FILE COPY

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

FRANK F. FASI
MAYOR

DONALD A. CLEGG
CHIEF PLANNING OFFICER

GENE CONNELL
DEPUTY CHIEF PLANNING OFFICER

VW/DGP 10/86-9917

November 6, 1986

Ms. Letitia N. Uyehara, Director
Office of Environmental Quality Control
State of Hawaii
465 South King Street, Room 104
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Environmental Impact Statement (EIS) for the
Proposed Golf Course 2/1A Project,
Kaiser Development Company,
Hawaii Kai, Honolulu District, Oahu, Hawaii
Tax Map Key: 3-9-10: por. of 1

We are notifying you of our acceptance of the subject EIS as an adequate fulfillment of Chapter 343, HRS requirements.

The major controversial issues are:

1. Additional traffic impacts generated by the proposed development of single-family residences and apartment dwelling units.

2. Sewage treatment plant impacts on the proposed project.

3. Recreational impacts of the proposed project.

Unresolved issues include (1) and (2) above, plus the determination of archaeological impacts.

Other concerns, which will be addressed by zoning and other permit processes include:

1. Water commitment from the Board of Water Supply.

2. Sewage Disposal Facilities Plan to be approved by the Department of Public Works (DPW) and the State Department of Health.

3. Drainage plan to be approved by the Department of Public Works.

4. Street and Highway Improvement Plans to be approved by the City Department of Transportation Services (DTS) and the State Department of Transportation (DOT).

5. Determination of low- and moderate-income housing to be coordinated with the City's Department of Housing and Community Development (DHCD).

6. Method of compliance with park dedication requirements.

If you have any questions on this subject, please call Verne Winquist of my staff at 527-6044.

Sincerely,

Donald Clegg

DONALD A. CLEGG
Chief Planning Officer

Attach.

cc: Mr. Fred Rodriguez

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CITY AND COUNTY OF HONOLULU
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VW/DGP 10/86-9917

November 6, 1986

Mr. Fred Rodriguez, President
Environmental Communications, Inc.
P.O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

Environmental Impact Statement (EIS) for the
Proposed Golf Course 2/1A Project,
Kaiser Development Company,
Hawaii Kai, Honolulu District, Oahu, Hawaii
Tax Map Key: 3-9-10: por. of 1

We have determined that the subject EIS is an acceptable document for the proposed project. This determination does not imply a favorable recommendation on the applicant's request for any approvals or permits required by the Department of General Planning or other City departments for this project.

There are several concerns that must be addressed by the applicant and handled via subsequent rezoning and other permit processes. These concerns are described in the attached acceptance report.

If you have any questions on this subject, please call Verne Winquist of my staff at 527-6044.

Sincerely,

Donald Clegg

DONALD A. CLEGG
Chief Planning Officer

Attach.

cc: OEQC

ACCEPTANCE REPORT: CHAPTER 343, HRS,
ENVIRONMENTAL IMPACT STATEMENT (EIS)
FOR THE PROPOSED GOLF COURSE 2/1A PROJECT
BY THE KAISER DEVELOPMENT COMPANY
AT HAWAII KAI, HONOLULU DISTRICT, OAHU, HAWAII
TAX MAP KEY: 3-9-10: POR. 1

A. BACKGROUND

This EIS was prepared for the Kaiser Development Company by Environmental Communications, Inc. The Kaiser Development Company proposes to develop 48 single-family residential units and 430 multi-family units (low density apartments and medium density apartments) on a 30 acre site at Hawaii Kai, Oahu.

The proposed project site is now designated for Preservation use on the East Honolulu Development Plan Land Use Map (not Industrial and Preservation as identified in the EIS). The East Honolulu Development Plan Public Facilities Map designates a solid waste transfer site on the subject property. The new zoning map (Ordinance No. 86-104 adopted 10/22/86) designates the subject property Residential (R-5) and Preservation (P-2). (Not R-6 and P-1 as identified in the EIS.)

The Kaiser Development Company describes the proposed development as a site "characterized by spaciousness and pleasant golf course or ocean views." The purpose of the project is to benefit the public by providing:

- Housing for approximately 1,100 people. (This population increase is within the East Honolulu population limits set by the Oahu General Plan.)
- A choice of single-family residences, low-density apartments or medium density apartments.
- Housing accommodations for retirees and "empty nestors" as well as the existing Hawaii Kai family market.

Implementation and development of this project is contingent upon several subsequent governmental approvals including: (1) amendment of the East Honolulu DP Land Use Map; (2) rezoning; (3) water commitment; and (4) grading; permit. In addition, proponent must comply with DOH Decision and Order 86-PIC-EOW-B and with EPA decision and order (Docket No. IX FY 86-97) with respect to the sewage treatment plant (STP).

The anticipated major environmental impacts include the following:

(1) Additional traffic impacts generated by approximately 478 new residential units housing approximately 1,100 people.

(2) Odors from the nearby sewage treatment plant impinging on residents of the project.

B. PROCEDURES

1. On May 27, 1986, the State Environmental Council ruled that, henceforth, "an environmental assessment must be prepared for private, non-county initiated applications for amendments to the City and County of Honolulu's general plan and development plans, which would result in designations other than agriculture, conservation or preservation."

2. The DGP issued a Preparation Notice for the EIS which was published in the "Office of Environmental Quality Control (OEQC) Bulletin" on May 23, 1986. The Notice was sent to Federal, State, and City agencies and to community interest groups.

3. Comments on the Preparation Notice were received from twenty-three respondents. The comments are included in Section XII of the Final EIS. The applicant made written point-by-point responses to all comments.

4. The Draft EIS was received and distributed by the OEQC. Notice of the request for comments on the draft was published in the "OEQC Bulletin" of September 8, 1986; the deadline for comments was established as October 8, 1986.

5. Comments on the Draft EIS were received from twenty-five respondents. In addition, one respondent, the Department of Transportation Services, submitted comments after the deadline for comments had passed. The comments are included in Section XIII of the Final EIS. The applicant made written point-by-point responses to all comments received by October 9, 1986.

6. DGP received the Final EIS on October 23, 1986.

In conclusion, the DGP finds that the applicant has complied with EIS procedures in accordance with Section 11-200-18(4) of the DOH's Environmental Impact Statement Rules.

C. EIS CONTENT

The applicant prepared this Final EIS in a style that emphasizes substantive information with a detailed index located upfront to enable quick reference to thirteen major sections with sub-sections. Technical studies and supporting documentation are included in the EIS as appendices A through H.

The applicant includes a Section XI concerning a list of organizations and agencies which were consulted; Section XII in which the applicant reproduces both the letters from organizations and agencies commenting on the EIS Preparation Notice and the applicant's point-by-point responses to the questions raised. Section XIII includes all comments received on the Draft EIS together with the applicant's point-by-point responses to these comments. In this manner, the Final EIS meets the content requirements of the DOH's, Environmental Impact Statement Rules [Section 11-200-18(4)].

D. IDENTIFICATION OF CONTROVERSIAL ISSUES

Certain issues involving the proposed development are controversial because a difference of opinions by "experts" were presented by the applicant and one or more respondents. These issues must be resolved prior to rezoning action by the City.

1. Traffic Impacts Generated by the Proposed Development

While the State Department of Transportation (DOT) sent no comments upon the Draft EIS, a response to the Environmental Assessment questioned the assumptions used by the applicant's traffic consultant to route traffic to Kalanianaole Highway versus Hawaii Kai roadways.

In a late comment, the Department of Transportation Services (DTS) states that three more key intersections need to be modified to accommodate the traffic increase attributed to the subject project and other planned projects in Hawaii Kai.

OEQC recommended that mitigating measures to alleviate increased traffic congestion in East Honolulu during peak hours should be implemented before proceeding with the proposed development.

The Environmental Center, University of Hawaii notes that traffic congestion has now resulted in spreading the peak hour traffic to approximately 2 hours each weekday morning and evening. A request is made for a table summarizing the traffic flows for each hour measured over several days.

The Hawaii Kai Neighborhood Board No. 1 questions the capability of Hawaii Kai streets to accommodate future traffic from a combination of Marina Rezoning and the subject Golf Course 2/1A project.

2. Impacts of the Sewage Treatment Plant on Residents of the Proposed Development

The Department of Public Works (DPW) comments that during kona winds and during night-time periods, winds patterns will cause STP odors to be directed toward the proposed development. DPW further comments that unless the Hawaii Kai STP has an adequate odor control system, the present land uses at the proposed site (preservation use) should be retained.

Other recent STP problems with spillage indicate the lack of proper maintenance and inadequate plant capacity. Other agencies calling for specific explanations of needed improvements to the capacity, operation and maintenance of the Hawaii Kai STP included OEQC, DOH, DPED, and the Environmental Center, UH.

3. Recreational Impacts

The Department of Parks and Recreation (DPR) comments that the Draft EIS does not adequately address the regional impact that the proposed development would have on public parks in Hawaii Kai; DPR also points out that the applicant needs to make arrangements to comply with the City's Park Dedication Ordinance.

The DGP finds that the recreational impact of the proposed development is a controversial issue which can apparently be handled to the satisfaction of DPR prior to application for rezoning.

D. UNRESOLVED ISSUES

The unresolved issues are: (1) traffic impacts both on Kalanianaole Highway and within Hawaii Kai; (2) sewage treatment plant impacts; (3) archaeological impacts; and (4) compliance with park dedication requirements.

The DGP finds that the traffic impact of the proposed development is an unresolved issue. DGP recommends that prior to rezoning the applicant resolve the questions raised by the Neighborhood Board No. 1, the DOT, the DTS, and the Environmental Center, U of H concerning traffic congestion both within Hawaii Kai and on Kalanianaole Highway. In particular, the degree of success of the Marina rideshare program must be assessed and proponent needs to make agreements with State DOT and City DTS regarding traffic mitigation measures to be provided by the developer.

The DGP finds that the adequate capacity, proper operation and maintenance of the STP are unresolved issues. Methods must be devised to stop or reduce the odors from the STP to an acceptable minimum prior to rezoning; DOH and DPW must approve the STP's satisfactory capacity, maintenance and odor control.

Archaeological impacts are an unresolved issue which can be resolved via an intensive site survey on that part of the site not used for a burrow pit.

The method of compliance to the City's park dedication ordinance is an unresolved issue to be addressed in the rezoning process.

E. DETERMINATION

This EIS is determined to be acceptable under the criteria for acceptance established in Chapter 343, HRS and Section 11-200-18(4) of the DOH's Environmental Impact Statement Rules. This determination in no way implies a favorable recommendation on the applicant's requests for any approvals or permits required by any City agency for this development.

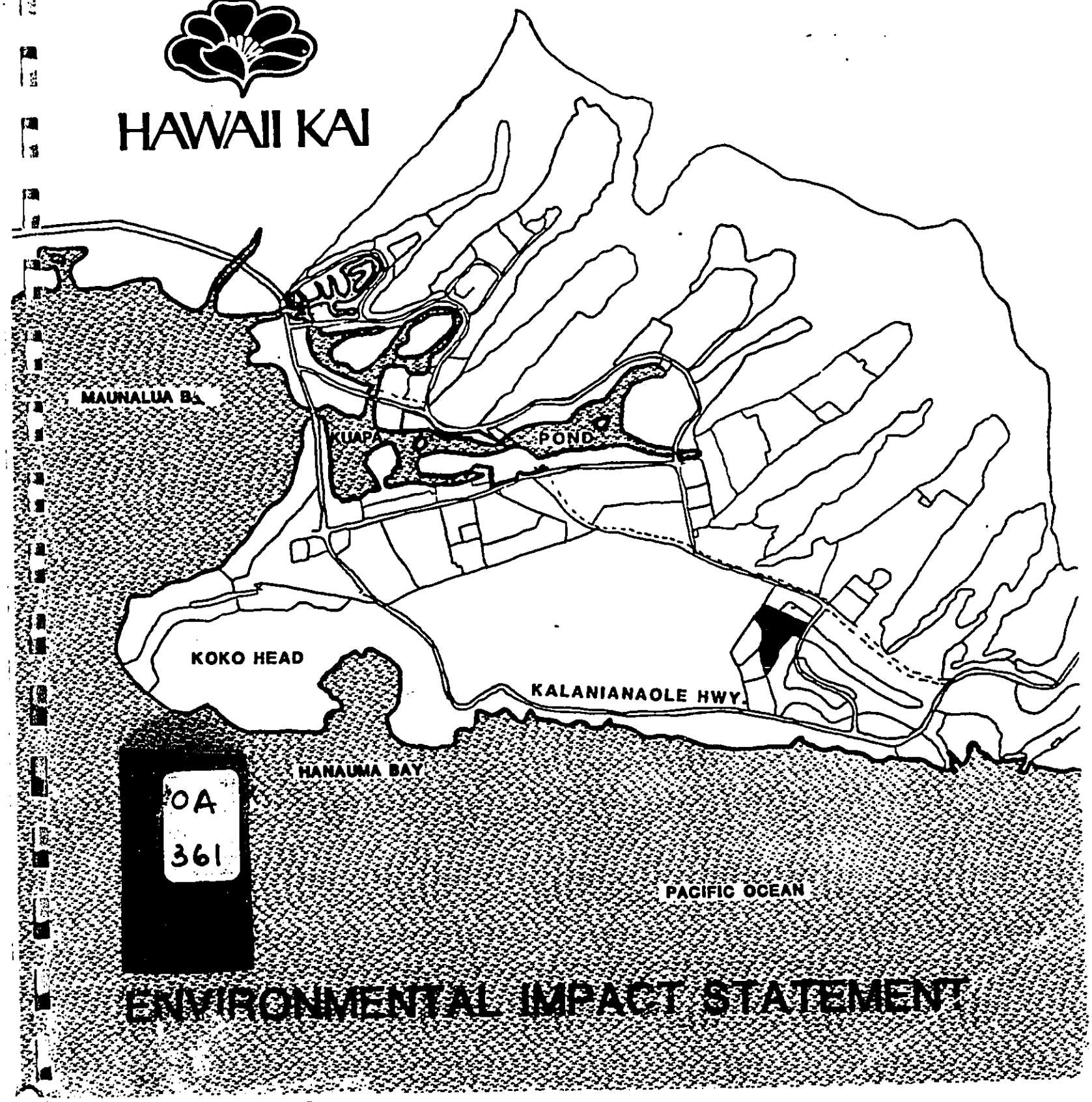
Approved Donald A. Clegg

DONALD A. CLEGG
Chief Planning Officer
Department of General Planning

GOLF COURSE 2/1A

Hawaii Kai
Honolulu District
Island of Oahu
Hawaii
October 1986

HAWAII KAI



ENVIRONMENTAL IMPACT STATEMENT

FINAL ENVIRONMENTAL IMPACT STATEMENT
for
GOLF COURSE 2/1A

Hawaii Kai, Honolulu District, Island of Oahu, Hawaii

October 1986

SUBMITTED PURSUANT TO CHAPTER 343, HAWAII REVISED STATUTES,
ENVIRONMENTAL IMPACT STATEMENT REGULATIONS

F.J. RODRIGUEZ, PRESIDENT
ENVIRONMENTAL COMMUNICATIONS, INC.
ENVIRONMENTAL CONSULTANTS FOR
THE KAISER DEVELOPMENT COMPANY

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C	Golf Course 2/1A Subdivision Traffic Impact Study
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F	Social Demographics
G	Viewplane Analysis
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— SUMMARY

I. SUMMARY

CHAPTER 343, HRS
ENVIRONMENTAL IMPACT STATEMENT (EIS)

Action:	**Applicant**
Project Name:	**Golf Course 2/1A Residential Project**
Project Description:	**The proposed project will consist of the development of residential subdivisions adjacent to the existing Hawaii Kai golf-course. The project, which will contain approximately 48 single-family units and 430 multifamily units (low and medium density apartment), will also provide all necessary infrastructure and appurtenant support facilities.**
Area:	**30 acres**
Project Location:	**Hawaii Kai, makai of Kalama Valley between Koko Crater and Hawaii Kai Golf Course, and mauka of the existing wastewater treatment plant.**
Tax Map Key:	**3-9-10: Por. of 1**
Present Use:	**A portion used as an approved stockpiling site since 1980.**
State Land Use:	**Urban District**

Development Plan Designation:	Land Use Map: Preservation and Industrial Public Facilities Map: Waste Transfer Facility
Zoning:	Residential (R-6) and Preservation (P-1)
Proposing Applicant:	Kaiser Development Company
Landowner:	Kamehameha Schools/Bernice P. Bishop Estate
Accepting Authority:	Department of General Planning 650 South King Street Honolulu, Hawaii 96813

= PURPOSE

II. PURPOSE

This Environmental Impact Statement is prepared pursuant to Chapter 343 Hawaii Revised Statutes and in accordance with the City and County of Honolulu's Department of General Planning Development Plan regulations. This document will also be used for subsequent zoning requests.

The initial action required for this project involves a Development Plan amendment of Industrial and Preservation lands to Urban useage. The document will be reviewed by the City and County Department of General Planning.

PROJECT DESCRIPTION
STATEMENT OF OBJECTIVES

III. PROJECT DESCRIPTION AND STATEMENT OF OBJECTIVES

A. Project Location

The 30 acre project site is located in the Hawaii Kai area of Oahu, makai of Kalama Valley between Koko Crater and the Hawaii Kai Golf Course (Figure 1).

The Hawaii Kai Championship Golf Course borders the project site on the mauka and windward sides except for a 600-foot frontage along Kealahou Street near Hawaii Kai Drive. To the west is the existing preservation area, and to the south the proposed light industrial site, that is before the City Council as part of the 85/86 Annual Review of the East Honolulu Development Plan (Figure 2). More specifically, the project is defined as TMK: 3-9-10: Por. of 1. The fee landowner is the Kamehameha Schools/ Bernice P. Bishop Estate.

B. Project Description

Kaiser Development Company proposes to develop the site for residential use. It intends to build single-family residences, and low-rise and mid-rise apartments. The site has been planned for residential development since the adoption of the master plan for Hawaii Kai in 1961. The area was designated for medium density apartment use on the City & County's 1966 Detailed Land Use Map (DLUM).

The development would consist of approximately 48 single-family units and 430 multifamily units of low and medium density use and appurtenant infrastructure and facilities.

