King Street Apartments

BENJAMIN J. CAYETANO
GOVERNOR

DONALD K.W. LAU
EXECUTIVE DIRECTOR

SHARYN L. MIYASHIRO
EXECUTIVE ASSISTANT

STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
HOUSING AND COMMUNITY DEVELOPMENT CORPORATION OF HAWAII
677 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX (808) 587-0600

98:FIN/1243

October 6, 1998

Mr. Gary Gill
Director
Office of Environmental Quality Control
235 S. Beretania Street - Suite 702
Honolulu, HI 96813

Dear Mr. Gill:

Subject: Finding of No Significant Impact
King Street Apartments
TMK (1)2-3-12-44 Honolulu, Oahu

The Housing and Community Development Corporation of Hawaii (successor to the Housing Finance and Development Corporation in accordance with Act 350, Session Laws of Hawaii 1997) has reviewed the comments received during the 30-day public comment period which began on May 23, 1998. The agency has determined that this project will not have a significant environmental effect and has issued a Finding of No Significant Impact. Please publish this notice in the October 23, 1998 OEQC Bulletin.

We have enclosed a completed OEQC Bulletin Publication Form and final EA. Please contact Lloyd Fukuoka at 587-0579 or Kwan G. Low at 587-0797, if you have any questions.

Sincerely,

Donald K. W. Lau
Executive Director

Enclosures

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FINAL
ENVIRONMENTAL ASSESSMENT
AND
FINDING OF NO SIGNIFICANT IMPACT
(F.O.N.S.I.)

FOR

THE KING STREET APARTMENTS

AN ELDERLY LOW INCOME RENTAL HOUSING DEVELOPMENT PROJECT

"A Facility for Aging in Place"

AT
1239 SOUTH KING STREET
HONOLULU, HAWAII
T.M.K. : 2-3-12:44

ACCEPTING AGENCY

HOUSING AND COMMUNITY DEVELOPMENT CORPORATION OF HAWAII
(Formerly the Housing Finance and Development Corporation)

677 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813

CONTACT PERSON
GARY S. FURUTA, PROJECT MANAGER
Hawaii Housing Development Corporation
725 Kapiolani Blvd., Suite C-103
Honolulu, Hawaii 96813

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I. INTRODUCTION

The Hawaii Housing Development Corporation (HHDC) proposes to develop an affordable rental housing project for low income elderly, on a 18,963 sq. ft. parcel in urban Honolulu. It intends to utilize whatever rental housing assistance programs available, e.g., tax credits, waivers, grants, below market financing, technical assistance, etc. to complete the project.

With the consideration that funding will require tax credits from the State of Hawaii to assure affordable rental rates, the project is subject to the Hawaii State Environmental Impact Review process, as stipulated by Chapter 343, Hawaii Revised Statutes, and Chapter 200, Title 11 Administrative Rules.

This Environmental Assessment document is prepared according to guidelines provided by the Office of Environmental Quality Control, and with the assistance of its staff.

In accordance with the guidelines, the Housing and Community Development Corporation of Hawaii (formerly the Housing Finance and Development Corporation) is the Accepting Agency.

HHDC is a nonprofit organization created by the Hawaii Community Foundation and other grantmakers to develop low income, affordable rental housing on an ongoing basis. Its Directors are made up of influential and successful business people in the community, coming from both the public and private sectors. Their experience is varied, e.g., bankers, union officers, legislators, government administrators, developers, affordable housing coalition members, etc. .

HHDC was instrumental with the development of the Birch Street Apartments, a 52 unit, two-bedroom, affordable rental project for low income families, that is currently under construction on a site adjacent to the proposed project.

HHDC intends to develop the King Street Apartments, a 91 unit, one-bedroom, affordable rental project for the low income elderly.

II. GENERAL INFORMATION

A.	ACCEPTING AGENCY:	*Housing and Community Development Corporation of Hawaii (formerly the Housing Finance and Development Corporation)* *677 Queen Street, Suite 300* *Honolulu, Hawaii 96813*
	Principal Contact Person:	*Hawaii Housing Development Corporation (HHDC)* *C/o Gary S. Furuta* *725 Kapiolani Boulevard, Suite C-103* *Honolulu, Hawaii 96813* *Phone: 596-2120 (Fax: 395-1520)*
B.	ADDRESS:	*1239 South King Street*
C.	TAX MAP KEY:	*2 - 3 - 12 : 44*
D.	LAND AREA:	*0.435 Acres (18,963 s.f.)*
E.	LAND OWNER / LESSOR:	*Pacific Century Trust (PCT),* *As Trustee for* *Hawaii Community Foundation (HCF)* *Okumura Family Trust* *P.O. Box 3170* *Honolulu, Hawaii 96813* *(Hawaii Housing Development Corporation has an option to purchase)*
F.	STATE LAND USE DESIGNATION:	*Urban*
G.	DEVELOPMENT PLAN DESIGNATION:	*Commercial*
H.	ZONING (LUO):	*BMX-3 Community Business Mixed Use District*
I.	HEIGHT LIMIT:	*150 feet maximum*

J. STREET SETBACKS: *Dwellings - Front :10 feet*
Multifamily- Side & Rear: 10 feet

K. HISTORIC PROPERTIES: *None*

L. SHORELINE MANAGEMENT AREA: *Not Applicable*

M. FLOOD ZONE: *ZONE "X"; outside 500 year flood zone; There have been no registered complaints regarding flood damage.*

N. TSUNAMI INUNDATION ZONE: *The site is located outside of the Tsunami Inundation Zone.*

O. EXISTING USE(S): *The site is currently occupied by a Texaco service station.*

P. SURROUNDING USE(S): *Mauka: Commercial*
Diamond Head: Commercial
Makai: Apartment/Residential
Ewa: Commercial

Q. AGENCIES CONSULTED IN MAKING THIS ENVIRONMENTAL ASSESSMENT:

The following agencies and organizations were invited to provide comment on the proposed action:

DEPARTMENT OF LAND UTILIZATION
City and County of Honolulu

DEPARTMENT OF PUBLIC WORKS
City and County of Honolulu

DEPARTMENT OF WASTEWATER MANAGEMENT
City and County of Honolulu

FIRE DEPARTMENT
City and County of Honolulu

DEPARTMENT OF TRANSPORTATION SERVICES
City and County of Honolulu

BOARD OF WATER SUPPLY
City and County of Honolulu

BUILDING DEPARTMENT
City and County of Honolulu

DEPARTMENT OF PARKS AND RECREATION
City and County of Honolulu

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
City and County of Honolulu

POLICE DEPARTMENT
City and County of Honolulu

NEIGHBORHOOD BOARD #11 (ALA MOANA/KAKAAKO)
c/o Neighborhood Board Commission

STATE HISTORIC PRESERVATION DIVISION
DEPARTMENT OF LAND & NATURAL RESOURCES
State of Hawaii

The letters of review and comment from the above agencies are included in Attachment "H" with the corresponding response in Attachment "I".

R. SUMMARY OF REQUIRED APPROVALS AND PERMITS:

1. EXEMPTIONS UNDER PROVISIONS OF CHAPTER 201G, HRS (Hawaii Revised Statutes):

   The applicant has submitted an application to the City and County of Honolulu, for City Council approval of exemptions requested under provisions of Chapter 201G, HRS.

2. BUILDING PERMITS:

   Upon approval of the exemptions requested under the provisions of

Chapter 201G by resolution of the City Council of Honolulu, the applicant will have construction documents prepared and submitted to the Department of Planning and Permitting of the City and County of Honolulu for review and approval.

III. DESCRIPTION OF THE PROPOSED ACTION

The site is a 18,963 square foot parcel located in the central urban core of Honolulu, in the Makiki/McCully district, approximately one block Diamond Head of the Piikoi and South King Street intersection. It fronts both South King and Alder Streets. It is in the most densely populated area of the State which is in a generational transition from a single family to a multifamily neighborhood.

The proposed project is intended to provide the elder generation an opportunity to continue residence in the neighborhood.

The area is among the most popular and convenient on Oahu. It is in close proximity to downtown, Ala Moana Shopping Center and the Queen's Medical Center. The site is located along major streets, near major bus routes and has easy access to the freeway on-ramps at Lunalilo Street.

Across South King Street are Zippy's and Wisteria restaurants. At the corner of South King and Alder Streets is the Golden Duck Chinese Restaurant.

Adjacent to the site on Birch Street, there is a nine-story residential condominium building, a small office building, a residential apartment building, single family homes and an affordable 52 two bedroom unit, eight-story apartment building under construction.

The parcel is located within one block of Sheridan Park, a municipal public park with amenities that include play courts, picnic areas, play equipment, and more important with regard to the proposed elderly project, shade rimmed open space.

The site is currently occupied by a Texaco service station that includes a paved parking area along Alder Street. The tenant is currently on a month to month lease. Under the provisions of its current lease, the tenant, Texaco, is required to clean up any contamination it may have caused.

In anticipation of the expiration of their lease, Texaco has initiated a Preliminary Site Assessment Phase II Report in preparation of any remediation and/or mitigating measures that may be required upon demolition of the existing facility.

The service station, paved parking area, all site improvements including underground storage tanks will be completely removed by demolition, including any remediation and/or mitigation of any hazardous materials or contaminated soil.

The site is essentially a flat lot, with a slight down slope from mauka to makai.

The site has a Land Use Ordinance (LUO) designation for: Business-Mixed Use (BMX-3), which designates "Dwellings, multifamily" as an Allowable Use. According to LUO provisions the maximum floor area ratio (including open space bonuses) available for a BMX-3 district parcel is x.3.5. For this 18, 963 sq. ft. parcel, this calculates to a maximum floor area of: 66,370 sq. ft.

The King Street Apartments project will be 47,407 sq. ft. or approximately 70% of the maximum allowable density.

The project will be an eight-story mid-rise building with 91 one-bedroom rental units for low income elderly. The structure will be of concrete and masonry, extending to a building height of approximately 71' to the roof level. There will be 7 dwelling floors above the main lobby and multi purpose room located at the ground floor. Each dwelling floor is planned to have a lounge or storage/laundry area and up to thirteen (13) typical rental units.

The typical rental units are planned to have one bedroom, with one bath and be approximately 396 s.f. in floor area.

Of the 91 rental units, there will be at least 5 rental units designed and built to comply with the provisions of the Americans with Disabilities Act (ADA). In addition, all units will be designed to be adaptable for accessibility to comply with the Fair Housing Act (FHA).

All the units are intended to be rental for low income elderly residents who earn 50% of the HUD area median annual income or less. The initial rent for the units is anticipated to be $498 per month.

As an elderly living project, the minimum entry age for tenants will be 62, and an assisted living component will be provided on an as needed basis to minimize the maintenance costs for individual residents of the facility. This project will offer an alternative to a full assisted living project where services are paid for by all residents, whether needed or not. The project will try to minimize maintenance costs by developing individual programs of assistance for the seniors as they need it. This allows seniors to select just those services that they need at the time, and provides a wide selection of services to allow them to stay in this facility for as long as possible. The concept of "aging in place" will be promoted and seniors will be able to enjoy the company of friends and neighbors until age and/or illness places them in a position of needing 24-hour care as provided by long term care facilities.

The Catholic Charities Elderly Services, under the auspices of the Catholic Diocese of Honolulu, has a mission to provide needed services to frail elderly individuals living in Honolulu. The purpose of providing these services is to help the individuals to manage living in their own apartments for as long as possible and as independently as possible.

The project will have 30 on-site, at grade parking stalls. As an elderly low income rental project, the HHDC has applied to the City and County of Honolulu, Department of Planning and Permitting, for processing of a Chapter 201G, HRS application to the City Council. The project will have a parking ratio of approximately one stall per three units (1:3), which is more than the accepted parking ratio for elderly communities of one stall per four units (1:4).

The site plan will include private park space areas totaling approximately 4,597 square feet. The park areas will provide the occupants with picnic tables, shaded rest areas, and space for individual gardening.

The proposed development schedule for the project anticipates design, approvals, and funding arrangements to occur through the end of 1998. Construction should begin in January 1999 with completion by the first quarter of the following year. Rental units will be available to the elderly in the first quarter of 2000.

IV. AFFORDABLE RATES PROPOSED

The target rental market for the project is the elderly earning at or below 50% of the Honolulu median annual income.

For the above income range, a maximum tenant's contribution (rent), which includes utilities, has been established by the Department of Housing and Urban Development (HUD) of the Federal Government.

For a low income elderly rental project such as the King Street Apartments, the monthly gross is $606, with a utility allowance of $52 per month. This equates to a net rental income per apartment unit of $554 per month allowed by HUD.

The King Street Apartments' net monthly rent at $498 per month (45% +/- of annual monthly income) will be below that allowed by HUD.

Marketing research has determined that one-bedroom units for the City and County of Honolulu, in mid 1997, had an average rent of $722 per month, with a median rent of $700 per month, or about 60% of the HUD area median annual income. The market demand is high and affordable one-bedroom rental units are readily occupied. With regard to specifically elderly one-bedroom rental units, the availability is virtually nonexistent and the elderly are paying considerably higher rents to remain in the urban core. Even in this market, the projected monthly rent of $498 for the King Street Apartments, is below the market in urban Honolulu area for comparable new units.

V. IMPACTS TO EXISTING CONDITIONS

Based on the current stage of the design of the project, preliminary research and review has determined that the proposed project will have the following impact to existing conditions:

A. PHYSICAL SERVICES:

1. *Water:* *Estimating the water use with reference to the adjacent Birch Street Apartments, the projected domestic water use is: 28,300 gallons per day, with landscaping use projected for: 220 gallons per day, totaling approximately 28,520 gpd.*

There are 8" lines on Birch and Alder Streets and 12" lines on South King and Elm Streets.

The Board of Water Supply has determined that the existing water system is presently adequate to accommodate the proposed apartment building.

No off-site water improvements will be required.

In addition, the design of the project will incorporate water efficient low flush toilet fixtures, low flow shower heads and sink faucets, for water conservation.

The project will be responsible for payment of the corresponding Water System Facilities Charges and the planning will coordinate the determination and sizing of an appropriate water meter and back flow preventer for the project with the Board of Water Supply.

2. *Sewers:* *With regard to the projected wastewater generation in gallons per day(gpd) from the project, the accepted standards include:*

85 gpd per occupant.
50 gpd per laundry machine
15 gpd per staff member

With regard to the above, the projections for the proposed project include:

A maximum residency of two occupants per unit (182 tenants) would be: *15,470 gpd,*
Ten laundry machines would be: *500 gpd,*
and,
An approximate staff of 6, would be: *90 gpd.*

Total wastewater generation is projected to be approximately: *16,060 gpd.*

There are 6" and 8" sewer lines on Birch Street, a 12" sewer line on South King street, and a 6" sewer line on Elm Street.

The Department of Wastewater Management has approved a Sewer Connection Application for the proposed project, provided a connection is made to the existing Alder Street sewer line. A 6" sewer line of approximately 225 ft. will be required on Alder Street.

The project will also be responsible for payment of the Wastewater System Facility Charge.

As noted earlier, the design of the project will incorporate water efficient low flush toilet fixtures, low flow shower heads and sink faucets, for water conservation

3. *Access:* *The property has frontages on two city streets. South King Street is one way (five lanes) in the Diamond Head direction with parking on both sides. Alder Street is one-way in the makai direction with parking on one side. No off-site roadwork will be required.*

   Also, no easements or additional acquisitions are required for access. The project is situated near bus routes and has easy access to the freeway and major streets, e.g., South King, Elm and Piikoi Streets.

   A Traffic Impact Assessment Report, prepared by Pacific Planning & Engineering, Inc., indicates that the proposed elderly rental project will have less of an impact to current traffic than the existing Texaco Station. The report states that the proposed project will have less impact to traffic

than other comparable allowable developments, such as market condominiums (130+/- units), or a 66,000 sq. ft. office retail building which could be built on the site. The report also states that elderly projects need considerably less parking than other projects according to accepted national and local standards.

The development of the design will address comments received from the Department of Transportation Services regarding:

Site improvements, such as landscaping and fence walls, will be designed to assure clear sight lines for vehicles and pedestrians at all driveways.

New driveways will be designed to not exceed 5% slope.

Abandoned driveways will be reconstructed for sidewalks, curbs, and gutters to match adjacent existing conditions, as well as according to the standard details of the Department of Public Works.

The site will be planned to allow on-site maneuvering for loading spaces and all parking stalls.

Parking entry controls, if planned, will be positioned to allow queuing of vehicles entering the site to clear the public street.

Planning for the site should include an increase of the property line radius at the intersections of the South King and Alder Streets from 20 feet to 30 feet.

A traffic control/detour plan, including affected traffic signs and pavement markings on both side of each affected street, will be submitted to the Department of Transportation Services for their review and approval.

4. *Drainage:* *The existing site topography is essentially a pad lot. The parcel has street frontages on two sides. The streets are fully improved city streets with curbs and gutters. No off-*

site drainage work is expected.

The development of the design will address comments received from the Department of Public Works regarding:

1. Compliance with City Ordinance 96-34 to control peak runoff from the site during the construction period of the project.

   The project will address City Ordinance 96-34, regarding limiting the runoff from the site to its present levels through the design of drainage flow to landscaped areas within and around the perimeter of the site. The Project will have approximately 4,597 square feet of private park land provided in three areas on site, and landscaped yards around the majority of the perimeter of the site. These areas will be used as destination for drainage runoff and increase the "Time of Concentration" for percolation before reaching the property line.

2. Street frontage repair and/or reconstruction to comply with City Standards and the Americans with Disabilities Act Accessibility Guidelines (ADAAG).

   The design of the project will included appropriate construction details regarding street front improvements, such as gutter, curbs, sidewalks, and dropped curb driveways from the four-county STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION. The design will also include any applicable ADAAG provisions relating to accessible routes including such items as curb ramps, and ramps.

3. Best Management Practices (BMPs) during construction to minimize erosion and sediment runoff.

   The construction documents will be prepared to

direct the Construction Contractor to include dust barriers and silt fences around the perimeter of the site to prevent erosion and sediment runoff. He will also be directed to provide a 6" thick gravel surfaced ingress and egress driveway to minimize site debris from leaving the site.

4. Direct storm water runoff from paved areas to planted areas to minimize discharge of pollutants into the City's drainage system.

   The design of the site will direct paved area runoff into planting areas in response to compliance with City Ordinance 96-34, and will also consider any other measures, including retention areas or sumps, to minimize discharge into the City's storm drainage system.

5. *Police:* *The project site will be serviced as needed by patrol officers from the main police station on Beretania Street.*

   The Police Department's review of the draft Environmental Assessment has determined that this project should have no significant impact on their operations.

6. *Fire:* *There is an existing fire hydrant at the project street frontage on King Street, and another across the project street frontage on Alder Street.*

   Engine Company No. (2) Pawaa Station, located at Makaloa and Kaheka Street, is within .5 miles and 5 minutes from the site and will be the first station responding to an alarm, with Engine Company (3) Makiki Station, at Wilder and Piikoi Streets, as well as Engine Company (9) Kakaako Station, at Mission and Queen Streets providing back up services as needed.

   In conclusion to their review of the Draft Environmental Assessment, the Fire Department forsees no adverse impact relating to the proposed use of the property.

7. *Utilities:*

a. *Electric:* *The Hawaiian Electric Company (HECO) has existing power lines in the area and the applicant will coordinate development of the project with HECO to assure that the power will be adequate to support the proposed rental apartment project.*

In addition, the design of the project will consider incorporating energy efficient design including solar panels as an alternate energy source, and compact flourescent light fixtures in the common areas for energy conservation.

The project will also be design to maximize the use of natural cross ventilation into the apartments, to minimize the need for individual air conditioning units.

b. *Telephone:* *The GTE Hawaiian Telephone Company has existing service lines in the area. It is expected that these existing lines will be used to service the proposed apartment project. No off-site work is expected.*

c. *Cable:* *Cable television service is provided to buildings and dwellings in the surrounding area and arrangements will be made with the appropriate vendor to provide cable service to this project. No off-site work is expected.*

8. *Parks and Recreation:*

The Project is located within one block of Sheridan Park, a municipal public park with amenities that include play courts, picnic areas, play equipment, and shade rimmed open space.

The design of the Project will address comments received from the Department of Parks and Recreation regarding:

1. The impact of the project on recreational facilities in the Makiki/McCully area.

In addition to the close proximity to the Sheridan

Municipal Park, the project will include three separate on site private park areas totaling 4,597 square feet for the use of the residents. These on-site recreational areas will relieve the residents use of the municipal facilities.

Elderly use of the municipal park is expected to be passive in nature consisting of walking and sitting in the shaded areas of the park. It is not anticipated that the elderly residents of the project will monopolized the courts or play areas of the park. These facilities will continue to be available to, while shared with, the neighborhood.

2. Compliance with the City and County of Honolulu's Park Dedication Ordinance No. 4621, and street tree requirements.

The project has applied to the Department of Planning and Permitting requesting an exemption from the park dedication requirements under the provision of Chapter 201G HRS.

The project will comply with street tree requirements of the City and County of Honolulu.

B. <u>ECONOMIC:</u>

According to the Market Study of Elderly Housing, prepared by SMS Research & Marketing Services Inc., the availability of elderly housing is low, and demand is high. The Study provided as an example, the recently completed Kulana Hale in Kakaako. It was developed as an elderly project, targeting tenants at 50% and 60% of the area median income. All of the 50% units have been rented, and the 60% units are currently being rented. The Study states that there is a high demand for elderly housing within the urban core. It is the conclusion of the Study that the proposed King Street Apartments is well designed to respond to that demand.

As a rental apartment development, the project will have a secondary effect on economic growth by providing development related work for architects, engineers, etc., as well as short-term construction jobs. The project will provide long term employment for maintenance personnel, and

possibly security guards, as well as service industry jobs to support the rental tenants and their facilities such as the common laundry and landscaping.

As an elderly rental development, case workers will be stationed on-site to care for the tenants. Care services, including bathing, housecleaning, counseling, food services, etc., will be available to the building occupants, either through employment or independent contractors.

The project will provide housing for at least 91 elderly residents of the community, who will continue to make use of the numerous retail, restaurant, and service establishments in the area.

Short term impacts include the use of adjoining retail and restaurant establishments by the construction personnel during the anticipated 15 months of construction. The project may also provide a corresponding economic stimulus to the communities where the construction personnel live and will spend their earnings.

The project will be financed principally from state grants and loans from the State of Hawaii Rental Housing Trust Fund (RHTF) and the Hawaii Development Revolving Fund (HDRF), federal and state low-income housing tax credits, as well as interim low cost construction loans through local financial institutions. These funding sources are made available by the State of Hawaii to promote the development of affordable low income housing through the Housing and Community Development Corporation of Hawaii (HCDCH).

C. SOCIAL:

The McCully/Makiki area is older and more developed than newer outer urban areas, and has a considerable number of elderly residents. The elderly tend to want to remain in their familiar neighborhood.

The project is intended to provide 91 affordable one-bedroom rental housing units for low income elderly in the urban core. The community is in a generational transition from a single family to a multi-family neighborhood. The proposed project is intended to provide the elder generation an opportunity to continue residence in the neighborhood.

The proposed project not only provides an opportunity for a good location for the elderly to live, but also assures the affordability they may need for

a quality lifestyle. The project provides affordability through the proposed rent of $498 per month, as compared to market rates in the range of $700 per month.

The project is arranging with Catholic Charities Elderly Services under the auspices of the Catholic Diocese of Honolulu, to provide needed services to the tenants. The Catholic Charities Elderly Services is expected to have the following services available:

1. *Case Management - which is the comprehensive, holistic approach to the planning and delivery of services to meet the client's needs.*

2. *Set up classes for social, educational, and/or health needs - to prevent the social isolation of the residents and to foster preventive measures for health related areas.*

3. *Chore services, such as light housekeeping.*

4. *Transportation - to doctors, other medical entitlement, or financial appointments.*

5. *Shopping service - assist clients by doing their marketing (food shopping) or other shopping for them.*

6. *Money management - help with direct deposits, check writing and bill paying.*

7. *Arrange for personal care or health related needs - including assistance in bathing and other daily hygiene requirements, nurse monitoring and other daily activities with which a resident requires assistance. This may also include having doctors, nurses, and other health practitioners come to the site to speak or to provide health related services, including blood pressure and cholesterol screening, and podiatry services.*

8. *Establish linkage with other agencies and service providers in the community.*

9. *Develop a directory of providers for use by the staff and residents and referring and linking residents to service providers in the community.*

10. *Educate residents on service availability, application procedures*

(including food stamps, rent rebates, Supplementary Social Security Income, Medicare, prescription assistance, energy assistance, etc.) client rights, and other relevant issues.

11. *Develop case plans in coordination with assessment services.*

12. *Monitor the ongoing provision of services from community agencies.*

13. *Set up volunteer support programs with service organizations.*

14. *Help residents build informal support networks with other residents, family and friends.*

15. *Educate project staff on issues related to aging in place and service coordination.*

16. *Assess residents' functional abilities so that the appropriate case plans can be developed.*

17. *Increase social interactions among residents, and decrease isolation by some, through the promotion of social activities and encouraging greater participation by all residents.*

D. <u>ENVIRONMENTAL:</u>

1. *Historic and Archaeological Resources:*

The State Historic Preservation Division, of the Department of Land and Natural Resources, has determined that the proposed project is located on land which has been extensively developed and altered making it unlikely that subsurface historic sites would be found. It believes that this project will have "no effect" on historic sites.

In addition to the above, the project plans will be prepared to direct the Construction Contractor to stop work and notify the State Historic Preservation Division should any historic sites, including human burial, be uncovered during routine construction activities.

2. *Natural Resources:*

a. *Water Sources:* *The project does not anticipate impacting the water table in the area.*

Subsurface conditions presented through test borings for the Foundation Investigation Report prepared by Ernest K Hirata & Associates, Inc., of the adjacent Birch Street Apartments, indicated subsurface water at approximately 8.5 to 9.5 feet below grade.

The proposed foundation system, anticipated to be spread footings with 15 foot piles, will not adversely impact the area water sources. Parking will be at grade.

b. *Flood Plain:* *The project is in ZONE X, outside the 500 year flood zone.*

c. *Wetlands:* *The project site is in the urban core and does not involve wetland areas.*

d. *Coastal Zone:* *The project site is not in within the coastal zone management area or the City's Special Management Area.*

e. *Flora and Fauna:* *The project site is in the urban core and does not contain any wildlife habitats or rare or endangered flora and fauna.*

f. *Agricultural Lands:* *The project site is in the urban core and designated for urban and apartment use. The proposed project will not impact agricultural lands or lands with potential agricultural use.*

3. *Noise:*

Short term noise impacts at construction sites are a normal and expected result of construction activity. The State Department of Health administers rules and regulations relating to the hours during which construction is permitted and the noise levels permitted during those hours. The Construction Contractor will be required to apply for a permit from the State Department of Health regarding regulatory limits for noise from construction activities.

The Construction Contractor will also coordinate the anticipated pile driving operations with the Noise and Radiation Branch of the Department of Health.

Long term noise impact from the proposed project is expected to be minimal.

4. *Air Quality:*

   Short term impacts to air quality are primarily relating to expected dust generated by construction activity. The Construction Contractor will be directed to take dust control measures during the construction period to minimize or eliminate any negative impact to air quality.

   Long term impact to air quality is anticipated to be minimal.

5. *Resource Conservation Measures:*

   The project will be designed to be environmentally sensitive by including non polluting waste water systems involving connection to the available municipal sewer system.

   The project will include water conservation elements with regard to low-flush toilets, low flow plumbing fixtures, and an efficient irrigation system including drip distribution.

   The building will have energy efficient lighting fixtures, such as compact fluorescent lights in the common areas, low voltage landscaping and walkway lighting. Solar panels will be considered in the design for hot water generation, and as an alternate energy source.

   In addition, the design will maximize the opportunity for cross natural ventilation for the dwelling units, to allow further conservation of energy otherwise needed for individual air conditioning units.

VI. MAJOR ENVIRONMENTAL CONCERNS

Based on the Environmental Site Assessment - Phase 1 report prepared for Bishop Trust Company Ltd. by R.M. Towill Corporation, dated September 1991, the property was previously used for residential purposes until 1961 when the property was improved for the current use as a Texaco service station. The report concludes that "...Although there were no signs of surficial contamination, the previous use of the site as a service station suggests the potential for subsurface contamination...".

Under the provisions of its current lease, Texaco is required to clean up any contamination it may have caused.

In its lease with Pacific Century Trust (PCT), Texaco as Lessee is required to:

> "....keep the demised premises and all improvements thereon in a strictly clean and sanitary condition, and will observe and perform and comply with all laws, ordinances, rules, and regulations of the health or other governmental authorities applicable to said premises... and will make good at its own cost and expense all defects of which notice shall be given...".

The lease further states that:

> "...if Lessor, prior to the termination thereof, shall so request, Lessee shall remove at its own expense all improvements erected by it on the demised premises and restore the premises to a clean and level condition...".

In response to the possible expiration of their month to month lease, Texaco initiated a Preliminary Site Assessment Phase II Report, dated January 1997, prepared by Walker Consultants, Ltd. of Honolulu. The preparation of the report included a soil gas survey of 19 locations on the site, soils sampling and monitoring of 8 ground water wells, as well as 2 rounds of ground water sampling.

The report concluded that:

> "...the chemical composition of the soil vapor samples indicates that any past release of gasoline has been naturally degraded into compounds that are shorter than gasoline range impacts. Analytical results for all of the soils and groundwater samples are well below their respective DOH Tier SALS and GALs, indicating that there are no ongoing releases."

*On March 25, 1997, Texaco submitted the report to the State of Hawaii Department of Health, Environmental Management Division, Solid and Hazardous Waste Branch, with a request for a "*No Further Action Required*" designation.*

On May 30, 1997, The State of Hawaii responded that they "...have no further questions regarding the no further action request and removal of the release identification number.*" Mr. Jose Ruiz of the DOH Underground Storage Tank Section, confirmed for this Environmental Assessment, that the State had accepted the report that the site had no significant contaminants, and determined that the site is "clean".*

Additionally, the project has been designed to minimize any impact to the existing subsurface soils conditions on the project site. The design allows for maximum access to the project's site during construction and even after completion of the proposed project, in the event any contamination is detected.

All construction, except for normal foundation work, will be at grade or above grade. The proposed project is not anticipated to disturb the existing subsurface soil conditions.

VII. MAJOR ALTERNATIVES CONSIDERED

Landowners, including the current Trustee owner, have the responsibility to seek the highest and best use of the property.

The major alternative uses considered for the property include:

CONTINUED USE:

This alternative involves the continuation of its current use, as an: Automotive Service Station.

The land owner, Pacific Century Trust (PCT) as Trustee of the Hawaii Community Foundation Trust - Okumura Family Fund, did not desire to have a property used as a service station in its permanent portfolio, and offered the property for sale. They approached the current tenant, Texaco Refining and Marketing, to offer the first right of purchase to them to convert their month-to month lease to ownership. Texaco has indicated that they have no intention to purchase the property for their continued use and will vacate the property should the opportunity of another use be available.

Should another vendor become available, the site could be re-tenanted for the continued use as a service station. However this use is not consistent with the interest of both the PCT and HHDC who has an option to purchase the property. The service station use does not maximizing utilization of the property, and can create liability and expenses to the owner with the handling of potentially hazardous materials.

DISUSE:

As an alternative, the site may also be cleared of its current use and essentially no development of the property may occur. The land will lay fallow.

This alternative is not in the interest of the PCT, or future owner, to seek the highest and best use of the property.

IMPROVED USE:

The maximum potential for the improvement of the property is directly related to the maximum allowable floor area available on the parcel. According to the LUO designation for Business-Mixed Use (BMX-3), the maximum allowable floor area (including open space bonuses) available on the parcel is x.3.5. For this 18, 963

sq. ft. parcel, the maximum floor area calculates to 66,370 sq. ft..

The BMX-3 designation intends the parcel to be used for a variety of "Allowable Uses" according to the provisions of the LUO. The most pertinent use for this parcel includes:

> *OFFICE BUILDINGS.*
> *or,*
> *DWELLINGS, MULTI-FAMILY. Within this permitted use, a residential development as an alternate use may be considered, both for market residential (condominium) and low income affordable (rental).*

With regard to the above alternatives, use for an Office Building is not anticipated to be advantageous with the current overabundance of office space throughout the city.

The direction for the highest and best use of the property leads significantly toward residential use.

With regard to "for sale" market condominiums, the overabundance of existing condominium units on the market makes condominium development unfeasible.

According to the Market Study of Elderly Housing, prepared by SMS Research & Marketing Services, Inc., with the substantially limited availability of elderly housing in general, and affordable rentals in particular, it is apparent in the report that maximum and best use of the parcel is to provide affordable, one-bedroom rental units for low income elderly at the targeted rental market range.

It is the conclusion of the marketing report, and the position of this assessment, that the proposed affordable elderly rental project is significantly better than the current continued use of the parcel as an automotive service station, the disuse of the parcel, or the improved use as an office building or market residential (condominium).

VIII. MITIGATION MEASURES

Few potential adverse impacts to the area are expected to result from the implementation of the proposed project.

SHORT TERM

Immediate short term mitigation measures will respond to the demolition and removal of the tenant's improvements currently on the site, including structural demolition, removal of underground storage tanks, as well as remediation of any hazardous materials generated by the tenants occupancy.

The lease provisions between the landowner and the tenant, clearly define the responsibility for the removal of hazardous materials prior to the return of the site by the tenant. The tenant has indicated that they will completely fulfill their responsibility according to regulations of the State of Hawaii regarding the proper removal and disposal of hazardous materials.

The short term mitigation measures at the start of the construction period will respond to adverse conditions generated by the initial construction phase such as on-site grading and movement of vehicles within the project site.

The Construction Contractor will be required to install silt fences and site drainage controls to prevent erosion and off-site runoff.

The short term mitigation measures for the duration of the construction period will respond to adverse conditions generated by the continuing construction of the project including activities that will generate localized noise and dust.

Impacts from the noise and exhaust emissions of the construction vehicles will be mitigated by the mufflers and filters on the construction equipment and restricting the use of construction equipment to daylight hours.

Mitigating measures in response to adverse impacts to air quality would include minimizing the amount of dust generating materials and activities, providing an adequate water source at the site prior to startup of construction activities, frequent watering of unpaved areas, and the installation of dust screens to limit fugitive dust from the site.

The Construction Contractor will be required to provide adequate dust control measures during the weekends, after hours, and prior to daily start up of construction activities, as well as controlling dust generated by debris being

hauled away from the site.

In addition, the Construction Contractor will be required to apply for permits from the Department of Health and comply with noise and dust control regulations.

In response to the community concerns regarding limited street parking, the Construction Contractor will be required to provide loading and parking areas on-site, as well as alternate parking sites for the construction personnel, during the construction of the project.

The Construction Contractor will be responsible to provide for the safety of the pedestrian public along the street front of the project site, including barricades and signage.

The Construction Documents will include a traffic control plan for any work affecting the street frontage areas of the project, and the Construction Contractor will be required to follow City regulations for street and sidewalk closures during the period of construction, and provide the necessary traffic control devices required to minimize the disruption of vehicular, as well as pedestrian movement.

He will also be responsible for the security of the site itself, and the construction materials on-site, from theft or vandalism during off-hours with patrolling guards, or electronic warning systems.

LONG TERM

Long term impacts from the development of the project are expected to produce minimal impacts to the adjacent residential and commercial property owners. Appropriate engineering and design measures will ensure adequate drainage and irrigation of the site after the completion of the project.

The proposed project is not expected to have any impact on the micro-climate of the area or region. The planned height of the structure will not be tall enough to significantly affect existing wind patterns. No specific, important, nor predominant natural feature is visually associated with the project site.

The project does not anticipate to impact on the limited street parking in the area. As an elderly facility for residents at least 62 years old, it is expected that many of the residents will enlist the convenience of public transportation. The project has applied to the Department of Planning and Permitting requesting an exemption from parking requirements under the provisions of Chapter 201G

HRS. The project will have 30 parking stalls for a parking ratio of approximately one stall per three units (1:3), which is more that the accepted parking ratio for similar elderly communities of one stall per four units (1:4). Additional parking will be a priority as the design of the project develops.

There will be a long term benefit to the area with the establishment of site landscaping to aesthetically integrate the project into the surrounding neighborhood.

The proposed project will also provide long term improvement to the quality of the environment in the area with the discontinuance of the current use as a service station.

An implementation of the measures listed above, should be appropriate to minimize, if not eliminate, any adverse impact to the environment of the proposed project.

IX. MAJOR EXEMPTIONS REQUESTED UNDER PROVISIONS OF CHAPTER 201G HRS

The project has submitted an application to the City and County of Honolulu for City Council approval of the following requested exemptions:

A. *Exemption from Chapter 21, Article 5, Section 21-3.70-2, ROH, Land Use Ordinance, Ordinance No. 86-96, as amended, to allow the provision of 30 parking stalls for the proposed 91-unit, affordable, elderly apartment rental development instead of 101 stalls.*

B. *Exemption from Chapter 21, Article 5, Section 21-5.90-3(b), ROH, Land Use Ordinance, Ordinance No. 86-96, as amended, to allow:*
   a. *A front yard of approximately 5 feet for about a 16-foot section.*
   b. *A front yard of about 9 feet for about a 42-foot section along Alder Street.*
   c. *A side yard along the south property line of approximately 3 feet for about a 96-foot section.*

C. *Exemption from Chapter 21, Article 5, Section 21-5.90-3(d)(2)(B), ROH, Land Use Ordinance, Ordinance No. 86-96, as amended, to allow:*
   a. *A portion of the building to encroach into the transitional height setback for about a 17-foot section, including the elevator shaft and a portion of the elevator lobby, along the south property line with a 3-foot transitional height setback instead of a 13-foot transitional height setback from the 40-foot elevation level up to the top of the structure at 70 feet, 6 inches.*
   b. *A portion of the building to encroach into the transitional height setback for about a 7-foot section, a portion of the corridor, along the south property line with a 12-foot transitional height setback instead of a 13-foot transitional height setback from the 40-foot elevation level up to the top of the structure at 70 feet, 6 inches .*

D. *Exemption from the Park Dedication requirements, Chapter 22, Article 7, ROH to allow the provision of 4,597 square feet of private park land provided in three areas, the 935 square foot Victory Gardens, the 1,310 square foot Terrace area and the 2,352 square foot Private Park, including the construction of benches, tables, and barbeque areas, instead of 6,637 square feet of park and playground.*

E. *Exemption from Chapter 18, Article 6, Section 18-6.2, ROH, Building Permit Fees, as amended, to allow exemption of the fees for building*

permits.

F. *Exemption from the payment of Real Property Taxes, in accordance with Chapter 8, Article 10, Section 8-10.20 ROH, real Property Tax Building Permit Fees - Exemption - Low-income and Moderate income housing, as amended.*

X. COMMENTS ON THE DRAFT ENVIRONMENTAL ASSESSMENT

The applicant has received comments, regarding the draft of this Environmental Assessment from the following:

Agencies:

DEPARTMENT OF LAND UTILIZATION
City and County of Honolulu

DEPARTMENT OF PUBLIC WORKS
City and County of Honolulu

DEPARTMENT OF WASTEWATER MANAGEMENT
City and County of Honolulu

FIRE DEPARTMENT
City and County of Honolulu

DEPARTMENT OF TRANSPORTATION SERVICES
City and County of Honolulu

BOARD OF WATER SUPPLY
City and County of Honolulu

BUILDING DEPARTMENT
City and County of Honolulu

DEPARTMENT OF PARKS AND RECREATION
City and County of Honolulu

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
City and County of Honolulu

POLICE DEPARTMENT
City and County of Honolulu

NEIGHBORHOOD BOARD #11 (ALA MOANA/KAKAAKO)
c/o Neighborhood Board Commission

STATE HISTORIC PRESERVATION DIVISION,
DEPARTMENT OF LAND & NATURAL RESOURCES
State of Hawaii

OFFICE OF ENVIRONMENTAL QUALITY CONTROL
State of Hawaii

Public:

COUNCIL MEMBER Andy Mirikitani
City Council, District V

XI. SIGNIFICANCE CRITERIA

According to the Department of Health Administrative Rules (Title 11- Chapter 200-12), the applicant or agency must determine whether an action may have a significant impact on the environment, including all phases of the project, its expected consequences both primary and secondary, its cumulative impact with other projects, and its short and long tem effects. In making the determination, the Rules establish "Significance Criteria" to be used as a basis for identifying whether significant environmental impact will occur. According to the Rules, an action shall be determined to have a significant impact on the environment if it meets any one of the following criteria:

(1) **Involves an irrevocable commitment to loss or destruction of any natural or cultural resources;**

The proposed project will replace an existing Texaco service station.

The site has a Land Use Ordinance (LUO) designation for: Business-Mixed Use (BMX-3), which designates "Dwellings, multi-family" as an Allowable Use. According to LUO provisions the maximum floor area ratio (including open space bonuses) available for a BMX-3 district parcel is x.3.5. For this 18, 963 sq. ft. parcel, the maximum floor area calculates to be: 66,370 sq. ft.

The King Street Apartments project will be 47,407 sq. ft. or approximately 70% of the maximum allowable density.

No significant or historic sites are known to exist within the project site. Should any archaeologically significant artifacts, bones, or other indicators of previous on-site activity be uncovered during the construction of the project, their treatment will be conducted in strict compliance with the requirements of the Department of Land and Natural Resources.

The proposed project does not involve a loss or destruction of any natural or cultural resource.

(2) **Curtails the range of beneficial uses of the environment;**

The use of the property is designated to be residential in general and specifically allows: multi-family.

The proposed project is consistent with the continued beneficial use of the property as multi-family residential.

The proposed project does not curtail the range of beneficial uses to the environment.

(3) **Conflicts with the state's long term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions or executive orders;**

The proposed project is consistent with the Environmental Policies established in Chapter 344, HRS, and the National Environmental Policy Act, and has not been subjected to any court decisions or executive orders.

(4) **Substantially affects the economic or social welfare of the community or State;**

The proposed project will have a short term beneficial affect on the economic welfare of the community for the employment of construction workers as well as the support of materials providers.

The proposed project is intended to be an affordable rental project for low income elderly residents who earn 50% of the HUD area median annual income or less. The project is responsive to the existing need for affordable senior housing.

The proposed project does not negatively affect the economic or social welfare of the community or state.

(5) **Substantially affects Public Health;**

The proposed project will have short term significant impact to the public health of the immediate area surrounding the site due to construction activities.

Equipment and construction activities generating noise, such as specifically pile driving, will be scheduled to be least disruptive to surrounding properties and will be monitored to comply with Department of Health regulations.

Dust and other airborne debris will be minimized during the construction period with the use of tarps and water spray. No exposed trash containers will be allowed, and the construction site will be cleaned of debris on a regular schedule to avoid accumulation.

The proposed project anticipates no long term negative effects to the public health, and will be significantly positive in terms of providing safe, decent and affordable senior housing.

(6) **Involves substantial secondary impacts, such as population changes or effects on public facilities;**

The proposed project is within the planned land uses of the City and County of Honolulu, and the State of Hawaii.

The proposed project has been reviewed by governing agencies regarding utilities services such as wastewater and water service, as well as other public facilities such as traffic, police and fire. All reviewing agencies have provided their concurrence with the intent of the proposed project.

The proposed project does not involve substantial secondary impacts, such as population changes or infrastructure demands.

(7) **Involves a substantial degradation of environmental quality;**

The proposed project will utilize existing urban land for the development of a multi-family apartment building for the low income elderly. The proposed use is consistent with the current multi-family residential buildings surrounding the site.

The proposed project is not anticipated to provide a substantial degradation of the environmental quality of the area.

(8) **Is individually limited but cumulatively has considerable effect on the environment, or involves a commitment of large actions;**

The proposed project is intended to reduce the critical need for affordable rental housing for the low income elderly of the State of Hawaii and City and County of Honolulu. As a multi family, mid rise structure, the proposed project will provide the best use of the existing site with regard to reducing the need for affordable rental housing.

The King Street corridor is City zoned to be Business Mixed Use, which includes residential apartments. The project is compatible to the long term intention of the City and good planning.

The project intends to continue the diversity of residential use in the area. The residential community is in transition from single family dwellings to multi-family apartments and condominiums. The adjacent Birch Street Apartments project, as a housing project for low income families in the area, is on the site of a previously residential facility for young orphaned boys and girls. It is currently under construction for a mid-rise, multi-family affordable rental housing project. A nine story apartment condominium was built across the street on the Diamond Head side of Birch Street. Other nearby affordable projects, e.g., Kulana Hale, etc, also have just been completed.

The area is zoned by city ordinance for mid and high rise mixed (business/residential) and apartment (residential) use.

A Market Study of Elderly Housing, prepared for the proposed project, has determined that the proposed King Street Apartments is consistent with the residential character of the neighborhood, and will provide direly needed additional affordable housing for the state.

A Traffic Impact Assessment Report, prepared for the proposed project, has determined that the elderly housing project will not significantly impact the street parking or the traffic of the neighborhood. Elderly residential projects are generally accepted to need only 1 stall per 4 units. The proposed project will have a parking to unit ratio of 1 stall to 3 units, which will provide relief to any impact the proposed project may have to street parking in the area. With respect to traffic, the report indicates that the proposed project will generate less traffic than the site's current use as a service station.

The proximity of the proposed project to major municipal bus routes, will allow the elderly residents convenient use of transportation service independent of individual vehicles, which will minimize any impact the proposed project will have to traffic in the area.

Additionally, by replacing a potentially hazardous use of the service station, with an affordable elderly rental housing project will only reduce any adverse impact to the environment of the immediate area.

The current environment of the project is multi-family residential, and the proposed project is consistent and compatible with that environment.

The proposed project will not have a considerable effect on the environment, and will not require a commitment for larger actions.

(9) **Substantially affects a rare, threatened, or endangered species, or its habitat.**

There are no rare, threatened or endangered species, or their habitat on the site of the proposed project.

The proposed project will not affect rare, threatened, or endangered species or their habitat.

(10) **Detrimentally affects air or water quality or ambient noise levels;**

The proposed project will have a short term impact to the air quality of the immediate area surrounding the site due to exhaust emissions from equipment, dust and other airborne debris generated from construction activities.

The impact of exhaust emissions will be minimized with the use of filters and other improvements to limit exhaust emissions. Dust and other airborne debris will be minimized during the construction period with the use of tarps and water spray.

The proposed project site has no accessible water sources, and the proposed project is not anticipated to affect the subterranean water quality.

The proposed project will have a short term impact to ambient noise levels of the immediate area surrounding the site due to construction activities.

Equipment and construction activities generating noise will be scheduled to be least disruptive to surrounding properties and will be monitored to comply with Department of Health regulations.

The proposed project anticipates no long term detrimental effects to the air or water quality or ambient noise levels of the site.

(11) **Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;**

The site of the proposed project is located in the central Makiki district, approximately 3/4 miles from the ocean at Ala Moana Beach Park. The site is not located in a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water or coastal waters, and the proposed project will not provide any adverse affect.

The proposed project will not affect an environmentally sensitive area, such as a flood plain, tsunami zone, erosion prone area, geologically hazardous land, estuary, fresh water area, or coastal waters.

(12) **Substantially affects scenic vistas and view planes identified in county or state plans or studies;**

The proposed project is not located in any special design district that may have provisions for scenic vistas and view planes.

The approximate 71' height of the proposed project is within the 150' maximum height limitation of the BMX-3 Business Mixed Use Zoning District. The design height is comparable to several surrounding existing multi-family structures, and is not intended to be detrimental to their orientation to a view.

(13) **Requires substantial energy consumption.**

The proposed project has been reviewed by the electric utility company, and has been determined to be within power availability.

The multi-family apartment building will be designed to incorporate energy efficient design for energy conservation, but more specifically to allow cost control and reduction of maintenance fees for the benefit of the residents.

The project will include water conservation elements with regard to low-flush toilets, low flow plumbing fixtures, and an efficient irrigation system including drip distribution.

The building will have energy efficient lighting fixtures, such as

compact fluorescent lights in the common areas, low voltage landscaping and walkway lighting. Solar panels will be considered in the design for hot water generation, and as an alternate energy source.

In addition, the design will maximize the opportunity for cross natural ventilation for the dwelling units, to allow further conservation of energy otherwise needed for individual air conditioning units.

XII. DETERMINATION

Based on a review of the Significance Criteria in the preceding section, we have determined a: FINDING OF NO SIGNIFICANT IMPACT (FONSI) for the proposed affordable rental apartment development, planned as the KING STREET APARTMENTS.

ATTACHMENT "A"

PROJECT TEAM

PROJECT TEAM

Selection of the project team is being made to facilitate the development and processing of the project. Team members are a permanent part of the community and represent both large and small business and community groups. They have expertise and years of experience in the development, design, construction, management and rental businesses. The project team will have the capability to expeditiously design, process approvals for financing and building, construct and rent the project in a timely manner.

The following highlight some of the key project team members:

DEVELOPER/OWNER. The Hawaii Housing Development Corporation ("HHDC") is a non-profit organization created to develop lower income rental housing on an ongoing basis. Its directors are made up of very influential and successful business people in the community, coming from both the public and private sectors. Their experience is varied, e.g., bankers, union officers, legislators, government employees, developers, affordable housing coalition members, etc. Directors with experience in the affordable housing arena include Leonard Hoshijo and Tracy Takano, past and present Housing Representatives for the International Longshore and Warehouse Union. The Union has been involved in building and managing single family affordable housing since the 1950s. It has over 30 projects consisting of over 3,000 affordable residences. Also, Director Wallace J. Inglis' experience includes serving as president of the Coalition for Specialized Housing that developed the 200 unit Hale Mohalu elderly project. HHDC is the developer of the Birch Street Apartments affordable family rental, adjacent to the King Street Apartments project.

DEVELOPMENT CONSULTANT. Gary Furuta has over 23 years of experience in real estate development and engineering, with knowledge in acquisition, planning, financing, sales and asset management. A considerable amount of his experience has been in a corporate environment where he was responsible for the profitable and efficient management of a company or real estate division. He is HHDC's development coordinator for the adjacent Birch Street Apartments.

ARCHITECT. Kazutoshi Yato of Kazu Yato, AIA & Associates is a registered architect with over 30 years of experience in architecture and has a considerable amount of knowledge and experience in multi-family mid- and high-rise buildings. Many of Mr. Yato's buildings dot the Honolulu skyline. He has designed both high end market projects as well as several affordable rental projects.

PROPERTY MANAGEMENT. Prudential Locations has over 18 years of experience in Hawaii and is a diversified real estate company. The Property Management Division currently provides management services to over 900 properties, of which one-third are affordable and elderly apartment units.

ATTACHMENT "B"

PROJECT SITE

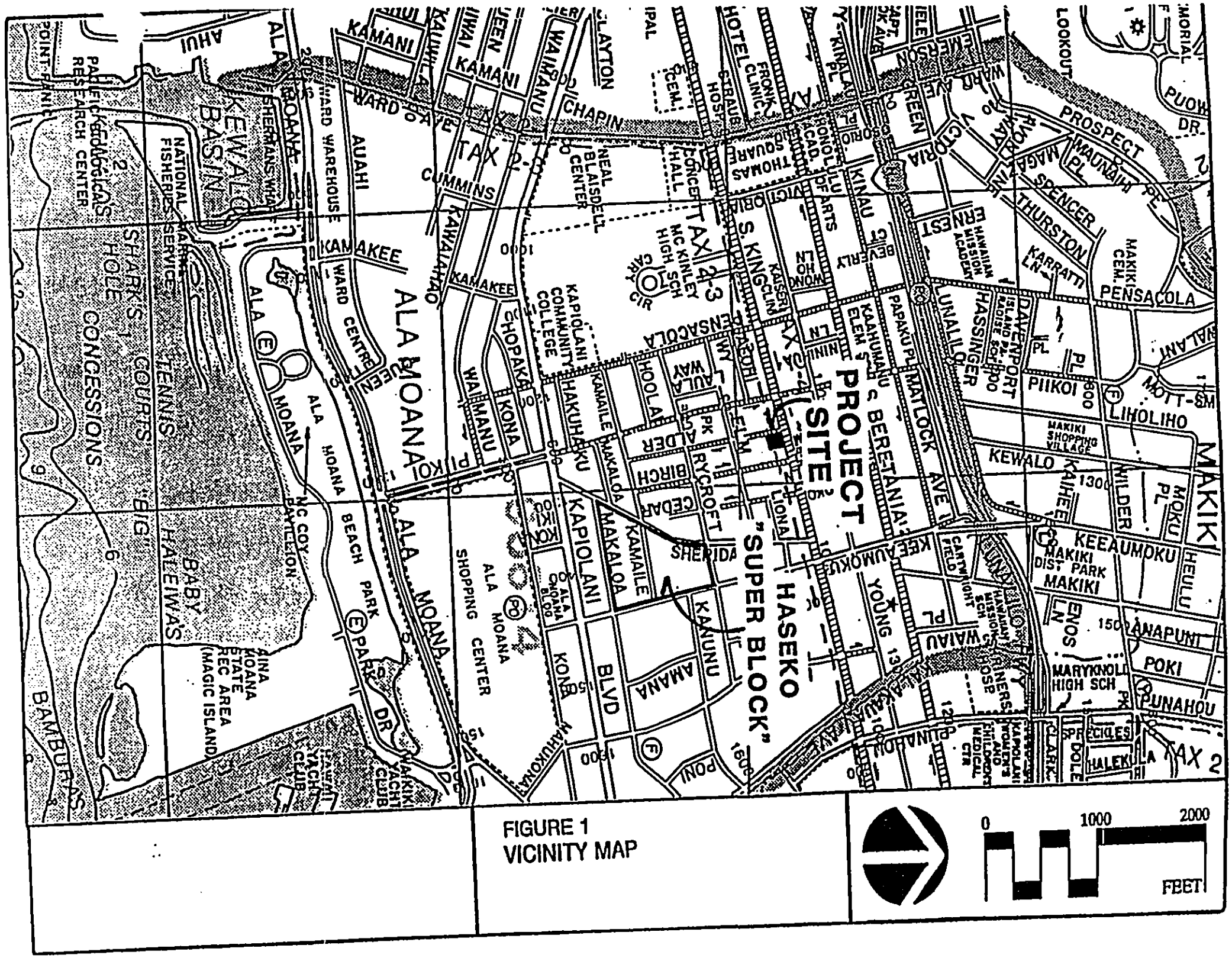


FIGURE 1
VICINITY MAP

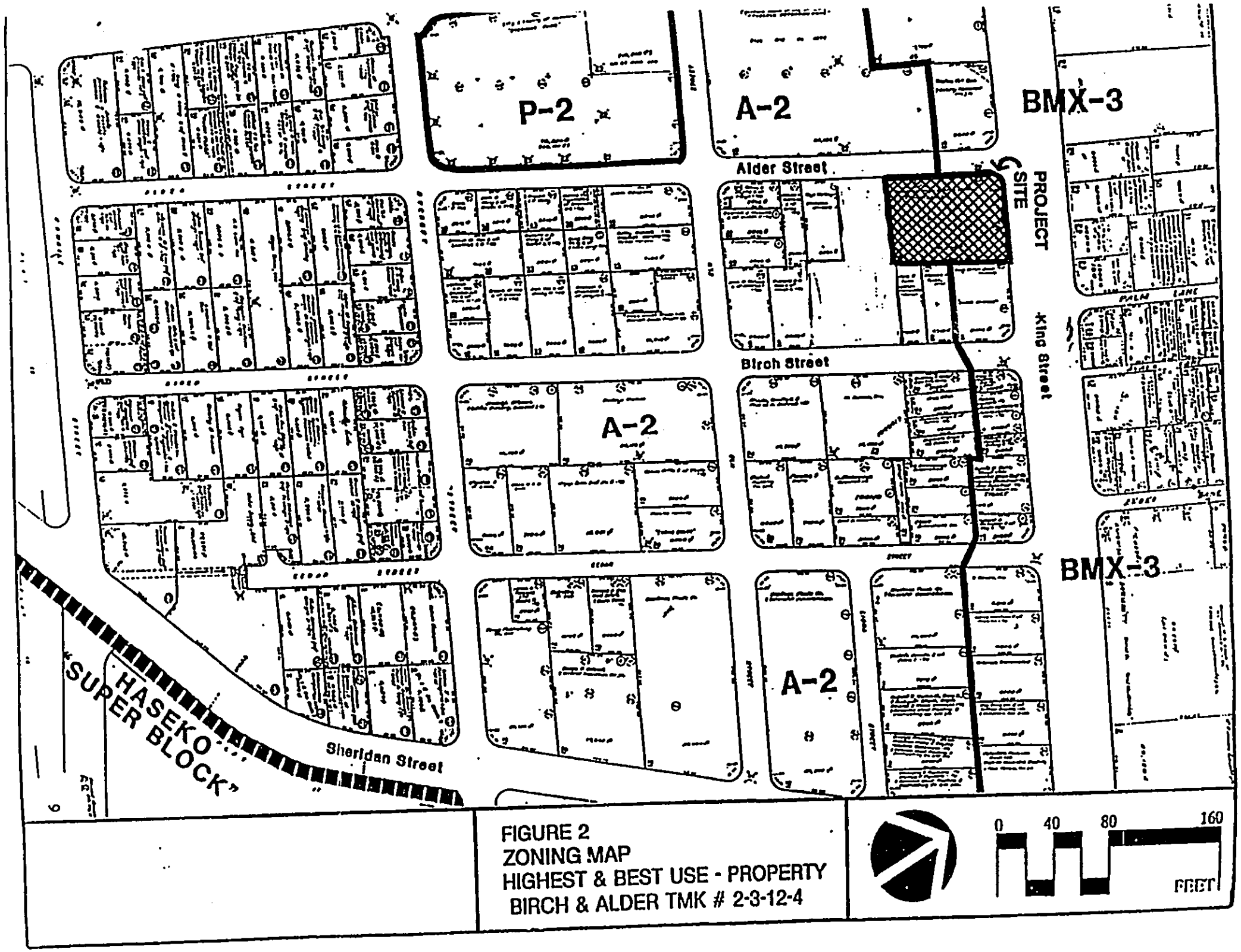
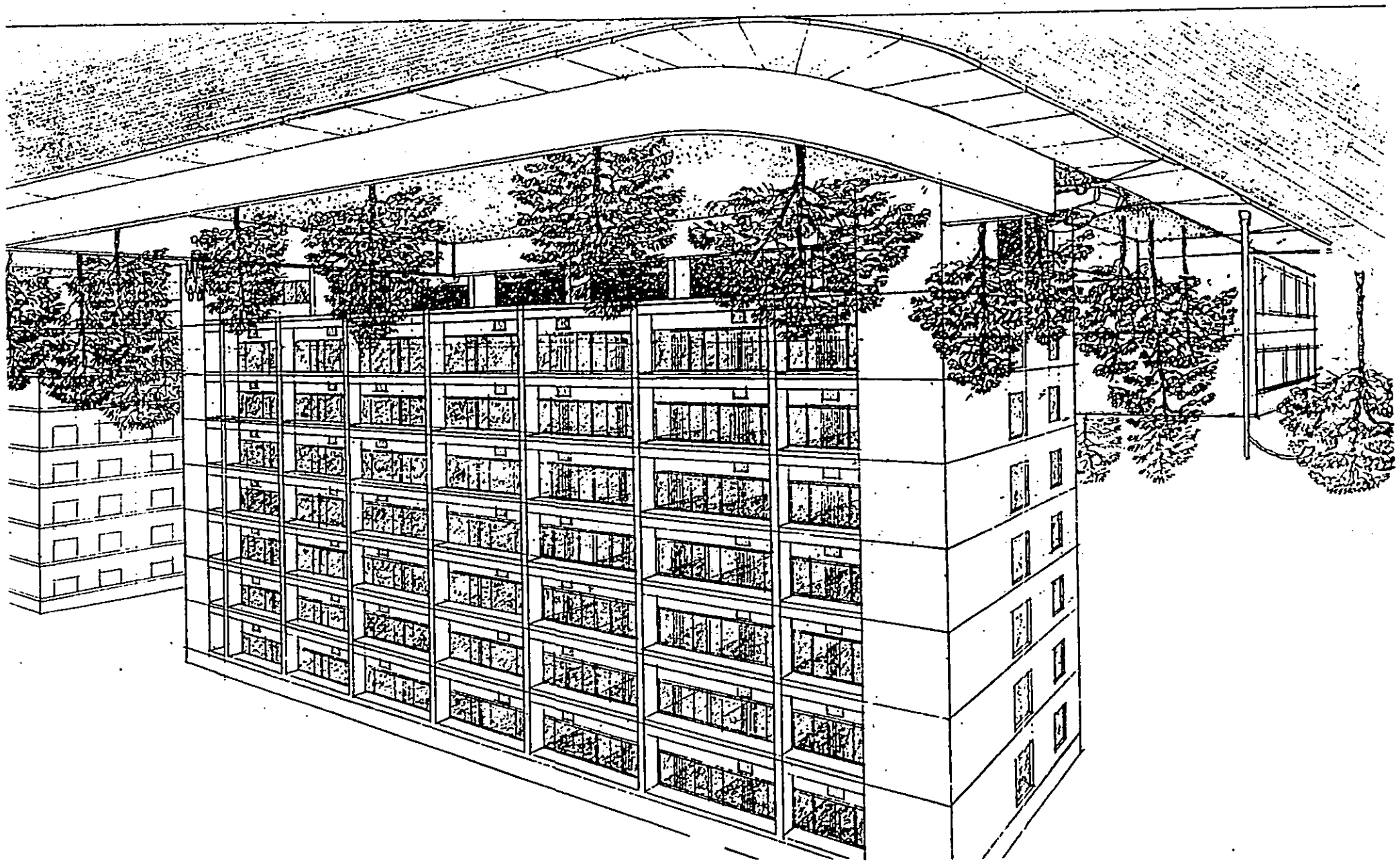
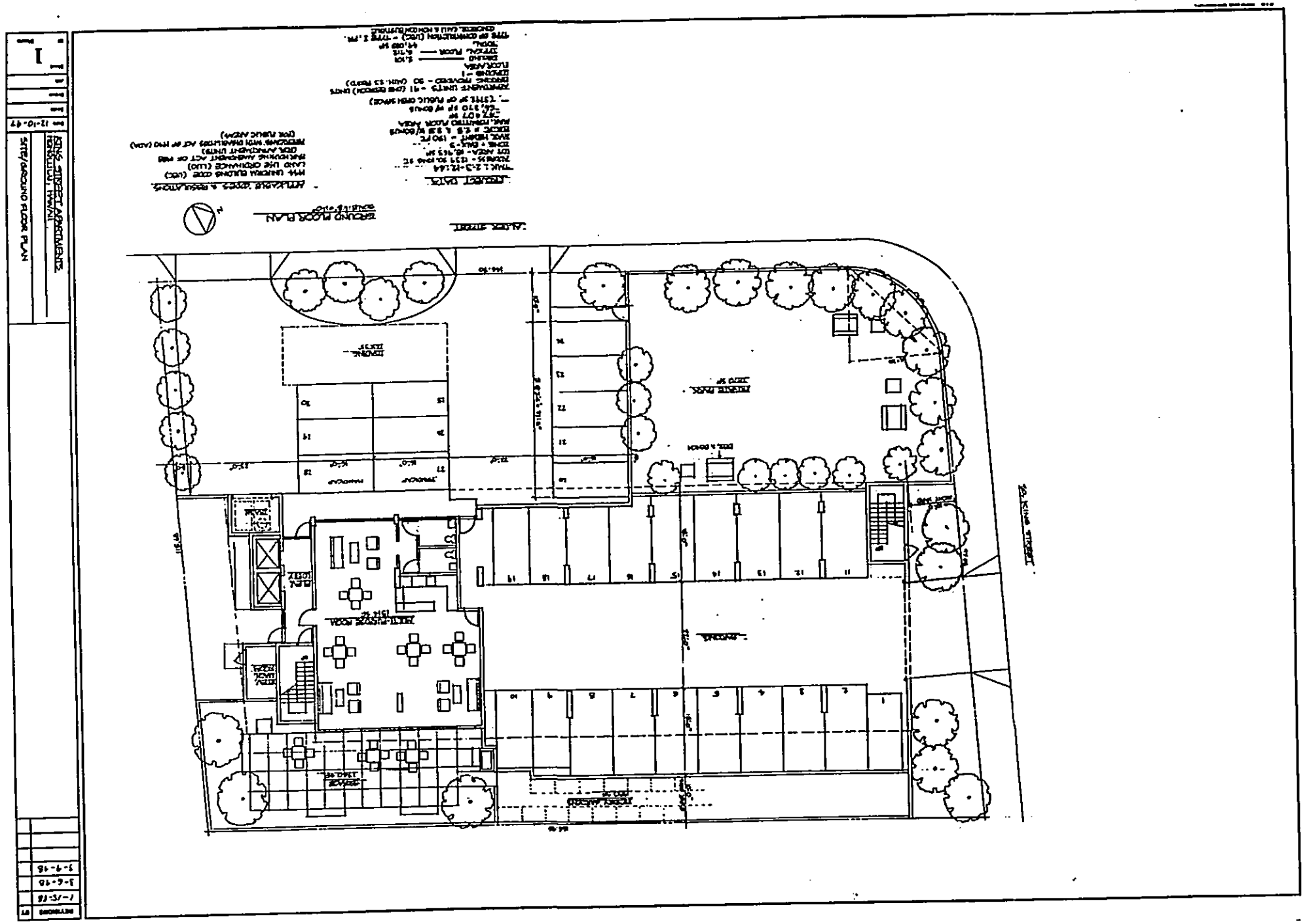


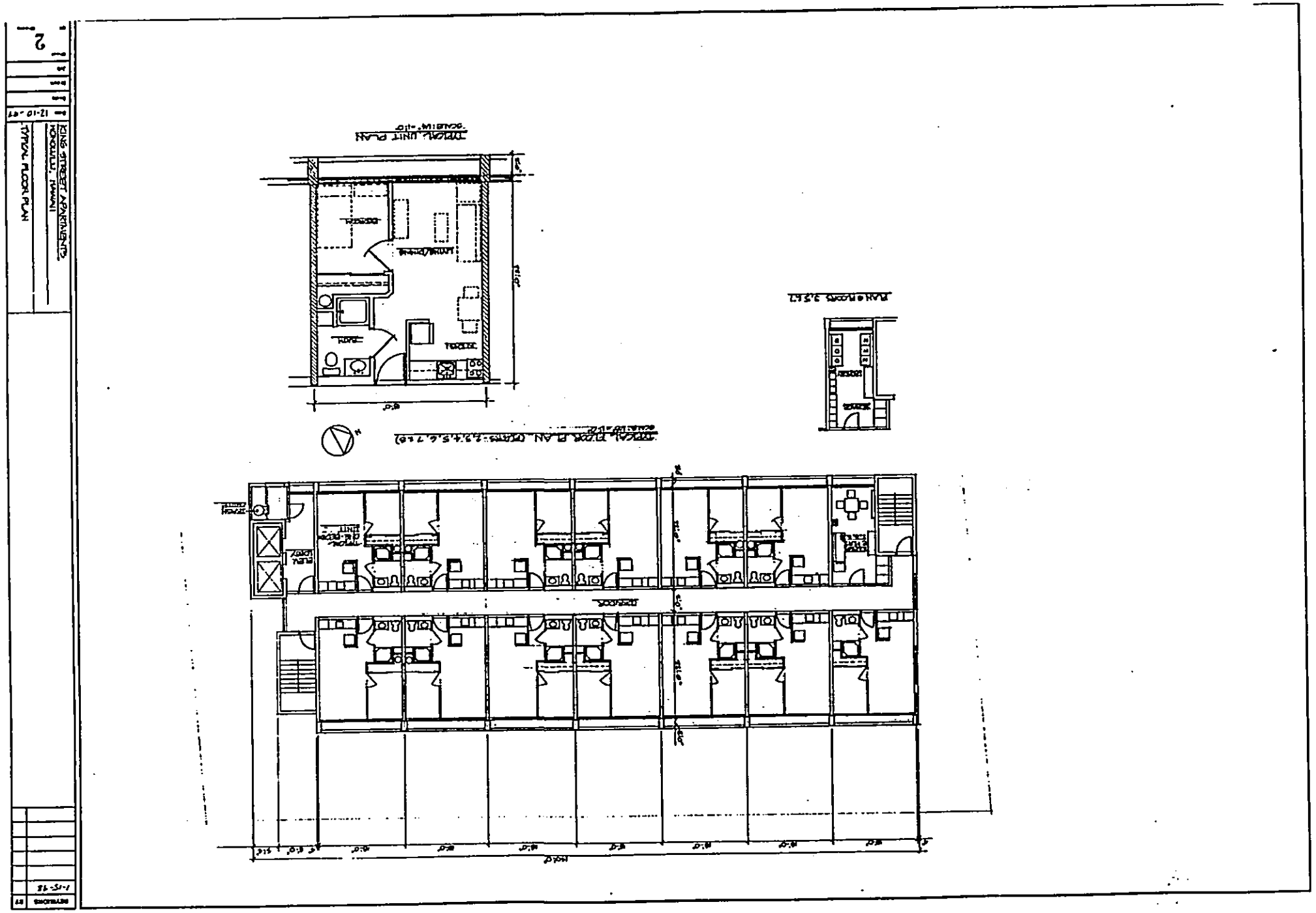
FIGURE 2
ZONING MAP
HIGHEST & BEST USE - PROPERTY
BIRCH & ALDER TMK # 2-3-12-4

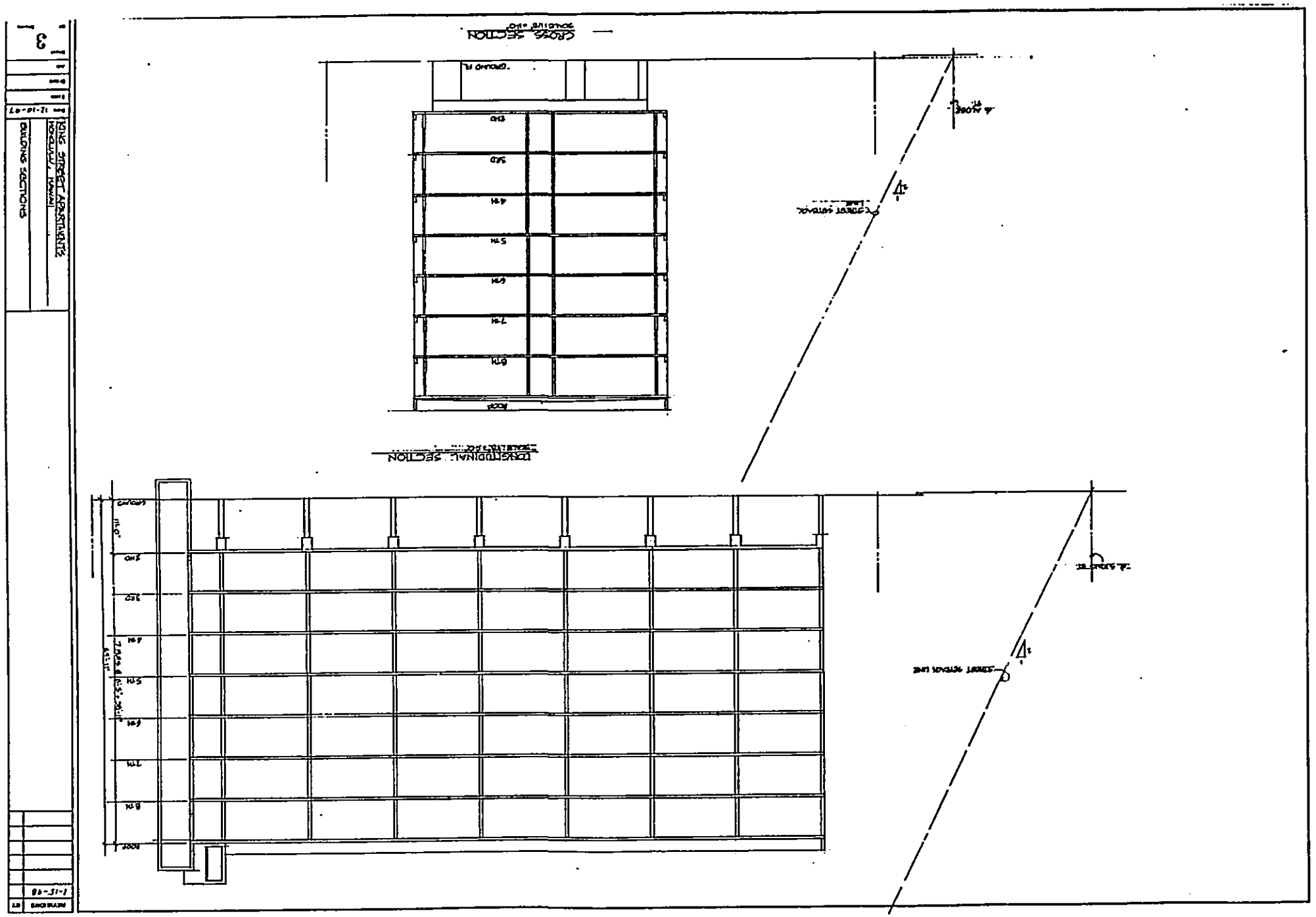
ATTACHMENT "C"

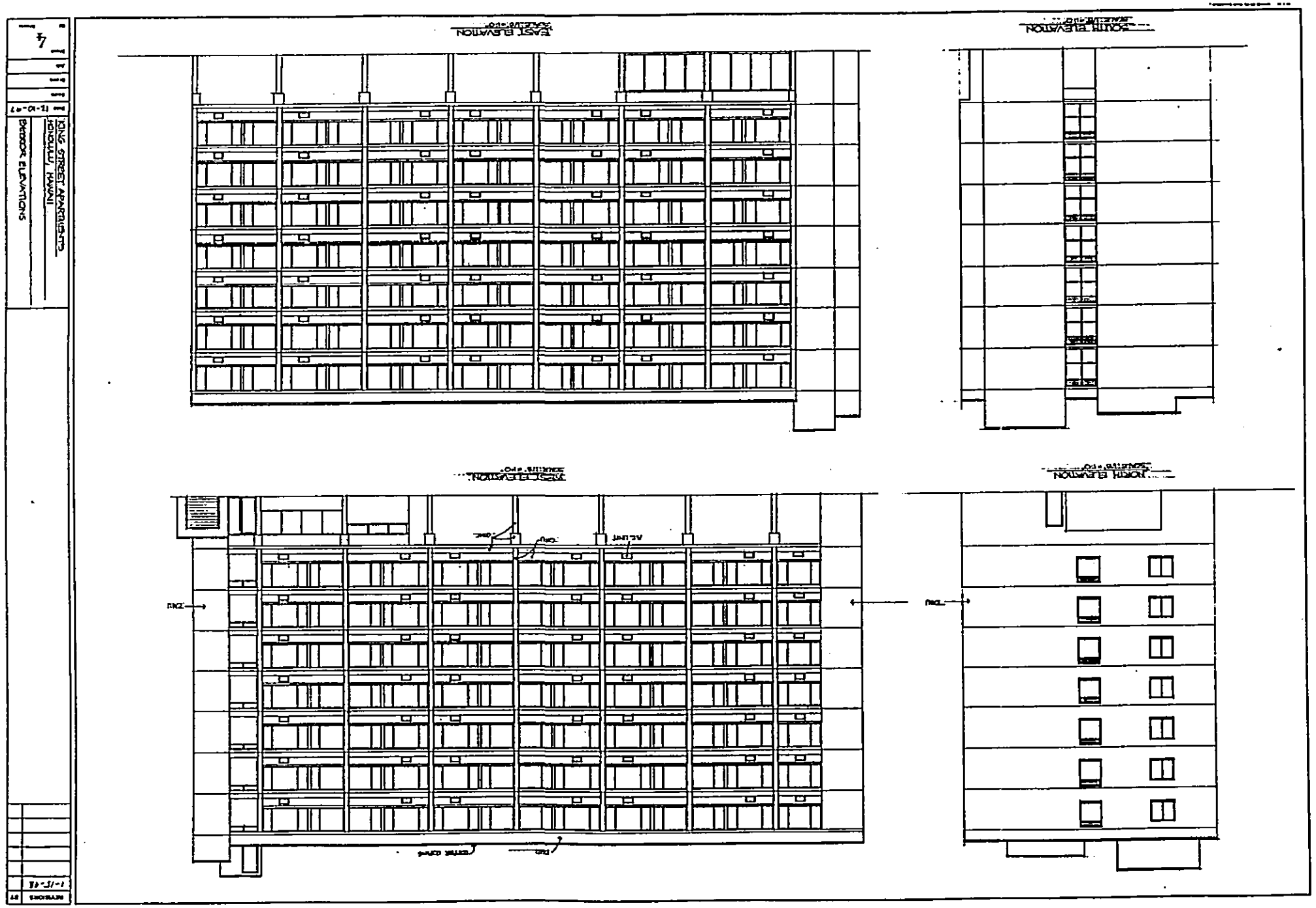
PROJECT DESIGN











ATTACHMENT "D"

PRO FORMA PROJECT FINANCING

FINANCING – PRO FORMA USES

USES	AMOUNT
LAND ACQUISITION (FEE SIMPLE)	$2,550,000
CONSTRUCTION	$8,033,169
FINANCING	$866,626
OTHER	$3,168,660
TOTAL PROJECT	$14,618,455

FINANCING -- PRO FORMA SOURCES

SOURCES	INTERIM	PERMANENT
EQUITY	$125,000	$125,000
RHTF-CBG	$50,000	$50,000
HDRF	$250,000	0
RHTF-PA	$4,550,000	$4,550,000
PRE-DEVELOPMENT & CONSTRUCTION	$9,643,455	0
FEDERAL/STATE TAX CREDIT EQUITY	0	$7,450,246
TAKEOUT	0	$2,443,209
	$14,618,455	$14,618,455

Legend.
RHTF-CBG: Rental Housing Trust Fund Capacity Building Grant
HDRF: Hawaii Development Revolving Fund
RHTF-PA: RHTF Project Award

ATTACHMENT "E"

ENVIRONMENTAL SITE ASSESSMENT
PHASE II
&
DEPARTMENT OF HEALTH
LETTER, DATED MAY 30, 1997

NJAMIN J. CAYETANO
OVERNOR OF HAWAII

LAWRENCE MIIKE
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
ENVIRONMENTAL MANAGEMENT DIVISION
SOLID AND HAZARDOUS WASTE BRANCH
919 ALA MOANA BLVD., #212
HONOLULU, HAWAII 96814

In reply, please refer to:
EMD/SHW

May 30, 1997

U0551JAR

Mr. Michael W. Condon, R.G.
Texaco Refining and Marketing Inc.
3400 188th Street SW
Suite 630
Lynwood, WA 98037

1239 S. King St.
61-100-0090

Dear Mr. Condon:

Subject: King Street Texaco
Facility I.D. 9-100340/ Release I.D. 960004

We have reviewed the "Preliminary Site Assessment Report" dated January 1997 and prepared by Walker Consultants, Ltd., regarding the environmental condition of the property in response to a possible lease expiration at the subject location.