Approximately 6 acres abutting the golf course on the north boundary of the site are now zoned R-6 and are proposed for single

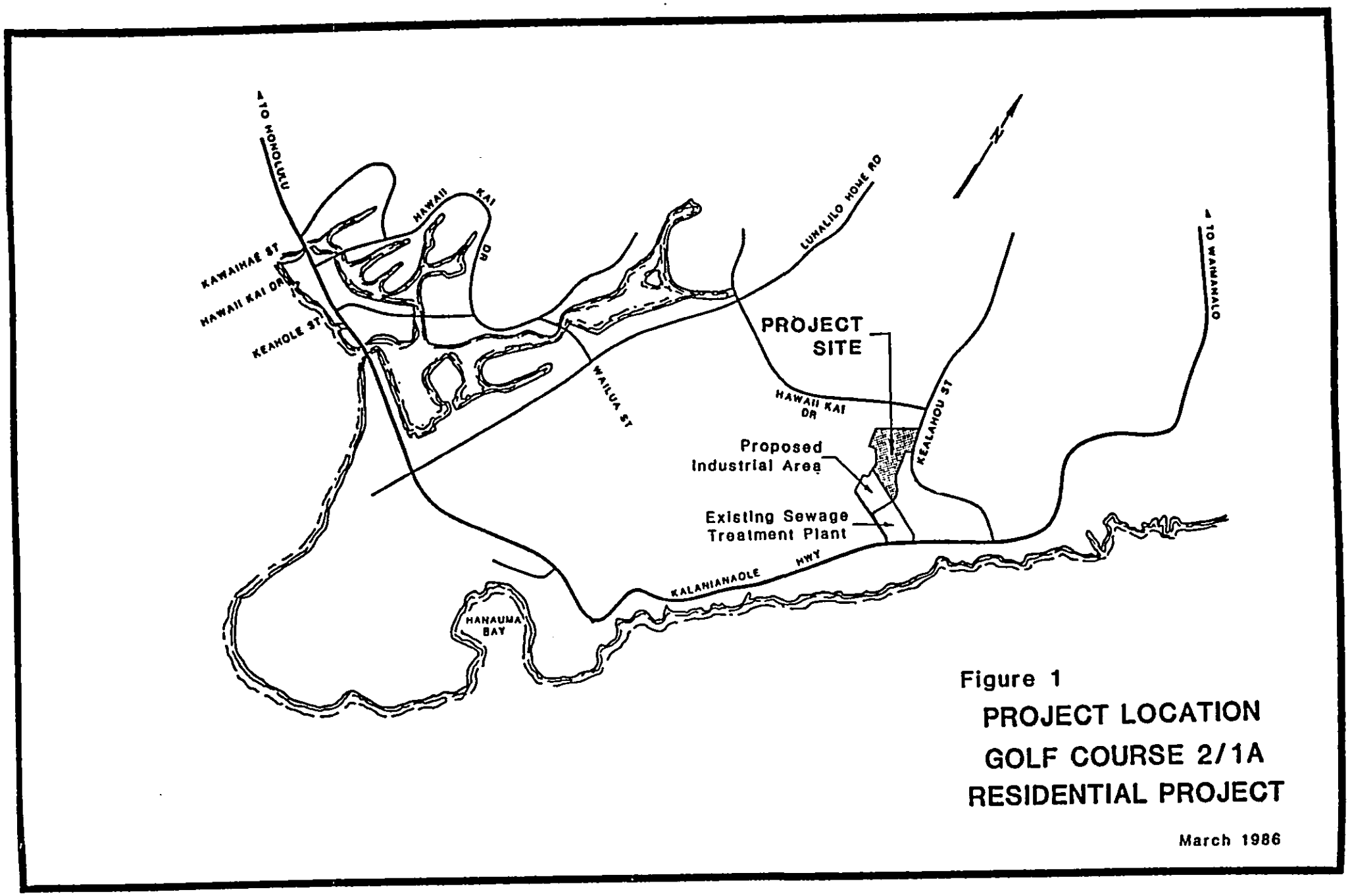


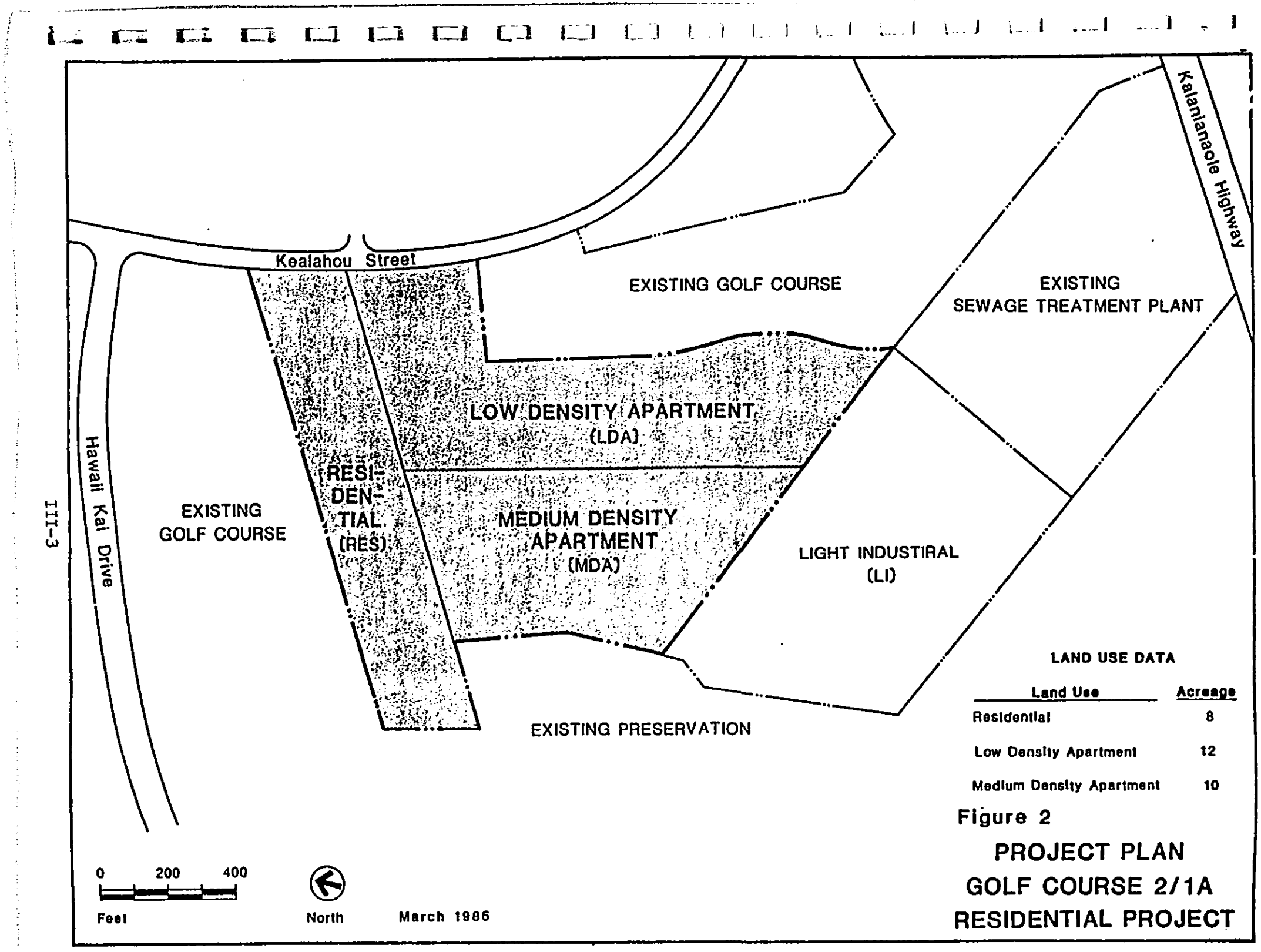
Figure 1

PROJECT LOCATION

GOLF COURSE 2/1A

RESIDENTIAL PROJECT

March 1986



LAND USE DATA

Land Use	Acreage
Residential	8
Low Density Apartment	12
Medium Density Apartment	10

Figure 2

PROJECT PLAN
GOLF COURSE 2/1A
RESIDENTIAL PROJECT

family residential development with a lot size of approximately 5,000 to 6,000 square feet. No change in zoning will be required.

Approximately 2 acres abutting Kealahou Street are now zoned P-1 and are proposed for single-family residential development. A zone change will be required from P-1 to R-6.

An area of approximately 11 acres abutting Kealahou Street and the 14th hole of the golf course is proposed for low density apartment development. Approximately 2 acres abutting Kealahou Street are now zoned P-1. A zone change to A-1 will be required. The remaining 9 acres proposed for low density apartment development are split zoned with approximately 4 acres zoned R-6 and the remaining 5 acres zoned P-1. A change of zone from R-6 and P-1 to A-1 will be required. The purpose of the A-1, Low Density Apartment District is to provide areas for multiple family use within a range of low to medium land use intensities.

Approximately 10 acres bordered by the proposed industrial site, the single family residential area, low density apartment site, and the remaining Preservation land abutting Koko Crater, is proposed for medium density apartment. Zoning is presently split between R-6 and P-1. A zone change to A-2 for both areas will be required. The purpose of the A-2 Apartment district is to provide areas for medium density multifamily and compatible non-residential uses.

The area abutting Koko Crater Park will remain P-1.

C. Statement of Objectives

The project site is one of the parcels in the ±6,000-acre master planned Hawaii Kai community. It has been planned for residential development since the beginning of the Hawaii Kai community in 1961. Using Department of General Planning household sizes and

densities, a population increase of approximately 1,100 persons would be realized by the implementation of the development. This increase is in keeping with the population policies stated in the Oahu General Plan.

A choice of single-family residences and low- and mid-rise multi-family apartments will be offered at the project site. All of these housing types have been successfully produced in Hawaii Kai. The site has golf course frontage on two boundaries and preservation-open space land on one boundary. Residents should enjoy an atmosphere characterized by spaciousness and pleasant golf course or ocean views.

Additionally, emerging markets in Hawaii Kai include retirement living facilities and also a higher percentage of "empty nesters," i.e. couples moving into smaller units after their children have grown up. These markets serve to supplement the traditional Hawaii Kai family market. The developer is encouraging this emerging market in part because retirement living facilities generate minimal peak hour traffic.

Since 1961, the project site has been designated for housing in the Hawaii Kai Master Plan as confirmed in the 1966 DLUM medium density apartment designation. The site is designated for Industrial/Preservation use in the East Honolulu Development Plan; it is proposed for Residential and Apartment/Preservation designation which would allow implementation of its original, master planned intended use.

D. Development Timetable and Phasing

If appropriate zoning is obtained in 1988, it is anticipated that development will begin in 1990. A five-year time frame is currently planned for completion of the entire project, which will occur in increments. The actual pace of construction, however, will depend on prevailing market conditions.

E. Funding

The total construction costs for buildings and direct site improvements for the entire project are estimated to be in the range of $45 to $50 million. The cost projection does not include land values, anticipated financing costs, general corporate overhead costs or property and income taxes. The project will be primarily developed at the developer's expense.

F. Historical Perspective

The project site is currently owned by Kamehameha Schools/Bernice P. Bishop Estate. The site has primarily remained vacant except for a portion which has been used as an approved stockpiling site since 1980. The site has been designated for housing in the Hawaii Kai Master Plan since 1961.

2 ALTERNATIVES CONSIDERED

IV. ALTERNATIVES CONSIDERED

A. No Project

The "no project alternative" would result in the nonimplementation of part of the Hawaii Kai master planned community which began in 1961. The project site has always been slated for housing as confirmed by the 1966 DLUM.

B. Existing Development Plan

Under the existing Development Plan, the project site is designated Industrial and Preservation. Should development occur under these designations, the planned residential use of the site would again not be possible. Part of the site could be put to industrial and accessory uses, and the remainder kept in preservation. This alternative would not take advantage of extensive golf course frontage on two sides of the project and existing preservation frontage on another. Open spaces such as these are most suitable as frontage for residential development. Also, the proposed industrial use remains. It merely has been shifted to a better location just mauka of the wastewater treatment plant.

C. Industrial Use

This alternative involves use of the entire site as well as the adjacent parcel planned for light industrial (see Figure 2) for industrial and accessory uses only. A market study was made for Kaiser Development Company which supports the development of the 15-acre planned light industrial site. Market demand for more industrial acreage at the proposed site has not been shown.

< AFFECTED ENVIRONMENT

V. THE AFFECTED ENVIRONMENT

A. Geographical Characteristics

1. Topography

The project site consists of varying terrain with slopes up to 30% along the base of Koko Crater. The makai corner of the parcel is approximately 40 feet above mean sea level with the remainder of the parcel higher on the varying slopes. The natural drainage pattern of the site is influenced by the topography of Koko Crater. On most of the site, drainage is to the southeast and across the site to Kalanianaole Highway.

The project site is currently mostly unused. A portion of the undeveloped site is used for approved stockpiling.

2. Geology

The site, which is covered by 6 to 10 feet of Koko series soils, is underlain with consolidated lava, volcanic ash, cinders, and tuff. Surface material in the area is generally non-expanding, non-rocky soil that is well drained.

3. Soils

There are three soil types on the parcel. The area along the western boundary of Koko Crater is designated Rocky Land (rRK) and consists of exposed rock. The other two soils on the parcel are of the Koko Series. These soils are usually located on volcanic spurs on Oahu on gently sloping to moderately steep sites. Elevations range from nearly sea level to 200 feet. This soil occurs near Koko Head, Koko Crater and Diamond Head. Sites covered by this soil type have been used

for homesites, pasture, and truck crops. Natural vegetation consists of kiawe, klu, koa haole, fingergrass, and bristly foxtail.

4. Climate

The climate in the area is consistant with typical temperatures ranging from 65 to 86 degrees Fahrenheit and prevailing trade winds from the East-Northeast. The long-term annual rainfall for the project area is approximately 35 inches.

B. Hydrological Characteristics

1. Surface Runoff

There are no streams, bodies of water, or other hydrological subsurface features on the project site. The project site is underlain by caprock and brackish water (chloride content is greater than 250 mg/L, which is generally regarded as the upper limit for drinking water). Except for a few acres along the lower edge of Koko Crater near the Koko Head Stables, there is essentially no upper surface water drainage across (from above) the proposed project area, inasmuch as the existing drainage from the interior of Koko Crater and the general area around Koko Stables is diverted down a concrete lined drainage ditch which flows into the large concrete lined drainage ditch that parallels Hawaii Kai Drive, crosses under Kealahou Street and eventally flows to the ocean.

2. Floodplain

According to the Flood Insurance Study for the City and County of Honolulu prepared by the Federal Insurance Administration (FIA) in September 1980, flood-prone areas have

not been identified for these areas. The development will occur in a designated Zone D, an area of undetermined, but possible flood hazard.

3. Coastal Zone

The subject site is outside the designated shoreline and tsunami inundation zone. A Shoreline Management Area Permit is required for any development within a minimum of 100 yards (300 feet) inland from the shoreline.

Tsunami or tidal waves have been a recurring menace and are given special emphasis. Scientific studies and historical records indicate that anticipated flooding generally will be limited to the shaded areas on the Tsunami Zone Map in the telephone directory.

4. Wetlands

Wetlands include marshes, swamps, bogs and tidal estuary areas. Wetlands are not found within the project area. Wetlands will usually be partially covered by natural, non-flood waters during some period of the year, as well as by flood waters during other times.

C. Biological Characteristics

1. Flora

Vegetation at the project site consists predominantly of keawe, haole koa, and other weedy species that are common to the undeveloped portions of the surrounding area. The vegetation reflects the semi-arid climatic conditions of the area. There are no endangered species known to be located anywhere on the project site.

2. Fauna

Avifauna likely to be found within the project area are largely exotic in nature, and not considered rare or endangered species. Various common birds species such as the Barred and Spotted Dove, Cardinal, Golden Plover, Pueo, Ricebird and Japanese White eye may frequent the site.

Pests, such as the house mouse (Mus musculus), Polynesian rat (Rattus exulans hawaiiensis), and Indian mongoose (Herpestes auropunctatus auropunctatus) are also likely to be at the project site.

D. Archaeological Characteristics

Evidence of extensive prior disturbances by heavy equipment was noted during the archaeological reconnaissance of the project site. The area had once been used as a borrow pit for nearby construction projects and a portion of the property was also used as a dumpsite. The State Historic Preservation Office site maps did not indicate the presence of any known sites.

A literature search through McAllister's Archaeology of Oahu, and Summers and Sterling's Oahu Sites described two sites which, judging from McAllister's map, may been situated in or near the project area:

"Site 36. House site on the low ridge of Koko Crater, Makapuu side.

"Only a few of the foundation stones of the house remain; they are insufficient to give an idea of size. A low wall was formed about the site by placing large stones on end. It is approximately 85 feet wide and much longer. On the Makapuu side of the crater, south of and lower than the house, is a

series of three terraces, in poor state of preservation, which were probably used for agricultural purposes. Though the site is old, it may be post-European."

"Site 37. Terraces, northwest slope of Koko Crater, facing Kamiloiki Valley.

"A series of terraces from 12 to 20 feet wide run across the slope of the land. The terraces are low and unfaced, not more than 1 foot above each other, with the stones gathering in clearing (sic) placed along the edges. Seventeen terraces were counted along one slope. One area which was mounded up had a considerable number of larger stones scattered about and was probably a house site."

The only site indicated to be near the property by Summers and Sterling (1978) was McAllister's Site 37, discussed above.

The field inspection located no historic or archaeological sites on the property. Only one area, situated between the access roads and the golf course on the north and northeast sides of the parcel, remains relatively untouched.

E. Existing Population and Growth Characteristics

The 1985 State of Hawaii Data Book gives Hawaii Kai's 1984 population as 27,074 people. As a fast-growing "bedroom" residential community, this area experienced tremendous population growth in the decade between 1970 and 1980. In comparison with a 21% increase for Honolulu County and a 12.4% increase for Honolulu District, Hawaii Kai's population increased 104%. While the subsequent period between 1980 and 1984 saw only a 5.7% increase, it was at a faster rate than the County's 5.6% or the district's 4.0% rate.

Table 1
Population Growth

Honolulu County	Honolulu District	Hawaii Kai
1970 - 630,528	324,871	12,572
1980 - 762,565 (+21%)	365,048 (+12.4%)	25,603 (+104%)
1984 - 805,300 (+5.6%)	379,599 (+4.0%)	27,074 (+5.7%)

F. Existing Roadway and Traffic Conditions

Primary access to and from the residential and industrial services portions of Golf Course 2/1A would be provided by Kealahou Street, Kalanianaole Highway, and Hawaii Kai Drive (See Figure 3). General characteristics of primary access roadways are presented in Table 2.

Table 2
Primary Access Roadway Characteristics

Roadway	No. of Lanes	Roadway Width	Right-of-Way	Speed Limit
Kealahou Street	2	44 Ft.	56 Ft.	30 MPH
Kalanianaole Highway	2*	22 Ft.	100 Ft.	45 MPH
Hawaii Kai Street	2	44 Ft.	56 Ft.	35 MPH

* Ewa of Lunalilo Home Road Kalanianaole Highway widens to four lanes.

Kealahou Street, which would provide direct access to the residential development, extends from Kalanianaole Highway to the Kalama Valley residential area. The "T" intersections which occur at Kalanianaole Highway and Hawaii Kai Drive are currently controlled by a one-way stop (for Kealahou Street traffic approaching Kalanianaole Highway) and a three-way stop configuration respectively.

Kalanianaole Highway is a primary State highway which provides access between the Central Honolulu urbanized area, East Honolulu (including Hawaii Kai) and the southern part of the Koolaupoko area. Hawaii Kai Drive connects the Golf Course and Kalama Valley areas to the commercial and residential developments in the Marina area of Hawaii Kai.

1. Current Traffic Volumes

Average weekday traffic volumes on primary access roadways in the vicinity of the proposed Golf Course 2/1A residential project are as follows:

- 4,000 to 5,000 vehicles on Kealahou Street
- 8,000 to 9,000 vehicles on Kalanianaole Highway (at Kealahou Street)
- 6,000 to 7,000 vehicles on Hawaii Kai Drive.

Current weekday morning and evening peak hour traffic volumes on Hawaii Kai roadways are depicted in Figures 3 and 4 respectively.

As reflected in the figures, weekday evening peak hour traffic volumes adjacent to Golf Course 2/1A are generally from 50 percent higher (on Kealahou Street) to close to 300 percent higher (on Kalanianaole Highway) than the morning peak hour volumes. Both morning and evening peak hour traffic flows indicate that commuter traffic traveling between Honolulu and Central Hawaii Kai primarily use Hawaii Kai Drive rather than Kalanianaole Highway. This travel pattern is also evident for traffic between Central Hawaii Kai and Windward Oahu.

2. Hawaii Kai Intersection Service Levels

An assessment was made of existing traffic conditions at key

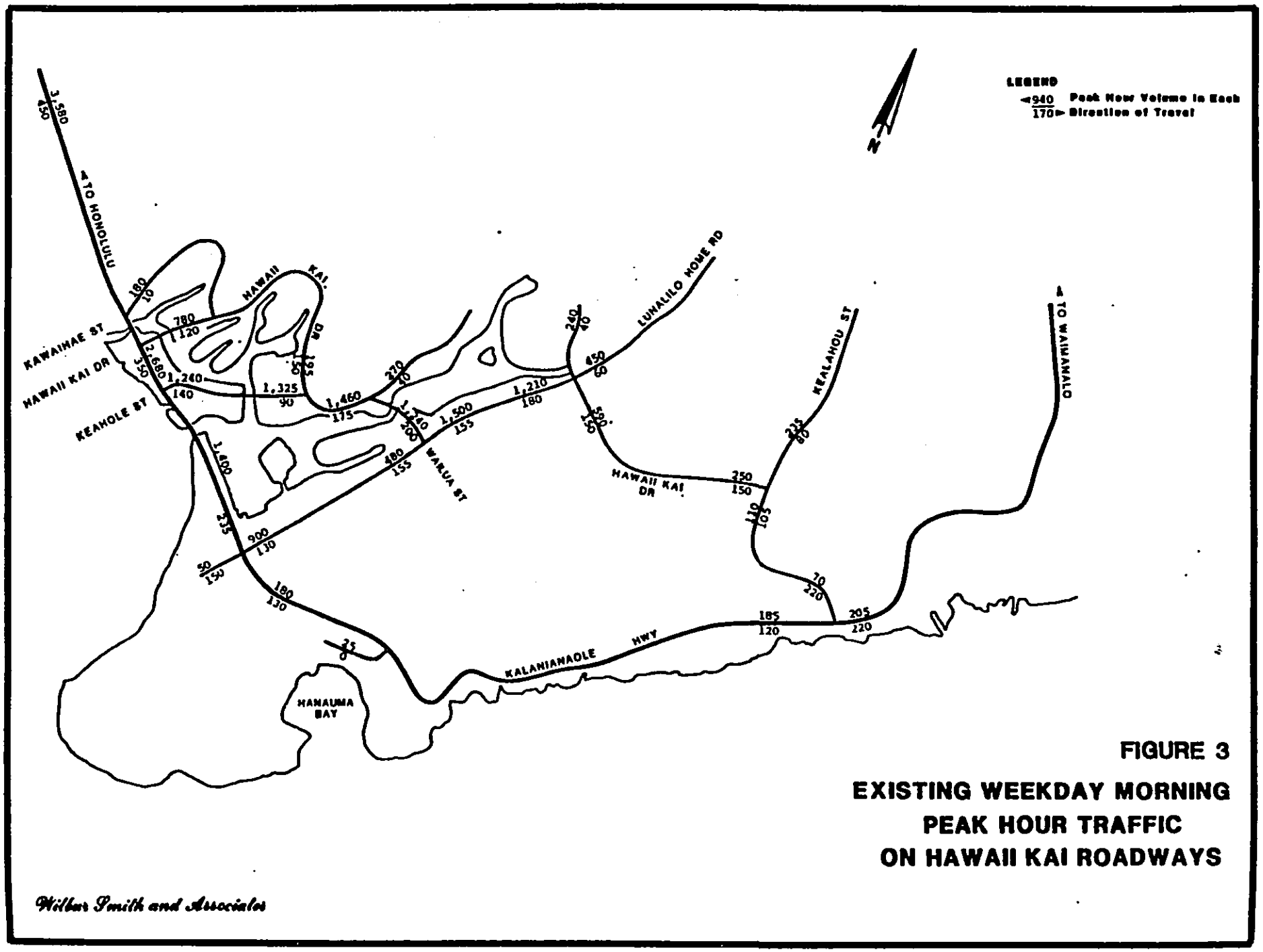


FIGURE 3

EXISTING WEEKDAY MORNING PEAK HOUR TRAFFIC ON HAWAII KAI ROADWAYS

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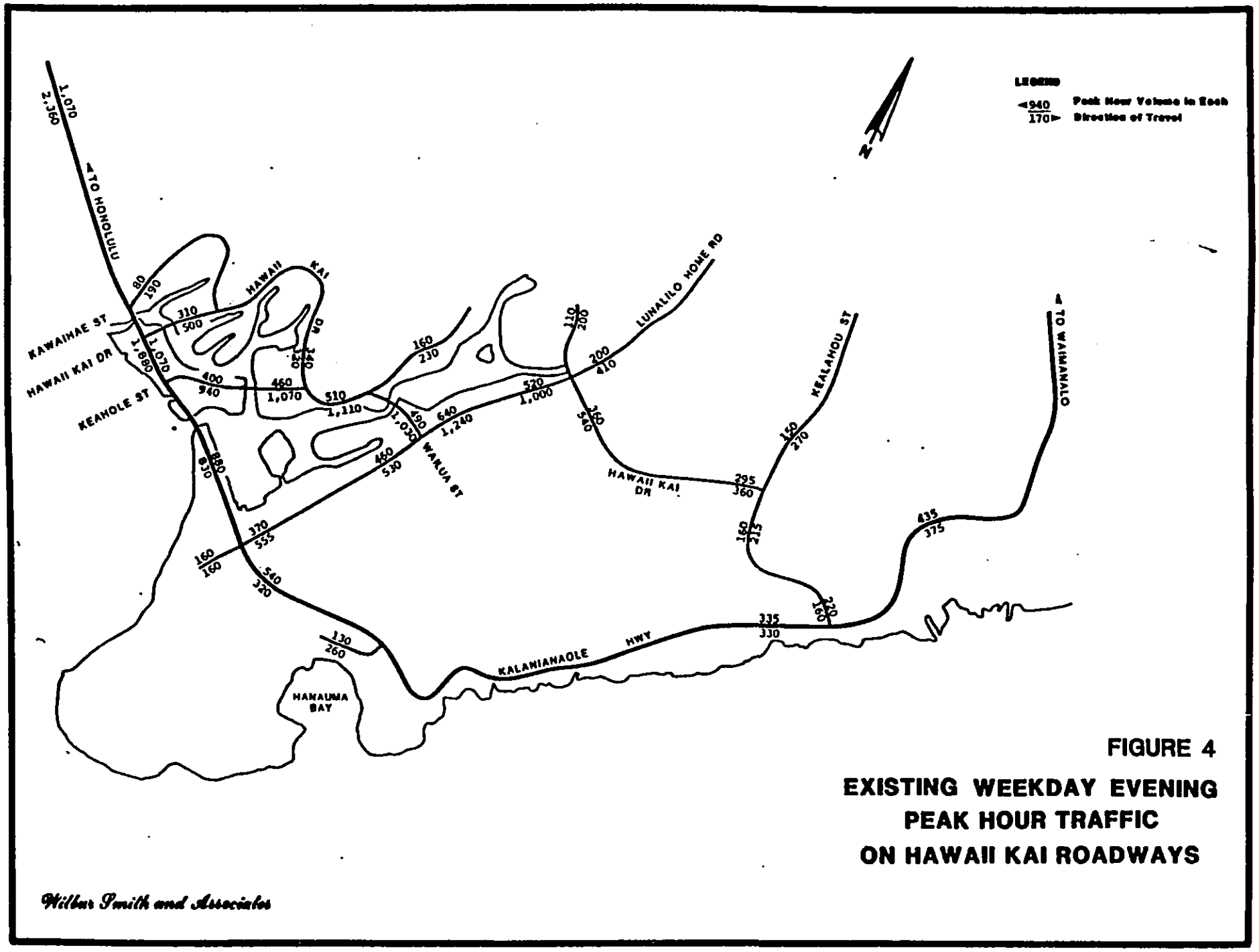

FIGURE 4

EXISTING WEEKDAY EVENING PEAK HOUR TRAFFIC ON HAWAII KAI ROADWAYS

Wilbur Smith and Associates

site access intersections using several methodologies involving basic volume-capacity and level of service concepts. The results of the analyses indicated the following:

- Kalanianaole Highway/Kealahou Street Intersection

  - Weekday peak hour traffic conditions are satisfactory (Service Level D or better) with the present stop sign control.

  - Heavier weekend (Sunday) traffic flows on Kalanianaole Highway result in longer than acceptable delays (Service Level F) occur for left turn traffic from Kealahou Street during peak traffic peak traffic periods on Sundays.

  - Sunday traffic conditions marginally meet the warrant for installation of a traffic signal at the intersection. Weekday and Saturday conditions do not.

  - Some minor disruption of Windward-bound traffic occurs from vehicles blocking Kalanianaole Highway while waiting to turn left onto Kealahou Street.

- Kealahou Street/Hawaii Kai Drive Intersection

  - Current weekday and Sunday traffic volumes represent only about one-half of the intersection capacity available with the present three-way stop sign control.

A summary of existing service levels at other Hawaii Kai intersections which would provide access to the proposed residential development is provided in Table 3.

Table 3
Existing Level of Service for Key
Intersections Within Hawaii Kai

Intersection	Morning Peak Hour Volume-Capacity Ratio	Morning Peak Hour Level of Service	Evening Peak Hour Volume-Capacity Ratio	Evening Peak Hour Level of Service
Kalanianaole Hwy./ Hawaii Kai Dr.	.89	D	.65	B
Kalanianaole Hwy./ Keahole St.	.79	C	.91	E
Kalanianaole Hwy./ Lunalilo Home Rd.	.57	A	.74	C
Lunalilo Home Rd./Wailua St.	.83	D	.56	A
Lunalilo Home Rd./ Hawaii Kai Dr.	.82	D	.48	A
Hawaii Kai Dr./Keahole St.	.51	A	.57	A
Hawaii Kai Dr./Wailua St.	.90	E	.67	B

Level of Service D conditions assessed at the Lunalilo Home Road intersections with Hawaii Kai Drive and Wailua Street and Level of Service E conditions at the Hawaii Kai Drive/Wailua Street intersection are the result of very heavy left turn and right turn movements occurring at these intersections during the morning commute period. The commuter traffic flow during the evening peak hour also results in large turning volumes at these intersections, however the conflicting traffic movements

are not as heavy and therefore allow the peak direction movements to be made with less disruption to overall intersection operations.

3. Kalanianaole Highway Traffic Conditions

Between H-1 Freeway and Hawaii Kai, Kalanianaole Highway varies from a six-to-four-lane roadway with the transition occurring between Kirkwood Street and West Hind Drive. Current roadway facilities and public transit services are intensely used throughout the morning and evening peak travel periods. Traffic flows have reached or are approaching the capacity of the critical "bottleneck" intersections along Kalanianaole Highway. As peak hour traffic volumes continue to increase the limited present capacity on Kalanianaole Highway has had a "metering" effect on traffic and has resulted in longer peak traffic periods.

Current directional morning and evening peak hour traffic volumes are depicted in Figure 5. Traffic volumes indicate that the heavy morning Ewa-bound traffic flows are generally 15 to 30 percent higher than the reverse, Koko Head-bound traffic peak in the evening.

Estimated capacity utilization and Level of Service at key intersections on Kalanianaole Highway is presented in Table 4.

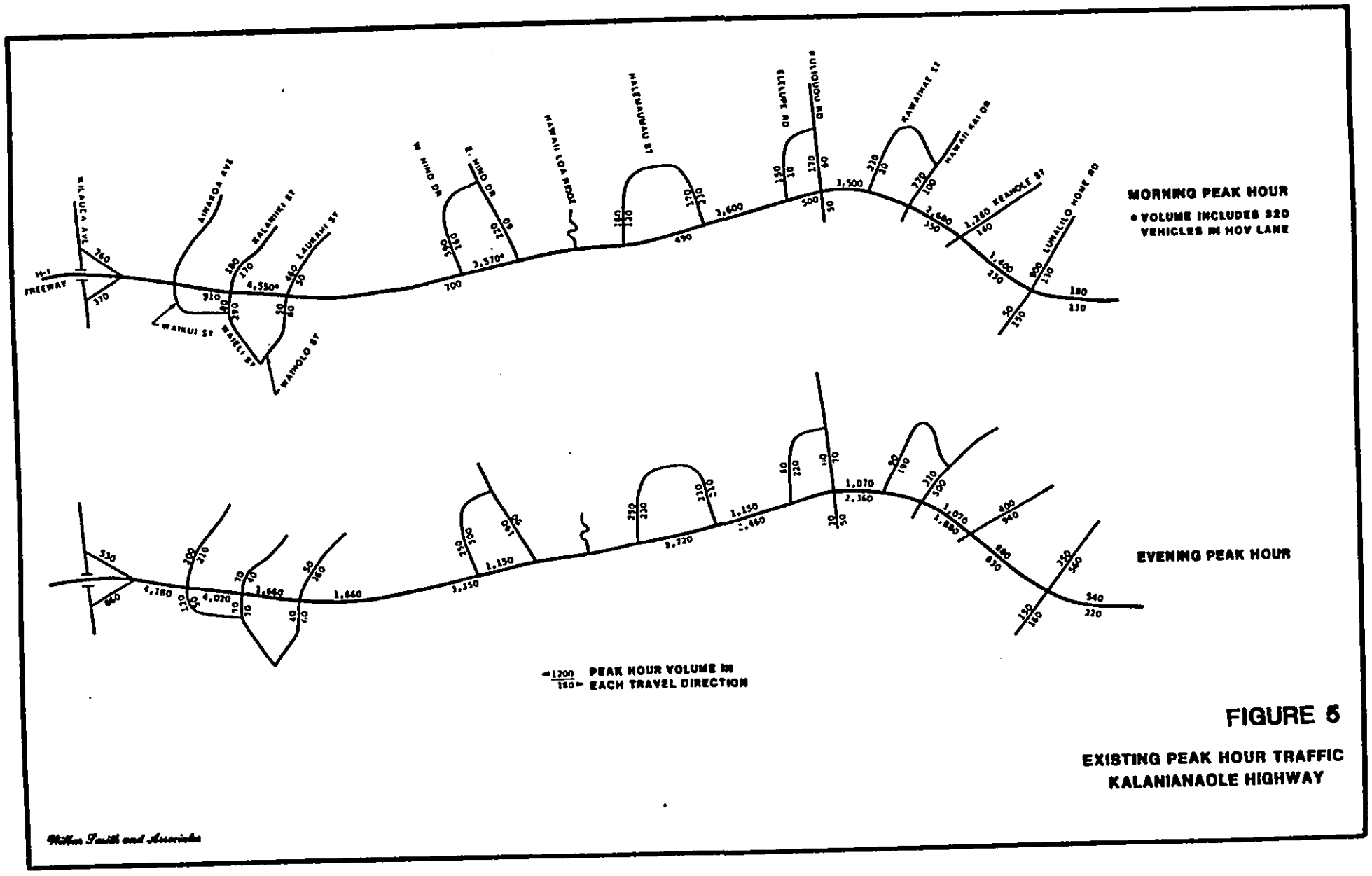

FIGURE 5

EXISTING PEAK HOUR TRAFFIC
KALANIANAOLE HIGHWAY

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Table 4

Existing Level of Service for Key Intersections
Along Kalanianaole Highway

Intersection	Morning Peak Hour Volume-Capacity Ratio	Morning Peak Hour Level of Service	Evening Peak Hour Volume-Capacity Ratio	Evening Peak Hour Level of Service
Kalanianaole Hwy./ Ainakoa Ave./ Waikui St.	N/A	N/A	.93	E
Kalanianaole Hwy./ Kalaniiki St./ Waieli St.	.99	E	.93	E
Kalanianaole Hwy./ Laukahi St./ Waiholo St.	.95	E	.85	D
Kalanianaole Hwy./ West Hind Dr.	.88	D	.86	D
Kalanianaole Hwy./ East Halemaumau St.	.87	D	.93	E
Kalanianaole Hwy./ Kuliouou Rd.	.92	E	.90	E

G. Ambient Air Quality

There are no ambient air quality monitoring stations within the immediate vicinity of Hawaii Kai. Under prevailing trade wind conditions there is no industrial activity for thousands of miles upwind and it is reasonable to assume that present air quality is quite good.