Please note that the above document has been included as part of the facility's file which is available for the public to review.

Based on the information provided, we have no further questions regarding the no further action request and removal of release identification number. However, you should be aware that if future evidence indicates that there may be contamination from the UST at the site that exceeds our recommended cleanup criteria, additional investigative and cleanup actions may be required.

Should you have any questions regarding this letter, please contact Mr. Jose Ruiz of our Underground Storage Tank Section at 586-4226.

Sincerely,

STEVEN Y. K. CHANG, P.E., CHIEF
Solid and Hazardous Waste Branch

SYKC:JR:sc

c: Norwood Scott, EPA Region IX, San Francisco

Texaco Refining
and Marketing Inc

3400 188th Street SW
Suite 630
Lynnwood WA 98037

March 25, 1997

ENV - SERVICE STATION
Report Transmittal, Closure Request
King Street Texaco, Texaco Location #61-100-0090, 1239 S. King Street, Honolulu, HI
DOH Facility ID# 9 -100340
Release ID# 960004

Mr. Steven Y. K. Chang
State of Hawaii Department of Health
Environmental Management Division
Solid and Hazardous Waste Branch, Room 212
919 Ala Moana Blvd.
Honolulu, HI 96814-4912

Dear Mr. Chang:

Enclosed please find a copy of the "Preliminary Site Assessment Report" for the above-referenced Texaco station. This report was prepared by Texaco's consultant, Walker Consultants, Ltd. of Honolulu.

The activities described in the report were conducted between September, 1995 and July, 1996. These activities were undertaken to assess the environmental condition of the property in response to a possible lease expiration, and were not the result of any known or suspected release. Major activities conducted included the following:

conducting a soil gas survey at 19 locations on the site

collecting soil samples and installating eight groundwater monitoring wells

two rounds of groundwater sampling

The soil vapor samples collected contained Total Volatile Hydrocarbons (TVH) of up to 45,600 ppmv. However, upon further examination, it was determined that the detected TVH was composed almost entirely of methane through pentane. This would suggest that the TVH is either biogenic in origin, or is the result of natural degradation of historic gasoline impacts.

Groundwater was encountered at a depth of approximately 12 feet below grade, with groundwater gradient being nearly horizontal but somewhat irregular. Field measurements and regional groundwater utility data indicate that the DOH Tier I soil action levels (SALs) and groundwater action levels (GALs) are appropriate for this site. Of the sixteen soil samples analyzed for TPH-as-gasoline (TPH-G), TPH-as-oil (TPH-O), and benzene, toluene, ethylbenzene, and xylenes (BTEX), only one sample contained a detectable concentration of any of these compounds or chemicals, that being 8 mg/kg TPH-G.

Of the fifteen groundwater samples collected and analyzed from the two sampling events, the highest respective BTEX concentrations encountered were 0.199, 0.084, 0.018, and 0.039 mg/L. These concentrations are all well below their respective Tier I GALs.

In summary, the chemical composition of the soil vapor samples indicates that any past release of gasoline has been naturally degraded into compounds that are shorter than gasoline range impacts. Analytical results for all of the soil and groundwater samples are well below the respective DOH Tier I SALs and GALs, indicating that there are no ongoing releases. With these facts in mind, Texaco feels that further environmental activity on this site is not warranted. A No Further Action Required designation from the Hawaii Department of Health, and removal of the site from the Active LUST listing, is hereby requested.

If you have any questions or comments, please feel free to contact me at (206) 774-6090, extension 226.

Sincerely,

Michael W. Condon, R.G.
Project Manager
Texaco EH&S

MWC:mwc
p:\lynnwood\mwc\hawaii\1239king\rptcvr.doc

enclosure

KTJewett-File(w/enclosure)

PR:

PRELIMINARY SITE ASSESSMENT REPORT

Prepared for

TEXACO ENVIRONMENT, HEALTH & SAFETY

At

KING STREET TEXACO (LOCATION #61-100-90)

1239 SOUTH KING STREET

HONOLULU, HAWAII 96814

TMK No. 2-3-12:44

DOH UST FACILITY ID No. 9-100340

JANUARY 1997

Prepared by

WALKER CONSULTANTS, LTD.

PO BOX 4998, HILO, HAWAII 96720

(808) 966-7481 FAX (808) 966-6509

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LIST OF ABBREVIATIONS AND ACRONYMS

µg/kg	micrograms per kilogram (approximate parts per billion)
µohms	micro-ohms
APCL	Applied P & Ch Laboratory (Chino, California)
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
BWS	Honolulu Board of Water Supply
CFR	Code of Federal Regulations
CO_2	carbon dioxide
DLNR	Hawaii Department of Land and Natural Resources
DOH	Hawaii Department of Health
EH&S	Texaco Environment, Health & Safety
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
GALs	DOH Groundwater Action Levels
HAR	Hawaii Administrative Rules
LUFT	California Leaking Underground Fuel Tank
makai	coastward or near-coastal
mauka	inland or toward the mountains
mg/kg	milligrams per kilogram (approximate parts per million)
mg/L	milligrams per liter (approximate parts per million)
MSL	mean sea level
NA	not analyzed
NCA	North Creek Analytical
ND	not detected
NGAL	No Groundwater Action Levels
O_2	oxygen
ppmv	parts per million volumetric
PQL	Practical Quantitation Limit
QA/QC	quality assurance/quality control
SAL	DOH Tier 1 Soil Action Level
TEG Hawaii	Transglobal Environmental Geochemistry Hawaii (Honolulu)
TES	Texaco Environmental Services (a predecessor to EH&S)
TMK	Tax Map Key
TPH-G	total petroleum hydrocarbons as gasoline or TPH-Gasoline
TPH-O	total petroleum hydrocarbons as oil or TPH-Oil
TRMI	Texaco Refining & Marketing Inc.
TVH	total volatile hydrocarbons
UG	underground
UH	University of Hawaii
UIC	Underground Injection Control
UST	underground storage tank

WCL	Walker Consultants, Ltd.
WTPH	Washington Total Petroleum as Hydrocarbons Method

EXECUTIVE SUMMARY

Walker Consultants, Ltd. (WCL) has prepared this report for Texaco Environment, Health & Safety (EH&S) to describe a Phase II Site Assessment that was conducted at the King Street Texaco service station, 1239 South King Street, Honolulu, Hawaii, TMK (Tax Map Key) No. 2-3-12:44 (the Property). This Phase II Site Assessment was undertaken for Texaco Environmental Services (TES, a predecessor to EH&S) as a voluntary action incident to the contemplated termination of its current lease of the Property and consisted of the following: 1) conducting a soil vapor survey, 2) driving soil sampling points, 3) installation of groundwater monitoring wells, and 4) collecting and analyzing soil and groundwater samples.

In plan view, the Property is a rectangular-shaped parcel (excluding a radius at the intersection of South King and Alder Streets) that comprises 18,903 square feet (approximately 0.4 acre). The nearby surrounding area consists of mixed commercial/residential uses. The nearest residences are in an apartment building which adjoins the Property to the southeast.

The service station building, which houses the office, three service bays, a stock room, and restrooms, occupies the center portion of the Property. The service bays are equipped with two in-ground mechanics' lift hoists, and one aboveground mechanics' lift hoist. A metal canopy roof, which is contiguous with the building roof, covers two islands, each containing three gasoline dispensers. A small, narrow curbed planter is located along the northwestern corner of the Property, adjacent to the intersection of South King and Alder Streets. Excluding the small planter, the Property is paved or covered by structures. The Property is fenced along the southern and eastern property lines, but the street frontages are unfenced. Vehicular access to the Property is via four driveways, two from each of the streets.

Excluding a small area near South King Street which slopes gently toward the north, the ground surface onsite slopes gently toward the southwest. Most of the onsite runoff is directed as sheet flow onto Alder Street; and the remainder is directed as sheet flow onto South King Street. The Property is unaffected by runoff from adjoining properties, which apparently discharge onto the streets.

Four currently-used 10,000-gallon single-walled fiberglass gasoline underground storage tanks (USTs) are arranged side-by-side and are located northwest of the dispenser islands. A currently-used 550-gallon single-walled fiberglass used oil UST is located west of the southern service bay. These five currently-used USTs are registered with the Hawaii Department of Health (DOH), UST Facility ID 9-100340. DOH records indicate that all five currently-used USTs are approximately 11 years old and are constructed of lined interior fiberglass/plastic. All four gasoline UST systems passed an annual tank tightness testing performed by NDE Environmental Corporation on September 26, 1995. The used oil tank, however, reportedly failed its annual tank tightness test on September 26, 1995. This prompted exposure of the top of the used oil UST and associated pipes to isolate the pipes and UST prior to retesting. The retesting indicated that the vent pipe was leaking. It was repaired, and the exposure excavation was backfilled and repaved. All five UST systems passed the most recent tank tightness tests in 1996. The five currently-used single-walled fiberglass USTs replaced five single-walled steel USTs (installed in 1965) which were previously located in approximately the same locations as the currently-used USTs.

Prior to commencement of field activities at the Property, a site-specific Health and Safety Plan was prepared. Additionally, the locations of the USTs and underground (UG) utilities and structures at the Property were identified. The soil gas probe and soil sampling point/groundwater monitoring well locations were selected so as to avoid encountering the USTs, and UG utilities and structures.

The soil vapor survey was conducted to provide an initial environmental evaluation of the Property, and it was intended to optimize locations of soil sampling points/groundwater monitoring wells. On September 25, 1995, Transglobal Environmental Geochemistry (TEG) Hawaii, also contracted with EH&S, used its truck-mounted, Strataprobe™ direct-push rig to drive the soil vapor probes. The primary focus of the soil vapor survey was the area surrounding the four gasoline USTs in the north-central portion of the Property and the adjacent gasoline dispenser islands. The soil vapor survey was expanded outward from these initial areas to evaluate the lateral extent of the soil vapor impacts. One or two soil vapor samples each (a total of 35 soil vapor samples) were collected from the 19 soil gas probes (SV-1 through SV-19) at depths ranging from 5 to 12.5 feet below ground surface (bgs).

The eight sampling points/wells (MW-1 through MW-8) were located as follows. MW-1 was located as an upgradient (background) well. MW-2 and MW-3 were located to delineate the limits of detectable impacted caprock groundwater in the southern part of the Property. MW-5 through MW-8 were located in the vicinity of the gasoline and used oil USTs and the gasoline dispensers to evaluate conditions in those areas. MW-4 was as near as possible to the western property line to evaluate whether impacted caprock groundwater extended offsite in that direction (MW-8 was also as near as possible to the western property line). The first seven sampling points/wells were installed during late September 1995, and the eighth sampling point/well (MW-8) was installed approximately six months later.

Two soil samples each (a total of 16 soil samples) were collected from the eight soil sampling points at depths ranging from 6 to 13 feet bgs. After collecting the deepest sample, TEG Hawaii used its truck-mounted, direct-push rig and soil sampling system to deepen each of the eight soil sampling points and permit installation of a groundwater monitoring well. The soil sampling system was driven to refusal at depths ranging from approximately 15.5 to 21.5 feet bgs. Owing to caving soil conditions in lower part of each well, a thin-walled steel drive-tube was driven to refusal to allow well installation, after pre-punching the hole using the soil sampling system. Total depths of the eight wells ranged from approximately 15 to 19.7 feet bgs. On October 2, 1995, WCL collected seven caprock groundwater samples, one from each of the first seven wells (MW-1 through MW-7). On July 18, 1996, WCL collected eight caprock groundwater samples, one from each of the eight wells (MW-1 through MW-8).

Twenty-six of the 35 soil vapor samples were analyzed for the following: 1) total volatile hydrocarbons (TVH), including methane; 2) methane as a separate compound; 3) benzene, toluene, ethylbenzene, and xylenes (BTEX); 4) fixed and biogenic gases: oxygen (O_2) and carbon dioxide (CO_2); and 5) the CO_2/O_2 ratio. The 16 soil samples from the soil sampling points were analyzed for total petroleum hydrocarbons as gasoline (TPH-G) and BTEX. Six of the soil samples were also analyzed for TPH-Oil (TPH-O). The seven first-event and eight second-event caprock groundwater samples were analyzed for TPH-G and BTEX. Four first-event and two second-event caprock groundwater samples were also analyzed for TPH-O.

The caprock sediments onsite are estimated to be 500 feet thick. The caprock onsite consists of the following: 1) an upper clayey silt/fine sand unit (basalt pea gravel UST backfill

was encountered in one sampling point/well), 2) a well-graded, fine-coarse grained basalt sand unit, and 3) hard coralline sand and gravel unit. Six of the sampling points/wells were driven to refusal in the hard coralline sands and gravels. The permeability of the caprock onsite is judged to range from low to moderate.

Caprock groundwater was encountered in eight monitoring wells onsite. The caprock water table in the eight onsite points/wells ranged from approximately 11.40 to 12.63 feet bgs, equivalent to elevations ranging from approximately 1.62 to 1.76 feet above MSL in MW-1 through MW-7 (water table elevations could not be calculated for MW-8 because its well-head elevation was not surveyed). These water table elevations indicate that the water table is nearly horizontal but is slightly irregular including a slight depression at MW-4. There is, however, no discernible hydraulic gradient onsite; the hydraulic gradient and flow direction for the local caprock aquifer are presumed to be south-southwesterly (makai or coastward). Because the Property is approximately 0.8 mile from the coast, water levels in the caprock aquifer fluctuate tidally. In the eight onsite wells, the observed tidal fluctuations range from 0.1 to 0.5 foot.

The following are concluded, based on: 1) field observations during the soil vapor survey, soil sampling, monitoring well installation, and caprock groundwater sampling; 2) laboratory analytical results of soil vapor samples, soil samples, and caprock groundwater samples; and 3) interpretations based on the above data and field observations.

1. The seven soil vapor samples having the highest TVH concentrations were capillary fringe samples from the seven probes which were nearest to the gasoline USTs.
2. To the east and south of the impacted area, the outermost probes satisfactorily evaluated the extent of the soil vapor impacts. To the west and north of the gasoline USTs, the deeper soil vapor samples from the probes near the western and northern property lines were significantly impacted by TVH which is, however, nearly all methane through pentane.
3. Elevated CO_2/O_2 ratios and CO_2 concentrations, together with low O_2 concentrations, occur in ten soil vapor samples that have or that are adjacent to samples having the seven highest TVH concentrations. This relationship suggests that there is ongoing naturally-occurring biodegradation (intrinsic bioremediation) of the gasoline impacts present.
4. Chromatograms from laboratory analyses of the 19 soil vapor samples having detected TVH, indicate that the TVH in these samples is nearly all composed of methane through pentane (carbon chains C_1 through C_5). Together with the high CO_2/O_2 ratios in the samples having the higher TVH concentrations, this indicates that intrinsic bioremediation has broken down the longer chain components of the gasoline into short chain components which are nearly all shorter than gasoline-range hydrocarbons.
5. Together with the "not detected" or low soil and caprock groundwater sample analyses from the four groundwater monitoring wells near the gasoline USTs, the associated seven soil vapor sample analyses indicate that the impacts are primarily in vapor phase in the capillary fringe zone and that there are no significant sorbed- or dissolved-phase impacts.
6. In the 16 soil samples, all of the TPH-G, BTEX, and TPH-O concentrations, as well as laboratory reporting limits and PQLs, are less than corresponding DOH Tier 1 Soil Action Levels, indicating that no further assessment and no remediation are necessary.
7. In the 15 caprock groundwater samples, all of the TPH-G, BTEX, and TPH-O concentrations, as well as laboratory reporting limits and practical quantitation limits, are less than corresponding DOH Tier 1 Groundwater Action Levels, indicating that no further assessment and no remediation are necessary.

WALKER CONSULTANTS, LTD.

P.O. Box 4998
Hilo, HI 96720
(808) 966-7481
FAX (808) 966-6509

PHASE II SITE ASSESSMENT REPORT
Prepared For
TEXACO ENVIRONMENT, HEALTH & SAFETY
At
KING STREET TEXACO
1239 SOUTH KING STREET, HONOLULU, HAWAII
TEXACO LOCATION No. 61-100-90
TMK No. 2-3-12:44
DOH UST FACILITY ID No. 9-100340

Prepared By
WALKER CONSULTANTS, LTD.

JANUARY 1997

1.0 INTRODUCTION

Walker Consultants, Ltd. (WCL) has prepared this Phase II Site Assessment Report for Texaco Environment, Health & Safety (EH&S) to describe a subsurface investigation that was conducted at the King Street Texaco service station, 1239 South King Street, Honolulu, Hawaii, TMK (Tax Map Key) No. 2-3-12:44 (the Property). This Phase II Site Assessment was undertaken for Texaco Environmental Services (TES, a predecessor to EH&S) as a voluntary action incident to the contemplated termination of its current lease of the Property and consisted of the following: 1) conducting a soil vapor survey, 2) driving soil sampling points, 3) installation of groundwater monitoring wells, and 4) collecting and analyzing soil and groundwater samples. This report generally complies with the following: 1) Title 40, Code of Federal Regulations (CFR) Part 280 *Technical Standards and Corrective Actions for Owners and Operators of Underground Storage Tanks*; 2) *Technical Guidance Manual for Underground Storage Tank Closure and Release Response* (Hawaii Department of Health (DOH), August 1992) and DOH Policy Updates; and 3) *Risk-Based Corrective Action and Decision Making at Sites with Contaminated Soil and Groundwater* (DOH, December 1995). Photographs taken during the field investigation are contained in Appendix A.

Prior to the start of field activities, WCL prepared a site-specific Health and Safety Plan (Appendix B) that describes health and safety monitoring, equipment, practices, and procedures used by WCL and Transglobal Environmental Geochemistry (TEG) Hawaii, also contracted with EH&S, during field work.

2.0 SITE BACKGROUND

2.1 SITE DESCRIPTION

Located at 1239 South King Street, the King Street Texaco service station is southeast of the intersection of South King and Alder Streets, in the Makiki district of Honolulu (Figure 1). King Street Texaco has occupied the Property since 1965. The nearby surrounding area consists of mixed commercial/residential uses. The nearest residences are in an apartment building which adjoins the Property to the southeast.

In plan view (Figure 2), the Property is a rectangular-shaped parcel (excluding a radius at the intersection) that comprises 18,903 square feet (approximately 0.4 acre). An apartment building and a professional office building adjoin the Property to the east. Adjoining the Property to the south is a parking lot for Home Maluhia. South King and Alder Streets adjoin the Property to the north and west, respectively. Across South King Street to the north are retail shops, professional offices, and restaurants. The Golden Duck (a Chinese restaurant) and Home Maluhia (a juvenile detention home) are across Alder Street to the west.

The service station building, which houses the office, three service bays, a stock room, and restrooms, occupies the center portion of the Property. The service bays are equipped with two in-ground mechanics' lift hoists, and one aboveground mechanics' lift hoist. A metal canopy roof, which is contiguous with the building roof, covers two islands, each containing three gasoline dispensers. A small, narrow curbed planter is located along the northwestern corner of the Property, adjacent to the intersection of South King and Alder Streets. Excluding the small planter, the Property is paved or covered by structures. The Property is fenced along the southern and eastern property lines, but the street frontages are unfenced. Vehicular access to the Property is via four driveways, two from each of the streets.

Excluding a small area near South King Street which slopes gently toward the north, the ground surface onsite slopes gently toward the southwest. Most of the onsite runoff is directed as sheet flow onto Alder Street; and the remainder is directed as sheet flow onto South King Street. The Property is unaffected by runoff from adjoining properties, which apparently discharge onto the streets.

The onsite surface elevations are approximately 14 feet above mean sea level (MSL). Per Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map Sheet 120, the Property is within Flood Hazard Zone "X", and is determined to be outside the 500-year flood plain. The Property is approximately 0.6 mile north of (outside) the Civil Defense tsunami ("tidal wave") evacuation zone which extends only several hundred feet mauka (inland) from the coast (GTE Hawaiian Tel, 1995-1996).

2.2 FACILITY AND UNDERGROUND STORAGE TANK INFORMATION

Four currently-used 10,000-gallon single-walled fiberglass gasoline underground storage tanks (USTs) are arranged side-by-side and are located northwest of the dispenser islands. A currently-used 550-gallon single-walled fiberglass used oil UST is located west of the southern service bay. These five currently-used USTs are registered with the DOH, UST Facility ID 9-100340. DOH records indicate that all five currently-used USTs are approximately 11 years old and are constructed of lined interior fiberglass/plastic. All four gasoline UST systems passed an annual tank tightness testing performed by NDE Environmental Corporation on September 26,

1995 (Appendix C). The used oil tank, however, reportedly failed its annual tank tightness test on September 26, 1995 (Appendix C). This prompted exposure of the top of the used oil UST and associated pipes to isolate the pipes and UST prior to retesting. The retesting indicated that the vent pipe was leaking; it was repaired, and the exposure excavation was backfilled and repaved. All five UST systems reportedly passed the most recent tank tightness tests in 1996, but the test reports were not available for this report. The five currently-used single-walled fiberglass USTs replaced five single-walled steel USTs (installed in 1965) which were previously located in approximately the same locations as the currently-used USTs. The approximate locations of the currently-used USTs, associated pipes, and other pertinent features are depicted on Figure 2.

2.3 Nearby Surface Water Bodies

The nearest permanent surface water body, Makiki Stream, is located approximately 0.4 mile east of the Property (Figure 1). There are no other permanent surface water bodies located within 0.5 mile of the Property. The Pacific Ocean coastline at Ala Moana Park is located approximately 0.8 mile makai of the Property.

2.4 Nearby Water Wells

Introduction

The well information in this section is from the following: 1) Sheet O-13 of the well location map series (Figure 3) and the *Ground Water Index and Summary*, both by the Hawaii Department of Land and Natural Resources (DLNR), and 2) Sheet O-13 of the DOH Underground Injection Control Program map series by the DOH Safe Drinking Water Branch (Figure 4). The locations of nearby offsite wells are depicted on Figures 3 and 4, which are reproductions of portions of the respective Sheets O-13. Data from some of the wells on Figures 3 and 4 are contained on pages 9 through 13 (from the *Groundwater Index and Summary*), and are summarized on a Summary of Nearby Wells, all of which follow Figure 3.

Nearby Offsite Water Wells

There are 15 water wells located within approximately 0.05 to 0.5 mile of the Property. Two of these wells are located mauka of the Property, and are generally upgradient of it, relative to the presumed south-southwesterly (makai or coastward) hydraulic gradient. The remaining 13 wells are located in a presumed hydraulic crossgradient direction.

The nearest water well (state water well number 3-1750-09) is located approximately 0.3 mile southeast of the Property, and is used by the Pagoda Hotel for industrial purposes, and is the only one of the 15 nearby wells that is not sealed (abandoned). The surface elevation for this well is 7 feet above MSL. This well has a 16-inch diameter casing which is 53 feet deep; the top of perforations (bottom of solid casing) is 21 feet below ground surface (bgs), indicating that it taps caprock groundwater. The initial static head in this well is 2.8 above MSL (equivalent to 4.2 feet bgs). The reported chlorides concentration for the water from these wells is 490 mg/L, indicating the caprock groundwater in this well has low salinity.

The 14 other wells located within a 0.5 mile radius of the Property were drilled between 1882 and 1914, and reportedly were sealed (abandoned) between 1924 and 1973. The data for these wells is summarized on Summary of Nearby Wells which follows Figure 3. Surface elevations for these 14 wells ranged from 6 to 41 feet above MSL (ranging from approximately

8 feet lower than to approximately 27 feet higher than surface elevations on the Property). Total depths of these former wells ranged from 277 to 656 feet bgs, and the tops of perforations (bottoms of solid casings) ranged from 237 to 486 feet bgs. The initial static head data indicate that the water levels in these wells ranged from 11.8 to 42 feet above MSL, indicating that in 12 of these 14 wells, the basal groundwater was under artesian conditions. The reported chlorides concentrations for the water from these 14 wells ranged from 48 to 85 mg/L, indicating that it is freshwater.

Nearby Offsite Drinking Water Wells

The nearest drinking water wells are the eight Beretania Pump Station wells (state water well numbers 3-1851-12, -13, -24, and -31 through -35) which are located approximately 0.75 mile northwest of the Property. These eight municipal water supply wells are owned by the Honolulu Board of Water Supply (BWS). Surface elevations for these eight wells range from 14 to 21 feet above MSL (ranging from approximately the same as, to approximately 7 feet higher, than surface elevations on the Property). Total depths of these eight wells range from 533 to 636 feet bgs (equivalent to elevations ranging from 519 to 622 feet below MSL). Tops of perforations (bottoms of solid casings) for the BWS wells range from 465 to 478 feet below MSL (equivalent to 447 to 458 feet bgs). The initial static head data indicate that the water levels in seven of these wells ranges from 23.3 to 32 feet above MSL, indicating that the basal groundwater is under artesian conditions. The reported chlorides concentration for the water from these eight municipal water supply wells is 67 mg/L indicating that it is freshwater. These eight nearby municipal water supply wells are hydraulically crossgradient of the Property.

There is essentially no possibility that conditions on the Property could adversely affect any of these 15 nearby water wells or eight nearby municipal water supply wells because all of these wells are hydraulically upgradient or crossgradient of the Property.

Nearby Offsite Injection Wells

The nearest injection well is injection well number 3-1751-01 (listed on the DLNR's Map Sheet O-13 as state water well number 3-1751-04) which is located approximately 0.6 mile southwest (hydraulically downgradient) of the Property, and is used by the 1350 Ala Moana condominiums as a disposal (injection) well. Other than the ground surface elevation which is 5 feet above MSL, there is no available information regarding this disposal (injection) well. Other injection wells are more than 1 mile from the Property.

2.5 ANNUAL RAINFALL

The annual rainfall is approximately 31 inches (80 cm) on the Property (DOH, December 1995, Revised June 1996).

3.0 SOIL VAPOR SURVEY

3.1 INTRODUCTION

The soil vapor survey was conducted to provide an initial environmental evaluation of the Property. It was intended to optimize locations of soil sampling points/groundwater monitoring wells. Excluding the small amount of drilled cuttings near the top of each soil vapor probe, no soil cuttings were generated because TEG Hawaii's Strataprobe™ soil vapor probe system is a displacement-type system. The field procedures for the soil vapor survey are contained in Appendix D.

3.2 UNDERGROUND UTILITY LOCATION

Prior to commencement of intrusive sampling activities, a site inspection was conducted which indicated that the locations of the USTs, as well as the locations of other underground (UG) utilities and structures at the Property were, for the most part, well identified. The soil vapor probe and soil sampling point/well locations were selected so as to avoid encountering the USTs and UG utilities and structures. Prior to driving the probe and soil sampler, the locations of nearby UG utilities and other UG structures were identified as follows.

1. By obtaining excavation permits and(or) clearances from utility companies and others having UG structures.
2. By reviewing facility plans provided by Texaco Refining & Marketing, Inc. (TRMI).
3. By surficial evaluation of the proposed sampling locations for features such as nearby man-holes, utility vaults, or surface features served by UG utilities.
4. By field screening each location using utility locating devices.

3.3 SOIL VAPOR PROBE INSTALLATION

On September 25, 1995, TEG Hawaii, also contracted with EH&S, used its truck-mounted, Strataprobe™ direct-push rig to drive the soil vapor probes. WCL's geologist selected the locations of the 19 soil vapor probes (designated SV-1 through SV-19) and soil vapor sample collection depths. The primary focus of the soil vapor survey was the area surrounding the four gasoline USTs in the north-central portion of the Property and the adjacent gasoline dispenser islands. The soil vapor survey was expanded outward from these initial areas to evaluate the lateral extent of the soil vapor impacts. Approximate locations of the 19 soil vapor probes are depicted on Figure 5. The field procedures for the soil vapor survey are contained in Appendix D.

3.4 SOIL VAPOR SAMPLE COLLECTION

Two soil vapor samples each were collected from probes SV-1 through SV-16 at approximately 5 and 11 to 12.5 feet bgs, and one sample each was collected from probes SV-17 through SV-19 at approximately 11 to 12 feet bgs. The deeper samples in probes SV-1 through SV-16 and the only samples in SV-17 through SV-19 was collected in the capillary fringe zone. Each soil vapor sample was assigned a unique identifier containing the probe number followed by the approximate sampling depth (e.g., soil vapor sample SV1-5 was collected from soil vapor probe SV-1 at approximately 5 feet bgs). Soil vapor sample collection procedures are contained in Appendix D.

3.5 Soil Vapor Sample Analytical Methods

TEG Hawaii analyzed 26 of the 35 soil vapor samples for the following: 1) total volatile hydrocarbons (TVH), including methane; 2) methane as a separate compound; 3) benzene, toluene, ethylbenzene, and xylenes (BTEX); 4) fixed and biogenic gases: oxygen (O_2) and carbon dioxide (CO_2); and 5) the CO_2/O_2 ratio. The 26 samples analyzed consisted of the capillary fringe zone samples from all 19 probes and the shallower soil vapor samples from the seven probes (SV-1 and SV-6 through SV-12) where the deeper sample was strongly impacted and(or) where field-evident gasoline odors were noted during purging of the shallower sample. The 11 soil vapor samples that were not analyzed consisted of the shallower samples where no field-evident gasoline odors were noted during purging and(or) where the associated deeper samples had no detected impacts. TEG Hawaii's analytical results are summarized below and in Table 1. TEG Hawaii's complete analytical results, together with laboratory quality assurance/quality control (QA/QC) data and Chain-of-Custody records, are contained in Appendix E.

3.6 Soil Vapor Sample Analytical Results

In seven of the soil vapor samples (including the capillary-fringe samples from SV-4, SV-5, SV-14, SV-17, and SV-19), no TVH were detected at 10 parts per million volumetric (ppmv) laboratory detection limits. The TVH concentrations in eight of the remaining 19 samples ranged from 18 to 879 ppmv. In four of the remaining 19 samples, the TVH concentrations ranged from 1,170 to 3,160 ppmv. The TVH concentrations in the last seven samples ranged from 12,700 to 45,600 ppmv; these seven samples were capillary-fringe samples from the seven probes nearest to the gasoline USTs.

In the 12 samples which had TVH concentrations of 38 ppmv or less, no methane was detected at 10 ppmv laboratory detection limits. The methane concentrations ranged from 56 to 832 ppmv in six of the remaining 14 samples which had TVH concentrations ranging from 260 to 3,160 ppmv. The last eight of these 14 samples, which had TVH concentrations of 1,890 and 12,700 to 45,600 ppmv, the methane concentrations were 1,890 and 3,050 to 17,200 ppmv. In 12 of these 14 samples (excluding SV3-11 and SV9-5) having both detected TVH and methane, the methane concentrations correlated well, ranging from approximately 19 to 41 percent of the corresponding TVH concentrations. In SV3-11, the TVH and methane concentrations were each 1,890 ppmv, and in SV9-5, the methane concentration was approximately 71 percent of the corresponding TVH concentration.

In 19 of the 26 samples, no BTEX were detected at 0.100 ppmv laboratory detection limits. No TEX were detected at 0.100 ppmv detection limits in six of the remaining seven samples, in which the benzene concentrations ranged from 0.238 to 2.84 ppmv. In the last sample, SV1-11, no ethylbenzene and no xylenes were detected at 0.100 ppmv detection limits, and the benzene and toluene concentrations were 6.28 and 0.18 ppmv, respectively. Six of the seven samples which contained benzene also had the seven highest TVH concentrations.

In 11 of the 26 samples, the CO_2/O_2 ratios ranged from 1.05 to 6.67, the O_2 concentrations ranged from 1.68 to 7.47 percent, and the CO_2 concentrations ranged from 6.48 to 11.2 percent. Seven of these 11 samples also had the seven highest TVH concentrations. In the remaining 15 samples, the CO_2/O_2 ratios ranged from 0.14 to 0.85, the O_2 concentrations ranged from 8.79 to 17.0 percent, and the CO_2 concentrations ranged from 2.12 to 8.43 percent. Ten of these 15 samples also had TVH concentrations less than 36 ppmv. Seventeen of CO_2/O_2 ratios correlated well with the corresponding TVH concentrations. One group of exceptions were the

shallower samples from the three of the seven probes having the highest TVH concentrations and sample SV13-12 (near the front dispenser island); these four samples which had TVH concentrations ranging from 23 to 562 ppmv but had CO_2/O_2 ratios ranging from 1.11 to 3.24. The other group of exceptions were five samples which had TVH concentrations ranging from 879 to 3,160 ppmv but had CO_2/O_2 ratios ranging from 0.17 to 0.66.

The seven samples having the highest TVH concentrations (ranging from 12,700 to 45,600 ppmv) were capillary fringe samples from the seven probes (SV-1, SV-6 through SV-9, SV-11, and SV-12) which were nearest to the gasoline USTs. These seven soil vapor sample analyses indicate that the TVH are likely due to release(s) from the former gasoline USTs for the following reasons: 1) the currently-used gasoline USTs have passed tank tightness tests, and 2) TVH concentrations in these seven samples are relatively uniform on all sides of the gasoline USTs. Together with the "not detected" or low soil and caprock groundwater sample analyses from the four groundwater monitoring wells (MW-5 through MW-8) near the gasoline USTs, these seven soil vapor sample analyses indicate that the impacts are primarily in vapor phase in the capillary fringe zone and that there are no significant sorbed- or dissolved-phase impacts. The elevated CO_2/O_2 ratios and CO_2 concentrations, together with the low O_2 concentrations, occur in ten soil vapor samples that have or that are adjacent to samples having detected the seven highest TVH concentrations. This relationship suggests that there is ongoing naturally-occurring biodegradation (intrinsic bioremediation) of the gasoline impacts present. Chromatograms from laboratory analyses of the 19 soil vapor samples having detected TVH (Appendix D), indicate that the TVH in these samples is nearly all composed of methane through pentane (carbon chains C_1 through C_5). Together with the high CO_2/O_2 ratios in the samples having the higher TVH concentrations, this indicates that intrinsic bioremediation (naturally-occurring biodegradation) has broken down the longer chain components of the gasoline into short chain components which are nearly all shorter than gasoline-range hydrocarbons.

To the east and south of the impacted area, the outermost probes satisfactorily evaluated the extent of the soil vapor impacts. To the west and north of the gasoline USTs, the deeper soil vapor samples from the probes near the western and northern property lines were significantly impacted which is, however, nearly all methane through pentane.

4.0 SOIL SAMPLING, GROUNDWATER MONITORING WELL INSTALLATION, AND CAPROCK GROUNDWATER SAMPLING

4.1 INTRODUCTION

The locations of the eight soil sampling points/groundwater monitoring wells were primarily selected based on the results of the soil vapor survey, but one sampling point/well (MW-6) was located near the used oil UST to evaluate environmental conditions associated with it. In addition, the locations were adjusted where necessary, based on locations of the USTs, as well as other underground utilities and structures. Excluding the small amount of drilled cuttings near the top of each sampling point/well and portions of the soil samples, no soil cuttings were generated because TEG Hawaii's Strataprobe™ soil sampler system is a displacement-type system. The field procedures for the soil sampling, groundwater monitoring well installation and development, and caprock groundwater sampling are contained in Appendix D.

On September 26 through 28, 1995, TEG Hawaii used its truck-mounted, Strataprobe™ direct-push rig to drive the soil sampler for the first seven soil sampling points/groundwater monitoring wells (designated MW-1 through MW-7). On February 2, 1996, TEG Hawaii drove the soil sampler for the eighth sampling point/well, MW-8. In addition to selecting the locations of the eight sampling points/wells, the soil sample collection depths, and the well construction dimensions, WCL's geologist logged the well borings. MW-1 was located as an upgradient (background) well. MW-2 and MW-3 were located to delineate the limits of detectable impacted caprock groundwater in the southern part of the Property. MW-5 through MW-8 were located in the vicinity of the gasoline and used oil USTs and the gasoline dispensers to evaluate conditions in those areas. MW-4 was as near as possible to the western property line to evaluate whether impacted caprock groundwater extended offsite in that direction (MW-8 was also as near as possible to the western property line). Logs and Schematics of Wells MW-1 through MW-8 are contained in Appendix F. Approximate locations of the sampling points/wells are depicted on Figure 6.

4.2 SOIL SAMPLE COLLECTION

A total of 16 soil samples were collected using TEG Hawaii's truck-mounted, direct-push rig, two from each of the eight soil sampling points. The sampling depths were approximately 6 or 6.5 and 11 to 13 feet bgs, with the deepest sample being collected in the capillary fringe zone. Each soil sample was assigned a unique identifier containing the sampling point number followed by the approximate sampling depth (e.g., soil sample MW1-6 was collected from soil sampling point MW-1 at approximately 6 feet bgs). Soil sample collection procedures are contained in Appendix D.

4.3 GROUNDWATER MONITORING WELL INSTALLATION

After collecting the deepest sample, TEG Hawaii used its truck-mounted, direct-push rig and soil sampling system to deepen each of the eight soil sampling points and permit installation of a groundwater monitoring well. The soil sampling system was driven to refusal at depths ranging from approximately 15.5 to 21.5 feet bgs. Owing to caving soil conditions in the lower part of each well, a thin-walled steel drive-tube was driven to refusal to allow well installation, after pre-punching the hole using the soil sampling system. Total depths of the eight wells ranged from approximately 15 to 19.7 feet bgs. In the six wells which were deep enough to permit optimal well screen placement, the screen depth was adjusted so that the 10-foot long screen

extended approximately 3 feet above and 7 feet below the static water level in these six wells. Shallow refusal occurred in the two remaining wells (MW-4 and MW-8), and for this reason, the well screen was extended to the total depth of the drive-tube. In MW-4, the 10-foot length of well screen extends approximately 4.75 feet above and 5.25 feet below the static water level, and in MW-8, the 5-foot length of well screen extends approximately 2.1 feet above and 2.9 feet below the static water level.

4.4 Well-Head Survey

On November 22, 1995, the surface elevations of the north sides of the well-head cover rims of MW-1 through MW-7 were surveyed relative to MSL by Wm. Dean Alcon & Associates, licensed surveyors. The surface elevation of the well-head cover rim of MW-8 was not surveyed, because it was installed on February 2, 1996, after the well-head survey. The surface elevations of the north sides of well-head cover rims of MW-1 through MW-7 range from 13.04 to 14.36 feet above MSL (Appendix G).

4.5 Well Development

On September 28, 1995, each of the wells was developed by pumping approximately 8 to 15 gallons of water from it using an air-operated diaphragm pump. Development was continued until the temperature, pH, and conductivity of the discharge water had stabilized between the second and third measurements, and the discharge water was clear or there was no visual improvement in turbidity with continued development (Groundwater Sampling Field Data sheets, Appendix H). The turbidity was also monitored and recorded.

4.6 Caprock Groundwater Sample Collection

On October 2, 1995, WCL collected seven caprock groundwater samples, one from each of the first seven wells (MW-1 through MW-7). The seven first-event caprock groundwater samples were designated MW1-1W through MW7-1W. On July 18, 1996, WCL collected eight caprock groundwater samples, one from each of the eight wells (MW-1 through MW-8). The eight second-event caprock groundwater samples were designated MW1-2W through MW8-2W.

Prior to the first and second caprock groundwater sampling events, a peristaltic pump was used to purge each well of approximately 1.2 and 1 gallons, respectively. Purging was continued until the temperature, pH, and conductivity of the discharge water had stabilized between the second and third measurements, and the discharge water was clear or there was no visual improvement in turbidity with continued development (Groundwater Sampling Field Data sheets, Appendix H). The turbidity was also monitored and recorded.

After purging, the water level was allowed to stabilize, and a caprock groundwater sample was collected from each well. For TPH-G and BTEX analyses of the first-event samples, a stainless-steel bailer was used. For TPH-G and BTEX analyses of the second-event samples, precleaned, single-use polyethylene bailers were used, fitted with a single-use, slow-discharge bottom-emptying device for sampling volatiles. For the TPH-O analyses of four of the first-event samples and the TPH-O analyses of two of the second-event samples, the peristaltic pump was used for sample collection.

The caprock groundwater samples were each placed in appropriate sample containers which were supplied by the analytical laboratory. Trip and field blanks of distilled water accompanied the samples from the time of collection until received by the analytical laboratory.

4.7 Disposition of Development and Purge Water

Based on the sample analyses, the drummed development and purge water was determined to be nonhazardous. The drummed development/purge water from the well development and the first monitoring event was recycled locally by Industrial Technology. The drummed purge water from the second monitoring event was recycled locally by Allwaste of Hawaii, Inc. Documentation of the local recycling is contained in Appendix H.

5.0 SOIL AND CAPROCK GROUNDWATER SAMPLE ANALYSES

5.1 Soil Sample Laboratory Analytical Methods

Applied P & Ch Laboratory (APCL) analyzed the 14 soil samples from soil sampling points MW-1 through MW-7 for the following: 1) TPH-Gasoline (total petroleum hydrocarbons as gasoline or TPH-G) using EPA M8015 Method, and 2) BTEX using EPA Method 8020. APCL also analyzed the six soil samples from soil sampling points MW-3, MW-4, and MW-6 for TPH-Motor Oil (TPH-O) using the California Modified-Leaking Underground Fuel Tank (LUFT)/EPA M8015 Method. North Creek Analytical (NCA) analyzed the two soil samples from soil sampling point MW-8 for the following: 1) total petroleum hydrocarbons-gasoline range (TPH-G) using the Washington TPH-G Method, and 2) BTEX using EPA Method 8020. APCL's and NCA's analytical results are summarized below and in Table 2. APCL's and NCA's complete analytical results, together with laboratory QA/QC data and Chain-of-Custody records, are contained in Appendix I.

5.2 Soil Sample Analytical Results

No TPH-G were detected at 1 mg/kg laboratory practical quantitation limits (PQLs) in 13 of the soil samples from soil sampling points MW-1 through MW-7, and the TPH-G concentration was 8 mg/kg in remaining sample, MW6-13. No TPH-G were detected at 1.0 mg/kg reporting limits in the two soil samples from the soil sampling point MW-8. No BTEX were detected at 0.005 mg/kg PQLs in the 14 soil samples from soil sampling points MW-1 through MW-7. No BTEX were detected at reporting limits that were 0.050 mg/kg for BTE and 0.10 mg/kg for xylenes in two soil samples from the soil sampling point MW-8. These laboratory analyses, which are consistent with field observations, indicate that there are no significant sorbed-phase gasoline impacts at these two soil sampling points. The three "not detected" TPH-G analyses and one low TPH-G concentration in four capillary fringe soil samples from the sampling points MW-5 through MW-8 which are near the gasoline USTs compared with the high TVH concentrations for the seven capillary fringe soil vapor sample analytical results for the associated soil vapor probes, indicate that there are no significant sorbed-phase gasoline constituents. This relationship suggests by analogy that there are probably no detectable sorbed-phase gasoline constituents present at the other soil vapor probe locations which had lower TVH concentrations.

No TPH-O were detected at 10 mg/kg PQLs in the six soil samples from soil sampling points MW-3, MW-4, and MW-6. These "not detected" laboratory analyses, which are consistent with field observations, indicate that there are no detectable oil impacts in the six soil samples from these three soil sampling points.

The DOH uses comparison of chemical results for any detected analytes with DOH Tier 1 Soil Action Levels (SALs) to determine if further action (investigation and(or) cleanup/remediation) is required. All of the TPH-G, BTEX, and TPH-O concentrations, as well as laboratory reporting limits and PQLs (for "not detected" compounds), are less than corresponding DOH Tier 1 SALs, indicating that no further assessment and no remediation are necessary. The DOH Tier 1 SALs used in this report (Section 6.5) are based on the following: 1) annual rainfall on the Property of less than 80 cm (200 cm), and 2) drinking water source not threatened.

5.3 Caprock Groundwater Sample Laboratory Analytical Methods

APCL analyzed the seven first-event caprock groundwater samples MW1-1W through MW7-1W for the following: 1) TPH-Gasoline (TPH-G) using EPA M8015 Method, and 2) BTEX using EPA Method 8020. APCL also analyzed the four caprock groundwater samples MW1-1W, MW3-1W, MW4-1W, and MW6-1W for TPH-Motor Oil (TPH-O) using the California Modified-Leaking Underground Fuel Tank (LUFT)/EPA M8015 Method. NCA analyzed the eight second-event caprock groundwater samples MW1-2W through MW8-2W for the following: 1) gasoline hydrocarbons (TPH-G) using EPA Method 8015M, and 2) BTEX using EPA Method 8020. NCA also analyzed the two caprock groundwater samples MW4-2W, and MW6-2W for heavy oil range hydrocarbons (TPH-O) using the Washington TPH (WTPH)-418.1 Method. APCL's and NCA's analytical results are summarized below and in Table 3. APCL's and NCA's complete analytical results, together with laboratory QA/QC data and Chain-of-Custody records, are contained in Appendix J.

5.4 First-Event Caprock Groundwater Sample Analytical Results

No TPH-G and no BTEX were detected at respective 0.05 and 0.0005 mg/L laboratory PQLs in the first-event caprock groundwater samples MW1-1W and MW2-1W. In MW3-1W, the respective TPH-G and ethylbenzene concentrations were 0.10 and 0.0008 mg/L, and no benzene, no toluene, and no xylenes were detected at 0.0005 mg/L PQLs. The respective TPH-G, ethylbenzene, and xylenes concentrations were 1.4, 0.018, and 0.0009 mg/L in MW5-1W, and no benzene and no toluene were detected at 0.0005 mg/L PQLs. In MW6-1W, the respective TPH-G, benzene, and ethylbenzene concentrations were 0.21, 0.0056, and 0.0022 mg/L, and no toluene and no xylenes were detected at 0.0005 mg/L PQLs. The respective TPH-G, benzene, ethylbenzene, and xylenes concentrations were 1.1, 0.013, 0.0043, and 0.0010 mg/L in MW7-1W, and no toluene was detected at a 0.0005 mg/L PQL. In MW4-1W, the respective TPH-G, benzene, toluene, ethylbenzene, and xylenes concentrations were 1.5, 0.074, 0.084, 0.0012, and 0.039 mg/L. No TPH-O were detected at 0.5 mg/L PQLs in first-event caprock groundwater samples MW1-1W, MW3-1W, MW4-1W, and MW6-1W.

5.5 Second-Event Caprock Groundwater Sample Analytical Results

No TPH-G, no BTE, and no xylenes were detected at respective 0.0500, 0.000500, and 0.00100 mg/L laboratory reporting limits in the second-event caprock groundwater samples MW1-2W and MW3-2W. In MW2-2W and MW5-2W, the respective TPH-G concentrations were 0.226 and 0.218 mg/L, and no BTE and no xylenes were detected at respective 0.000500 and 0.00100 mg/L reporting limits. The respective TPH-G, benzene, and toluene concentrations were 0.371, 0.0235, and 0.00128 mg/L in MW6-2W, and no benzene and no xylenes were detected at respective 0.000500 and 0.00100 mg/L reporting limits. In MW8-1W, the respective benzene, toluene, and xylenes concentrations were 0.00558, 0.00113, and 0.00255 mg/L, and no TPH-G and no ethylbenzene were detected at respective 0.0500 and 0.000500 mg/L reporting limits. The respective TPH-G, benzene, ethylbenzene, and xylenes concentrations were 1.530, 0.00205, 0.000539, and 0.00124 mg/L in MW7-2W, and no toluene was detected at a 0.000500 mg/L reporting limit. In MW4-2W, the respective TPH-G, benzene, toluene, and xylenes concentrations were 0.969, 0.199, 0.0435, and 0.0121 mg/L, and no ethylbenzene was detected at a 0.000500 mg/L reporting limit. No TPH-O were detected at 1.00 mg/L reporting limits in second-event caprock groundwater samples MW4-2W and MW6-2W.

5.6 Discussion of Caprock Groundwater Sample Analytical Results

The first-event and second-event caprock groundwater sample analytical results are generally consistent with each other, as well as with field observations and soil vapor sample analytical results. The caprock groundwater sample analytical results indicate the following: 1) the dissolved-phase gasoline impacts are greatest near the gasoline USTs, but even the worst dissolved-phase gasoline impacts are less than DOH Tier 1 Groundwater Action Levels (GALs); and 2) there are no detectable oil impacts in the two caprock groundwater samples analyzed for TPH-O. The DOH uses comparison of laboratory analyses for any detected analytes with DOH Tier 1 GALs to determine if further action (investigation and(or) cleanup/remediation) is required. All of the TPH-G, BTEX, and TPH-O concentrations, as well as laboratory reporting limits and PQLs (for "not detected" compounds), are less than corresponding DOH Tier 1 GALs, indicating that no further assessment and no remediation are necessary. The DOH Tier 1 GALs used in this report (Section 6.5) are based on the following: 1) annual rainfall on the Property of less than 80 cm (200 cm), and 2) drinking water source not threatened.

6.0 ENVIRONMENTAL SETTING

The data in this section was obtained from the results of the onsite subsurface investigation and the following references, except where data has been assumed or estimated, and is consistent with accepted hydrogeologic principles.

1. *Aquifer Identification and Classification for Oahu: Groundwater Protection Strategy for Hawai'i*, Mink and Lau, February 1990, Revised (UH Water Resources Center Technical Report No. 179).
2. *Geology of the State of Hawaii*, 2nd ed., Stearns, 1985.
3. *Ground Water Index and Summary*, DLNR, July 14, 1992.
4. *Ground-Water Resources in Southern Oahu, Hawaii*, Visher and Mink, 1964 (U.S. Geological Survey Water-Supply Paper 1778).
5. Underground Injection Control Program Map Sheet O-13, DOH Safe Drinking Water Branch, July 6, 1984.
6. *Volcanoes in the Sea*, The Geology of Hawaii, 2nd ed., MacDonald, *et al.*, 1990.

6.1 GEOLOGY

The Property is located near the south-center of the coastal plane of Oahu which is underlain by sediments (caprock) of Holocene to Pleistocene geologic age which was eroded from the Koolau Range. The caprock is a wedge-shaped unit which thickens coastward; it is estimated to be 500 feet thick onsite. Regionally, the caprock is primarily composed of alluvial and marine silts, clays, gravels, sands, and calcareous coral reef deposits, as well as deeply weathered basalt, which have variable, though generally low, permeabilities. The caprock is underlain by basalt flows of Tertiary geologic age from the Koolau range. Taken as a whole, the caprock deposits are considerably less permeable than the surrounding and underlying, generally highly permeable, basalt lavas.

Subsurface earth materials encountered in the eight soil sampling points/wells on the Property consisted the following:

1. Asphalt pavement or concrete slabs underlain by gravel and sand base course extending to approximately 1 foot bgs.
2. Clayey silt/fine sand (apparent low permeability) extending to approximately 9.5 to 11 feet bgs in points/wells MW-1 through MW-7, and basalt pea gravel (UST backfill) to approximately 9.5 feet bgs in point/well MW-8.
3. Well-graded, fine-coarse grained basalt sand (apparent moderate permeability) extending to approximately 12.5 to 15.5 feet bgs.
4. Hard coralline gravel/sand (apparent low to moderate permeability) extending to at least 21.5 feet bgs, the maximum depth explored.

6.2 GROUNDWATER HYDROLOGY

Regionally, the caprock contains groundwater which ranges in salinity from freshwater to seawater. The basaltic lavas that underlie the caprock contain basal groundwater, the upper portion of which is freshwater. The freshwater portion of the basal groundwater comprises a lens that floats on and partially displaces the underlying, denser sea water, in static equilibrium. The freshwater portion of the basal groundwater is recharged by infiltration of rainfall on the Koolau

Range. Discharge occurs from pumping of municipal and other water-supply wells, and naturally as springs and seeps in valleys and coastal areas, upward flow into the caprock, and probably as submarine seepage offshore.

Data from nearby offsite water wells indicate the elevation for the caprock water table is approximately 2.8 feet above MSL, and the elevations for the water levels in the basal aquifer are approximately 23.3 to 32 feet above MSL, which is approximately 6.3 to 11 feet *aboveground*, indicating that the basal aquifer is under artesian conditions. The water level elevations in the basal aquifer are higher than those for the caprock water table, indicating that if there is leakage between caprock and basal aquifers, the leakage will be upward from the basal aquifer into the caprock aquifer.

The caprock water table in the eight onsite points/wells ranged from approximately 11.40 to 12.63 feet bgs within the basalt sand, equivalent to elevations ranging from approximately 1.62 to 1.76 feet above MSL in MW-1 through MW-7 (water table elevations could not be calculated for MW-8 because its well-head elevation was not surveyed). These water table elevations indicate that the water table is nearly horizontal but is slightly irregular including a slight depression at MW-4 (Figure 7). There is however, no discernible hydraulic gradient onsite; the hydraulic gradient and flow direction for the local caprock aquifer are presumed to be south-southwesterly (makai or coastward). Because the Property is approximately 0.8 mile from the coast, water levels in the caprock aquifer fluctuate tidally. In the eight onsite wells, the observed tidal fluctuations range from 0.1 to 0.5 foot.

6.3 Underground Injection Control Line

The Underground Injection Control (UIC) line has been established by the DOH as the boundary between underground sources of drinking water and exempted (non-drinking water) portions of aquifers. The areas makai (coastward) of the UIC line is defined in *Underground Injection Control*, Hawaii Administrative Rules (HAR) 11-23, as the exempted (non-drinking water) portions of aquifers, and the areas mauka (inland) of the UIC line are drinking water portion. The Property is approximately 0.4 mile mauka of the UIC line which is along Kapiolani Boulevard (Figure 8), and is within a drinking water portion of the local aquifer (see below).

6.4 Aquifer Classification

The near-coastal part of the Nuuanu System of the Honolulu Sector, which includes the Property, contains a caprock aquifer and an underlying basal aquifer (Mink and Lau, February 1990).

The local caprock aquifer has an Aquifer Code of 30102116, and a Status Code of 13321 (Figure 4). The last three digits of the Aquifer Code and the five Status Code digits for the caprock aquifer indicate the following:

1. It is basal groundwater(freshwater in contact with seawater).
2. It is unconfined.
3. It occurs in sedimentary (nonvolcanic) strata.
4. It is currently used.
5. It does not have drinking water utility and it is not ecologically important.
6. Its salinity is moderate (1,000-5,000 mg/L Cl^-).
7. It is replaceable.
8. It has a high vulnerability to contamination.

The local basal aquifer has an Aquifer Code of 30102121, and a Status Code of 11113. The last three digits of the Aquifer Code and the five Status Code digits for the basal aquifer indicate the following:

1. It is basal groundwater (freshwater in contact with seawater).
2. It is confined.
3. It occurs in flanks (horizontally-extensive lavas).
4. It is currently used.
5. It has drinking water utility.
6. It is freshwater (<250 mg/L Cl^-).
7. It is irreplaceable.
8. It has a low vulnerability to contamination.

6.5 GROUNDWATER UTILITY

Although the Property is located mauka (inland) of the UIC line, it is nonetheless underlain by a moderately-saline caprock aquifer which has a utility code of 3, indicating that it does not have drinking water utility and is not ecologically important (Mink and Lau, February 1990). This regionally-based classification is consistent with field conductances measured during well development and purging which ranged from 980 to 1,540 µmhos. Furthermore, nearby well data indicate that water level elevations in the basal aquifer are higher than those for the caprock water table, therefore if there is leakage between caprock and basal aquifers, then the leakage will be upward from the basal aquifer into the caprock aquifer. These conditions mitigate adverse effects on the basal aquifer due to environmental conditions on the Property. Accordingly, the DOH Tier 1 SALs and GALs used in this report are based on the following: 1) annual rainfall on the Property of less than 80 cm (200 cm), and 2) drinking water source not threatened.

7.0 CONCLUSIONS

The following are concluded, based on: 1) field observations during the soil vapor survey, soil sampling, monitoring well installation, and caprock groundwater sampling; 2) laboratory analytical results of soil vapor samples, soil samples, and caprock groundwater samples; and 3) interpretations based on the above data and field observations.

1. The seven soil vapor samples having the highest TVH concentrations were capillary fringe samples from the seven probes which were nearest to the gasoline USTs.
2. To the east and south of the impacted area, the outermost probes satisfactorily evaluated the extent of the soil vapor impacts. To the west and north of the gasoline USTs, the deeper soil vapor samples from the probes near the western and northern property lines were significantly impacted by TVH which is, however, nearly all methane through pentane.
3. The elevated CO_2/O_2 ratios and CO_2 concentrations, together with the low O_2 concentrations, occur in ten soil vapor samples that have or that are adjacent to samples having the seven highest TVH concentrations. This relationship suggests that there is ongoing naturally-occurring biodegradation (intrinsic bioremediation) of the gasoline impacts present.
4. Chromatograms from laboratory analyses of the 19 soil vapor samples having detected TVH, indicate that the TVH in these samples is nearly all composed of methane through pentane (carbon chains C_1 through C_5). Together with the high CO_2/O_2 ratios in the samples having the higher TVH concentrations, this indicates that intrinsic bioremediation has broken down the longer chain components of the gasoline into short chain components which are nearly all shorter than gasoline-range hydrocarbons.
5. Together with the "not detected" or low soil and caprock groundwater sample analyses from the four groundwater monitoring wells near the gasoline USTs, the associated seven soil vapor sample analyses indicate that the impacts are primarily in vapor phase in the capillary fringe zone and that there are no significant sorbed- or dissolved-phase impacts.
6. In the 16 soil samples, all of the TPH-G, BTEX, and TPH-O concentrations, as well as laboratory reporting limits and PQLs, are less than corresponding DOH Tier 1 SALs, indicating that no further assessment and no remediation are necessary.
7. In the 15 caprock groundwater samples, all of the TPH-G, BTEX, and TPH-O concentrations, as well as laboratory reporting limits and PQLs, are less than corresponding DOH Tier 1 GALs, indicating that no further assessment and no remediation are necessary.

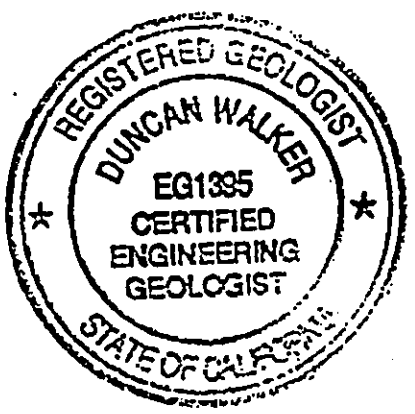
8.0 CERTIFICATION

This Phase II Site Assessment Report has been prepared for Texaco Environment, Health & Safety by Walker Consultants, Ltd., in accordance with customary professional practice. This UST Closure Report generally complies with the following: 1) Title 40, CFR Part 280 *Technical Standards and Corrective Actions for Owners and Operators of Underground Storage Tanks*; 2) *Technical Guidance Manual for Underground Storage Tank Closure and Release Response* (DOH, August 1992) and DOH Policy Updates; and 3) *Risk-Based Corrective Action and Decision Making at Sites with Contaminated Soil and Groundwater* (DOH, December 1995, Revised June 1996).

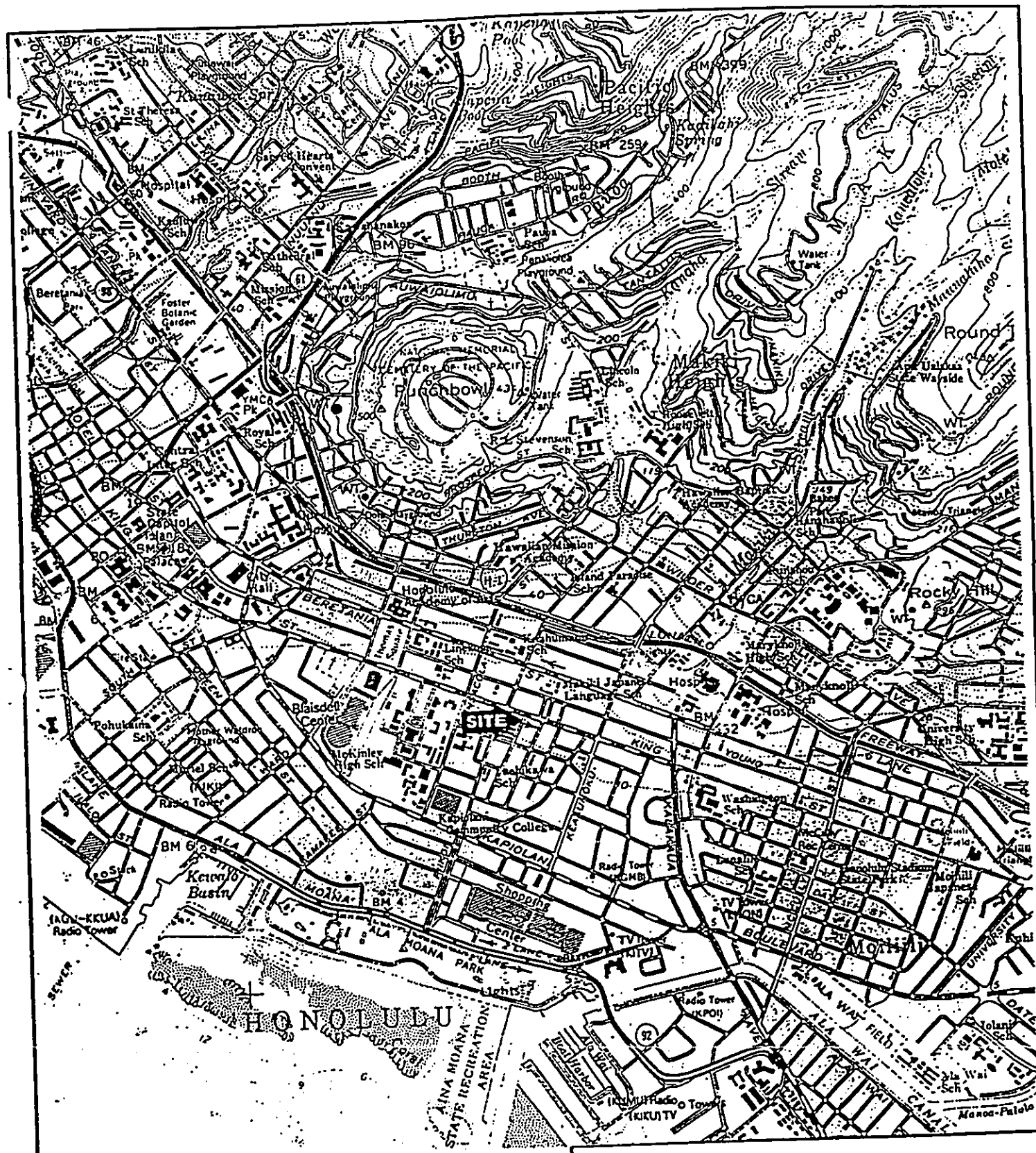
No other warranty is either expressed or implied. Please contact us if you have questions or need additional information.

Duncan Walker, RG, CEG

January 17, 1997
Date



FIGURES 1 THROUGH 8



VICINITY MAP

for

KING STREET TEXACO

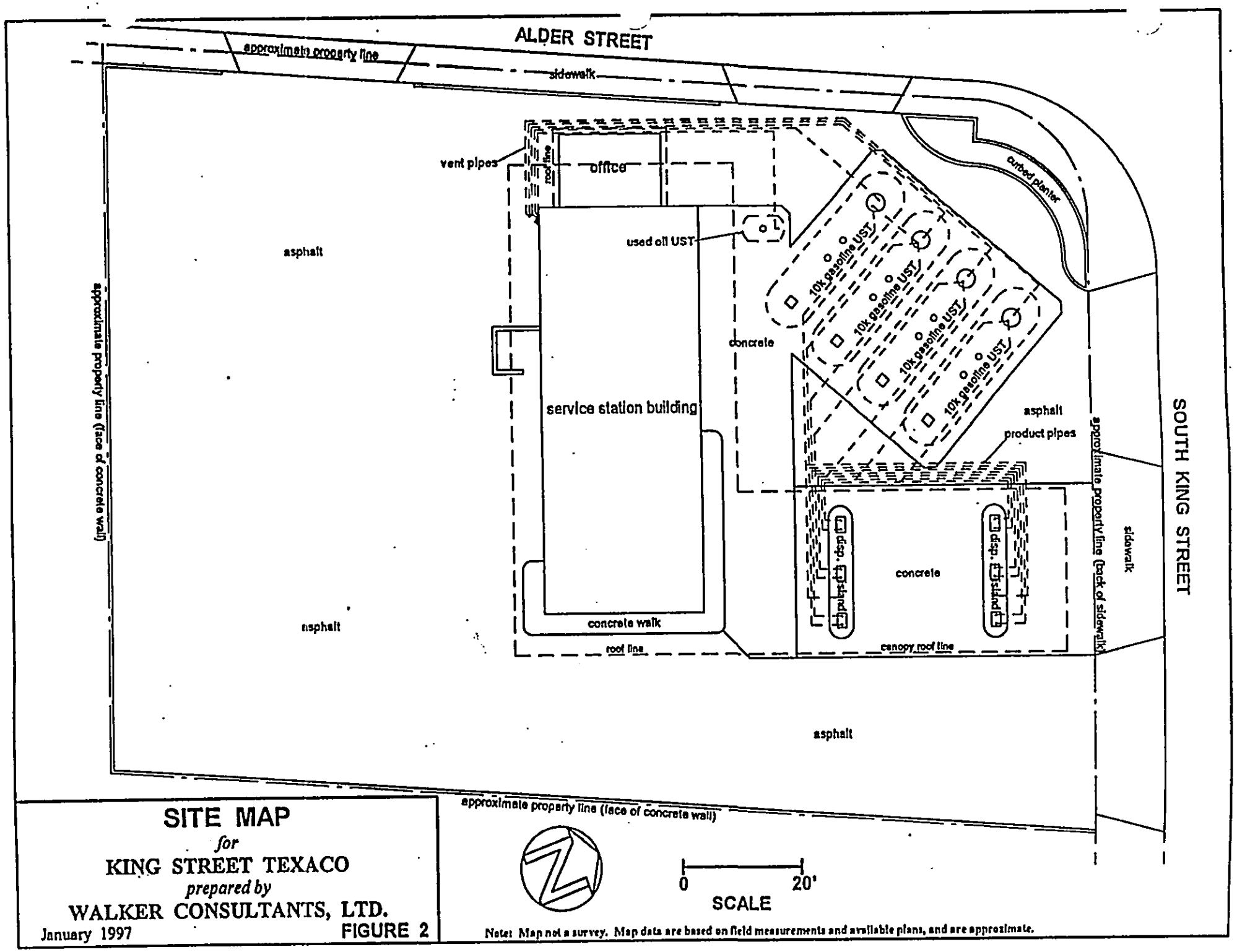
prepared by

WALKER CONSULTANTS, LTD.

January 1997

FIGURE 1

Note: Map reproduced from a portion of Honolulu 7.5' Quadrangle (USGS, 1981).



SITE MAP

for

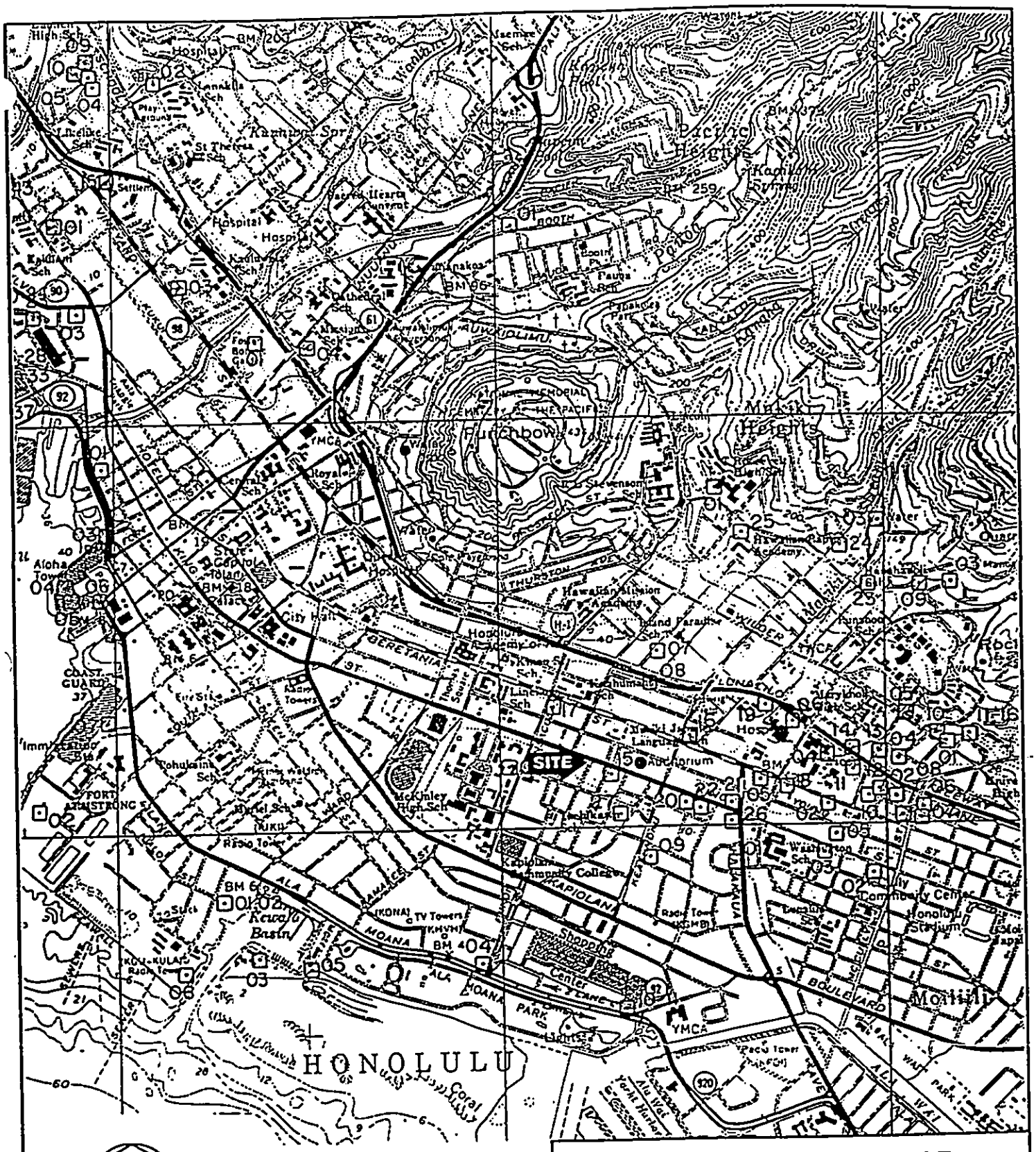
KING STREET TEXACO

prepared by

WALKER CONSULTANTS, LTD.

January 1997 FIGURE 2

Note: Map not a survey. Map data are based on field measurements and available plans, and are approximate.



WELL LOCATION MAP

for

KING STREET TEXACO

prepared by

WALKER CONSULTANTS, LTD.

January 1997

FIGURE 3

SUMMARY OF NEARBY WATER WELLS

State well I.D.	Owner or user	Approx. distance (mi.) and direction from Property	Presumed hydraulic gradient relationship	Year drilled	Dia. (in)	Total depth (ft.)	Surface elev. (ft.)	Top of screen elev. (ft.)	Bottom of hole elev. (ft.)	Static head elev. (ft.)	Chloride (mg/L)	Use/year
Water Wells within 0.5 mile of Property												
3-1850-15	Wilcox	0.05 SE	crossgradient	1884	6	656	17	-438	-639	19	48	sealed/1927
3-1850-27	Meadow Gold	0.15 SE	crossgradient	1914	10	552	8	-478	-544	27	85	sealed/1963
3-1850-17	Hawaiian Electric Co.	0.20 NW	crossgradient	1887	8	510	6	NR	-504	27.6	63	sealed/1924
3-1850-09	State of Hawaii	0.25 W	crossgradient	1882	6	620	6	NR	-614	29.6	62	sealed/1938
3-1850-08	Bank of Hawaii	0.25 NE	upgradient	1882	7	358	34	NR	-324	11.8	NR	sealed/1933
3-1850-16	Honolulu City	0.30 NE	crossgradient	1886	6	442	22	-378	-420	28.5	53	sealed/1940
3-1850-20	Plews & Wichman	0.30 SE	crossgradient	1891	8	437	14	-361	-423	31	62	sealed/1953
3-1750-09	Pagoda Hotel	0.30 SE	crossgradient	1964	16	53	7	-14	-46	2.8	490	industrial/1974
3-1850-22	Bishop Estate	0.30 SE	crossgradient	1894	8	521	16	-403	-505	27.6	62	sealed/1932
3-1850-07	Babcock	0.35 NE	crossgradient	1882	7	375	37	NR	-338	42	NR	sealed/1926
3-1850-21	Board of Water Supply	0.40 SE	upgradient	1894	8	409	20	-292	-389	29.8	62	sealed/1973
3-1850-26	II Estate	0.40 SE	crossgradient	1910	10	450	15	-341	-435	27.7	60	sealed/1940
3-1750-01	Honolulu City	0.45 SE	crossgradient	1890	8	475	14	NR	-461	29.9	67	sealed/1932
3-1850-05	Rowlins	0.45 SE	crossgradient	1882	5	310	28	-209	-282	29.7	61	sealed/1928
3-1850-19	Jodo Mission	0.50 NE	crossgradient	1890	10	277	41	-179	-236	30.6	NR	sealed/1928
Nearest Drinking Water Wells												
3-1851-12	Board of Water Supply	0.75 NW	crossgradient	1895	10	580	21	-478	-559	32	67	municipal/1974
3-1851-13	Board of Water Supply	0.75 NW	crossgradient	1895	10	616	22	-477	-594	NR	67	municipal/1974
3-1851-24	Board of Water Supply	0.75 NW	crossgradient	1910	12	616	20	-467	-596	26.9	67	municipal/1974
3-1851-31	Board of Water Supply	0.75 NW	crossgradient	1924	12	600	20	-469	-580	28	67	municipal/1974
3-1851-32	Board of Water Supply	0.75 NW	crossgradient	1924	12	600	20	-469	-580	27.8	67	municipal/1974
3-1851-33	Board of Water Supply	0.75 NW	crossgradient	1926	12	533	14	-465	-519	23.6	67	municipal/1974
3-1851-34	Board of Water Supply	0.75 NW	crossgradient	1926	12	636	14	-470	-622	23.6	67	municipal/1974
3-1851-35	Board of Water Supply	0.75 NW	crossgradient	1926	12	566	15	-473	-551	23.3	67	municipal/1974

NOTE
NR Not Reported.