The only significant sources of man-made air pollution in the area are motor vehicles traveling within the Hawaii Kai development or on nearby Kalanianaole Highway. There is no agricultural activity requiring open field burning on east Oahu. The proximity of a wastewater treatment plant presents the potential for the release of objectionable odors, but the prevailing trade winds should carry these odors away from the proposed housing area in most instances, and under normal operating conditions the wastewater treatment plant should produce no detectable airborne effluents.

Natural air pollutant producers which could affect Hawaii Kai air quality include the ocean (sea spray), plants (aero-allergens), dust, and perhaps a distant volcanic eruption on the island of Hawaii. Concentrations of pollutants from these kinds of sources should be fairly uniform for most Oahu locations.

The nearest long-term air pollution monitoring station to the project is located in Waimanalo on the other side of the Koolau Mountains. Only particulates are measured at Waimanalo and for the past 15 years readings there have been running less than half the allowable State and National AQS. In fact, the station was specifically chosen to provide an estimate of background particulate levels in the air arriving over Oahu.

Oahu-wide air pollution monitoring data indicates that State of Hawaii ambient air quality standards for particulates, sulfur dioxide, nitrogen dioxide, and lead are currently being met at most locations.

On the other hand, carbon monoxide and ozone readings from urban Honolulu indicate that allowable State of Hawaii standards for these vehicle-related air pollutants are being violated at a rate of more than once per year. Ozone is an indicator of the formation of photochemical pollutants in the air, a condition which tends to develop if the air mass over the islands has been fairly stable with little wind flow for a period stretching over several days.

Concentrations of carbon monoxide are more directly related to vehicular emissions and tend to be highest during periods of rush hour traffic. Carbon monoxide would thus be the pollutant most likely to cause difficulty in meeting allowable State of Hawaii AQS as a result of new residential development on Oahu.

H. Ambient Traffic Noise Conditions

The existing traffic noise environment along the Hawaii Kai roadways which would service this project are in the "Moderate Exposure, Acceptable" and "Significant Exposure, Normally Unacceptable" categories. This condition is typical for residential subdivisions on Oahu where the first row of homes fronting a subdivision roadway are setback between 50 to 75 feet from the roadway's centerlines. Traffic noise levels along the first row of homes fronting a major roadway generally represent the worst case (or highest) levels for homes of a subdivision. Traffic noise levels at interior lots (second row of homes from the roadway, for example) are generally in the "Minimal Exposure, Unconditionally Acceptable" to "Moderate Exposure, Acceptable" categories, with 5 to 10 Ldn lower noise levels resulting from shielding and distance effects. An exception occurs for mid- and high-rise structures which are not shielded from the roadway by intervening low-rise units.

Figure 6 depicts the location of the existing 65 Ldn traffic noise contours at the intersection of Hawaii Kai Drive and Kealahou Street in the immediate vicinity of the project. It should be noted that the

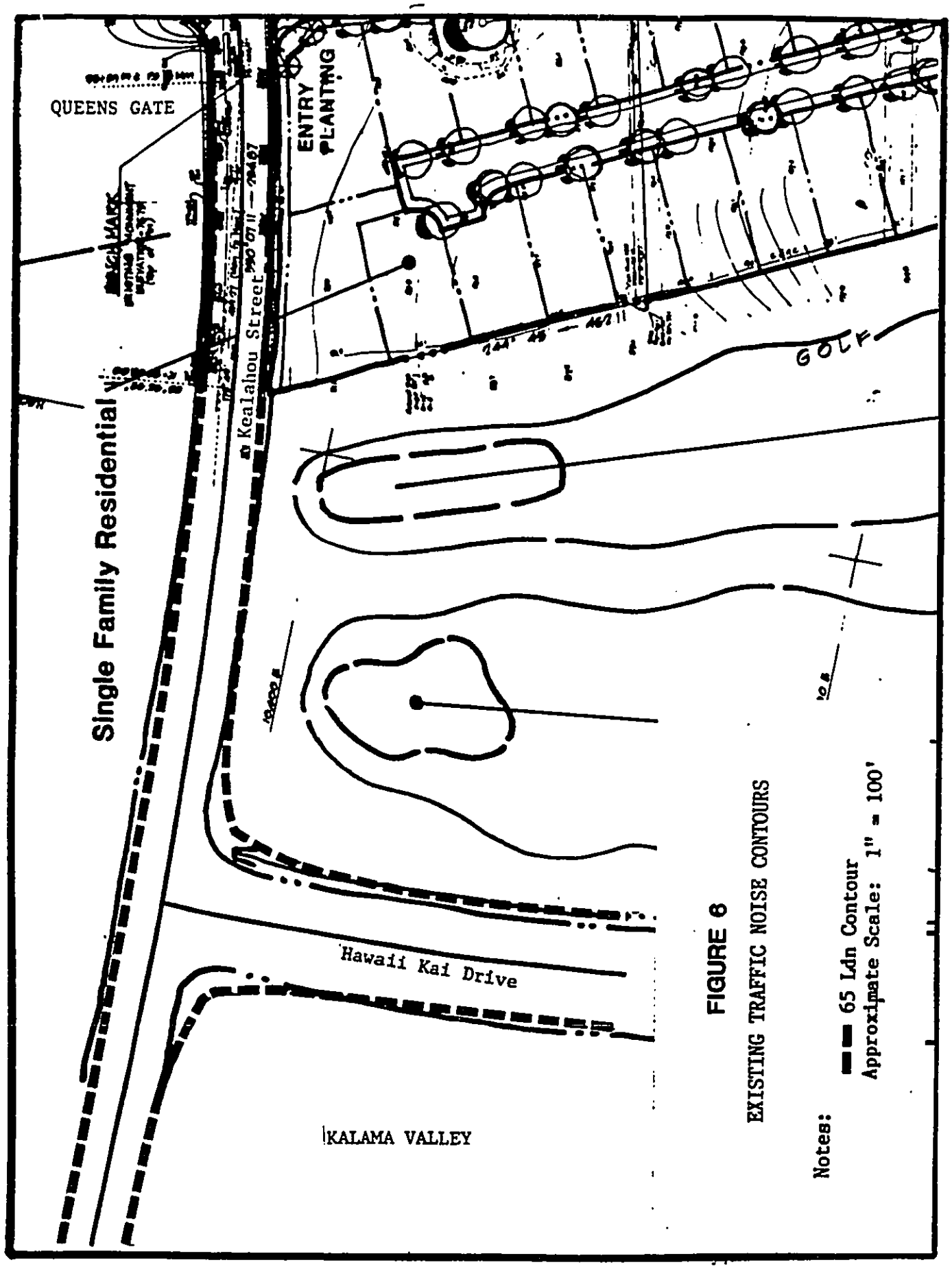

FIGURE 8

EXISTING TRAFFIC NOISE CONTOURS

Notes:

▬▬ 65 Ldn Contour

Approximate Scale: 1" = 100'

contour lines shown represent the freefield noise condition, and do not take into account the excess sound attenuation effects of existing walls and other structures. However, from Figure 6, it can be concluded that the setbacks of the proposed Golf Course 2/1A homes are generally adequate for the existing traffic noise levels, since all of the proposed homes are located outside the existing 65 Ldn contours.

I. Infrastructure and Utilities

1. Water Supply

The Golf Course 2/1A development will be served by two water service systems, one high level and one low level. The high level system consists of the Kamehame 500 Reservoir and a 12-inch main that is located on Hawaii Kai Drive. The low level system consists of four interconnected reservoirs, including the Kalama 170 Reservoir, and a 12-inch main located on Kealahou Street. These systems have sufficient capacity to accommodate the proposed development.

2. Sanitary Sewer System

The project area is served by the East Honolulu Wastewater Treatment Plant, a 3.9 million gallon per day (mgd) activated sludge facility located east of Kokohead Crater. This facility is owned by East Honolulu Community Services, Inc. (EHCS, Inc.), is operated and maintained by MEPAC Services, Inc. (a private wastewater treatment operations/maintenance contractor), and serves Hawaii Kai, Portlock, Kuliouou Valley, and a portion of Paiko. Following secondary treatment, effluent is discharged into coastal waters via a 1400-feet long, 46-feet deep, 36-inch diameter outfall pipe.

3. Drainage

Except for a few acres along the lower edge of Koko Crater near the Koko Head Stables, there is essentially no upper surface water drainage across (from above) the proposed project area, inasmuch as the existing drainage from the interior of Koko Crater and the general area around Koko Stables is diverted down a concrete lined drainage ditch which flows into the large concrete lined drainage ditch that parallels Hawaii Kai Drive, crosses under Kealahou Street and eventually flows to the ocean.

4. Solid Waste Disposal

The project area will be regularly serviced by City and County refuse collection or private refuse collection companies. Collected wastes will be transported to public landfills.

5. Electrical and Telephone Service

Overhead electrical or telephone services currently exist on the property to serve the wastewater treatment plant and Koko Head District Park. However, electrical and communications improvements required to support the needs of the project can be accommodated by existing electrical and communications systems within Kealahou Street. They can be supported with offsite improvements that are within the normal scope of activities for the utility companies. All utility systems will be constructed and maintained according to approved utility standards.

J. Public Facilities and Services

1. Police and Fire Protection

An estimated population increase of approximately 1,100 new residents is projected for the fully developed project. Based

on the current Oahu police force staff to population ratio of 2.5 to 1,000 and an estimated total addition of two to three officers and support staff would be required to service the area.

The Hawaii Kai Fire Station, which consists of an engine company and a hook-and-ladder unit, is located approximately 2 miles away on Lunalilo Home Road. The Wailupe Fire Station is also located in the general vicinity. It is anticipated that the proposed project will be accomodated by existing facilities.

2. Health Services

Three health care facilities are located within the immediate project area with the Kaiser Clinic located in the Hawaii Kai Towne Center, Straub Clinic located at the Koko Marina Shopping Center, and the Hawaii Kai Emergency and Family Medicine located at the Kuapa Kai Center.

Emergency services are offered by the Hawaii Kai Fire Station and an ambulance is stationed at the Wailupe Fire Station. The nearest hospital is the Queens Medical Center in Honolulu.

3. Educational Facilities

The project area is located within a triangle of three public elementary schools; Hahaione, Kamiloiki and Koko Head. The closest intermediate school is Niu Valley and the nearest high school is Kaiser High on Lunalilo Home Road.

4. Recreational Facilities

Hawaii Kai has an abundance of public and private recreational facilities either in or abutting the community. The following Table 5 lists facilities, public and private, within the general vicinity.

TABLE 5

PUBLIC PARKS AND RECREATION IN HAWAII KAI

A. Existing Public Parks and Recreational Facilities

	Park/Recreation Area	Area	Existing Facilities
1.	Hahaione Community Park	± 4 acres	Tot playground, softball field, basketball courts, comfort station, pavilion, parking lot, walkway lights and flood lights for basketball courts.
2.	Hahaione Neighborhood Park	± 6 acres	Comfort station, paved courts, play equipment, sprinkler system and landscaping.
3.	Kamiloiki Community Park	± 10 acres	Community recreation center, one baseball field, one softball field and sprinkler system. Paved courts and play apparatus.
4.	Kamiloiki Neighborhood Park	± 7 acres	Ballfields, comfort station, sprinkler system and landscaping.
5.	Koko Head District Park	± 50 acres	Recreation center building with gymnasium, six tennis courts, three softball fields, one base ball field, one vollyeball court, two basketball courts, one comfort station, access road, parking, landscaping and sprinkler system.
6.	Koko Head Sandy Beach Park	± 29 acres	Comfort station, outdoor showers, access road, parking, landscaping and sprinkler system.
7.	Maunalua Bay Beach Park	± 4 acres	Comfort station, picnic benches and tables, landscaping and sprinkler system.
8.	Hanauma Bay Beach Park	± 9 acres	Comfort station, food concession, picnic benches and tables and landscaping.

Table 5 (continued)

	Park/Recreation Area	Area	Existing Facilities
9.	Koko Head Elementary School Park	± 9 acres	Two baseball fields, three vollyeball courts and two basketball courts.
10.	Koko Crater Botanical Garden	±200 acres	Dry land plants.
11.	Koko Head Stables	± 10 acres	Horse riding, stables for rent, horse shows and lessons on horse riding.
12.	Koko Head Firing Range	± 25 acres	Rifle and pistol range.
13.	Kalama Valley Community Park	± 6 acres	Two softball fields, two volleyball courts, two basketball courts, landscaping and sprinkler system.
B.	Undeveloped Parks		
1.	Koko Kai Beach Parks and Access		
a.	Lot 4, Koko Kai 1 File Plan 750	23,946 s.f.	
b.	Lot 23, Koko Kai 1 File Plan 750	25,986 s.f.	
2.	Koko Head Park	±1050 acres	No proposed improvements yet.

Table 5 (continued)

PUBLIC PARKS AND FACILITIES
HAWAII KAI AREA

Driving Distance from G.C. 2/1A	Existing Parks		Acreage
3.6	Hahaione Community Park		4.09
4.0	Hahaione Neighboring Park		6.20
1.2	Kamiloiki Community Park		9.98
2.1	Kamiloiki Neighborhood Park		7.00
3.0	Koko Head District Park		50.00
.6	Koko Head Sandy Beach Park		28.85
3.5	Maunalua Bay Beach Park		4.00
3.5	Hanauma Bay Beach Park		8.70
3.0	Koko Head Elementary School Park		6.74
.4	Kalama Valley Community Park		6.00
		Total	131.56
	Undeveloped Parks		
4.0	Koko Kai Beach Parks		1.15
N/A	Koko Head Park		1,057.15
		Total	1,058.30
	Other Recreational Areas		
.3	Koko Head Botanical Gardens		200.00
.2	Koko Head Stables		10.00
2.4	Koko Head Firing Range		25.00
		Total	235.00
	School Playgrounds		
	Existing:		
2.1	Kaiser High School		6.46
1.2	Kamiloiki Elementary School		0.75
3.6	Hahaione Elementary School		0.50
3.0	Koko Head Elementary School		1.60
		Total	9.31

Table 5 (continued)
PRIVATE RECREATIONAL FACILITIES IN HAWAII KAI

A.	Golf Courses		
	1. Hawaii Kai Championship (18 holes - regular)	130 acres	
	2. Hawaii Kai Executive (18 holes - par 3)	47 acres	
B.	Hawaii Kai Marina	260 acres	
C.	Pacific Islands Club	6.2 acres	Pavilion, 50-meter swimming pool, wading pool, tot lot, six tennis courts, sauna baths and meeting rooms.
D.	Marina Park 2 (Handcock's Landing)		Boat ramp, parking, landscaping.
E.	Private Residential Facilities		
	1. Golf Course 1 (Queen's Gate and Queen's Point)	122 units	Handball court.
	2. Hahaione 1-B (Village Green)	56 units	Swimming pool and patio w/kitchenette.
	3. Hahaione 1-D (Heritage House)	135 units	Swimming pool
	4. Hahaione 1-D (Mauna Luan)	433 units	Two large swimming pools, wading pool, putting greens, large pavilion, barbecue pits, tot lot, handball and volleyball courts and clubhouse w/exercise rooms, showers, saunas and locker rooms.
	5. Hahaione 1-D (Naniwa Gardens)	111 units	Swimming pool, recreation room, weight lifting room, ping pong room, social rooms.
	6. Hahaione 1-D (Hawaii Kai Plaza)	146 units	Swimming pool, community room for meetings and socials.
	7. Kamiloiki 3B-4 (Mariner's Village Three)	291 units	Clubhouse with kitchen facilities and swimming pool.

Table 5 (continued)

8.	Luna-Kai Marina Park	1 acre	Presently landscaped garden and walkway (ultimately to be developed into a 2.4-acre park).
9.	Marina 1-E (Marina Palms)	189 units	(Swimming pool and patio.
10.	Marina 1-E (Colony Marina)		(
11.	Marina 1-E (Villa Marina)		(Swimming pool, boat ramp and patio
12.	Marina 1-E (Koko Head Villa)		(
13.	Marina 1-F-1 (The Moorings)	64 units	(Swimming pool.
14.	Marina 1-H (Gateway Peninsula)	39 units	(Swimming pool.
15.	Marina 2-B (Kuapa Isle)	134 units	Swimming pool and pavilion.
16.	Marina Park 1		Swimming pool, meeting room and kitchenette.
17.	Marina 4 (Marina West)	60 units	Clubhouse (meeting rooms, party hall and children's playroom), swimming pool and boat ramp.
18.	Marina 5 (Marina Hale)	51 units	Boat ramp near Hawaii Kai Drive, southwest of Kuapa Isle.
19.	Marina 7C (Koko Isle)	124 units	Handball court, picnic area.
20.	Marina 7D (Kaimala Marina)	91 units	Boat ramp.
21.	Marina 7D (Esplanade)	209 units	Clubhouse (sauna bath, shower and kitchenette), swimming pool and two open play areas.
			Swimming and Jacuzzi (whirlpool) pool.
			Sauna bath, putting green, shuffle board, swimming pool, wading pool, tennis courts and pavilion.

Table 5 (continued)

22. Marina 8 & 9 (Mariner's Cove)	410 units	Clubhouse (kitchenette), boat ramp and dock and swimming pool.
23. Mt. Terrace	126 units	Swimming and Jacuzzi pool, handball court, exercise room, two sauna baths, kitchenette with activity room, putting green, garden area and jogging track.

Total Units Served by Private Recreational Facilities = 2,891

RELATIONSHIP TO PLANS, POLICIES, AND CONTROLS

VI. RELATIONSHIP TO PLANS, POLICIES, AND CONTROLS

A. State Plan and Functional Plans

The Hawaii State Plan (H.R.S., Chapter 226) has been prepared for use as the primary planning tool in directing the planning process for Hawaii's long and short-term goals. By setting the overall theme and directive, twelve functional plans were created as extensions of the State Plan. These functional plans specify objectives, policies, and implementing actions to address these concerns. These plans were reviewed to determine their relationship to the project. Each plan is reviewed and evaluated below.

State Education Plan & State Higher Education Plan

This plan relates to educational functions, respective school systems, growth and goals. Office procedure (records in a computer system), target groups, personnel developments, and school sites are discussed. As related to the proposed project, demand for educational facilities will be increased, however, existing facilities should accommodate this increase.

State Housing Plan

Relating to the East Honolulu District, the Plan States:

"The County intends that East Honolulu continue as a suburban, low density residential area with development confined to the low ridges and inner valley floors."

There are no obvious siting problems between the proposed developments and the housing plan.

The project, which is in the Hawaii Kai area will be comprised of

single-family detached and multi-family dwellings. A conflict of consequence is the additional traffic that will be generated by the proposed units.

The proposed project is currently under negotiation with the City and County of Honolulu to determine the method of compliance to Section 226-106, HRS Affordable Housing. The project is expected to attract buyers similar to those in the existing Hawaii Kai community with the possible addition of more retirement market buyers.

State Health Plan

The primary purpose of the State Health Plan is to serve as a guide for State and County agencies and the private sector in outlining environment related and health care objectives for Hawaii.

"More specifically, the plan's objectives, policies and implementing actions are intended to 1) prevent disease and promote healthful lifestyles and environmental conditions; 2) ensure and promote appropriate provision and access to health care for the total community; 3) protect society from potential dangers (e.g., epidemics, hazardous environmental conditions or violent persons); and finally, 4) prevent environmental degradation and enhance the quality of the air, land and water."

"The State Health Plan focuses primarily on public health programs under the jurisdiction of the State Health Department."

As the State Health Plan relates to the proposed project, health and medical care facilities (emergency and routine) are located within the immediate area and are expected to accomodate the additional population of the project.

Environmental concerns covered in the State Health Plan have been addressed in the air and noise quality studies and utilities sections

of this document. Utility impacts such as sewerage and drainage, as it affects water quality, are expected to create only minor impacts that are normal for projects of this nature. Mitigation of these impacts are the responsibility of the developer and will be addressed as necessary. Air and noise quality impacts, as reported in their respective studies, are also minor in nature.

State Conservation Lands Plan

The project site is currently in the Urban District and is not affected by this plan.

State Agriculture Plan

The Hawaii State Plan states its two primary objectives as 1) increased viability in the sugar and pineapple industries, and 2) continued growth and development of diversified agriculture throughout the State. The project site does not contain any designated agriculture lands and is not subject to this plan.

State Historic Preservation Plan

The Historic Preservation Plan, reviews the procedures and identifies areas where archaeological salvaging or preservation are desireable. Procedures for developments include preparing an archaeological survey, preserving sites considered of value, and coordination of salvaging and preservation with the State Historic Sites Office. In this regard, the project has complied with these procedures.

State Transportation Plan

The general objectives of this plan are outlined in these two statements:

An integrated multi-modal transportation system which services statewide needs relating to the efficient, safe, and convenient movement of people and goods.

A statewide transportation system supportive of planned growth objectives throughout the state.

Although the State Transportation Plan does not single out the Hawaii Kai Golf Course 2/1A area for any specific highway development or improvement policies and actions, the development will increase vehicular traffic in the general area. For this reason, an extensive traffic study has been conducted and mitigative measures recommended. These measures, which include roadway modifications and rideshare methods, are presented in an effort to meet the general objectives of the Plan.

State Recreation Plan

The State Recreation Plan reviews the demands and actions that need to be taken to fulfill existing and future recreational demands. Specifically, in the East Honolulu District, the Plan acknowledges the demand for recreational activity and the varying availability for community-oriented park acreage. The project will be developed adjacent to the existing golf course.

State Energy Plan

The Hawaii State Plan defines two major energy objectives:

Dependable, efficient, and economical Statewide energy Systems capable of supporting the needs of the people; and

Increased energy self-sufficiency for Hawaii.

Specific information on projects do not relate to or address the Golf Course 2/1A project site. Other policies and objectives are broad and relate to energy conservation and use of energy sources other than fossil fuels.

Energy conservation methods will be investigated for use in the project pertaining to the latest energy savings devices and installations which should result in some cost reduction as well as being conservation actions. Rideshare transportation measures, if implemented, should also conserve a considerable amount of energy and fossil fuel.

State Tourism Plan

This plan relates to tourism actions and does not address or relate directly with this project.

State Water Resources Development Plan

The primary objectives of the State Water Resources Development Plan are:

Regulations of the development and use of water to assure adequate supplies for the future;

Development of water resources to meet municipal, agricultural, and industrial requirements, and the reduction of flood damage; and

Preservation of water-related ecological, recreational, and aesthetic values and the quality of water resources.

This plan acknowledges that municipal water supply service is primarily a County function. To this extent, the developer has coordinated with the Board of Water Supply in addressing the

projects water needs. The proposed water system development for the project is not expected to be of any significant impact.

Hawaii State Plan - Objectives and Policies for Facility Systems

The Hawaii State Plan also states in Section 226-14 to 226-17, HRS, the objective and policies for facility systems. As these policies relate to solid and liquid wastes, it should be noted that the applicant is currently working with the appropriate governmental agencies in meeting these objectives and future compliance for the proposed project is mandatory.

The objectives and policies for facility water systems are met by the existing water service system which has adequate capacity for the proposed project.

Transportation objectives and policies will also be met by the proposed traffic mitigation measures. These measures, which include ride-share systems, are similar to those developed and approved for the Kaiser Marina Zoning project.

B. State Land Use

The project site is currently designated as an Urban District.

C. City and County of Honolulu General Plan

Listed below are those policies in the General Plan that have the most relevancy to the proposed project. Each is followed by a discussion of the extent to which the proposed development is consistent with the stated policy.

1. Population

The basis for the population projections in the General Plan

for the City and County of Honolulu are the most recent population projections series produced by the State Department of Planning and Economic Development (DPED). DPED's most recent figures released in July 1984 project a year 2000 population of 925,700 persons.

According to the General Plan, the desired East Honolulu percentage of the total island population is a range of 6.2 to 6.8 percent or 57,393 - 62,947 persons.

East Honolulu's population in 1980 was 43,213 or 5.7 percent of Oahu's total population of 762,565. The current population capacity for East Honolulu is 61,000 based on the East Honolulu Development Plan. This 1,948 fewer persons than allowed by the upper range of the Revised General Plan.

The proposed development would increase the population in Hawaii Kai by approximately 1,088 persons. This increase is in conformance with the General Plan Population Policies.

2. Natural Environment

The steeper land on the project site is located at the base of Koko Crater. This area would remain in preservation. The developer would commit to a building elevation of not more than 140 feet above mean sea level or a building height of 60 feet in the medium density development area, whichever is less. These design steps, which are stricter than required by planning or zoning laws, will insure protection of the view of the crater.

3. Housing

The project site is one of the parcels of the ±6,000 acre master planned Hawaii Kai community. It is within the State Urban

District and has been planned for residential development since the beginning of Hawaii Kai in 1961. The 1966 City and County of Honolulu, Detailed Land Use Map (DLUM) designated the entire property for medium density apartment use.

Residential development in Hawaii Kai offers single-family residences, townhomes, and multi-story condominiums. Infrastructure planning was based on the 1966 DLUM and is adequate or will be made adequate to handle the proposed development.

4. Transportation and Utilities

A transportation management study is on file at the City Department of Land Utilization for the proposed Hawaii Kai Marina Zoning project. The traffic to be generated by the development of Golf Course Parcel 2/1A, which contains the project site, is being studied by the same consultant.

The transportation demand management measures that the developer will start in connection with the approval of the Marina Zoning, e.g. ridesharing, vanpools, private express buses, park n' ride facility, clearly meet and implement the General Plan transportation policies.

5. Physical Development and Urban Design

The project site has been planned for residential development since the beginning of Hawaii Kai in 1961. Therefore, its use is compatible with the overall master plan of the Hawaii Kai community. The site is designated State Urban land and the proposed development will be consistent with the physical and social character of the existing community.

D. East Honolulu Development Plan

The proposed project is situated in the East Honolulu Development Plan District and is designated "Preservation" and "Industrial" on the Land Use Map while the Public Facilities Map designates the site as a "Waste Transfer Facility." The applicant is requesting a development plan amendment from the City and County of Honolulu which will allow "Urban" useage.

E. Zoning

The project site is currently zoned Residential (R-6) and Preservation (P-1). At the appropriate time, the applicant will apply for a zoning district change for the preservation lands as necessary.

F. H.R.S. Chapter 205-A Coastal Zone Management

The project site is not designated as a special management area for which a permit is required pursuant to H.R.S. Chapter 205-A. However, the project site is within an area controlled by the CZMA and is, therefore, subject to H.R.S. Chapter 205-A's objectives and policies.

G. Permits and Approvals

The proposed project must obtain the following approvals and permits prior to its implementation:

Rezoning Approval - Department of Land Utilization, City Council, Mayor

Grading Permit - Department of Public Works

Building Permit - Building Department

It is also noted that in obtaining these permits (i.e. Grading and Building) the following agencies must provide certification which indicates that the plans are acceptable from the standpoint of meeting the applicable codes, standards, and regulations.

Wastewater Treatment Plant	-	State Department of Health Department of Public Works, City & County of Honolulu
Roadways	-	State Department of Transportation Department of Transportation Services City and County of Honolulu
Water Supply	-	State Department of Health Board of Water Supply, City & County of Honolulu
Drainage	-	Department of Public Works, City & County of Honolulu
Fire Protection	-	Fire Department, City & County of Honolulu

VII ANTICIPATED IMPACTS AND MITIGATIVE MEASURES

VII. ANTICIPATED IMPACTS AND MITIGATIVE MEASURES

Impacts of the proposed project can be viewed in the short-and long-term. Short-term impacts, beneficial and adverse, generally result from construction-related activities. Consequently, these impacts should last no longer than the duration of the construction. Long-term impacts, beneficial and adverse result from the implementation and operation of the proposed project.

A. Geographical Characteristics

1. Topography

Impact on the physical terrain of the proposed parcels of land will result from site grading. However, this grading will be limited to typical site preparation work.

Prior to beginning of any grading operation it will be necessary to strip all existing vegetation from areas to be developed. The material exposed after the stripping operation may be used for engineered fill. After stripping, slab and pavement sub grades and areas to receive engineered fill should be excavated of any and all loose soils.

To minimize the occurrence of soil erosion, temporary soil erosion and sediment control measures will be designed and implemented during the construction phase in accordance with Chapter 23, Grading, Soil Erosion, and Sediment Control, Revised Ordinances of Honolulu, 1978, as amended; the City & County of Honolulu's Grading, Grubbing, and Stockpiling Ordinance No. 3968, 1972; and the USDA Soil Conservation Services Erosion and Sediment Control Guide for Hawaii, 1981.

2. Geology

No impacts are expected on the geology of the area, therefore, no mitigative measures should be required.

3. Soils

Impact on the soil will result from introduction of soil conditioners and EPA approved fertilizers, pesticides, and herbicides. These conditioners will enhance the grassing and landscaping of the project site. The introduction of such chemicals, however, will not adversely affect the soil.

Project development will not alter soil characteristics, but soils on site will determine procedures and techniques in construction of structures, paving and utilities. No mitigative measures should be required for soils impact.

4. Climate

No impacts are expected on the climate of the area.

B. Impact on Hydrological Chracteristics

Associated with urban development projects such as the proposed are alterations in surface water runoff resulting from increasing the area of impervious surfaces, through development of roof tops, roadways and other finished surfaces.

Interest in these runoff changes is generally a result of concern over two factors; public safety and environmental impact. The first factor requires the identification of changes in peak discharge rates, the magnitudes of which are necessary for designing adequate drainage structures to prevent flooding, while the second concern requires identification of the changes in total runoff volume, as

well as sediment, nutrient, and other constituent loads, and the effects these will have on the ecosystem of the natural resource serving as the "sink." It is this second concern, environmental impact resulting from increased runoff volume and sediment and nutrient loads, and its probable effect on subsequent receiving waters (coastal) that is under study.

1. Surface Water Runoff Quantity

The estimated storm water runoff and constituent changes due to the proposed Hawaii Kai Golf Course 2/1A Residential Project (30 acres) are shown in Table 6. The values presented, it must be emphasized, are for comparative purposes only, and are not intended to be representative of the accuracy implied by the practice of reporting results to one decimal place. This was done primarily for convenience of calculations and balancing.

Since approximately 28 acres of the proposed project area is "Koko" soil, which is listed by SCS as Class "B" soil, the entire site is assumed to be Class B, inasmuch as the remaining site only had about two acres of unclassified (by SCS hydrologic rating) "Rock Land," and the roadways only amount to approximately one-half acre.

As can be observed in Table 6, there is essentially no storm runoff volume for the 1-yr, 1-hr duration storm for existing 1986 (predevelopment) conditions; however, as the storm duration and recurrence interval increases the predevelopment conditions approaches about 2/3 of full development conditions. Among other factors causing this difference is that as the intensity and duration of the storm increases the ability of the soil to accept water decreases which approaches the less permeable conditions that would normally occur under full developed conditions, as a result of roofs, sidewalks, etc.

TABLE 6.

Estimated Storm Water Runoff Volume and Constituent Changes due to the Proposed Hawaii Kai Golf Course 2/1A Residential Development, Oahu, Hawaii

Storm[a]			Storm Water Runoff											
			Hydraulic			Nitrogen[b]			Phosphorus[c]			Suspended Solids[d]		
Duration	Recurrence Interval	Quantity	Development		Δ	Development		Δ	Development		Δ	Development		Δ
			1986	Full		1986	Full		1986	Full		1986	Full	
hr	yr	in.	AF/event	AF/event	AF/event	lb/event	lb/event	lb/event	lb/event	lb/event	lb/event	ton/event	ton/event	ton/event
1	1	1.4	0.0	2.0	+ 2.0	0.0	3.2	+ 3.2	0.0	3.1	+ 3.1	0.00	0.68	+ 0.68
1	5	2.0	0.1	3.3	+ 3.2	0.4	5.4	+ 5.0	0.1	5.2	+ 5.1	0.26	1.13	+ 0.87
1	10	2.4	0.3	4.3	+ 4.0	1.2	7.0	+ 5.8	0.1	6.6	+ 6.5	0.70	1.45	+ 0.75
1	25	2.7	0.6	5.0	+ 4.4	1.9	8.1	+ 6.2	0.2	7.7	+ 7.5	1.13	1.69	+ 0.56
1	50	3.0	0.8	5.7	+ 4.9	2.8	9.3	+ 6.5	0.3	8.8	+ 8.5	1.65	1.93	+ 0.28
1	100	3.5	1.3	6.9	+ 5.6	4.5	11.2	+ 6.7	0.5	10.7	+ 10.7	2.67	2.34	- 0.33
24	1	3.2	1.0	6.2	+ 5.2	3.4	10.0	+ 6.6	0.3	9.6	+ 9.3	2.03	2.10	+ 0.07
24	5	6.8	6.3	15.0	+ 8.7	21.6	24.4	+ 2.8	2.2	23.2	+ 21.0	12.88	5.10	- 7.78
24	10	8.5	9.6	19.2	+ 9.6	32.9	31.3	- 1.6	3.3	29.8	+ 26.5	19.56	6.53	- 13.03
24	25	10.3	13.3	23.7	+ 10.4	45.8	38.7	- 7.1	4.6	36.7	+ 32.1	27.23	8.05	- 19.18
24	50	12.0	17.1	27.9	+ 10.8	58.6	45.6	- 13.0	5.9	43.3	+ 37.4	34.88	9.49	- 25.39
24	100	13.5	20.5	31.7	+ 11.2	70.3	51.7	- 18.6	7.0	49.1	+ 42.1	41.86	10.76	- 31.10

a) From U.S. Weather Bureau "Rainfall Frequency Atlas of the Hawaii Islands" (1962).

b) Based on a nitrogen value of 1.26 mg/L for 1986 conditions and 0.60 mg/L for "Full" development.

c) Based on a phosphorus value of 0.13 mg/L for 1986 conditions and 0.57 mg/L for "Full" development.

d) Based on a suspended solids value of 1500 mg/L for 1986 conditions and 250 mg/L for "Full" development.

As would be generally expected the greatest calculated incremental storm runoff volume (11.2 acre-ft/event) resulted from the 100-year storm with a 24-hour duration, as shown in Table 6. These values (acre-ft/event) represent a volume of water and should not be confused with peak discharge rates which represent the maximum volume of storm water runoff discharged per unit of time (e.g., cfs). Peak discharge rates are required for engineering design or proposed drainage facilities and ascertaining the capacity of existing facilities, while total runoff volume provides a more realistic estimate of impact on water quality.

2. Surface Water Runoff Quality.

Besides the changes in the volume of storm water runoff, the quality of the various constituents being transported is of equal, if not more importance. However, as previously mentioned estimates of water quality concentrations resulting from significant storm water runoff that occurs at the most only a few times a year is very perplexing, especially since information on this subject essentially only became available at both the local and national level in the 1970's.

The summation of nitrogen, phosphorus, and suspended solids loads from both present (1986) and projected (full) residential development for storms of 1- and 24-hour duration at recurrence intervals of 1-, 5-, 10-, 25-, 50-, and 100-years are shown in Table 6. The incremental changes per storm event for the present and projected development conditions for the various duration and recurrence interval storms indicate that from the least to the greatest amount of rainfall: nitrogen increases for the 1-hr duration storms and then decreases when the intensity (> 10-yr recurrence interval) of the storms increase; phosphorus increases from 3.1 lb/event to 49.1 lb/event; and suspended solids shows general increases for the

1-hr duration storms and then general decreases (except for the 24-hr/1-hr storm) for the 24-hr duration storms.

As previously stated it must be emphasized that the constituent values are only for comparative purposes, and should not be taken as absolute values. Overall then (between pre-and-post developed conditions), the output of nitrogen is about the same and phosphorus is expected to increase in the runoff, while suspended solids increase slightly for the lower intensity/duration storms, and then generally decrease for the higher intensity/duration storms. The decreased amount of exposed soil in residential areas tend to reduce the quantity of the suspended solids load at the higher intensity/duration storm events even though the total quantity of storm water increases.

The hydrologic and water quality aspects of the surface runoff were only considered for the present and projected conditions. However, increases in constituents loads will undoubtedly result from construction activities, especially if a significant storm occurs during the interim period between earth moving operations and soil stabilization completion. The impact of construction activities can be minimized by adhering to strict erosion control measures.