STATE OF HAWAII / DEPARTMENT OF LAND AND NATURAL RESOURCES / COMMISSION ON WATER RESOURCE MANAGEMENT
GROUND WATER INDEX AND SUMMARY
JULY 14, 1992

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WELL NUMBER	NAME OR LOCATION	QUAD MAP	OWNER OR USER	YEAR DRLD	DRILLER	COORDINATES LAT	COORDINATES LONG	PHYSICAL DATA TYPE CONS	PHYSICAL DATA CSG DIA IN	PHYSICAL DATA TOTAL DEPTH FT	ELEVATIONS IN FEET GRND SURF	ELEVATIONS IN FEET BOTT SOLID CASE	ELEVATIONS IN FEET BOTT PERF CASE	ELEVATIONS IN FEET BOTT OF HOLE	INITIAL TEST STAT HEAD FT	INITIAL TEST CHLOR MG/L	PUMP TEST RESULTS PUMP RATE GPM	PUMP TEST RESULTS DRAW DOWN FT	PUMP TEST RESULTS SPEC CAP	PUMP TEST RESULTS CHLOR MG/L	PUMP TEST RESULTS WATR TEMP C	WATER SUPPLY PUMP CAPAC MGD	WATER SUPPLY DRAFT MGD,YR	WATER SUPPLY --CHLORIDES-- MG/L, YEAR MAX	WATER SUPPLY --CHLORIDES-- MG/L, YEAR MIN	WATER SUPPLY MAJOR USE, YR	WELL NUMBER
3-1744-04																											3-1744-04
3-1744-06	PIA EXPL	15	HONOLULU BWS	1990	ROSCOE MOSS	211950	1574481	PER 12	315	281	10	-30	-34	4.4	83	200	2.0	100	98	22.6					UNU,83	3-1745-01
3-1745-01	MAILIPE	15	HONOLULU BWS	1981	ROSCOE MOSS	211753	1574519	PER 14	435	379	12	-27	-56	3.7	63	350	14.9	23	76	19.5					MUN,74	3-1746-01
3-1746-01	AIHAROA WELL	13	HONOLULU BWS	1988	ROSCOE MOSS	211715	1574653	PER 12	305	156	-7	-37	-149	9.0	308	160			308	21.0	0.50	0.4,76		136,00	MUN,74	3-1746-07
3-1746-02	WAIALAE IKI WELL	15	HONOLULU BWS	1973	ROSCOE MOSS	211707	1574617	PER 12	440	385	2	-28	-55	2.0	130	350			130	21.0	0.50	0.2,76			OBS,74	3-1747-01
3-1747-01	WAIALAE	13	HONOLULU BWS	1935	KEIZER	211717	1574739		1	151	152	-6	-16	-19	10.3							0.4,76				
3-1747-02	WAIALAE SHAFT	13	HONOLULU BWS	1937		211719	1574736	TUN 96	157	160				3	10.2	73	696	0.8	868	364		0.60	0.4,	173,	138,	MUN,74	3-1747-02
3-1747-03	WAIALAE NUI	13	HONOLULU BWS	1983	ROSCOE MOSS	211753	1574704	PER 14	410	310	-17	-57	-100	11.4	48	1000	7.8	128	48	20.8					UNU,83	3-1747-03
3-1748-01	PALOLO	13	BISHOP ESTATE	1895	MCCANDLESS	211749	1574854		8		48	-38		26.2											OBS,74	3-1748-01
3-1748-02	PALOLO	13	BOOTH E K	1896	MCCANDLESS	211735	1574858		10	159	29	-71	-130												ELO,28	3-1748-02
3-1748-03	KAIMUKI PUMP STA	13	HONOLULU BWS	1898		211727	1574858		12	260	25		-235	25.2						22.5		3.5,76	67,	39,	MUN,74	3-1748-03
3-1748-04	KAIMUKI PUMP STA	13	HONOLULU BWS	1898		211727	1574858		12	260	26		-234							22.5					MUN,74	3-1748-04
3-1748-05	KAIMUKI PUMP STA	13	HONOLULU BWS	1912	MCCANDLESS	211727	1574858		12	250	37	-63	-213	22.3						22.5					MUN,74	3-1748-05
3-1748-06	KAIMUKI PUMP STA	13	HONOLULU BWS	1912	MCCANDLESS	211727	1574858		12	250	27	-73	-223	24.0						22.5					MUN,74	3-1748-06
3-1748-07	KAIMUKI PUMP STA	13	HONOLULU BWS	1925	MCCANDLESS	211727	1574858		12	301	29	-66	-272	24.9	41					22.5			48,	39,	MUN,74	3-1748-07
3-1748-08	KAIMUKI PUMP STA	13	HONOLULU BWS	1925	MCCANDLESS	211727	1574858		12	304	28	-73	-276	23.9	46					22.5			53,	44,	MUN,74	3-1748-08
3-1748-09	KAIMUKI PUMP STA	13	HONOLULU BWS	1925	MCCANDLESS	211727	1574858		12	302	28	-73	-274	24.8						22.5					MUN,74	3-1748-09
3-1748-10	KAIMUKI PUMP STA	13	HONOLULU BWS	1928	MCCANDLESS	211727	1574858		12	308	32	-69	-276	25.0						22.5					MUN,74	3-1748-10
3-1748-11	KAIMUKI	13	HONOLULU BWS	1960	PACIFIC DRLG	211727	1574858		6	1404	29	-85	-1375		16800				17500						OBS,74	3-1748-11
3-1748-12	KAIMU	13	HONOLULU BWS	1975	ROSCOE MOSS	211719	1574809	PER 12	368	121	-9	-166	-247	7.9	3000										MUN,74	3-1748-12
3-1748-13	MANOA I	13	HONOLULU BWS	1984	ROSCOE MOSS	211734	1574859	PER 12	100	40	-8	-60	-60	25.0	33	700	42.5	16	30	21.1					UNU,84	3-1748-13
3-1748-14	KAIMUKI MONITR 2	13	HONOLULU BWS	1986	NAT RES INTL	211727	1574858	ROT 9	1203	26	-97		-1177												OBS,86	3-1748-14
3-1749-01	KAPAHULU	13	SPENCER C R	1881		211725	1574922		6	407	15		-392	22.7	28										ELO,72	3-1749-01
3-1749-02	KAPAHULU	13	SEEK Y C	1881		211720	1574924		6	428	13		-415												ELO,38	3-1749-02
3-1749-03	KAPAHULU	13	MAOOOH TRUST	1882	COOKE-PEDDLAR	211724	1574936			730	10		-720												LOA,74	3-1749-03
3-1749-04	KAPAHULU	13	STATE OF HAW	1883		211738	1574906		8	286	28	-162	-258										30,		ELO,26	3-1749-04
3-1749-05	KAPAHULU	13	UNG T Y	1883		211730	1574939		6	587	8	-556	-579	24.8	37								218,	37,	ELO,45	3-1749-05
3-1749-06	KAPAHULU	13	BISHOP ESTATE	1884		211735	1574905		10	162	22	-103	-140	23.3	34								34,	27,	ELO,30	3-1749-06
3-1749-07	KAPAHULU	13	STATE OF HAW	1885		211716	1574910		8	625	10	-291	-607	25.0	96							0.6,	2250.	51,	OBS,74	3-1749-07
3-1749-08	KAPAHULU	13	CHANG KIN	1888		211712	1574912		4	411	11	-185	-400	20.1	51							0.0,76	335,	51,		3-1749-08
3-1749-09	KAPAHULU	13	HONOLULU CTY	1889		211700	1574901		6	510	12	-458	-498	21.0	76								120,	74,	ELO,28	3-1749-09
3-1749-10	KAPAHULU	13	TSUMOTO F Y	1889		211722	1574923		12	463	13	-411	-450	23.2	47								47,	25,	ELO,40	3-1749-10
3-1749-11	KAPAHULU	13	DUNAE S S	1889		211723	1574923		10	475	14	-406	-461	24.0	47								63,	30,	ELO,45	3-1749-11
3-1749-12	KAPAHULU	13	CHAR T T	1889		211720	1574927		6	521	12	-406	-509	19.9	240								610,	240,	ELO,69	3-1749-12
3-1749-13	KAPAHULU	13	MEEK L Y	1889		211721	1574926		8	500	16	-416	-486	23.0	216								270,	56,	ELO,28	3-1749-13
3-1749-14	KAPAHULU	13	HONOLULU BWS	1891		211721	1574914		8	417	13	-269	-404	24.8	57							0.1,	162,	53,	OBS,74	3-1749-14
3-1749-15	KAPAHULU	13	MURANO D S	1892	MCCANDLESS	211727	1574901		6	165	19	-103	-146	17.3	46								66,	34,	ELO,40	3-1749-15
3-1749-16	KAPAHULU	13	U S ARMY	1911	WRIGHT	211709	1574902		10	420	6	-336	-412	22.0	53								65,	42,	ELO,67	3-1749-16
3-1749-17	KAPAHULU	13	HAWN HOTELS	1917	MCCANDLESS	211718	1574925		10	458	11	-391	-457	19.5	83								700,	83,	ELO,71	3-1749-17
3-1749-18	KAPAHULU	13	LOVES BAKERY	1921	JAMSON-SMOCK	211715	1574901		4	269	16	-239	-253	22.6	32							0.1,76	98,	32,	IMO,76	3-1749-18
3-1749-19	KAPAHULU	13	HAWN HOTELS	1927	MCCANDLESS	211732	1574908		12	276	21	-154	-255	24.7	26							0.6,	36,	22,	DOM,74	3-1749-19
3-1749-20	MOILILI	13	STAR MARKET	1954	NAT MARTON	211746	1574936		12	28						200	2.4	83			0.03	0.0,			ELO,82	3-1749-20
3-1749-21	MOILILI	13	STAR MARKET	1954	NAT MARTON	211746	1574936		12	28						100	1.0	100							ELO,82	3-1749-21
3-1749-22	KAIMUKI OBS	13	HONOLULU BWS	1970	LAYNE INT	211718	1574908	ROT 8	911	14	-291		-897	23.4	145					24.0				105,00	OBS,74	3-1749-22
3-1750-01	MCCULLY	13	HONOLULU CTY	1881		211754	1575023		8	475	14		-461	29.9	42							0.1,	67,	42,	ELO,32	3-1750-01
3-1750-02	MCCULLY	13	YOU HAN	1890		211753	1575002		6	416	9	-354	-407	29.4	75								142,	55,	ELO,76	3-1750-02

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																						0.1,	91,		58,	SLD,29	3-1750-03
3-1750-03	MCCULLY		13 DIAMOND HEAD	1890		211756	1575010		8	374	10	-330		-366	28.2	58											UNU,74	3-1750-04
3-1750-04	MAIKIKI		13 HIUMALU HOTEL	1950	SAMSON-SHOCK	211706	1575024		10	62							230	1.0	230								UNU,61	3-1750-05
3-1750-05	MCCULLY		13 TIMES MARKET	1953	NAT WELTON	211758	1575009		6	154							50	8.0	6								UNU,74	3-1750-06
3-1750-06	MAIKIKI		13 HILTON HOTEL	1955	SAMSON-SHOCK	211709	1575020		8	122																	UNU,74	3-1750-07
3-1750-07	MAIKIKI		13 HILTON HOTEL	1955	SAMSON-SHOCK	211713	1575022		8	120																		
																							690,			UNU,74	3-1750-08
3-1750-08	MAIKIKI		13 HILTON HOTEL	1955	SAMSON-SHOCK	211713	1575022		8	90				-46			550	2.9	190								IND,74	3-1750-09
3-1750-09	ALA MOANA		13 PAGODA HOTEL	1964	NAT WELTON	211757	1575036		16	53	7	-14		-84	2.8	13954	600	0.8	750								DIS,74	3-1750-10
3-1750-10	ALA MOANA		13 ALA MOANA CTR	1967	NAT WELTON	211733	1575041		18	88	4	-38		-50	2.9	13451	550	0.5	1100	17680							DIS,74	3-1750-11
3-1750-11	ALA MOANA		13 ALA MOANA CTR	1967	NAT WELTON	211738	1575042		18	55	5	-32				16100						1.01					IND,74	3-1751-01
3-1751-01	ALA MOANA		13 CASTLE & COOKE	1939	NAT WELTON	211751	1575142		12	142																		
																						2.02				IND,74	3-1751-02
3-1751-02	ALA MOANA		13 CASTLE & COOKE	1949	MULLIN	211751	1575142		12	150						15780										OTH,74	3-1751-03
3-1751-03	ALA MOANA		13 STATE OF HAW	1959	SAMSON-SHOCK	211742	1575130		6	92						18000										DIS,74	3-1751-04
3-1751-04	ALA MOANA		13 1350ALA MOANA	1967	NAT WELTON	211760	1575103				5						600			17070						OTH,74	3-1751-05
3-1751-05	ALA MOANA		13 U OF HAWAII	1968	NAT WELTON	211748	1575150										179	8.0	22							OTH,74	3-1751-06
3-1751-06	ALA MOANA		13 U OF HAWAII	1970	ROSCOR MOSS	211748	1575149	PER	16	151	5	-41		-166													
																										OBS,74	3-1800-01
3-1800-01	EWA BEACH		10 N O A A	1972	CONTINENTAL	211856	1580020		4	106																UNU,74	3-1805-01
3-1805-01	BARBERS POINT		06 CAMPBELL EST	1957	SAMSON-SHOCK	211859	1580327		7	50	22	20		-26	1.1	932	375	1.0	375	958							UNU,83	3-1805-02
3-1805-02	BARBERS POINT		06 OCEAN MINERALS	1976	ROSCOR MOSS	211837	1580326	PER	20	100	18	-2	-22	-82			3000	2.0	1500							OTH,85	3-1805-03
3-1805-03	HIAI FIREKILL		06 HAWN IND REFIN	1985	FOUND INTL	211819	1580325	ROT	20	50	10	-9		-49		2700	2800	3.0	933			0.00				UNU,74	3-1806-01
3-1806-01	BARBERS POINT		06 CAMPBELL EST	1957	SAMSON-SHOCK	211809	1580617		7	50	9	6		-41	0.8	6830											
																										UNU,74	3-1806-02
3-1806-02	BARBERS POINT		06 CHEVRON USA	1957	SAMSON-SHOCK	211838	1580636		7	50	7	5		-43	0.8	7160										UNU,81	3-1806-03
3-1806-03	BARBERS POINT		06 BAM WESTAM ST	1959	SAMSON-SHOCK	211820	1580628		16	100	12	-12	-36	-88	0.5	9050	1100	2.5	440			1.58				UNU,81	3-1806-04
3-1806-04	BARBERS POINT		06 BAM WESTAM ST	1959	SAMSON-SHOCK	211820	1580628		16	50	12	9		-38		3020	1000	1.7	588			1.44				IND,74	3-1806-05
3-1806-05	BARBERS POINT		06 SO PIPELINE	1959	SAMSON-SHOCK	211836	1580624		8	40	12	-4	-28	-28								2.74				IND,74	3-1806-06
3-1806-06	BARBERS POINT		06 CHEVRON USA	1959	NAT WELTON	211833	1580650		18	50	7			-43	1.0	13400	1500	6.0	375	14300							
																										DIS,74	3-1806-07
3-1806-07	BARBERS POINT		06 DILL-CONOCO	1972	CONTINENTAL	211820	1580642		6	300	9	-207		-291			385	2.0	193								OBS,74	3-1806-08
3-1806-08	BARBERS POINT		06 DIL-CONOCO	1972	CONTINENTAL	211820	1580642			215												0.00				OTH,86	3-1806-09
3-1806-09	BARBERS POINT		06 C&C H-POWER	1986	ROSCOR MOSS	211830	1580629	PER	16	103	12	-38	-88	-91	0.3		3000	1.8	1667			0.00				OTH,86	3-1806-10
3-1806-10	BARBERS POINT		06 C&C H-POWER	1986	ROSCOR MOSS	211830	1580629	PER	16	105	12	-38	-88	-93	0.2		3000	5.0	600								3-1806-11
3-1806-11	ARS PROD #1		06 ARS INC	1989	ROSCOR MOSS	211824	1580630	PER	20	115	12	-48	-103	-103			4500	19.0	237								
																										IND,00	3-1806-12
3-1806-12	ARS 1B		06 ARS INC	1990	ROSCOR MOSS	211822	1580632	PER	20	124	13	-24	-109	-111	0.6		3000	2.4	1250								IND,00	3-1806-13
3-1806-13	ARS 1C		06 ARS INC	1990	ROSCOR MOSS	211822	1580629	PER	20	124	11	-26	-111	-113	0.8		2000	2.9	690	28000							IND,00	3-1806-14
3-1806-14	ARS 1D		06 ARS INC	1990	ROSCOR MOSS	211821	1580631	PER	20	125	13	-24	-107	-112	1.0		1000	5.1	196		25.0						OTH,74	3-1840-01
3-1840-01	KALAWA VALLEY		15 CONES	1945	MULLIN	211808	1574040		6	116	94	27		-22	1.3	667									1040,	667,	UNU,74	3-1840-02
3-1840-02	KALAWA VALLEY		15 KUBA T	1945	MULLIN	211800	1574045		6	116	106	31	11	-10	2.6	785											
																										UNU,74	3-1840-03
3-1840-03	KALAWA VALLEY		15 TAJIRI T	1946	MULLIN	211817	1574038		6	99	78	-21		-21	3.0	922									1080,	836,	UNU,74	3-1840-04
3-1840-04	KALAWA VALLEY		15 LEONG R	1947	MULLIN	211830	1574036		7	110	88	4	-20	-22	2.2	1080									1100,	OTH,74	3-1840-05
3-1840-05	KALAWA VALLEY		15 MARRERO T	1949	NAT WELTON	211808	1574034		6	83	67	-16		-16	0.6	1190	59	1.9	31						1390,	LOS,74	3-1840-06
3-1840-06	KALAWA VALLEY		15 RACOR REALTY	1949	NAT WELTON	211805	1574036		8	101	78	-11		-23	0.6	1370	33	1.3	25							OTH,74	3-1840-07
3-1840-07	KALAWA VALLEY		15 ING P	1950	NAT WELTON	211811	1574034		6	89	75	-13		-14	0.8	1740	82	0.1	820								
																										UNU,74	3-1841-01
3-1841-01	KAHILONUI VALLEY		15 KANESHINO M	1956	SAMSON-SHOCK	211833	1574152		8	275	33			-238													UNU,74	3-1842-01
3-1842-01	KAHILONUI VALLEY		15 SHINDO T	1945	MULLIN	211815	1574200		6	200	35			-165	0.8	750											UNU,83	3-1843-01
3-1843-01	KULIOUOU		15 HONOLULU BWS	1983	ROSCOR MOSS	211827	1574340	PER	12	268	218	10	-30	-50	3.7		350	2.6	135	100	21.1						UNU,87	3-1845-01
3-1845-01	WAILUPE II		15 HONOLULU BWS	1986	ROSCOR MOSS	211815	1574535	PER	12	490	388	-15		-110	7.5		300	17.0	18	25	20.3						HUN,75	3-1847-01
3-1847-01	PALOLO WELL		13 HONOLULU BWS	1974	NAT RES INTL	211837	1574729	ROT	12	570	387	-33		-183	21.9	22	1100	11.0	100	24		1.50	1.4.76				

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3-1849-01	MANOA VALLEY	13	MARQUES E M	1880	PIERCE	211812	1574950		3	295	37	-236		-258	43.5	69								49.	48.	SLD,38	3-1849-01
3-1849-02	MANOA VALLEY	13	BONARD M	1881	FRESLER	211804	1574959		8	358	25	-281		-333	30.0	51								47.	51.	SLD,43	3-1849-02
3-1849-03	MANOA VALLEY	13	FIETSCH D & L	1882		211834	1574965			980	200			-780												SLD,53	3-1849-03
3-1849-04	MANOA VALLEY	13	SOOH T Y	1885		211809	1574958		6	240	30	-151		-230	42.0	52								52.		SLD,29	3-1849-04
3-1849-05	MANOA VALLEY	13	FUNGLOU SCR	1889		211816	1574950		6	213	48	-124		-165	35.8	55										SLD,29	3-1849-05
3-1849-06	MANOA VALLEY	13	CHING S S	1891	MCCANDLESS	211800	1574954		8	160	17			-143	30.6	54							0.1,	62.	54.	UNU,00	3-1849-06
3-1849-07	MANOA VALLEY	13	LAND PROC SERV	1891	MCCANDLESS	211800	1574955		6		18				30.0	55							0.1,	58.	55.	IRR,85	3-1849-07
3-1849-08	MANOA VALLEY	13	CHINN J T	1894		211801	1574957		8	397	20	-317		-377	30.8	56								69.	55.	SLD,51	3-1849-08
3-1849-09	MANOA VALLEY	13	MORGAN A S	1901		211835	1574954		10	194	154	51		-40	37.0	55								55.	15.	SLD,47	3-1849-09
3-1849-10	MANOA VALLEY	13	FUNGLOU SCR	1909	MCCANDLESS	211813	1574952		8	315	36	-159		-279	29.1	48							0.2,76	62.	18.	DOH,76	3-1849-10
3-1849-11	WILDER AVE WELLS	13	HONOLULU BWS	1912	MCCANDLESS	211813	1574947		12	304	43	-229		-261	27.7	52							7.2,76	106.	45.	OAS,76	3-1849-11
3-1849-12	WILDER AVE WELLS	13	HONOLULU BWS	1912	MCCANDLESS	211813	1574947		12	630	43	-257		-387												OAS,76	3-1849-12
3-1849-13	WILDER AVE WELLS	13	HONOLULU BWS	1941	PACIFIC DRLG	211813	1574947		16	600	50	-202		-350								2.50				MUN,76	3-1849-13
3-1849-14	WILDER AVE WELLS	13	HONOLULU BWS	1941	PACIFIC DRLG	211813	1574947		16	406	56	-202		-350								2.50				MUN,76	3-1849-14
3-1849-15	WILDER AVE WELLS	13	HONOLULU BWS	1942	PACIFIC DRLG	211813	1574947		16	396	46	-202		-350								2.50				MUN,76	3-1849-15
3-1849-16	WILDER AVE WELLS	13	HONOLULU BWS	1942	PACIFIC DRLG	211813	1574947		16	376	56	-230		-320			1935	8.8	220			2.50				MUN,76	3-1849-16
3-1850-01	ROOSEVELT SCH	13	STATE OF HAW			211849	1575026		7		166															SLD,32	3-1850-01
3-1850-02	MAKIKI	13	BISHOP TRUST	1880	PIERCE	211803	1575008		5	475	25	-322		-450	29.8	51								51.		SLD,53	3-1850-02
3-1850-03	MAKIKI	13	HONOLULU BWS	1881		211844	1575001		12	900	160			-740		36								44.	36.	UNU,76	3-1850-03
3-1850-04	MAKIKI	13	DILLINGHAM B	1882	PIERCE	211810	1575010		6	300	36			-244	30.0											SLD,32	3-1850-04
3-1850-05	MAKIKI	13	RAWLINS M P	1882	FRESLER	211807	1575020		5	310	28	-209		-282	29.7	61								61.		SLD,28	3-1850-05
3-1850-06	MAKIKI	13	DOWSETT J M	1882		211819	1575014		4	419	47	-130		-372	27.5									50.		SLD,56	3-1850-06
3-1850-07	MAKIKI	13	BABCOCK	1882	FRESLER	211826	1575035		7	375	37			-338	42.0											SLD,26	3-1850-07
3-1850-08	MAKIKI	13	BANK OF HAW	1882	MCCANDLESS	211821	1575035		7	358	34			-324	11.8											SLD,33	3-1850-08
3-1850-09	MAKIKI	13	STATE OF HAW	1882	COOKE-FRODLER	211808	1575058		6	620	6			-614	29.6	62								62.	61.	SLD,38	3-1850-09
3-1850-10	MAKIKI	13	TAP LIN	1883,		211804	1575003		6	281	28	-206		-233	30.3											SLD,28	3-1850-10
3-1850-11	MAKIKI	13	DILLINGHAM M	1882		211808	1575005		6	310	36	-231		-274	24.1											SLD,53	3-1850-11
3-1850-12	MAKIKI	13	BONARD M	1884		211804	1575008		6	311	25	-280		-286	30.7	60								76,	80.	SLD,43	3-1850-12
3-1850-13	MAKIKI	13	VILLADA J M	1884		211810	1575000		6	357	37	-217		-320	42.9	58								54.		SLD,52	3-1850-13
3-1850-14	MAKIKI	13	KING R	1884		211810	1575004		6	271	40	-200		-231	30.8											SLD,46	3-1850-14
3-1850-15	MAKIKI	13	WILCOX G M	1884	MCCANDLESS	211808	1575043		6	456	17	-438		-639	19.0									48.		SLD,27	3-1850-15
3-1850-16	MAKIKI	13	HONOLULU CTY	1886		211813	1575031		6	442	22	-378		-420	25.8	53								53,	44.	SLD,40	3-1850-16
3-1850-17	MAKIKI	13	HAWN ELEC CO	1887		211817	1575053		8	510	16			-494	27.6	63								63.	62.	SLD,24	3-1850-17
3-1850-18	MAKIKI	13	TANNER J	1890		211805	1575015		8	383	29			-356	26.6											SLD,28	3-1850-18
3-1850-19	MAKIKI	13	JODO MISSION	1890		211817	1575019		10	277	41	-179		-236	30.6											SLD,28	3-1850-19
3-1850-20	MAKIKI	13	PLEWSIWICKHAM	1891	MCCANDLESS	211803	1575032		8	437	16	-361		-421	31.0	56								62.	56.	SLD,53	3-1850-20
3-1850-21	MAKIKI	13	HONOLULU BWS	1894	MCCANDLESS	211803	1575023		8	409	20	-292		-389	29.8	62										SLD,73	3-1850-21
3-1850-22	MAKIKI	13	BISHOP ESTATE	1894	ARAKI	211802	1575028		8	521	16	-403		-505	27.6	61								62.	60.	SLD,32	3-1850-22
3-1850-23	MAKIKI	13	CONDON M I	1899	MCCANDLESS	211834	1575003		10	194	104	18		-90	33.0	47								47.		SLD,26	3-1850-23
3-1850-24	MAKIKI	13	LOWREY S M	1906		211841	1575007		10	302	137	-119		-165	16.0	32								50.	32.	SLD,24	3-1850-24
3-1850-25	MAKIKI	13	KIM C L	1907		211842	1575023		12	123	150	64		27		65										SLD,46	3-1850-25
3-1850-26	MAKIKI	13	II ESTATE	1910	MCCANDLESS	211801	1575024		10	450	15	-341		-435	27.7	57								60.	57.	SLD,40	3-1850-26
3-1850-27	MAKIKI	13	MEADOW GOLD	1914		211802	1575042		10	552	8	-478		-548	27.9	75								85.	52.	SLD,63	3-1850-27
3-1851-01	H I C	13	MARD C P	1881		211817	1575108		6	540	16			-524	30.8	65								65.	44.	SLD,62	3-1851-01
3-1851-02	THOMAS SQUARE	13	HONOLULU BWS	1882		211824	1575107		2	470	27	-431		-443	27.2											OBS,76	3-1851-02

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3-1851-03	KING ST	13	STATE OF HAW	1882		211830	1575141	5	769	14	-701		-755	30.8	55							0.1,	55,	44,	SLD,77	3-1851-03
3-1851-04	IOLANI PALACE	13	STATE OF HAW	1882		211838	1575140	14	752	18	-730		-734	25.2	43								54,	43,	UNU,74	3-1851-04
3-1851-05	ALAKEA ST	13	COOPER K M	1882		211845	1575141	6	636	20			-616	26.0	48								48,	43,	SLD,25	3-1851-05
3-1851-06	YOUNG ST	13	VIDA VILLA	1883		211818	1575101	6	503	17	-217		-486	19.2											SLD,27	3-1851-06
3-1851-07	PACIFIC CLUB	13	PACIFIC CLUB	1888	ASHLEY	211849	1575127	3	560	28	-470		-532	23.2	35							0.03	0.0,76	53,	30,	DOM,74	3-1851-07
3-1851-08	HOTEL ST	13	H R T	1889	MCCANDLESS	211825	1575120	8	618	19	-565		-629	27.2	56									56,	50,	SLD,50	3-1851-08
3-1851-09	KAMAIAHAO CR	13	KAMAIAHAO CR	1893	PINKHAM	211829	1575139	4	765	14	-701		-751	26.1	52							0.10	0.0,76	60,	43,	SLD,87	3-1851-09
3-1851-10	ACAD OF ARTS	13	COOKE C M	1894	MCCANDLESS	211827	1575104	8	486	30	-392		-456	31.0											SLD,28	3-1851-10
3-1851-11	QUEENS HOSP	13	QUEENS HOSP	1894	MCCANDLESS	211839	1575122	8	521	24	-385		-497	27.1	49										48,00	SLD,60	3-1851-11
3-1851-12	BERETANIA P STA	13	HONOLULU BWS	1895	MCCANDLESS	211831	1575120	10	560	21	-478		-559	32.0									7.6,76	67,	36,	HUH,74	3-1851-12
3-1851-13	BERETANIA P STA	13	HONOLULU BWS	1895	MCCANDLESS	211831	1575120	10	616	22	-477		-594											67,	36,	HUH,74	3-1851-13
3-1851-14	KAPIOLANI BLVD	13	HONOLULU CTY	1897	MCCANDLESS	211820	1575128	6	691	9	-641		-682	24.9	80									80,	73,	SLD,40	3-1851-14
3-1851-15	WARD AVE	13	HAWN ELEC CO	1898	MCCANDLESS	211815	1575192	8	734	5	-597		-729	28.3	70									70,	50,	UNU,74	3-1851-15
3-1851-16	CENTRAL SCHOOL	13	HONOLULU CTY	1899	MCCANDLESS	211855	1575135	6	1007	28			-979											90,		SLD,39	3-1851-16
3-1851-17	POHUKAINA	13	BOH IRON WORKS	1900	MCCANDLESS	211817	1575154	8	1007	5	-798		-1002	27.8	98									190,	98,	SLD,40	3-1851-17
3-1851-18	QUEEN S	13	C Q YEE HOP	1900	MCCANDLESS	211822	1575144	8	806	8	-766		-798	27.7	69									89,	60,	UNU,74	3-1851-18
3-1851-19	KALAKAUA ST	13	HAWN ELEC CO	1900	MCCANDLESS	211832	1575155	1	1053	6	-1037		-1067	27.2	67									6120,	210,	OBS,74	3-1851-19
3-1851-20	BERETANIA ST	13	HTL INC	1901	MCCANDLESS	211838	1575120	8	516	19	-513		-557	31.2	75							0.1,76	75,	35,	SLD,90	3-1851-20
3-1851-21	KAMAIAHAO ST	13	MAGOON ESTATE	1901	MCCANDLESS	211818	1575136	6	791	1	-610		-787	29.1	90								350,69	40,	SLD,90	3-1851-21
3-1851-22	ALA MOANA BLVD	13	U.S.G.S.	1901	MCCANDLESS	211828	1575150	8	1152	6	-1121		-1148	22.5	194							0.6,	7650,	113,	OBS,82	3-1851-22
3-1851-23	BISHOP ST	13	A YOUNG HOTEL	1901	MCCANDLESS	211843	1575148	10	960	15	-835		-965	26.5	67							0.3,	580,	16,	SLD,71	3-1851-23
3-1851-24	BERETANIA P STA	13	HONOLULU BWS	1910	MCCANDLESS	211831	1575120	12	616	20	-467		-596	26.9									67,	36,	HUH,74	3-1851-24
3-1851-25	BERETANIA P STA	13	HONOLULU BWS	1910	MCCANDLESS	211831	1575120	12	617	17	-478		-600	27.7									67,	36,	SLD,63	3-1851-25
3-1851-26	KAPIOLANI BLVD	13	BUS INVEST LTD	1910	MCCANDLESS	211815	1575128	8	725	6	-653		-719	27.8	95	800	6.0	133				0.1,76	116,	40,	SLD,90	3-1851-26
3-1851-27	QUEEN ST	13	HAWN ELEC CO	1910	MCCANDLESS	211836	1575153	12	1145	2	-803		-1143	27.2	55								141,	55,	SLD,63	3-1851-27
3-1851-28	YOUNG ST	13	KEO ARTS BLDG	1913	MCCANDLESS	211818	1575103	8	505	10	-458		-487	30.3	41							0.1,	63,	24,	UNU,74	3-1851-28
3-1851-29	ALA MOANA BLVD	13	INTERISLND MV	1913	MCCANDLESS	211817	1575159	12	1009	7	-904		-1002	30.2	103							0.0,76	216,	103,	SLD,36	3-1851-29
3-1851-30	ALAKEA ST	13	BOH MISS HART	1915	MCCANDLESS	211846	1575143	10	810	18	-688		-792	28.4	66							0.1,	63,	34,	SLD,90	3-1851-30
3-1851-31	BERETANIA P STA	13	HONOLULU BWS	1926	MCCANDLESS	211831	1575120	12	600	20	-469		-580	28.0									67,	36,	HUH,74	3-1851-31
3-1851-32	BERETANIA P STA	13	HONOLULU BWS	1926	MCCANDLESS	211831	1575120	12	600	20	-469		-580	27.8									67,	36,	HUH,74	3-1851-32
3-1851-33	BERETANIA P STA	13	HONOLULU BWS	1926	PRINKER	211831	1575120	12	533	14	-465		-519	23.6									67,	36,	HUH,74	3-1851-33
3-1851-34	BERETANIA P STA	13	HONOLULU BWS	1926	PRINKER	211831	1575120	12	636	16	-470		-622	23.6	55								67,	36,	HUH,74	3-1851-34
3-1851-35	BERETANIA P STA	13	HONOLULU BWS	1926	PRINKER	211831	1575120	12	566	15	-473		-551	23.3	47								67,	36,	HUH,74	3-1851-35
3-1851-36	HOTEL ST	13	SAN JUICE IND	1936	MULLIN	211824	1575117	6	700	15	-598		-685	29.0	38								30,	30,	SLD,69	3-1851-36
3-1851-37	MAUNU AVE	13	CONS AMUS CO	1936	HOBART	211854	1575147	8	52	24	-16		-28	8.4		3										OTH,74	3-1851-37
3-1851-38	FT ST MALL	13	BARNES C & CO	1937	MULLIN	211843	1575156	6	100							130										OTH,74	3-1851-38
3-1851-39	HOTEL ST	13	CONS AMUS CO	1937	MULLIN	211851	1575152	6	60							50	0.8	63	181							OTH,74	3-1851-39
3-1851-40	FT ST MALL	13	EAST APPLIANC	1938	HOBART	211845	1575154	6	42																	OTH,74	3-1851-40
3-1851-41	FT ST MALL	13	FRONK & MYHN	1938	NAT WHITON	211850	1575146	6	46	21	-1	-21	-25	1.5	139	40	2.3	17	150							OTH,74	3-1851-41
3-1851-42	MERCHANT ST	13	WILCOX DEV	1939	NAT WHITON	211837	1575150	8	50	10	-12	-30	-40		2100	125	2.3	56								OTH,74	3-1851-42
3-1851-43	MERCHANT ST	13	WILCOX DEV	1939	NAT WHITON	211837	1575150	8	60	10	-7	-27	-30			125	3.1	40								DIS,74	3-1851-43
3-1851-44	PUNCHBOWL ST	13	MEDICAL GROUP	1939	MULLIN	211833	1575133	6	62																	SLD,57	3-1851-44
3-1851-45	MERCHANT&RICHARD	13		1939	MULLIN	211836	1575150	6	80						1060											OTH,74	3-1851-45
3-1851-46	MERCHANT&RICHARD	13	.	1939	MULLIN	211836	1575150	6	75																	UNU,74	3-1851-46
3-1851-47	KING ST	13	WALSTON & CO	1939	NAT WHITON	211841	1575152	6	41					3.7	3290	75	0.3	250						1190,00	UNU,74	3-1851-47

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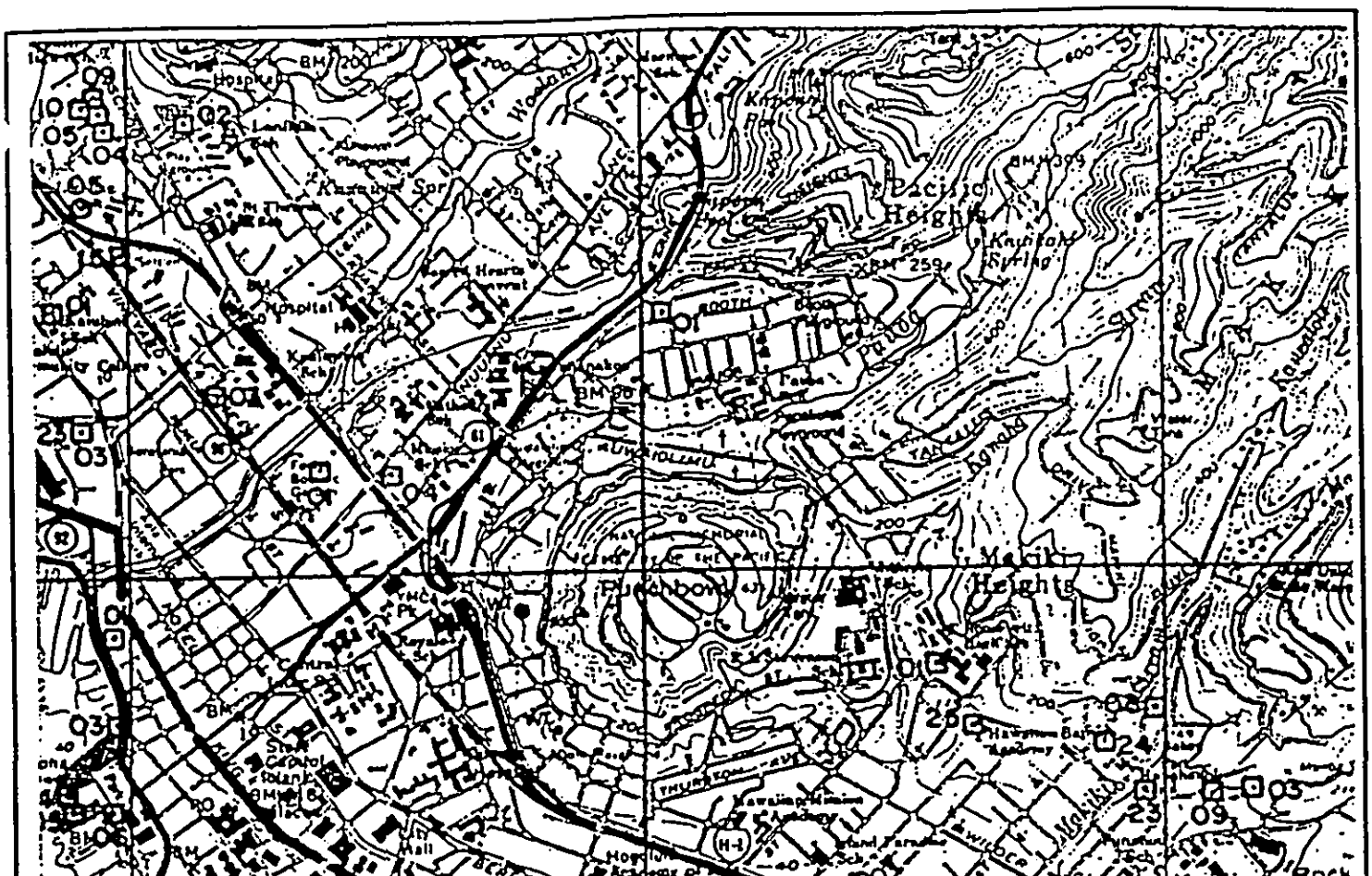
WELL NUMBER	NAME OR LOCATION	QUAD MAP	OWNER OR USER	YEAR DRLD	DRILLER	COORDINATES LAT	LONG	PHYSICAL DATA TYPE CONS	CSG DIA IN	TOTAL DEPTH FT	ELEVATIONS IN FEET GRND SURF	BOTT SOLID CASE	BOTT PERF CASE	BOTT OF HOLE	INITIAL TEST STAT HEAD FT	CHLOR MG/L	PUMP TEST RESULTS PUMP RATE GPM	DRAW DOWN FT	SPEC CAP	CHLOR MG/L	WATR TEMP C	WATER SUPPLY PUMP CAPAC MGD	DRAFT MGD, YR	--CHLORIDES-- MG/L, YEAR MAX	MIN	MAJOR USE, YR	WELL NUMBER
																									UNU,74	3-1851-46
3-1851-48	KING ST	13	WALSTON & CO	1939	MAT NEITON	211841	1575152	S	40						3.6	1360	75	0.3	250						OTH,74	3-1851-49
3-1851-49	KING ST	13	ROYAL AMUSENT	1910	MULLIN	211846	1575155		60																OTH,74	3-1851-50
3-1851-50	FT ST MALL	13	RAMSEY W A	1940	MAT NEITON	211852	1575148	S	23								300	1.6	188						OTH,74	3-1851-51
3-1851-51	IOLANI PALACE	13	STATE OF HAW	1952	MAT NEITON	211835	1575130	S	31		16	-6		-53	3.6	966	148	0.6	247						LOG,74	3-1851-52
3-1851-52	KING ST	13	BANK OF HAW	1952	SAMSON-SMOCK	211843	1575132	S	100																	
																									OTH,74	3-1851-53
																	400	13.1	31	19					DOH,74	3-1851-54
3-1851-53	QUEEN ST	13	ALEXBALDWIN	1956	SAMSON-SMOCK	211848	1575156	S	122		12		-22	-114	0.4							1.08	0.7,76	65,	41.	OTH,74	3-1851-55
3-1851-54	QUEENS HOSP	13	QUEENS HOSP	1958	PACIFIC DRLG	211842	1575122	S	660		10	-322		-426	28.5	41									OTH,74	3-1851-56
3-1851-55	ALAKEA ST	13	AM MUTUAL INS	1958	MAT NEITON	211846	1575140	S	40		24	13		-26	1.0	967	250	4.0	63						OBS,74	3-1851-57
3-1851-56	ALAKEA ST	13	AM MUTUAL INS	1958	MAT NEITON	211846	1575140	S	30		24	13		-14	1.0		75	1.0	75							
3-1851-57	BMS MONITOR WELL	13	HONOLULU BMS	1960	PACIFIC DRLG	211833	1575122	S	1509		6	-427		-1486	26.9										UNU,84	3-1851-58
																						0.59			SLD,76	3-1851-59
																							0.1,	52,	OTH,74	3-1851-60
3-1851-58	KAPIOLANI BLVD	13	SHELLY MOTORS	1968	PACIFIC DRLG	211812	1575120	S	710		6	-634		-708											OTH,74	3-1851-61
3-1851-59	KING ST	13	STUDE LOFT	1968	PACIFIC DRLG	211819	1575121	S	678		4	-599		-670	25.9	48									OTH,74	3-1851-62
3-1851-60	WARD AVE	13	STRAUB CLINIC	1967	SAMSON-SMOCK	211819	1575112	S	180		6	-144		-166	6.0	470	115	4.0	29							
3-1851-61	STATE CAPITOL	13	STATE DAGS	1961	SAMSON-SMOCK	211841	1575139	S	77		16	-5	-144	-57	30.0	4030	1655	27.0	61	7500	24.4					
3-1851-62	HBC	13	HON AUDITORIUM	1967	MAT NEITON	211813	1575111	S	65		5		-51	-60		376	400	1.9	316							
																									OTH,74	3-1851-63
											5														DIS,74	3-1851-64
3-1851-63	HBC	13	HON AUDITORIUM	1967	MAT NEITON	211812	1575116										200	0.3	667						DIS,74	3-1851-65
3-1851-64	KING ST	13	BERTS SERVICE	1967	ROSCOE MOSS	211821	1575122	PER	8	91	7	-20	-28	-66			275	0.7	393	2100					OTH,74	3-1851-66
3-1851-65	QUEEN ST	13	KAY SERVICE	1967	ROSCOE MOSS	211821	1575141	PER	8	80	7	-5		-73	1.5		1500	40.0	38						OBS,74	3-1851-67
3-1851-66	BERETANIA	13	STATE OF HAW	1967	LAYNE INT	211842	1575137	ROT		100	20			-80												
3-1851-67	BERETANIA	13	HONOLULU BMS	1968	LAYNE INT	211831	1575120	ROT	20	619	18	-466		-601	3.0											
																									OTH,74	3-1851-68
																									OTH,74	3-1851-69
3-1851-68	FT ST MALL	13	AMFAC	1968	MAT NEITON	211837	1575150		24	36	7	-1		-29			440	4.5	98	16750	26.1				DIS,74	3-1851-70
3-1851-69	FT ST MALL	13	AMFAC	1968	MAT NEITON	211837	1575156		24	40	7	-2		-33	0.3		425	11.2	38	17300	25.6				OTH,74	3-1851-71
3-1851-70	FT ST MALL	13	AMFAC	1968	MAT NEITON	211837	1575158		24	30	7			-23	0.3		550	1.9	289	17800	25.6				OTH,74	3-1851-72
3-1851-71	FT ST MALL	13	CENTER PROP	1973	ROSCOE MOSS	211841	1575159	PER	16	45	7	-3		-38			850	8.2	104							
3-1851-72	FT ST MLL	13	CENTER PROP	1973	ROSCOE MOSS	211841	1575139	PER	16	45	7	-3		-38			950	9.5	112							
																									IRR,87	3-1851-73
																									MUN,00	3-1851-74
3-1851-73	KAMAIAKAO CEMTRY	13	KAMAIAKAO CE	1966	MAT REB INTL	211828	1575139	ROT	9	777	13	-696		-766	19.2		102	6.0	17						MUN,00	3-1851-75
3-1851-74	BERETANIA STA	13	HONOLULU BMS	1968	MAT REB INTL	211833	1575123	ROT	14	598	19	-479		-579	21.0		1400	1.9	737	66	21.5				OTH,74	3-1852-01
3-1851-75	BERETANIA STA	13	HONOLULU BMS	1969	MAT REB INTL	211831	1575121	ROT	14	625	18	-505		-607	22.9		1400	2.2	636	102	20.4				UNU,74	3-1852-02
3-1852-01	ALA MOANA BLVD	13	CEVN SOON MKT	1937	MULLIN	211858	1575202		6	60																
3-1852-02	FT ARMSTRONG	13	STATE OF HAW	1939	MULLIN	211805	1575212		8	102						14500										
																									OTH,74	3-1852-03
																									OTH,74	3-1852-04
3-1852-03	ALA MOANA BLVD	13	CASTLE&COOKE	1947	MAT NEITON	211844	1575200		6	52							150	2.3	65						UNU,74	3-1852-05
3-1852-04	ALOHA TOWERS	13	CASTLE&COOKE	1947	MAT NEITON	211837	1575207		6	64							150	1.5	100						OTH,74	3-1852-06
3-1852-05	ALOHA TOWER	13	PODMORE J M	1931	MAT NEITON	211836	1575207		8	40							90	3.6	26							3-1852-07
3-1852-06	ALA MOANA BLVD	13	HAWN ELEC CO	1953	SAMSON-SMOCK	211833	1575200		24	94							600	3.1	194							
3-1852-07	IMMIGRATION STA	13	STATE OF HAW	1955	MAT NEITON	211816	1575203		10	95	8	-20		-67												
																									OTH,74	3-1852-08
																										3-1853-01
											8	-92					900	2.3	391	19000					OBS,74	3-1900-01
3-1852-08	COAST GUARD RES	13	STATE AQUATICS	1971	MAT NEITON	211828	1575229		12													2.90		600,	480.	OBS,74	3-1900-02
3-1853-01	SAND ISLE MEASR	13	STATE OF HAW	1973	CONTL DRLG CO	211859	1575304			120				-5									1.8,76	660,	520.	UNU,74	3-1900-03
3-1900-01	EWA PLANTN SP 20	10	OAHU SUGAR	1930		211958	1580038	DUG	12	30	25			-6												
3-1900-02	EWA PLANTN SP 22	10	OAHU SUGAR	1930		211952	1580040	DUG	12	29	23			-22		1000										
3-1900-03	BARBERS PT	10	U S NAVY	1939	MULLIN	211959	1580010		6	37	15	-5														
																									UNU,74	3-1900-04
																									UNU,74	3-1900-05
3-1900-04	BARBERS POINT	10	U S NAVY	1939	MULLIN	211934	1580002		6	37	15	-5		-22		905									UNU,74	3-1900-06
3-1900-05	BARBERS POINT	10	U S NAVY	1941	MAT NEITON	211952	1580002		6	35						1050									UNU,74	3-1900-07
3-1900-06	BARBERS POINT	10	U S NAVY	1941	MAT NEITON	211952	1580000		6	37						1100									UNU,00	3-1900-08
3-1900-07	BARBERS POINT	10	U S NAVY	1941	MAT NEITON	211937	1580013		6	31								30.0								
3-1900-08	BARBERS POINT	10	U S NAVY	1941	MAT NEITON	211942	1580000		6	28						1080										



UIC PROGRAM MAP

for

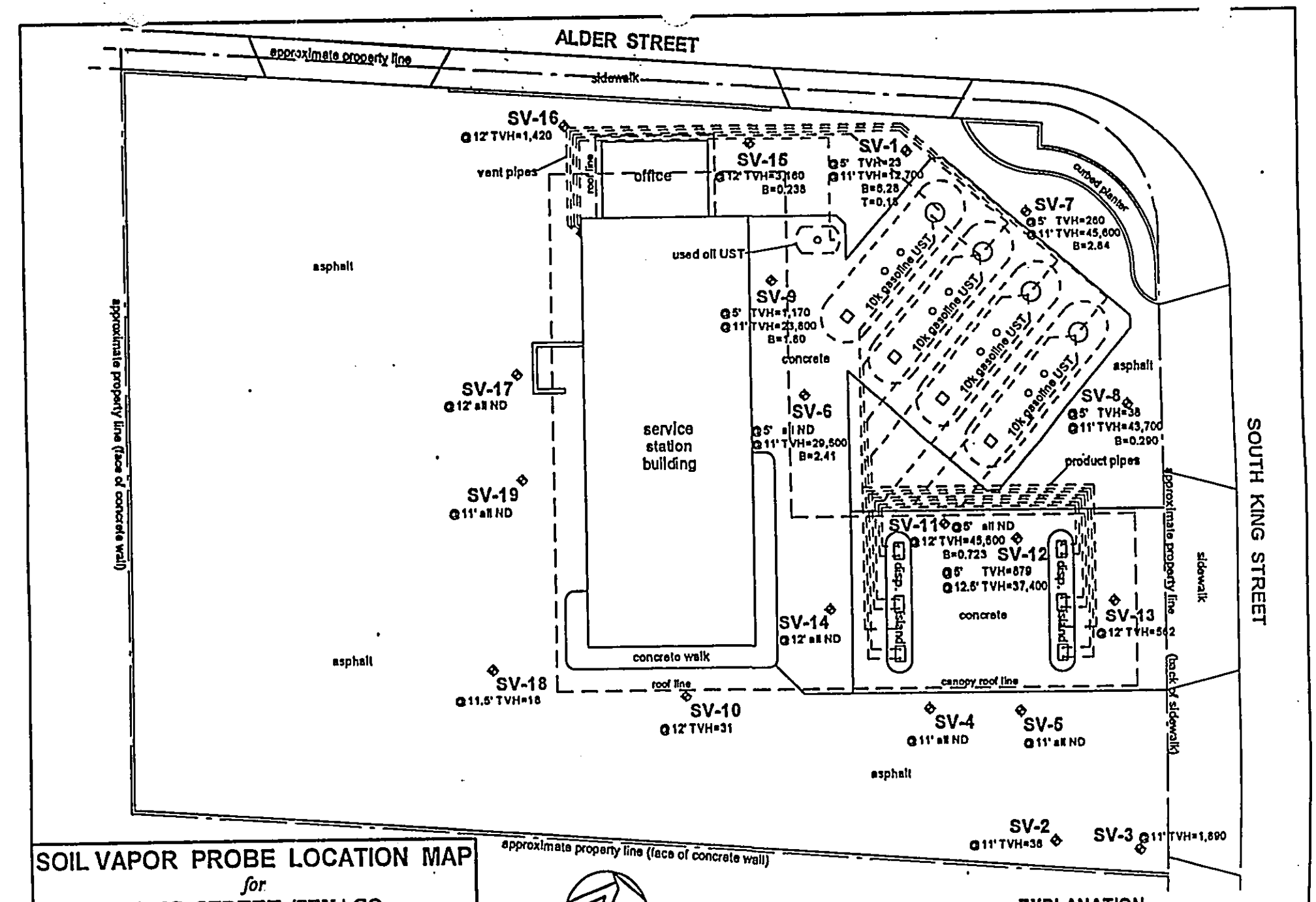
KING STREET TEXACO

prepared by

WALKER CONSULTANTS, LTD.

January 1997

FIGURE 4

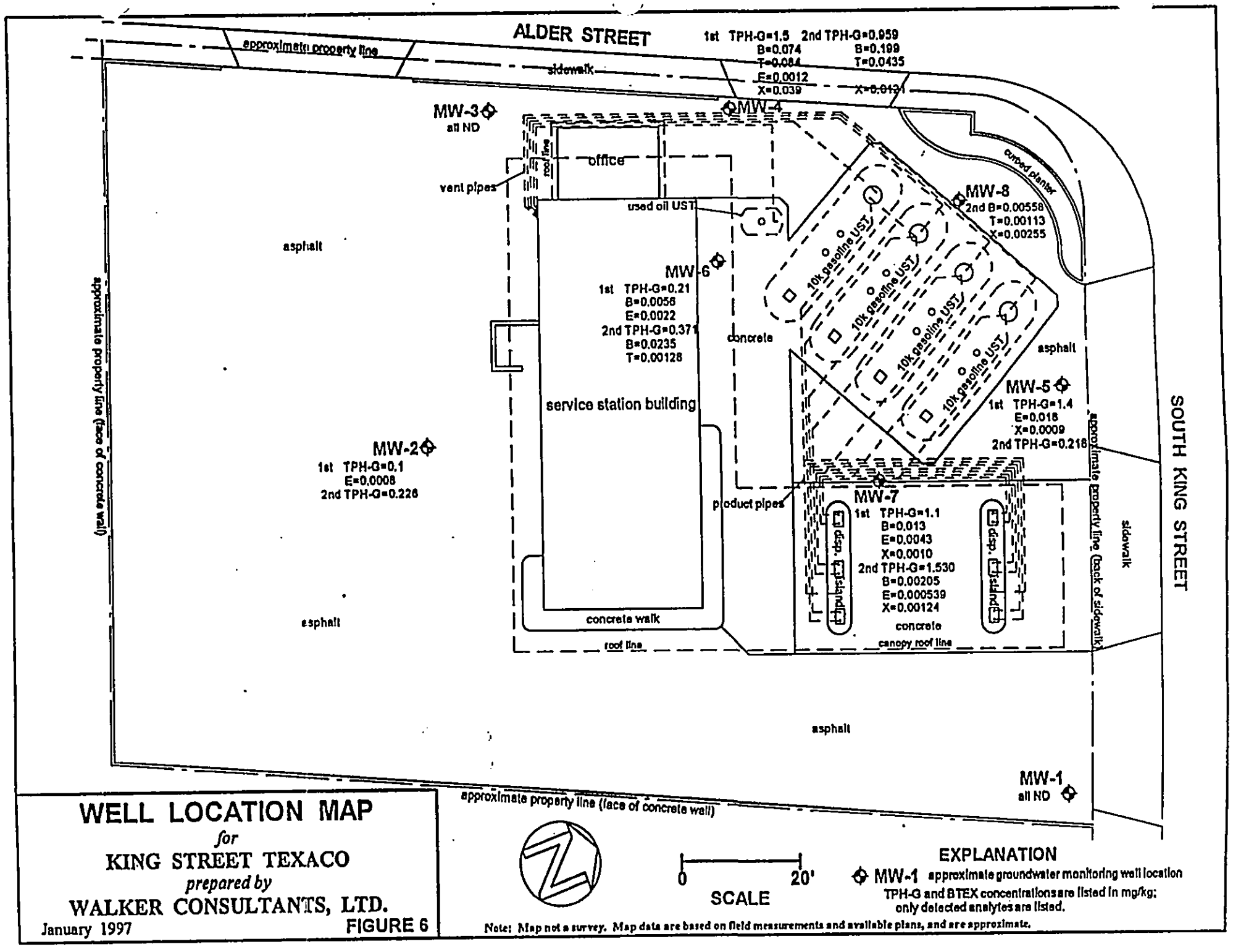


SOIL VAPOR PROBE LOCATION MAP
for
KING STREET TEXACO
prepared by
WALKER CONSULTANTS, LTD.
January 1997 FIGURE 5

0 20'
SCALE

EXPLANATION
◇ SV-1 approximate soil vapor probe location
TVH and BTEX concentrations are listed in ppmv; only detected analytes are listed.

Note: Map not a survey. Map data are based on field measurements and available plans, and are approximate.



WELL LOCATION MAP

for

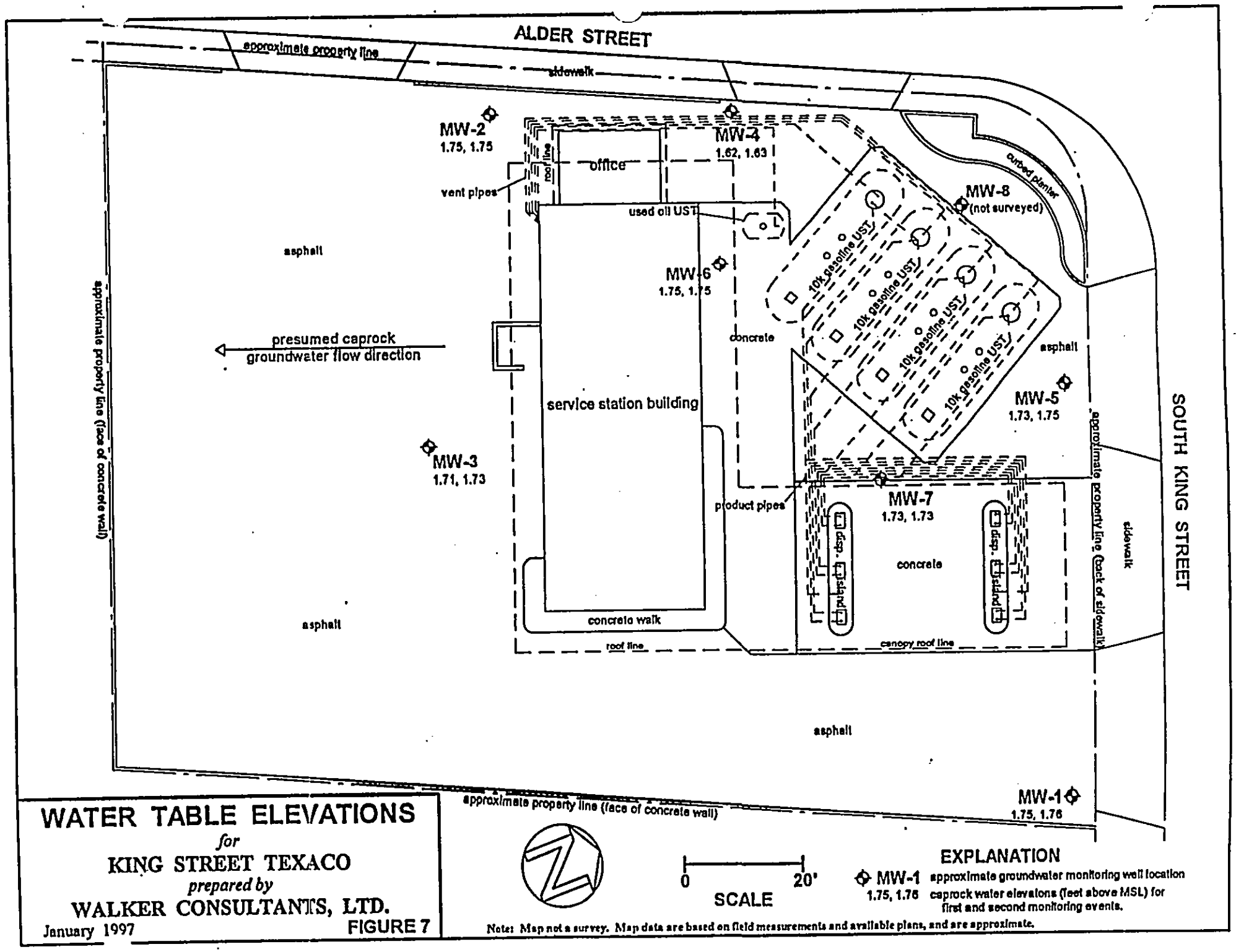
KING STREET TEXACO

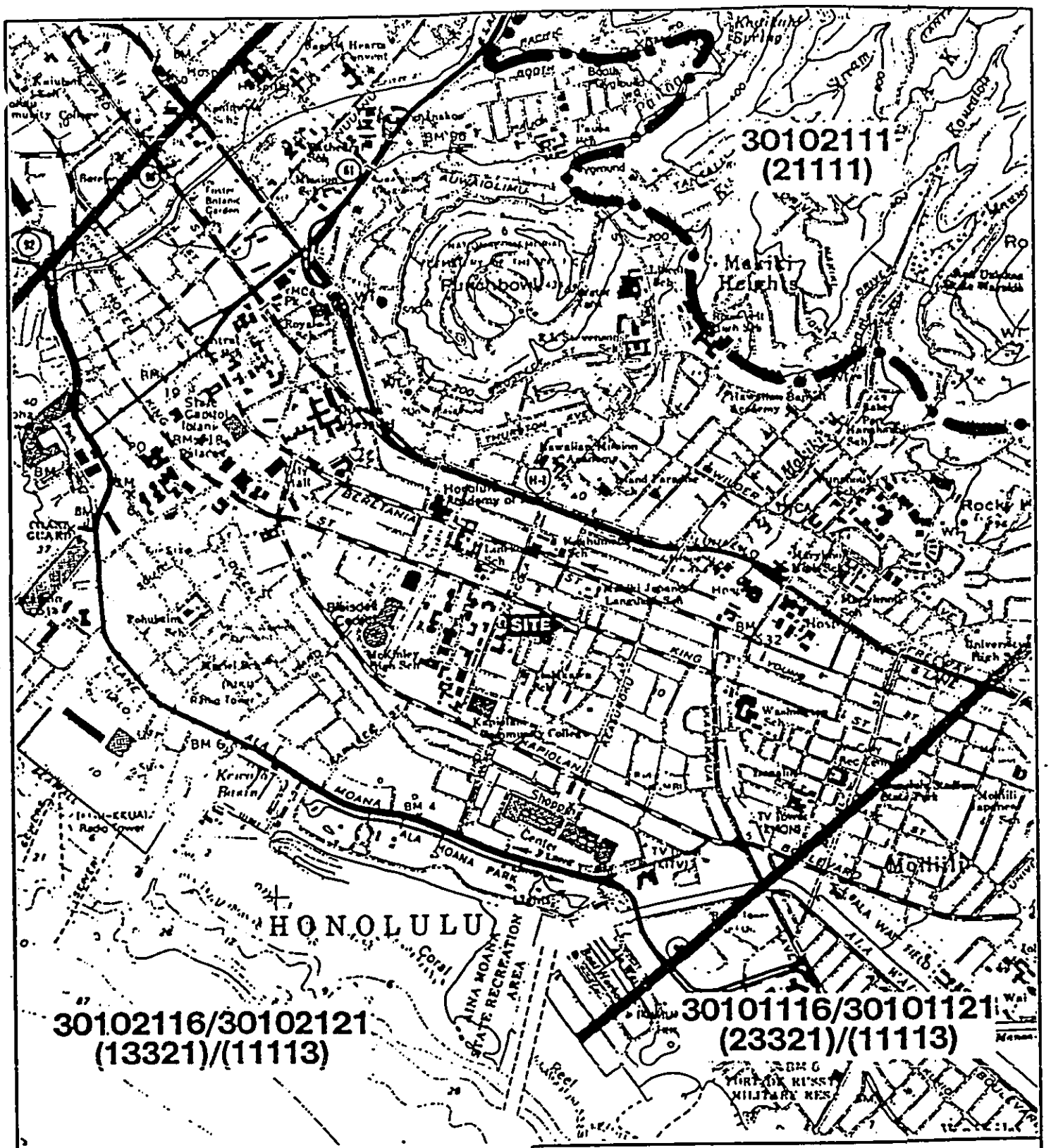
prepared by

WALKER CONSULTANTS, LTD.

January 1997

FIGURE 6


ALDER STREET
approximate property line
sidewalk
MW-2
1.75, 1.75
MW-4
1.62, 1.63
office
roof line
vent pipes
used oil UST
curbed planter
MW-8
(not surveyed)
asphalt
MW-6
1.75, 1.75
10k gasoline UST
10k gasoline UST
10k gasoline UST
10k gasoline UST
presumed caprock
groundwater flow direction
concrete
asphalt
service station building
MW-5
1.73, 1.75
approximate property line (face of concrete wall)
MW-3
1.71, 1.73
product pipes
MW-7
1.73, 1.73
disp. island
disp. island
concrete
approximate property line (back of sidewalk)
sidewalk
SOUTH KING STREET
asphalt
concrete walk
roof line
canopy roof line
asphalt
approximate property line (face of concrete wall)
MW-1
1.75, 1.76
WATER TABLE ELEVATIONS
for
KING STREET TEXACO
prepared by
WALKER CONSULTANTS, LTD.
January 1997
FIGURE 7
0
20'
SCALE
EXPLANATION
MW-1 approximate groundwater monitoring well location
1.75, 1.76 caprock water elevations (feet above MSL) for first and second monitoring events.
Note: Map not a survey. Map data are based on field measurements and available plans, and are approximate.



Note: Map reproduced from a portion of Aquifer Classification Map O-13 (Mink and Lau, February 1990 Revised).

AQUIFER CLASSIFICATION MAP

for

KING STREET TEXACO

prepared by

WALKER CONSULTANTS, LTD.

January 1997

FIGURE 8

TABLES 1 THROUGH 4

TABLE 1
SOIL VAPOR SAMPLE ANALYTICAL RESULTS

Sample Number	Sample Date	Sample Depth	TVH (ppmv)	methane[a] (ppmv)	benzene (ppmv)	toluene (ppmv)	ethylbenzene (ppmv)	xylenes (ppmv)	CO_2 (%)	O_2 (%)	CO_2/O_2
SV1-5	09/25/95	~5' bgs	23	ND <10	ND <0.100	ND <0.100	ND <0.100	ND <0.100	8.30	7.47	1.11
SV1-11	09/25/95	~11' bgs	12,700	3,050	6.28	0.18	ND <0.100	ND <0.100	10.90	5.15	2.12
SV2-11	09/25/95	~11' bgs	36	ND <10	ND <0.100	ND <0.100	ND <0.100	ND <0.100	7.75	9.11	0.85
SV3-11	09/25/95	~11' bgs	1,890	1,890	ND <0.100	ND <0.100	ND <0.100	ND <0.100	6.90	10.4	0.66
SV4-11	09/25/95	~11' bgs	ND <10	ND <10	ND <0.100	ND <0.100	ND <0.100	ND <0.100	7.41	9.60	0.77
SV5-11	09/25/95	~11' bgs	ND <10	ND <10	ND <0.100	ND <0.100	ND <0.100	ND <0.100	7.77	9.70	0.80
SV6-5	09/25/95	~5' bgs	ND <10	ND <10	ND <0.100	ND <0.100	ND <0.100	ND <0.100	2.60	10.2	0.26
SV6-11	09/25/95	~11' bgs	29,500	10,000	2.41	ND <0.100	ND <0.100	ND <0.100	10.3	1.82	5.66
SV7-5	09/25/95	~5' bgs	260	56	ND <0.100	ND <0.100	ND <0.100	ND <0.100	7.70	4.60	1.67
SV7-11	09/25/95	~11' bgs	45,600	14,100	2.84	ND <0.100	ND <0.100	ND <0.100	11.2	1.68	6.67
SV8-5	09/25/95	~5' bgs	38	ND <10	ND <0.100	ND <0.100	ND <0.100	ND <0.100	6.48	5.55	1.17
SV8-11	09/25/95	~11' bgs	43,700	17,100	0.290	ND <0.100	ND <0.100	ND <0.100	9.36	3.12	3.00
SV9-5	09/25/95	~5' bgs	1,170	832	ND <0.100	ND <0.100	ND <0.100	ND <0.100	2.32	13.5	0.17
SV9-11	09/25/95	~11' bgs	23,800	7,730	1.80	ND <0.100	ND <0.100	ND <0.100	7.22	6.87	1.05

NOTES:
ND Not Detected at the listed laboratory detection limits.
ppmv Parts Per Million Volumetric.
TVH Total Volatile Hydrocarbons.
a Methane concentration for each soil vapor sample is included in the corresponding TVH concentration.

TABLE 1 (Continued)
SOIL VAPOR SAMPLE ANALYTICAL RESULTS

Sample Number	Sample Date	Sample Depth	TVH (ppmv)	methane[a] (ppmv)	benzene (ppmv)	toluene (ppmv)	ethylbenzene (ppmv)	xylenes (ppmv)	CO_2 (%)	O_2 (%)	CO_2/O_2
SV10-12	09/25/95	~12' bgs	31	ND <10	ND <0.100	ND <0.100	ND <0.100	ND <0.100	5.65	11.8	0.48
SV11-5	09/25/95	~5' bgs	ND <10	ND <10	ND <0.100	ND <0.100	ND <0.100	ND <0.100	2.12	15.0	0.14
SV11-12	09/25/95	~12' bgs	45,500	17,200	0.723	ND <0.100	ND <0.100	ND <0.100	9.88	2.95	3.35
SV12-5	09/25/95	~5' bgs	879	323	ND <0.100	ND <0.100	ND <0.100	ND <0.100	4.22	12.7	0.33
SV12-12.5	09/25/95	~12.5' bgs	37,400	15,300	ND <0.100	ND <0.100	ND <0.100	ND <0.100	9.87	2.97	3.32
SV13-12	09/25/95	~12' bgs	562	211	ND <0.100	ND <0.100	ND <0.100	ND <0.100	9.35	2.89	3.24
SV14-12	09/25/95	~12' bgs	ND <10	ND <10	ND <0.100	ND <0.100	ND <0.100	ND <0.100	5.71	9.21	0.62
SV15-12	09/25/95	~12' bgs	3,160	683	0.238	ND <0.100	ND <0.100	ND <0.100	4.92	8.79	0.56
SV16-12	09/25/95	~12' bgs	1,420	272	ND <0.100	ND <0.100	ND <0.100	ND <0.100	4.04	9.98	0.40
SV17-12	09/25/95	~12' bgs	ND <10	ND <10	ND <0.100	ND <0.100	ND <0.100	ND <0.100	8.43	11.7	0.72
SV18-11.5	09/25/95	~11.5' bgs	18	ND <10	ND <0.100	ND <0.100	ND <0.100	ND <0.100	4.61	17.0	0.27
SV19-11	09/25/95	~11' bgs	ND <10	ND <10	ND <0.100	ND <0.100	ND <0.100	ND <0.100	5.93	14.5	0.41

NOTES:
ND Not Detected at the listed laboratory detection limits.
ppmv Parts Per Million Volumetric.
TVH Total Volatile Hydrocarbons.
a Methane concentration for each soil vapor sample is included in the corresponding TVH concentration.

TABLE 3
CAPROCK GROUNDWATER SAMPLE ANALYTICAL RESULTS

Sample Number	Sample Date	Water Table Depth	TPH-O (mg/L)	TPH-G (mg/L)	benzene[a] (mg/L)	toluene[a] (mg/L)	ethylbenzene[a] (mg/L)	xylenes[a] (mg/L)
MW1-1W	10/02/95	~12.57' bgs	ND <0.5	ND <0.05	ND <0.0005	ND <0.0005	ND <0.0005	ND <0.0005
MW1-2W	07/18/96	~12.56' bgs	NA	ND <0.0500[a]	ND <0.000500	ND <0.000500	ND <0.000500	ND <0.00100
MW2-1W	10/02/95	~11.40' bgs	NA	ND <0.05	ND <0.0005	ND <0.0005	ND <0.0005	ND <0.0005
MW2-2W	07/18/96	~11.40' bgs	NA	0.226[a]	ND <0.000500	ND <0.000500	ND <0.000500	ND <0.00100
MW3-1W	10/02/95	~12.15' bgs	ND <0.5	0.10	ND <0.0005	ND <0.0005	0.0008	ND <0.0005
MW3-2W	07/18/96	~12.13' bgs	NA	ND <0.0500[a]	ND <0.000500	ND <0.000500	ND <0.000500	ND <0.00100
MW4-1W	10/02/95	~11.42' bgs	ND <0.5	1.5	0.074	0.084	0.0012	0.039
MW4-2W	07/18/96	~11.41' bgs	ND <1.00	0.969[a]	0.199	0.0435	ND <0.000500	0.0121
MW5-1W	10/02/95	~12.28' bgs	NA	1.4	ND <0.0005	ND <0.0005	0.018	0.0009
MW5-2W	07/18/96	~12.26' bgs	NA	0.218[a]	ND <0.000500	ND <0.000500	ND <0.000500	ND <0.00100
MW6-1W	10/02/95	~12.47' bgs	ND <0.5	0.21	0.0056	ND <0.0005	0.0022	ND <0.0005
MW6-2W	07/18/96	~12.47' bgs	ND <1.00	0.371[a]	0.0235	0.00128	ND <0.000500	ND <0.00100
MW7-1W	10/02/95	~12.63' bgs	NA	1.1	0.013	ND <0.0005	0.0043	0.0010
MW7-2W	07/18/96	~12.63' bgs	NA	1.530[a]	0.00205	ND <0.000500	0.000539	0.00124
MW8-1W	07/18/96	~12.21' bgs	NA	ND <0.0500[a]	0.00558	0.00113	ND <0.000500	0.00255
DOH Tier I Groundwater Action Levels			NGAL	NGAL	1.7	2.1	0.14	10

NOTES:
DOH Tier I Groundwater Action Levels are based on onsite rainfall ≤200 cm/year and drinking water source not threatened.
NA Not Analyzed.
NGAL No DOH Tier I Groundwater Action Level.
ND Not Detected at the listed laboratory practical quantitation limits or reporting limits.
a Laboratory reported analyses in µg/L (0.001 mg/L).