Other water quality constituents of general concern include biocides and heavy metals. Typically the biocides presently being used tend to break down more readily in comparison to the more long lasting types of a few years ago; consequently, except for agricultural runoff, the types and concentrations are usually considered insignificant. On the other hand, heavy meatals do apparently increase somewhat as a result of urbanization; however, the possible long-term effect, if any, that increased heavy metals may have upon the biological life of the receiving waters (fronting ocean with essentially unconfined water movement) at the concentrations expected in residential runoff is presently undefined.

C. Impact on Biological Characteristics

1. Flora

No endangered or threatened species exist on the project site. While all existing vegetation will be cleared during the course of construction, these plants primarily consist of noxious weedy species. As the project is developed, landscaping will be implemented.

2. Fauna

Fauna on the project site are likely to consist of feral pests and various exotic avifauna. No rare or endangered species are on the project site.

D. Impact on Archaeology

The field inspection located no historic or archaeological sites on the property. This was not unexpected, considering the extent of disturbance by heavy machinery to which the parcel has been subjected. Only one area, situated between the access roads and the golf course on the north and northeast sides of the parcel, remains relatively untouched.

That portion of the property which served as a borrow pit is definitely clear of archaeological or historical remains, and construction may proceed there without concern for any such sites. However, the situation is not so clear for the relatively undisturbed portion, as it is possible that sub-surface remains are present. This possibility is indicated by McAllister's observation of Sites 36 and 37 in the vicinity. Even though these particular house sites and terraces may have been situated outside of the project area, their documented former presence strongly suggests that sites were distributed throughout the entire area. If the surface evidence of these sites

(stone walls, terraces, etc.) has been destroyed by relatively minor earthmoving activities (scraping of the ground surface during grubbing of vegetation, for example) important sub-surface deposits containing valuable data in the form of midden remains, artifacts, charcoal deposits and cultural layers may still be present.

It has been recommended that an intensive survey, to consist of extensive sub-surface testing, be conducted on the relatively undisturbed portion of the project area prior to any construction activity. These investigations can be done after land use policy changes have been completed, as long as there is a commitment to proper archaeological study of any significant remains that might be found.

E. Social Impact

The existing Hawaii Kai community is predominantly comprised of fairly young but established families with household sizes similar to the County average. The community has a sizeable base of local born residents which compares similarly to the County, however, it also notes a larger number of mainland born and a small percentage of foreign born.

The median household income for Hawaii Kai residents is significantly higher than the County average and reflects the upper-middle class status which is marked by other socio/economic indicators. Employment within the area is very high with a large percentage of the work force employed in professional and related fields. A very large number of families in the area own their own homes which is indicative of the non-transient nature of its' residents.

The proposed Golf Course 2/1A project will be similar to the newer developments within Hawaii Kai and is expected to attract an analogous resident market. The developer has indicated that the quality of this development will be very good and it's location along the Hawaii Kai Golf Course is considered premium siting. In this

respect, the proposed development, when completed and occupied, should reflect similar socio-economic characteristics.

With the development of the proposed Golf Course 2/1A project, some changes will occur on the existing community, however, the changes should not be unexpected to existing residents since changes of a similar nature hve already occured through out Hawaii Kai. Again, this project represents an additional phase of the Hawaii Kai Master Plan and the mixed residential use proposed for the project reflects the evolution and maturation of the community. The development will serve as a continuation of the original Master Plan concept.

Social impacts occuring as a result of the new development should be positive and enhancing to the existing community since it will introduce some very desireable housing in a previously vacant and untended site. As the project is developed over it's five year buildout plan any resultant impacts will occur gradually and should not be traumatic.

F. Impact on Traffic Conditions

The analysis of future traffic conditions reflect the following basic assumptions:

- Full development and occupancy of the proposed Golf Course 2/1A residential and industrial services developments would occur by 1995.

- Projected 1995 traffic volumes include traffic increases associated with the nearby planned residential developments including Golf Course projects 4, 5 and 6 and Kalama Valley projects 6B, 8, 9 and Ocean View. More general traffic increases resulting from additional Oahu residents and tourists were also included.

- Future trips generated by Golf Course 2/1A and nearby planned projects would be distributed on the area roadway network in a manner consistent with current traffic distribution patterns in Hawaii Kai.

- Projected traffic volumes reflect development of the Marina Zoning parcels and the roadway improvements and rideshare program as approved by the Honolulu City Council. For purposes of the impact analysis, the Golf Course 2/1A forecasts do not reflect extension of the rideshare measures to Golf Course 2/1A residents. (See "Mitigation Measures" for estimated reduction in vehicle trips.)

1. Future Traffic Conditions Without Golf Course 2/1A

For comparison purposes, future (1995) traffic conditions without Golf Course 2/1A were evaluated at several area intersections which would provide access to Golf Course 2/1A. The results of the analysis of key site access intersections are summarized in the following paragraphs.

- Kalanianaole Highway/Kealahou Street Intersection

  - Weekday evening peak hour traffic conditions would result in long delays (Service Level E) for left turn traffic at the Kealahou Street approach to Kalanianaole Highway.

  - Sunday peak hour traffic volumes would result in very long delays (Service Level F) for left turn at the Kealahou Street approach to Kalanianaole Highway.

  - Sunday evening peak hour traffic conditions would also result in periodic delays (Service Level D) for

windward-bound Kalanianaole Highway traffic due to traffic waiting to turn left into Kealahou Street.

- Kealahou Street/Hawaii Kai Drive Intersection

  - Projected peak hour traffic volumes would result in Service Level B conditions or better at this three-way stop-controlled intersection.

Traffic service levels at other intersections located along principal access routes for 1995 conditions without Golf Course 2/1A are presented in Table 7.

Table 7

Intersection Volume-Capacity Summary

1995 Conditions Without Golf Course 2/1A[(a)]

Intersection	Morning Peak Hour Volume-Capacity Ratio	Morning Peak Hour Level of Service	Evening Peak Hour Volume-Capacity Ratio	Evening Peak Hour Level of Service
Lunalilo Home Rd./ Hawaii Kai Dr.	0.97	E	0.64	B
Hawaii Kai Dr./ Wailua St.	0.64	B	0.86	D
Lunalilo Home Rd./ Wailua St.	0.94	E	0.77	C

(a) Intersection conditions reflect ongoing projects, plus the planned Marina Zoning development and traffic mitigation measures as approved by the Honolulu City Council.

2. Golf Course 2/1A Traffic Generation

Residential and service-oriented industrial trip rates used to estimate Golf Course 2/1A traffic, and the resultant estimated vehicle trips for the weekday morning and evening peak hour trips are summarized in Table 8.

Table 8
Traffic Increases From
Golf Course 2/1A Development
1995

Peak Hour Periods	Peak Hour Trip Rates Per Unit[a] To Project	From Project	Peak Hour Trips To Project	From Project
Weekday Morning				
Single family residences	.21	.55	10	26
Low density town homes	.10	.40	12	48
Medium density apartments	.10	.20	30	60
Service Industrial (per acre)	9.50	6.00	140	89
Total			192	223
Weekday Evening				
Single family residences	.63	.37	30	17
Low density town homes	.40	.20	48	24
Medium density apartments	.20	.20	60	60
Service Industrial (per acre)	15.00	18.00	222	266
Total			360	367

(a) Trip rates. Sources: "Trip Generation," Institute of Transportation Engineers, Third Edition, 1982, and "Traffic Generators," San Diego Association of Governments, 1984.

Based on the peak hour trip generation estimates, the residential portion of the development would generate approximately 45 percent and 33 percent of the combined trips to and from the Golf Course 2/1A residential and services industrial uses trips during the morning and evening peak hour respectively. During the morning peak hour, the residential development would generate significantly more outbound trips than inbound trips. These outbound trips would be comprised primarily of work trips. Conversely, during the morning peak hour, the services industrial development would generate significantly more inbound trips (employee work trips) than outbound trips.

During the evening peak, the residential development would generate more inbound than outbound trips and the industrial development, more outbound than inbound trips. The combination of trip-making characteristics of the residential and service industrial developments results in an almost equal number of inbound and outbound trips generated by Golf Course 2/1A during each of the peak traffic periods.

The highest one-hour trip generation period would occur during the evening peak hour with a total of 360 inbound trips and 367 outbound trips.

3. Hawaii Kai Traffic Increases With Golf Course 2/1A

Based on traffic routing assumptions specified in the Golf Course 2/1A Subdivision Traffic Impact Study* regarding the utilization of Hawaii Kai Drive versus Kalanianaole Highway, estimated Golf Course 2/1A traffic was assigned to the adjacent roadway network as follows:

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* Golf Course 2/1A Subdivision Traffic Impact Study, prepared for Kaiser Development Company by Wilbur Smith and Associates, July 31, 1986.

- Of the total morning peak hour trips estimated between Golf Course 2/1A and points Ewa of East Hawaii Kai, 70 percent were assigned to Hawaii Kai Drive and 30 percent to Kalanianaole Highway.

- Of the total evening peak hour trips estimated between Golf Course 2/1A and points Ewa of East Hawaii Kai, 75 percent were assigned to Hawaii Kai Drive and 25 percent to Kalanianaole Highway.

These assumptions result in a conservative assessment of Golf Course 2/1A-related traffic impacts on Hawaii Kai Drive.

The estimated total 1995 peak hour traffic volumes on Hawaii Kai roadways, including combined traffic forecasts for Marina Zoning parcels, other infill projects, and Golf Course 2/1A are presented in Figures 7 and 8. The combined traffic estimate for the Golf Course 2/1A residential and service industrial uses would result in the following increases to traffic volumes at key Hawaii Kai intersections:

Intersection	Percent Increase Morning Peak Hour	Percent Increase Evening Peak Hour
Kealahou St./Hawaii Kai Dr.	41.2	22.2
Kealahou St./Kalanianaole Hwy.	33.8	27.2
Hawaii Kai Dr./Lunalilo Home Rd.	12.3	16.6
Lunalilo Home Rd./Wailua St.	8.4	6.5
Hawaii Kai Dr./Wailua St.	1.0	2.6

4. Impact on East Hawaii Kai Roadways

An assessment of the adequacy of the principal access intersections to accommodate Golf Course 2/1A traffic increases indicated the following:

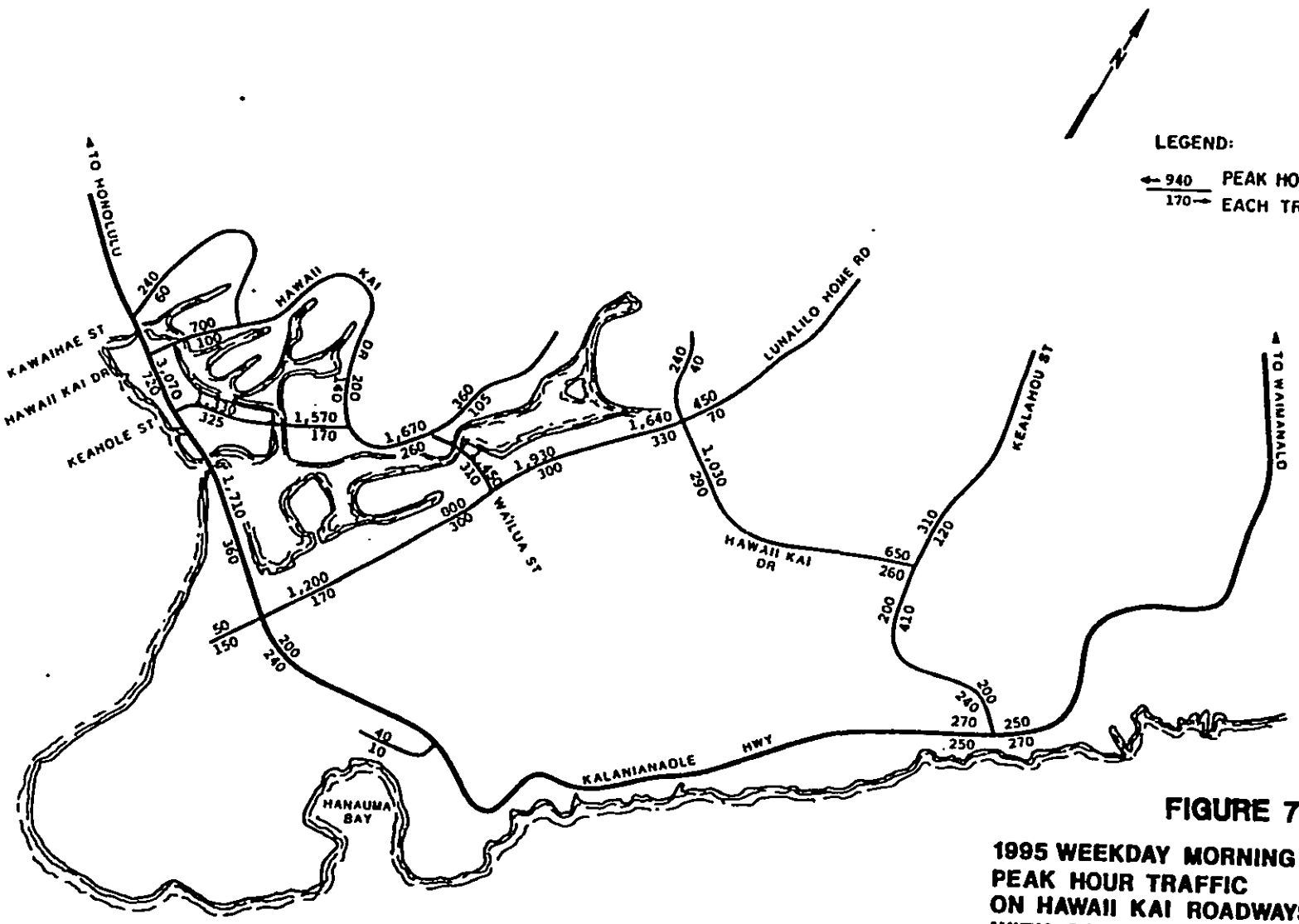

FIGURE 7

1995 WEEKDAY MORNING PEAK HOUR TRAFFIC ON HAWAII KAI ROADWAYS WITH GOLF COURSE 2/1A

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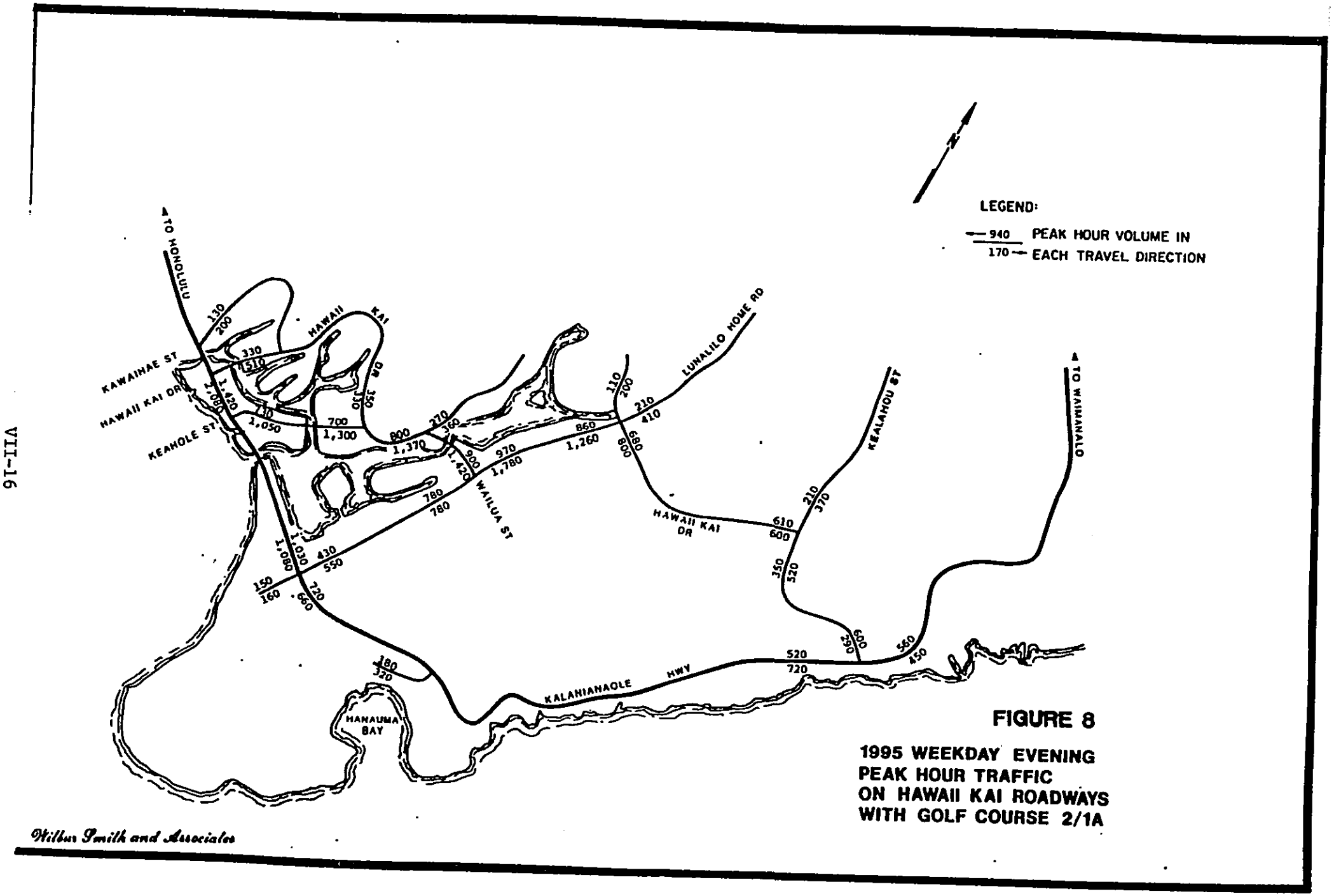

FIGURE 8

1995 WEEKDAY EVENING PEAK HOUR TRAFFIC ON HAWAII KAI ROADWAYS WITH GOLF COURSE 2/1A

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- Golf Course 2/1A Residential Development Access Intersection.

  - Projected 1995 peak hour volumes at the residential development access intersection, located on Kealahou Street opposite the existing access road for Queens Gate residential area, should not result in any lengthy delays to traffic entering and exiting these residential areas.

- Golf Course 2/1A Services Industrial Development Access Intersection.

  - Conditions at the intersection of the services industrial area access road with Kalanianaole Highway would be dependent upon the proportion of traffic turning left (versus right turns) from the access road onto Kalanianaole Highway. Intersection conditions could decline to Level of Service E for the weekday evening peak hour if the majority of the exiting traffic turn left.

- Kealahou Street/Kalanianaole Highway Intersection

  - The additional Golf Course 2/1A traffic would primarily increase the right turn volume from Kealahou Street and the left turn volume from Kalanianaole Highway.

  - Traffic increases from Golf Course 2/1A area (primarily trips to and from the industrial services development) would further increase the need for traffic signal controls at this intersection.

- Kealahou Street/Hawaii Kai Drive Intersection

  - Although Golf Course 2/1A residential and services projects would significantly increase traffic turning movements at this three-way stop-sign-controlled intersection, the intersection should continue to operate at an acceptable level of service (Level of Service C or better) during peak traffic periods.

A summary of 1995 peak hour Service Levels, with and without Golf Course 2/1A, are presented in Table 9 for key signalized intersections within Hawaii Kai.

As indicated in Table 9, the projected traffic increases would result in traffic conditions approaching Level of Service F at the intersections of Hawaii Kai Drive/Lunalilo Home Road and Lunalilo Home Road/Wailua Street during the morning peak hour. Mitigation measures would be required at these two Lunalilo Home Road intersections to maintain Level of Service D conditions or better during the peak traffic periods.

The additional Golf Course 2/1A traffic would result in small increases in the volume-capacity ratios at the Kalanianaole Highway intersections with Keahole Street, Hawaii Kai and Kawaihae Street. During the more critical morning peak hour period, the ratios increase from .88-.89 without the project to .90-.91 with the project.

5. 1995 Traffic Conditions on Kalanianaole Highway with Golf Course 2/1A

The analysis of projected 1995 traffic conditions along Kalanianaole Highway between Hawaii Kai and H-1 Freeway reflects:

TABLE 9

1995 LEVELS OF SERVICE FOR
HAWAII KAI INTERSECTIONS
WITH AND WITHOUT GOLF COURSE 2/1A
(Without Project Mitigation Measures(a))

	MORNING PEAK HOUR				EVENING PEAK HOUR			
	Without Project		With Project		Without Project		With Project	
	Volume-Capacity Ratio	Level of Service	Volume Capacity Ratio	Level of Service	Volume-Capacity Ratio	Level of Service	Volume-Capacity Ratio	Level of Service
Kalanianaole Hwy./Kealahou St.	.27	A	.35	A	.72	C	1.01	F
Hawaii Kai Dr./Lunalilo Home Rd.	.97	E	1.11	F	.64	B	.70	C
Hawaii Kai Dr./Wailua St.	.64	B	.65	B	.86	D	.88	D
Lunalilo Home Rd./Wailua St.	.94	E	.97	E	.70	C	.76	C
Kalanianaole Hwy./Kawaihae St.	.89	D	.91	E	.82	D	.82	D
Kalanianaole Hwy./Hawaii Kai Dr.	.89	D	.91	E	.75	C	.76	C
Kalanianaole Hwy./Keahole St.	.88	D	.90	E	.82	D	.82	D

(a) Analysis reflects implementation of roadway and rideshare improvements identified as part of Marina Zoning program, but does not reflect impact of Marina Zoning rideshare programs on Golf Course 2/1A traffic, or any additional roadway improvements for Golf Course 2/1A (see Potential Mitigation Measures).

- existing roadway facilities, plus the inclusion of planned new traffic signals at Nenue Street, Hawaii Loa Ridge access road and Kawaihae Street, and left turn lanes at West Halemaumau, Kuliouou and Kawaihae Streets;

- the inclusion of the proposed pedestrian bridge near Kalaniiki Street;

- implementation of the Marina Zoning rideshare program; and

- the assumption that a total of 440 vehicles would be allowed to use the contraflow High Occupancy Vehicle (HOV lane).

It does not, however, reflect capacity increases which would result from completion of the State DOT's median HOV lane widening project.

Total directional peak hour traffic volumes on Kalanianaole Highway are presented in Figure 9. The net traffic increases projected on Kalanianaole Highway (at Kalaniiki Street) as a result of Golf Course 2/1A residential and service industrial developments are estimated as follows:

	Towards Honolulu	Towards Hawaii Kai
Morning Peak Hour	50	No Change
Evening Peak Hour	55	-8

During the morning peak hour, the Golf Course 2/1A residential and industrial projects would add a net increase of approximately 50 vehicles to the peak-direction volumes on Kalanianaole Highway in the vicinity of Kalaniiki Street. This estimated

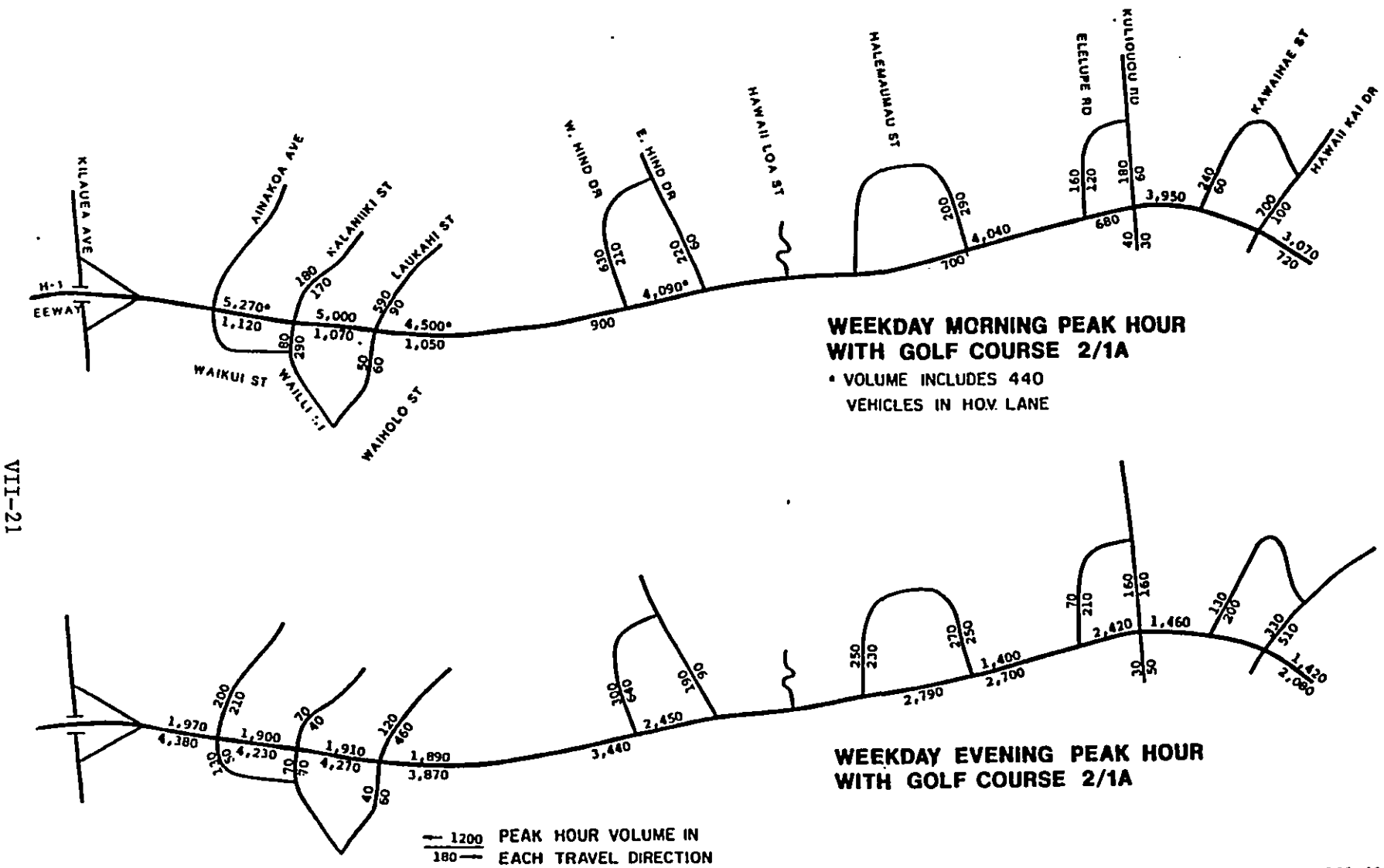


FIGURE 9

1995 PEAK HOUR TRAFFIC
KALANIANAOLE HIGHWAY

Wilbur Smith and Associates

net increase represents the addition of 105 work trips made by Golf Course 2/1A residents to Honolulu, minus the diversion of 55 Hawaii Kai resident trips to the services industrial development which are currently made to Honolulu via Kalanianaole Highway.

Evening peak hour traffic projections indicate that the development of Golf Course 2/1A would result in a small net decrease in Hawaii Kai-bound (peak-direction) trips. The reduction in traffic would be due to the increased number of Hawaii Kai trips being made within Hawaii Kai, rather than these trips being made to outside locations using Kalanianaole Highway. This shift in travel patterns is expected to result from the increase in jobs and new services provided by the services industrial development which would more than offset the added work trips between the new Golf Course 2/1A residential development and Honolulu.

A summary of the volume-capacity relationships and respective service levels for the key intersections along Kalanianaole Highway are presented in Table 10.

Results of the volume-capacity analysis of projected 1995 peak hour traffic condition indicate that the Kalanianaole Highway intersections at Kalaniiki Street, East Halemaumau Street and Kuliouou Street would all be operating near capacity with or without Golf Course 2/1A. Traffic added by Golf Course 2/1A during the morning peak hour would increase the 1995 volume-capacity ratios at these intersections by between 0.01 and 0.02. This increase would not represent a noticeable change in congestion and delay experienced by vehicles using these intersections during the morning peak hour.

Traffic added during the evening peak hour would have no measurable effect on the volume-capacity ratios or service levels at the key intersections.

TABLE 10

1995 LEVELS OF SERVICE FOR
INTERSECTIONS ON KALANIANAOLE HIGHWAY
WITH AND WITHOUT GOLF COURSE 2/1A[a]

	MORNING PEAK HOUR				EVENING PEAK HOUR			
	Pre-Project		Post-Project		Pre-Project		Post-Project	
	Volume-Capacity Ratio	Level of Service	Volume-Capacity Ratio	Level of Service	Volume-Capacity Ratio	Level of Service	Volume-Capacity Ratio	Level of Service
Kalanianaole Hwy./Kalaniiki St.	.98	E	.99	E	.93	E	.93	E
Kalanianaole Hwy./E. Halemaumau St.	.97	E	.99	E	.97	E	.97	E
Kalanianaole Hwy./Kuliouou Rd.	.97	F	.99	E	.82	D	.84	D

(a) Analysis reflects implementation of roadway and rideshare measures identified as part of Marina Zoning program, but does not reflect any special mitigation measures for Golf Course 2/1A.

6. Potential Mitigation Measures

Although most of the existing and planned roadways/intersections in Hawaii Kai would provide sufficient capacity to accommodate projected future traffic increases including Golf Course 2/1A traffic, several intersections would require mitigation measures to maintain acceptable conditions (Level of Service D or better).

The key intersections where mitigation measures may be necessary include:

- Kealahou Street/Golf Course 2/1A residential development access road;
- Kalanianaole Highway/Golf Course 2/1A service industrial development access road;
- Kalanianaole Highway/Kealahou Street;
- Hawaii Kai Drive/Lunalilo Home Road; and
- Lunalilo Home Road/Wailua Street.

The problems identified at these intersections would result from the addition of traffic from Golf Course 2/1A, Marina Zoning, and infill projects to the already heavy traffic flows on area roadways and at key area intersections. Roadway modifications which could be implemented to alleviate or minimize future traffic problems at the above mentioned locations are discussed in the following sections. A summary of volume-capacity ratios and service levels with implementation of the proposed mitigation measures is presented in Table 11 for locations involving signalized intersections.

TABLE 11

VOLUME-CAPACITY ANALYSIS
WITH PROPOSED MITIGATION MEASURES

LOCATION	MORNING PEAK HOUR Volume-Capacity Ratio	MORNING PEAK HOUR Level of Service	EVENING PEAK HOUR Volume-Capacity Ratio	EVENING PEAK HOUR Level of Service
Hawaii Kai Intersections:				
Kalanianaole Hwy./Kealahou St.	.35	A	.73	C
Hawaii Kai Dr./Lunalilo Home Rd.	.82	D	.55	A
Lunalilo Home Rd./Wailua St.	.87	D	.52	A

a. Kealahou Street/Golf Course 2/1A Residential Area Access Road

Although capacity deficiencies are not expected at this intersection, traffic operation and safety could be improved through implementation of the following measures:

1. Restripe Kealahou Street to provide a left-turn storage lane on both Kealahou Street approaches to this intersection;

2. Provide separate right-turn and left-turn lanes on the Golf Course 2/1A access road approach; and

3. Prohibit on-street parking along Kealahou Street from Hawaii Kai Drive to the Golf Course 4 roadway.

The left-turn lanes on Kealahou Street would minimize any blockage of through traffic by vehicles waiting to turn left into the Golf Course 2/1A or Queen's Gate residential areas, and reduce the potential for rear-end accidents.

b. Kalanianaole Highway/Services Industrial Area Access Road

As noted earlier, the existence and seriousness of a capacity deficiency for the left-turn movement from the industrial area access road onto Kalanianaole Highway would depend on the actual proportion of exiting traffic which would be turning left. Given the level of uncertainty involved, the only mitigation measure which is suggested at this time is the provision of separate right and left-turn lanes at the access road approach to Kalanianaole Highway. The potential need for a left-turn lane on Kalanianaole Highway and/or additional traffic control

measures at the intersection, should be based on actual turning movement demand monitored after partial development of the area.

c. Kealahou Street Kalanianaole Highway Intersection

Future potential mitigation measures include:

1. Additional of a left-turn storage lane on the Ewa-side approach of Kalanianaole Highway. This would reduce delays to through traffic.

2. Future installation of traffic signal controls to reduce delays to Kealahou Street traffic turning left onto Kalanianaole Highway. Traffic volumes and accidents should be monitored to determine when conditions warrant traffic signal control.

The combination of these measures would provide 1995 weekday peak hour service levels of C or better with the Golf Course 2/1A project.

d. Hawaii Kai Drive/Lunalilo Home Road Intersection

The following mitigation measure could improve 1995 traffic service levels to D or better during peak periods.

- Revise the pavement markings and signing on the makai intersection approach on Hawaii Kai Drive to allow left turns from both the existing left-turn lane and from the curb lane, which is currently marked as a thru/right-turn lane.

This measures would provide additional capacity for the

large number of vehicles turning left during the morning peak hour and allow more efficient use of the existing combination thru/right-turn lane, which currently is underutilized. Lunalilo Home Road, on the makai side of the intersection, currently has two makai-bound lanes and therefore would not require any widening to receive the double left-turn movement from Hawaii Kai Drive. Consideration should be given, however, to relocating the stop bar on the makai side approach of Lunalilo Home Road to improve the left turn radius from Hawaii Kai Drive.

In addition, the curb and sidewalk on the southeast corner should be reconstructed (cut back) to provide a larger turning radius. This would allow buses and other vehicles with long wheelbases to turn right onto Hawaii Kai Drive without swinging across the roadway center line.

As an additional mitigation measure, the mauka intersection approach on Lunalilo Home Road could be restriped to provide two lanes entering the intersection. This measure would provide additional capacity to the through movement at the approach. Implementation of this measure in addition to the previously described mitigation measures would result in Level of Service B (volume-capacity ratio of 0.69) during the morning peak hour and Level of Service A (volume-capacity ratio of 0.55) during the evening peak hour.

e. Lunalilo Home Road/Wailua Street Intersection

To minimize congestion during the morning peak hour, the following mitigation measure could be implemented:

- Widen Wailua Street along the mauka side and provide channelization to permit a continuous right-turn traffic movement. As an alternative, the widening may be used to allow a right-turn movement from two lanes on Lunalilo Home Road onto Wailua Street.

The increased right-turn capacity would require less signal "green" time to serve the heavy right-turn movement, and would improve the morning peak hour operations from Level of Service E to D.

f. Kalanianaole Highway

The Golf Course 2/1A project is not expected to impact traffic operation beyond those impacts previously indentified for the Hawaii Kai Marina Zoning parcels.* The Marina impact analysis reflects the total number of dwelling units requested by Kaiser Development Company. Actions taken by the Honolulu City Council resulted in the downsizing of the proposed Kaluanui 1 development from 1,020 proposed units to 400 approved units. The estimated increase in the Kalanianaole Highway peak hour, peak direction traffic from the Golf Course 2/1A project is less than the number of estimated future trips eliminated by the City Council action down-sizing the proposed Kaluanui 1 development.

It should be noted that traffic increases permitted for the Golf Course 2/1A development do not reflect any trip reduction resulting from the implementation of the Marina Zoning rideshare program. It is recommended that the

* Hawaii Kai Transportation Management Study, prepared by Wilbur Smith and Associates, September 1985.

program ridesharing incentives be extended to new residents of the Golf Course 2/1A development. This would result in an estimated reduction of 10 to 12 peak hour, peak direction trips from the volumes included in the impact analysis for Kalanianaole Highway.

7. Traffic Impacts of No Action Alternative

A general assessment was made of the potential traffic impacts associated with a decision to develop the Golf Course 2/1A property in accordance with the current area Development Plan which calls for light industrial uses on a portion of the property with the balance remaining in preservation. For this analysis, no trips are assumed for the areas designated preservation because it is not possible to predict any particular permitted use at this time.

Based on a total developable area of 14.8 acres and previously used trip rates for service industrial land use, the following weekday morning and evening peak hour trips were estimated:

Traffic Increases From
14.8 Acre Service Industrial Development

Peak Hour Period	Peak Hour Trip Rate Per Acre		Peak Hour Trips	
	To Project	From Project	To Project	From Project
Weekday Morning	9.5	6.0	140	89
Weekday Evening	15.0	18.0	222	266

A service industrial type development typically generates both work trips and customer trips as noted in the table above. Inbound trips would exceed outbound trips during the morning

peak hour and outbound trips would exceed inbound trips during the evening peak hour.