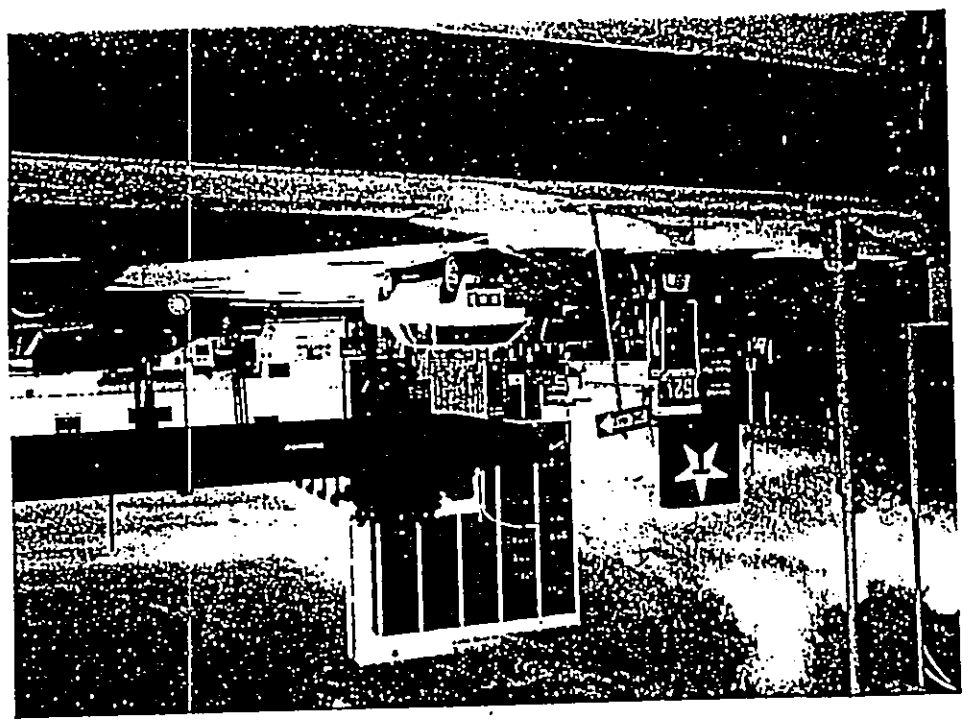
TABLE 4
CAPROCK WATER TABLE ELEVATIONS

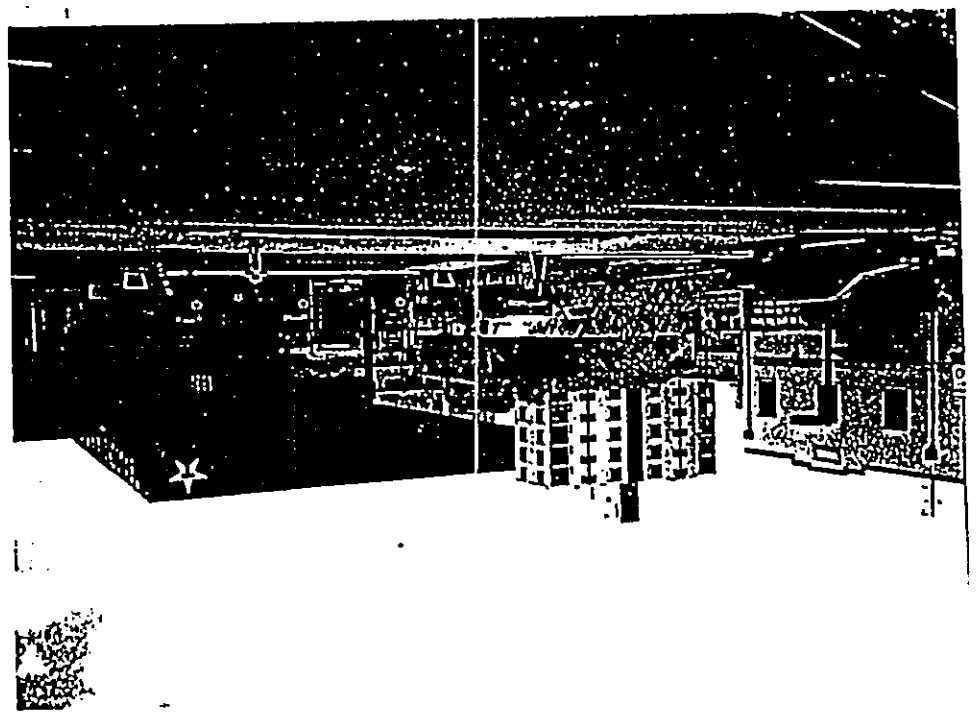
Well Numbers	Well Surface Elevations[a] (feet, MSL)	10/02/95 Caprock Water Table Depths (feet, bgs)	10/02/95 Caprock Water Table Elevations (feet, MSL)	07/18/96 Caprock Water Table Depths (feet, bgs)	07/18/96 Caprock Water Table Elevations (feet, MSL)
MW-1	14.32	12.57	1.75	12.56	1.76
MW-2	13.15	11.40	1.75	11.40	1.75
MW-3	13.86	12.15	1.71	12.13	1.73
MW-4	13.04	11.42	1.62	11.41	1.63
MW-5	14.01	12.28	1.73	12.26	1.75
MW-6	14.22	12.47	1.75	12.47	1.75
MW-7	14.36	12.63	1.73	12.63	1.73
MW-8	not surveyed[b]	not measured[c]	not applicable[d]	12.21	not applicable[d]

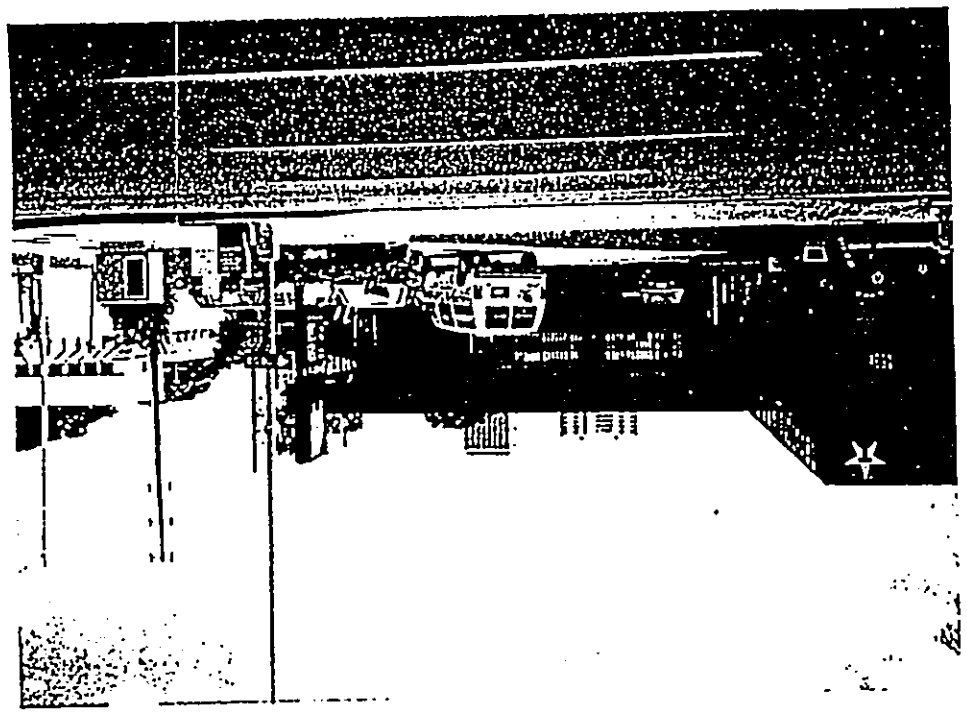
NOTES:
bgs below ground surface.
MSL Mean Sea Level.
a Surface elevations are top of north side of well cover rim.
b MW-8 was installed after the wellhead survey.
c MW-8 was installed after the initial groundwater monitoring event.
d Caprock water table elevations for MW-8 cannot be calculated, because its surface elevation was not surveyed.

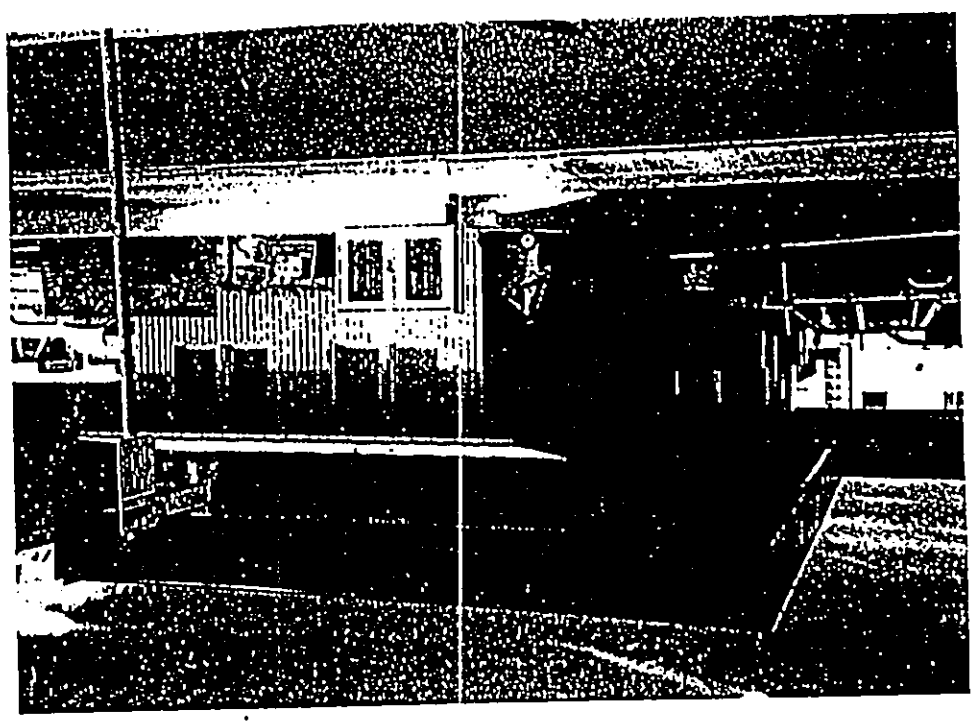
APPENDIX A

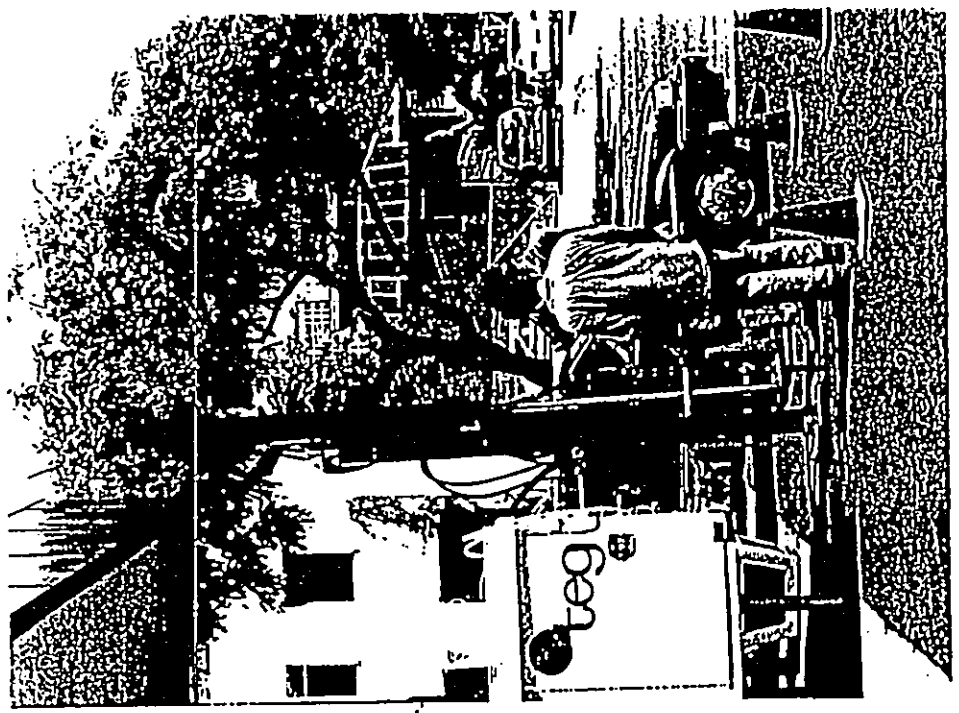
PHOTOGRAPHS

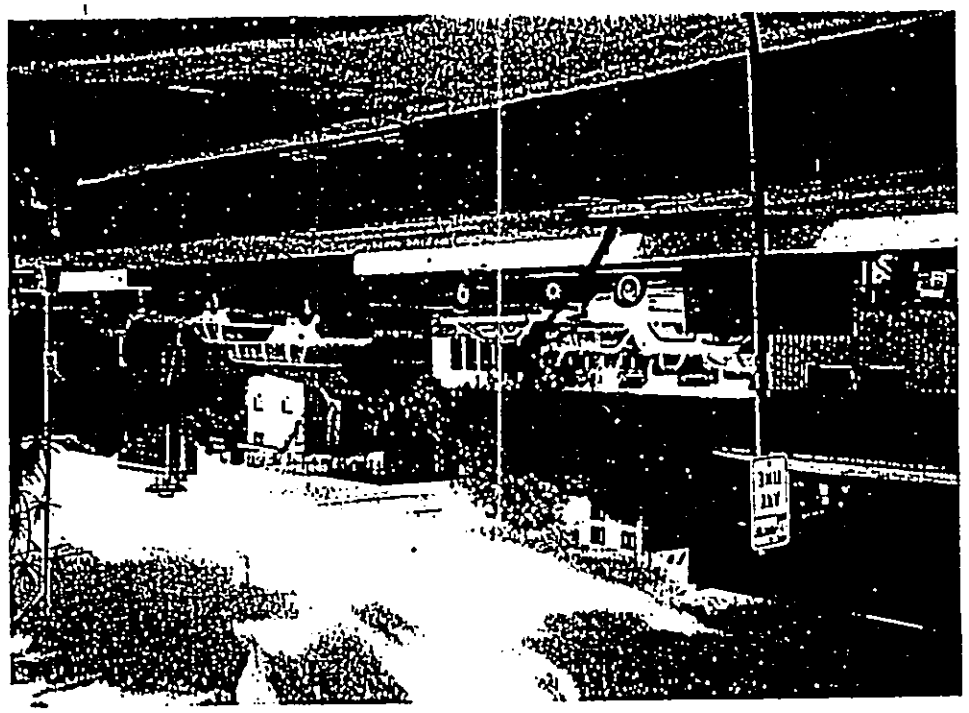


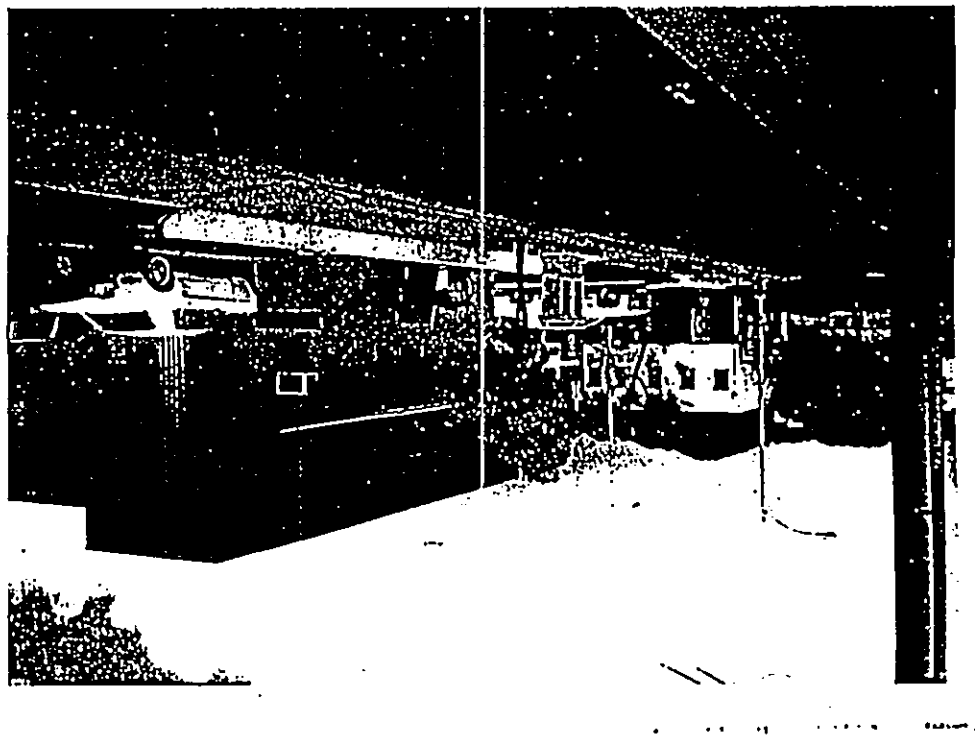












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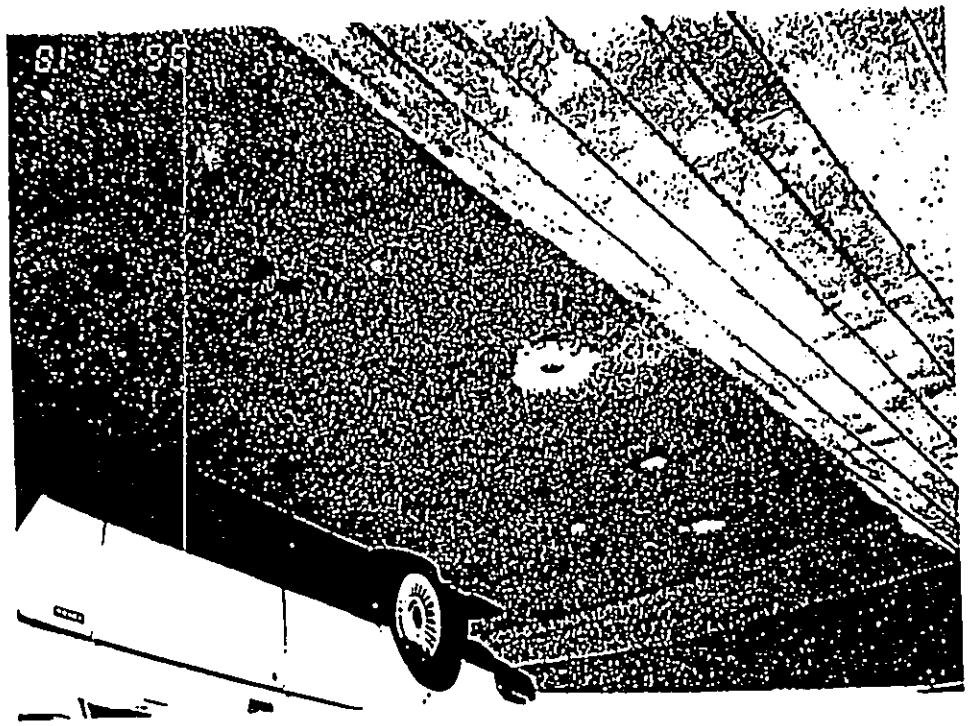

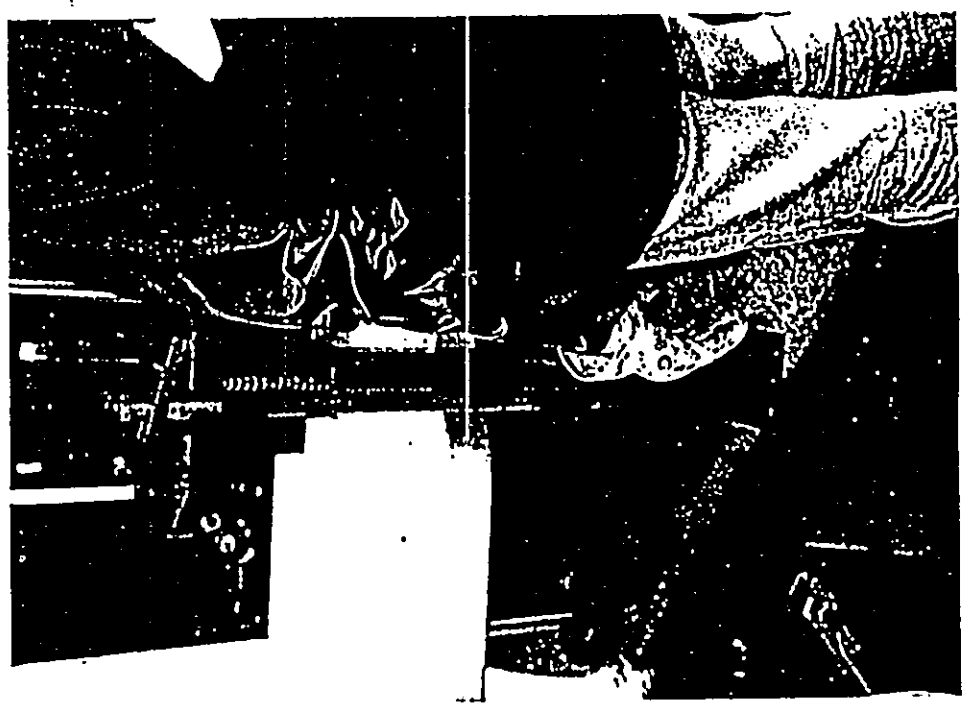

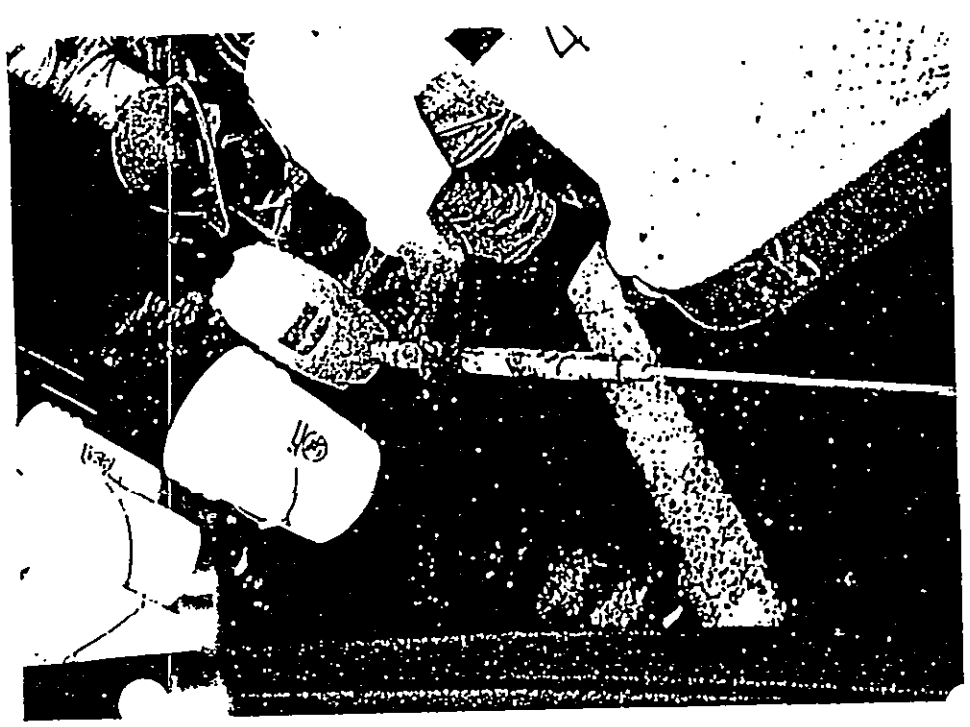

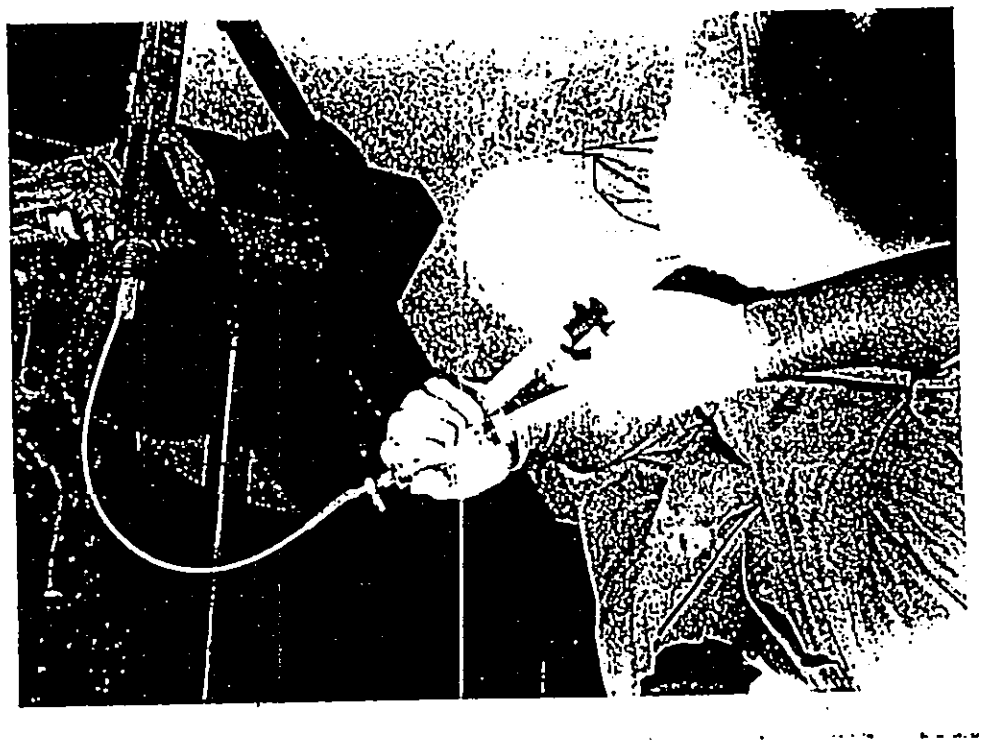

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APPENDIX B

HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN

For

TEXACO ENVIRONMENTAL SERVICES

At

KING STREET TEXACO
1239 SOUTH KING STREET
HONOLULU, HAWAII
TMK No. 2-3-12:44

Prepared by

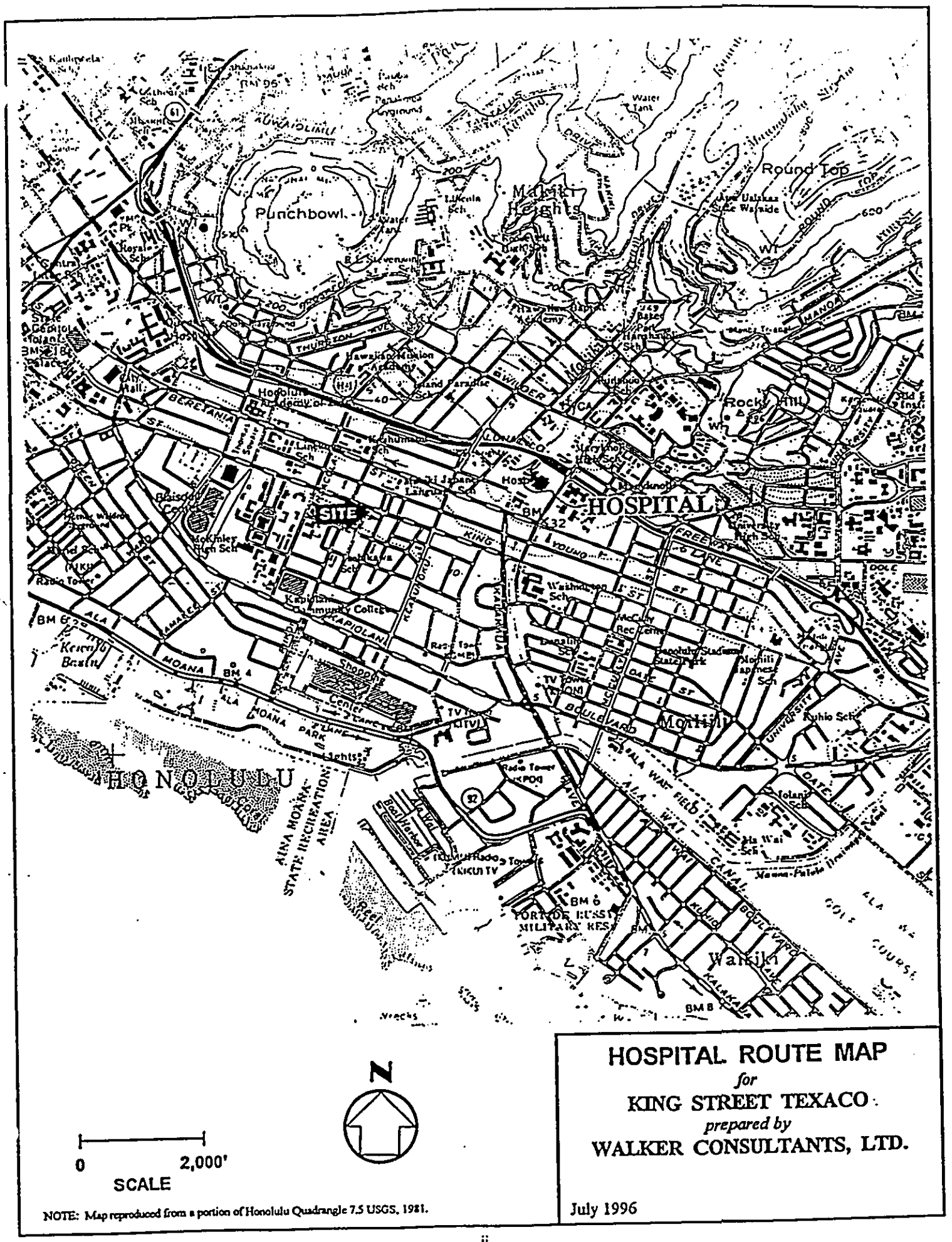
WALKER CONSULTANTS, LTD.
7192 Kalanianaole Highway
Suite G-220
Honolulu, Hawaii 96825
808-395-0392

	Name	Date
WCL Project Manager:	[signature]	7/16/96
WCL Health and Safety Representative:	David W. Mark	7/16/96

EMERGENCY CONTACTS

In the event of any situation or unplanned occurrence requiring assistance, the appropriate contact(s) should be made from the list below. For emergency situations, contact should first be made with the field team leader (or designee), who will notify emergency personnel, who will then contact the appropriate response teams. The emergency contacts list must be kept in an easily accessible location at the site.

Contingency Contacts	**Telephone Number**
Nearest telephone located onsite	284-4591
Fire Department	911
Police	911
Ambulance Service	911
County Sheriff	911
Chemtrec	1-800-424-9300
Texaco Refining & Marketing Inc..	533-1886
Medical Emergency	
Hospital Name	Kapiolani Medical Center
Hospital Address	1319 Punahou Honolulu, Hawaii
Hospital Telephone Number	973-8511
Ambulance Service Telephone Number	911
Travel Time from Site	15 minutes
Map to Hospital	See next page
Route to Hospital	Right onto King Street approx. 1/2 mile, left onto Punahou approx. 1/4 mile, right on Bingham, 2nd entrance, follow signs to emergency room.
Walker Consultants, Ltd. Contacts	
Project Manager & Health and Safety Officer	Duncan Walker Office: 395-0392 Cellular: 284-4591
Field Team Leader	Duncan Walker Office: 395-0392 Cellular: 284-4591



NOTE: Map reproduced from a portion of Honolulu Quadrangle 7.5 USGS, 1981.

HOSPITAL ROUTE MAP

for

KING STREET TEXACO

prepared by

WALKER CONSULTANTS, LTD.

July 1996

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(Continued)

LIST OF TABLES

SECTION 1

INTRODUCTION

1.1 PURPOSE AND POLICY

The purpose of this Health and Safety Plan is to establish personnel protection standards and mandatory safety practices and procedures for all onsite work conducted by Walker Consultants, Ltd. (WCL). This Health and Safety Plan assigns responsibilities, establishes standard operating procedures, and provides for contingencies that may arise while operations are being conducted at the site described below.

The provisions of this Health and Safety Plan are mandatory for all field personnel onsite. All WCL field personnel and all other field personnel onsite will abide by this Health and Safety Plan, at a minimum. Any supplemental health and safety plans used by others shall at least conform to this Health and Safety Plan. All personnel who engage in field activities onsite must be familiar with this Health and Safety Plan and comply with its requirements.

1.2 SITE LOCATION AND USAGE

The site is located at 1239 South King Street, Honolulu, Hawaii 96814 (the Property). The Property is occupied by the King Street Texaco Service Station.

1.3 SCOPE OF WORK

The field tasks to be performed at the Property are expected to include:

1. Conducting a Subsurface Soil Investigation, including collecting soil samples.
2. Drilling and installing groundwater monitoring wells, including collecting soil and groundwater samples.
3. Conducting a Soil Vapor Survey, including collecting soil vapor samples for onsite laboratory analyses.

1.4 PROJECT TEAM ORGANIZATION

Table 1.1 describes the responsibilities of all onsite personnel associated with this project. The names of principal onsite personnel associated with this project are listed below (the Field Team Leader may also be the Site Safety Officer):

Project Manager:	Duncan Walker
Field Team Leader:	Duncan Walker
Site Safety Officer:	Duncan Walker

TABLE 1.1
ONSITE PERSONNEL

Title	General Description	Responsibilities
Project Manager	Reports to upper-level management. Has authority to direct response operations. Assumes total control over site activities.	Prepares and organizes Work Plan, Site Safety Plan, and the field team.
		Obtains permission for site access and coordinates activities with appropriate officials.
		Ensures that the Work Plan is completed and on schedule.
		Briefs the field teams on their specific assignments.
		Uses the site safety and health officer to ensure that safety and health requirements are met.
		Prepares the final report and support files on the response activities.
		Serves as the liaison with public officials.
Site Safety Officer	Advises the Project Manager on all aspects of health and safety onsite. Stops work if any operation threatens worker or public health or the Access Points.	Periodically inspects protective clothing and equipment.
		Ensures that protective clothing and equipment are properly stored and maintained.
		Controls site entry and exit.
		Coordinates safety and health program activities with the Project Safety Officer.
		Confirms each team member's suitability for work based on a physician's recommendation.
		Monitors the work parties for signs of stress, and fatigue.
		Implements the Site Safety Plan.
		Conducts periodic inspections to determine if the Site Safety Plan is being followed.
		Knows emergency procedures, evacuation routes, and the telephone numbers of the ambulance, local hospital, poison control center, and fire and police departments.
		Notifies, when necessary, local public emergency officials.
		Coordinates emergency medical care.
		Sets up decontamination solutions appropriate for the type of chemical contamination onsite.
		Stops work if any operation threatens worker or public health or the Access Points. Controls the decontamination of all equipment, personnel, and samples from the contaminated areas.

TABLE 1.1 (Continued)
ONSITE PERSONNEL

Title	General Description	Responsibilities
Site Safety Officer (Continued)	Advises the Project Manager on all aspects of health and safety onsite. Stops work if any operation threatens worker or public health or the Access Points.	Controls the decontamination of all equipment, personnel, and samples from the contaminated areas
		Assures proper disposal of contaminated clothing and materials.
		Ensures that all required equipment is available.
		Advises medical personnel of potential exposures and consequences.
		Notifies emergency response personnel by telephone or radio in the event of an emergency.
Field Team Leader	Responsible for field team operations and safety.	Manages field operations.
		Executes the Work Plan and Schedule.
		Enforces safety procedures.
		Coordinates with the Site Safety Officer in determining protection level.
		Enforces site control.
		Documents field activities and sample collection.
		Serves as a liaison with public officials.
Work Team	Performs the field tasks described in the Work Plan.	Safely completes the onsite tasks required to fulfill the Work Plan.
		Complies with Site Health and Safety Plan.
		Notifies Site Safety Officer or supervisor of suspected unsafe conditions.

SECTION 2

RISK ANALYSIS

2.1 CHEMICAL HAZARDS

A number of products containing hazardous chemicals may be encountered onsite. The chemicals of primary concern will be those originating from gasoline. Chemical constituents of gasoline include benzene, ethylbenzene, toluene, and xylenes (BTEX).

The toxicological properties of these compounds are summarized in Table 2.1. The Material Safety Data Sheets (MSDS) for gasoline are contained in Appendix A. These compounds can be taken into the body by oral ingestion, by absorption through the skin, and by inhalation. Benzene is a known human carcinogen.

TABLE 2.1
TOXICOLOGICAL PROPERTIES OF COMPOUNDS

Compound	LEL (%)	PEL-TWA (ppm)	PEL-STEL (ppm)	IDLH (ppm)	Odor Characteristics	Acute Toxic Effects of Compound
Benzene	1.3	1	5	3,000	Aromatic	Headache, dizziness, lassitude, (inhalation); inflammation, blistering (dermal).
Ethylbenzene	1.0	100	125	2,000	Aromatic	Irritation of skin, eyes, nose, and upper respiratory tract
Gasoline	1.3	300	none	none	Aromatic	See those for BTEX.
Toluene	1.2	100	150	2,000	Aromatic, Sour	Nausea, headache, confusion, lack of coordination.
Xylenes	1.1	100	150	1,000	Aromatic	Upper respiratory tract irritation; eye irritation; blistering and cracking skin.

NOTES
LEL Lower Explosive Limit.
PEL-TWA Permissible Exposure Level-8-Hour Time Weighted Average, OSHA 1987, as adopted by the State of Hawaii.
PEL-STEL Permissible Exposure Level-Short Term (15 minute average) Exposure Level.
IDLH Level which is Immediately Dangerous to Life and Health.
NA Not Applicable.

2.2 PHYSICAL HAZARDS

2.2.1 Explosion and Fire

BTEX and gasoline, which have flash points that range from 12° to 84°F, are highly flammable and can be explosive.

2.2.2 Heat Stress

The use of personal protective equipment (PPE) may create heat stress. Monitoring of personnel wearing protective clothing should commence when the ambient temperature is 70°F or above, using the frequencies listed below in Table 2.2.

TABLE 2.2
SUGGESTED FREQUENCY OF PHYSIOLOGICAL MONITORING FOR FIT AND ACCLIMATED WORKERS[a]

Adjusted Temperature[b]	Normal Work Ensemble[c]	Impermeable Ensemble
90°F or above (32.3°C or above)	After each 45 minutes of work	After each 15 minutes of work
87.5-90°F (30.8-32.3°C)	After each 60 minutes of work	After each 30 minutes of work
82.5-87.5°F (28.1-30.8°C)	After each 90 minutes of work	After each 60 minutes of work
77.5-82.5°F (25.3-28.1°C)	After each 120 minutes of work	After each 90 minutes of work
72.5-77.5°F (22.5-25.3°C)	After each 150 minutes of work	After each 120 minutes of work

NOTES

a For work levels of 250 kilocalories/hour.

b Calculate the adjusted air temperature (TA ADJ) by using this equation:

TA ADJ °F = TA °F + (13 x % Sunshine).

Measure air temperature (TA) with a standard mercury-in-glass thermometer, with the bulb shielded from radiant heat. Estimate percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow. (for example, 100 percent sunshine = no cloud cover and a sharp, distinct shadow; 0 percent sunshine = no shadows.)

c A normal work ensemble consists of cotton coveralls or other cotton clothing with long pants.

Monitoring frequency should increase as the ambient temperature increases or as slow recovery rates are observed. Heat-stress monitoring should be performed by a person with a current first aid certification who is trained to recognize heat stress symptoms. For monitoring the body's recuperative abilities to excess heat, one or more of the following techniques will be used.

To monitor the worker, measure the heart rate and oral temperature as follows:

1. Heart rate. Count the radial pulse during a 30-second period as early as possible in the rest period.
   a. If the heart rate exceeds 100 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same.
   b. If the heart rate still exceeds 100 beats per minute at the next rest period, shorten the following work cycle by one-third.

2. Oral temperature. Use a clinical thermometer (3 minutes under the tongue) or similar device to measure the oral temperature at the end of the work period (before drinking).
   a. If oral temperature exceeds 99.6°F (37.6°C), shorten the next work cycle by one-third without changing the rest period.

b. If oral temperature still exceeds 99.6°F (37.6°C) at the beginning of the next rest period, shorten the following cycle by one-third.

c. Do not permit a worker to wear a semipermeable or impermeable garment when oral temperature exceeds 100.6°F (38.1°C).

Prevention of Heat Stress

Proper training and preventive measures will aid in averting loss of worker productivity and serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illness. To avoid heat stress the following steps should be taken:

1. Adjust work schedules.
   a. Modify work/rest schedules according to monitoring requirements.
   b. Mandate work slowdowns as needed.
   c. Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.

2. Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.

3. Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluids intake must approximately equal the amount of water lost in sweat, i.e., eight fluid ounces (0.23 liters) of water must be ingested for approximately every eight ounces (0.23 kg) of weight lost. The normal thirst mechanism is not sensitive enough to ensure that enough water will be consumed to replace lost sweat. When heavy sweating occurs, encourage the worker to drink more. The following strategies may be useful:
   a. Maintain water temperature at 50°-60°F (10°-16.6°C).
   b. Provide small disposable cups that hold about four ounces (0.1 liter).
   c. Have workers drink 16 ounces (0.5 liters) of fluid (preferably water or dilute drinks) before beginning work.
   d. Urge workers to drink a cup or two every 15 to 20 minutes, or at each monitoring break. A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per day are recommended, but more may be necessary to maintain body weight.

4. Train workers to recognize the symptoms of heat related illness.

2.2.3 Sunburn

Worker sunburn will be primarily mitigated by the coverage afforded by work clothes and PPE. Exposed portions of faces, necks, hands, and arms should be monitored from time to time for soreness and(or) redness, and sun-block will be available onsite to provide protection for these exposed areas.

2.2.4 Other Hazards

Other physical hazards at the site include:

- overhead power lines.
- underground utilities and pipelines.
- vehicular traffic.

SECTION 3

PERSONNEL PROTECTION AND MONITORING

3.1 MEDICAL SURVEILLANCE

WCL will utilize the services of a licensed occupational health physician with knowledge and/or experience in the hazards associated with the project to provide the medical examinations and surveillance specified herein.

Personnel undergo medical surveillance prior to employment at WCL, and thereafter at 12-month intervals. The 12-month medical examination includes a complete medical and work history and a standard occupational physical, examination of all major organ systems, complete blood count with differential (CBC), and a SMAC/23 blood chemistry screen which includes calcium, phosphorous, glucose, uric acid, BUN, creatinine, albumin, SGPT, SGOT, LDH, globulin, A/G ratio, alkaline phosphatase, total protein, total bilirubin, triglyceride, cholesterol, and a creatinine/BUN ratio. Additionally, a pulmonary function test will be performed by trained personnel to record Forced Vital Capacity (FVC) and Forced Expiratory Volume (FEV 1.0). An audiogram and visual acuity measurement, including color perception, is provided. The medical exam is performed under the direction of a licensed Occupational Health Physician. A medical certification as to the fitness or unfitness for employment on hazardous waste projects, or any restrictions on his/her utilization that may be indicated, is provided by the physician. This evaluation will be repeated as indicated by substandard performance or evidence of particular stress that is evident by injury or time loss illness on the part of any worker.

3.2 SITE-SPECIFIC TRAINING

The Site Safety Officer will be responsible for developing a site-specific occupational hazard training program and providing training to all WCL personnel that are to work onsite. This training will be conducted prior to starting field work and will consist of the following topics:

- Names of personnel responsible for site safety and health.
- Safety, health, and other hazards at the site.
- Proper use of personal protective equipment.
- Work practices by which the employee can minimize risk from hazards.
- Safe use of engineering controls and equipment onsite.
- Acute effects of chemicals that may be present at the site.
- Decontamination procedures.

3.3 PERSONAL PROTECTIVE EQUIPMENT

Level D PPE will be used for initial entry onsite and initially for all work activities. The level of personal PPE will be upgraded to Level C if any of the action levels discussed in Section 3.5 are exceeded:

Level D PPE will consist of the following:

- Standard work clothes.

- o Safety boots.
- o Hard hat, only during appropriate activities.

Level C PPE will consist of the following:

- o Standard work clothes and tyvek coveralls.
- o Half-face air-purifying respirator (APR) fitted with combination dust and organic vapor/acid gas cartridges.
- o PVC inner and nitrile outer gloves.
- o Butyl rubber boots with steel toe and shank.
- o Hard hat, only during appropriate activities.

All personal protective equipment used during the course of this field investigation must meet the following OSHA standards:

Type of Protection	Regulation	Source
Eye and face	29 CFR 1910.133	ANSI Z87.1-1968
Respiratory	29 CFR 1910.134	ANSI Z88.1-1980
Head	29 CFR 1910.135	ANSI Z89.1-1969
Foot	29 CFR 1910.136	ANSI Z41.1-1967

NOTES:
ANSI American National Standards Institute
CFR Code of Federal Regulations

In accordance with OSHA regulations (29 CFR 1910.1025; 29 CFR 1910.134), the half-face APR (fitted with the cartridges specified for use in Level C PPE) must be fit-tested by each worker prior to use.

Half-face APRs cannot be worn under the following conditions:

- o Oxygen-deficient atmosphere (an oxygen concentration less than 19.5 percent).
- o IDLH concentrations listed in Table 2.1.
- o High relative humidity.
- o Contaminant levels which exceed designated use concentrations (50 times the PEL-TWAs listed in Table 2.1).

3.4 MONITORING REQUIREMENTS

If noticeable hydrocarbon odors are present in the breathing zone, then monitoring for organic vapors in the breathing zone will be conducted with a Photovac Microtip or other photo ionization detector (PID). PID readings will be taken under the following circumstances:

- o Upon initial entry onto the site.
- o When weather conditions change.
- o When work begins and periodically during sampling and soil excavation and handling.
- o When work begins at another portion of the site.

3.5 ACTION LEVELS

Dust (potentially hazardous due to possible contamination by BTEX) may be generated onsite during excavation, soil handling, and backfilling. Water spraying will be used for dust suppression, if necessary.

Level D PPE will be used for initial entry onsite and initially for all work activities. The level of personal PPE will be upgraded to Level C PPE if any of the following conditions occur:

- The total volatile organic compounds (VOCs) concentration in the breathing zone exceeds 300 ppmv (parts per million volumetric).
- The benzene concentration in the breathing zone equals or exceeds 1 ppmv.
- The Field Team Leader decides that dust conditions warrant it.

All work in the affected area will cease and workers will vacate the area until additional monitoring indicates that these conditions are temporary and(or) engineering controls are implemented, if one or more of the following occurs:

- The total VOCs concentration exceeds 1,000 ppmv.
- The benzene concentration exceeds 10 ppmv.
- The available oxygen concentration is less than 19.5 percent.

If further monitoring indicates that these conditions are permanent and(or) implementation of engineering controls do not mitigate these conditions, then work in the affected area will cease and workers will vacate the area, and the Project Health and Safety Officer will be notified. If the only condition requiring long-term work stoppage is a total VOCs concentration exceeding 1,000 ppmv, then additional chemical-specific monitoring for TEX (toluene, ethylbenzene, and xylenes) using Drager tubes will be implemented to evaluate whether IDLH conditions have been exceeded. Work may resume if the chemical-specific monitoring for TEX indicates that IDLH conditions have not been exceeded, but additional TEX monitoring may be necessary if a total VOCs concentration exceeding 1,000 ppmv is encountered in the future

SECTION 4

WORK ZONES AND DECONTAMINATION

4.1 ONSITE WORK ZONES

If Level C PPE is necessary, then work zones will be delineated onsite to reduce the spread of hazardous materials by workers from the contaminated areas to the clean areas. The flow of personnel between the zones will be controlled and unauthorized persons will be prohibited. The establishment of the work zones will help ensure that (1) personnel are properly protected against the hazards present where they are working, (2) work activities and contamination are confined to the appropriate areas, and (3) personnel can be located and evacuated in an emergency.

4.1.1 Exclusion Zone

An Exclusion Zone will be established at the job site if Level C PPE is necessary. In general, the Exclusion Zone will consist of the excavation and stockpiled soil areas, and the Exclusion Zone will be delineated by barricades, warning tape, and traffic cones/delineator posts. All personnel within the Exclusion Zone must don Level C PPE as discussed in Section 3.3, and unprotected workers and visitors will not be allowed within/downwind of the Exclusion Zone. No eating, drinking, or smoking will be allowed in the Exclusion Zone.

4.1.2 Decontamination Zone

A Decontamination Zone will be utilized if Level C PPE is necessary. The Decontamination Zone will be established between the Exclusion Zone and the Support Zone, and will include the personnel and equipment necessary for decontamination of equipment and personnel (discussed below). The Decontamination Zone will be delineated by barricades, warning tape, and traffic cones/delineator posts. Personnel and equipment in the Exclusion Zone must pass through this zone before entering the Support Zone. The Decontamination Zone should always be located upwind of the Exclusion Zone, and unprotected workers and visitors will not be allowed within the Decontamination Zone. No eating, drinking, or smoking will be allowed in the Decontamination Zone.

4.1.3 Support Zone

The Support Zone will include the remaining areas of the job site if Level C PPE is necessary. Break areas, operational direction and support facilities (to include supplies, equipment storage and maintenance areas) will be located in this area. No equipment or personnel will be permitted to enter the Support Zone from the Exclusion Zone without passing through the personnel or equipment decontamination station. Eating and drinking, but no smoking, will be allowed only in this area.

4.2 DECONTAMINATION

4.2.1 Personnel Decontamination

Full decontamination procedures which are described herein will be necessary when Level C PPE is used. The following OSHA-specified procedures include steps necessary for complete decontamination prior to entry into the Support Zone, and steps necessary if a worker only needs to change a respirator or respirator canister. Modification can be made to the eight-station decontamination process depending upon the extent of worker contamination. For

example, outer gloves and safety boots may be carefully removed and may be subsequently reused without washing/rinsing if they are not significantly contaminated.

APR, APR Cartridge, and(or) Outer Glove Replacement

If a worker leaves the exclusion zone to change an APR, APR cartridge, and(or) outer gloves the worker should leave the tools and equipment in the Exclusion Zone and this is the only step in the decontamination procedure. The worker removes the outer gloves (and discards them if they are to be replaced, exchanges the APR and(or) APR cartridge (if these are to be replaced), dons the outer gloves, and returns to duty.

Station 1: Segregated Equipment Drop

Deposit equipment used onsite (tools, monitoring instruments, clipboards, hard hats, safety vests, etc.) on plastic drop cloths or in different containers with plastic liners. Each type of equipment will probably be contaminated to a different degree. Segregation at the drop reduces the probability of cross-contamination.

Station 2: Safety Boot and Outer-Glove Wash

Thoroughly wash safety boots and outer-gloves. Scrub with long-handle, soft-bristle scrub brush and copious amounts of alconox/water solution. Necessary equipment includes:

1. Wash tub (large enough for person to stand in)
2. Alconox/water solution
3. Long-handle soft-bristle scrub brushes

Station 3: Safety Boot and Outer-Glove Rinse

Rinse off alconox/water solution using copious amounts of water. Repeat as many times as necessary. Necessary equipment includes:

1. Wash tub (large enough for person to stand in)
2. Spray unit with water
3. Long-handle, soft-bristle scrub brushes

Station 4: Outer Gloves Removal

Carefully remove the outer gloves and deposit in plastic bag.

Station 5: Removal and Disposal of Tyvek Suit

Carefully remove tyvek suit inside-out, and deposit it in a plastic bag.

Station 6: Inner-Glove Removal

Carefully remove inner gloves and deposit in a plastic bag.

Station 7: Field Wash

Wash hands and face. Necessary equipment includes:

1. Water
2. Soap

3. Table
4. Wash and rinse buckets
5. Clean towels

Station 8: Redress

Personnel re-entering Exclusion Zone, must don PPE (e.g., tyvek suits, gloves, etc.); PPE may be reused if not significantly contaminated. Necessary equipment includes:

1. Table
2. PPE, including APR

4.2.2 Equipment Decontamination

Gross contamination will be removed from the excavating machines, equipment, tools and test meters prior to leaving the site. Excavating machines will be steam cleaned, and smaller tools and equipment will be washed with Alconox, and rinsed with water.

SECTION 5

ACCIDENT PREVENTION AND CONTINGENCY PLAN

5.1 ACCIDENT PREVENTION

All field personnel will receive health and safety training prior to the start of onsite work. On a day-to-day basis, individual workers should be constantly alert for indicators of potentially hazardous situations and for signs and symptoms in themselves and others that warn of hazardous conditions and exposures. Rapid recognition of dangerous situations can avert an emergency. Before daily work assignments, the Field Team Leader should hold organizational meetings. Discussion should include:

- Tasks to be performed.
- Time constraints (e.g., rest breaks, APR cartridge changes, etc.).
- Hazards that may be encountered, including their effects, how to recognize symptoms or monitor them, concentration limits, or other danger signals.
- Emergency procedures.

Prior to any excavation, efforts should be made to determine whether underground installations will be encountered and, if so, where these installations are located. Level D PPE (Section 3.3), including safety boots, must be worn during all onsite work. The Field Team Leader or Site Safety Officer will provide constant onsite supervision of the workers and visitors to ensure that they are meeting the health and safety requirements. If deficiencies are noted, work will be stopped and corrective action will be taken (e.g., retrain, provide additional safety equipment). Reports of health and safety deficiencies and the corrective action taken will be forwarded to the Project Manager. Periodic air monitoring will be performed by the Site Safety Officer to ensure that proper personal protection is being utilized.

5.2 CONTINGENCY PLAN

General emergency procedures, and specific procedures for chemical exposure and personal injury, are described below.

5.2.1 Emergency Procedures

In the event that an emergency develops onsite, the procedures delineated herein are to be immediately followed. Emergency conditions are considered to exist if:

- Any worker is involved in an accident or experiences any adverse effects or symptoms of exposure while onsite.
- A condition is discovered that suggests the existence of a situation more hazardous than anticipated.

5.2.2 Chemical Exposure

If a worker demonstrates symptoms of chemical exposure the procedures outlined below should be followed:

- Another worker (buddy) should remove the individual from the immediate area of contamination. The buddy should communicate to the Field Team Leader (via voice or hand signals) of the chemical exposure. The Field Team Leader should contact the appropriate emergency response agency.
- Precautions should be taken to avoid exposure of other workers to the chemical.
- If the chemical is on the worker's clothing, then the chemical should be neutralized or removed if it is safe to do so.
- If the chemical has contacted the worker's skin, then the skin should be washed with copious amounts of water.
- In case of eye contact, an emergency eye wash should be used. Eyes should be washed for at least 15 minutes.
- All chemical exposure incidents must be reported in writing to the Health and Safety Representative. The Site Safety Officer or Field Team Leader is responsible for completing the attached Accident Report.

5.2.3 Personal Injury

In case of personal injury at the site, the following procedures should be followed:

- Another worker (buddy) should signal the Field Team Leader (via voice or hand signals) that an injury has occurred.
- A worker trained in first aid can administer treatment to an injured worker.
- The injured worker should then be transported to the nearest hospital or medical center (Page i and ii). If necessary, an ambulance should be called to transport the injured worker.
- For minor injuries, the injured worker can be treated onsite.
- The Field Team Leader or Site Safety Officer is responsible for making certain that the Accident Report is completed. The Accident Report is to be submitted to the Health and Safety Representative. Follow-up action should be taken to correct the situation that caused the accident.

5.2.4 Evacuation Procedures

If monitoring results or other conditions indicate the need to cease work and evacuate the work area, then the following procedures should be followed:

- The Field Team Leader will initiate the evacuation procedure by signaling (via voice or hand signal) to leave the site.
- All personnel in the work area should evacuate the area and meet in the common designated area.
- All personnel suspected to be in or near the contract work area should be accounted for and the whereabouts of missing persons determined immediately.
- Further instructions will then be given by the Field Team Leader.

5.2.5 Procedures To Be Implemented in the Event of a Major Fire, Explosion or Onsite Health Emergency Crisis

In the event of a major fire, explosion or onsite health emergency crisis, the following procedures should be followed:

- Notify the paramedics and/or fire department, as necessary (Page i).
- Signal the evacuation procedure outlined above and implement the entire procedure.
- Isolate the problem source area.
- Stay upwind of any fire or the problem source area.
- Keep area surrounding the problem source area clear after the incident occurs.
- Complete Accident Report and distribute it to appropriate personnel.

SECTION 6

STANDARD SAFE WORK PRACTICES

STANDARD SAFE WORK PRACTICES

The following are considered standard safe work practices:

1. Eating, drinking, chewing tobacco, smoking and carrying matches or lighters is prohibited in a contaminated or potentially contaminated area or where the possibility for the transfer of contamination exists.

2. All workers should avoid contact with potentially contaminated substances. Do not walk through puddles, pools, mud, etc. Avoid, whenever possible, kneeling on the ground, leaning or sitting on equipment or ground. Do not place monitoring equipment on potentially contaminated surfaces (i.e., ground, etc.).

3. All workers should make use of their senses (all senses) to alert them to potentially dangerous situations in which they should not become involved, (i.e., presence of strong and irritating or nauseating odors).

4. All workers should prevent, to the extent possible, spillages. In the event that a spillage occurs, contain liquid if possible.

5. All workers shall be familiar with the physical characteristics of investigations, including:

   a. Wind direction in relation to excavations, stockpiles, and nearby buildings.
   b. Accessibility to associates, equipment, vehicles and communication devices.
   c. Hot zones (areas of known or suspected contamination).
   d. Site access.
   e. Nearest water sources.

6. All wastes generated during activities onsite should be disposed of as directed by the project manager or onsite representative.

7. Personal protective equipment specified in Section 3 will be utilized by workers onsite.

APPENDIX A

MATERIAL SAFETY DATA SHEETS

Date Issued: 05-12-94
Supersedes: 02-24-84

TEXACO
MATERIAL SAFETY DATA SHEET
NOTE: Read and understand Material Safety Data Sheet before handling or disposing of product.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATERIAL IDENTITY
Product Code and Name:
00365 TEXACO UNLEADED GASOLINE
Chemical Name and/or Family or Description:
Automotive Lead-Free Gasoline

Manufacturer's Name and Address:
TEXACO REFINING AND MARKETING, INC
P.O. Box 7812
Universal City, CA 91608

Telephone Numbers:

Transportation Emergency	-Company	: (914) 831-3400
	CHEMTREC	: (800) 424-9300
Health Emergency	-Company	: (914) 831-3400
General MSDS Assistance		: (914) 838-7204
Technical Information	-Fuels	: (914) 838-7336
	-Chemical	: (512) 459-6543
	-Lubricant/Antifreezes	: (800) 782-7852
	-Additives	: (713) 235-6278
	-Solvents	: (800) 876-3738

2. COMPOSITION/INFORMATION ON INGREDIENTS

THE CRITERIA FOR LISTING COMPONENTS IN THE COMPOSITION SECTION IS AS FOLLOWS: CARCINOGENS ARE LISTED WHEN PRESENT AT 0.1 % OR GREATER; COMPONENTS WHICH ARE OTHERWISE HAZARDOUS ACCORDING TO OSHA ARE LISTED WHEN PRESENT AT 1.0 % OR GREATER; NON-HAZARDOUS COMPONENTS ARE LISTED AT 3.0 % OR GREATER. THIS IS NOT INTENDED TO BE A COMPLETE COMPOSITIONAL DISCLOSURE. REFER TO SECTION 14 FOR APPLICABLE STATES' RIGHT TO KNOW AND OTHER REGULATORY INFORMATION.

Product and/or Component(s) Carcinogenic According to:

OSHA	IARC	NTP	OTHER	NONE
X	X	X	X	

Composition: (Sequence Number and Chemical Name)

Seq.	Chemical Name	CAS Number	Range in %
	Gasoline consists mainly of straight chain and branched paraffinic hydrocarbons, olefins, cycloparaffins, and aromatics. The MTBE content may vary based on seasonal requirements from 0-15%. Typical constituents (not intended as manufacturing specifications) include:		
01	* Gasoline		95.00-99.99
02	* Propane, 2-methoxy-2-methyl-	1634-04-4	3.00-9.99
03	* Xylenes	1330-20-7	3.00-9.99
04	* Toluene	108-88-3	3.00-9.99
05	* Benzene	71-43-2	1.00-2.99
06	* 1,2,4-trimethylbenzene	95-63-6	1.00-2.99
07	* Ethylbenzene	100-41-4	1.00-2.99
08	* N-hexane	110-54-3	1.00-2.99

PRODUCT IS HAZARDOUS ACCORDING TO OSHA (1910.1200).
* COMPONENT IS HAZARDOUS ACCORDING TO OSHA.

Exposure Limits referenced by Sequence Number in the Composition Section

Seq.	Limit	
01	300	ppm TWA-OSHA
01	500	ppm STEL-OSHA
01	300	ppm TWA-ACGIH
01	100	ppm TWA-TEXACO
03	100	ppm TWA-OSHA
03	150	ppm STEL-OSHA
03	100	ppm TWA-ACGIH
03	150	ppm STEL-ACGIH
04	100	ppm TWA-OSHA
04	150	ppm STEL-OSHA
04	50	ppm TWA-ACGIH (SKIN)

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
< - LESS THAN > - GREATER THAN

3. HAZARD IDENTIFICATION (CONT)

Sensitization Properties:
Unknown.

Chronic:
No adverse effects have been documented in humans as a result of chronic exposure. Section 11 may contain applicable animal data.

Medical Conditions Aggravated by Exposure:
Because of its irritating properties, repeated skin contact may aggravate an existing dermatitis (skin condition).

Other Remarks:
This product contains benzene. Prolonged and repeated exposure to benzene may cause headaches, loss of appetite, rapid pulse, fatigue, liver and kidney damage, decreased bone-marrow activity with increased bleeding tendencies, and possible irreversible injury to blood forming organs. Prolonged and repeated overexposure to benzene has been associated with aplastic anemia and acute myelogenous leukemia in humans.

4. FIRST AID MEASURES

Eyes:
Immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids apart while flushing to rinse entire surface of eye and lids with water. Get medical attention.

Skin:
Wash skin with plenty of soap and water until all traces of material are removed. Remove and clean contaminated clothing (See Other Instructions). Destroy non-resistant footwear. Get medical attention if skin irritation persists or contact has been prolonged.

Ingestion:
If person is conscious and can swallow, give two glasses of water (16 oz.) but do not induce vomiting. If vomiting occurs, give fluids again. Have medical personnel determine if evacuation of stomach or induction of vomiting is necessary. Do not give anything by mouth to an unconscious or convulsing person.

Inhalation:
If inhaled, remove to fresh air. If not breathing, clear person's airway and give artificial respiration. If breathing is difficult, qualified medical personnel may administer oxygen. Get medical attention immediately.

Other Instructions:
Aspiration of this product during induced emesis may result in severe lung injury. If evacuation of stomach is necessary, use method least likely to cause aspiration, such as gastric lavage after endotracheal intubation. Contact a Poison Center for additional treatment information.

Remove and dry-clean or launder clothing soaked or soiled with this material before reuse. Dry cleaning of contaminated clothing may be more effective than normal laundering. Inform individuals responsible for cleaning of potential hazards associated with handling contaminated clothing.

5. FIRE-FIGHTING MEASURES

Ignition Temperature (degrees F):
850
Flash Point (degrees F):
-40 (PMCC)
Flammable Limits (%):
Lower: 1.4
Upper: 7.6

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
< - LESS THAN > - GREATER THAN

8. EXPOSURE CONTROLS/PERSONAL PROTECTION (CONT)

Ventilation:
Use explosion-proof equipment to maintain adequate ventilation to meet occupational exposure limits, if applicable (see below), prevent accumulation of explosive air-gas mixtures, and avoid significant oxygen displacement. Oxygen levels should be at least 19.5% in confined spaces or other work areas (OSHA value).

Exposure Limit for Total Product:
Gasoline: OSHA PEL-TWA 300 ppm; STEL 500 ppm.
ACGIH TLV-TWA 300 ppm; STEL 500 ppm.
TEXACO TLV-TWA 100 ppm.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:
Light red to light straw liquid

Odor:
Petroleum odor

Boiling Point (degrees F):
> 90

Melting/Freezing point (degrees F):
Not applicable.

Specific Gravity (water=1):
.7 - .77

pH of undiluted product:
Not applicable.

Vapor Pressure:
465 - 775 mmHg at 100.0

Viscosity:
< 1.4 cSt at 37.7 C

VOC Content:
Not determined.

Vapor Density (air=1):
3 - 4

Solubility in Water (%):
.1 - 1

Other: None

10. STABILITY AND REACTIVITY

This Material Reacts Violently With:
(If Others is checked below, see comments for details)

Air	Water	Heat	Strong Oxidizers	Others	None of These
_	_	X	X	_	_

Comments:
None

Products Evolved When Subjected to Heat or Combustion:
Toxic levels of carbon monoxide, carbon dioxide, irritating aldehydes and ketones.

Hazardous Polymerizations: DO NOT OCCUR

11. TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION(ANIMAL TOXICITY DATA)
Median Lethal Dose
Oral:
LD50 Believed to be > 5.00 g/kg (rat) practically non-toxic
Inhalation:
Not determined.

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
< - LESS THAN > - GREATER THAN

13. TRANSPORT INFORMATION

Transportation
DOT:
Proper Shipping Name:
Gasoline
Hazard Class:
3
Identification Number: UN1203
Packing Group: II
Label Required:
Flammable liquid

Marine pollutant:
Not applicable

This product contains a DOT Hazardous Substance or substances, listed in Section 14 of the MSDS. DOT information must be accompanied with RQ notation, or, an otherwise 'Not Regulated' product will be classified as Environmentally Hazardous (solid/liquid) N.O.S., Class 9, IF the product's shipping container holds at least (lbs) 7.14.

IMDG:
Proper Shipping Name:
Not evaluated

ICAO:
Proper Shipping Name:
Not evaluated

TDG:
Proper Shipping Name:
Not evaluated

14. REGULATORY INFORMATION

Federal Regulations:
SARA Title III:
Section 302/304 Extremely Hazardous Substances

Seq.	Chemical Name	CAS Number	Range in %
None			

Section 302/304 Extremely Hazardous Substances (CONT)

Seq.	TPQ	RQ
None		

Section 311 Hazardous Categorization:

Acute	Chronic	Fire	Pressure	Reactive	N/A
X	X	X	-	-	-

Section 313 Toxic Chemical

Chemical Name	CAS Number	Concentration
Propane, 2-methoxy-2-methyl-	1634-04-4	3.00-9.99
Xylenes	1330-20-7	3.00-9.99
Toluene	108-88-3	3.00-9.99
Benzene	71-43-2	1.00-2.99
1,2,4-trimethylbenzene	95-63-6	1.00-2.99
Ethylbenzene	100-41-4	1.00-2.99

CERCLA 102(a)/DOT Hazardous Substances: (+ indicates DOT Hazardous Substance)

Seq.	Chemical Name	CAS Number	Range in %
01	Propane, 2-methoxy-2-methyl-	1634-04-4	3.00-9.99
02+	Xylenes	1330-20-7	3.00-9.99
03+	Toluene	108-88-3	3.00-9.99
04+	Benzene	71-43-2	1.00-2.99
05	N-hexane	110-54-3	1.00-2.99
06+	Ethylbenzene	100-41-4	1.00-2.99
07+	Benzene, (1-methylethyl) -	98-82-8	0.01-0.09

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
< - LESS THAN > - GREATER THAN

15. ENVIRONMENTAL INFORMATION (CONT)

Mobility:
Not determined.

Persistence and Biodegradability:
Not determined.

Potential to Bioaccumulate:
Not determined.

Remarks:
None

16. OTHER INFORMATION

THIS PRODUCT IS INTENDED FOR USE AS A MOTOR FUEL ONLY.

Texaco recommends that all exposures to this product be minimized by strictly adhering to recommended occupational controls procedures to avoid any potential adverse health effects.

Texaco has notified EPA of a TSCA 8(e) Notice of Substantial Risk to Health on the basis of results from a range finding developmental toxicity study for this product or a component of this product.
A definitive developmental toxicity study is underway.

THE INFORMATION CONTAINED HEREIN IS BELIEVED TO BE ACCURATE. IT IS PROVIDED INDEPENDENTLY OF ANY SALE OF THE PRODUCT FOR PURPOSE OF HAZARD COMMUNICATION AS PART OF TEXACO'S PRODUCT SAFETY PROGRAM. IT IS NOT INTENDED TO CONSTITUTE PERFORMANCE INFORMATION CONCERNING THE PRODUCT. NO EXPRESS WARRANTY, OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS MADE WITH RESPECT TO THE PRODUCT OR THE INFORMATION CONTAINED HEREIN. DATA SHEETS ARE AVAILABLE FOR ALL TEXACO PRODUCTS. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL TEXACO PRODUCTS YOU BUY, PROCESS, USE OR DISTRIBUTE AND YOU ARE ENCOURAGED AND REQUESTED TO ADVISE THOSE WHO MAY COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

TO DETERMINE APPLICABILITY OR EFFECT OF ANY LAW OR REGULATION WITH RESPECT TO THE PRODUCT, USER SHOULD CONSULT HIS LEGAL ADVISOR OR THE APPROPRIATE GOVERNMENT AGENCY. TEXACO DOES NOT UNDERTAKE TO FURNISH ADVICE ON SUCH MATTERS.

Date: 05-12-94 New X Revised, Supersedes: 02-24-94
Date printed: 08-09-94

Inquiries regarding MSDS should be directed to:
Texaco Inc.
Manager, Product Safety
P.O. Box 509
Beacon, N.Y. 12508

PLEASE SEE NEXT PAGE FOR PRODUCT LABEL

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
< - LESS THAN > - GREATER THAN

17. PRODUCT LABEL (CONT)

	Gasoline		95.00-99.99
*	Propane, 2-methoxy-2-methyl-	1634-04-4	3.00-9.99
*	Xylenes	1330-20-7	3.00-9.99
*	Toluene	108-88-3	3.00-9.99
*	Benzene	71-43-2	1.00-2.99
*	1,2,4-trimethylbenzene	95-63-6	1.00-2.99
*	Ethylbenzene	100-41-4	1.00-2.99
*	N-hexane	110-54-3	1.00-2.99

PRODUCT IS HAZARDOUS ACCORDING TO OSHA (1910.1200).
* COMPONENT IS HAZARDOUS ACCORDING TO OSHA.

Pennsylvania Special Hazardous Substance(s)	CAS Number	Range in %
Benzene	71-43-2	1.00-2.99

HMIS			NFPA		
Health: 1	Reactivity: 0		Health: 1	Reactivity: 0	
Flammability: 3	Special : -		Flammability: 3	Special : -	

Transportation
DOT:
Proper Shipping Name:
Gasoline
Hazard Class:
3
Identification Number: UN1203
Packing Group: II
Label Required:
Flammable liquid

Marine pollutant:
Not applicable

This product contains a DOT Hazardous Substance or substances, listed in Section 14 of the MSDS. DOT information must be accompanied with RQ notation, or, an otherwise 'Not Regulated' product will be classified as Environmentally Hazardous (solid/liquid) N.O.S., Class 9, IF the product's shipping container holds at least (lbs) 714.

CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flame or heat. Keep container closed and drum bungs in place.

Manufacturer's Name and Address:
TEXACO REFINING AND MARKETING, INC
P.O. Box 7812
Universal City, CA 91608

TRANSPORTATION EMERGENCY	Company:	(914) 831-3400
	CHEMTREC:	(800) 424-9300
HEALTH EMERGENCY	Company:	(914) 831-3400

ATTACHMENTS

FORMS

NOTE: THE OSHA JOB SAFETY AND HEALTH POSTER MUST BE DISPLAYED PROMINENTLY AT THE SITE

ACCEPTANCE FORM
PROJECT HEALTH AND SAFETY PLAN

I have read and agree to abide by the contents of the Health and Safety Plan for the following project:

_____

Name (print):

_____

Signature:

_____

Date:

_____

Return to Health and Safety Officer before starting to work on subject project work site.

WALKER CONSULTANTS, LTD.
7192 Kalanianaole Highway, Suite G-220
Honolulu, HI 96825
(808) 395-0392
FAX (808) 395-1969

ACCIDENT REPORT FORM

PROJECT

1. Project: _____

EMPLOYER

2. Name: _____
3. Address: _____
4. Mailing Address: _____

INJURED OR ILL EMPLOYEE

5. Name: _____ 6. SSAN: _____
7. Home Address: _____
8. Age: _____ 9. Sex: Male _____ Female _____
10. Occupation: _____
11. Department: _____

ACCIDENT OR EXPOSURE

12. Location:
13. Was accident or exposure on employer's premises? _____ (Yes/No)
14. Specific activity when injured or exposed: _____

_____

15. How did the accident or exposure occur? _____
(Describe fully the events which caused the injury or

_____

illness. Tell what happened and how. Name the objects and substances involved. Give details of all

_____

factors which led to the accident or exposure. Use separate sheets for additional space.)

16. Date and time of accident or exposure: _____

ACCIDENT REPORT FORM
(Continued)

WITNESSES

17. _____ (Name) _____ (Affiliation) _____ (Phone No.)
_____ (Name) _____ (Affiliation) _____ (Phone No.)
_____ (Name) _____ (Affiliation) _____ (Phone No.)

OCCUPATIONAL INJURY OR ILLNESS

18. Fully describe the injury or illness and indicate the body part affected: _____

_____

_____

19. Name the object or substance which directly caused the injury or illness. (For example, the object which struck the employee; the vapor or poison inhaled or swallowed; the chemical or radiation which irritated the skin; or in the cases of strains, hernias, etc., the object being lifted or pulled, etc.)

_____

_____

20. Date of the initial illness diagnosis if different from exposure date: _____

21. Did the injury or illness result in a fatality? _____ (Yes/No)

PHYSICIAN AND HOSPITAL INFORMATION

22. Physician's name, address, and phone number: _____

_____

23. Hospital's name, address, and phone number: _____

_____

REPORT PREPARATION INFORMATION

24. Report date: _____

25. Preparer's name: _____

26. Preparer's signature: _____

27. Preparer's employer: _____

28. Preparer's position: _____

JOB SAFETY & HEALTH PROTECTION

The Occupational Safety and Health Act of 1970 provides job safety and health protection for workers by promoting safe and healthful working conditions throughout the Nation. Provisions of the Act include the following:

Employers

All employers must furnish to employees employment and a place of employment free from recognized hazards that are causing or are likely to cause death or serious harm to employees. Employers must comply with occupational safety and health standards issued under the Act.

Employees

Employees must comply with all occupational safety and health standards, rules, regulations and orders issued under the Act that apply to their own actions and conduct on the job.

The Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor has the primary responsibility for administering the Act. OSHA issues occupational safety and health standards, and its Compliance Safety and Health Officers conduct jobsite inspections to help ensure compliance with the Act.

Inspection

The Act requires that a representative of the employer and a representative authorized by the employees be given an opportunity to accompany the OSHA inspector for the purpose of aiding the inspection.

Where there is no authorized employee representative, the OSHA Compliance Officer must consult with a reasonable number of employees concerning safety and health conditions in the workplace.

Complaint

Employees or their representatives have the right to file a complaint with the nearest OSHA office requesting an inspection if they believe unsafe or unhealthful conditions exist in their workplace. OSHA will withhold, on request, names of employees complaining.

The Act provides that employees may not be discharged or discriminated against in any way for filing safety and health complaints or for otherwise exercising their rights under the Act.

Employees who believe they have been discriminated against may file a complaint with their nearest OSHA office within 30 days of the alleged discriminatory action.

Citation

If upon inspection OSHA believes an employer has violated the Act, a citation alleging such violations will be issued to the employer. Each citation will specify a time period within which the alleged violation must be corrected.

The OSHA citation must be prominently displayed at or near the place of alleged violation for three days, or until it is corrected, whichever is later, to warn employees of dangers that may exist there.

Proposed Penalty

The Act provides for mandatory civil penalties against employers of up to $7,000 for each serious violation and for optional penalties of up to $7,000 for each nonserious violation. Penalties of up to $7,000 per day may be proposed for failure to correct violations within the proposed time period and for each day the violation continues beyond the prescribed abatement date. Also, any employer who willfully or repeatedly violates the Act may be assessed penalties of up to $70,000 for each such violation. A minimum penalty of $5,000 may be imposed for each willful violation. A violation of posting requirements can bring a penalty of up to $7,000.

There are also provisions for criminal penalties. Any willful violation resulting in the death of any employee, upon conviction, is punishable by a fine of up to $250,000 (or $500,000 if the employer is a corporation), or by imprisonment for up to six months, or both. A second conviction of an employer doubles the possible term of imprisonment. Falsifying records, reports, or applications is punishable by a fine of $10,000 or up to six months in jail or both.

Voluntary Activity

While providing penalties for violations, the Act also encourages efforts by labor and management, before an OSHA inspection, to reduce workplace hazards voluntarily and to develop and improve safety and health programs in all workplaces and industries. OSHA's Voluntary Protection Programs recognize outstanding efforts of this nature.

OSHA has published Safety and Health Program Management Guidelines to assist employers in establishing or perfecting programs to prevent or control employee exposure to workplace hazards. There are many public and private organizations that can provide information and assistance in this effort, if requested. Also, your local OSHA office can provide considerable help and advice on solving safety and health problems or can refer you to other sources for help such as training.

Consultation

Free assistance in identifying and correcting hazards and in improving safety and health management is available to employers, without citation or penalty, through OSHA-supported programs in each State. These programs are usually administered by the State Labor or Health department or a State university.

Posting Instructions

Employers in States operating OSHA approved State Plans should obtain and post the State's equivalent poster.

Under provisions of Title 29,Code of Federal Regulations, Part 1903.2(a)(1) employers must post this notice (or facsimile) in a conspicuous place where notices to employees are customarily posted.

More Information

Additional information and copies of the Act, specific OSHA safety and health standards, and other applicable regulations may be obtained from your employer or from the nearest OSHA Regional Office in the following locations:

Atlanta, GA	(404) 347-3573
Boston, MA	(617) 565-7164
Chicago, IL	(312) 353-2220
Dallas, TX	(214) 767-4731
Denver, CO	(303) 844-3061
Kansas City, MO	(816) 426-5861
New York, NY	(212) 337-2378
Philadelphia, PA	(215) 596-1201
San Francisco, CA	(415) 744-6670
Seattle,WA	(206) 553-5930

To report suspected fire hazards, imminent danger safety and health hazards in the workplace, or other job safety and health emergencies, such as toxic waste in the workplace, call OSHA's 24-hour hotline: 1-800-321-OSHA.

Washington, DC
1992 (Reprinted)
OSHA 2203

Robert B. Reich, Secretary of Labor

U.S. Department of Labor

Occupational Safety and Health Administration

This information will be made available to sensory impaired individuals upon request.
Voice phone: (202) 219-8615; TDD message referral phone: 1-800-326-2577

CPO : 1993 O - 355-763 QL 3

APPENDIX C

UST TIGHTNESS TESTING CERTIFICATES

CERTIFICATE OF UNDERGROUND STORAGE TANK SYSTEM TESTING

NDE ENVIRONMENTAL CORPORATION
8906 WALL STREET, SUITE 306
AUSTIN, TEXAS 78754
(512) 719-4633
FAX (512) 719-7986

TEST RESULT SITE SUMMARY REPORT

TEST TYPE: Sure Test

TEST DATE: 08/29/95

WORK ORDER NUMBER: 670446

CLIENT: TEXACO REFINING AND MARKETING INC.
1800 SW FIRST AVE, SUITE 180
PORTLAND, OR 97201

SITE: KING STREET TEXACO 61-100-090
1239 SOUTH KING STREET
HONOLULU, HI 96814

ATTN: Kerstin Anderson

The following test were conducted at the site above in accordance with all applicable portions of Federal, NFPA and local regulations

Tank Tests

1	REGULAR	9,816	92.00	PASS	0.021	PASS
2	REGULAR	9,816	92.00	PASS	0.038	PASS
3	PREMIUM	9,816	92.00	PASS	-0.001	PASS
4	PLUS	9,816	92.00	PASS	-0.012	PASS
5	WASTE OIL	,548	48.00	PASS	0.007	FAIL

Line and Leak Detector Tests

1	REGULAR	0.004	P	YES	PASS
2	REGULAR				
3	PREMIUM	0.006	P	YES	PASS
4	PLUS	0.003	P	YES	PASS
5	WASTE OIL				

NDE appreciates the opportunity to serve you, and looks foward to working with you in the future. Please call any time, day or night, when you need us.

NDE Customer Service Representative:
THOMAS CORNO

Test conducted by:
AL QUEIROS

Reviewed:

Technician Certification Number:

INDIVIDUAL TANK/LINE/LEAK DETECTOR TEST REPORT

NDE ENVIRONMENTAL CORPORATION

WORK ORDER NUMBER: 670446

TEST DATE: August 29,
SITE: KING STREET TEXACO
CLIENT: TEXACO REFINING AND

Tank ID:	1	Bottom to top fill in inches:	
Product:	REGULAR	Bottom to grade fill in inches:	
Capacity in gallons:	9,816	Fill pipe length in inches:	
Diameter in inches:	92.00	Fill pipe diameter in inches:	4.0
Length in inches:	345	Stage I vapor recovery:	NONE
Material:	FIBERGLASS	Stage II vapor recovery:	NONE
Tank:	YES		
Manifolded Vent:	NO		
V/R:	NO		

LINE & LD TEST ONLY.

Test Method:	Sure Test
Psi at tank bottom:	0.63
Fluid level in inches:	25.00
UFT/OFT:	UFT
Fluid volume in gallons:	2,142
Water Level in inches:	0.00
Test time:	06:45-10:45
Number of thermistors:	
Specific gravity:	0.705
Water table depth in inches:	150.00
Determined by: (method):	MONIR WELL
Leak rate in gph:	0.021
RESULT:	PASS

	New/passed detector	Failed/Replaced detector
Test method:	FIA	
Make:	RED JACKET	
Model:	X.L.D.	
Serial Number:	30194-6110	
Open time in sec.:	3.00	
Holding psi:	17	
Resiliency cc:	105	
Test leak rate ml/min:	252.0	
Metering psi:	11	
Calib. leak in gph:	4.00	
RESULT:	PASS	

Test method:	U2
Test time:	12:20-12:50
Ullage volume:	7,676
Ullage pressure:	1.00
RESULT:	PASS

DATA FOR UTS-4T ONLY:

Time of test 1:	12:20-12:42
Temperature:	65.00
Flow rate (cfh):	
Time of test 2:	
Temperature:	
Flow rate (cfh):	
Time of test 3:	
Temperature:	
Flow rate (cfh):	

Material:	FIBERGLASS
Diameter (in):	2.0
Length (ft):	60.0
Test psi:	50
Bleedback cc:	140
Test time (min):	30
Test 1:Start time:	11:17
finish psi:	48
Vol change cc:	6
Test 2:Start time:	11:27
finish psi:	49
Vol change cc:	2
Test 3:Start time:	11:37
finish psi:	50
Vol change cc:	0
Final gph:	0.004
RESULT:	PASS

Test type: Proline Test Series III

Pump type: PRESSURE Pump make: RED JACKET

INDIVIDUAL TANK/LINE/LEAK DETECTOR TEST REPORT

NDE ENVIRONMENTAL CORPORATION

TEST DATE: August 29,
WORK ORDER NUMBER: 670446
CLIENT: TEXACO REFINING AND
SITE: KING STREET TEXACO

Tank ID:	2	Bottom to top fill in inches:	
Product:	REGULAR	Bottom to grade fill in inches:	
Capacity in gallons:	9,816	Fill pipe length in inches:	
Diameter in inches:	92.00	Fill pipe diameter in inches:	4.0
Length in inches:	345	Stage I vapor recovery:	NONE
Material:	FIBERGLASS	Stage II vapor recovery:	NONE
Tank:	YES		
Manifolded Vent:	NO		
V/R:	NO		

LINE & LD TEST ONLY.

Test Method:	Sure Test
Psi at tank bottom:	0.62
Fluid level in inches:	26.50
UFT/OFT:	UFT
Fluid volume in gallons:	2,080
Water Level in inches:	0.00
Test time:	08:15-12:15
Number of thermisters:	3
Specific gravity:	0.705
Water table depth in inches:	300.00
Determined by: (method):	MONTR WELL
Leak rate in gph:	0.038
RESULT:	PASS

	New/passed detector	Failed/Replaced detector
Test method:		
Make:		
Model:		
Serial Number:		
Open time in sec.:		
Holding psi:		
Resiliency cc:		
Test leak rate ml/min:		
Metering psi:		
Calib. leak in gph:		
RESULT:		

Test method:	U2
Test time:	16:10-17:35
Ullage volume:	7,736
Ullage pressure:	1.00
RESULT:	PASS

DATA FOR UTS-4T ONLY:

Time of test 1:	16:10-16:20
Temperature:	66.00
Flow rate (cfh):	
Time of test 2:	17:05-17:27
Temperature:	65.00
Flow rate (cfh):	
Time of test 3:	
Temperature:	
Flow rate (cfh):	

TEST RAN TWICE DUE ULLAGE
LEAK FOUND AT 4" RISER.

Material:	FIBERGLASS		
Diameter (in):	2.0		
Length (ft):	60.0		
Test psi:			
Bleedback cc:			
Test time (min):			
Test 1:Start time:			
finish psi:			
Vol change cc:			
Test 2:Start time:			
finish psi:			
Vol change cc:			
Test 3:Start time:			
finish psi:			
Vol change cc:			
Final gph:			
RESULT:			

Test type:

Pump type: PRESSURE Pump make: RED JACKET

8906 WALL STREET SUITE 306, AUSTIN, TEXAS 78754 (512) 719-4633

INDIVIDUAL TANK/LINE/LEAK DETECTOR TEST REPORT

NDE ENVIRONMENTAL CORPORATION

TEST DATE: August 29,
WORK ORDER NUMBER: 670446
CLIENT: TEXACO REFINING AND
SITE: KING STREET TEXACO

Tank ID:	3	Bottom to top fill in inches:	
Product:	PREMIUM	Bottom to grade fill in inches:	
Capacity in gallons:	9,816	Fill pipe length in inches:	
Diameter in inches:	92.00	Fill pipe diameter in inches:	4.0
Length in inches:	345	Stage I vapor recovery:	NONE
Material:	FIBERGLASS	Stage II vapor recovery:	NONE
Tank:	NO		
Manifolded Vent:	NO		
V/R:	NO		

LINE & LD TEST ONLY.

Test Method:	Sure Test
Psi at tank bottom:	0.80
Fluid level in inches:	33.00
UFT/OFT:	UFT
Fluid volume in gallons:	3,181
Water Level in inches:	0.00
Test time:	07:15-11:15
Number of thermisters:	4
Specific gravity:	0.680
Water table depth in inches:	300.00
Determined by: (method):	MONTR WELL
Leak rate in gph:	-0.001
RESULT:	PASS

	New/passed detector	Failed/Replaced detector
Test method:	PTA	
Make:	RED JACKET	
Model:	X.L.D.	
Serial Number:	40633-9585	
Open time in sec.:	3.00	
Holding psi:	16	
Resiliency cc:	85	
Test leak rate ml/min:	252.0	
Metering psi:	11	
Calib. leak in gph:	6.00	
RESULT:	PASS	

Test method:	U2
Test time:	13:30-14:00
Ullage volume:	6,635
Ullage pressure:	1.00
RESULT:	PASS

DATA FOR UTS-6T ONLY:

Time of test 1:	13:30-14:00
Temperature:	61.00
Flow rate (cfh):	
Time of test 2:	
Temperature:	
Flow rate (cfh):	
Time of test 3:	
Temperature:	
Flow rate (cfh):	

Material:	FIBERGLASS
Diameter (in):	2.0
Length (ft):	60.0
Test psi:	50
Bleedback cc:	114
Test time (min):	30
Test 1:Start time:	13:29
finish psi:	46
Vol change cc:	6
Test 2:Start time:	13:39
finish psi:	49
Vol change cc:	4
Test 3:Start time:	13:49
finish psi:	50
Vol change cc:	0
Final gph:	0.006
RESULT:	PASS

Test type: Prolink Test Series III

Pump type: PRESSURE Pump make: RED JACKET

8906 WALL STREET SUITE 306, AUSTIN, TEXAS 78754 (512) 719-4633

INDIVIDUAL TANK/LINE/LEAK DETECTOR TEST REPORT

NDE ENVIRONMENTAL CORPORATION

TEST DATE: August 29,
WORK ORDER NUMBER: 670446
CLIENT: TEXACO REFINING AND
SITE: KING STREET TEXACO

TANK INFORMATION

Tank ID:	4	Bottom to top fill in inches:	
Product:	PLUS	Bottom to grade fill in inches:	
Capacity in gallons:	9,816	Fill pipe length in inches:	
Diameter in inches:	92.00	Fill pipe diameter in inches:	4.0
Length in inches:	345	Stage I vapor recovery:	NONE
Material:	FIBERGLASS	Stage II vapor recovery:	NONE
Tank:	NO		
Manifolded Vent:	NO		
V/R:	NO		

COMMENTS

LINE & LD TEST ONLY.

TANK TEST RESULTS

Test Method:	Sure Test
Psi at tank bottom:	0.97
Fluid level in inches:	38.50
UFT/OFT:	UFT
Fluid volume in gallons:	3,936
Water Level in inches:	0.00
Test time:	07:30-11:30
Number of thermisters:	4
Specific gravity:	0.700
Water table depth in inches:	300.00
Determined by: (method):	MONTR. WELL
Leak rate in gph:	-0.012
RESULT:	PASS

COMMENTS

LEAK DETECTOR RESULTS

	New/passed detector	Failed/Replaced detector
Test method:	PTA	
Make:	RED JACKET	
Model:	X.L.D.	
Serial Number:	10394-0157	
Open time in sec.:	3.00	
Holding psi:	16	
Resiliancy cc:	90	
Test leak rate ml/min:	252.0	
Metering psi:	10	
Calib. leak in gph:	4.00	
RESULT:	PASS	

COMMENTS

ULLAGE TEST RESULTS

Test method:	02
Test time:	15:05-15:35
Ullage volume:	5,880
Ullage pressure:	1.00
RESULT:	PASS

DATA FOR UTS-4T ONLY:

Time of test 1:	15:05-15:27
Temperature:	72.00
Flow rate (cfh):	
Time of test 2:	
Temperature:	
Flow rate (cfh):	
Time of test 3:	
Temperature:	
Flow rate (cfh):	

COMMENTS

LINE TEST RESULTS

Material:	FIBERGLASS
Diameter (in):	2.0
Length (ft):	60.0
Test psi:	50
Bleedback cc:	140
Test time (min):	30
Test 1:Start time:	14:44
finish psi:	49
Vol change cc:	6
Test 2:Start time:	14:54
finish psi:	50
Vol change cc:	0
Test 3:Start time:	15:04
finish psi:	50
Vol change cc:	0
Final gph:	0.003
RESULT:	PASS

Test type: Proline Test Series III

Pump type: PRESSURE Pump make: RED JACKET

COMMENTS

8906 WALL STREET SUITE 306, AUSTIN, TEXAS 78754 (512) 719-4633

INDIVIDUAL TANK/LINE/LEAK DETECTOR TEST REPORT

NDE ENVIRONMENTAL CORPORATION

TEST DATE: August 29,
WORK ORDER NUMBER: 670446
CLIENT: TEXACO REFINING AND
SITE: KING STREET TEXACO

TANK INFORMATION

Tank ID:	5	Bottom to top fill in inches:	84.5
Product:	WASTE OIL	Bottom to grade fill in inches:	89.5
Capacity in gallons:	548	Fill pipe length in inches:	35.0
Diamter in inches:	48.00	Fill pipe diameter in inches:	2.0
Length in inches:	60	Stage I vapor recovery:	NONE
Material:	FIBERGLASS	Stage II vapor recovery:	NONE
Tank:	NO		
Manifolded Vent:	NO		
V/R:	NO		

COMMENTS

TANK TEST RESULTS

Test Method:	Sure Test
Psi at tank bottom:	0.74
Fluid level in inches:	23.50
UFT/OFT:	UFT
Fluid volume in gallons:	240
Water Level in inches:	0.00
Test time:	13:20-16:20
Number of thermisters:	3
Specific gravity:	0.880
Water table depth in inches:	300.00
Determined by: (method):	MONTR WELL
Leak rate in gph:	0.007
RESULT:	PASS

SUPPLEMENTAL COMMENTS

LINE TEST RESULTS

Test method:	U2
Test time:	17:00-17:30
Ullage volume:	308
Ullage pressure:	1.00
RESULT:	FAIL
DATA FOR UTS-4T ONLY:	
Time of test 1:	17:00-17:12
Temperature:	78.00
Flow rate (cfh):	
Time of test 2:	
Temperature:	
Flow rate (cfh):	
Time of test 3:	
Temperature:	
Flow rate (cfh):	

COMMENTS

TANK FAILS NO VISUAL LEAKS.

LEAK DETECTOR TEST RESULTS

	New/passed detector	Failed/Replaced detector
Test method:		
Make:		
Model:		
Serial Number:		
Open time in sec.:		
Holding psi:		
Resiliancy cc:		
Test leak rate ml/min:		
Metering psi:		
Calib. leak in gph:		
RESULT:		

COMMENTS

Material:	NONE
Diameter (in):	
Length (ft):	
Test psi:	
Bloodback cc:	
Test time (min):	
Test 1:Start time:	
finish psi:	
Vol change cc:	
Test 2:Start time:	
finish psi:	
Vol change cc:	
Test 3:Start time:	
finish psi:	
Vol change cc:	
Final gph:	
RESULT:	

Test type:

Pump type: GRAVITY Pump make: NONE

COMMENTS

8906 WALL STREET SUITE 306, AUSTIN, TEXAS 78754 (512) 719-4633

APPENDIX D

PID, FIELD AND SAMPLE COLLECTION METHODS

APPENDIX D

PID FIELD SCREENING AND SAMPLE COLLECTION METHODS

Equipment Decontamination

The soil sample sleeves, and all portions of the Strataprobe™ soil gas probe system and soil sampler system that were driven into the ground were decontaminated by TEG Hawaii prior to each use using Liquinox™ detergent, followed by successive potable and distilled water rinses.

Soil Gas Sample Collection

TEG Hawaii used its truck-mounted, Strataprobe™ direct-push rig to drive the soil gas probes and collect the soil gas samples. TEG Hawaii's soil gas probe system consists of the following:

1. An internally-threaded probe tip fitted with a conical drop-off steel drive-tip.
2. 48-inch long sections of nominal 1-inch outside diameter (OD), flush-threaded steel drive-tube which are added to the probe tip as it is advanced.
3. Mylar sample tubing with an externally-threaded metal tip.
4. A plastic sampling syringe with two valved ports.

First, the pavement and upper foot of the underlying soil were pre-drilled, and the drive-tube was then driven to the desired sample depth, at which time the drive-tube was retracted slightly, partially ejecting the conical drive-tip from the drive-tube to admit the soil gas. The mylar sample tubing was then inserted into the drive-tube and the threaded metal tip was screwed into the upper end of the probe tip; the tubing was sufficiently long that it extended beyond the top of the drive-tube. A plastic syringe was connected to the upper end of the mylar tubing and the probe. The syringe and mylar tubing system was purged sufficiently to remove several times their combined volume prior to collecting the soil gas sample. While purging a probe, the valve of the inlet port (connected to the mylar tubing) was open and the valve of the exhaust port (open to the air) was closed; to empty the syringe, the positions of the valves were reversed. After purging, the soil gas sample was collected using the syringe. After sampling, the probe was then either driven to the next sampling depth (at which time the above procedure is repeated) or it was withdrawn. After collecting the deepest soil gas sample, the probe tube was withdrawn, leaving the drop-off drive tip behind, and each probe hole was filled with bentonite chips. After backfilling, the ground surface at each probe location was patched using asphalt cold patch or sand-cement mixture to match the surrounding paving materials.

Each soil gas sample syringe was labeled, and was hand-carried to TEG Hawaii's onsite mobile laboratory. The soil gas samples were analyzed onsite by TEG Hawaii within two hours of collection. Chain-of-Custody records were completed in the field.

Soil Sample Collection

TEG Hawaii used its truck-mounted direct-push rig to drive the soil sampler and collect the soil samples. TEG Hawaii's Strataprobe™ soil sampler system consists of the following:

1. A nominal 1-inch inside diameter (ID), 24-inch long, split-barrel steel sampler with removable (threaded) steel drive-tip and top assembly.

2. A conical-tipped end-plug (having an outside diameter (OD) slightly-smaller than 1 inch) with a rod attached to its top; the end-plug fits inside the sampler drive-tip.
3. Nominal 1-inch OD, 6-inch long, thin-walled stainless steel sample sleeves which fit inside the sampler barrel.
4. 48-inch long sections of nominal 1-inch OD, flush-threaded steel drive-tube which are added to the sampler as it is advanced.
5. 48-inch long sections of nominal ¼-inch OD threaded steel rod and threaded couplers.

First, the pavement and upper foot of the underlying soil were pre-drilled, and the soil sampler was then driven to the desired sample depth. Prior to reaching the sampling depth, the end-plug blocks the drive-tip and prevents soil from entering the sampler; the end-plug is fixed inside the drive-tip by a coupling that is reverse (left-hand) threaded into the top of the sampler and acts against the rod attached to the end-plug. When the sampling depth is reached, the threaded rod is inserted into the drive-tube and threaded into the reverse-threaded coupling to remove it from the sampler and free the end plug. The rod and coupling are then withdrawn from the tube. The sampler is then driven an additional 24-inches (or to refusal, if less than 24-inches), and soil enters and fills the sampler tube by pushing the end-plug upward inside the sampler tube.

After driving each soil sample, TEG Hawaii immediately withdrew the sampler and disassembled it. WCL then removed sample sleeves from the sampler and selected one of the sleeves for laboratory analysis. Both ends of the sample sleeve for laboratory analysis were covered with Teflon sheets and fitted with plastic end-caps. An additional sleeve from each sample was retained for field screening and geologic logging.

Photo Ionization Detector Calibration and Field Screening

The Photovac Microtip photo ionization detector (PID) was calibrated prior to the start of each field day using a 100-ppmv (parts per million, volumetric) hexane (isobutylene) gas standard; "zero air" calibration was accomplished at an up-wind location which had no olfactory evidence that volatiles were present, and which was remote from the USTs, motor vehicles and other volatile organic compound (VOC) sources.

For the splits of the soil samples, the field PID screening was accomplished by extruding the sample split from the sample sleeve into a plastic bag which was then sealed and set aside for approximately one-half hour to allow for any VOCs in the sample to migrate into the bag's headspace. The bag was then opened slightly, and the PID tube was inserted into the bag and the VOC concentration was measured. This headspace measurement method is considered better than the glass-jar method recommended in the DOH Technical Guidance Manual, because removal of the glass jar lid for PID measurement may result in substantial losses of VOCs. Soil sample headspace PID measurements were recorded.

Groundwater Monitoring Well Installation

After collecting the deepest sample, TEG Hawaii used its truck-mounted direct-push rig and soil sampling system to deepen each of the eight soil sampling points and permit installation of a groundwater monitoring well. After first pre-punching the hole to total depth using the Strataprobe™ soil sampling system, a 2-inch nominal OD, flush-threaded, thin-walled steel drive-tube was driven to refusal to allow well installation, due to caving soil conditions in the lower part of each well. The down-hole end of the drive-tube was fitted with a conical drop-off drive-tip which was ejected by retracting the drive-tube slightly when the total depth was reached.

The 1-inch nominal ID, flush-threaded, schedule 80 polyvinyl chloride (PVC) well casing and machine-slotted well screen (0.010 inch slots) were assembled and were inserted into the conductor casing. In the first seven wells, a 10-foot length of well screen was used, and in the eighth well (MW-8), a 5-foot length of well screen was used. After installing the well casing screen, the drive-tube was withdrawn and the annular materials (Monterey sand filter pack and bentonite chips) were successively placed in the well annulus. The Monterey sand filter pack extends from total depth to approximately 3 to 7 feet bgs. The bentonite chips extend from the top of the filter pack to approximately 1 to 2 feet bgs (approximately 5 feet bgs in MW-8).

The top of the casing was cut-off approximately 0.3 foot bgs, and was fitted with a PVC slip cap. The pavement surrounding each well-head was enlarged to accommodate the well-cover coupling, and the remaining well annulus was then filled with a sand-cement mixture, as part of the well-head cover installation. The well-head cover rim consists of a 3-inch ID, internally-threaded PVC coupling, and the well-head cover rim consists a 3-inch OD, externally-threaded brass plug. The rim/coupling was set in the sand-cement mixture so as to extend slightly above the surrounding ground surface, and the surface of the cement was tapered downward to match the surrounding ground surface.

Groundwater Monitoring Well Development

After installation, each of the wells was developed by pumping approximately 8 to 15 gallons of water from it using an air-operated diaphragm pump. A new section of Nalgene® suction tubing was used in each well to avoid cross-contaminating the wells. Each well pumped dry at approximately 1 to 3 gallons and pumping was then intermittent. The temperature, pH, and conductivity were monitored in the field during development. Development was continued until these three parameters had stabilized to within EH&S' criteria between the second and third measurements, and the discharge water was clear or there was no visual improvement in turbidity with continued development. The turbidity was also monitored and recorded. The development water from the eight wells was contained in two properly-labeled, USDOT-approved, 55-gallon drums which were temporarily stored onsite.

Caprock Groundwater Sample Collection

Prior to purging for each of the two groundwater sampling events, the caprock water table depths in the wells were measured. Each of the wells was then purged of approximately 1.5 gallons using a peristaltic pump. New sections of Nyloflow® suction and discharge tubing and Tygon® pump tubing were used in each well to avoid cross-contaminating the wells. The temperature, pH, and conductivity were monitored in the field during development. Purging was continued until these three parameters had stabilized to within EH&S' criteria between the second and third measurements, and the discharge water was clear or there was no visual improvement in turbidity with continued purging. The turbidity was also monitored and recorded. The purge water from the seven or eight wells was contained in a properly-labeled, USDOT-approved, 55-gallon drum which was temporarily stored onsite.

After purging, the water level was allowed to stabilize in each well, and a caprock groundwater sample was collected from each well. For TPH-G and BTEX analyses of the first-event samples, a stainless-steel bailer was used. The stainless-steel bailer was properly decontaminated prior to each use using Liquinox™ detergent, followed by successive potable and distilled water rinses; a bailer blank was collected after decontaminating the bailer to evaluate its effectiveness. For TPH-G and BTEX analyses of the second-event samples, precleaned,

single-use polyethylene bailers were used, fitted with single-use, slow-discharge polyethylene bottom-emptying devices for sampling volatiles; the bailer and bottom-emptying device were disposed of after each well. For the TPH-O analyses of selected samples from each event, the peristaltic pump was used for sample collection.

For TPH-G and BTEX analyses, the caprock groundwater samples were each contained in two 40-mL VOA vials having Teflon septa. For the TPH-O analyses of selected samples from each event, the caprock groundwater samples were also each contained in one 1-liter amber glass bottle having a Teflon seal. The sample containers, which were appropriately preserved, were supplied by the analytical laboratory. Trip and field blanks of distilled water accompanied the samples from the time of collection until received by the analytical laboratory.

Soil and Caprock Groundwater Sample Labeling, Storage, and Chain-of-Custody Records

Each of the soil sample sleeves and caprock groundwater sample containers was properly labeled. The soil sample sleeves and caprock groundwater sample containers were immediately placed in chilled ice chests and were maintained in a chilled condition until analyzed. Chain-of-Custody records were completed in the field and accompanied the samples to the analytical laboratory.

APPENDIX E

SOIL VAPOR SAMPLE ANALYTICAL RESULTS, LABORATORY QA/QC DATA, CHAIN-OF-CUSTODY RECORDS, AND SELECTED CHROMATOGRAMS

TEG hawaii

TRANSGLOBAL
ENVIRONMENTAL
GEOCHEMISTRY

October 27, 1995

Duncan Walker
Walker Consultants, Ltd.
7192 Kalanianaole Hwy, Suite G-220
Honolulu, HI 96825

SUBJECT: DATA REPORT - 1239 S. King St.

TEG Project #F50925

Mr. Walker:

Please find enclosed a data report for the samples analyzed from the above referenced project for Walker Consultants, Ltd.. The samples were collected by TEG personnel using the STRATAPROBE system and soil vapor samples were analyzed on-site in TEG's CA DOHS certified mobile laboratory (cert #1887).

The results of the analyses are summarized in the enclosed table. Also included are color 2D (contour) plots of the most prevalent species encountered. Also included is a plot of sampling locations for the survey.

Also enclosed is a brief description of TEG's soil vapor procedure for the analyses performed on the samples.

TEG appreciates the opportunity to have provided analytical services to Walker Consultants, Ltd. on this project. If you have any further questions relating to the data or report, please do not hesitate to contact us.

Sincerely,

Tim Fitzpatrick
Vice President
TEG Hawaii

770 Mokapu Rd., Kailua, HI 96734 Phone: (808) 254-0046 Fax: (808) 254-0243

WALKER CONSULTANTS, LTD
1239 S. KING STREET, HONOLULU, HI

TEG PROJECT #F50925

SOIL VAPOR DATA IN PPM BY VOLUME IN THE GAS

SAMPLE DESCRIPTION	BLANK	SV1-11	SV1-5	SV2-11	SV3-11	SV4-11	SV5-11	SV6-5	SV6-11	SV7-5	SV7-11
DATE ANALYZED	9/25/95	9/25/95	9/25/95	9/25/95	9/25/95	9/25/95	9/25/95	9/26/95	9/25/95	9/26/95	9/25/95
SAMPLING DEPTH (ft)	-	11	5	11	11	11	11	5	11	5	11
VOLUME WITHDRAWN (cc)	240	240	240	240	240	240	240	240	240	240	240
BENZENE	nd	6.28	nd	nd	nd	nd	nd	nd	2.41	nd	2.84
TOLUENE	nd	0.18	nd	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOTAL XYLENES	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TPH	nd	12700	23	36	1890	nd	nd	nd	29500	260	45600
METHANE	nd	3050	nd	nd	1890	nd	nd	nd	10000	56	14100
CO2 (%)	nd	10.90	8.30	7.75	6.90	7.41	7.77	2.6	10.3	7.7	11.2
O2 (%)	21.00	5.15	7.47	9.11	10.4	9.60	9.70	10.2	1.82	4.60	1.68
CO2/O2 RATIO	nd	2.12	1.11	0.85	0.66	0.77	0.80	0.26	5.66	1.67	6.67

ND MEANS NOT DETECTED AT 0.100 PPMV FOR EACH COMPONENT - 10 PPMV FOR TPH

SAMPLES ANALYZED IN TEG'S CA-DOHS CERTIFIED MOBILE LAB (CERT #1887)
ANALYSES PERFORMED BY: PHILIP HABECKER
DATA REVIEWED BY: TIM FITZPATRICK

TRANSGLOBAL
ENVIRONMENTAL
LABORATORY

WALKER CONSULTANTS, LTD
1239 S. KING STREET, HONOLULU, HI

TEG PROJECT #F50925

SOIL VAPOR DATA IN PPM BY VOLUME IN THE GAS

SAMPLE DESCRIPTION	SV8-11	SV8-5	SV9-11	SV9-5	SV10-12	SV11-5	SV11-12	SV12-5	SV12-12.5	SV13-12	SV14-12
DATE ANALYZED	9/25/95	9/26/95	9/25/95	9/26/95	9/25/95	9/26/95	9/25/95	9/26/95	9/25/95	9/25/95	9/26/95
SAMPLING DEPTH (ft)	11	5	11	5	12	5	12	5	12.5	12	12
VOLUME WITHDRAWN (cc)	240	240	240	240	240	240	240	240	240	240	240
BENZENE	0.290	nd	1.80	nd	nd	nd	0.723	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOTAL XYLENES	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TPH	43700	38	23800	1170	31	nd	45500	879	37400	562	nd
METHANE	17100	nd	7730	832	nd	nd	17200	323	15300	211	nd
CO2 (%)	9.38	6.48	7.22	2.32	5.65	2.12	9.88	4.22	9.87	9.35	5.71
O2 (%)	3.12	5.55	6.87	13.5	11.8	15.0	2.95	12.7	2.97	2.89	9.21
CO2/O2 RATIO	3.00	1.17	1.05	0.17	0.48	0.14	3.35	0.33	3.32	3.24	0.62

ND MEANS NOT DETECTED AT 0.100 PPMV FOR EACH COMPONENT - 10 PPMV FOR TPH

SAMPLES ANALYZED IN TEG'S CA-DOHS CERTIFIED MOBILE LAB (CERT #1887)
ANALYSES PERFORMED BY: PHILIP HABECKER
DATA REVIEWED BY: TIM FITZPATRICK

teg NOWON

TRANSGLOBAL
ENVIRONMENTAL
GEOCHEMISTRY

WALKER CONSULTANTS, LTD
1239 S. KING STREET, HONOLULU, HI

TEG PROJECT #F50925

SOIL VAPOR DATA IN PPM BY VOLUME IN THE GAS

SAMPLE DESCRIPTION	SV15-12	SV16-12	SV17-12	SV18-11.5	SV18-11.5 DUP	SV19-11	SV19-11 DUP
DATE ANALYZED	9/25/95	9/25/95	9/25/95	9/26/95	9/26/95	9/26/95	9/26/95
SAMPLING DEPTH (ft)	12	12	12	11.5	11.5	11	11
VOLUME WITHDRAWN (cc)	240	240	240	240	240	240	240
BENZENE	0.238	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd
TOTAL XYLENES	nd	nd	nd	nd	nd	nd	nd
TPH	3160	1420	nd	18	nd	nd	nd
METHANE	883	272	nd	nd	nd	nd	nd
CO2 (%)	4.92	4.04	8.43	4.81	3.56	5.93	6.33
O2 (%)	8.79	9.98	11.7	17.0	14.7	14.5	14.2
CO2/O2 RATIO	0.56	0.40	0.72	0.27	0.24	0.41	0.45

ND MEANS NOT DETECTED AT 0.100 PPMV FOR EACH COMPONENT - 10 PPMV FOR TPH

SAMPLES ANALYZED IN TEG'S CA-DOHS CERTIFIED MOBILE LAB (CERT #1887)
ANALYSES PERFORMED BY: PHILIP HABECKER
DATA REVIEWED BY: TIM FITZPATRICK

teg TRANSGLOBAL ENVIRONMENTAL GEOCHEMISTRY, INC.

CHAIN-OF-CUSTODY RECORD

CLIENT: WALKER CONSULTANTS
ADDRESS:
PHONE: 395-0392 FAX:
CLIENT PROJECT #: 95-1197 (ELD) PROJECT MANAGER: DUNCAN

DATE: SEPT 25 1995 PAGE 1 OF 3
TEG PROJECT #: F50925
LOCATION: 1231 SIXING ST
COLLECTOR: TEG SPROBE DATE OF COLLECTION: 9-25

Sample Number	Depth	Time	Sample Type	Container Type	VOA 601/8010	VOA 602/8020	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (g & d)	PNA 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	LOI/D2	TVH	FIELD NOTES	Total Number Of Containers	Laboratory Note Number
SV1-5	5'	0930	SOIL VAPOR	30cc Syringe	X														X	X			2	
SV1-11	11'	0935	"	60cc syringe	X														X	X			1	
SV2-5	5'	1000	"	"	X														X	X		HOLD	2	
SV2-11	11'	1005	"	"	X														X	X			1	
SV3-5	5'	1020	"	"	X														X	X		HOLD	2	
SV3-11	11'	1030	"	"	X														X	X				
SV4-5	5'	1100	"	"																		HOLD		
SV4-11	11'	1105	"	"	X														X	X				
SV5-5'	5'	1130	"	"																		1005		
SV5-11'	11	1135	"	"	X														X	X		HOLD 1030		
SV6-5'	5'	1140	"	"	X														X	X				
SV6-11	11'	1145	"	"	X														X	X		1100		
SV7.5	5'	1204	"	"	X														X	X		HOLD 1135 RUN		
SV7-11	11	1210	"	"	X														X	X		1140=TIME		
SV8-5	5	1225	"	"	X														X	X		HOLD RUN		
SV8-11	11	1231	"	"	X														X	X				
SV9-5	5	1252	"	"	X														X	X		HOLD RUN		
SV9-11	11	1310			X														X	X				

RELINQUISHED BY: (Signature) DATE/TIME 9/25/95/1525 RECEIVED BY: (Signature) DATE/TIME 9/25/95 1525

RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature) DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ TEG DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT

TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:
HELD SAMPLES STORED IN VAPOR VIAL 1 EACH

teg

TRANSGLOBAL ENVIRONMENTAL GEOCHEMISTRY, INC.

CHAIN-OF-CUSTODY RECORD

CLIENT: WALKER

ADDRESS:

PHONE: FAX:

CLIENT PROJECT #: 95-1197 PROJECT MANAGER: DUNCAN

DATE: SEPT 25 - 1995 PAGE 2 OF 3

TEG PROJECT #: F950725

LOCATION: 1219 S. KING ST

COLLECTOR: TEG STROBE DATE OF COLLECTION: 9-25

Sample Number	Depth	Time	Sample Type	Container Type	VOA 601/8010	VOA 602/8020	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (o & g)	PNA 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	CO2/O2	TVH	FIELD NOTES	Total Number Of Containers	Laboratory Note Number
SV10-5	5'	1410	VAPOR	SYRINGE	X																	HOLD	2	
SV10-12	12'	1415	"	"	X															X	X			
SV11-5	5'	1430	"	"	X															X	X	HOLD RUN		
SV11-12	12'	1441	"	"	X															X	X			
SV12-5	5'	1500	"	"	X															X	X	HOLD RUN		
SV12-12.5	12.5	1510	"	"	X															X	X	H2O @ 12.5		
SV13-5	5'	1530	"	"																		HOLD		
SV13-12 (DUP)	12	1545	"	"	X															X	X			
SV14-5	5'	1550	"	"																		HOLD		
SV14-12	12	1605	"	"	X															X	X			
SV15-5	5'	1620	"	"																		HOLD		
SV15-12	12'	1650	"	"	X															X	X			
SV16-5'	5'	1695	"	"	X				NO PH													HOLD H2O @ B		
SV16-12'	12'	1700	"	"	X															X	X			
SV17-12	12'	1730	"	"	X															X	X			
SV18-11.5	11.5	1800	"	"																		HOLD		
SV18-11.5DUP	11.5	1801	"	"	X															X	X			
SV19-11	11	1807	"	"	X															X	X			

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[signature]	9/25/95/1822	[signature]	9/25/95 1825
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ TEG DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

teg ENVIRONMENTAL GEOCHEMISTRY, INC.

CHAIN-OF-CUSTODY RECORD

CLIENT: WALKER
ADDRESS:
PHONE: FAX:
CLIENT PROJECT #: 95-1197 PROJECT MANAGER: DUNCAN

DATE: SEPT 25 1995 PAGE 3 OF 3
TEG PROJECT #: 950925
LOCATION: 1231 4TH C ST
COLLECTOR: TEG DATE OF COLLECTION: 9-25

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (g & d)	PNA 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	COLOR	TVH	FIELD NOTES	Total Number Of Containers	Laboratory Note Number
B-11DUP	11'	1819	VADOSE	SYRINGE	X														X	X				

RELINQUISHED BY: (Signature) DATE/TIME 9/25/95 1825 RECEIVED BY: (Signature) DATE/TIME 9/25/95 1825
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature) DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS
[ ] TEG DISPOSAL @ $2.00 each [ ] Return [ ] Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:
PLEASE RUN
6, 7, 8, 9, 11, 12
SHALLOW SAMPLES

STRATAPROBE™

Soil Vapor Sampling Procedures

Probe Construction

TEG's soil vapor probes are constructed of one inch diameter, steel, equipped with a hardened, steel tip. Nominal lengths are 5 feet although additional lengths may be added. An inert 1/8 inch polypropylene nylaflow tube runs down the center of the probe to sampling port.

Probe Insertion

The probe is driven into the ground by an electric rotary hammer or with TEG's *STRATAPROBE™* system. Once inserted to the desired depth, the probe is retracted which opens the tip and exposes the vapor sampling port. This design prevents clogging of the sampling ports and cross-contamination from soils during insertion.

Soil Gas Sampling

Soil vapor is withdrawn from the nylaflow tubing using a 20 cc syringe connected via an on-off valve. The first 5 dead volumes of gas are discarded to flush the probe and fill it with in-situ soil vapor. The next 20 cc of gas are withdrawn in the syringe, plugged, and immediately transferred to the mobile lab for analysis within minutes of collection. Additional soil vapor samples may be collected and stored in gas-tight containers as desired.

Flushing & Decontamination Procedures

To minimize the potential for cross-contamination between sites, all external probe parts are cleaned of excess dirt and moisture prior to insertion. The internal nylaflow tubing and sampling ports are flushed with hundreds of cc's of ambient air between samples. If water, dirt, or any material is observed in the tubing, the tubing is replaced with fresh tubing. If concentrations greater than 100 ppmv are detected for any compound (except methane), the tubing is replaced.

Sampling syringes are opened and exposed to outside air on a clean surface to allow any volatiles to escape after each use. If concentrations greater than 100 ppmv are detected for any compound (except methane), the syringe is discarded.

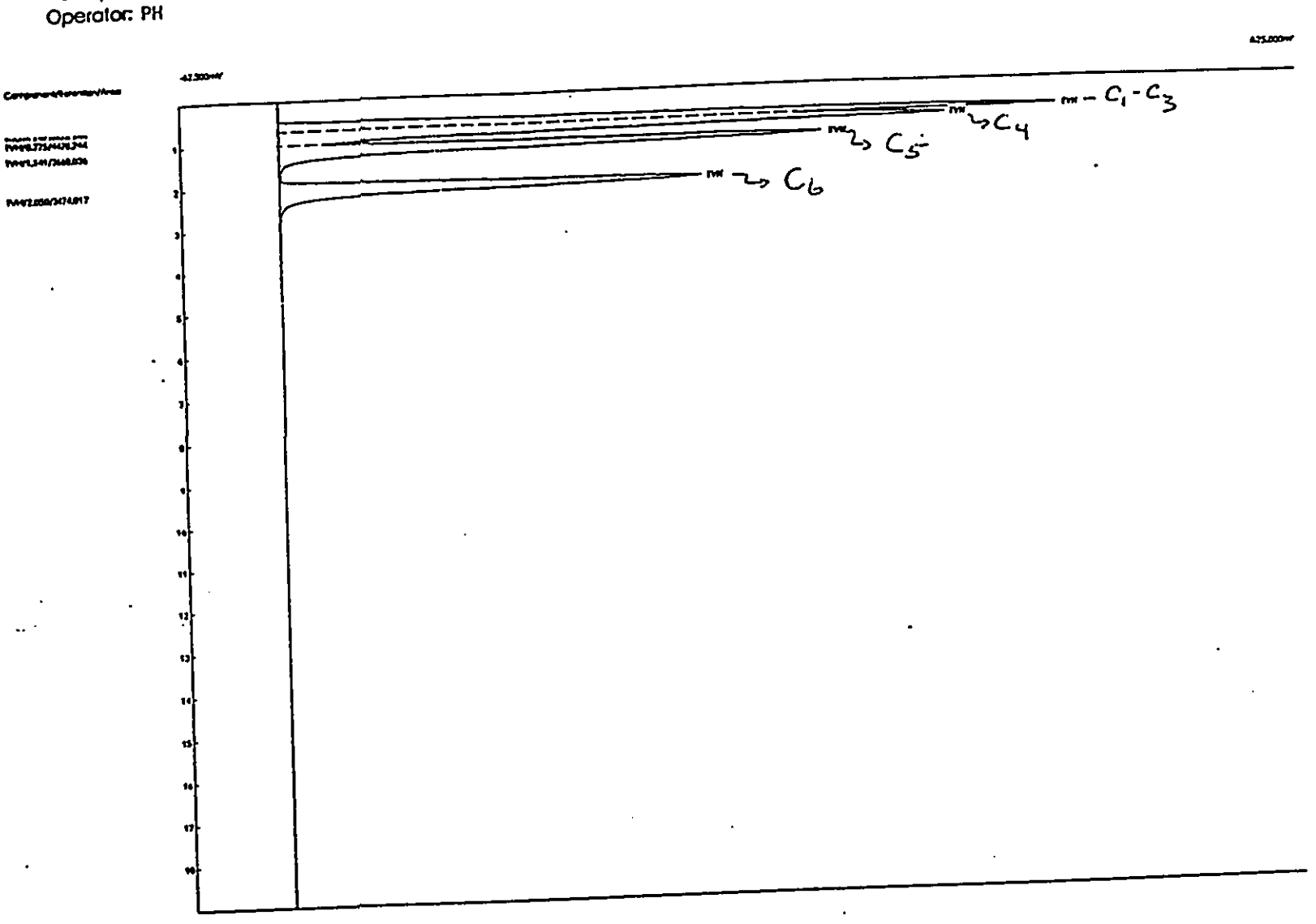
Field Collection Log

The field technician completes a logsheet summarizing depth of penetration, refusal, which probe is used on each sampling location, when tubing is replaced, any visual contamination on the probe, OVM readings as applicable, and any other unusual occurrences at a particular sampling location.

Transfer of Samples to the Laboratory

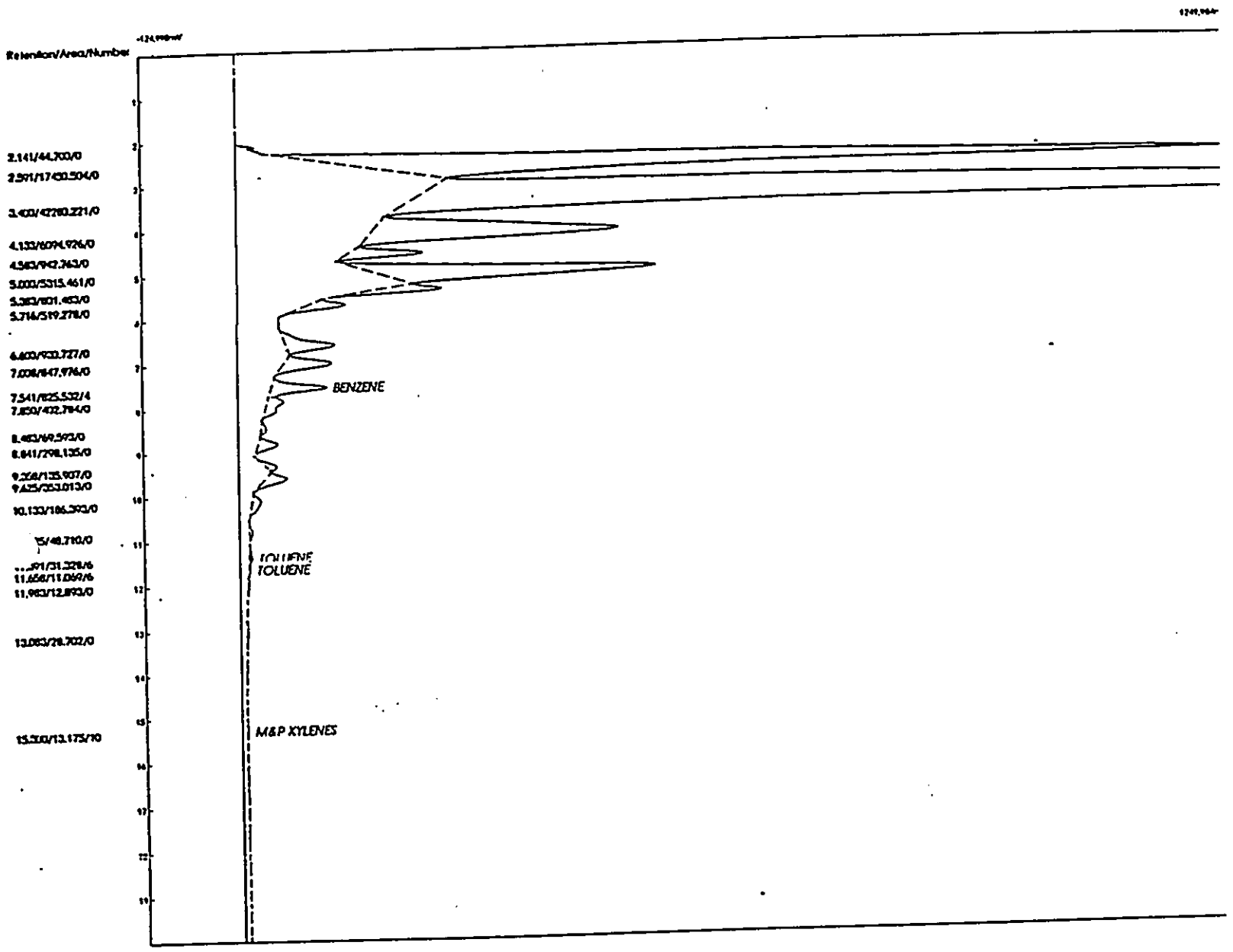
The sample syringe is immediately transferred in to the mobile laboratory for immediate analysis following the protocols discussed in the Analytical Methodology Section.

Lab name: IEG HAWAII
Client: WCL
Analysis date: 09/26/1995 16:24:51
Description: SRI #1 FID
Column: OLD RESTEK MXT-VOL
Carrier: N2 @150
Integration: Peak sens=80.0 Base sens=60.0 Min area= 35.00 Dilution= 1.000 Tangents=off
Data file: C:\PEAK\0926A15.CHR 0
Sample: 600ppmV
Operator: PH



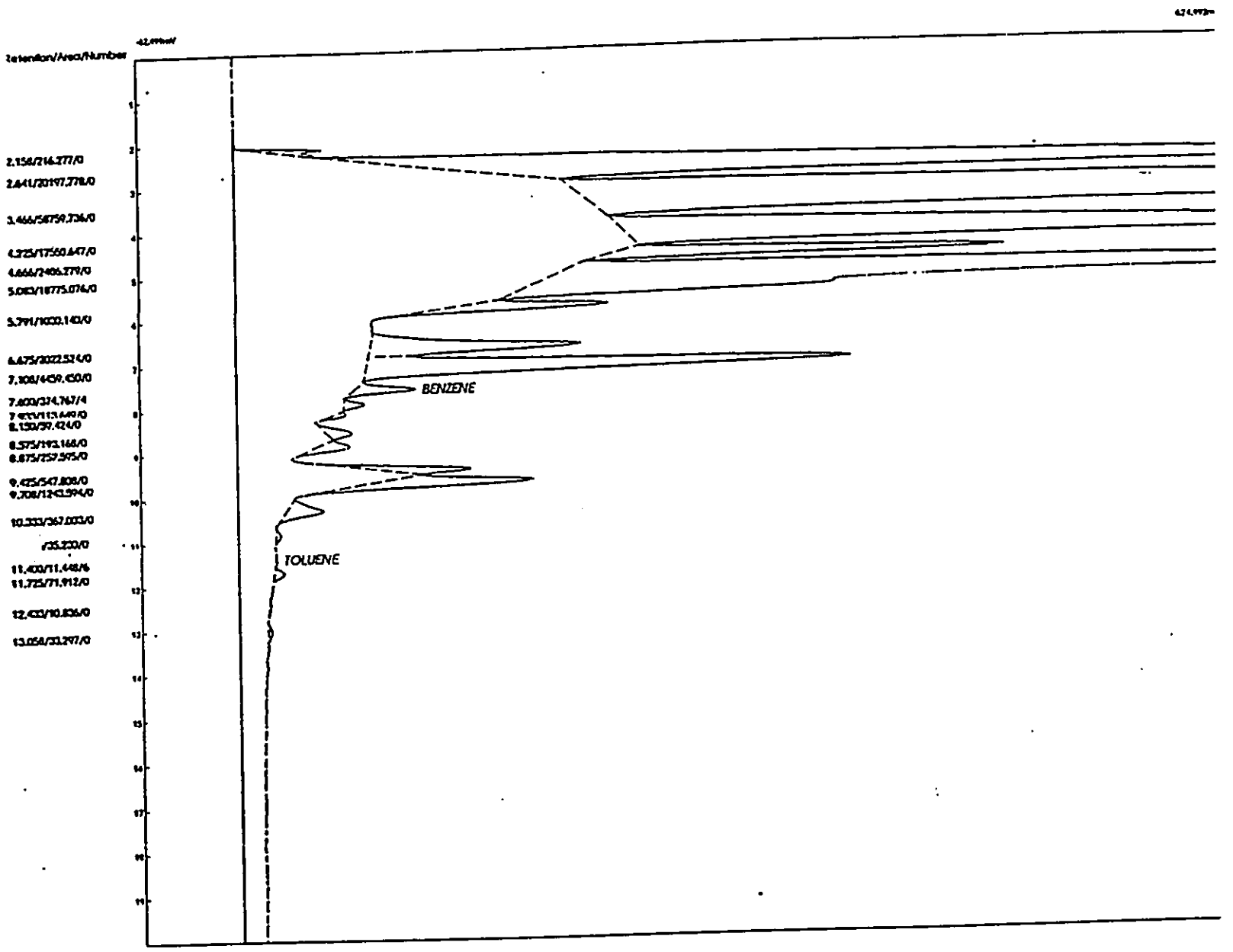
Component	Numbe	Retention	Area	Internal
TVH	1	0.625	4068.402	186.3248
TVH	1	0.775	4478.244	205.0948
TVH	1	1.141	3668.036	167.9888
TVH	1	2.050	3474.017	159.1031
	4		15689	719

Lab name: TEG HAWAII
Client: WCL
Analysis date: 09/25/1995 09:38:02
Description: outboard pid
Integration: Peak sens=85.0 Base sens=40.0 Min area= 10.00 Dilution= 1.000 Tangents=on
Data file: C:\PEAK\09025C6.CHR ()
Sample: SV1-11
Operator: PH



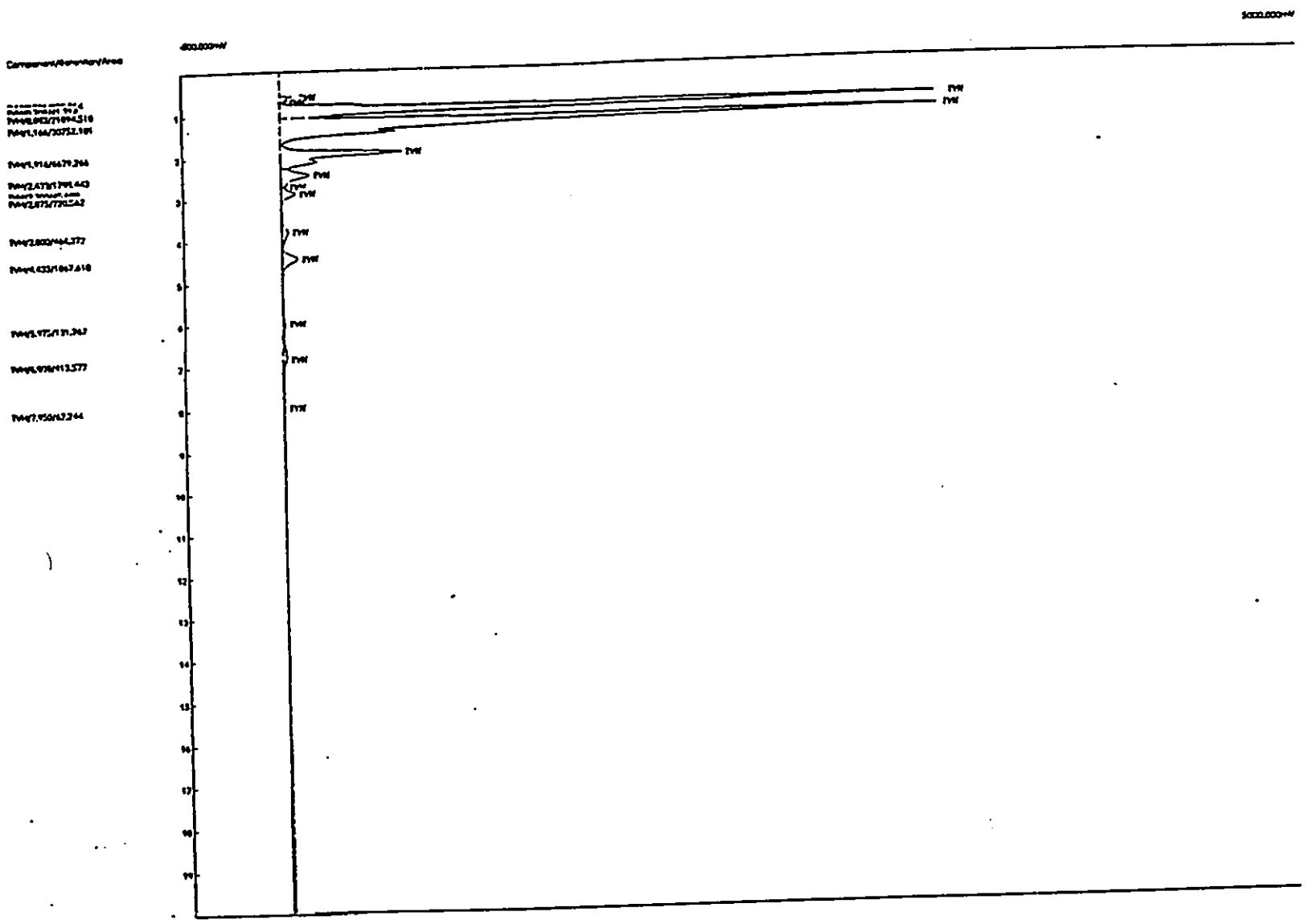
Component	Retention	Area	Internal w/o
BENZENE	7.541	825.532	20.4430
TOLUENE	11.391	31.328	0.6903
TOLUENE	11.658	11.069	0.2439
M&P XYLENES	15.300	13.175	0.3191
		881	22

Lab name: TEG HAWAII
Client: WCL
Analysis date: 09/25/1995 12:36:52
Description: outboard pid
Integration: Peak sens=85.0 Base sens=40.0 Min area= 10.00 Dilution= 1.000 Tangents=on
Data file: C:\PEAK\09025C12.CHR ()
Sample: SV6-11
Operator: PH



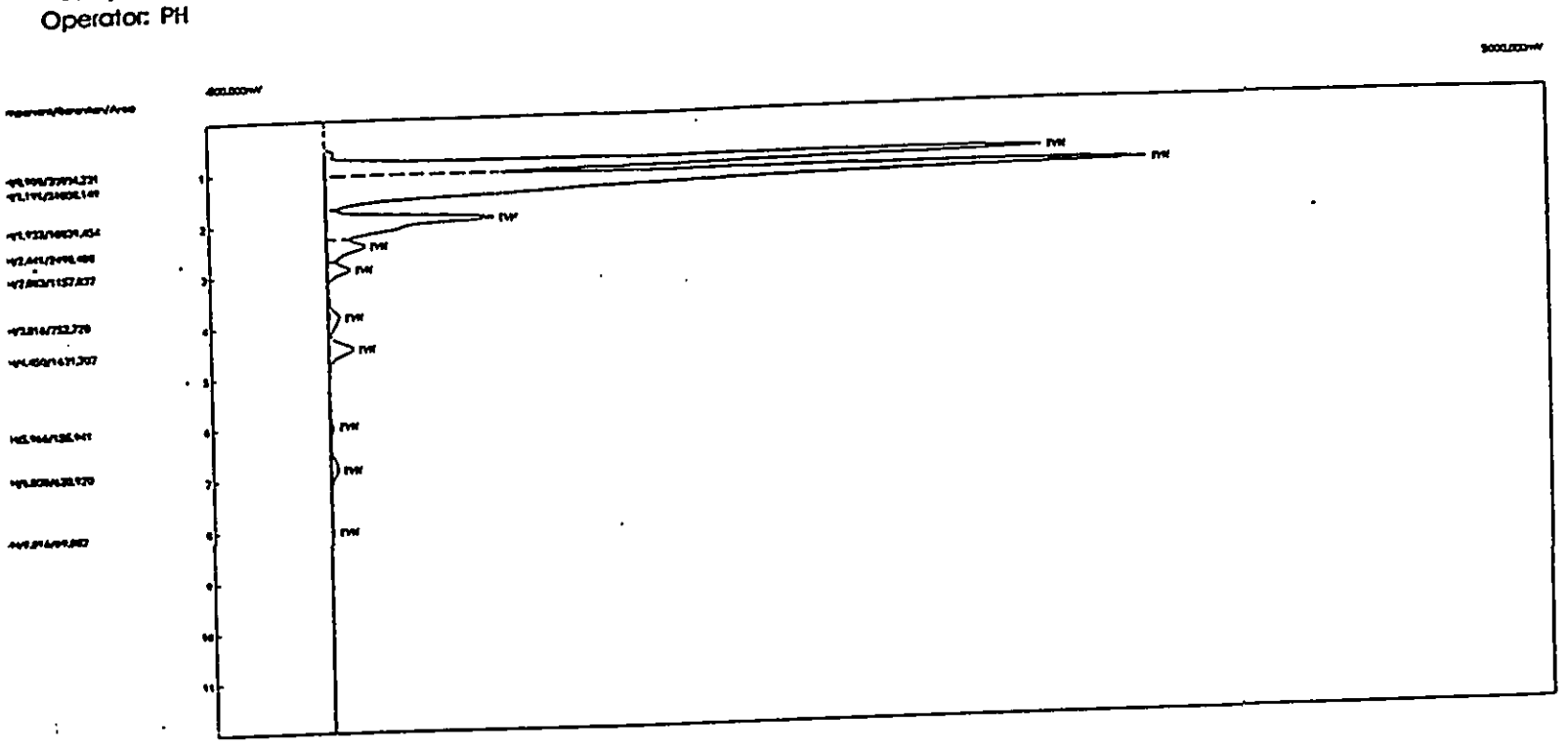
Component	Retention	Area	Internal w/o
BENZENE	7.600	374.767	7.8187
TOLUENE	11.400	11.448	0.2522
		386	8

Lab name: TEG HAWAII
Client: WCL
Analysis date: 09/25/1995 12:36:52
Description: SRI #1 FID
Column: OLD RESTEK MXT-VOL
Carrier: N2 @150
...egration: Peak sens=80.0 Base sens=60.0 Min area= 35.00 Dilution= 1.000 Tangents=off
Data file: C:\PEAK\0925A12.CHR 0
Sample: SV6-11 1:10
Operator: PH



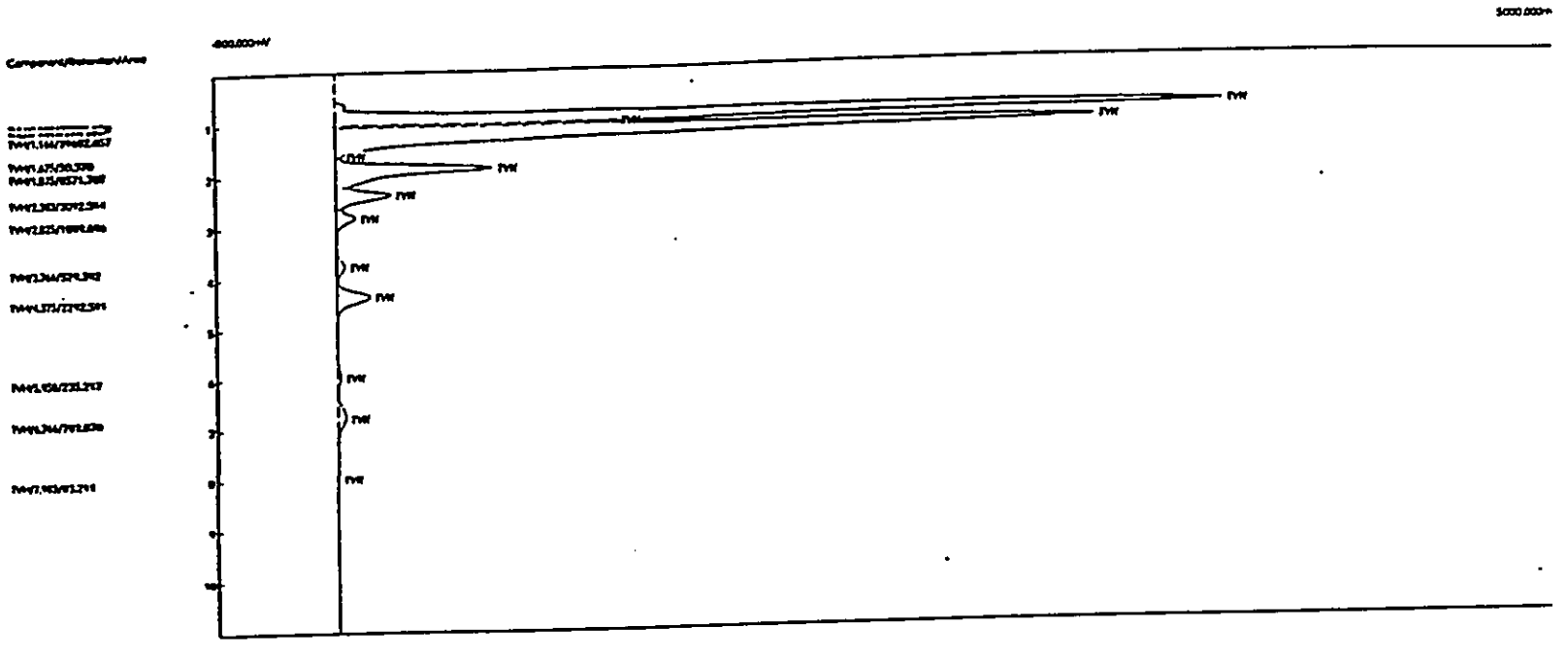
Component	Number	Retention	Area	Internal	
TVH	1	0.591	355.014	16.2590	
TVH	1	0.708	41.714	.1.9104	
TVH	1	0.883	21894.518	1002.7258	METHANE x10 = 10,000
TVH	1	1.166	30752.101	1408.3857	
TVH	1	1.916	6679.266	305.8972	
TVH	1	2.433	1788.443	81.9072	
TVH	1	2.700	45.688	2.0924	
TVH	1	2.875	720.562	33.0003	
TVH	1	3.800	464.372	21.2673	
	1	4.433	1067.610	48.8944	
	1	5.975	131.767	6.0346	
TVH	1	6.808	413.577	18.9410	
TVH	1	7.950	62.244	2.8507	
	13		64417	2950	x10 = 29,500

Lab name: TEG HAWAII
Client: WCL
Analysis date: 09/25/1995 13:37:39
Description: SRI #1 FID
Column: OLD RESTEK MXT-VOL
Carrier: N2 @150
Integration: Peak sens=80.0 Base sens=60.0 Min area= 35.00 Dilution= 1.000 Tangents=off
Data file: C:\PEAK\0925A14.CHR 0
Sample: SV7-11 1:10
Operator: PH



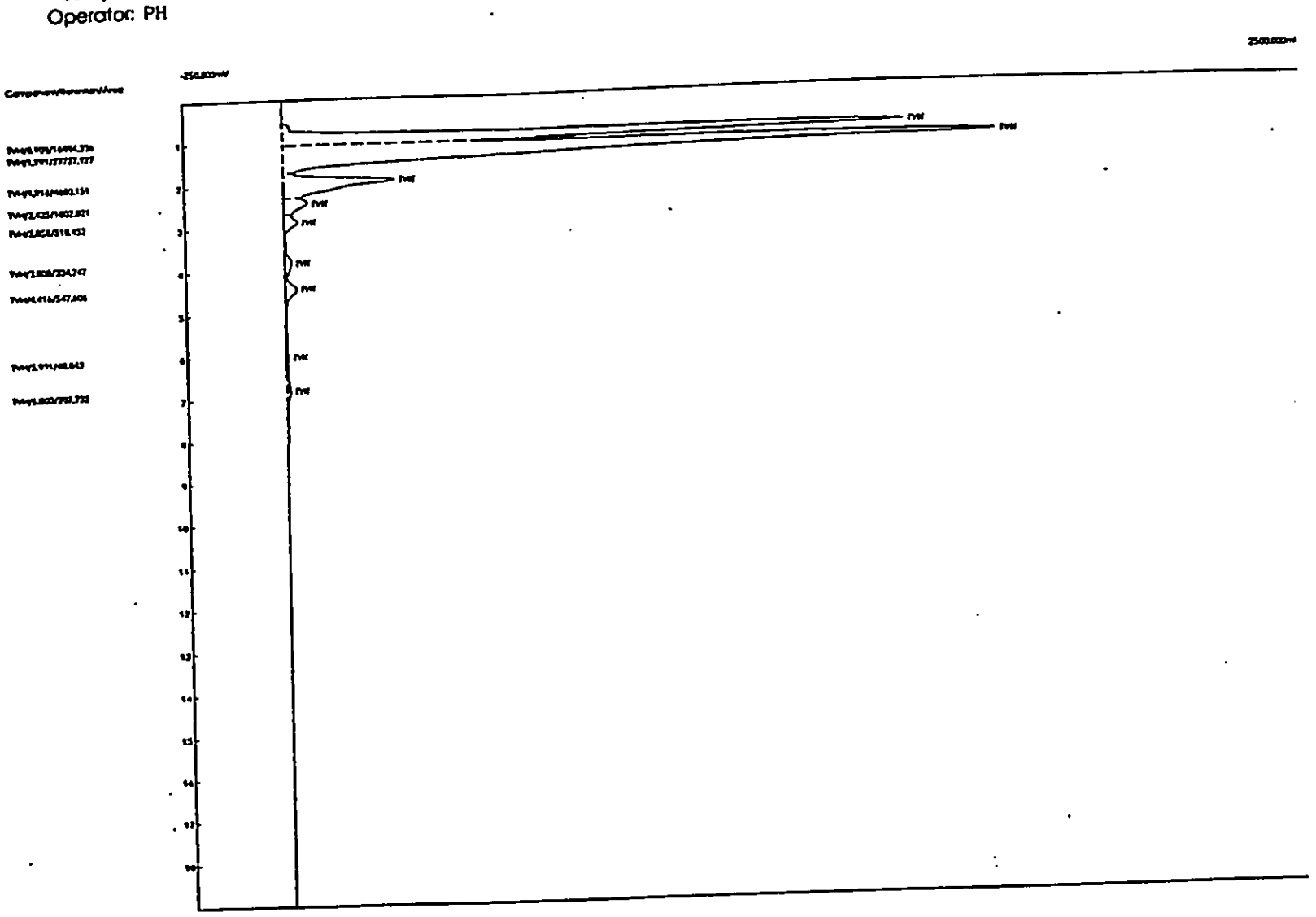
Component	Number	Retention	Area	Internal
VH	1	0.908	30804.231	1410.7731 Y~14,100
VH	1	1.191	51058.149	2338.3627
VH	1	1.933	10839.454	496.4256
VH	1	2.441	2498.488	114.4258
VH	1	2.883	1157.837	53.0267
VH	1	3.816	752.720	34.4731
VH	1	4.450	1631.707	74.7290
VH	1	5.966	155.941	7.1418
VH	1	6.808	620.920	28.4369
VH	1	8.016	69.082	3.1638
	10		99589	4561 45,610

Lab name: TEG HAWAII
Client: WCL
Analysis date: 09/25/1995 14:26:55
Description: SRI #1 FID
Column: OLD RESTEK MXT-VOL
Carrier: N2 @150
Integration: Peak sens=80.0 Base sens=60.0 Min area= 35.00 Dilution= 1.000 Tangents=off
Data file: C:\PEAK\0925A16.CHR 0
Sample: SV8-11 1:10
Operator: PH



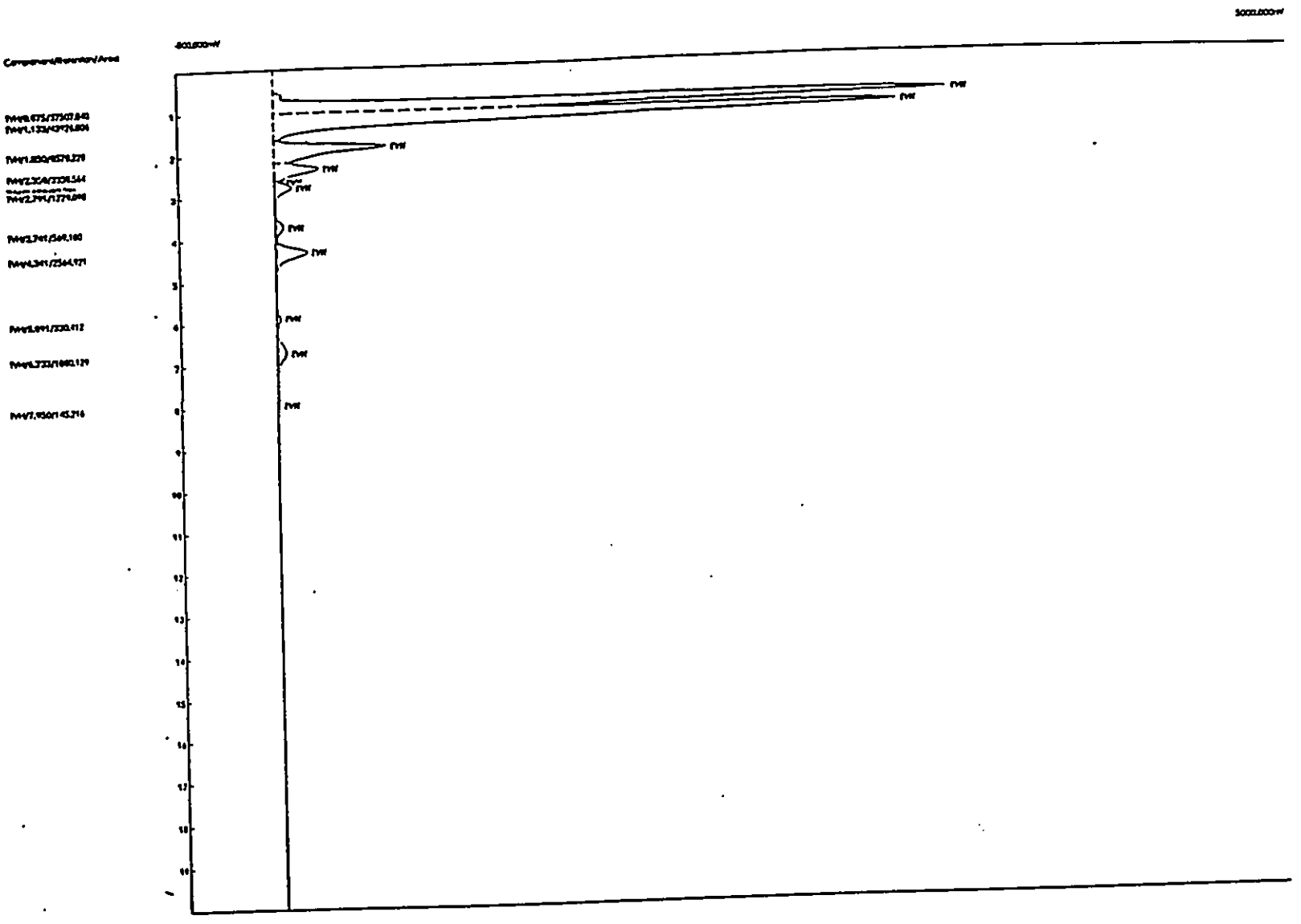
Component	Number	Retention	Area	Internal
TVH	1	0.908	37391.130	1712.4401 X10 17100 METHANE
TVH	1	1.033	1603.659	73.4444
TVH	1	1.166	39602.657	1813.7237
TVH	1	1.625	50.370	2.3068
TVH	1	1.875	8571.707	392.5673
TVH	1	2.383	3092.514	141.6310
TVH	1	2.825	1089.696	49.9059
TVH	1	3.766	529.392	24.2451
TVH	1	4.375	2292.511	104.9925
TVH	1	5.958	235.217	10.7725
TVH	1	6.766	789.870	36.1745
TVH	1	7.983	83.211	3.8109
	12		95332	4366

Lab name: TEG HAWAII
Client: WCL
Analysis date: 09/25/1995 15:11:27
Description: SRI #1 FID
Column: OLD RESTEK MXT-VOL
Carrier: N2 @150
Integration: Peak sens=80.0 Base sens=60.0 Min area= 35.00 Dilution= 1.000 Tangents=off
Data file: C:\PEAK\0925A18.CHR 0
Sample: SV9-11 1:10
Operator: PH



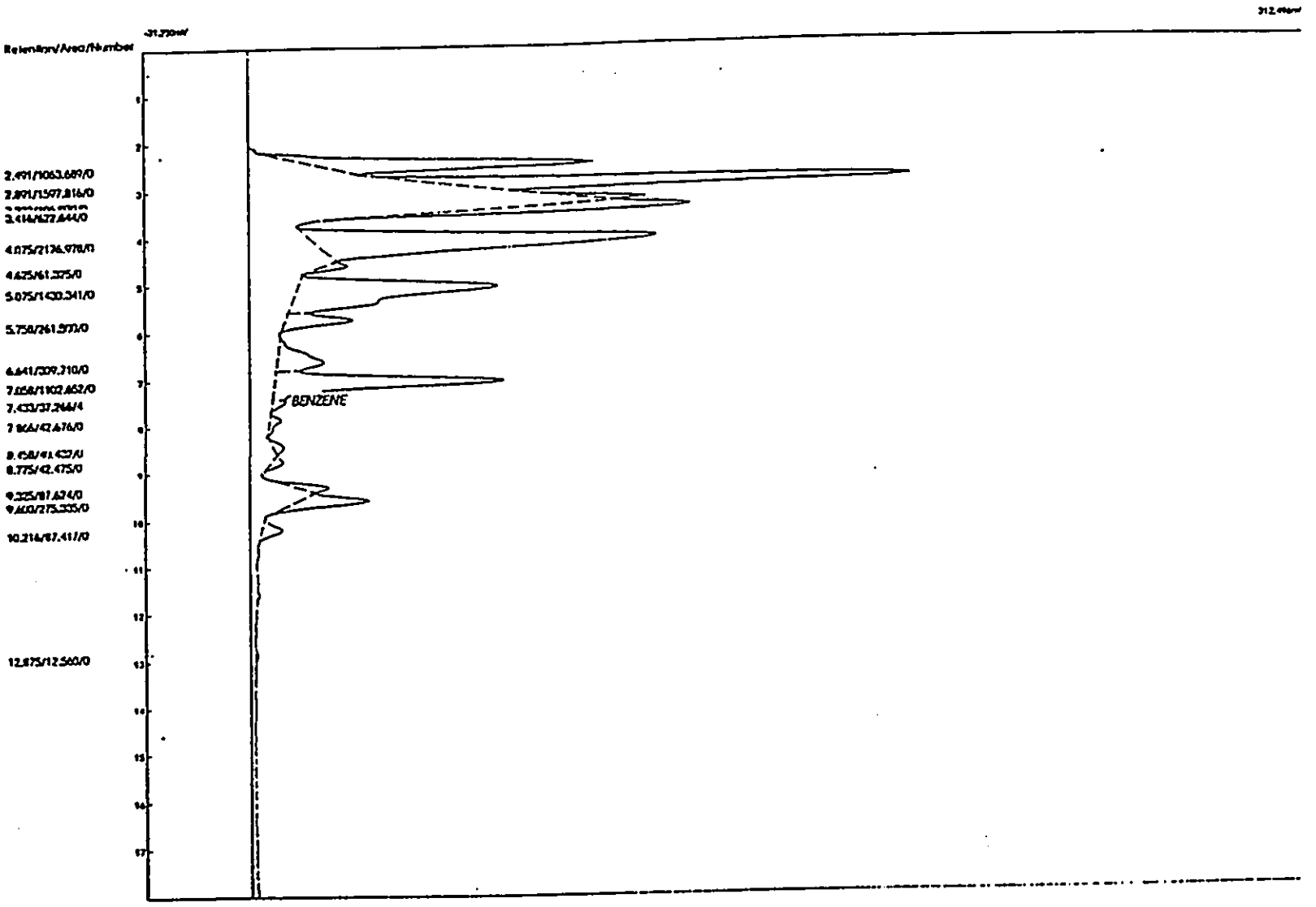
Component	Number	Retention	Area	Internal
TVH	1	0.908	16884.336	773.2693 X 7730
TVH	1	1.191	27727.927	1269.8044
TVH	1	1.916	4680.151	214.3417
TVH	1	2.425	1002.021	45.8906
TVH	1	2.858	518.452	23.7441
TVH	1	3.808	334.747	15.3307
TVH	1	4.416	547.606	25.0793
TVH	1	5.991	48.843	2.2369
TVH	1	6.800	207.732	9.5137
	9		51952	2379 X 23,80.0

Lab name: TEG HAWAII
Client: WCL
Analysis date: 09/25/1995 16:20:32
Description: SRI #1 FID
Column: OLD RESTEK MXT-VOL
Carrier: N2 @150
egration: Peak sens=80.0 Base sens=60.0 Min area= 35.00 Dilution= 1.000 Tangents=off
Data file: C:\PEAK\0925A21.CHR 0
Sample: SSV11-12 1:10
Operator: PH



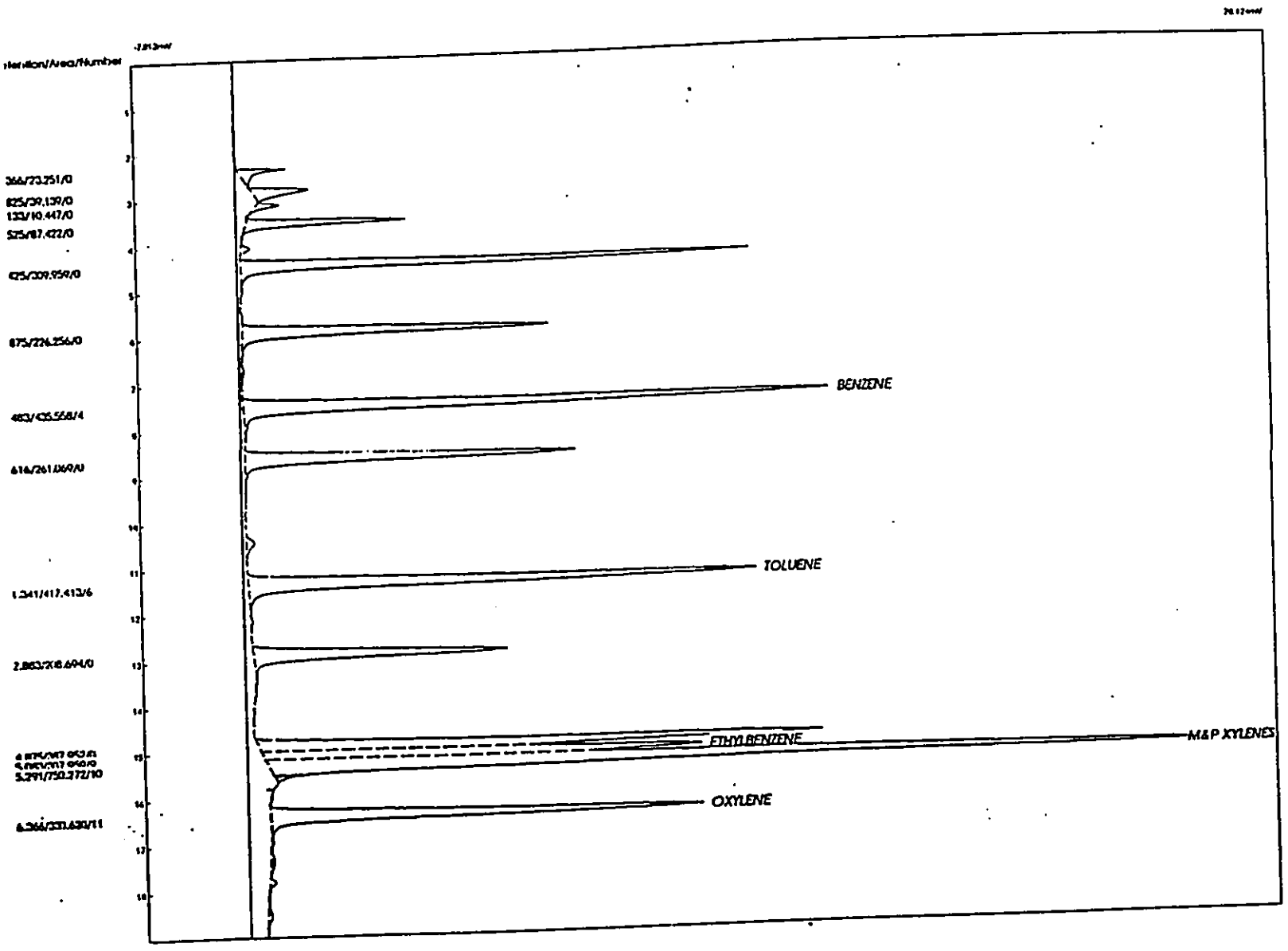
Component	Numbe	Retention	Area	Internal
TVH	1	0.875	37507.840	1717.7852 X10 17200 METHANE
TVH	1	1.133	43926.806	2011.7612
TVH	1	1.850	8578.228	392.8659
TVH	1	2.358	3358.564	153.8156
TVH	1	2.650	87.781	4.0202
TVH	1	2.791	1229.090	56.2899
TVH	1	3.741	569.100	26.0637
TVH	1	4.341	2564.921	117.4684
TVH	1	5.891	330.412	15.1322
TVH	1	6.733	1080.129	49.4678
1	1	7.950	145.216	6.6506
	11		99378	4551 X 10 = 45500

Lab name: TEG HAWAII
Client: WCL
Analysis date: 09/25/1995 18:42:57
Description: outboard pid
Integration: Peak sens=85.0 Base sens=40.0 Min area= 10.00 Dilution= 1.000 Tangents=on
Data file: C:\PEAK\09025C27.CHR ()
Sample: SV15-12
Operator: PH



Component	Retention	Area	Internal w/o
BENZENE	7.433	37.266	0.7775
		37	1

Lab name: TEG HAWAII
Client: WCL
Analysis date: 09/26/1995 15:58:15
Description: outboard pid
Integration: Peak sens=85.0 Base sens=40.0 Min area= 10.00 Dilution= 1.000 Tangents=on
Data file: C:\PEAK\09026C14.CHR 0
Sample: 10NG 8021
Operator: PH



Component	Retention	Area	Internal w/o
BENZENE	7.483	435.558	9.0870
TOLUENE	11.341	417.413	9.1972
ETHYLBENZENE	15.083	307.959	9.6582
M&P XYLENES	15.291	750.272	18.1720
OXYLENE	16.366	330.620	9.4878
		2242	56

APPENDIX F

LOGS AND SCHEMATICS OF WELLS

LOG AND SCHEMATIC OF WELL MW-1

Project Name: King Street Texaco

Project Location: 1239 South King Street, Honolulu, Hawaii

Well Location: Near Northeastern Property Corner

Driller: TEG Hawaii (Eric/Greg)

Geologist: Duncan Walker

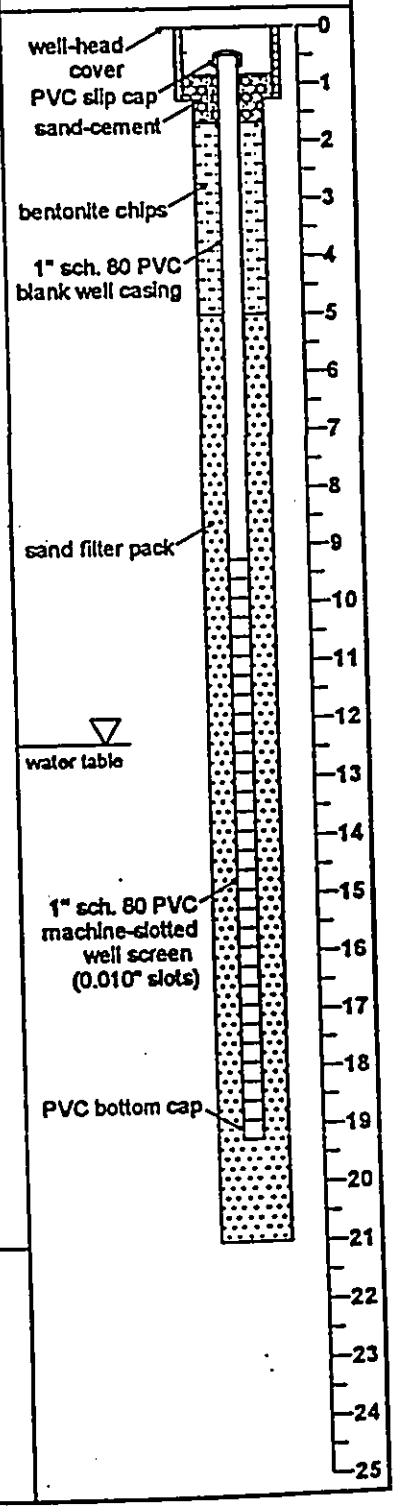
Drilling Date: September 26, 1995

Drilling Method: Strataprobe Direct-Push Rig

Sampling Method: 1.5" Split Barrel Sampler (Stratoprobe driven)

Static Water Level: ~12.4' below ground surface

Depth (feet, bgs)	Sample Identifier	PID (ppmv)	Lithologic Symbol	USCS Symbol	Description
0				gp	Asphalt pavement. Gray sand/gravel base course, sl.damp.
6	MW1-6	1.5		ml	Dk. brown clayey silt/fn. sand, mod. plastic, damp (no odor).
12	MW1-12	9.1		sw	Dk. gray f-c basaltic sand, moist-wet (no odor).
16				sp/gp	Buff-tan coralline gravel/sand, wet (no odor).
21					T.D. = 21'



WALKER CONSULTANTS, LTD.

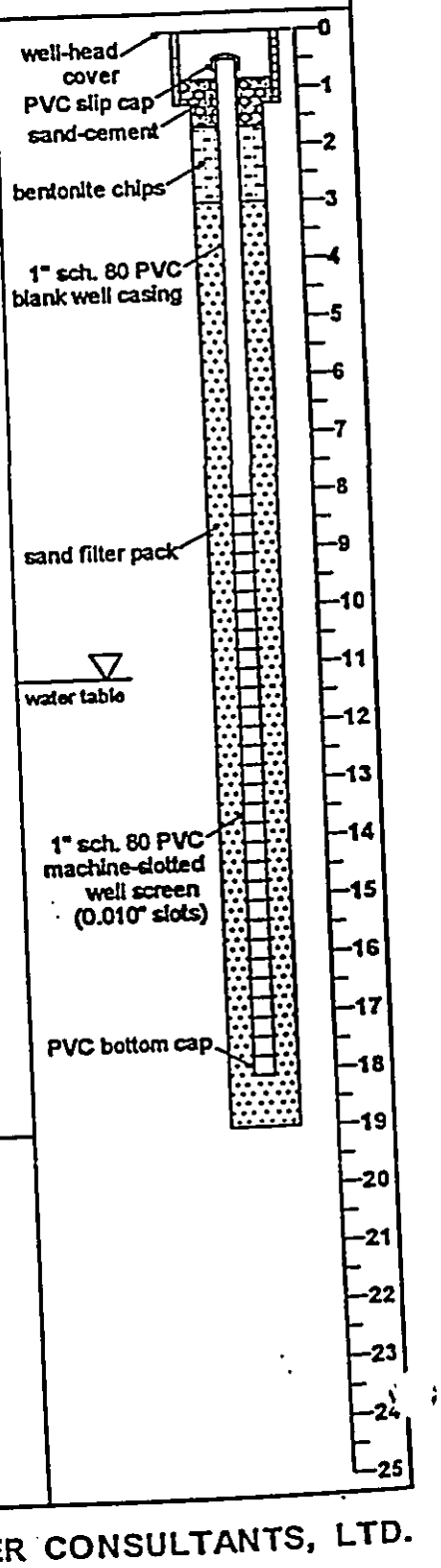
LOG AND SCHEMATIC OF WELL MW-2

Project Name: King Street Texaco
Project Location: 1239 South King Street, Honolulu, Hawaii
Well Location: Southwest of Service Station Building
Driller: TEG Hawaii (Eric/Greg)
Geologist: Duncan Walker

Drilling Date: September 26, 1995
Drilling Method: Strataprobe Direct-Push Rig
Sampling Method: 1.5" Split Barrel Sampler (Stratoprobe driven)
Static Water Level: ~11.2' below ground surface

Depth (feet, bgs)	Sample Identifier	PID (ppmv)	Lithologic Symbol	USCS Symbol	Description
0				gp	Asphalt pavement. Gray sand/gravel base course, sl.damp.
6	MW2-6	0.5		ml	Dk. brown clayey silt/fn. sand, mod. plastic, moist (no odor).
9	MW2-9	2.4		sm	Dk. gray silty f-c basaltic sand w/fn. gravel, moist (no odor).
11	MW2-11	ND		sw	Dk. gray f-c basaltic sand, wet (no odor).
13	MW2-13	0.6		sp/gp	Buff-tan coralline gravel/sand, wet (no odor).
19					T.D. = 19'

Well Schematic



WALKER CONSULTANTS, LTD.

LOG AND SCHEMATIC OF WELL MW-3

Project Name: King Street Texaco

Project Location: 1239 South King Street, Honolulu, Hawaii

Well Location: South-Center of Service Station Building

Driller: TEG Hawaii (Eric/Greg)

Geologist: Duncan Walker

Drilling Date: September 26, 1995

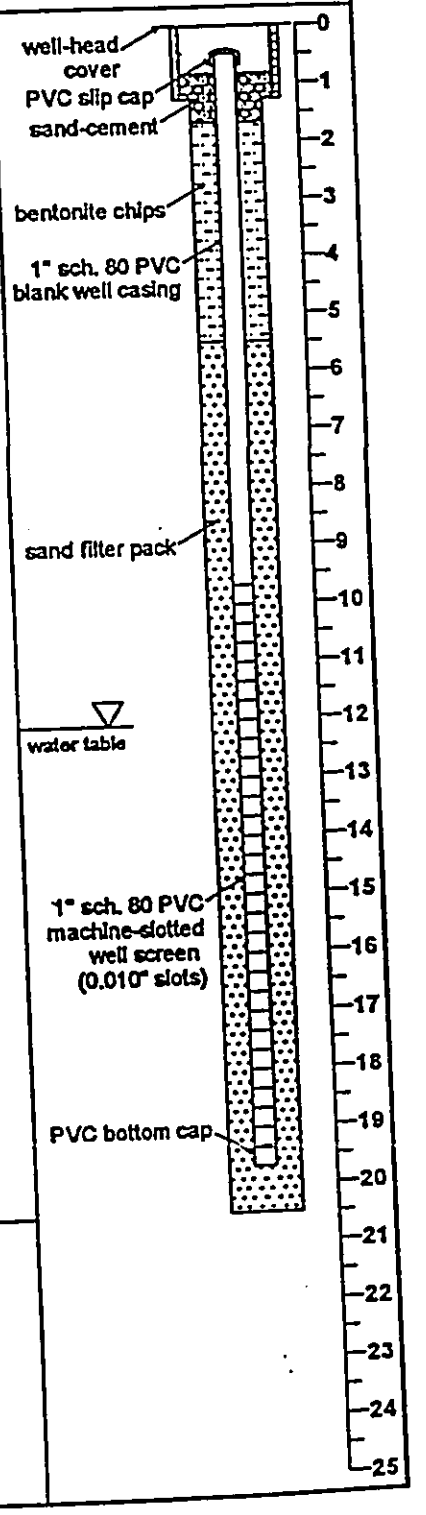
Drilling Method: Strataprobe Direct-Push Rig

Sampling Method: 1.5" Split Barrel Sampler (Stratoprobe driven)

Static Water Level: ~12.1' below ground surface

Depth (feet, bgs)	Sample Identifier	PID (ppm)	Lithologic Symbol	USCS Symbol	Description
0				gp	Asphalt pavement. Gray sand/gravel base course, sl.damp.
6	MW3-6	9.8		ml	Dk. brown clayey silt/fn. sand, mod. plastic, damp (no odor).
11	MW3-11	5.4		sw	Dk. gray f-c basaltic sand, moist-wet (no odor).
16				sp/gp	Buff-tan coralline gravel/sand, wet (no odor).
20.5					T.D. = 20.5'

Well Schematic



WALKER CONSULTANTS, LTD.

LOG AND SCHEMATIC OF WELL MW-4

Project Name: King Street Texaco

Project Location: 1239 South King Street, Honolulu, Hawaii

Well Location: Northwest of Service Station Building

Driller: TEG Hawaii (Eric/Greg)

Geologist: Duncan Walker

Drilling Date: September 26, 1995

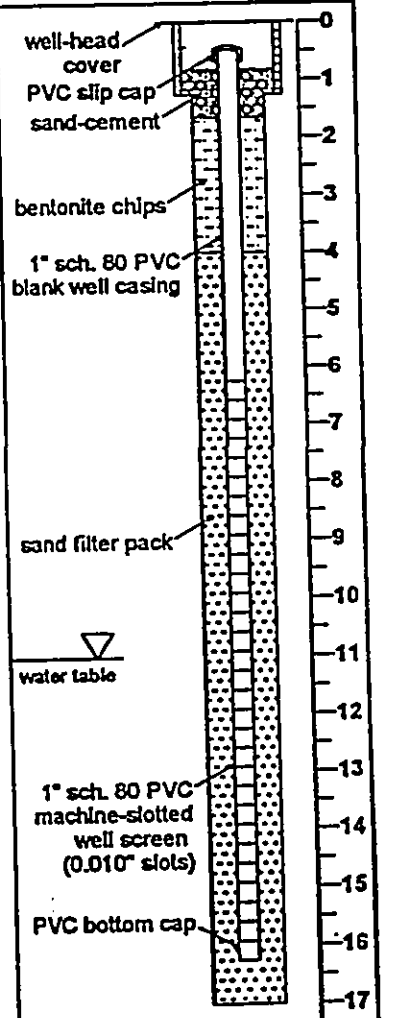
Drilling Method: Strataprobe Direct-Push Rig

Sampling Method: 1.5" Split Barrel Sampler (Stratoprobe driven)

Static Water Level: ~11.0' below ground surface

Depth (feet, bgs)	Sample Identifier	PID (ppmv)	Lithologic Symbol	USCS Symbol	Description
0				gp	Asphalt pavement. Gray sand/gravel base course, sl.damp.
6	MW4-6	4.6		ml	Dk. brown clayey silt/fn. sand, mod. plastic, damp (no odor).
11	MW4-11	10.4		sw	Dk. gray f-c basaltic sand, moist-wet (no odor).
16				sp/gp	Buff-tan coralline gravel/sand, wet (no odor).
18.5					Pilot Hole T.D. = 18.5' (refusal of drive tube at 17')

Well Schematic



WALKER CONSULTANTS, LTD.

LOG AND SCHEMATIC OF WELL MW-5

Project Name: King Street Texaco

Project Location: 1239 South King Street, Honolulu, Hawaii

Well Location: Northeast of Gasoline USTs

Driller: TEG Hawaii (Eric/Greg)

Geologist: Duncan Walker

Drilling Date: September 28, 1995

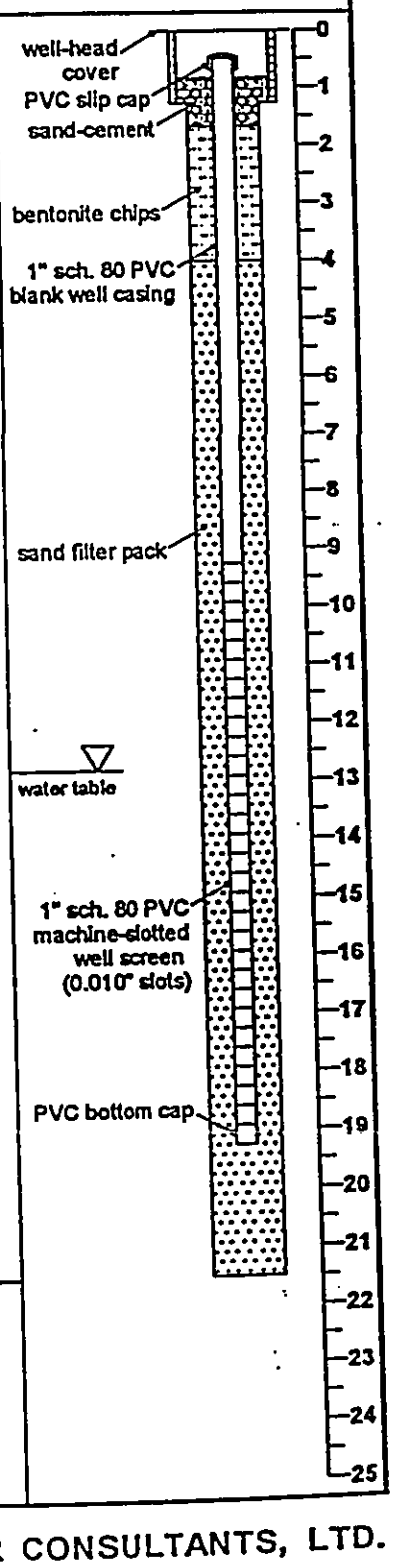
Drilling Method: Strataprobe Direct-Push Rig

Sampling Method: 1.5" Split Barrel Sampler (Stratoprobe driven)

Static Water Level: ~12.8' below ground surface

Depth (feet, bgs)	Sample Identifier	PID (ppmv)	Lithologic Symbol	USCS Symbol	Description
0					Asphalt pavement.
1				gp	Gray sand/gravel base course, sl.damp.
6	MW5-6	16.2		ml	Dk. brown clayey silt/fn. sand, mod. plastic, damp (no odor).
11	MW5-11	19.1		sw	Dk. gray f-c basaltic sand, moist-wet (faint gasoline odor).
15				sp/gp	Buff-tan coralline gravel/sand, wet (gasoline odor).
21.5					T.D. = 21.5'

Well Schematic



WALKER CONSULTANTS, LTD.

LOG AND SCHEMATIC OF WELL MW-6

Project Name: King Street Texaco

Project Location: 1239 South King Street, Honolulu, Hawaii

Well Location: Service Bay Apron, Southeast of Used Oil UST

Driller: TEG Hawaii (Eric/Greg)

Geologist: Duncan Walker

Drilling Date: September 28, 1995

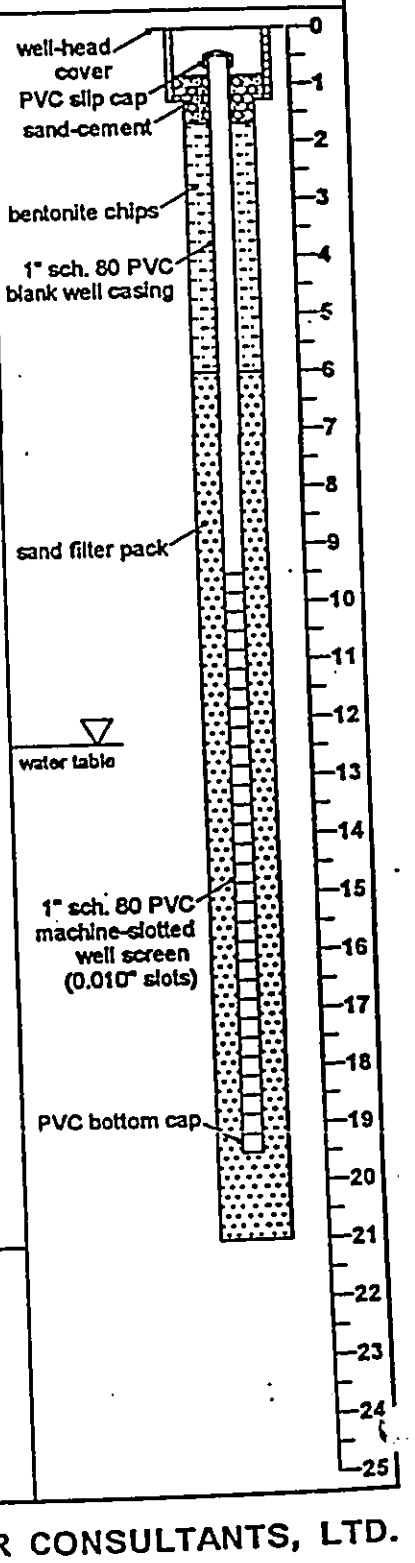
Drilling Method: Strataprobe Direct-Push Rig

Sampling Method: 1.5" Split Barrel Sampler (Stratoprobe driven)

Static Water Level: ~12.4' below ground surface

Depth (feet, bgs)	Sample Identifier	PID (ppmv)	Lithologic Symbol	USCS Symbol	Description
0				gp	Concrete slab. Gray sand/gravel base course, sl.damp.
6	MW6-6	35.3		ml	Dk. brown clayey silt/fn. sand, mod. plastic, damp (no odor).
13	MW6-13	86.8		sw	Dk. gray f-c basaltic sand, wet (gasoline odor).
17				sp/gp	Buff coralline gravel/sand, wet (no odor).
21					T.D. = 21'

Well Schematic



WALKER CONSULTANTS, LTD.

LOG AND SCHEMATIC OF WELL MW-7

oject Name: King Street Texaco

Project Location: 1239 South King Street, Honolulu, Hawaii

Well Location: East of Gasoline USTs

Driller: TEG Hawaii (Eric/Greg)

Geologist: Duncan Walker

Drilling Date: September 26, 1995

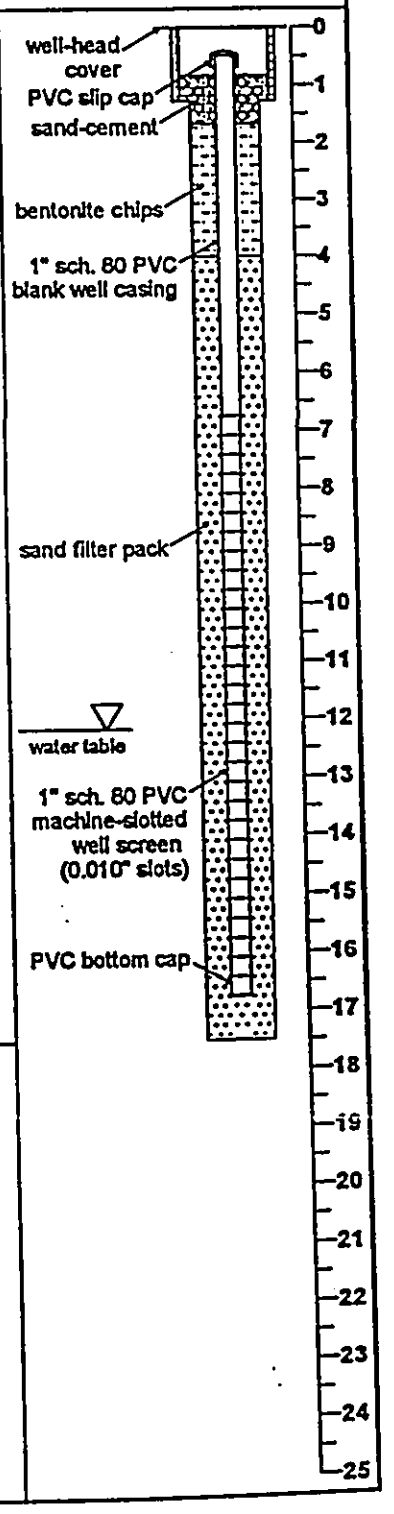
Drilling Method: Strataprobe Direct-Push Rig

Sampling Method: 1.5" Split Barrel Sampler (Stratoprobe driven)

Static Water Level: ~12.15' below ground surface

Depth (feet, bgs)	Sample Identifier	PID (ppmv)	Lithologic Symbol	USCS Symbol	Description
0				gp	Concrete slab. Gray sand/gravel base course, sl.damp.
6	MW7-6	6.7		ml	Dk. brown clayey silt/fn. sand, mod. plastic, moist (no odor).
11	MW7-11	3.6		sw	Dk. gray f-c basaltic sand, moist-wet (gasoline odor).
16				sp/gp	Buff-tan coralline gravel/sand, wet (gasoline odor/sheen on water on downhole tools).
17.5					T.D. = 17.5' (refusal)

Well Schematic



WALKER CONSULTANTS, LTD.

LOG AND SCHEMATIC OF WELL MW-8

Project Name: King Street Texaco

Project Location: 1239 South King Street, Honolulu, Hawaii

Well Location: West of Gasoline USTs

Driller: TEG Hawaii (Eric/Greg)

Geologist: Duncan Walker

Drilling Date: February 2, 1996

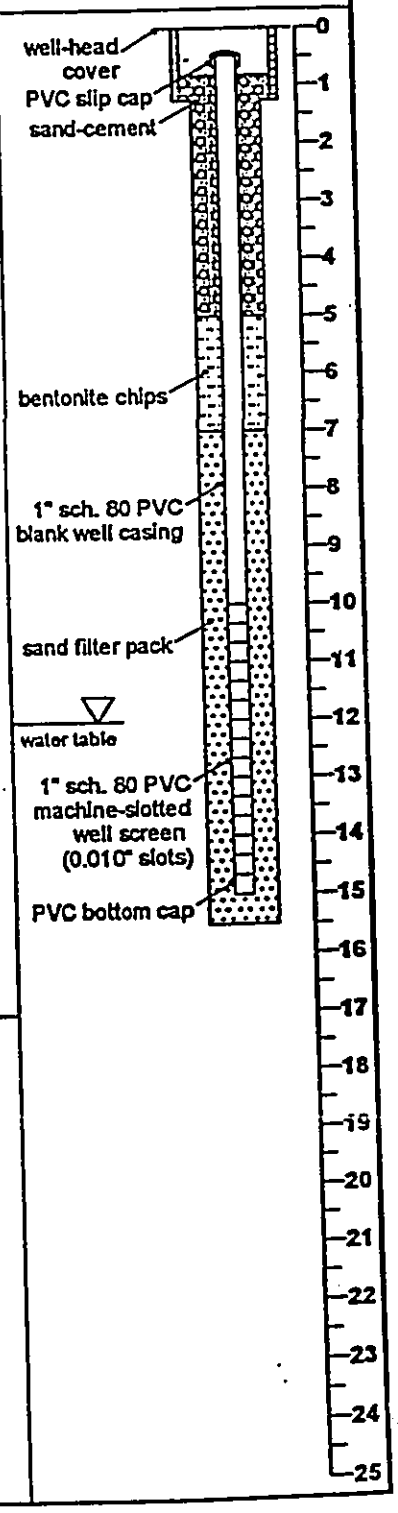
Drilling Method: Strataprobe Direct-Push Rig

Sampling Method: 1.5" Split Barrel Sampler (Stratoprobe driven)

Static Water Level: ~12.0' below ground surface

Depth (feet, bgs)	Sample Identifier	PID (ppmv)	Lithologic Symbol	USCS Symbol	Description
0				gp	Asphalt pavement. Gray sand/gravel base course, sl.damp.
7	MW8-6.5	6.7		gp	Gray basaltic pea gravel (UST backfill), sl.damp (no odor).
10				sw	Dk. gray f-c basaltic sand, moist-wet (faint gasoline odor).
12	MW8-12	3.6		ml	Dk. brown clayey silt/fn. sand, mod. plastic, moist (no odor).
14				sp/gp	Buff-tan coralline gravel/sand, wet (no odor).
17					Pilot Hole T.D. = 17' (refusal--drive tube refusal at 15.5')

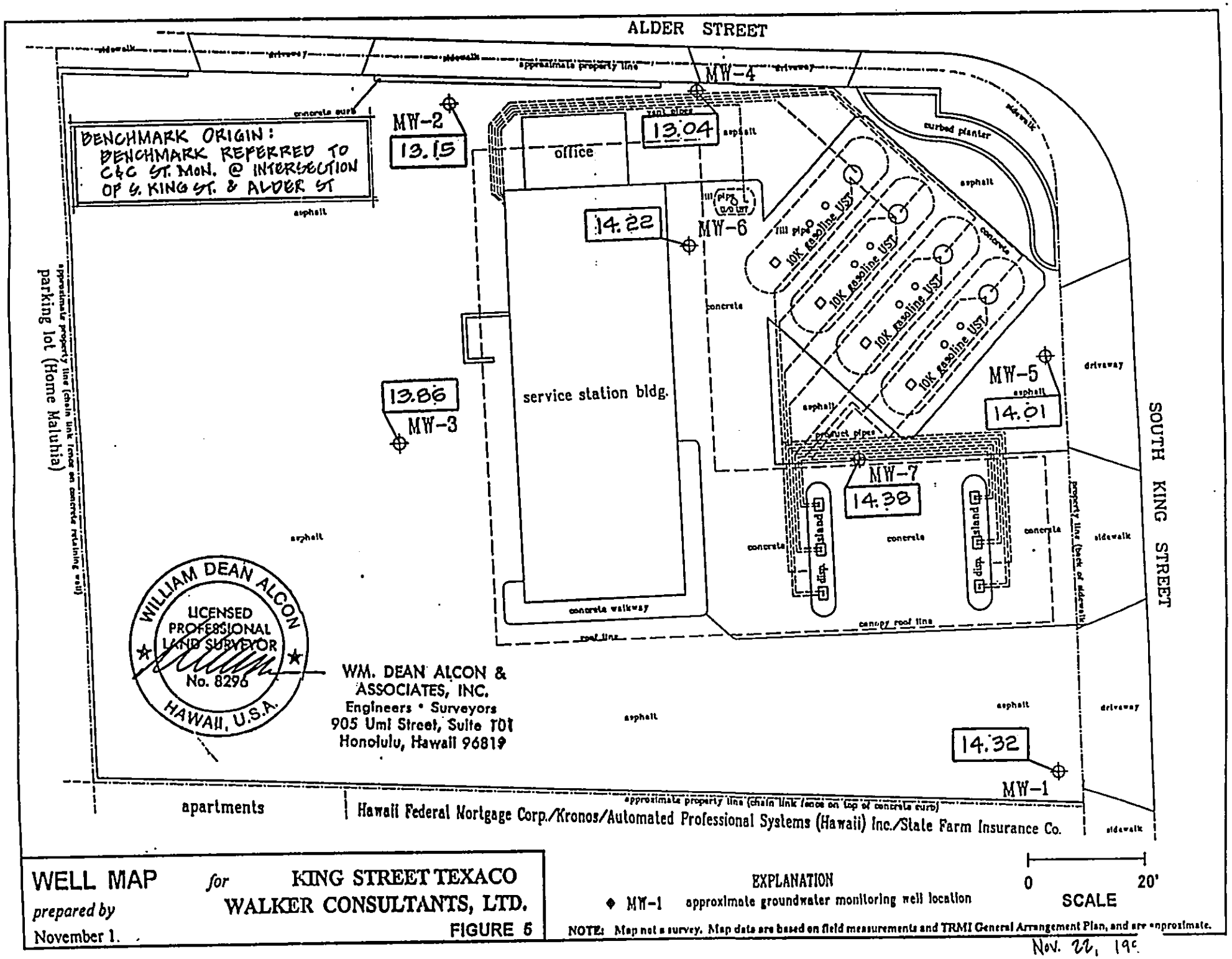
Well Schematic



WALKER CONSULTANTS, LTD.

APPENDIX G

WELL HEAD SURVEY DATA



WELL MAP *for* KING STREET TEXACO
prepared by WALKER CONSULTANTS, LTD.
November 1. FIGURE 5

EXPLANATION
◆ MW-1 approximate groundwater monitoring well location

NOTE: Map not a survey. Map data are based on field measurements and TRMI General Arrangement Plan, and are approximate.

Nov. 22, 19[illegible]

APPENDIX H

GROUNDWATER SAMPLING FIELD DATA AND DISPOSAL RECEIPTS FOR PURGED WATER

WALKER CONSULTANTS, LTD.
GROUNDWATER SAMPLING FIELD DATA

Job No: 95-1197 Site: King Street Texaco Date: 9/28/95

Field Conditions: Warm (80s), Partly Cloudy, Showers, Mod Trades Sampling Team: Duncan Walker

Sampling Method: NA Development Method: Diaphragm Pump

Well No.: MW-1

Well Depth: 19.25' Water Depth: 12.4'

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition
1010	8 gal.	7.1	1020	82	(UNDIL) 3.57	Clear, No Odor, No Sheen, No Seds
1015	10 gal.	7.0	1000	82	3.00	As Above
1020	12 gal.	7.0	1000	82	3.12	As Above

COMMENTS: Water very turbid for ~first 3 gallons, then clear for ~ last 5 gallons - Good yield.

Well No.: MW-3

Well Depth: 19.7' Water Depth: 12.1'

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition
1052	11 gal.	7.0	1250	86	(Undil.) 12.1	V/Sl. Cloudy, No Odor, No Sheen, No Seds.
1100	13 gal.	7.0	1240	86	13.4	As Above
1108	15 gal.	6.9	1200	86	8.71	As Above

COMMENTS: Water very turbid, ~ first 3 gallons, then clear for ~ last 4 gallons - Slow yield.

Well No.: MW-2

Well Depth: 18.1' Water Depth: 11.2'

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition
1200	4 gal.	7.1	1120	85	(undil) 31.6	Sl. Cloudy, Sl. Gas Odor, No Sheen, No SEDS
1216	6 gal.	7.1	1100	85	20.5	As Above
1230	8 gal.	7.1	1100	85	22.6	As Above

COMMENTS: Water very turbid ~first 1 gallon, then clear ~ last 5 gallons - Very slow yield.

WALKER CONSULTANTS, LTD.
GROUNDWATER SAMPLING FIELD DATA

Job No: 95-1197 Site: King Street Texaco Date: 9/28/95

Field Conditions: Warm (80s), Partly Cloudy, Showers, Mod Trades Sampling Team: Duncan Walker

Sampling Method: NA Development Method: Diaphragm Pump

Well No.: MW-4

Well Depth: 16.25' Water Depth: 11.0'

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition
1310	11gal.	6.9	1070	84	(UNDIC.) 5.81	VISL. Cloudy, Faint oil ODOR, No Sheen, No SEDS
1316	13gal.	6.9	1090	84	6.27	As Above
1322	15gal.	6.9	1040	84	7.97	As Above

COMMENTS: Water very turbid ~ first 3 gallons, then clear ~ last 8 gallons, moderately good yield.

Well No.: MW5

Well Depth: 19.8' Water Depth: 12.8'

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition
1405	11gal.	7.1	1390	85	(UNDIL) 12.8	SL. Cloudy, Faint Gas ODOR, No Sheen, NO SEDS
1411	13gal.	7.0	1300	85	11.5	As Above
1418	15gal.	7.0	1300	85	14.1	As Above

COMMENTS: Water very turbid ~ first 4 gallons, then clear ~ last 6 gallons, moderately good yield.

Well No.: MW6

Well Depth: 19.5' Water Depth: 12.4'

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition
1502	8 gal.	6.9	1090	82	(UNDIL) 6.0	Nearly Clear, NO ODOR, No Sheen, No SEDS
1508	10gal.	6.9	1040	82	7.29	As Above
1514	12gal.	7.0	1110	82	3.17	As Above

COMMENTS: Water very turbid ~ first 3 gallons, then clear ~ last 5 gallons, moderately good yield.

WALKER CONSULTANTS, LTD.
GROUNDWATER SAMPLING FIELD DATA

Job No: 95-1197 Site: King Street Texaco Date: 9/28/95

Field Conditions: Warm (80s), Partly Cloudy, Showers, Sampling Team: _____

Sampling Method: Mod. Trades Development Method: Diaphragm Pump
NA

Well No.: MW-7

Well Depth: 16.75' Water Depth: 12.1'

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition
0930	8gals.	6.7	1480	83	(UDIL) 9.67	V/SL. Cloudy, Mod. Gas Odor, Faint Sheen, No SEDS
0934	10gals.	6.6	1400	83	7.15	As Above
0938	12gals	6.7	1410	83	6.29	As Above

COMMENTS: Water very turbid ~ first 2 gallons, then clear ~ last 5 gallons, good yield.

Well No.: _____

Well Depth: _____ Water Depth: _____

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition

COMMENTS: _____

Well No.: _____

Well Depth: _____ Water Depth: _____

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition

COMMENTS: _____

WALKER CONSULTANTS, LTD.
GROUNDWATER SAMPLING FIELD DATA

Job No: 95-1197 Site: King Street Texaco Date: 10/2/95

Field Conditions: Warm (80's), Partly Cloudy, Mod. Trades Sampling Team: Duncan Walker & Eric Anders

Sampling Method: Stainless Steel Bailer Purging Method: Peristaltic Pump

Well No.: MW-1

Well Depth: 19.25' Water Depth: 12.57'

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition
1134	0.4 Gal.	7.1	1010	82	137 (UND)	Clear, No Sheen, NO ODOR SED
1137	0.8 Gal.	7.1	1000	82	1.28 "	As Above
1140	1.2 Gal.	6.9	980	82	1.18 "	As Above

COMMENTS:

Well No.: MW-3

Well Depth: 19.7' Water Depth: 12.15'

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition
1225	0.4 Gal.	7.1	1290	86	20:1 Dil. 40.8	Tan, OPAQUE - NO ODOR No Sheen << 1% SED
1228	0.8 Gal.	7.1	1250	86	NO Dil. 13.45	V/SL. Cloudy, NO ODOR No Sheen, No SED
1231	1.2 Gal.	7.0	1260	86	UNDIL. 8.18	Clear, No ODOR, No Sheen, NO SED

COMMENTS:

Well No.: MW-2

Well Depth: 18.1' Water Depth: 11.40'

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition
1409	0.4 Gal.	7.1	1140	85	20:1 Dil. 30.8	Tan, OPAQUE - SL. GAS ODOR No Sheen, << 1% SED
1416	1.2 Gal.	7.1	1100	84	UNDIL. 38.7	SL. Cloudy, SL. GAS ODOR, No Sheen, NO SED
1419	1.6 Gal.	7.0	1090	83	UNDIL. 21.4	As ABOVE

COMMENTS:

WALKER CONSULTANTS, LTD.
GROUNDWATER SAMPLING FIELD DATA

o: 95-1197 Site: King Street Texaco Date: 10/2/95

Field Conditions: Warm (80's), Partly Cloudy, Mod. Trades Sampling Team: Duncan Walker & ERIC ANDERS

Sampling Method: ~~Stainless Steel~~ Bailer Purging Method: Peristaltic Pump

Well No.: MW-4

Well Depth: 16.26' Water Depth: 11.42'

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition
1443	0.4 Gal.	7.0	1040	85	UNDIL 15.20	V/SL Cloudy, Faint GAS (Oil?) ODOR, No Sheen, No SED
1446	0.8 Gal.	6.9	1090	84	UNDIL 5.66	V/SL Cloudy, Faint Oil ODOR, No Sheen, NO SED
1449	1.2 Gal.	6.9	1100	83	UNDIL 5.48	AS ABOVE

COMMENTS:

Well No.: MW-5

Well Depth: 19.8' Water Depth: 12.28'

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition
1519	0.4 Gal.	7.0	1360	84	UNDIL. 35.1	V/SL Cloudy, Faint GAS ODOR?, No Sheen, NO SED
1522	0.8 Gal.	6.9	1400	84	UNDIL 11.7	V/SL Cloudy, SL. GAS ODOR No Sheen, No SED
1525	1.2 Gal.	6.9	1440	84	5.6	Nearly Clear, SL./NO (Faint) GAS ODOR, No Sheen, No SED

COMMENTS:

Well No.: MW-6

Well Depth: 19.5' Water Depth: 12.47'

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition
1551	0.4 Gal.	7.0	1070	82	UNDIL. 3.21	Nearly Clear, NO ODOR, No Sheen, NO SED
1555	0.8 Gal.	7.0	1080	81	2.03	AS ABOVE
1558	1.2 Gal.	6.9	1060	82	1.47	AS ABOVE

COMMENTS:

WALKER CONSULTANTS, LTD.
GROUNDWATER SAMPLING FIELD DATA

Job No: 95-1197 Site: King Street Texaco Date: 10/2/95

Field Conditions: WARM (80's), Partly Cloudy, Mod. Trades Sampling Team: Duncan Walker & ERIC ANDERS

Sampling Method: Stainless Steel Bailer Purging Method: Peristaltic Pump

Well No.: MW-7

Well Depth: 19.75' Water Depth: 12.63'

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition
1622	0.4 Gal.	6.6	1460	83	UNDIC 10.47	V/SL. Cloudy, Faint Gas ODOR, No Sheen, No SED
1625	0.8 Gal.	6.6	1440	83	4.69	Nearly Clear, SL/ND (Faint) Gas DOOR, No Sheen, No SED
1628	1.2 Gal.	6.6	1420	83	3.68	AS ABOVE

COMMENTS:

Well No.:

Well Depth: Water Depth:

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition

COMMENTS:

Well No.:

Well Depth: Water Depth:

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition

COMMENTS:

1 of 3

WALKER CONSULTANTS, LTD.
GROUNDWATER SAMPLING FIELD DATA

. 96-1246 Site: So. King Street Texaco Date: 7/18/96

ield Conditions: Lt. Trades - 80° Sampling Team: Dave Hawtin / Bassett

ampling Method: Disposable Vinly Tubers Purging Method: Peristaltic Pump

Well No.: MW-1

Well Depth: 19.25' Water Depth: 12.56

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition
1008	Initial	7.8	1120	82°	>200 off scale	Cloudy
1014	½ Gallon	7.6	1050	80°	4.9	Clear
1022	1 Gallon	7.6	1040	81°	26.4	Clear

COMMENTS:

Well No.: MW-3

Depth: 17' Water Depth: 12.13'

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition
1038	Initial	7.6	1220	83°	165.8	Cloudy
1045	½ Gallon	7.6	1220	82°	15.6	Clear
1052	1 Gallon	7.6	1220	82°	2.43	Clear

COMMENTS:

Well No.: MW-2

Well Depth: 18.1' Water Depth: 11.40'

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition
1100	Initial	7.6	1300	82°	177.5	Cloudy
1103	1 gallon	7.6	1120	82°	10.39	Clear
1109	1½ gallon	7.6	1120	82°	4.20	Clear

COMMENTS:

2 of 3

WALKER CONSULTANTS, LTD.
GROUNDWATER SAMPLING FIELD DATA

96-1246 Site: 1239 So. King St. Date: 7/18/96

Field Conditions: Lt. Trucks - 80° Sampling Team: Dave Hinson / Dennis Cousins

Sampling Method: Disposable Poly Bailers Purging Method: Peristaltic Pump

Well No.: MW-4

Well Depth: 16.25' Water Depth: 11.41'

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition
1150	Initial	7.6	1160	83°	54.9	Slightly Cloudy Product Odor
1157	½ gallon	7.4	1170	83°	7.7	Clear
1203	1 gallon	7.4	1160	83°	6.0	Clear

COMMENTS:

Well No.: MW-5

Well Depth: 19.8' Water Depth: 12.26

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition
1255	Initial	7.4	1320	82°	>200	Cloudy
1300		7.4	1310	83°	17.2	Clear
1305		7.4	1310	83°	3.5	Clear

COMMENTS:

Well No.: MW-6

Well Depth: 19.5' Water Depth: 12.47

Time	Volume Purged	pH	Conductivity	T °F	Turbidity	Water Condition
1345	Initial	7.5	1020	82°	13.0	Clear - product odor
1352	½ gallon	7.5	1020	82°	34.9	clear
1356	1 gallon	7.5	1020	82°	5.5	Clear

COMMENTS:

WALKER CONSULTANTS, LTD.
GROUNDWATER SAMPLING FIELD DATA

: 96-1246 Site: 1234 So Vasco Circle Date: 7/18/96

ield Conditions: 4. Tranquillo Sampling Team: Dave Walker / Dan Bassett

ampling Method: Disposable Poly Bailers Purging Method: Peristaltic Pump

Well No.: MW-7

Well Depth: 16.75' Water Depth: 12.63'

Time	Volume Purged	pH	Conductivity	T°F	Turbidity	Water Condition
1425	Initial	7.4	1416	84°	>200 off scale	Cloudy
1432	½ gallon	7.2	1366	83°	71.8	Slightly Cloudy
1437	1 gallon	7.1	1360	83°	5.0	

COMMENTS:

Well No.: MW-8

Well Depth: 17.0' Water Depth: 12.21'

Time	Volume Purged	pH	Conductivity	T°F	Turbidity	Water Condition
1455	Initial	7.4	1540	84°	1849	Very cloudy w/ clay interspersed silt

COMMENTS: Bailed dry @ 1500 hours after removing 0.25 gallon slant at 0.03 GPM

Well No.:

Well Depth: Water Depth:

Time	Volume Purged	pH	Conductivity	T°F	Turbidity	Water Condition

COMMENTS:

DOCUMENT CAPTURED AS RECEIVED

DUSTRIAL TECHNOLOGY
KK CLEANING & WASTE MANAGEMENT
). BOX 27066 • HONOLULU, HAWAII 96827
3 - 682 - 5858 • FAX 808 - 682 - 4377

NOV RECEIVED TEXACO ENVIRONMENTAL SERVICES

INVOICE NO: 42245

CUSTOMER NO: TEXACO

SOLD TO
TEXACO REFINING & MARKETING
1602 NUUANU AVE. SUITE 201
HONOLULU, HI
96817

SHIP TO
TEXACO REFINING & MARKETING
C/O KING ST. TEXACO STATION
1239 S. KING ST.
96817

DATE	CONTACT	PHONE NO.	TERMS
November 02, 95		(808) 533-1886	Net 30 Days
PURCHASE ORDER NUMBER	**ORDER DATE**	**SALESPERSON**	**OUR ORDER NUMBER**
CONTRACT#		JM	42245

QUANTITY ORDERED	QUANTITY SHIPPED	QUANTITY B.O.	ITEM NUMBER	DESCRIPTION	UNIT PRICE	EXTENSION
Ordered	Shipped					
2.000	2.000		DISWWN	Disposal NON HAZ WELL WATER/SEE LABS	63.500	127.00

Date Received Nov 22
Location Address
T: 12-5 From EPC
Location #101-100-0090
Incident #95495089 PAC 7075.30
Job No.
Approved
Approved
The ... reasonable and in accordance ... solely for labor performed ... out in this agreement under ... covered by this invoice ... satisfactory.
Contract

DATE RECEIVED
LOC. CODE/STA ID
PO #/EST. #
PAC CODE
DE CODES
APPROVED
APPROVED

Taxable Subtotal	:	127.00
Tax	:	5.29
Total	:	$132.29

ease pay from invoice. No statement rendered.
late charge of 1½% per month charged on past
e balance.

CUSTOMER
(See reverse for terms and conditions)

INVOICE TOTAL

TEXACO ENVIRONMENTAL SERVICES

WASTE DISPOSAL FORM

SITE ADDRESS: 1239 South King Street

Honolulu, Hawaii 96814

61-100-90

DISPOSAL AUTHORIZATION

DRUM #	ACCUM. DATES	CONTENTS	DESTINATION	COMMENTS
1	9/26-28/95	Develop. Water MW1-MW4	Industrial Technology	
2	9/28-10/2/95	Develop. /Purge Water	Industrial Technology	

EMPTY DRUM DISPOSITION

# OF DRUM	FACILITY NAME	STATUS (Check One)		
		STORAGE	RECYCLE	DISPOSAL
2	Walker Consultants	X		

STOCKPILES

CONTENTS	SIZE (YDS^3)	DESTINATION	TRANSPORTER	SHIP DOCS.

TES PM SIGNATURE: _____ DATE: _____

DISPOSAL VERIFICATION SECTION

The above listed wastes were transported and disposed at the above listed facilities with the following exceptions/modifications:

CONSULTANT SIGNATURE: _____ DATE: 10/2/95

WDF.DOC

TEXACO ENVIRONMENTAL SERVICES

WASTE MANAGEMENT/TRACKING SHEET

SITE LOCATION: 1239 South King Street
Honolulu, Hawaii 96814

LOCATION #: 61-100-90

TES PROJECT MANAGER: Ray Fields

DATE, TIME AND PURPOSE OF SITE VISIT: 10/2/95 - Groundwater Monitoring

PERSON & COMPANY MAKING REPORT: Duncan Walker, Walker Consultants, Ltd.

DRUMS

DRUM #	ACCUMULATION DATES	CONTENTS	COMMENTS
1	9/26-28/95	Develop. Water MW1-MW4	50 gallons
2	9/28-10/2/95	Develop. Water - MW5-MW-7 Purge Water - MW1 - MW7	50 gallons

STOCKPILES

I.D.	SIZE (YDS^3)	COMMENTS/MAINTENANCE

GENERAL SITE COMMENTS:

SIGNATURE:

WMF.DOC

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . . Manifest Document No. . . .

2. Page 1 of 1 — HIW9608151

Site: Texaco service station at South King St.

GENERATOR

3. Generator's Name and Mailing Address: King ST. Texaco
c/o Walker Consultant, Ltd
7192 Kalaniana'ole Hwy
Honolulu, Hi 96825

4. Generator's Phone ( )

5. Transporter 1 Company Name: Allwaste — 6. US EPA ID Number: HI2.DQ.8088.8.84

7. Transporter 2 Company Name — 8. US EPA ID Number: . . . . . .

9. Designated Facility Name and Site Address: Allwaste
91-416 Komohana St
Kapolei, Hi 96707 — 10. US EPA ID Number: HI2.R000.000.927

A. Transporter's Phone 682-3033
B. Transporter's Phone
C. Facility's Phone 682-3600

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. Non-DOT Regulated Wastewater	0010	DM	15	G
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
24 hr. Emergency Response # 808-682-3600

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name: Tuck — Signature — Month 10 Day 15 Year 96

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Mac Mackinney — Signature — Month 10 Day 15 Year 96

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Month . Day . Year .

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: JINGBO CHANG — Signature — Month 10 Day 15 Year 96

ORIGINAL – RETURN TO GENERATOR

TEXACO ENVIRONMENTAL SERVICES

WASTE DISPOSAL FORM

SITE ADDRESS: King Street Texaco

1239 So. King Street., Honolulu, Hawaii

Location #: 61-100-090

DISPOSAL AUTHORIZATION

DRUM #	ACCUM. DATES	CONTENTS	DESTINATION	COMMENTS
1	7/18/96	Purge Water MW-1 thru MW-8	AllWaste of Hawaii	~15 gallons

EMPTY DRUM DISPOSITION

# OF DRUM	FACILITY NAME	STATUS (Check One)		
		STORAGE	RECYCLE	DISPOSAL

STOCKPILES

CONTENTS	SIZE (YDS^3)	DESTINATION	TRANSPORTER	SHIP DOCS.

TES PM SIGNATURE: _____ DATE: 7/30/96

DISPOSAL VERIFICATION SECTION

The above listed wastes were transported and disposed at the above listed facilities with the following exceptions/modifications:

CONSULTANT SIGNATURE: _____ DATE: _____

SKSWDF.DOC

TEXACO ENVIRONMENTAL SERVICES

WASTE MANAGEMENT/TRACKING SHEET

SITE LOCATION: 1239 South King Street
Honolulu, Hawaii

LOCATION #: 61-100-090

TES PROJECT MANAGER: Mike Condon

DATE, TIME AND PURPOSE OF SITE VISIT: 7/18/96 Groundwater Monitoring

PERSON & COMPANY MAKING REPORT: Dave Martin, Walker Consultants, Ltd.

DRUMS

DRUM #	ACCUMULATION DATES	CONTENTS	COMMENTS
1	7/18/96	Purge Water MW-1 thru	
		MW-8	~ 15 gallons

STOCKPILES

I.D.	SIZE (YDS^3)	COMMENTS/MAINTENANCE

GENERAL SITE COMMENTS:

SIGNATURE: David W. Martin

SKSWM.DOC

APPENDIX I

SOIL SAMPLE ANALYTICAL RESULTS, LABORATORY QA/QC DATA, AND CHAIN-OF-CUSTODY RECORDS

Applied P & Ch Laborate
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Submitted to:
Walker Consultants, Ltd.
Attention: Duncan Walker
7192 Kalanianaole Hwy., Ste. G-220
Honolulu, HI 96825
Tel: (808)395-0392 Fax: (808)395-1969

Service ID #: 801-953841 Received : 09/29/95
Collected by: Duncan Walker Tested : 10/3-5/95
Collected on: 09/26/95 Reported : 10/06/95
Sample description:
Soil from 1239 S. King St. in Honolulu
Project: King St. Texaco; Job#: 95-1197

Analysis of Soil

Component Analyzed	Method	Unit	PQL	Concentration MW1-6 95-3841-1	MW1-11 95-3841-2	MW2-6 95-3841-3	MW2-11 95-3841-4	MW5-6 95-3841-9
TPH: Gasoline + BTXE Distinction								
TPH (Gasoline)	M8015	mg/kg	1	N.D.	N.D.	N.D.	N.D.	N.D.
Benzene	8020	µg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.
Ethylbenzene	8020	µg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.
Toluene	8020	µg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.
o-Xylene	8020	µg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.
m-Xylene/p-xylene	8020	µg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.
BTXE, Total	8020	µg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.

Component Analyzed	Method	Unit	PQL	MW5-11 95-3841-10	MW7-6 95-3841-13	MW7-11 95-3841-14	MW3-6 95-3841-5	MW3-11 95-3841-6
TPH: Gasoline + BTXE Distinction								
TPH (Gasoline)	M8015	mg/kg	1	N.D.	N.D.	N.D.	N.D.	N.D.
Benzene	8020	µg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.
Ethylbenzene	8020	µg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.
Toluene	8020	µg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.
o-Xylene	8020	µg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.
m-Xylene/p-xylene	8020	µg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.
BTXE, Total	8020	µg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.
TPH: Motor Oil	LUFT/M8015	mg/kg	10	—	—	—	N.D.	N.D.

CADHS ELAP CERTIFICATION NUMBER 1431

Applied P & Ch Laborate
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Analysis of Soil

Component Analyzed	Method	Unit	PQL	Concentration MW4-6 95-3841-7	MW4-11 95-3841-8	MW6-6 95-3841-11	MW6-13 95-3841-12
TPH: Gasoline + BTXE Distinction							
TPH (Gasoline)	M8015	mg/kg	1	N.D.	N.D.	N.D.	8
Benzene	8020	µg/kg	5	N.D.	N.D.	N.D.	N.D.
Ethylbenzene	8020	µg/kg	5	N.D.	N.D.	N.D.	N.D.
Toluene	8020	µg/kg	5	N.D.	N.D.	N.D.	N.D.
o-Xylene	8020	µg/kg	5	N.D.	N.D.	N.D.	N.D.
m-Xylene/p-xylene	8020	µg/kg	5	N.D.	N.D.	N.D.	N.D.
BTXE, Total	8020	µg/kg	5	N.D.	N.D.	N.D.	N.D.
TPH: Motor Oil	LUFT/M8015	mg/kg	10	N.D.	N.D.	N.D.	N.D.*

PQL : Practical Quantitation Limit
– : Analysis not requested.
N.D. : Not Detected or less than the quantitation limit.
* Sample contains 132 mg/kg of unknown hydrocarbons in Kerosene range.

Respectfully submitted,

Dominic Lau
Laboratory Manager
Applied P & Ch Laboratory

CADHS ELAP CERTIFICATION NUMBER 1431

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
(909) 590-1828 Fax: (909) 590-1498

APCL QA/QC Report

Submitted to:
Walker Consultants, Ltd.
Attention: Duncan Walker
7192 Kalanianaole Hwy, Ste G-220
Honolulu, HI 96825
Tel: (808)395-0392 Fax: (808)395-1969

Service ID #: 801-953841
Collected by: Duncan Walker
Collected on: 09/26/95
Sample description:
Soil from 1239 S. King St. in Honolulu
Project: King St. Texaco; Job# 95-1197

Received: 09/29/95
Tested: 10/3-5/95
Reported: 10/11/95

801-953841QC

Analysis of Soil

Component Name	Analysis Batch #	CCV mg/L	CCV %Rec	M-Blank mg/kg	SP Level mg/kg	LCS %Rec	MS %Rec	MSD %Rec	MS/MSD %RPD	Control Limit %Rec	Control Limit %Diff
TPH in Soil by GC/FID (M8015)											
Motor Oil	95G1963	1000	99	N.D.	500	104	96	109	13	65-135	35
Gasoline	95G1967	1	100	N.D.	10	97	101	107	6	70-130	30
Benzene	95G1967	0.100	107	N.D.	0.24	82	87	89	2	65-135	25
Toluene	95G1967	0.100	111	N.D.	0.66	107	110	113	3	65-135	25
Ethylbenzene	95G1967	0.100	108	N.D.	0.15	98	102	103	1	65-135	25
p/m-Xylene	95G1967	0.200	111	N.D.	0.54	105	107	110	3	65-135	25
o-Xylene	95G1967	0.100	108	N.D.	0.20	103	107	110	3	65-135	25

Samples were received intact and in chilled condition.

Notation:
ICV – Initial Calibration Verification
CCV – Continuation Calibration Verification
LCS – Lab Control Spike
MS – Matrix Spike
MSD – Matrix Spike Duplicate
ICS – Interference Check Standard
MD – Matrix Duplicate
N.D. – Not detected or less than PQL
CCB – Continuation Calibration Blank
M-blank – Method Blank
SP Level – Spike Level
%Rec – Recovery Percent
%RPD – Relative Percent Differences
%Diff – Control Limit for %RPD
ICP-SD – ICP Serial Dilution
N.A. – Not Applicable

Respectfully submitted,

Kevin Xie
QA/QC Coordinator
Applied P & Ch Laboratory

APCL

Applied P & Ch Laboratory

13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

Chain of Custody

Please Print in pen Page 1 of 1

Client: WCL Contact: DUNCAN WALKER Tel #: 808-395-0372 Fax #: 808-395-1869

Address: 7192 KALANIANAOLE HWY, E-G220 City: HONOLULU State: HI Zip code: 96825

Bill to: TET (RAY FIELDS, UNIVERSAL CITY, CA, 800-505-2066

Project Name/Code KING ST. TEXACO Job #95-1197 P.O. #

Project Address 1239 So. KING ST, HONOLULU APCL Quotation #

Due Date: ☒regular ☐rush: 7 days ___ hours Sampled by: DUNCAN WALKER

Field Sample ID No.	Sample Description	Date Collected	Time Collected	Sample Matrix	Preservation	# of Containers	Analysis Items: TPH-G/BTEX	Analysis Items: TPH-D	Remarks
MW1-6	SOIL, MW1 @ 6' BGS	9/26/95	0835	SOIL	—	1	X		
MW1-11	SOIL, MW1 @ 11' BGS	9/26/95	0855	SOIL	—	1	X		
MW2-6	SOIL, MW2 @ 6' BGS	9/26/95	1130	SOIL	—	1	X		
MW2-11	SOIL, MW2 @ 11' BGS	9/26/95	1200	SOIL	—	1	X		
MW3-6	SOIL, MW3 @ 6' BGS	9/26/95	1420	SOIL	—	1	X	X	
MW3-11	SOIL, MW3 @ 11' BGS	9/26/95	1505	SOIL	—	1	X	X	
MW4-6	SOIL, MW4 @ 6' BGS	9/26/95	1630	SOIL	—	1	X	X	X
MW4-11	SOIL, MW4 @ 11' BGS	9/26/95	1645	SOIL	—	1	X	X	
MW5-6	SOIL, MW5 @ 6' BGS	9/28/95	0855	SOIL	—	1	X		
MW5-11	SOIL, MW5 @ 11' BGS	9/28/95	0905	SOIL	—	1	X		
MW6-13	SOIL, MW6 @ 13' BGS	9/28/95	1230	SOIL	—	1	X	X	
MW6-6	SOIL, MW6 @ 6' BGS	9/28/95	1455	SOIL	—	1	X	X	
MW7-6	SOIL, MW7 @ 6' BGS	9/28/95	1620	SOIL	—	1	X		
MW7-11	SOIL, MW7 @ 11' BGS	9/28/95	1635	SOIL	—	1	X		

White – With report
Yellow – Lab copy
Pink – Originator

QC Requirement: ☐Regular; ☒QA/QC Report; ☐WIP; ☐Raw Data; ☐Extended Raw Data ☐CLP; ☐ACE ☐AFCEE ☐NEESA ___(E, C or D); ☐Other _____(Please specify)

Sample Disposal: ☐Return ☒Disposal by APCL ☐Hold for _____ days after receiving date. If not specified, samples will be discarded 45 days after samples are received.

Sample Conditions: ☒Intact; ☐Broken. Cooler Seal: ☒Intact; ☐Broken; ☐None. Tag # _____ Temperature: ☐Room ☒Cold (3.7 °C).

Relinquished by [signature] Date/Time 9/28/95 1955 Received by [signature] Date/Time 9/29/95 11:35

Relinquished by Date/Time / Received by Date/Time /

APCL USE ONLY Service # Note:

Clients un[illegible] and that all terms described in the proposals, quotations for this project, and/or the general terms provided in the current APCL price schedules will be followed. APCL reserves the right to terminat[illegible] service or withhold delivery of any reports, if in APCL's sole discretion the terms of the project have been broken.

Root:[illegible][CUST.DATA.LAN]CHAIN.ROOT.TEX File:[CUST.DATA[illegible]]CHAIN.TEX

Applied P & Ch Laboratory
13760 Magnolia Ave., Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

Sample Receiving Checklist

APCL ServiceID: 3841 Client Name/Project: Walker / King St. Texaco

1. Sample Arrival

Date/Time Received 9/29/95 Date/Time Opened 11:35. By (name): AS
Shipping: _____ Air Bill#: 772 8669901 Company: _____
Custody Transfer: ☐ Client ☐ Courier/Fast ☐ UPS ☐ US Mail ☒ ~~FedEx~~ DHL ☐ APCL Empl: _____

2. Chain-of-Custody (CoC)

☑ With Samples? ☐ Faxed? ☑ Client has Copy? ☑ Signed, dated? By: DW
☑ Project ID? ☑ Analyses Clear? ☐ Hold Samples? #on Hold _____ # Received 14
☑ CoC/Docs Zip-Locked under lid? ☐ Compos.#: _____ ☑ #Samples OK? 14
☐ Discrepancies? ☐ Client notified? ☐ Response (attach docs): _____

3. Shipping Container/Cooler

☑ Cooler Used? # of _____ Cooled by: ☑ Ice ☐ Blue Ice ☐ Dry Ice ☐ None
Temp? 27 °C °F Measured: ☐ Blank? ☑ Cooler? ☐ Other? _____
Cooler Custody Seal? ☐ Absent ☐ Intact ☐ Tampered? Custody Seal#: _____

4. Sample Preservation

☐ pH on label? ☐ Correctly? ☐ pH <2 ☐ pH >12
If Not, pH = _____ Preserved by: ☐ Client ☐ APCL ☐ Third Party _____
Initialed: _____ Use pH login checklist for multiple samples. ☐ Anomaly? _____

5. Holding-time Requirements

☐ pH 24hr ☐ BACT 6/24hr ☐ Cr^{VI} 24hr ☐ NO_3^- 48hr ☐ BOD 48hr ☐ SVOCs 7day-Extr
☑ VOCs 14day ☐ Cl_2 24hr ☐ Turbidity
☐ HT Expired? ☐ Client notified?* Response? _____

6. Sample Container Condition

☑ Intact? ☐ Broken? ☐ Documented? Number: _____ ☑ from Client ☐ from APCL
Type: ☐ plastic ☐ glass ☑ Tube: brass/SS ☐ Tedlar Bag ☐ Septum Reqd?
☑ Quantity OK? ☐ Leaking? ☐ Anomaly? ☐ Action: _____
☑ Caps tight? ☐ Air Bubbles? ☐ Anomaly? ☐ Action: _____
Labels: ☑ Unique ID? ☑ Date/Time ☐ Preserved? ☐ Action: _____

7. Turn Around Time

☑ RUSH TAT: 5 days ☐ Std (6 days) ☐ Not Marked ☐ Problem? ☐ Action: _____

8. Sample Matrix

☐ Drinking H_2O ☐ Other Liq ☑ Soil ☐ Wipe ☐ Polymer ☐ Air ☐ Other: _____
☐ Ground H_2O ☐ Sludge ☐ Filter ☐ Oil/Petrd ☐ Paint ☐ Waste ☐ Extract ☐ Unknown

9. Pre-Login Check List Completed & OK?

☑ ALL OK? (if not, attach docs) ☐ Client Contact? (Name:_____)Date/Time:_____

Received/Checked by: AS Date: 29 Sep 1995 Time: 11:28 a.m.

*TT: Samples must be analyzed for results to reflect total concentrations. Results generated outside required of holding times are considered minimal values and may be used to define waste as hazardous but not as non-hazardous.

DocumentFile: [acal.textfiles]samprcl.tex.

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bo[illegible]/A 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

Walker Consultants, Ltd.	Project Name:	Texaco Honolulu, #61-100-90	
9192 Kalanianaole Hwy., #G-220	Client Project :	#95-1197	Received: Feb 6, 1996
Honolulu, HI 96825			Reported: Feb 16, 1996
Attention: Duncan Walker	NCA Project #:	B602087	

PROJECT SUMMARY PAGE

Laboratory Sample Number	Sample Description	Sample Matrix	Date Sampled
B602087-01	MW8-6.5	Soil	2/2/96
B602087-02	MW8-12	Soil	2/2/96

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

NORTH CREEK ANALYTICAL Inc.

Jack Cooper
for Matthew T. Essig
Project Manager

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bo WA 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

Walker Consultants, Ltd.	Client Project ID:	Texaco Honolulu, #61-100-90	
9192 Kalanianaole Hwy., #G-220	Sample Matrix:	Soil	Received: Feb 6, 1996
Honolulu, HI 96825			Reported: Feb 16, 1996
Attention: Duncan Walker	First Sample #:	B602087-01	

TOTAL SOLIDS & MOISTURE CONTENT REPORT

Sample Number	Sample Description	Total Solids %	Moisture Content %
B602087-01	MW8-6.5	95	5.0
B602087-02	MW8-12	70	30

The enclosed analytical results for soils, sediments and sludges have been converted to a DRY WEIGHT reporting basis.
To attain the wet weight "as received" equivalent, multiply the dry weight result by the decimal fraction of percent Total Solids.

NORTH CREEK ANALYTICAL Inc.

Jack Cooper
for Matthew T. Essig
Project Manager

602087.WWW

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bo WA 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

Walker Consultants, Ltd.	Client Project ID:	Texaco Honolulu, #61-100-90	Sampled: Feb 2, 1996
9192 Kalanianaole Hwy., #G-220	Sample Matrix:	Soil	Received: Feb 6, 1996
Honolulu, HI 96825	Analysis Method:	TPH-G	Analyzed: Feb 13, 1996
Attention: Duncan Walker	First Sample #:	B602087-01	Reported: Feb 16, 1996

TOTAL PETROLEUM HYDROCARBONS-GASOLINE RANGE

Sample Number	Sample Description	Sample Result mg/kg (ppm)	Surrogate Recovery %
B602087-01	MW8-6.5	N.D.	101
B602087-02	MW8-12	N.D.	88
BLK021396	Method Blank	N.D.	102

Reporting Limits	1.0

4-Bromofluorobenzene surrogate recovery control limits are 50 - 150 %.
Volatile Total Petroleum Hydrocarbons are quantitated as Gasoline Range Organics (toluene - dodecane).
Analytes reported as N.D. were not detected above the stated Reporting Limit. The results reported above are on a dry weight basis.

NORTH CREEK ANALYTICAL Inc.

Jack Cooper
for Matthew T. Essig
Project Manager

602087.WWW <3>

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bo WA 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

Walker Consultants, Ltd.
9192 Kalanianaole Hwy., #G-220
Honolulu, HI 96825
Attention: Duncan Walker

Client Project ID: Texaco Honolulu, #61-100-90
Sample Matrix: Soil
Analysis Method: TPH-G
Units: mg/kg (ppm)

Analyzed: Feb 13, 1996
Reported: Feb 16, 1996

HYDROCARBON QUALITY CONTROL DATA REPORT

ACCURACY ASSESSMENT
Laboratory Control Sample

Gasoline

Spike Conc. Added:	5.0
Spike Result:	4.6
% Recovery:	92
Upper Control Limit %:	115
Lower Control Limit %:	33

PRECISION ASSESSMENT
Sample Duplicate

Gasoline Range Hydrocarbons

Sample Number:	B602173-06
Original Result:	N.D.
Duplicate Result:	N.D.
Relative % Difference	Relative Percent Difference values are not reported at sample concentration levels less than 10 times the Detection Limit.
Maximum RPD:	67

NORTH CREEK ANALYTICAL In

Matthew T. Essig
Project Manager

$$\text{\% Recovery:} \quad \frac{\text{Spike Result}}{\text{Spike Concentration Added}} \times 100$$

$$\text{Relative \% Difference:} \quad \frac{\text{Original Result - Duplicate Result}}{(\text{Original Result + Duplicate Result}) \,/\, 2} \times 100$$

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Walker Consultants, Ltd.	Client Project ID:	Texaco Honolulu, #61-100-90	Sampled: Feb 2, 1996
9192 Kalanianaole Hwy., #G-220	Sample Matrix:	Soil	Received: Feb 6, 1996
Honolulu, HI 96825	Analysis Method:	EPA 8020	Analyzed: Feb 13, 1996
Attention: Duncan Walker	First Sample #:	B602087-01	Reported: Feb 16, 1996

BTEX DISTINCTION

Sample Number	Sample Description	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)	Surrogate Recovery %
B602087-01	MW8-6.5	N.D.	N.D.	N.D.	N.D.	111
B602087-02	MW8-12	N.D.	N.D.	N.D.	N.D.	93
BLK021396	Method Blank	N.D.	N.D.	N.D.	N.D.	103
Reporting Limits:		0.050	0.050	0.050	0.10	

4-Bromofluorobenzene surrogate recovery control limits are 34 - 166 %.
Analytes reported as N.D. were not detected above the stated Reporting Limit.
The results reported above are on a dry weight basis.

NORTH CREEK ANALYTICAL Inc.

for Matthew T. Essig
Project Manager

602087.WWW <5>

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bo. WA 98011-9508 (206) 481-9200 • FAX 485-2992
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Walker Consultants, Ltd.
9192 Kalanianaole Hwy., #G-220
Honolulu, HI 96825
Attention: Duncan Walker

Client Project ID: Texaco Honolulu, #61-100-90
Sample Matrix: Soil
Analysis Method: EPA 8020
Units: mg/kg (ppm)
QC Sample #: B602176-05

Analyzed: Feb 13-14, 1996
Reported: Feb 16, 1996

MATRIX SPIKE QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Sample Result:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	0.54	0.54	0.54	1.62
Spike Result:	0.44	0.46	0.45	1.51
Spike % Recovery:	81%	85%	83%	93%
Spike Dup. Result:	0.41	0.43	0.42	1.41
Spike Duplicate % Recovery:	76%	80%	78%	87%
Upper Control Limit %:	111	118	120	128
Lower Control Limit %:	59	55	61	55
Relative % Difference:	7.1%	6.7%	6.9%	6.8%
Maximum RPD:	17	16	17	17

NORTH CREEK ANALYTICAL In

for Matthew T. Essig
Project Manager

$$\text{\% Recovery:} \quad \frac{\text{Spike Result - Sample Result}}{\text{Spike Conc. Added}} \times 100$$

$$\text{Relative \% Difference:} \quad \frac{\text{Spike Result - Spike Dup. Result}}{\text{(Spike Result + Spike Dup. Result) / 2}} \times 100$$

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 481-9200 FAX [illegible]
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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

TEXACO CHAIN OF CUSTODY REPORT Work Order #:

CONSULTANT: Walker Consultants, Ltd.
PROJECT MANAGER: Duncan Walker
ADDRESS: 7192 Kalaniana'ole Hwy, # G-220
Honolulu, HI 96825
PHONE: 808-395-0392 FAX: 808-395-1969
PROJECT NAME: King Street Texaco
PROJECT NUMBER: 95-1197(WCL)
SAMPLED BY: Duncan Walker

TEXACO INFORMATION
TEXACO PROJECT MANAGER: Mike Condon
TEXACO FACILITY NUMBER: 61-100-90
SITE ADDRESS: 1239 South King St.
Honolulu, HI 96814
State Hydrocarbon Methods (please circle): WA OR AK ID

TURNAROUND REQUEST In Business Days
Organic & Inorganic Analyses *: [X] 5 3 1
Air Analyses *: 3 1
OTHER Specify:
* Standard Turnaround for Organic & Inorganic Analyses is [illegible] days
* Standard Turnaround for Air Analyses is 3 Days

NCA SAMPLE NUMBER	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	Analysis Request: TPH-G/BTEX	TPH-D	TPH-D Extended	TPH 418.1	TPH-HCID	Tot/Diss Lead	MATRIX (W, S, O)	# OF CONTAINERS	COMMENTS & PRESERVATIVES USED
B602087-01	1. MWB-6.5	2/2/95 1435	X						S	1	—
B602087-02	2. MWB-12	2/2/95 1450	X						S	1	—
	3.										
	4.										
	5.										
	6.										
	7.										
	8.										
	9.										
	10.										

RELINQUISHED BY: [signature] DATE: 2/5/96
PRINT NAME: Duncan Walker FIRM: WCL TIME: 1200

RECEIVED BY: [signature] DATE: 2/1/96
PRINT NAME: Grace FIRM: NCA TIME: 10:40

RELINQUISHED BY: DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

PAGE 1 OF

TEXCOC.REV2.11/93

APPENDIX J

GROUNDWATER SAMPLE ANALYTICAL RESULTS, LABORATORY QA/QC DATA, AND CHAIN-OF-CUSTODY RECORDS

Applied P & Ch Laborat
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Submitted to:
Walker Consultants, Ltd.
Attention: Duncan Walker
7192 Kalanianaole Hwy., Ste. G-220
Honolulu, HI 96825
Tel: (808)395-0392 Fax: (808)395-1969

Service ID #: 801-953861 Received : 10/03/95
Collected by: Tested : 10/06-09/95
Collected on: 10/02/95 Reported : 10/09/95
Sample description:
Water from 1239 So. King St. in Honolulu
Project: King St. Texaco; Job#: 95-1197

Analysis of Water

Component Analyzed	Method	Unit	PQL	Concentration MW1-1W 95-3861-2	MW3-1W 95-3861-4	MW4-1W 95-3861-5	MW6-1W 95-3861-7	MW2-1W 95-3861-3
TPH: Motor Oil	MOD-LUFT/M	mg/L	0.5	N.D.	N.D.	N.D.	N.D.	—
TPH: Gasoline + BTXE Distinction								
TPH (Gasoline)	M8015	mg/L	0.05	N.D.	0.10	1.5	0.21	N.D.
Benzene	8020	µg/L	0.5	N.D.	N.D.	74	5.6	N.D.
Ethylbenzene	8020	µg/L	0.5	N.D.	0.8	1.2	2.2	N.D.
Toluene	8020	µg/L	0.5	N.D.	N.D.	84	N.D.	N.D.
o-Xylene	8020	µg/L	0.5	N.D.	N.D.	12	N.D.	N.D.
m-Xylene/p-xylene	8020	µg/L	0.5	N.D.	N.D.	27	N.D.	N.D.
BTXE, Total	8020	µg/L	0.5	N.D.	N.D.	198	7.8	N.D.

Component Analyzed	Method	Unit	PQL	MW5-1W 95-3861-6	MW7-1W 95-3861-8	FIELD BLANK 95-3861-1	TRIP BLANK 95-3861-9
TPH: Gasoline + BTXE Distinction							
TPH (Gasoline)	M8015	mg/L	0.05	1.4	1.1	N.D.	N.D.
Benzene	8020	µg/L	0.5	N.D.	13	N.D.	N.D.
Ethylbenzene	8020	µg/L	0.5	18	4.3	N.D.	N.D.
Toluene	8020	µg/L	0.5	N.D.	N.D.	N.D.	N.D.
o-Xylene	8020	µg/L	0.5	N.D.	N.D.	N.D.	N.D.
m-Xylene/p-xylene	8020	µg/L	0.5	0.9	1.0	N.D.	N.D.
BTXE, Total	8020	µg/L	0.5	19	18	N.D.	N.D.

PQL : Practical Quantitation Limit
— : Analysis not requested.
N.D. : Not Detected or less than the quantitation limit.

Respectfully submitted,

Dominic Lau
Laboratory Manager
Applied P & Ch Laboratory

CADHS ELAP CERTIFICATION NUMBER 1431

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL QA/QC Report

Submitted to:
Walker Consultants, Ltd.
Attention: Duncan Walker
7192 Kalanianaole Hwy,Ste G220
Honolulu, HI 96825
Tel: (808)395-0392 Fax: (808)395-1969

Service ID #: 801-953861
Collected by:
Collected on: 10/02/95
Sample description:
Water from 1239 So. King St. in Honolulu
Project: King St. Texaco; Job# 95-1197

Received: 10/03/95
Tested: 10/06-09/95
Reported: 10/11/95

801-953861QC

Analysis of Water

Component Name	Analysis Batch #	CCV mg/L	CCV %Rec	M-Blank mg/L	SP Level mg/L	LCS %Rec	MS %Rec	MSD %Rec	MS/MSD %RPD	Control Limit %Rec	Control Limit %Diff
TPH in Water by GC/FID (M8015)											
Motor Oil	95G1991	1000	106	N.D.	50	105	105	102	3	65-135	35
Gasoline	95G1989	1	99	N.D.	1	94	91	96	5	70-130	30
Benzene	95G1989	0.100	101	N.D.	0.024	80	82	83	1	65-135	25
Toluene	95G1989	0.100	105	N.D.	0.066	105	104	106	2	65-135	25
Ethylbenzene	95G1989	0.100	106	N.D.	0.015	97	98	98	0	65-135	25
p/m-Xylene	95G1989	0.200	106	N.D.	0.054	104	103	105	2	65-135	25
o-Xylene	95G1989	0.100	107	N.D.	0.020	95	97	98	1	65-135	25

Samples were received intact and in chilled condition.

Notation:
ICV – Initial Calibration Verification
CCV – Continuation Calibration Verification
LCS – Lab Control Spike
MS – Matrix Spike
MSD – Matrix Spike Duplicate
ICS – Interference Check Standard
MD – Matrix Duplicate
N.D. – Not detected or less than PQL
CCB – Continuation Calibration Blank
M-blank – Method Blank
SP Level – Spike Level
%Rec – Recovery Percent
%RPD – Relative Percent Differences
%Diff – Control Limit for %RPD
ICP-SD – ICP Serial Dilution
N.A. – Not Applicable

Respectfully submitted,

Kevin Xie
QA/QC Coordinator
Applied P & Ch Laboratory

DOCUMENT CAPTURED AS RECEIVED

APCL

Applied P & Ch Laboratory

13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

Chain of Custody

Please Print in pen Page 1 of 1

Client: WCC Contact: DUNCAN CLARKE Tel #: 808-395-0392 Fax #: 808-395-1969

Address: 7192 KALANIANAOLE HWY, #G220 City: HONOLULU State: HI Zip code: 96825

Bill to: TESORO GEOSCI, USCP, 808-505-2066

Project Name/Code KING ST. TESORO Job #95-1197 P.O. #

Project Address 1239 So. KING ST, HONOLULU APCL Quotation #

Due Date: ☒ regular ☐ rush: 7 days ___ hours Sampled by:

Field Sample ID No.	Sample Description	Date Collected	Time Collected	Sample Matrix	Preservation	# of Containers	Analysis Items: TPH-G/BTEX	Analysis Items: TPH-D (Extn)	Remarks
MW1-1W	GROUNDWATER, MW1	10/2/95	1200	WATER	HCL	3	X	X	
MW2-1W	GROUNDWATER, MW2	10/2/95	1245	WATER	HCL	2	X		
MW3-1W	GROUNDWATER, MW3	10/2/95	1420	WATER	HCL	3	X	X	
MW4-1W	GROUNDWATER, MW4	10/2/95	1451	WATER	HCL	3	X	X	
MW5-1W	GROUNDWATER, MW5	10/2/95	1535	WATER	HCL	2	X		
MW6-1W	GROUNDWATER, MW6	10/2/95	1600	WATER	HCL	3	X	X	
MW7-1W	GROUNDWATER, MW7	10/2/95	1640	WATER	HCL	2	X		
FIELD BLANK	FIELD BLANK	10/2/95	—	WATER	HCL	2	X		IF BTEX ONLY IF DETECTED IN SAMPLES
TRIP BLANK	TRIP BLANK	—	—	WATER	HCL	2	X		

3861

White – With report
Yellow – Lab copy
Pink – Originator

QC Requirement: ☐ Regular; ☒ QA/QC Report; ☐ WIP; ☐ Raw Data; ☐ Extended Raw Data ☐ CLP; ☐ ACE ☐ AFCEE ☐ NEESA ___ (E, C or D); ☐ Other ___ (Please specify)

Sample Disposal: ☐ Return ☒ Disposal by APCL ☐ Hold for ___ days after receiving date. If not specified, samples will be discarded 45 days after samples are received.

Sample Conditions: ☑ Intact; ☐ Broken. Cooler Seal: ☑ Intact; ☐ Broken; ☐ None. Tag # ___ Temperature: ☐ Room ☑ Cold (8.6 °C).

Relinquished by [signature] Date/Time 10/2/95 1900 Received by V Bottomley Date/Time 10/3/95 9:45AM

Relinquished by Date/Time / Received by Date/Time /

APCL USE ONLY Service # Note:

Clients understand that all terms described in the proposals, quotations for this project, and/or the general terms provided in the current APCL price schedules will be followed. APCL reserves the right to terminate service or withhold delivery of any reports, if in APCL's sole discretion the terms of the project have been broken.

Root-file:|CUST.DATA.LAB|CHAIN.ROOT.TEX File:|CUST.DATA.LAB|CHAIN.TEX

Rev. Dec. 20, 1994.

Applied P & Ch Laboratory
13760 Magnolia Ave., Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

Sample Receiving Checklist

APCL ServiceID: 3861 Client Name/Project: WCL / KING ST. TEXACO

1. Sample Arrival

Date/Time Received 10/3/95 9:45 Date/Time Opened 10/3/95 10:00 AM By (name): VB
Shipping: _____ Air Bill#: 7653704612 Company: _____
Custody Transfer: ☐ Client ☑ ~~Courier/Fast~~ DHL ☐ UPS ☐ US Mail ☐ FedEx ☐ APCL Empl: _____

2. Chain-of-Custody (CoC)

☑ With Samples? ☐ Faxed? ☑ Client has Copy? ☑ Signed, dated? By: VB
☑ Project ID? ☑ Analyses Clear? ☐ Hold Samples? #on Hold _____ ! # Received 1
☐ CoC/Docs Zip-Locked under lid? ☐ Compos.#: _ ☑ #Samples OK? _____
☐ Discrepancies? ☐ Client notified? ☐ Response (attach docs): _____

3. Shipping Container/Cooler

☑ Cooler Used? # of 1 VB 10/3/95 Cooled by: ☑ Ice ☑ Blue Ice VB 10/4/95 ☐ Dry Ice ☐ None
Temp? 8.6 °C °F Measured: ☐ Blank? ☑ Cooler? ☐ Other? _____
Cooler Custody Seal? ☐ Absent ☑ Intact ☐ Tampered? Custody Seal#: _____

4. Sample Preservation

☐ pH on label? ☐ Correctly? ☐ pH <2 ☐ pH >12
If Not, pH = _____ Preserved by: ☐ Client ☐ APCL ☐ Third Party _____
Initialed: _____ Use pH login checklist for multiple samples. ☐ Anomaly? _____

5. Holding-time Requirements

☐ pH 24hr ☐ BACT 6/24hr ☐ Cr^{VI} 24hr ☐ NO_3^- 48hr ☐ BOD 48hr ☐ SVOCs 7day-Extr
☑ VOCs 14day ☐ Cl_2 24hr ☐ Turbidity
☐ HT Expired? ☐ Client notified?* Response? _____

6. Sample Container Condition

☑ Intact? ☐ Broken? ☑ Documented? Number: 22 ☐ from Client ☐ from APCL
Type: ☐ plastic ☑ glass ☐ Tube: brass/SS ☐ Tedlar Bag ☐ Septum Reqd?
☑ Quantity OK? ☐ Leaking? ☐ Anomaly? ☐ Action: _____
☑ Caps tight? ☐ Air Bubbles? ☐ Anomaly? ☐ Action: _____
Labels: ☑ Unique ID? ☑ Date/Time ☑ Preserved? ☐ Action: _____

7. Turn Around Time

☑ RUSH TAT: 5 days ☐ Std (6 days) ☐ Not Marked ☐ Problem? ☐ Action: ~~None~~ VB 10/3/95

8. Sample Matrix

☐ Drinking H_2O ☐ Other Liq ☐ Soil ☐ Wipe ☐ Polymer ☐ Air ☑ Other: H_2O
☐ Ground H_2O ☐ Sludge ☐ Filter ☐ Oil/Petrd ☐ Paint ☐ Waste ☐ Extract ☐ Unknown

9. Pre-Login Check List Completed & OK?

☑ ALL OK? (if not, attach docs) ☐ Client Contact? (Name:_____)Date/Time:_____

Received/Checked by: VB Date: 3 Oct 1995 Time: 9:55 a.m.

Samples must be analyzed for results to reflect total concentrations. Results generated outside required of holding times are considered minimal values and may be used to define waste as hazardous but not as non-hazardous.

DocumentFile: [acal.textfile]smprcl.tex.

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ▪ (206) 481-9200 ▪ FAX 485-2992
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

Walker Consultants, LTD	Project: South King Street Texaco	Sampled: 7/18/96
9192 Kalanianaole HWY, G220	Project Number: 96-1246	Received: 7/22/96
Honolulu, HI 96825	Project Manager: Duncan Walker	Reported: 8/9/96

Project Summary

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
MW1-2W	B607339-01	Water	7/18/96
MW3-2W	B607339-02	Water	7/18/96
MW2-2W	B607339-03	Water	7/18/96
MW4-2W	B607339-04	Water	7/18/96
MW5-2W	B607339-05	Water	7/18/96
MW6-2W	B607339-06	Water	7/18/96
MW7-2W	B607339-07	Water	7/18/96
MW8-1W	B607339-08	Water	7/18/96
FIELD BLANK	B607339-09	Water	7/18/96
TRIP BLANK	B607339-10	Water	7/18/96

North Creek Analytical, Inc.

Jack R. Cooper for
Matthew Essig, Project Manager

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ▪ (206) 481-9200 ▪ FAX 485-2992
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

Walker Consultants, LTD	Project: South King Street Texaco	Sampled:	7/18/96
9192 Kalanianaole HWY, G220	Project Number: 96-1246	Received:	7/22/96
Honolulu, HI 96825	Project Manager: Duncan Walker	Reported:	8/9/96

Gasoline Hydrocarbons (C6-C12) and BTEX by EPA 8015M and 8020A

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW1-2W			B607339-01				Water	
Gasoline Range Hydrocarbons	6070684	7/25/96	7/25/96		50.0	ND	ug/l (ppb)	
Benzene	"	"	"		0.500	ND	"	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	*50.0-150*		*108*	%	
Surrogate: 4-BFB (PID)	"	"	"	*53.0-136*		*83.7*	"	
MW3-2W			B607339-02				Water	
Gasoline Range Hydrocarbons	6070684	7/25/96	7/25/96		50.0	ND	ug/l (ppb)	
Benzene	"	"	"		0.500	ND	"	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	*50.0-150*		*110*	%	
Surrogate: 4-BFB (PID)	"	"	"	*53.0-136*		*85.0*	"	
MW2-2W			B607339-03				Water	
Gasoline Range Hydrocarbons	6070684	7/25/96	7/25/96		50.0	226	ug/l (ppb)	
Benzene	"	"	"		0.500	ND	"	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	*50.0-150*		*142*	%	
Surrogate: 4-BFB (PID)	"	"	"	*53.0-136*		*90.0*	"	
MW4-2W			B607339-04				Water	
Gasoline Range Hydrocarbons	6070684	7/25/96	7/25/96		50.0	969	ug/l (ppb)	
Benzene	"	"	"		0.500	199	"	
Toluene	"	"	"		0.500	43.5	"	
Ethylbenzene	"	"	"		2.50	ND	"	
Xylenes (total)	"	"	"		1.00	12.1	"	
Surrogate: 4-BFB (FID)	"	"	"	*50.0-150*		*110*	%	
Surrogate: 4-BFB (PID)	"	"	"	*53.0-136*		*88.1*	"	
MW5-2W			B607339-05				Water	
Gasoline Range Hydrocarbons	6070684	7/25/96	7/25/96		50.0	218	ug/l (ppb)	
Benzene	"	"	"		0.500	ND	"	
Toluene	"	"	"		0.500	ND	"	

North Creek Analytical, Inc.

Jack R. Cogan for
Matthew Essig, Project Manager

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ▪ (206) 481-9200 ▪ FAX 485-2992
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

Walker Consultants, LTD	Project:	South King Street Texaco	Sampled: 7/18/96
9192 Kalanianaole HWY, G220	Project Number:	96-1246	Received: 7/22/96
Honolulu, HI 96825	Project Manager:	Duncan Walker	Reported: 8/9/96

Gasoline Hydrocarbons (C6-C12) and BTEX by EPA 8015M and 8020A

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW5-2W (continued)			B607339-05				Water	
Ethylbenzene	6070684	7/25/96	7/25/96		0.500	ND	ug/l (ppb)	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	*50.0-150*		*120*	%	
Surrogate: 4-BFB (PID)	"	"	"	*53.0-136*		*88.1*	"	
MW6-2W			B607339-06				Water	
Gasoline Range Hydrocarbons	6070684	7/25/96	7/25/96		50.0	371	ug/l (ppb)	
Benzene	"	"	"		0.500	23.5	"	
Toluene	"	"	"		0.500	1.28	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	*50.0-150*		*128*	%	
Surrogate: 4-BFB (PID)	"	"	"	*53.0-136*		*91.3*	"	
MW7-2W			B607339-07				Water	
Gasoline Range Hydrocarbons	6070684	7/25/96	7/25/96		50.0	1530	ug/l (ppb)	
Benzene	"	"	"		0.500	2.05	"	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	0.539	"	
Xylenes (total)	"	"	"		1.00	1.24	"	
Surrogate: 4-BFB (FID)	"	"	"	*50.0-150*		*138*	%	
Surrogate: 4-BFB (PID)	"	"	"	*53.0-136*		*98.1*	"	
MW8-1W			B607339-08				Water	
Gasoline Range Hydrocarbons	6070684	7/25/96	7/25/96		50.0	ND	ug/l (ppb)	
Benzene	"	"	"		0.500	5.58	"	
Toluene	"	"	"		0.500	1.13	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	2.55	"	
Surrogate: 4-BFB (FID)	"	"	"	*50.0-150*		*103*	%	
Surrogate: 4-BFB (PID)	"	"	"	*53.0-136*		*86.3*	"	
FIELD BLANK			B607339-09				Water	
Gasoline Range Hydrocarbons	6070684	7/25/96	7/25/96		50.0	ND	ug/l (ppb)	
Benzene	"	"	"		0.500	ND	"	
Toluene	"	"	"		0.500	0.714	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	*50.0-150*		*105*	%	

North Creek Analytical, Inc.

Jack R. Cooks for
Matthew Essig, Project Manager

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ▪ (206) 481-9200 ▪ FAX 485-2992
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

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Gasoline Hydrocarbons (C6-C12) and BTEX by EPA 8015M and 8020A

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
FIELD BLANK (continued)			B607339-09				Water	
Surrogate: 4-BFB (PID)	*6070684*	*7/25/96*	*7/25/96*	*53.0-136*		*86.9*	*%*	
TRIP BLANK			B607339-10				Water	
Gasoline Range Hydrocarbons	6070684	7/25/96	7/25/96		50.0	ND	ug/l (ppb)	
Benzene	"	"	"		0.500	ND	"	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	*50.0-150*		*104*	*%*	
Surrogate: 4-BFB (PID)	"	"	"	*53.0-136*		*86.9*	"	

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Jack R. Cooper for
Matthew Essig, Project Manager

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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Gasoline Hydrocarbons (C6-C12) and BTEX by EPA 8015M and 8020A
Quality Control

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 6070684	**Date Prepared: 7/25/96**				**Water**					
Blank	6070684-BLK1									
Gasoline Range Hydrocarbons	7/25/96			ND	ug/l (ppb)	50.0				
Benzene	"			ND	"	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	1.00				
Surrogate: 4-BFB (FID)	"	*16.0*		*16.6*	"	*50.0-150*	*104*			
Surrogate: 4-BFB (PID)	"	*16.0*		*13.0*	"	*53.0-136*	*81.3*			
					Water					
Blank Spike	6070684-BS1									
Gasoline Range Hydrocarbons	7/25/96	501		532	ug/l (ppb)	63.0-127	106			
Surrogate: 4-BFB (FID)	"	*16.0*		*21.1*	"	*50.0-150*	*132*			
					Water					
Duplicate	6070684-DUP1	B607339-03								
Gasoline Range Hydrocarbons	7/25/96	226		202	ug/l (ppb)			45.0	11.2	
Surrogate: 4-BFB (FID)	"	*16.0*		*18.6*	"	*50.0-150*	*116*			
					Water					
Matrix Spike	6070684-MS1	B607339-01								
Benzene	7/25/96	10.0	ND	8.75	ug/l (ppb)	62.0-126	87.5			
Toluene	"	10.0	ND	9.23	"	72.0-120	92.3			
Ethylbenzene	"	10.0	ND	9.22	"	69.0-129	92.2			
Xylenes (total)	"	30.0	ND	28.0	"	73.0-126	93.3			
Surrogate: 4-BFB (PID)	"	*16.0*		*14.4*	"	*53.0-136*	*90.0*			
					Water					
Matrix Spike Dup	6070684-MSD1	B607339-01								
Benzene	7/25/96	10.0	ND	8.94	ug/l (ppb)	62.0-126	89.4	13.5	2.15	
Toluene	"	10.0	ND	9.46	"	72.0-120	94.6	8.70	2.46	
Ethylbenzene	"	10.0	ND	9.48	"	69.0-129	94.8	13.6	2.78	
Xylenes (total)	"	30.0	ND	28.8	"	73.0-126	96.0	16.3	2.85	
Surrogate: 4-BFB (PID)	"	*16.0*		*14.7*	"	*53.0-136*	*91.9*			

North Creek Analytical, Inc.

Jack R. Cooper for
Matthew Essig, Project Manager

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

Offices:
BOTHELL • (206) 481-9200 • FAX 485-2992
SPOKANE • (509) 924-9200 • FAX 924-9290
PORTLAND • (503) 643-9200 • FAX 644-2202

Correspondence to: 18939 - 120th Ave. NE, #101, Bothell, WA 98011

Walker Consultants, LTD	Project: South King Street Texaco	Sampled: 7/18/96
9192 Kalanianaole HWY, G220	Project Number: 96-1246	Received: 7/22/96
Honolulu, HI 96825	Project Manager: Duncan Walker	Reported: 8/1/96

Project Summary

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
MW4-2W	B607339-04	Water	7/18/96
MW6-2W	B607339-06	Water	7/18/96

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Jack R. Cooper for
Matthew Essig, Project Manager

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Environmental Laboratory Services

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BOTHELL • (206) 481-9200 • FAX 485-2992
SPOKANE • (509) 924-9200 • FAX 924-9290
PORTLAND • (503) 643-9200 • FAX 644-2202

Correspondence to: 18939 - 120th Ave. NE, #101, Bothell, WA 98011

Valker Consultants, LTD	Project: South King Street Texaco	Sampled: 7/18/96
192 Kalanianaole HWY, G220	Project Number: 96-1246	Received: 7/22/96
Honolulu, HI 96825	Project Manager: Duncan Walker	Reported: 8/1/96

Heavy Oil Range Hydrocarbons by WTPH-418.1

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
			B607339-04					
MW4-2W Petroleum Oil Hydrocarbons	6070071	7/30/96	7/30/96	EPA 418.1	1.00	ND	mg/L (ppm)	
			B607339-06					
MW6-2W Petroleum Oil Hydrocarbons	6070071	7/30/96	7/30/96	EPA 418.1	1.00	ND	mg/L (ppm)	

North Creek Analytical, Inc.

Jack R. Cooper for
Matthew Essig, Project Manager

ATTACHMENT "F"

MARKET STUDY OF ELDERLY HOUSING

SMS Research & Marketing Services, Inc.
1042 Fort Street Mall, Suite 200
Honolulu, Hawaii 96813
Telephone: (808) 537-3356
Fax: (808) 537-2686

To: Name: Gary S. Furuta
Fax: 395-1520

From: John Kirkpatrick
Date: March 10, 1998
Number of pages including this one: 1

Thanks for your fax. In reply:

Our exhibit list projects recently completed or planned for the near future. The analysis builds on the 1997 Hawai'i Housing Policy Study Update, so it lists projects that are not in the inventory (as of 1/1/97) listed in that study. Accordingly, the Na Lei Hulu Kupuna project in Kaka'ako .and Hale Mohalu in Pearl City are not included, since these opened their doors before 1997.

The bankers asked, "What is the rent for comparable market units?" What units? One-bedroom rentals in multi-family buildings? As of mid-1997, there were a total of 467 units advertised on Oahu, and the average rent asked was $722. The median rent was $700 (as compared to $500 in the proposed King Street Apartments!)

If they're asking with regard to one-bedroom *elderly* units, our answer has to be that the available inventory is small. New projects such as Kulana Hale have included a very few one-bedroom units at affordable rates – and they're gone. There simply isn't a "market rate" here, i.e., both demand and a supply of units for which the market sets a price. Since there is demand but no units to meet it, we can be confident the King Street Apartments is well designed to respond to demand.

I hope this clears up the questions. Thanks!

SMS®

Research

Consulting

Financial Consulting

Training

Database Marketing

Socio-Economic Studies

MARKET STUDY OF ELDERLY HOUSING, CITY AND COUNTY OF HONOLULU, FOR THE PROPOSED KING STREET APARTMENTS

February 1998

SMS affiliations:

Allan Barker Associates
Customer Insight Company
Donnelly Marketing Inc.
International Survey Research
Simmons Market Research Bureau, Inc.

Prepared for:

Hawai'i Housing Development Corporation

SMS / 1042 Fort Street Mall, Suite 200 / Honolulu, Hawaii 96813
Telephone (808) 537-3356 / FAX (808) 537-2686 / Compuserve 73444,1373 / Internet info@smshawaii.com

INTRODUCTION

The proposed King Street Apartments will provide 91 one-bedroom units for elderly persons for rent for about $500 per month. (Including utilities, gross housing costs should come to about $550 per month.) This rate is affordable for households with 50% of the HUD median annual income. This market has been targeted on the expectation that demand is strong for such housing in the area.

In this report, SMS Research & Marketing Services, Inc. compiles and analyzes information bearing on the question of demand for elderly housing at this income level in Urban Honolulu. Major sources for the report are the *1997 Hawaii Housing Policy Study Update* and calls to developers. Major findings include:

- There is clear evidence of pent-up demand for elderly housing;
- Evidence of demand at the income level selected for the project is strong in wait-lists for existing projects;
- Little new competing supply is planned to be built; and
- Demographic projections strongly suggest that demand will grow in the next few decades.

We conclude that the project will respond to a strong existing demand. Demand from Honolulu's senior citizens will make vacancy levels in the project extremely low for the foreseeable future.

Key indicators of supply and demand are shown in Exhibit A. Calculations used to estimate demand are discussed later in the text.

AFFORDABLE HOUSING SUPPLY

O'ahu has long stood out as an urban area with low rates of homeownership, and extremely high housing prices. Rents, along with other components of the cost of living, have also been high. In recent years, rental vacancy rates have usually been less than 5% (as shown in Exhibit B), and are consistently lower than vacancy rates for the State as a whole.

Exhibit A: INDICATORS OF SUPPLY AND DEMAND FOR THE PROJECT

	O`ahu	Urban Honolulu
Supply		
New elderly units potentially competing with King/Alder Project	343	223
King/Alder Project units	91	91
Demand		
Households with persons age 62 or older	76,674	38,956
Households with seniors – respondent will move	21,168	8,918
Share expects to rent	41.4%	50.4%
Seniors expected to move (1)	14,108	7,168
Potential movers to project (2)	1,294	910
Demand as % of Supply	298%	290%

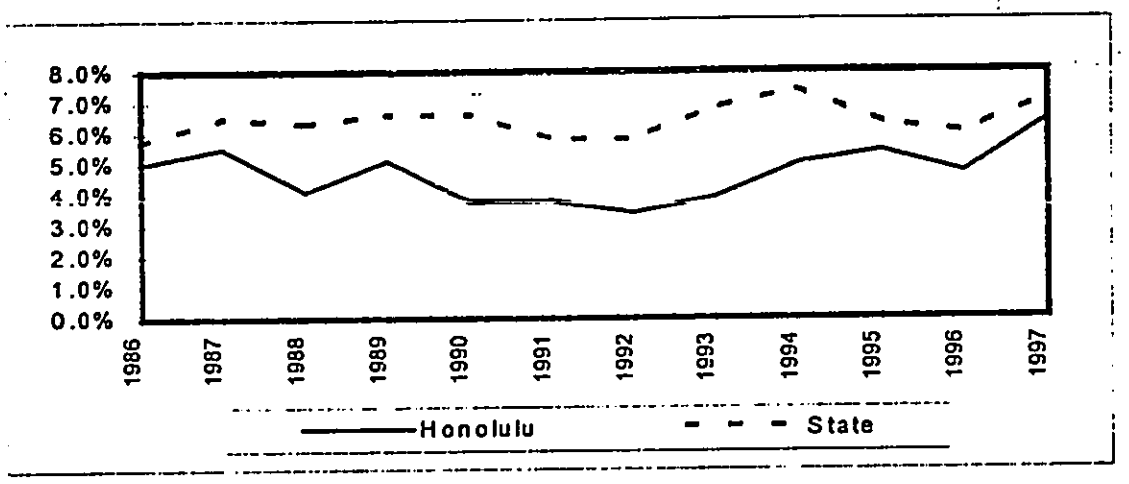
NOTES: Counts may not sum to total units due to weighting. Percentages may not sum to 100% due to rounding. Totals vary from table to table depending on whether "undecided" or "no data" responses are included.

(1) "Seniors" may be persons or couples moving as a separate household..

(2) Estimate based on affordability and locational preference.

SOURCE: SMS Research & Marketing Services, Inc. and The Prudential Locations, Inc., 1997.

Exhibit B: US CENSUS ESTIMATES OF RENTAL VACANCY RATES



SOURCE: US Bureau of the Census, 1997.

An analysis of annual changes in islandwide rents suggests that rents are stable with vacancy rates at about 4% and can decrease when the rate exceeds 5% (The Prudential Locations, 1997). This suggests that average rents will fall in the near term. However, as will be discussed below, additions to the island rental supply are small in comparison to demand, and vacancy rates will likely fall to the 4% to 5% range, or even lower. As a result, the supply of rental units available for households with incomes at about 50% to 60% of the HUD median will remain tight or even diminish.

In the year from August 1996 through July 1997, 5,953 newspaper advertisements -- 37.3% of the annual total -- on O'ahu were for studio and one-bedroom apartments. The studio units were all located in Honolulu and nearby Salt Lake. One-bedroom units were found in most parts of the island, but most were in the Honolulu area. Listed rents averaged $631/month for studios, an amount about half-way between the affordable rents for households earning 50% and 60% of the HUD median household income for O'ahu (for one- and two-person households). For one-bedroom apartments, the mean rent was $732/month, or about 60% of the HUD median.

At the end of the period (July 1997) the average rents listed had fallen slightly, to about $620 for studios and $722 for one-bedroom apartments. In comparison, rents at the King Street project are expected to be about – well below the average rate for studios, and about 70% the average cost of such units.

Recent Additions to the Elderly Housing Supply

SMS identified several existing and proposed elderly housing projects for additional research because of their potential to compete with the proposed King Street Apartments project. They are considered additions to the housing stock (taking the housing stock as of the end of 1996 as a baseline). These projects are shown in Exhibit C.

Of the existing projects identified, only three are located within the general vicinity of the proposed project — Arcadia Retirement Residence, Kulana Hale Phase I, and One Kalākaua Senior Living. Of these, only Kulana Hale Phase I competes directly with the King Street Apartments project.

Exhibit C: RECENTLY BUILT AND PROPOSED ELDERLY HOUSING

	Total Units	Elderly Units	Afford-able Units	Afforda-bility Criteria	Competes with King St. Apts	Maximum Number of Units Competing		Wait List/Duration
Existing								
Arcadia Retirment Residence (Makiki) (Purchase lifetime lease)	216	216	None	N/A	No	0		Yes/4-5 yrs
Kauoiu Phase I (Kamalu) (Waipahu)	109	109	109	<50%	Yes	0		Yes/1-2 yrs
Kauoiu Phase II (Hoolulu) (Waipahu)	112	112	112	<50%	Yes	0		Yes/1-2 yrs
Kulana Hale - Phase I (Makiki)	176	176	176	35 @ 50% 141 @ 60%	Yes	88		Had full sign-up/Opened 12/97 (approx 50% rented)
Maluhia Elderly Housing (Kalihi)	40	39	39	50%	Yes	0		Yes/1-2 yrs
Olaloa Retirement Community (Purchase) (Mililani)	360	360	180	80% - 160%	No	0		N/A
One Kalakaua Senior Living (Purchase) (Makiki)	166	166	None	None	No	0		(All affordable units sold) N/A - 80% Sold
Ponds at Punaluu (Punaluu)	138	138	None	N/A	No	0		N/A (25% Cater/Assisted Living rented; 50% Alzh. rented)
Proposed/Under Construction								
H & M Apartment Project (Waikiki)	132	0	66	up to 140%	Possibly	13		10% for 80% or less of med. inc.
Hawaii Kai (Assisted Living) (Hawaii Kai)	197	197	None	None	No	0		Yes
Isenberg Affordable Housing Project (Makiki)	217	54-72	217	Unknown	Possibly	36	(1)	N/A
Kapiolani Renaissance (Kakaako)	186	186	37	50%-140%	Possibly	18	(1)	N/A
Kauolu Phase III & IV (Waipahu)	240	240	Unknown	Unknown	Possibly	120	(2)	N/A
Kulana Hale Phase II (Assisted Living) (Makiki)	162	162	65	60%	No	0	(3)	N/A
One Archer Lane (purchase) (Kakaako)	331		None	None	No	0		N/A
Pawaa Annex Condos (purchase) (Makiki)	246	None	245	140%	No	0		N/A
Pawaa Annex Rentals (Makiki)	200	20	20	60%	Possibly	20		N/A
Queen Emma Fdn Waipahu Project (Assisted Living) (Waipahu)	277 beds	277 beds	None	None	No	0		
Royal Kinau	84	84	84	60%	Yes	48		Sign up list was full.
Symphony Park (purchase) (Kakaako) (Independent/Assisted Living)	490	490	None	None	No	0		N/A
TOTAL APPROXIMATE UNITS COMPETING WITH KING ST. PROJECT						343		

NOTES: Based on calls to developers by SMS Research, January 1998.

(1) Many or most "affordable" units could be priced much higher than the King St. Apartments. Hence the 50% estimate used here is maximal.

(2) 120 units of this project are being proposed for an assisted living facility. It is presently unclear what affordability criteria will be applied for the remaining units.

(3) The project's income limits are close to those of the King Street Apartments, but these assisted living units will be held for renters who need services.

Kulana Hale Phase I was recently completed and opened for occupancy in December 1997. It is presently approximately 50% occupied. Of the 176 total units in the project, 35 are reserved for seniors making 50% or less of the median household income. The remainder (141) are being marketed to those earning 60% or less of the median household income. It should be noted that of the 176 apartments, 11 are 2-bedroom units and will not compete with the proposed project. The large majority of units are studios and one-bedroom apartments. All the one-bedroom units are now rented

The King Street Apartments project will not compete with the other two existing facilities — Arcadia Retirement Residence and One Kalākaua Senior Living. Units in these two facilities are available only for sale and both contain assisted living and skilled nursing facilities.

The remaining existing seniors project are located outside of the general vicinity of the King Street Apartments project. Only the Kauolu projects (Kamalu and Hoolulu) and the Maluhia Elderly Housing compete for tenants at the same income level as the proposed project. However, vacancies at these projects are nearly non-existent and those signed up on the waiting lists typically wait 1 to 2 years for a unit to become available.

Proposed Housing

There are a number of proposed senior living projects proposed within the general vicinity of the proposed King Street Apartments project. However, only four — Kulana Hale Phase II, Royal Kinau, the Pawa'a Annex Rental project, and the Isenberg Affordable Housing Project — could compete with the proposed project for prospective tenants. Kulana Hale Phase II will be an assisted living facility. Of the 162 units, 65 will be reserved for seniors making 60% or less of the median household income, and those presently living in Phase I of the project will have first priority for these 65 units. It is anticipated that groundbreaking for this project could occur as early as May, 1998. Units should be available for occupancy approximately one year later.

The Royal Kinau building is to include some 48 units affordable to seniors earning 60% of the HUD median. It is scheduled to open in mid-1998. Currently, the developer is considering renting the entire project at rates affordable to households with 60% of the median income (personal communication to G. Furuta. February 1998), but is not committed to that strategy for the long term.

The Pawa'a Annex Rental project is actually the second phase of the development of the Pawa'a Annex property. The first phase consists of a 240-

condominium high-rise. It is currently under construction. These units are being marketed to those making 140% of the median household income. None of the units have been set aside for rental or for seniors.

Phase II of the Pawa'a Annex property consists of a 200-rental unit high-rise tower. The developer has applied for low-income tax credits. If these are granted, approximately 10% of the units, 20 units, will be reserved for seniors making 60% of the median income. It is these units that would compete with the King Street Apartments project. However, if the developer should not receive the low-income tax credit, all units will be marketed to those making 80%-140% of the median household income. Construction on this project could begin as early as next month, March, 1998, and units available for occupancy approximately one year later.

The proposed 217-unit Isenberg Affordable Housing project will include from 54 to 72 units available for seniors. At this time, though, it is unclear what the affordability criteria will be for these units. These units would not be available until mid-1999 at the earliest.

The remaining proposed projects are designed chiefly as more moderately-priced condominiums for sale, or as assisted living facilities. While several are intended to serve the seniors market, none has units reserved for seniors who might also compete for the units at the King Street Apartments project.

Total New Supply

The new O'ahu supply (since the cut-off point for the *1997 Update*) for senior singles and couples in the 50% to 60% income range amounts to 343 units listed in Exhibit B and another 91 units in the proposed King Street project, for a total of 434 units. Counting only units in urban Honolulu, the total comes to 314 units. It should be stressed that **most of these units will cost more** than King Street units, and **most will be studios, not one-bedroom apartments.** The King Street project stands out as new, very competitively priced, and cosnsisting entirely of one-bedroom units..

DEMAND

The Island Housing Market. O'ahu's high housing costs have long testified to pent-up demand. As of 1997, overall pent-up demand (or the "resident housing unit deficit") is estimated as 19,000 units. Pent-up demand remains, even though much new housing has been developed, and crowding has appreciably

diminished. (In 1992, 23.2% of households surveyed on O'ahu had more than one person per room; by 1997, only 10.8% did.)

Pent-up demand is theoretical – it is demand that could be realized if both incomes and the housing stock permitted. Current demand, as measured by residents' expectation that they will be moving in the near future, is lower now than in 1992. Moreover, the share of survey respondents who prefer to move to a location outside Hawaii has increased to 32.2% of current demand of the O'ahu respondents expecting to move sooner or later.

Renters form a smaller share of the O'ahu population as of 1997 (46.2%, compared to 52.4% surveyed in 1992). Growth in homeownership has been achieved at some cost. The share of homeowners paying 30% or more of their income for housing has grown to 39.2%. Among renters, the share with such high shelter-to-income ratios has declined slightly, from 44.6% to 41.4%.

The key indicator of current demand in surveys is respondents' expectation that they will move. The number of O'ahu households expecting to move has increased slightly, while the share of households expecting to move went down from 57.4% in 1992 to 55.2% in 1997.

Households now renting form the large majority (65.6%) of the 129,000 households expecting to move sooner or later. Most of those (56.0%) expect and prefer to rent their next home. Of potential renters, Statewide, a quarter (25.4%) thought that housing costs of about $500 to $799 would be affordable, and another quarter (27.8%) thought that costs in the $800 to $1,099 range would be affordable.

Senior Housing Demand – Analytic Issues. The *Hawaii Housing Policy Study* provides evidence of demand for housing among senior citizens. However, the data do not establish the extent of demand for elderly housing, for three reasons:

- Respondents are asked whether they expect to move, but not whether they might move into elderly housing.

- Some seniors leave multi-generational families to enter elderly housing. In their cases, data on household income is misleading, since it refers to a larger household than the senior(s) moving to new quarters.

- Seniors' moves to elderly housing, especially housing with assisted living, is often experienced as a matter of necessity, not preference or expectation.

Data from the *1997 Update* of the *Hawaii Housing Policy Study* must then be assessed to estimate (a) the share of households with seniors in which the older

members of the household are expecting to move; and (b) the share of households in which reported household income is much greater than the income of the moving person(s). The share of households in which seniors will move can be estimated from information on relationships among household members. The income issue is harder to tackle, so a very conservative approach is used in this report.

The likelihood that seniors are forced to move cannot be estimated from the study. By omitting cases in which seniors can no longer maintain independent households, the study provides a conservative estimate of demand for housing among seniors. Moreover, most Hawaii seniors have little experience of the range of options for elderly housing that are or may soon be available. The few options they have in mind may seem unacceptable. However, as housing of different types (assisted, congregate-living communities, and others) becomes available, seniors' interest in elderly housing is likely to increase.

Senior Housing Demand – Current and Future Demand. In the coming decades, seniors will constitute a growing share of Hawaii's population: some 275,000 persons 65 or older, over 19% of the resident population as of the year 2020.

Exhibit C: GROWTH IN SENIOR POPULATION, STATE OF HAWAII, TO 2020

NOTE: The State projections single out persons age 65 and older (State Department of Business, Economic Development and Tourism, 1997b). The share of the population meeting age criteria for elderly housing (in most cases, age 62 and above) would be greater than shown in the table.

On O'ahu, 55.2% of survey respondents say they expect to move eventually. For households with seniors, only 27.6% expect to move. SMS Research

estimates that the share of senior persons or couples likely to move is about 18.4% of all households with seniors present. (The number of senior movers – persons or couples -- expecting to move can be estimated by using data on relationships in these households. About 50% of these households are one-generation units. All of the persons or couples moving from these units will be seniors. The remainder are multi-generation units. If seniors (not younger members) are assumed to move a third of the time, then the overall ratio of seniors moving from households with seniors in which a respondent expects to move is 50% + (50% * 33.3%) = 66.7%.) This estimate does not include cases in which another member of the household – not the respondent – may move.

The estimated number of senior movers (persons or couples) on the island is estimated as 14,108, given O'ahu's estimated 76,674 households with persons age 62 or older. (See Appendix, Exhibit A-1 for key State and County demographics of senior households.) In the urban Honolulu area (defined here by zip codes beginning with "968"), the estimated number of senior movers comes to 7,168.

Households with seniors in which respondents expect to move differ slightly from non-movers. (See Appendix Exhibits A-1 and A-2 for the comparison.) Most households with seniors have only one persons 62 or older in the home. In urban Honolulu, however, the majority of senior households where respondents expect to move include two or more seniors. Again, while about half the households with seniors on O'ahu make 100% of the HUD median or less, the share in this income range is closer to 60% for households with potential movers.

Demand for the affordable units in urban Honolulu – the King Street Apartments and competing projects – can be estimated when affordability, location, and the likelihood that seniors, not others in the household, intend to move, are taken into consideration. The results, shown in Exhibit D, indicate that demand as of the year 1997 is for about 2,000 units for elderly persons or couples.

The number of singles or couples who might move into affordable elderly housing must be inferred, not simply computed from their current reported income, for at least three reasons. First, the current income may be due to younger earners, who would not move with them. Next, earning streams may diminish sharply as older people end or cut back on paid work. On the other hand, some elders can look to their children for financial support, and may be able to afford rents of about $500 per month even if their personal income is very modest.

Exhibit D: ESTIMATION OF DEMAND FOR URBAN HONOLULU AFFORDABLE ELDERLY RENTALS

	SOURCE	SHARE	DEMAND	
Urban Honolulu				
prefer to rent				
can afford --				
$0 to $499	720	50%	360	
$500 to $799	538	75%	404	
$800 to $1,099	538	25%	135	
$1,100 +	1,440	10%	144	
Don't know, refused (1)	720	28%	200	
Subtotal: affordability			1,242	
Adjust for household type		66.7%		828
Prefer urban location		94.7%		784
Rest of O`ahu				
prefer to rent				
can afford --				
$0 to $499	729	50%	365	
$500 to $799	668	75%	501	
$800 to $1,099	589	25%	147	
$1,100 +	487	10%	49	
Don't know, refused (1)	782	41%	320	
Subtotal: affordability			1,382	
Adjust for household type		66.7%		922
Prefer urban location		13.7%		126
Urban Honolulu				
prefer to own				
can afford --				
$0 to $499	-	50%	-	
$500 to $799	-	50%	-	
$800 to $1,099	1,110	25%	278	
$1,100 +	728	10%	73	
Don't know, refused (1)	1,682	15%	254	
Subtotal: affordability			604	
Adjust for household type		66.7%		403
Prefer urban location		71.2%		287
Rest of O`ahu				
prefer to own				
can afford --				
$0 to $499	-	50%	-	
$500 to $799	640	50%	320	
$800 to $1,099	864	25%	216	
$1,100 +	1,250	10%	125	
Don't know, refused (1)	1,759	19%	342	
Subtotal: affordability			1,003	
Adjust for household type		66.7%		669
Prefer urban location		14.5%		97
TOTAL				1,294

The best indicator of "affordability" in the survey data respondents' estimates of what they could pay for housing, not their reported income, (Also, fewer persons refused to answer the housing question than ones about incomes.) As shown in Exhibit D, SMS Research estimates that some households in which respondents say they would not be able to pay $500 for housing would actually be able to afford the rent at the King Street project ($498 plus utilities), while a share of households reporting that they could pay much more would still be candidates for this project, when senior-only income is separated from the total current income of the household.

On the grounds of affordability, some 4,231 households with persons age 62 or older are potential sources of demand for the project.

Next, the factor discussed earlier, that seniors will move sooner or later from two-thirds of households with seniors where respondents intend to move, was applied. Finally, locational preferences were counted, by treating only the share of potential movers expressing interest in an urban Honolulu location as potential candidates for the project. The share interested in urban Honolulu was calculated separately for potential renters and potential owners in urban Honolulu and the rest of the island, so four separate locational preference percentages are shown in Exhibit D.

The result is about three times the existing and expected supply (including the project along with competition).

Likelihood of Continuing Demand.

To estimate the extent of current vs. future demand, two separate issues deserve note: when those identified as potential movers are likely to move, and the recruitment of new potential movers in the future.

Among the O'ahu senior households with respondents expecting to move, some 33.9% expect to move in two years, and the rest are less certain about their timetables. In the current situation, of limited housing stock available for seniors, and limited housing at affordable rental rates, these judgments of when people will move likely often reflect a sense that there is little to move to, rather than plans not to move for the near future. As a result, it is likely that all the demand expressed in 1997 will be realized – i.e., people will take steps to move – within five years or less.

Furthermore, housing vacancies are currently relatively high, in comparison to historical data for O'ahu. Rental vacancy rates could fall gradually as the population grows and new housing production remains sluggish. They could fall sharply if there are major additions to the military family population (as is proposed in the event that a nuclear carrier is homeported at Pearl Harbor). With lower vacancy rates, the supply of housing affordable to households making 60% or less of the median income will shrink due both to fewer vacancies and to rent increases in buildings not subject to affordability rules.

Exhibit E: INCREASES IN O`AHU SENIOR POPULATION, TO 2020

	Five-Year Increase, Residents Age 65	O`ahu Share of State Pop.	Five-Year Increase, O`ahu Residents
2000	15,300	73.0%	11,168
2005	13,700	72.4%	9,918
2010	21,700	71.7%	15,560
2015	33,700	71.0%	23,935
2020	41,000	70.3%	28,813

Specific Housing Preferences. Of those who express a preference, most respondents from senior households expecting to move expect to own their next home. However, a large share of potential renters insisted not just that they expected to rent, but that they sought <u>not</u> to own their homes in the coming years.

Respondents from senior households often preferred two-bedroom housing or two-bathroom units. However, they were overwhelmingly willing to accept smaller units if necessary. Similarly, many of those intending to move would like to live in units larger than 1,000 square feet – but the single most common response to questions about acceptable size of units was "don't know." This suggests that these potential movers are flexible on the point.

In light of these results, the design of the King Street Apartments as a one-bedroom building, when studios predominate in the elderly housing stock, should guarantee its continuing appeal.

CONCLUSION

The estimated demand for affordable rentals in urban Honolulu among O'ahu's senior citizens is some three times greater than the existing and proposed supply (including the King Street Apartments). This demand is more than sufficient to justify the project.

In the coming decades, growth in the elderly population will result in continuing demand for projects like the King Street Apartments. As aging residents leave the project and comparable buildings, the number of potential renters for similar projects will be increasing. Continuing demand is certain.

A further point deserves note, since it underscore the fact that this report is conservative, and may underestimate demand. Seniors' housing choices are life choices. They involve decisions about resources, needs for shelter, health, convenient services, and sociability, not just income. A housing survey can provide indicators of demand, but cannot sort out with due care the forces motivating seniors to seek new housing. Nor can it fully estimate demand, since demand may be due to many different considerations, not just housing preferences.

The State Housing Finance and Development Corporation has expressed interest in a new study to estimate demand among seniors for multifamily rentals, independent elderly rentals, and assisted living situations. That study could provide more specific estimates of demand than are used here if it brings together information about the various factors motivating the search for new housing among Hawai'i's senior citizens. We expect that it could show that demand is appreciably higher than indicated here.

APPENDIX:

SUPPLEMENTARY TABLES

Exhibit A-1: KEY DEMOGRAPHICS, HOUSEHOLDS WITH SENIORS

	State	O`ahu
Households with persons age 62 or older	110,764	76,674
Households with seniors --		
Number of seniors		
One	60,788	42,360
Two	46,240	31,419
Three or more	3,736	2,895
Senior units likely to move		
Income as % of HUD median		
30% or less	10,335	8,634
over 30% to 50%	17,448	11,304
over 50% to 80%	24,350	16,006
over 80% to 100%	14,600	9,971
over 100%	35,858	26,192
no data	8,172	4,567
Household type		
one person	22,459	15,144
related, 1 gen.	37,729	24,631
related, 2 gen.	28,158	20,717
related, 3+ gen.	15,434	11,356
others	6,441	4,286
no data	545	538

NOTES: Counts may not sum to total units due to weighting. Percentages may not sum to 100% due to rounding. Totals vary from table to table depending on whether "undecided" or "no data" responses are included.

SOURCE: SMS Research & Marketing Services, Inc. and The Prudential Locations, Inc., 1997.

Exhibit A-2: KEY DEMOGRAPHICS, HOUSEHOLDS WITH SENIORS, IN WHICH RESPONDENT EXPECTS TO MOVE

	O`ahu	Honolulu
Households with member(s) 62 or older - EXPECT TO MOVE		
Total	21,168	10,373
Number of seniors		
One	11,296	4,162
Two	9,095	5,822
Three or more	777	390
Income as % of HUD median		
30% or less	2,392	2,153
over 30% to 50%	2,197	546
over 50% to 80%	3,782	1,474
over 80% to 100%	2,604	1,084
over 100%	8,700	4,935
no data	1,493	182
Household type		
one person	2,914	902
related, 1 gen.	6,609	4,348
related, 2 gen.	6,843	3,286
related, 3+ gen.	3,888	1,118
others	913	719

NOTES: Total includes both households in which respondent expects to move and ones in which another member of the household (19.5% of the O`ahu sample, 14.0% of the urban sample) will move. "O`ahu" is the City and County of Honolulu; "Honolulu" covers the areas with zip codes beginning in 968--; i.e, Honolulu and East Honolulu.
Counts may not sum to total units due to weighting. Percentages may not sum to 100% due to rounding. Totals vary from table to table depending on whether "undecided" or "no data" responses are included.

SOURCE: SMS Research & Marketing Services, Inc. and The Prudential Locations, Inc., 1997.

Exhibit A-3: ACCEPTABLE HOUSING OPTIONS, O`AHU SENIOR HOUSEHOLDS WITH RESPONDENT EXPECTING TO MOVE

	O`ahu -- Respondent Expects to Move	
	All Household with Seniors	Prefers to Rent
Housing Preference		
single-family	3,747	1,152
multi-family	11,581	4,427
undecided	1,706	1,315
Bedrooms		
studio, one	4,464	1,808
two	7,666	3,290
three or more	3,213	720
undecided	1,691	1,077
Willing to reduce?		
yes	10,026	4,378
no	5,078	1,440
undecided, no data	1,930	1,077
Acceptable bathrooms		
one	8,105	4,666
two or more	7,568	1,691
undecided	1,361	538
Willing to reduce?		
yes	10,300	5,098
no	5,374	1,258
undecided, no data	1,360	538
Smallest area acceptable		
800 sq. ft. or less	1,865	1,224
800 to 1,000	1,562	842
1,000 to 1,200	1,103	-
1,200 to 1,500	3,300	1,478
more than 1,500	2,183	640
don't know	7,022	2,710
TOTAL	17,034	6,894

NOTES: Based on responses from Oahu, in which household includes a senior and survey respondent expects to move eventually.
Counts may not sum to total units due to weighting. Percentages may not sum to 100% due to rounding. Totals vary from table to table depending on whether "undecided" or "no data" responses are included.

SOURCE: SMS Research & Marketing Services, Inc. and The Prudential Locations, Inc., 1997.

Exhibit A-4: ACCEPTABLE HOUSING OPTIONS, URBAN HONOLULU SENIOR HOUSEHOLDS WITH RESPONDENT EXPECTING TO MOVE

	Honolulu -- Respondent Expects to Move	
	All Household with Seniors	Prefers to Rent
Acceptable Housing		
single-family	1,292	720
multi-family	6,160	2,699
undecided	1,467	1,077
Bedrooms		
studio, one	1,979	720
two	3,972	1,979
three or more	1,708	720
undecided	1,258	1,077
Willing to reduce?		
yes	4,563	1,979
no	3,096	1,440
undecided, no data	1,259	1,077
Acceptable bathrooms		
one	4,147	2,699
two or more	4,051	1,258
undecided	720	538
Willing to reduce?		
yes	5,283	2,699
no	2,915	1,258
undecided, no data	720	538
Smallest area acceptable		
800 sq. ft. or less	538	538
800 to 1,000	1,084	364
1,000 to 1,200	910	
1,200 to 1,500	1,649	1,077
more than 1,500	1,111	
don't know	3,627	2,517
TOTAL	8,918	4,496

NOTE: Based on responses from Honolulu and East Honolulu (zip codes beginning in 968--), in which household includes a senior and survey respondent expects to move eventually.
Counts may not sum to total units due to weighting. Percentages may not sum to 100% due to rounding. Totals vary from table to table depending on whether "undecided" or "no data" responses are included.

SOURCE: SMS Research & Marketing Services, Inc. and The Prudential Locations, Inc., 1997.

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ATTACHMENT "G"

TRAFFIC IMPACT ASSESSMENT REPORT

TRAFFIC IMPACT ASSESSMENT REPORT

FOR

KING STREET APARTMENTS

April 15, 1998

Honolulu, Oahu, Hawaii

Prepared for:

Hawaii Housing Development Corporation

Prepared By:

Pacific Planning & Engineering, Inc.
1221 Kapiolani Boulevard, Suite PH-60
Honolulu, Hawaii 96814

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FOREWORD

The traffic forecasts shown within this report's figures and tables are the direct result of Pacific Planning & Engineering, Inc.'s proprietary analytical tools. For report editing and review purposes, some or all of the forecast values have been rounded to the nearest five vehicles from our mathematical results, although we do not imply this level of accuracy can exist in any forecast method. The rounded values, however, reasonably quantify the forecasted traffic volumes for the purposes of this study.

The findings and conclusions contained herein are based solely in terms of roadway capacity. No inference should be made from the conclusions regarding traffic safety.

EXECUTIVE SUMMARY

Pacific Planning & Engineering, Inc. (PPE) was engaged to identify and assess future traffic impacts that would be caused by the proposed King Street Apartments project in Honolulu, Oahu, Hawaii.

Project Description

Hawaii Housing Development Corporation is proposing to develop an elderly residential project in Honolulu, Oahu, Hawaii. The project site is located along King Street and is identified by Tax Map Key: 2-3-12:44.

The proposed King Street Apartments project is intended to be an elderly (age 62+) rental project consisting of 91 one-bedroom units and 27 at grade parking stalls. Access to the project will be via driveways on King Street and Alder Street. The project is expected to be completed by the year 2000.

Methodology

Analysis was conducted for the unsignalized intersections of Alder Street with Elm Street and Alder Street with the proposed main project driveway to determine the relative impact of the proposed King Street Apartments Project on the local roadway system.

Future traffic was forecasted for the study intersections by adding the following:

- Existing traffic volumes at the study intersections,
- Traffic generated by other nearby developments in the area that would impact the study intersections, and
- Traffic generated by the project.

This study assesses the impact on each intersection by determining and comparing the level-of-service (LOS) for existing traffic, 2000 forecast without the project, and 2000 forecast with the project traffic conditions.

The time periods analyzed include the two weekday commuter peak hours (morning and afternoon). These periods were studied since traffic volumes on the surrounding roadways would be highest at these times.

Conclusions and Recommendations

The King Street Apartments Project, when completed in the year 2000, would not affect the Level-of-Service at the existing study intersection of Alder Street with Elm Street during the weekday commuter hours. In addition, the intersection of Alder Street with the Project Driveway is anticipated to operate at Level-of-Service A condition. No capacity mitigating actions are required due to the proposed project.

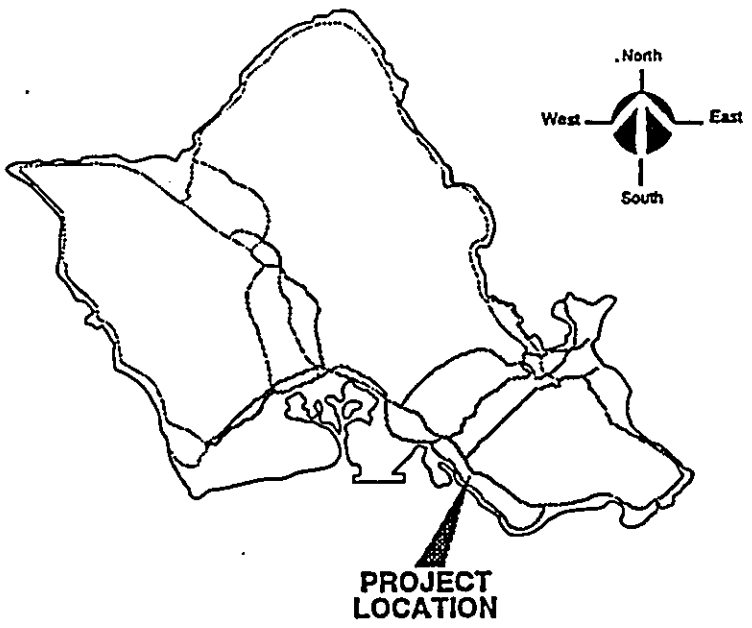
The trips generated by the King Street Apartments Project is estimated to be less than the number of trips generated by the existing Texaco Gas Station.

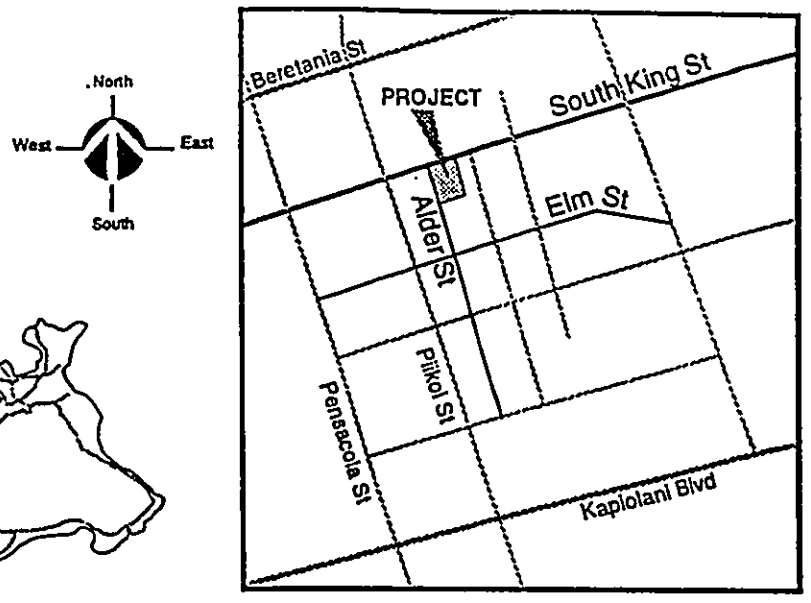
The 27 parking spaces provided as part of the King Street Apartments should be adequate for the intended use as an elderly rental facility.

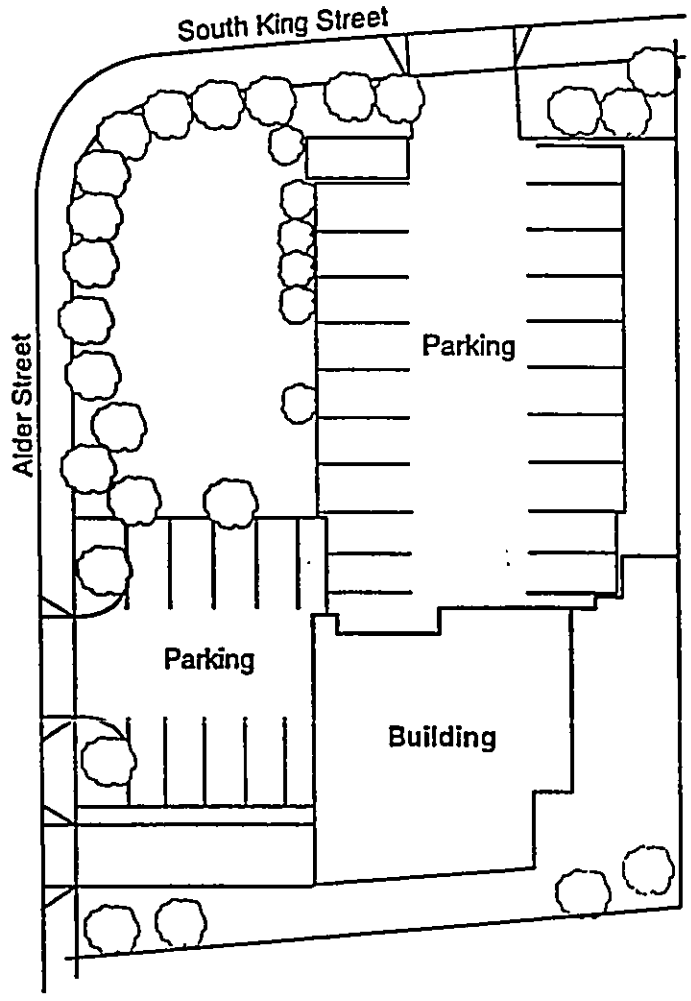
PROJECT DESCRIPTION

Hawaii Housing Development Corporation is proposing to develop a residential project in Honolulu, Oahu, Hawaii. The project site is located at the corner of King Street and Alder Street and is identified by Tax Map Key: 2-3-12:44. Figure 1 shows the project location, roadway network in the vicinity and site plan.

The King Street Apartments project consists of 91 one-bedroom units for elderly (age 62+) rental with 27 on-site parking stalls. The project is expected to be completed by the year 1998. Currently, the project site is occupied by a Texaco Gas Station. Access to the project will be via driveways on King Street and Alder Street.







King Street Apartments

- *91 One Bedroom Units*
- *27 Parking Stalls*

PACIFIC PLANNING & ENGINEERING, INC	Project Location Map & Site Plan	Figure 1

EXISTING CONDITIONS

An inventory of existing conditions was conducted to ascertain the current traffic conditions in the area and to provide a basis for estimating the potential traffic impact of the proposed project. The review included the land uses in the area, roadway facilities, and existing traffic conditions.

Land Uses

The land uses in the vicinity of the project consists primarily of residential uses and commercial uses. Residential uses are generally located makai of King Street. Commercial uses are predominately located along South King Street.

Land use surrounding the project include Hale Ho'omalu, a youth detention facility and Sheridan Park. Hale Ho'omalu is located south of the project along Alder Street. Sheridan Park is also located along Alder Street makai of Elm Street.

Roadway Facilities

South King Street is a major one-way urban arterial road running through Honolulu. Near the T-intersection with Alder Street, South King Street has four through lanes with provisions for parking on both sides. During the afternoon commuter peak times (3:30 - 5:30 p.m.), parking is banned along South King Street. The result is six through lanes. On-street parking consists of metered parallel stalls. The posted speed limit in the vicinity of the intersection with Alder Street is 30 miles per hour (mph).

Alder Street is a single-lane one-way road paralleling Piikoi Street. Parking is allowed on the west side of the street. The intersection is unsignalized with pedestrian crosswalks. The posted speed limit on Alder Street is 20 mph.

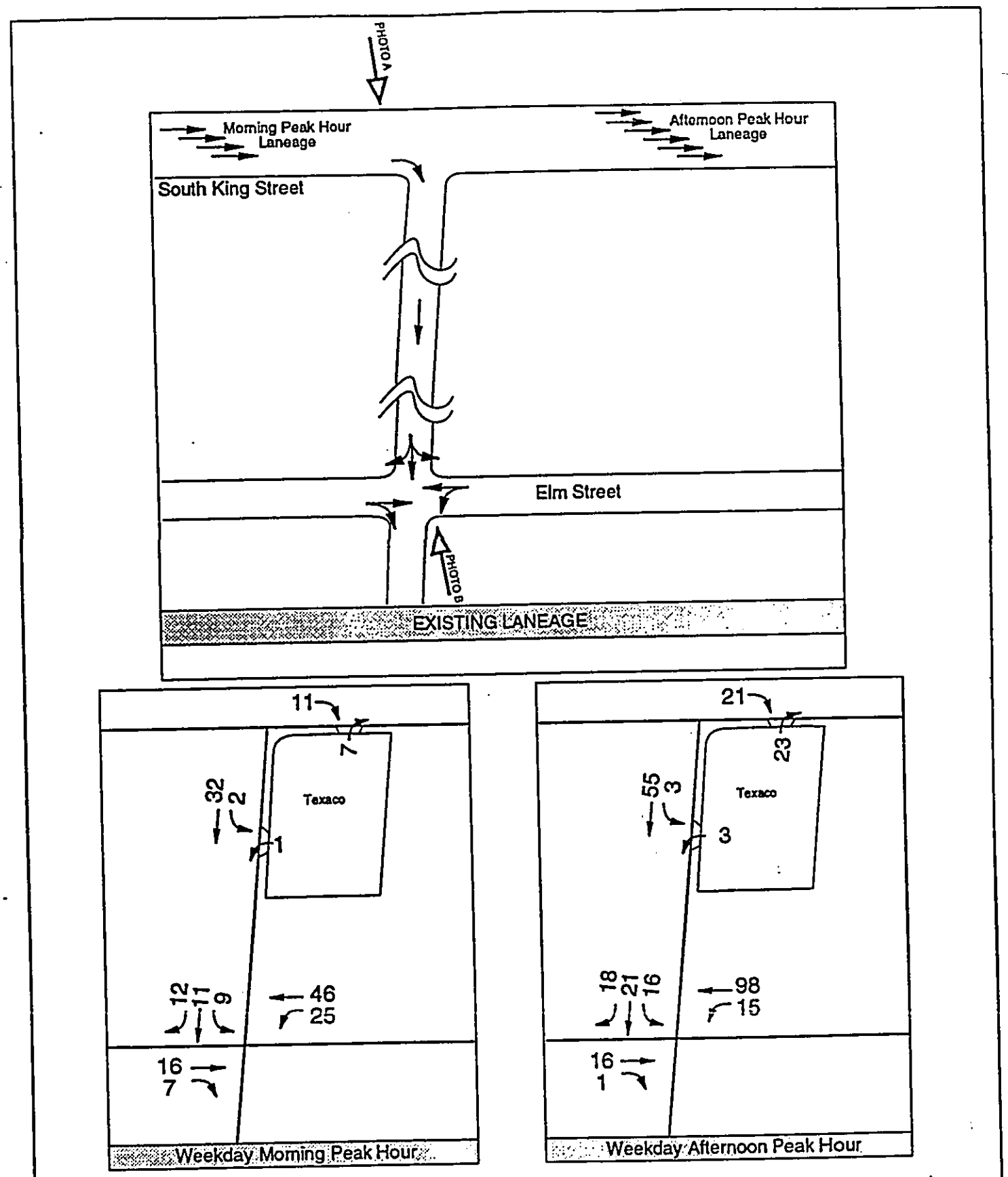
Elm Street is a two-way two-lane road paralleling South King Street with parking allowed on the north side of the street. The posted speed limit on Elm Street is 25 mph.

Figure 2 shows the existing laneage at the study intersections. Photos of the study intersections are shown in Figure 3.

Traffic Conditions

A review of 1995 Hawaii Department of Transportation (HDOT) traffic count data for Station SL-72C on South King Street East of Ward Avenue indicate that the commuter peak periods generally occurs on weekdays between 7:00 to 8:30 in the morning and 4:15 to 5:45 in the afternoon. These peak hours were used to determine traffic impacts, since the project traffic would impact the surrounding roads the most during these time periods.

Manual traffic counts were taken at the intersection of Alder Street with Elm Street and the existing Texaco driveways located on King Street and Alder Street. The counts were taken on Wednesday, February 11, 1998 during the afternoon peak period and on Thursday, February 12, 1998 during the morning peak period. These counts were used as the baseline condition upon which future estimated traffic volumes were added.



PACIFIC PLANNING & ENGINEERING, INC	Existing Laneages and Weekday Morning & Afternoon Peak Hour Traffic Volumes	Figure 2

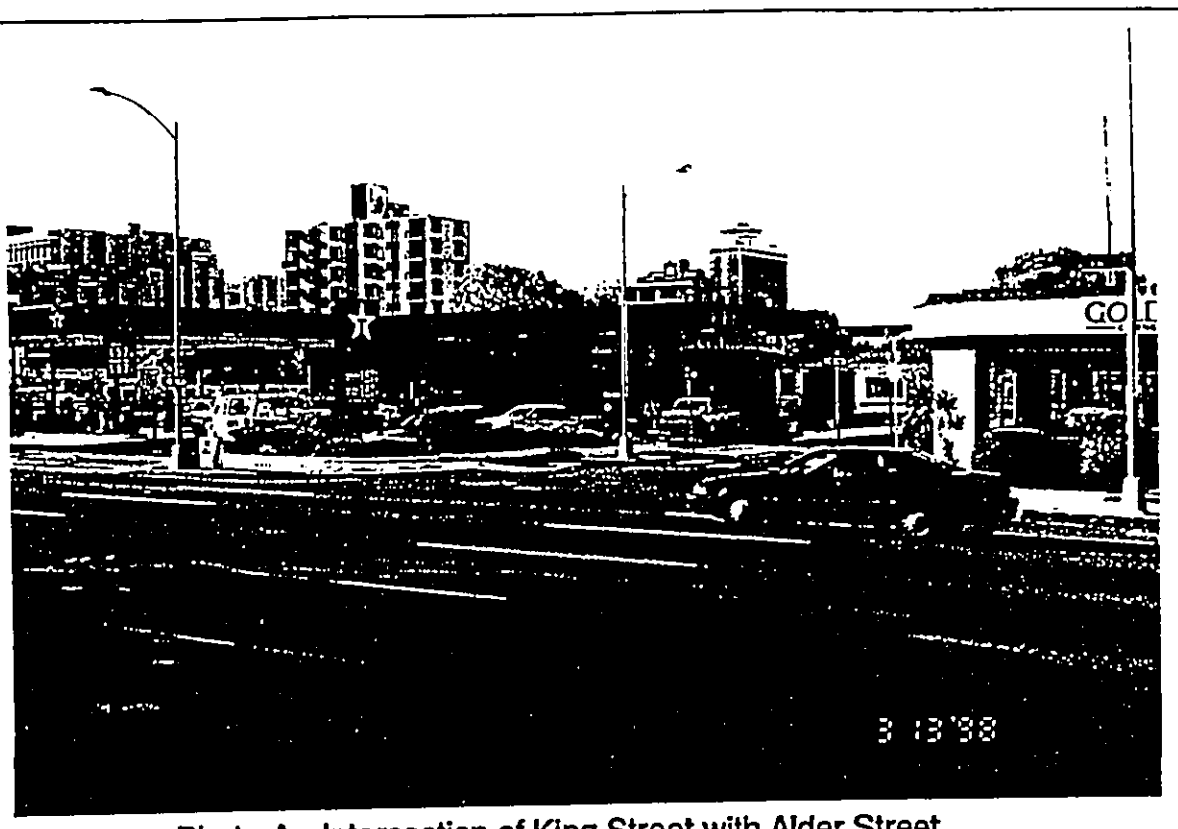


Photo A - Intersection of King Street with Alder Street

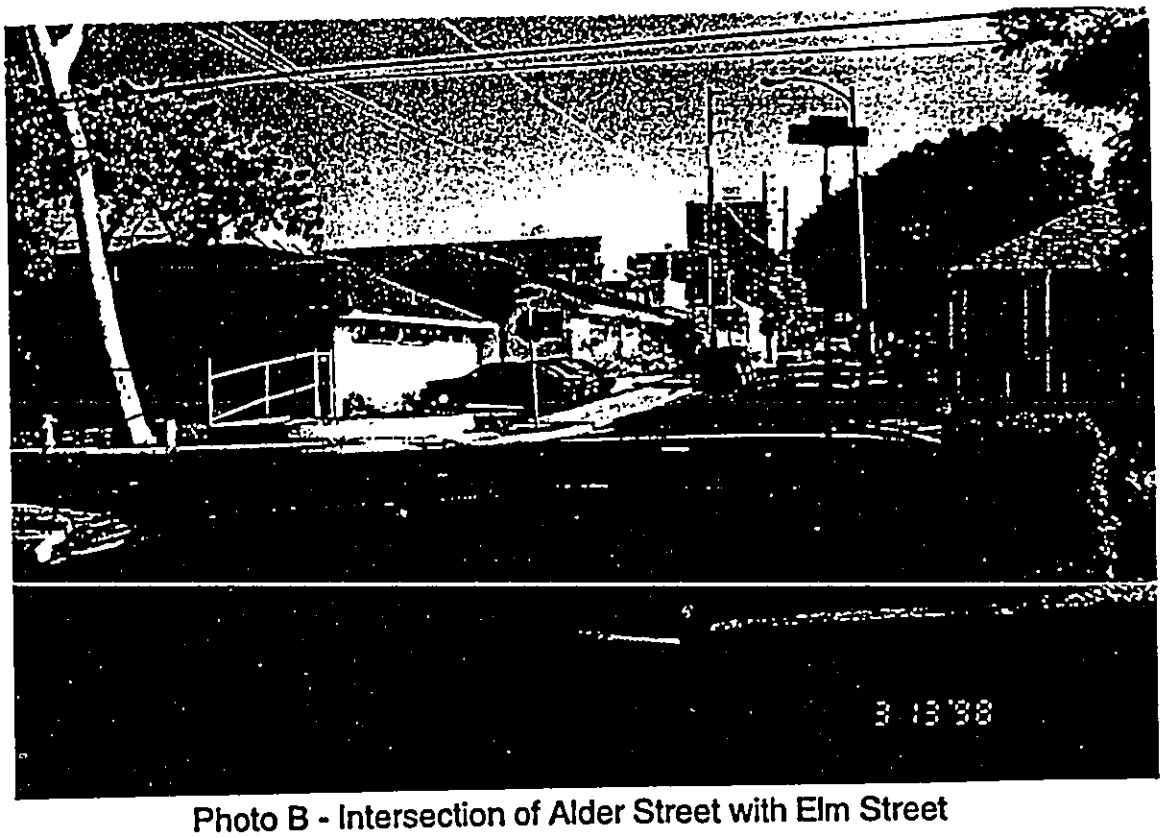


Photo B - Intersection of Alder Street with Elm Street

PACIFIC PLANNING & ENGINEERING, INC	Study Intersections	Figure 3

Manual counts were taken of passenger cars, trucks and buses by turning movements and approaches. During the field counts, the weather was clear and the roadway pavement was dry. Figure 2 shows the present volume of traffic at the study intersections for the observed peak hours. Manual traffic count data is summarized in Appendix A.

Observed Traffic Conditions

The following observations were made during the field survey:

- Traffic along South King Street and Alder Street flowed smoothly during the study periods. Traffic flow along South King Street was heavily platooned.

FUTURE CONDITIONS

A survey was conducted of planned developments in the immediate area to estimate future traffic conditions at the study intersections.

Future Land Uses

The Birch Street Apartments, a 53 unit apartment, is currently under construction with an anticipated competion by the end of year 1998. Birch Street Apartments is located south of the project between Alder Street and Birch Street. Access to Birch Street Apartments will be via new driveways on Alder Street and Birch Street.

Future Roadway Facilities

Within the study time frame, there are no known roadway improvements planned in the vicinity of the project. The roadway patterns and study intersection laneages are expected to remain the same as existing.

PROJECTED TRAFFIC CONDITIONS

Future traffic was forecasted for traffic conditions without and with the King Street Apartments Project. Traffic forecasts were estimated for the year 1998 when the project is expected to be completed.

Future Traffic Without Project

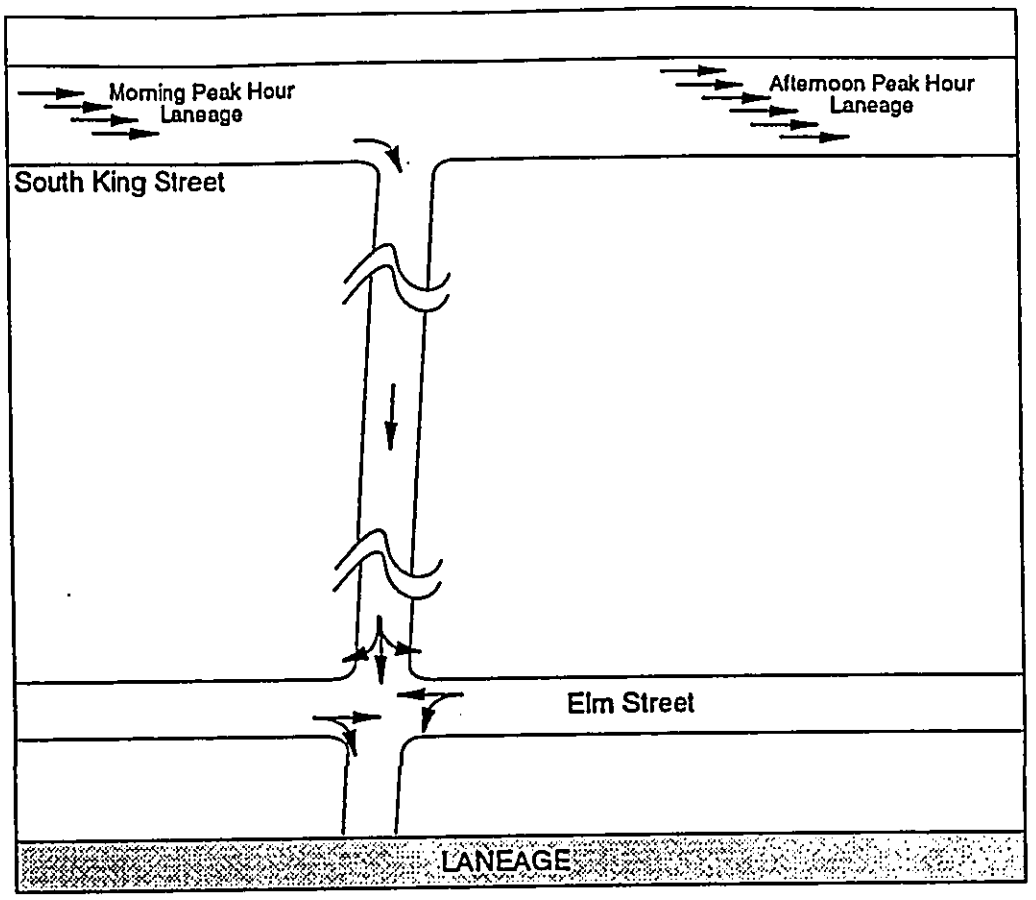
Future traffic without the project was forecasted by adding the following; 1) existing traffic volumes, 2) adding traffic from other proposed developments in the area. The resulting traffic volume forecasts at the study intersections for the traffic peak hours without the project in year 1998 are shown in Figure 4.

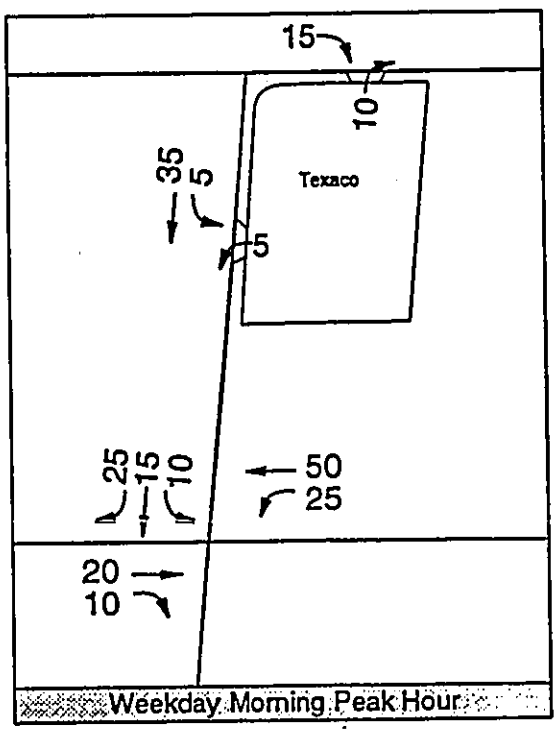
Traffic From Other Developments

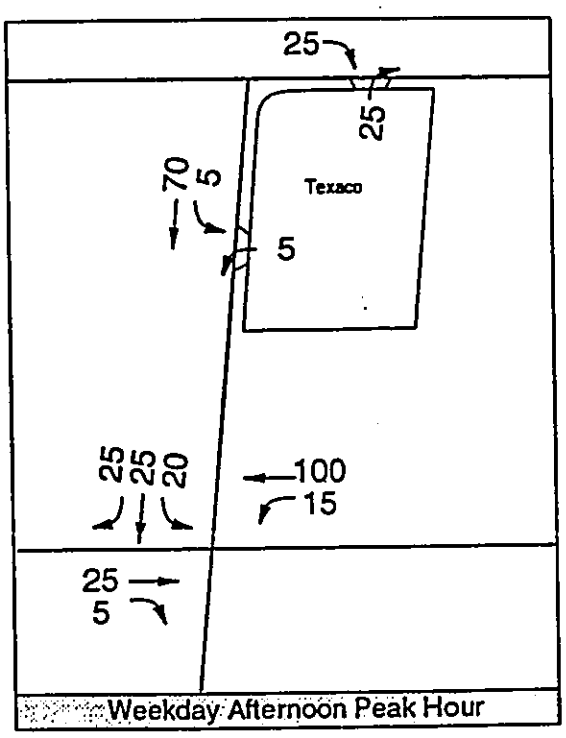
The three-step procedure of trip generation, trip distribution, and traffic assignment was used to forecast traffic from other developments.

The trip generation step estimates the number of trips that would be generated by the other developments in the area during the weekday morning and afternoon peak hours. Trip generation was based on rates from the ITE Trip Generation Report[1]. Table 1 shows the estimated trips generated by other developments.

1 Trip Generation Report, by the Institute of Transportation Engineers, Sixth Edition, 1997.







PACIFIC PLANNING & ENGINEERING, INC	Year 2000 Without Project Weekday Morning & Afternoon Peak Hour Traffic Volumes	Figure 4

Table 1. Trip Generation For Other Developments				
	Morning		Afternoon	
Land Use	Enter	Exit	Enter	Exit
Birch Street Apartments (53 units)	5	17	16	9

The trip distribution step estimates the distribution of vehicle trips to their predicted destinations and origins. It is not expected that the trip distribution will be significantly different from existing conditions, so trips were distributed based on existing data.

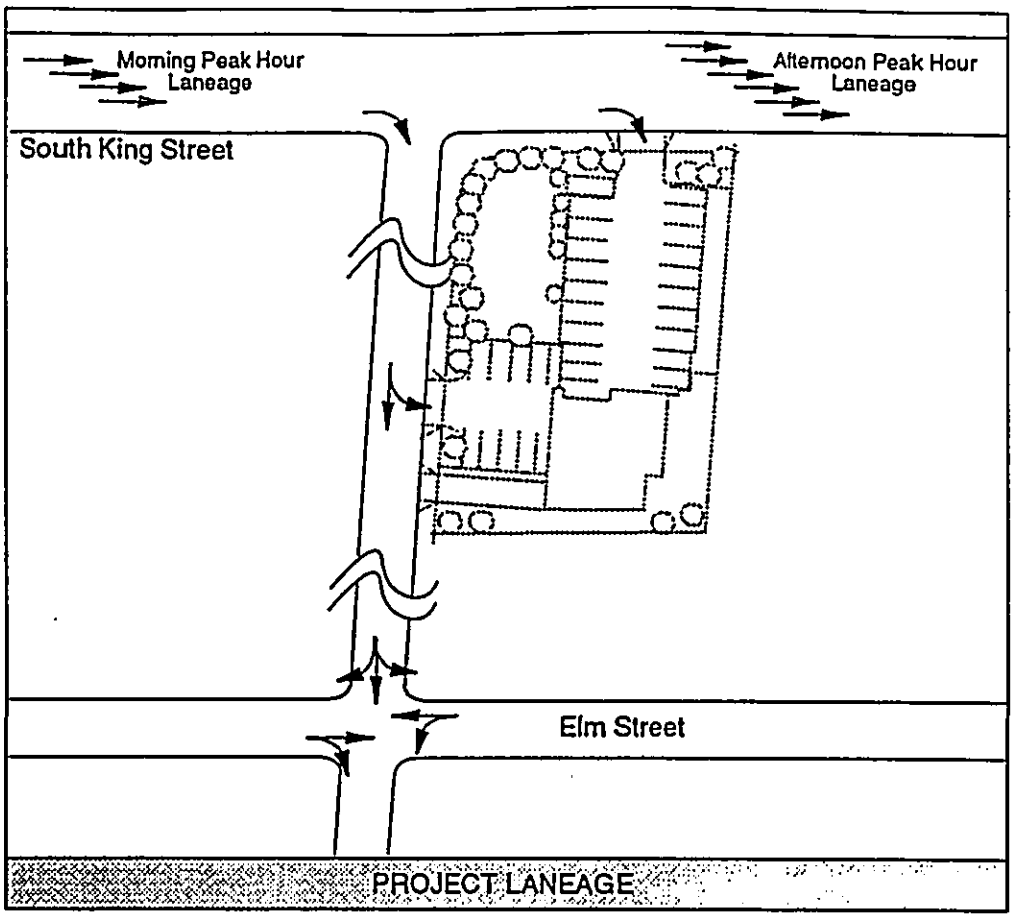
Future traffic from these developments were assigned to a specific route for each origin and destination based on the estimated shortest distance or travel time.

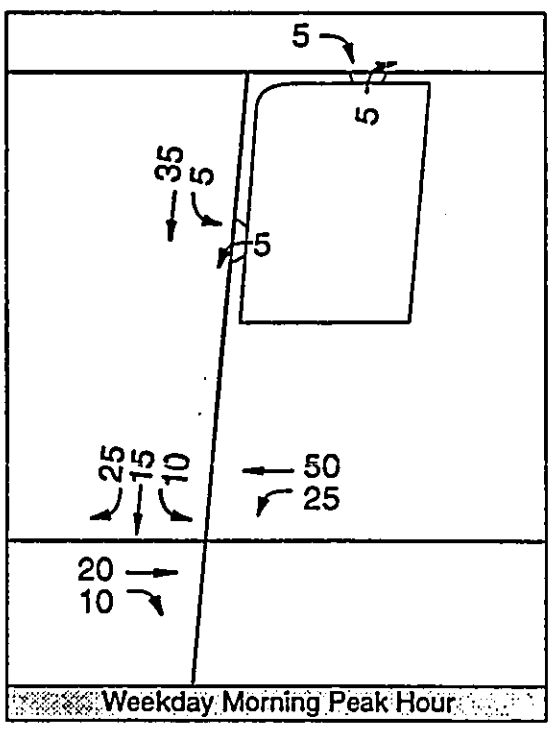
Future Traffic With Project

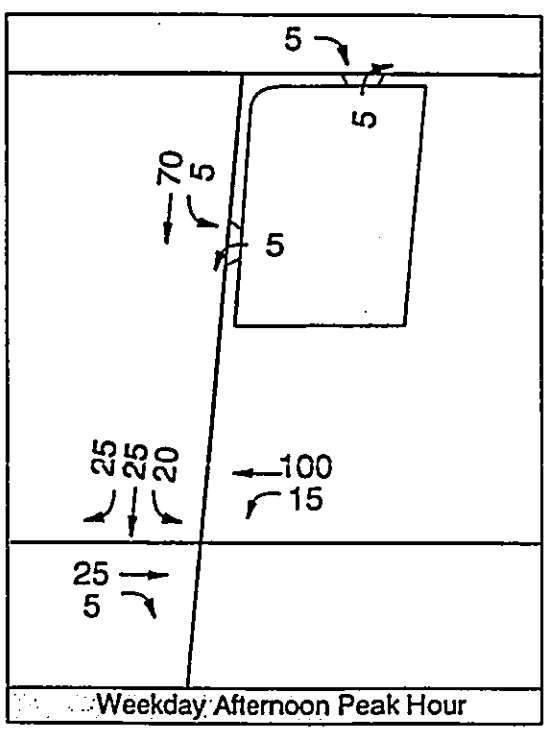
Future traffic with the project was forecasted by adding traffic generated by the King Street Apartments Project to the forecasted traffic without the project. The resulting peak hour traffic volume forecasts with the project are shown in Figure 5.

The standard three-step procedure of trip generation, trip distribution, and traffic assignment was used to estimate peak hour traffic from the proposed project.

Trip generation for the proposed project was determined based on the project land uses and data from the ITE Trip Generation Report. Trips were also obtained for the existing Texaco Gas Station from manual traffic counts.







PACIFIC PLANNING & ENGINEERING, INC	Year 2000 With Project Weekday Morning & Afternoon Peak Hour Traffic Volumes	Figure 5

Table 2 shows the number of trips generated due to the project and the number of trips generated by the existing Texaco Gas Station.

Table 2. Project Site Trip Generation

Land Use	Morning		Afternoon	
	Enter	Exit	Enter	Exit
Elderly Apartments (91 units)	4	2	5	4
Existing Texaco Gas Station	13	8	24	26

The trip distribution step estimates the distribution of vehicle trips to their predicted destinations and origins. It is not expected that the trip distribution will be significantly different from existing conditions, so trips were distributed based on existing data.

The traffic assignment step assigns vehicle trips to specific routes on the roadway network that drivers would take from their trip origin to their destination.

TRAFFIC IMPACT ANALYSIS

Analyses were conducted for the intersections of Alder Street with Elm Street and Alder Street with the project driveway to determine the relative impact of the project. Analyses were conducted for the existing, 1998 forecasts without project, and 1998 forecast with project traffic conditions.

Analysis Methods

The study intersections were analyzed using the methods for unsignalized intersections outlined in the 1994 Highway Capacity Manual. Appendix B provides detailed definitions of the "level-of-service" (LOS) used in this study.

"Level-of-service" for unsignalized intersections is determined by total delay which is defined as the total elapsed time from when a vehicle stops at the end of a queue until the vehicle departs from the stop line. This includes the time required for the vehicle to travel from the last-in-queue position. LOS for unsignalized intersections is classified into six categories ranging from less than 5 seconds of average total delay per vehicle (LOS A) to over 45 seconds of average total delay per vehicle (LOS F).

Analysis Results

The results of the analysis for the weekday morning and afternoon peak hours generally are shown in Tables 3 and 4. The results of the analysis show that there would be no change in LOS due to the project.

Table 3 - Unsignalized Intersection Analysis - Morning Peak Hour			
Movement	**LOS (delay-seconds/vehicle)**		
	Existing	**2000 Without Project**	**2000 With Project**
Birch Street with Elm Street			
Southbound LT/TH/RT on Alder St	A	A	A
Westbound LT from Elm St	A	A	A
Alder Street with Project Driveway			
Westbound LT from Project	n/a	n/a	A
Southbound LT from Alder St	n/a	n/a	A

Table 4 - Unsignalized Intersection Analysis - Afternoon Peak Hour			
Movement	**LOS (delay-seconds/vehicle)**		
	Existing	**2000 Without Project**	**2000 With Project**
Birch Street with Elm Street			
Southbound LT/TH/RT on Alder St	A	A	A
Westbound LT from Elm St	A	A	A
Alder Street with Project Driveway			
Westbound LT from Project	n/a	n/a	A
Southbound LT from Alder St	n/a	n/a	A

Note: TH - Through, RT - Right turn, LT- Left turn

PARKING GENERATION

The proposed King Street Apartments project includes 27 at grade parking stalls. A review was conducted to determine the adequacy of the parking provided by the project.

Parking generation was determined based on the project land uses and data from the ITE Parking Generation Report[2]. The parking generation rate is the number of occupied parking spaces per one unit of independent variable. The average parking generation rate on a weekday for a retirement community is 0.27 occupied stalls per dwelling unit. This rate is expected to include parking generated by residents, visitors and service personel. Therefore, based on the data provided by ITE, the estimated peak parking spaces occupied on a weekday for the project is 25 parking stalls.

A survey was also conducted of the number of parking stalls provided by other elderly housing projects and is shown in Table 5.

Table 5 - Provided Parking at Urban Elderly Housing Projects

Project Name	Location	Total Units	Stalls Provided
Kalunihuia	Aala Park	151	42
Makamae	Nuuanu	124	27
Punchbowl Homes	Kalihi	144	69
Makua Au	Kalakaua	210	49
Paokalani	Kalakaua	150	28
Midrise	Kalakaua	123	40
Kapunai	Liliha	162	57
Hale Poai (Kapuna II)	Liliha	206	82
Manoa Gardens	Manoa	80	40
Pauahi Elderly	Chinatown	48	12

2 Parking Generation Report, by the Institute of Transportation Engineers, Second Edition, 1987.

Based on the results of the analysis and the survey of other elderly housing projects, the 27 parking spaces provided for the King Street Apartments should be adequate for a 91 one-bedroom elderly rental project

CONCLUSIONS AND RECOMMENDATIONS

The King Street Apartments Project, when completed in the year 2000, would not affect the Level-of-Service at the existing study intersection of Alder Street with Elm Street during the weekday commuter hours. In addition, the intersection of Alder Street with the Project Driveway is anticipated to operate at Level-of-Service A condition. No capacity mitigating actions are required due to the proposed project.

The trips generated by the King Street Apartments Project is estimated to be less than the number of trips generated by the existing Texaco Gas Station.

The 27 parking spaces provided as part of the King Street Apartments should be adequate for the intended use as an elderly rental facility.

APPENDIX A

TRAFFIC COUNT DATA

Project : 82.0 King St. Apartments
Date: 2/12/98

			Direction NORTHBOUND			North-South Road Alder Street			Direction SOUTHBOUND Makai Bound		
Start Time	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
6:30 AM										
6:45 AM						2	4	2		
7:00 AM						3	3	5		
7:15 AM						1	2	0		
7:30 AM						0	4	3		
7:45 AM						3	2	2		
8:00 AM						0	4	5		
8:15 AM						6	1	2		
8:30 AM										
8:45 AM										

PEAK HOUR	NB-LT	NB-TH	NB-RT			SB-LT	SB-TH	SB-RT		
7:30 AM	0	0	0	0	0	9	11	12	0	0
8:45 AM	TOTAL	0		#DIV/0!		TOTAL	32		0.00%	

			Direction EASTBOUND DH Bound			East-West Road Elm Street			Direction WESTBOUND Ewa Bound		
Start Time	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
6:30 AM										
6:45 AM		4	2			1	12			
7:00 AM		1	1			1	9			
7:15 AM		3	1			6	22			
7:30 AM		4	1			6	12			
7:45 AM		4	0			7	12			
8:00 AM		4	1			8	9			
8:15 AM		4	5			4	13			
8:30 AM										
8:45 AM										

PEAK HOUR	EB-LT	EB-TH	EB-RT			WB-LT	WB-TH	WB-RT		
7:30 AM	0	16	7	0	0	25	46	0	0	0
8:45 AM	TOTAL	23		0.00%		TOTAL	71		0.00%	

Project : 82.0 King St. Apartments
Date: 2/12/98

Direction NORTHBOUND — North-South Road **Alder Street** — Direction SOUTHBOUND Makai Bound

Start Time	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
3:45 PM										
4:00 PM						4	4	0		
4:15 PM						5	2	2		
4:30 PM						6	5	4		
4:45 PM						2	6	6		
5:00 PM						7	4	8		
5:15 PM						1	6			
5:30 PM										
5:45 PM										
6:00 PM										

PEAK HOUR	NB-LT	NB-TH	NB-RT			SB-LT	SB-TH	SB-RT		
4:30 PM	0	0	0	0	0	16	21	18	0	0
6:00 PM	TOTAL	0		#DIV/0!		TOTAL	55		0.00%	

Direction EASTBOUND DH Bound — East-West Road **Elm Street** — Direction WESTBOUND Ewa Bound

Start Time	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
3:45 PM										
4:00 PM		1	4			2	22			
4:15 PM		5	0			6	18			
4:30 PM		4	0			5	32			
4:45 PM		3	0			6	20			
5:00 PM		3	0			2	19			
5:15 PM		6	1			2	27			
5:30 PM										
5:45 PM										
6:00 PM										

PEAK HOUR	EB-LT	EB-TH	EB-RT			WB-LT	WB-TH	WB-RT		
4:30 PM	0	16	1	0	0	15	98	0	0	0
6:00 PM	TOTAL	17		0.00%		TOTAL	113		0.00%	

Project : 82.0 King St. Apartments
Date: 2/12/98

			Direction NORTHBOUND			North-South Road Alder Street			Direction SOUTHBOUND		
						in			out		
Start Time	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B		
6:30 AM											
6:45 AM						0		1			
7:00 AM						0		0			
7:15 AM						0		0			
7:30 AM						0		0			
7:45 AM						0		0			
8:00 AM						1		0			
8:15 AM						1		1			
8:30 AM											
8:45 AM											

PEAK HOUR	NB-LT	NB-TH	NB-RT			SB-LT	SB-TH	SB-RT		
7:30 AM	0	0	0	0	0	2	0	1	0	0
8:45 AM	TOTAL	0		#DIV/0!		TOTAL	3		0.00%	

			Direction EASTBOUND DH Bound			East-West Road King Street			Direction WESTBOUND		
						in			out		
Start Time	EB-LT	EB-TH	EB-RT	T/B		WB-RT	WB-TH	WB-RT	T/B		
6:30 AM											
6:45 AM						3		1			
7:00 AM						3		3			
7:15 AM						4		3			
7:30 AM						3		2			
7:45 AM						4		2			
8:00 AM						2		1			
8:15 AM						2		2			
8:30 AM						2		4			
8:45 AM											

PEAK HOUR	EB-LT	EB-TH	EB-RT			WB-RT	WB-TH	WB-RT		
7:30 AM	0	0	0	0	0	11	0	7	0	0
8:45 AM	TOTAL	0		#DIV/0!		TOTAL	18		0.00%	

Project : 82.0 King St. Apartments
Date: 2/12/98

			Direction NORTHBOUND			North-South Road Alder Street			Direction SOUTHBOUND	
						in			out	
Start Time	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
3:45 PM										
4:00 PM						0		0		
7:00 AM						1		0		
7:15 AM						0		0		
7:30 AM						0		1		
7:45 AM						1		0		
8:00 AM						2		1		
8:15 AM						0		1		
8:30 AM						1		0		
8:45 AM										

PEAK HOUR	NB-LT	NB-TH	NB-RT			SB-LT	SB-TH	SB-RT		
7:30 AM	0	0	0	0	0	3	0	3	0	0
8:45 AM	TOTAL	0		#DIV/0!		TOTAL	6		0.00%	

			Direction EASTBOUND DH Bound			East-West Road King Street			Direction WESTBOUND	
						in			out	
Start Time	EB-LT	EB-TH	EB-RT	T/B		WB-RT	WB-TH	WB-RT	T/B	
3:45 PM										
4:00 PM						4		3		
7:00 AM						3		5		
7:15 AM						5		4		
7:30 AM						5		3		
7:45 AM						4		6		
8:00 AM						7		5		
8:15 AM						5		9		
8:30 AM						3		2		
8:45 AM										

PEAK HOUR	EB-LT	EB-TH	EB-RT			WB-RT	WB-TH	WB-RT		
7:30 AM	0	0	0	0	0	21	0	23	0	0
8:45 AM	TOTAL	0		#DIV/0!		TOTAL	44		0.00%	

APPENDIX B

LEVEL-OF-SERVICE DEFINITIONS

FOR

UNSIGNALIZED INTERSECTIONS

REFERENCE: Highway Capacity Manual (Special Report 209, 1994)

LEVEL-OF-SERVICE FOR UNSIGNALIZED INTERSECTIONS

The level of service criteria are given in the table to the right. As used here , total delay is defined as the total elapsed time from when a vehicle stops at the end of a queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue position.

Level of Service	Average Total Delay (sec/veh)
A	≤ 5
B	> 5 and ≤ 10
C	> 10 and ≤ 20
D	> 20 and ≤ 30
E	<30 and ≤ 45
F	>45

The proposed level of service criteria are somewhat different from the criteria for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an unsignalized intersection. Additionally, several driver behavior considerations combine to make delays at signalized intersections less onerous than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, whereas drivers on the minor approaches to unsignalized intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized than signalized intersections. For these reasons, it is considered that the total delay threshold for any given level of service is less for an unsignalized intersections than for a signalized intersection.

ATTACHMENT "H"

LETTERS FROM AGENCIES CONSULTED

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 523-4414 • FAX: (808) 527-6743

JEREMY HARRIS
MAYOR

JAN NAOE SULLIVAN
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

98-01198(ST)
'98 EA Comments Zone 2

April 6, 1998

Mr. Randolph G. Moore
Hawaii Housing Development Corporation
c\o Gary S. Furuta
725 Kapiolani Boulevard, Suite C-103
Honolulu, Hawaii 96813

Dear Mr. Moore:

Draft Environmental Assessment (EA): King Street Apartments
An Elderly Low Income Rental Housing Project
Honolulu, Oahu
Tax Map Key: 2-3-12: 44

We have reviewed the Draft EA for the above-referenced project received on February 17, 1998, and offer the following comments:

Section II. **GENERAL INFORMATION** - This section should be revised to identify the accepting authority for the Final EA pursuant to the Environmental Impact Statement (EIS) regulations, Section 11-200-10(1), Hawaii Administrative Rules (HAR). The Final EA should also discuss the type of "action" which triggered its preparation pursuant to Section 11-200-6, HAR. This section should also include a list of all permits and approvals which are required for the project.

We also suggest that the property history on page 3 be moved to Section III, under its own heading and that the soil mitigation/contamination discussion be moved to the next section with the discussion of construction characteristics.

Section III. **DESCRIPTION OF PROPOSED ACTION** - This section should be expanded to provide additional information on the surrounding community and the physical characteristics of the existing site. The construction characteristics of the proposed project should also be described, including any demolition, grading, filling and soil remediation required.

This section should also discuss the intended market for this project. Although reference is made to the project as a low income elderly rental apartment, details on the restrictions and criteria for occupancy have not been provided.

Based on our staff's earlier consultations on this project, it is our understanding that the Hawaii Housing Development Corporation (HHDC) had intended to seek the approval of a Conditional Use Permit, Type 2 (CUP2) for this project as a group living facility.

In order to determine if this project could be considered as such, information on the operations of the project, including whether or not assistance with daily living services (e.g., meals, house cleaning, etc.) or specialized services (e.g., group counseling, medical care, etc.) must be provided.

SECTION IV. **IMPACTS** - This section is confusing and the labeling of impacts *appear* to be more appropriately labeled as project characteristics. Furthermore, this section should elaborate on access and parking requirements, as well as disclose the estimated water and wastewater demands of the proposed ninety-one (91) unit structure. In addition, an anticipated development timetable (i.e., construction phasing) and cost estimates of the proposed project should be provided.

We have no further comment to offer at this time. If you have any questions, please contact Steve Tagawa of our staff at 523-4817.

Very truly yours,

JAN NAOE SULLIVAN
Director of Land Utilization

JNS:am

cc: State Office of Environmental Quality Control

g:ppd\DEAking.sht

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

JEREMY HARRIS
MAYOR

JONATHAN K. SHIMADA, PhD
DIRECTOR AND CHIEF ENGINEER
ROLAND D. LIBBY, JR.
DEPUTY DIRECTOR

ENV 98-060

March 2, 1998

Mr. Randolph G. Moore
Chairman of the Board
Hawaii Housing Development Corp.
c/o Gary S. Furuta
Imperial Plaza, Suite C-103
725 Kapiolani Boulevard
Honolulu, Hawaii 96813

Dear Mr. Moore:

Subject: Draft Environmental Assessment (DEA)
King Street Apartments
TMK: 2-3-12: 44

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

1. The DEA should address City Ordinance 96-34 for controlling peak runoff.

2. The condition of the existing street frontage improvements may require repair and/or reconstruction in accordance with City standards and the Americans with Disabilities Act Accessibility Guidelines. Construct new or reconstruct existing curb ramps to current standards and guidelines.

3. The DEA should describe best management practices (BMPs) during construction to minimize erosion and sediment runoff. List any other storm water pollution prevention measures proposed during construction to mitigate pollutants from entering the City's drainage system, specifically if runoff from the existing Texaco Station contains any oily substances.

4. Direct storm water runoff from paved areas to planted area or use water quality inlets to minimize discharge of pollutants to the City's drainage system after completion of construction.

Should you have any questions, please contact Alex Ho, Environmental Engineer, at 523-4150.

Very truly yours,

For JONATHAN K. SHIMADA, PhD
Director and Chief Engineer

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 3RD FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 527-6663 • FAX: (808) 527-6675

JEREMY HARRIS
MAYOR

KENNETH E. SPRAGUE, P.E., Ph.D.
DIRECTOR

CHERYL K. OKUMA-SEPE, ESQ.
DEPUTY DIRECTOR

In reply refer to:
WCC 98-30

February 20, 1998

Mr. Randolph G. Moore, Chairman of the Board
Hawaii Housing Development Corporation
Imperial Plaza, Suite C-103
725 Kapiolani Boulevard
Honolulu, Hawaii 96813

Dear Mr. Moore:

Subject: **Draft Environmental Assessment**
King Street Apartments
1329 South King Street
TMK: 2-3-12: 44

A Sewer Connection Application form was approved for the subject project on December 11, 1997, provided connection is made to the existing Alder Street sewer line. The subject project is for construction of 91 low income elderly rental units. The applicant is liable for payment of a wastewater system facility charge.

If you have any questions, please contact Ms. Tessa Ching of the Service Control Branch at 523-4956.

Sincerely,

Cheryl K. Okuma-Sepe

KENNETH E. SPRAGUE
Director

FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU
3375 KOAPAKA STREET, SUITE H425
HONOLULU, HAWAII 96819-1869

JEREMY HARRIS
MAYOR

ANTHONY J. LOPEZ, JR.
FIRE CHIEF

ATTILIO K. LEONARDI
FIRE DEPUTY CHIEF

February 25, 1998

Mr. Randolph G. Moore, Chairman of the Board
Hawaii Housing Development Corporation
Imperial Plaza, Suite C-103
725 Kapiolani Boulevard
Honolulu, Hawaii 96813

Dear Mr. Moore:

Subject: Draft Environmental Assessment
King Street Apartments
HFD OL 98-077

We have reviewed the submitted information relating to the proposed property and foresee no adverse impact if the amendment were approved.

The Fire Code of the City and County of Honolulu requires the removal of the five underground storage tanks. Once they have been removed, we will require that a letter be submitted to us certifying that these tanks were removed per the UST Guidelines of the State of Hawaii.

If you need additional information, please contact Battalion Chief Charles Wassman of our Fire Prevention Bureau at 831-7778.

Sincerely,

ANTHONY J. LOPEZ, JR.
Fire Chief

AJL/CW:bh

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
PACIFIC PARK PLAZA • 711 KAPIOLANI BOULEVARD, SUITE 1200 • HONOLULU, HAWAII 96813
PHONE: (808) 523-4529 • FAX: (808) 523-4730

JEREMY HARRIS
MAYOR

CHERYL D. SOON
DIRECTOR

JOSEPH M. MAGALDI, JR.
DEPUTY DIRECTOR

March 27, 1998

TSP2/98-00981R

Mr. Randolph G. Moore, Chairman of the Board
Hawaii Housing Development Corporation
c/o Gary S. Furuta
Imperial Plaza, Suite C-103
725 Kapiolani Boulevard
Honolulu, Hawaii 96813

Dear Mr. Moore:

Subject: King Street Apartments

In response to your February 12, 1998 letter, we reviewed the draft environmental assessment for the subject project and have the following comments:

1. On-site parking should be provided to support the demand for the entire development. Problems have occurred when the parking demand for a housing project exceeds the amount being provided on-site. Residents must then depend on street parking. As the area develops and densities increase, there will be a need to remove on-street parking to facilitate traffic movement.

2. Adequate vehicular sight distance to pedestrians and other vehicles must be provided and maintained at all driveways. Landscaping and walls should be placed in locations which will afford the greatest vehicular sight.

3. Driveway grades should not exceed five percent for a minimum distance of 35 feet from the curb prolongation. Existing driveways, which will not be used by this project, should be adjusted to match the existing curb grade.

4. Vehicular access at all public streets should be constructed as standard City dropped driveways.

5. On-site loading and parking areas should be designed such that no maneuvering occurs on any public street. This will affect the design of the loading area on Alder Street.

6. Parking entry controls, if provided, should be recessed as far into the project as practical to avoid vehicular queuing onto any public street.

7. The property line radius at the intersection of King Street and Alder Street should be adjusted from 20 feet to 30 feet to provide a wider sidewalk area. This will be requested at the time of the submittal of the building permit.

8. Construction plans and a traffic control/detour plan for all work within the City's street right-of-way should be submitted to this department for review and approval. Existing and new traffic signs and pavement markings on both sides of each affected street should be included in the plans.

Should you have any questions regarding these comments, please contact Faith Miyamoto of the Transportation System Planning Division at 527-6976.

Sincerely,

Cheryl D. Soon

CHERYL D. SOON
Director

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96843
PHONE (808) 527-6180
FAX (808) 533-2714

March 25, 1998

Mr. Randolph G. Moore, Chairman of the Board
Hawaii Housing Development Corporation
c/o Gary S. Furuta
Imperial Plaza, Suite C-103
725 Kapiolani Boulevard
Honolulu, Hawaii 96813

Dear Mr. Moore:

Subject: Your Transmittal of February 12, 1998 Regarding the Draft Environmental Assessment for the Proposed King Street Apartment, TMK: 2-3-012: 044

Thank you for the opportunity to review and comment on the Draft Environmental Assessment for the proposed King Street Apartments.

We have the following comments:

1. The existing water system is presently adequate to accommodate the proposed apartment building.

2. There is an existing 3/4-inch domestic water meter currently serving the project site.

3. The availability of water will be confirmed when the building permit application is submitted for our review and approval. When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission and daily storage.

4. If a three-inch or larger meter is required, the construction drawings showing the installation of the meter should be submitted for our review and approval.

5. Board of Water Supply approved reduced pressure principle backflow prevention assemblies will be required to be installed after all domestic water meters serving the project site.

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

Very truly yours,

FOR RAYMOND H. ~~SATO~~
Manager and Chief Engineer

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

JEREMY HARRIS
MAYOR

RANDALL K. FUJIKI
DIRECTOR AND BUILDING SUPERINTENDENT

ISIDRO M. BAQUILAR
DEPUTY DIRECTOR AND BUILDING SUPERINTENDENT

PB 98-113

February 26, 1998

Mr. Randolph G. Moore, Chairman of the Board
Hawaii Housing Development Corporation
c/o Gary S. Furuta
Imperial Plaza, Suite C-103
725 Kapiolani Boulevard
Honolulu, Hawaii 96813

Dear Mr. Moore:

Subject: King Street Apartments
Draft Environmental Assessment (DEA)

This is in response to your request of February 12, 1998 to review and comment on the subject DEA.

We have no comments to offer but appreciate the opportunity to review the document.

Should there be any questions, please contact Douglas Collinson at 527-6375.

Very truly yours,

RANDALL K. FUJIKI
Director and Building Superintendent

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 10TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 523-4182 • FAX: (808) 523-4054

JEREMY HARRIS
MAYOR

WILLIAM D. BALFOUR, JR.
DIRECTOR

MICHAEL T. AMII
DEPUTY DIRECTOR

March 5, 1998

Mr. Randolph G. Moore
Chairman of the Board
Hawaii Housing Development Corporation
Imperial Plaza, Suite C-103
725 Kapiolani Boulevard
Honolulu, Hawaii 96813

Dear Mr. Moore:

Subject: Draft Environmental Assessment (EA) for
King Street Apartments, 1329 South King Street
Makiki, Oahu, Hawaii
Tax Map Key No. 2-3-012: 044

We have reviewed the draft EA for the above-described project and offer the following comments.

Your project will have a significant impact on our recreational facilities and services in the Makiki/McCully area and should have been identified and addressed in Section IV of the draft EA.

For your information, the proposed residential development project will need to comply with the City and County of Honolulu's Park Dedication Ordinance No. 4621 and street tree requirements.

We recommend that you consult our Advance Planning Branch staff for park dedication requirements. During your plan development stage, please submit a detailed street tree planting plan to our Landscape Section for review and approval.

Please contact Mr. Lester Lai, planner, at 523-4696 for consultation on park dedication and Mr. David Kumasaka, landscape architect, at 523-4884 for information on street tree requirements.

Sincerely,

W. D. Balfour

WILLIAM D. BALFOUR, JR.
Director

WDB:ei

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 5TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 523-4427 • FAX: (808) 527-5498

JEREMY HARRIS
MAYOR

ROBERT AGRES JR.
DIRECTOR

DARWIN J. HAMAMOTO
DEPUTY DIRECTOR

March 9, 1998

Mr. Randolph G. Moore, Chairman of the Board
Hawaii Housing Development Corporation
c/o Gary Furuta
Imperial Plaza, Suite C-103
725 Kapiolani Boulevard
Honolulu, Hawaii 96813

Dear Mr. Moore:

SUBJECT: King Street Apartments - Draft Environmental Assessment

We have received and reviewed the Hawaii Housing Community Development Corporation's (HHDC) Draft Environmental Assessment for the King Street Apartments, an elderly low income rental housing development project to be located at 1329 South King Street, Honolulu, Hawaii.

We understand that the proposed project will occupy approximately 18,963 square feet in urban Honolulu and include the development of 91 rental apartments and 27 parking stalls. We further understand that the units will be rented at rates affordable to elderly households earning less than 50 percent of Honolulu's median income and that the Director of Land Utilization will determine the adequacy of the parking stalls proposed.

The proposed project is consistent with the Department of Housing and Community Development's goal of providing affordable rental housing for low income households in the urban core. In addition, we find that this project does not interfere with any DHCD projects or programs. As such, we are supportive of your plans to provide much needed low income rental housing to our elderly population and recommend your continued consultation with appropriate City agencies as your project progresses.

Questions regarding this matter may be directed to Kim Evans at 527-5085.

Sincerely,

ROBERT AGRES, JR.

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU
801 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96813 - AREA CODE (808) 529-3111

JEREMY HARRIS
MAYOR

LEE D. DONOHUE
ACTING CHIEF

WILLIAM B. CLARK
DEPUTY CHIEF

OUR REFERENCE BS-DL

February 19, 1998

Mr. Randolph G. Moore
Chairman of the Board
Hawaii Housing Development
Corporation
c/o Gary S. Furuta
Imperial Plaza, Suite C-103
725 Kapiolani Boulevard
Honolulu, Hawaii 96813

Dear Mr. Moore:

This is in response to your letter of February 12, 1998, regarding the Draft Environmental Assessment for the King Street Apartments.

This project should have no significant impact on the operations of the Honolulu Police Department.

Thank you for the opportunity to review this document.

Sincerely,

LEE D. DONOHUE
Acting Chief of Police

By
JAMES FEMIA, Assistant Chief
Administrative Bureau

ALA MOANA/KAKAAKO NEIGHBORHOOD BOARD NO. 11

c/o NEIGHBORHOOD COMMISSION • CITY HALL, ROOM 400 • HONOLULU, HAWAII 96813

March 30, 1998

Gary Furuta
Hawaii Housing Development Corporation
Suite C-103
725 Kapiolani Blvd.
Honolulu, HI 96813

Dear Mr. Furuta:

We appreciate your taking the time to give a presentation to the Ala Moana-Kakaako Neighborhood Board at our meeting on March 24, 1998 on your proposed senior housing project on King Street. Judging by the number of people attending the Board meeting who are interested in this project we assume there is a need in our area for affordable senior housing. Questions were raised regarding the very difficult on street parking in that area and the need for adequate on site parking for any new buildings in our neighborhood. We strongly recommend that sufficient parking for residents, staff, and visitors be incorporated into the plans for this project and that this project have no negative impact on street parking.

The Board did not take a position on this project at this time and reserves the right to comment in the future as the plans develop. Thank you for keeping the Board informed and we look forward to hearing from you as these plans continue to be developed.

Sincerely,

John A. Breinich
Chair

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

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

March 5, 1998

Randolph G. Moore, Chairman
Hawaii Housing Development Corporation
Imperial Plaza, Suite C-103
725 Kapiolani Blvd.
Honolulu, Hawaii 96813

LOG NO: 21122 ✓
DOC NO: 9802EJ15

Dear Mr. Moore:

SUBJECT: **Chapter 6E-8 Historic Preservation Review -- Hawaii Housing Development: Draft Environmental Assessment for the King Street Apartments, A Elderly Low Income Rental Housing Development Project at 1329 South King Street, Honolulu, Hawaii Honolulu, Kona, O'ahu**
TMK: 2-3-12:44

Thank you for the opportunity to review the DEA for this project which proposes the construction of a 91 unit elderly, low income, rental project. We commented in September, 1996 that we believed that another proposed low income rental housing project on the adjacent parcel (TMK: 2-3-12:4) "The Birch Street Apartments, would have "no effect" on historic sites (Doc No. 9609TD14). Our comments consisted of the following:

> A review of our records shows that there are no known historic sites at this parcel. The parcel has been developed and the portion fronting Alder Street is now used for parking. It is unlikely that subsurface historic sites are located here. We believe the project will have "no effect" on historic sites.
>
> It is possible that historic sites, including human burials, will be uncovered during routine construction activities. Should this be the case, all work in the vicinity must stop and the State Historic Preservation Division must be contacted at 587-0047.

The current project is also located on land which has been extensively developed and altered making it unlikely that subsurface historic sites would be found. Therefore, we believe that this project will have "no effect" on historic sites. As with the previous comments, it is possible that historic sites, including human burials, will be uncovered during routine construction activities. Should this be the case, all work in the vicinity must stop and the State Historic Preservation Division must be contacted at 587-0047.

If you have any questions please call Elaine Jourdane at 587-0014.

Aloha,

DON HIBBARD, Administrator
State Historic Preservation Division

EJ:jk

c: Gary Furuta

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII 96813-3065 / TELEPHONE 547-7000

ANDY MIRIKITANI
COUNCILMEMBER
(808) 547-7005

May 19, 1998

Gary Furuta, Project Manager
Hawaii Housing Development Corporation
725 Kapiolani Boulevard Ste C-103
Honolulu, Hawaii 96813

RE: Parking Concerns Relating to the King Street Apartments Project

Dear Mr. Furuta:

Residents have voiced concerns regarding parking for the King Street Apartments project and potential impacts on the Sheridan-Kamaile-Piikoi-King Street quadrant. Residents have expressed concerns regarding this housing project and the adverse parking impact it may generate in the surrounding residential community. Residents have reported that this low income, elderly housing project does not contain an adequate amount of on-site parking stalls to support the parking demand of tenants and their guests.

Residents have stated that the density in the area will increase as a result of this housing project and the Birch Street Apartments Project and result in exacerbating the existing on-street parking shortage. Residents have stated that this housing project will lead to a decreased amount of available on-street parking which would be at the expense of current residents, lessen motorist visibility on the roadways due to the increased on-street parking demand and cause more congestion that would impede vehicular movement on the adjacent roadways.

This is to initiate a request for your organization to conduct an investigation and respond to these residential concerns. If you have any questions, please feel free to call my aide Rudy Bilan at 527-5598.

Very truly yours,

ANDY MIRIKITANI
Councilmember, District V

AKM:rtb
cc: Members of the Ala Moana/Kakaako Neighborhood Board No. 11
Roy Oshiro, Executive Director - State Housing Finance and Development Corporation
Gary Gill, Director - State Office of Environmental Quality Control

ATTACHMENT "I"

RESPONSE LETTERS TO AGENCIES CONSULTED

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o GARY S. FURUTA
Imperial Plaza · Suite C-103
725 Kapiolani Boulevard
Honolulu, Hawaii 96813
Telephone: 596-2120 · Fax: 395-1520

April 17, 1998

Ms. Jan Noe Sullivan, Director
Department of Land Utilization
City & County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Project: King Street Apartments
An Elderly Low-Income Rental Housing Development Project

Subject: Environmental Assessment – Final

Dear Ms. Sullivan:

We appreciate your Department's review and comments of April 6, 1998 regarding our Draft Environmental Assessment for the project.

With regard to the comments we provide the following responses:

1. Section II. GENERAL INFORMATION: We have included information designating the accepting authority as Housing Finance and Development Corporation, as well as references to corresponding Hawaii Revised Statutes that have initiated this Environmental Assessment.

   We have also reviewed your comments regarding the format of the document, as well as discussed them with Steve Tagawa of your staff. We have made the appropriate revisions.

2. Section III. DESCRIPTION OF THE PROPOSED ACTION: We have expanded this section to include information regarding the surrounding community and its characteristics. We also have included information regarding the demolition of the existing service station, and the anticipated construction process of the new building.

   We have added information regarding criteria for occupancy as a low-income elderly rental apartment. We also included the operational aspect of Catholic Charities Elderly Services for the occupants in the proposed project.

   The project is anticipating application for a Conditional Use Permit – Type 2, for a Group Living Facility. We have added information supporting that application, regarding the anticipated services that will be provided to the elderly tenants.

3. Section IV. IMPACTS: We have reviewed this section with regard to your comments and have revised our labeling of the subsections.

   We have also provided additional information regarding the access to and from the site, based on the Traffic Impact Assessment Report For King Street Apartments prepared by Pacific Planning & Engineering, Inc.

We hope the above is a satisfactory response to your comments. Please feel free to contact Mr. Gary Furuta, at 596-2120 or the address indicated above, if you require any questions.

We are preparing our Final Environmental Assessment and will include a copy of your comments in our submittal.

Very truly yours,

Randolph Moore

Randolph G. Moore, Chair
Hawaii Housing Development Corporation

cc: Gary Furuta, HHDC Project Manager

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o Gary S. Furuta
Imperial Plaza - Suite C-103
725 Kapiolani Blvd.
Honolulu, Hawaii 96813

March 30, 1998

Mr. Jonathan K. Shimada, Phd.
Director and Chief Engineer
Department of Public Works
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Project: King Street Apartments
An Elderly Low Income Rental Housing Development Project

Subject: Environmental Assessment - Final

Dear Sir,

We appreciate your Department's review and comments of March 2, 1998 regarding our Draft Environmental Assessment for the Project.

With regard to your comments, we provide the following response:

1. We will instruct our engineering consultants to address City Ordinance 96-34 with regard to controlling peak runoff from the site during our design development and preparation of the construction documents for the project.

2. The project will include any necessary reconstruction of the street frontage to conform to the provisions of the Americans with Disabilities Act (ADA), as well as the detail standards of the Department of Public Works regarding driveways, curbs and gutters.

3. The existing Texaco Station site will be cleared of all contaminants before the construction of the project as part of the lease requirements between the tenant, Texaco, and the landowner. The engineering planning will include provisions for Best Management Practices (BMPs) to control erosion and sediment runoff, as well as other measures to control storm water pollution from the site during the course of construction.

4. The site grading plan will be engineered to direct paved areas runoff into planing areas to minimize discharge into the City's storm drainage system.

In addition to the above, we will direct our engineering consultants to contact Mr. Alex Ho, Environmental Engineer of your staff, as we develop the plans for the project.

We hope the above is a satisfactory response to your comments. Please feel free to contact Mr. Gary Furuta, at Phone # 596-2120 or the address indicated above, if you require any further discussion.

We are preparing our Final Environmental Assessment and will include a copy of your comments and this response in our submittal

Very truly yours,

Randolph G. Moore, Chair
Hawaii Housing Development Corporation

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o Gary S. Furuta
Imperial Plaza - Suite C-103
725 Kapiolani Blvd.
Honolulu, Hawaii 96813

March 30, 1998

Mr. Kenneth E Sprague, Director
Department of Wastewater Management
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Project: King Street Apartments
An Elderly Low Income rental Housing Development Project

Subject: Environmental Assessment - Final

Dear Sir,

We appreciate your Department's review and comments of February 20, 1998 regarding our Draft Environmental Assessment for the Project.

With regard to your comments we recognize that we will pay the corresponding wastewater system facility charge for the project coincidental with the building permit application.

In addition to the above, we will direct our engineering consultants to keep in touch with Ms. Tessa Ching of your Service Control Branch, as we develop the plans for the project.

We hope the above is a satisfactory response to your comments. Please feel free to contact Mr. Gary Furuta, at Phone # 596-2120 or the address indicated above, if you require any further discussion.

We are preparing our Final Environmental Assessment and will include a copy of your comments and this response in our submittal

Very truly yours,

Randolph G. Moore, Chair
Hawaii Housing Development Corporation

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o Gary S. Furuta
Imperial Plaza - Suite C-103
725 Kapiolani Blvd.
Honolulu, Hawaii 96813

March 30, 1998

Fire Chief Anthony J. Lopez
Fire Department
City & County of Honolulu
3375 Koapaka Street, Suite H425
Honolulu, Hawaii 96819-1869

Project: King Street Apartments
An Elderly Low Income Rental Housing Development Project

Subject: Environmental Assessment - Final

Dear Chief,

We appreciate your Department's review and comments of February 25, 1998 regarding our Draft Environmental Assessment for the Project.

In response to your comments, we submit that the existing five underground storage tanks will be removed as per requirements of the lease agreement between the tenant, Texaco, and the landowner. The removal will be according to the UST Guidelines of the State of Hawaii, and proper certification will be submitted to your Department during the processing of the project building permit application.

In addition to the above, we will direct our design and engineering consultants to keep in contact with Battalion Chief Charles Wassman, of your Fire Prevention Bureau, as we develop the plans for the project.

We hope the above is a satisfactory response to your comments. Please feel free to contact Mr. Gary Furuta, at Phone # 596-2120 or the address indicated above, if you require any further discussion.

We are preparing our Final Environmental Assessment and will include a copy of your comments and this response in our submittal

Very truly yours,

Randolph G. Moore, Chair
Hawaii Housing Development Corporation

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o GARY S. FURUTA
Imperial Plaza - Suite C-103
725 Kapiolani Boulevard
Honolulu, Hawaii 96813
Telephone: 596-2120 - Fax: 395-1520

April 19, 1998

Ms. Cheryl Soon, Director
Department of Transportation Services
City & County of Honolulu
Pacific Park Plaza, Suite 1200
711 Kapiolani Boulevard
Honolulu, Hawaii 96813

Project: King Street Apartments
An Elderly Low-Income Rental Housing Development Project

Subject: Environmental Assessment – Final

Dear Ms. Soon:

We appreciate your Department's review and comments of March 27, 1998, regarding our Draft Environmental Assessment for the project.

With regard to your comments we provide the following responses:

1. Pacific Planning & Engineering, Inc. has completed a Traffic Impact Assessment Report for the proposed project. The report indicates, among other things, that the average parking generation rate for a retirement community is 0.27 parking stalls per dwelling unit. This ratio is for total parking, including parking for visitors, staff, service vehicles, etc., as well as the residents. Using the above ratio and the proposed 91 elderly units in the project, 25 parking stalls would be required. The proposed on-site parking of thirty (30) stalls is expected to be more than adequate for the development. The final number of parking stalls will be determined by the Department of Land Utilization.

   The Report also concluded that the traffic for the proposed elderly project will have less of an impact than the existing service station use. Also, no existing street parking will have to be removed to facilitate traffic or ingress/egress requirements for the project.

2. The site improvements, including landscaping and fence walls, will be designed to assure adequate and clear sight lines for vehicles and pedestrians at all driveways.

3. The design of new driveway grades will not exceed five percent (5%). Abandoned driveways will be reconstructed for sidewalks, curbs and gutters to match the adjacent existing conditions.

4. All new driveways and reconstructed sidewalks, curbs and gutters will be built according to the standard details of the Department of Public Works.

5. The site will be planned to allow on-site maneuvering for loading spaces and parking stalls.

6. Parking entry controls, if planned, will be positioned to allow queuing of vehicles entering the site to clear the public street.

7. The engineering studies of the site improvements will include increasing the property line radius at the intersection of King and Alder Streets, from 20 to 30 feet, in anticipation of the DOTS request during the building permit application processing.

8. We will direct our engineering consultant to submit to your department a traffic control/detour plan for the project. It will include both new and existing traffic signs and pavement markings on both sides of each affected street.

In addition to the above, we will direct our engineering consultants to keep contact with Ms. Faith Miyamoto of your Transportation System Planning Division, as we develop the plans for the project.

We hope the above is a satisfactory response to your comments. Please feel free to contact Mr. Gary Furuta at 596-2120 or the address above if you require any further discussion.

We are preparing our final Environmental Assessment and will include a copy of your comments in our submittal.

Very truly yours,

Randolph Moore

Randolph G. Moore, Chair
Hawaii Housing Development Corporation

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o Gary S. Furuta
Imperial Plaza - Suite C-103
725 Kapiolani Blvd.
Honolulu, Hawaii 96813

March 30, 1998

Mr. Raymond H. Sato, Manager and Chief Engineer
Board of Water Supply
City & County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96813

Project: King Street Apartments
An Elderly Low Income Rental Housing Development Project

Subject: Environmental Assessment - Final

Dear Sir,

We appreciate your review and comments of March 25, regarding our Draft Environmental Assessment for the Project.

With regard to your comments, we submit that we will accept responsibility for payment of the corresponding Water System Facilities Charges for the project.

We will direct our engineering consultants to coordinate the determination and sizing of appropriate water meter and backflow preventer for the project with the Board of Water Supply.

In addition the above, we also will direct our engineering consultant to keep in contact with Mr. Barry Usagawa, of your staff, as we develop the plans for the project.

We hope the above is a satisfactory response to your comments. Please feel free to contact Mr. Gary Furuta, at Phone # 596-2120 or the address indicated above, if your require any further discussion.

We are preparing our Final Environmental Assessment and will include a copy of your comments in our submittal

Very truly yours,

Randolph G. Moore, Chair

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o Gary S. Furuta
Imperial Plaza - Suite C-103
725 Kapiolani Blvd.
Honolulu, Hawaii 96813

March 30, 1998

Mr. Randall K. Fujiki,
Director and Building Superintendent
Building Department
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Project: King Street Apartments
An Elderly Low Income Rental Housing Development Project

Subject: Environmental Assessment - Final

Dear Sir,

We appreciate your Department's review and comments of February 26, regarding our Draft Environmental Assessment for the Project.

We are preparing our Final Environmental Assessment and will include a copy of your letter as well as this response in our submittal

Very truly yours,

Randolph G. Moore, Chair
Hawaii Housing Development Corporation

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o Gary S. Furuta
Imperial Plaza - Suite C-103
725 Kapiolani Blvd.
Honolulu, Hawaii 96813

March 30, 1998

Mr. William D. Balfour, Jr., Director
Department of Parks and Recreation
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Project: King Street Apartments
An Elderly Low Income Rental Housing Development Project

Subject: Environmental Assessment - Final

Dear Sir,

We appreciate your Department's review and comments of March 5, 1998 regarding our Draft Environmental Assessment for the Project.

With regard to your comments, we provide the following response:

1. We have expanded Section IV to identify the impact the proposed project will have on the recreational facilities in the Makiki/McCully area, in particular the Sheridan Neighborhood park.

2. We will comply with the Park Dedication Ordinance, and instruct our design, landscape and engineering consultants to develop their design to comply with street tree requirements.

As also requested in your letter, we will direct our design, landscape and engineering consultants to contact your planner, Mr. Lester Lai and landscape architect, Mr. David Kumasaka, as we develop the plans for the project.

We hope the above is a satisfactory response to your comments. Please feel free to contact Mr. Gary Furuta, at Phone # 596-2120 or the address indicated above, if you require any further discussion.

We are preparing our Final Environmental Assessment and will include a copy of your comments and this response in our submittal

Very truly yours,

Randolph G. Moore, Chair
Hawaii Housing Development Corporation

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o Gary S. Furuta
Imperial Plaza - Suite C-103
725 Kapiolani Blvd.
Honolulu, Hawaii 96813

March 30, 1998

Mr. Robert Agres, Jr., Director
Department of Housing and Community Development
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Project: King Street Apartments
An Elderly Low Income Rental Housing Development Project

Subject: Environmental Assessment - Final

Dear Sir,

We appreciate your Department's review and comments of March 9, 1998 regarding our Draft Environmental Assessment for the Project.

We are preparing our Final Environmental Assessment and will include a copy of your comments and this response in our submittal

Very truly yours,

Randolph G. Moore

Randolph G. Moore, Chair
Hawaii Housing Development Corporation

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o Gary S. Furuta
Imperial Plaza - Suite C-103
725 Kapiolani Blvd.
Honolulu, Hawaii 96813

March 30, 1998

Acting Chief Lee D. Donohue
Police Department
City & County of Honolulu
801 South Beretania Street
Honolulu, Hawaii 96813

Project: King Street Apartments
An Elderly Low Income Rental Housing Development Project

Subject: Environmental Assessment - Final

Dear Sir,

We appreciate your Department's review and comments of February 19, 1998 regarding our Draft Environmental Assessment for the Project.

We are preparing our Final Environmental Assessment and will include a copy of your comments and this response in our submittal

Very truly yours,

Randolph G. Moore, Chair
Hawaii Housing Development Corporation

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o GARY S. FURUTA
Imperial Plaza · Suite C-103
725 Kapiolani Boulevard
Honolulu, Hawaii 96813
Telephone: 596-2120 · Fax: 395-1520

April 17, 1998

Mr. John A. Breinich, Chair
Ala Moana/Kakaako Neighborhood Board
c/o Neighborhood Board Commission
City & County of Honolulu
City Hall, Room 400
Honolulu, Hawaii 96813

Project: King Street Apartments
An Elderly Low-Income Rental Housing Development Project

Subject: Environmental Assessment – Final

Dear Mr. Breinich:

We appreciated the opportunity to present the proposed project to your board and the public on March 24, 1998. We noted many people at the meeting had the flyers we sent out regarding our presentation. Councilmember Mirikitani had suggested that we send flyers to residents in the immediate neighborhood. Like you, we were pleasantly surprised at the considerable turnout of residents in the area for the presentation.

Thank you for your letter regarding our presentation. As you suggested, we will keep your board informed of the progress we make on the project. Regarding the concerns about parking that one individual brought up, we wish to assure you that we will do everything reasonably possible, as we did in our adjacent Birch Street Apartments project, to provide sufficient on-site parking. As an elderly apartment project, a parking ratio of one stall per four units (1:4) is a recognized acceptable standard, both locally and nationally. In the case of the King Street Apartments project with 91 units, this ratio equates to 23 parking stalls which would be sufficient to accommodate guests, employees, service personnel, etc., as well as the residents in the project. For the proposed project, 30 on-site parking stalls (1:3 ratio) are being provided. We believe that this number of stalls will accommodate the parking needs of the residents, staff and visitors.

As we explained in the presentation, the Pacific Planning & Engineering, Inc. traffic study indicates that the proposed project will have less of an impact to traffic in the area than even the existing service station. The project also will have little or no impact on the area, compared to either a condominium (for sale) or retail/office building project, both of which are logical alternative development scenarios for the site.

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o GARY S. FURUTA
Imperial Plaza · Suite C-103
725 Kapiolani Boulevard
Honolulu, Hawaii 96813
Telephone: 596-2120 · Fax: 395-1520

April 17, 1998

Mr. John A. Breinich, Chair
Ala Moana/Kakaako Neighborhood Board
c/o Neighborhood Board Commission
City & County of Honolulu
City Hall, Room 400
Honolulu, Hawaii 96813

Project: King Street Apartments
An Elderly Low-Income Rental Housing Development Project

Subject: Environmental Assessment – Final

Dear Mr. Breinich:

We appreciated the opportunity to present the proposed project to your board and the public on March 24, 1998. We noted many people at the meeting had the flyers we sent out regarding our presentation. Councilmember Mirikitani had suggested that we send flyers to residents in the immediate neighborhood. Like you, we were pleasantly surprised at the considerable turnout of residents in the area for the presentation.

Thank you for your letter regarding our presentation. As you suggested, we will keep your board informed of the progress we make on the project. Regarding the concerns about parking that one individual brought up, we wish to assure you that we will do everything reasonably possible, as we did in our adjacent Birch Street Apartments project, to provide sufficient on-site parking. As an elderly apartment project, a parking ratio of one stall per four units (1:4) is a recognized acceptable standard, both locally and nationally. In the case of the King Street Apartments project with 91 units, this ratio equates to 23 parking stalls which would be sufficient to accommodate guests, employees, service personnel, etc., as well as the residents in the project. For the proposed project, 30 on-site parking stalls (1:3 ratio) are being provided. We believe that this number of stalls will accommodate the parking needs of the residents, staff and visitors.

As we explained in the presentation, the Pacific Planning & Engineering, Inc. traffic study indicates that the proposed project will have less of an impact to traffic in the area than even the existing service station. The project also will have little or no impact on the area, compared to either a condominium (for sale) or retail/office building project, both of which are logical alternative development scenarios for the site.

We hope the above is a satisfactory response to your comments. Please feel free to contact Mr. Gary Furuta, at 596-2120 or the address indicated above, if you have any questions.

We are preparing our Final Environmental Assessment and will include a copy of your comments in our submittal.

Again, thank you for your cooperation. Mahalo!

Very truly yours,

Randolph G. Moore, Chair
Hawaii Housing Development Corporation

cc: Gary S. Furuta, HHDC Project Manager

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o Gary S. Furuta
Imperial Plaza - Suite C-103
725 Kapiolani Blvd.
Honolulu, Hawaii 96813

March 30, 1998

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

Project: King Street Apartments
An Elderly Low Income Rental Housing Development Project

Subject: Environmental Assessment - Final

Dear Sir,

We appreciate your Office's review and comments of March 5, 1998 regarding our Draft Environmental Assessment for the Project.

In response to your comments, we submit that we will incorporate into the construction documents provisions directing the contractor to stop work and notify the State Historic Preservation Division should any historical sites, including human burial, be uncovered during routine construction activities.

We are preparing our Final Environmental Assessment and will include a copy of your comments and this response in our submittal

Very truly yours,

Randolph G. Moore, Chair
Hawaii Housing Development Corporation

KING STREET APARTMENTS L.P.
GARY S. FURUTA
Imperial Plaza · Suite C-103
725 Kapiolani Boulevard
Honolulu, Hawaii 96813
Telephone: 596-2120 · Fax: 395-1520

May 22, 1998

Councilmember Andy Mirikitani
City Council
City and County of Honolulu
Honolulu, Hawaii 96813-3065

Subject: Parking Concerns Relating to the King Street Apartments Project

Reference: Your letter of May 19, 1998, same subject.

Dear Councilmember Mirikitani:

This is a follow up to the above referenced letter as well as my telephone conversation with Mr. Rudy Bilan of your office.

It was comforting to hear that concerns regarding parking for the King Street Apartments project have not been prevalent. When we made a public presentation at a neighborhood board meeting a few months earlier in March, we were pleasantly surprised at the large turnout. You may recall that there was only one person that brought up issues regarding parking during the question and answer period after our presentation.

As with the adjacent Birch Street Apartments project, Hawaii Housing Development Corporation ("HHDC") is committed to being a good neighbor, and working and coordinating with the neighborhood board in its development of the King Street Apartments project. You may recall during the Chapter 201E, HRS approval process for the Birch Street Apartments family rental project, HHDC solicited the support of the neighborhood board. Together we were successful in maintaining the planned number of parking stalls, in spite of outside pressure to reduce parking in the project.

Since our presentation to the neighborhood board, we have completed a traffic report, prepared by Pacific Planning & Engineering, Inc., for the proposed project. The report included an investigation on the generation and adequacy of parking for the project. It concluded the following:

- The level-of-service at the intersections in the area would not be affected by the proposed project;
- The traffic generated by the project is estimated to be less than that presently being generated by the existing Texaco service station;
- The 27 parking stalls are adequate for the proposed elderly rental King Street Apartments project. *(Note: the most recent site plan for the project increases the number of parking stalls to 30)*

The project is being designed within the BMX-3 zoning density allowed by the city. In fact, the project is considerably below the allowable density for the property. The project will have a building area of approximately 47,000 sq. ft., which is approximately 70% of the maximum allowable density of 66,000 sq. ft. A considerably larger building could be built on the property.

As part of the project, adequate on-site parking, using national and local standards, will be provided. Based on these standards, and experience with existing projects in the urban core, an elderly rental project generates approximately 0.25 parking stalls per dwelling unit, or 23 parking stalls for the King Street Apartments project. This would include parking for residents, as well as visitors and service personnel. The proposed project will be providing 30 parking stalls (0.33 parking stalls per dwelling unit), considerably more than that normally required. Other allowable uses for the property, e.g., "for sale" condominium, office building, etc., would generate considerably more parking.

The proposed project will not reduce the number of existing parking stalls, or impede vehicular movement on adjacent roadways in the area. Presently, curbside parking is not allowed on the street frontages of the property and therefore, no existing parking will be eliminated. The level-of-service at the intersections in the area will not be affected by the project. Road visibility will not be hampered; overall traffic in the area should be improved. Traffic related to the project should be less than that presently being generated by the existing Texaco service station.

We trust that the above further clarifies the parking and traffic situation for the proposed project. HHDC will continue to have in mind the interest and concerns of the neighborhood when proposing developments in the area. We believe we have investigated and researched these matters, and incorporated reasonable and proper considerations in the design of the King Street Apartments project.

Please call if you have any questions. As discussed with Mr. Bilan, attached is another copy of the traffic report for your use or dissemination as necessary.

Very truly yours,

Gary S. Furuta, Project Manager

cc: Members of the Ala Moana/Kakaako Neighborhood Board No. 11
Roy Oshiro, Executive Director – State Housing Finance and Development Corporation
Gary Gill, Director - State Office of Environmental Quality Control

Attachment

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o Gary S. Furuta
Imperial Plaza - Suite C-103
725 Kapiolani Blvd.
Honolulu, Hawaii 96813

July 28,1998

Mr. Jonathan K. Shimada, Phd. , Director
Department of Facilities Maintenance
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

COPY

Project: King Street Apartments
An Elderly Low Income Rental Housing Development Project

Subject: Final Environmental Assessment - Address Correction

Dear Sir,

This is to inform you that the correct address of the property is 1239 South King Street. In the Draft Environmental Assessment, the address was incorrectly stated as 1329 South King Street.

The address correction has been incorporated into the Final Environmental Assessment.

Please call if you have any questions.

Very truly yours,

for:

Gary S. Furuta, Project Manager
Hawaii Housing Development Corporation

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o Gary S. Furuta
Imperial Plaza - Suite C-103
725 Kapiolani Blvd.
Honolulu, Hawaii 96813

COPY

July 28, 1998

Chief Lee D. Donohue
Police Department
City & County of Honolulu
801 South Beretania Street
Honolulu, Hawaii 96813

Project: King Street Apartments
An Elderly Low Income Rental Housing Development Project

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Dear Chief,

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Very truly yours,

for

Gary S. Furuta, Project Manager
Hawaii Housing Development Corporation

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o Gary S. Furuta
Imperial Plaza - Suite C-103
725 Kapiolani Blvd.
Honolulu, Hawaii 96813

COPY

July 28, 1998

Mr. Brooks Yuen, Acting Manager and Chief Engineer
Board of Water Supply
City & County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96813

Project: King Street Apartments
An Elderly Low Income Rental Housing Development Project

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Gary S. Furuta, Project Manager
Hawaii Housing Development Corporation

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o Gary S. Furuta
Imperial Plaza - Suite C-103
725 Kapiolani Blvd.
Honolulu, Hawaii 96813

COPY

July 28, 1998

Mr. Randall K. Fujiki, Director
Department of Design and Construction
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Project: King Street Apartments
An Elderly Low Income Rental Housing Development Project

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Very truly yours,

Gary S. Furuta, Project Manager
Hawaii Housing Development Corporation

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o Gary S. Furuta
Imperial Plaza - Suite C-103
725 Kapiolani Blvd.
Honolulu, Hawaii 96813

July 28, 1998

Ms. Jan Noe Sullivan, Director
Department of Planning and Permitting
City & County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Project: King Street Apartments
An Elderly Low Income Rental Housing Development Project

Subject: Final Environmental Assessment - Address Correction

Dear Madame Director,

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Please call if you have any questions.

Very truly yours,

Gary S. Furuta, Project Manager
Hawaii Housing Development Corporation

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o Gary S. Furuta
Imperial Plaza - Suite C-103
725 Kapiolani Blvd.
Honolulu, Hawaii 96813

COPY

July 28, 1998

Mr. William D. Balfour, Jr., Director
Department of Parks and Recreation
City & County of Honolulu
650 South King Street, 10th Floor
Honolulu, Hawaii 96813

Project: King Street Apartments
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Subject: Final Environmental Assessment - Address Correction

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Very truly yours,

Gary S. Furuta, Project Manager
Hawaii Housing Development Corporation

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o Gary S. Furuta
Imperial Plaza - Suite C-103
725 Kapiolani Blvd.
Honolulu, Hawaii 96813

COPY

July 28, 1998

Fire Chief Attilio Leonardi
Fire Department
City & County of Honolulu
3375 Koapaka Street, Suite H425
Honolulu, Hawaii 96819-1869

Project: King Street Apartments
An Elderly Low Income Rental Housing Development Project

Subject: Final Environmental Assessment - Address Correction

Dear Chief,

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Very truly yours,

for:

Gary S. Furuta, Project Manager
Hawaii Housing Development Corporation

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o Gary S. Furuta
Imperial Plaza - Suite C-103
725 Kapiolani Blvd.
Honolulu, Hawaii 96813

July 28, 1998

Ms. Cheryl Soon, Director
Department of Transportation Services
City & County of Honolulu
711 Kapiolani Boulevard, Suite 1200
Honolulu, Hawaii 96813

Project: King Street Apartments
An Elderly Low Income Rental Housing Development Project

Subject: Final Environmental Assessment - Address Correction

Dear Ms Director,

This is to inform you that the correct address of the property is 1239 South King Street. In the Draft Environmental Assessment, the address was incorrectly stated as 1329 South King Street.

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Very truly yours,

Gary S. Furuta, Project Manager
Hawaii Housing Development Corporation

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o Gary S. Furuta
Imperial Plaza - Suite C-103
725 Kapiolani Blvd.
Honolulu, Hawaii 96813

COPY

July 28, 1998

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

Project: King Street Apartments
An Elderly Low Income Rental Housing Development Project

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Hawaii Housing Development Corporation

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o Gary S. Furuta
Imperial Plaza - Suite C-103
725 Kapiolani Blvd.
Honolulu, Hawaii 96813

COPY

July 28, 1998

Mr. John A Breinich, Chair
Ala Moana / Kakaako Neighborhood Board
c/o Neighborhood Board Commission
City & County of Honolulu
530 South King Street, Room 400
Honolulu, Hawaii 96813

Project: King Street Apartments
An Elderly Low Income Rental Housing Development Project

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Dear Mr. Brienich,

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Please call if you have any questions.

Very truly yours,

Gary S. Furuta, Project Manager
Hawaii Housing Development Corporation

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o Gary S. Furuta
Imperial Plaza - Suite C-103
725 Kapiolani Blvd.
Honolulu, Hawaii 96813

July 28, 1998

Mr. Robert Agres, Jr., Director
Department of Community Services
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Project: King Street Apartments
An Elderly Low Income Rental Housing Development Project

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Very truly yours,

for:

Gary S. Furuta, Project Manager
Hawaii Housing Development Corporation

HAWAII HOUSING DEVELOPMENT CORPORATION
c/o Gary S. Furuta
Imperial Plaza - Suite C-103
725 Kapiolani Blvd.
Honolulu, Hawaii 96813

July 28, 1998

Mr. Kenneth E. Sprague, Director
Department of Environmental Assessment
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Project: King Street Apartments
An Elderly Low Income rental Housing Development Project

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