The development of only the 14.8 Golf Course 2/1A as service industrial park with no residential use in accordance with the area Development Plan would result in approximately 45 percent (45%) and 33 percent (33%) less trips being generated during the morning and evening peak hours respectively; that would be the case with the proposed residential project.

G. Impact on Air Quality

1. Direct Air Quality Impact of Project Construction

During the site preparation and construction phases of this project it is inevitable that a certain amount of fugitive dust will be generated. Actual emissions of fugitive dust from this project can be expected to vary daily depending upon the amount of activity and the moisture content of exposed soil in work areas. Fortunately the project site is relatively level and little dirt moving should be required for project construction.

On the other hand, the project site currently presents a rather dry and dusty appearance. Improving the area with houses and suburban landscaping may actually decrease the amount of airborne dust produced by the area over the long term.

One major generator of fugitive dust during project development is construction equipment moving over unpaved roadways. This problem can be substantially mitigated by completing and paving roadways and parking areas as early in the development process as possible. Because some construction will be taking place in close proximity to existing residential areas, dust control will have to be an item of special concern throughout the construction phase of the project.

Heavy equipment at construction sites will also emit some air pollutants in the form of engine exhausts. The largest equipment is usually diesel-powered. Carbon monoxide emissions for large diesel engines are generally about equal to those from a single automobile, but nitrogen dioxide emissions from this type of engine can be quite high. Fortunately, nitrogen dioxide emissions from other sources in the area should be relatively low and the overall impact of pollutant emissions from construction equipment should be minor compared to levels generated on roadways nearby.

2. Indirect Air Quality Impact of Increased Traffic

Once construction is completed the proposed project is not in itself likely to constitute a major direct source of air pollutants. By serving as an attraction for increased motor vehicle traffic in the area, however, the project must be considered to be a significant indirect air pollution source.

Motor vehicles, especially those with gasoline-powered engines, are known sources of carbon monoxide. Motor vehicles also emit some nitrogen dioxide and those burning fuel which contains lead as an additive contribute some lead particles to the atmosphere as well. The major control measure designed to limit lead emissions is a Federal law requiring the use of unleaded fuel in most new automobiles. As older cars are removed from the vehicle fleet lead emissions should continue to fall. In fact, effective January 1, 1986, the Federal Environmental Protection Agency has revised the allowable lead amount in gasoline to 0.1 grams per gallon. At the beginning of 1985 the standard was 1.1 grams per gallon. The EPA is also advocating a total ban on lead in gasoline to take effect as early as 1988.

Federal control regulations also call for increased efficiency in removing carbon monoxide and nitrogen dioxide from vehicle

exhausts. By 1995 carbon monoxide emissions from the vehicle fleet then operating are mandated to be only a little more than half the amounts now emitted.

3. Mitigative Measures

a. Short Term

As previously indicated the only direct short term adverse air quality impact that the proposed project is likely to create is the emission of fugitive dust during construction. State of Hawaii regulations stipulate the control measures that are to be employed to reduce this type of emissions. Primary control consists of wetting down loose soil areas. An effective watering program can reduce particulate emission levels from construction sites by as much as 50 percent. Other control measures include good housekeeping on the job site and pavement or landscaping or bare soil areas as quickly as possible.

Other indirect long term air quality impacts are expected in those areas where traffic congestion can potentially be worsened by the addition of vehicles traveling to and from the proposed project. Project planners can do very little to reduce the emission levels of individual vehicles, but the Hawaii Kai Transportation Management Study and the Traffic Impact Study for the project describe several proposed roadway improvements and a comprehensive ride sharing program that could significantly decrease traffic congestion along the roadways leading to and from the project.

If it should turn out that this ride sharing program is totally unsuccessful and a pedestrian overpass is not constructed at Kalaniiki Street, then modeling work done

for the Marina Zoning project in 1985 indicates that morning worst case carbon monoxide levels there could rise to slightly over 15 milligrams per cubic meter. This level is significantly above the allowable State of Hawaii limit, although it is still within allowable National AQS.

Current proposed mitigative measures for traffic congestion along roadways leading to and from the project area should be sufficient to meet existing air quality requirements and no further air pollution mitigation measures are proposed. It is noted, however, that tall, dense vegetation can provide some screening of residential areas from larger airborne particulates generated along roadways and near construction areas. It is thus recommended that *whereever possible such vegetative cover be included in* landscaping plans with plantings occuring as early in the development process as practicable.

H. Impact on Noise Environment

The increases in traffic noise levels attributable to the project are less than 0.5 dB for the high volume roadways, and 1.4 to 1.6 dB in the immediate vicinity of the project along Hawaii Kai Drive and Kealahou Street. An increase in traffic noise of less than 0.5 dB should not be perceptable and is not considered to be significant. Increases in traffic noise of 1.4 to 1.6 dB are considered to be moderately significant, but these larger increases are predicted to occur along the quieter roadways in the vicinity of the project.

In absolute terms, Year 1995 traffic noise levels along the Hawaii Kai Drive and Kealahou Street should not exceed 65 Ldn at 68 and 41 Ft. setback distances, respectively, from the roadways' centerlines. Existing setback distances of Kalama Valley homes are in the order of 40 to 60 Ft. from the centerline of Kealahou Street. All, but possibly two, of the proposed dwelling units are predicted to

be outside the 65 Ldn traffic noise contours. Therefore, existing and planned residences along the roadways in the immediate vicinity of the proposed project should remain in the "Moderate Exposure, Acceptable" noise exposure category. Additionally, the majority of existing Kalama Valley and Queens Gate homes are shielded from traffic noise by walls. For these reasons, future traffic noise impacts resulting from the proposed Golf Course 2/1A subdivision are not expected to be significant.

For the two single family residences of the Golf Course 2/1A project which may be within the Year 1995 65 Ldn contour, the use of larger setback distances from the roadway centerlines is a possible noise mitigation measure. The construction of sound attenuation walls is another standard mitigation measure, particularly for shielding single-story residences from traffic noise. In general, the wall height requirements become excessive (in the order of 10-plus feet) when multi-story residences are involved in traffic noise mitigation efforts. For this reason, this noise mitigation measure is generally limited to ground floor residential units. For single story residences where the increased setback distance option does not exist, the construction of sound attenuation walls has been widely applied.

Where none of the above mitigation measures are feasible, the remaining options are air conditioning the affected residential spaces or sound-treating ventilation openings (windows) to increase their exterior-to-interior noise reduction properties. The use of air conditioning within residences is not common, and is not considered a practical option for subdivision residences. The use of sound-treated windows has been applied at selected mid-rise structures in Hawaii for the purpose of meeting FHA/HUD noise standards.

Along Kalanianaole Highway, project related traffic noise impacts should be minimal (less than 0.8 dB) in all areas except for the section between Lunalilo Home Road and Haunauma Bay. Along this

section of the highway, traffic associated with the light industrial subdivision is predicted to increase noise levels by 1.0 dB at existing Hawaii Kai residences north and south of the highway between Hanauma Bay and Lunalilo Home Road. This degree of increase is considered to be minimally to moderately significant, and will be difficult to perceive during the build-out period of the light industrial subdivision. In absolute terms, project and non-project traffic noise levels are predicted to be above 65 Ldn by the Year 1995 along Kalanianaole Highway. The use of sound attenuating walls to shield existing residences from the traffic noise is a possible noise mitigation measure. For those residences which are elevated above the grade of the highway, the use of sound attenuating walls may not be feasible, and the addition of air conditioning or sound attenuating windows are the only other noise mitigation possibilities. The ultimate use of a particular noise mitigation measure may depend upon other considerations besides noise, such as economic cost, aesthetics, and technical feasibility.

I. Impact on Infrastructure and Utilities

1. Water Supply

The Golf Course 2/1A development will be served by two water service systems, one high level and one low level. The high level system consists of the Kamehame 500 Reservoir and a 12-inch main that is located on Hawaii Kai Drive. The low level system consists of four interconnected reservoirs, including the Kalama 170 Reservoir, and a 12-inch main located on Kealahou Street. These systems have sufficient capacity to accommodate the proposed development.

The Kamehame 500 high level system has a reservoir storage capacity of 1.5 million gallons (MG). The existing and committed average daily draw on this reservoir storage amounts to 0.7734 MGD. The average daily demand generated by that

portion of the proposed development to be served by this high level system is 0.1130 MGD, resulting in a total average daily demand of 0.8864 MGD placed on the system. This average daily demand yields a maximum daily demand of 1.3296 MGD, and based on Board of Water Supply (City and County of Honolulu) standards, the required reservoir storage capacity is equal to the maximum daily consumption, or 1.3296 MG. From this discussion, it is evident that the Kamehame 500 high level system has adequate reservoir storage capacity to serve the Golf Course 2/1A development. Furthermore, the 12-inch main on Hawaii Kai Drive is adequately sized to serve the proposed development.

The low level system has a collective storage capacity of 7.0 MG, with an existing and committed average daily draw of 4.091 MGD. The average daily demand generated by that portion of the proposed development to be served by the low level system amounts to 0.1122 MGD, resulting in a total average daily demand of 4.2032 MGD. At this average daily demand, the maximum daily demand is 6.3048 MGD, and as previously explained, the required storage capacity is 6.3048 MG. Again, it is seen that the reservoir storage capacity of the low level system is adequate for the proposed development.

Finally, the 12-inch main on Kealahou Street is adequately sized for the proposed development.

Although water system improvements have been provided by the developer, the availability of the commodity itself rests with local and state water agencies. The Board has indicated that water can be made available to serve this area, however, no commitment will be made until construction plans and drawings have been prepared and submitted, a procedure which is consistant with Board policy. Close and continued cooperation

with the Board will be established and maintained to secure a water commitment for the proposed project at that time.

2. Wastewater Treatment and Disposal

The proposed Golf Course 2/1A development will be served by the East Honolulu Wastewater Treatment Plant, a 3.9 million gallons per day (MGD) activated sludge facility located east of Koko Crater. This facility is owned by East Honolulu Community Services, Inc. (EHCS, Inc.), is operated and maintained by MEPAC Services, Inc. (a private wastewater treatment operations/maintenance contractor), and serves Hawaii Kai, Portlock, Kuliouou Valley, and a portion of Paiko. Following secondary treatment, effluent is discharged into coastal waters via a 1400-feet long, 46-feet deep, 36-inch diameter outfall pipe.

Average daily flow to the East Honolulu WWTP is approximately 3.4 MGD. With a design capacity of 3.9 MGD, the plant can treat an additional 500,000 gallons per day (gpd). However, to determine whether the plant can accommodate the Golf Course 2/1A development, consideration must be given to 1) other developments that will be served by this facility which may precede the proposed project, and 2) the estimated flow to be generated by this project. Table 12 is an estimate of flow capacity at the East Honolulu WWTP, taking into consideration 1) planned developments for which flow capacity has been reserved, and 2) planned plant expansion in 1987. These actions are listed in the order of their expected timeframe.

As shown in Table 12, the Golf Course 2/1A development will generate an average daily flow of 258,840 gpd, and notwithstanding other planned developments, the East Honolulu WWTP will have sufficient flow capacity to accommodate this proposed development. A key action is the expansion of the plant from

Table 12: SUMMARY OF FLOW CAPACITY AT EAST HONOLULU WWTP

ITEM	GPD
Design Average Daily Flow Capacity 1/	3,900,000
Existing Average Daily Flow 2/	(3,400,000)
Available Flow Capacity	500,000
Flow Capacity Reserved for Zoned Lands Under Development	(216,836) 3/
Available Flow Capacity	283,164
Additional Flow Capacity from 1987 Plant Expansion	800,000
Available Flow Capacity	1,083,164
Flow Capacity Reserved for Zoned Lands to be Developed	(448,560) 3/
Available Flow Capacity	634,604
Flow Capacity Reserved for Unzoned Lands	(241,980) 3/
Available Flow Capacity	392,624
Flow Capacity Required for Golf Course 2/1A	(258,840) 3/
Net Available Flow Capacity	133,784

1/ Confirmed by Brown & Caldwell, 1986

2/ From East Honolulu WWTP flow records

3/ Reserved Flow Capacity = Average Daily Flow from Described Lands

Average Daily Flow = Population x q

Generation coefficient, q, is based on existing flow of 3.4 mgd and tributary defacto census population of 38,264 (= 90 gpcd).

Population based on density coefficients as specified in Design Standards, Division of Wastewater Management, Volume I, City and County of Honolulu, 1984.

3.9 to 4.7 MGD, with construction expected to be completed no later than the Fall of 1987. Construction plans have been prepared and are being reviewed by the governmental agencies.

The sewerage system required to collect and convey wastewater from the proposed development to the treatment plant will likewise be owned by EHCS, Inc. and operated and maintained by MEPAC Services, Inc.

There have been problems at the facility that have resulted in the East Honolulu Community Services, Inc. (EHCS, Inc.) being cited for violation of its NPDES permit by the State Department of Health. There are questions as to whether the facility is in compliance with its permit and also differences of opinion as to the capacity of the plant.

As a result, EHCS, Inc. is working with the City & County Department of Land Utilization, the Department of Public Works, the State Department of Health, and the Environmental Protection Agency to answer these questions to the satisfaction of these agencies.

Recognizing the need to make improvements over a year ago, EHCS, Inc. on April 1, 1986 turned over operation of the entire system to MEPAC Services, Inc. wastewater treatment plant specialists and a subsidiary of Metcalf & Eddy out of Massachusetts. A number of major improvements have already taken place since MEPAC, Inc. took over including:

1. Hiring of an onsite plant manager (certified).
2. Hiring of a lab technician (certified).
3. Construction of training classroom.
4. Implemented ongoing operator and lab training program.
5. Installed backup high-level alarm system at six pump stations.

6. Calibration of the effluent flow meter.
7. Installed influent odor control system.
8. Installed computerized process control testing and record keeping.
9. Installed chlorine leak detector alarm system.
10. Repaired chlorine chlorinators.

3. Solid Waste Disposal

The project site will require servicing by City and County refuse collection or private refuse collection companies, however, no impacts are expected from this additional demand.

4. Electrical and Telephone Service

These services are available for the project site and no adverse impacts are expected.

J. Impact on Public Facilities and Services

There are existing fire and police protection services available to the established Hawaii-Kai community. Review by these agencies on the anticipated demand for expanded services will be coordinated during the review of the zoning application. Since the project phasing is scheduled for approxmately five years, the timing can be such that increased services can be provided on a timely basis. No significant adverse impacts are anticipated.

1. Police Protection

Additional police officers will be required to service the project's population. Since the development will be phased over several years, impact on police services and facilities will be gradual, thus, providing time for governmental services to budget and acquire the needed personnel and facilities.

2. Fire Protection

A population increase in the East Honolulu area resulting from construction of the proposed project will result in increased emergencies handled by the Fire Department. The City will be committed to provide continued fire protective services. These services will require additional personnel, capital expenditures, and operating funds.

It is anticipated that upon completion of the project, fire protection services in Hawaii Kai will be adequate to accomodate the proposed project.

Since the development will be phased over several years, impact on fire protection and facilities will be gradual, thus providing time for governmental services to budget and acquire the needed personnel and facilities.

3. Health Care Facilities

The project will result in a greater demand on existing health care facilities serving the community.

Though demands would increase, it is anticipated that existing facilities are adequate to satisfy all medical needs.

4. Educational Facilities

The project will result in a greater demand on existing public educational facilities servicing the community. Since the development will be phased over several years, demand on public educational facilities will be gradual, thus, providing time for governmental services to budget and acquire the needed personnel and facilities.

5. Recreational Facilities

Implementation of the project will create a demand for park and recreational facilities in the area and community. However, there is an extensive inventory of recreation site in the area and this supply is expected to be adequate to accomodate the project.

Dedication of park areas within the project will be required by the City's Park Dedication Ordinance No. 4621.

6. Public Transportation Facilities

Existing City bus routes are provided on Kalanianaole Highway. Scheduling of more buses and rerouting of the existing system can be requested to service the proposed development as the need arises.

K. Visual Impacts

The proposed Hawaii Kai Golf Course 2/1A project will be situated on the moderately sloping land at the base of Koko Crater. The area is now covered with kiawe and lowland shrubs. Koko Crater provides an imposing backdrop to the proposed development. Views from the site range from immediate golf fronting views to extensive views of the ocean and hillsides beyond.

The project is planned to minimize the visual impact from adjoining existing development, major roadways, Sandy Beach as well as Kalama Valley north of the project. Single-family and low density, low rise townhouse units are sited on the periphery stepping up to mid-rise units six stories in height at the base of the mountain.

These taller units are sited against the major mass of Koko Crater so as not to block views of other residences.

1. Views from Koko Crater

Koko Crater rises abruptly from the project site, does not have a defined trail system and is considered too steep to climb west of and behind the project site. The possibility of impairing views from Koko Crater to the ocean is not applicable. If it were possible, the major views are to the ocean and will not be affected.

2. Views from Queen's Gate

Units in Queen's Gate predominately orient toward the adjacent golf course and views from these units should not be affected by the project.

3. Photos of Model (Appendix G)

The accompanying photos taken of a site model show the project relative to views from (1) Sandy Beach, (2) traveling west on Kealahou Street, (3) from the entry to Queen's Gate, and (4) at the intersection of Hawaii Kai Drive and Kealahou Street. In addition, the view of the model looking down on the project site shows the relative insignificance of the buildings next to the mass of Koko Crater.

SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

VIII IRREVERSIBLE/IRRETRIEVABLE COMMITMENTS OF RESOURCES

VIII. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY AND IRREVERSIBLE/IRRETRIEVABLE COMMITMENTS OF RESOURCES

It is anticipated that the construction of the proposed project will commit the necessary construction materials and human resources (in the form of planning, designing, engineering, construction labor, landscaping, and personnel for the sales, management, services, offices, and maintenance functions). Some of the construction materials could be reused if and when the structures are demolished; however, at the present time and state of our economy, it is felt that the reuse of much of these materials is not practical. Labor expended for this development is not retrievable. However, labor will be compensated during the various stages of the project by the developer, commercial businesses, and the building's management.

The appearance of the project site will be altered from its present open vacant appearance to that of a completed planned residential community. The development will be highly visible but visually integrated with the surrounding areas.

Air and noise quality will be adversely affected by this proposed project, but will remain in compliance with State standards. While ambient air and noise quality in the area is relatively good, however, the proposed development will result in greater number of vehicles going to and from the project areas, resulting in vehicular pollution emissions.

The project development will result in a commitment of land for a long-term period. Once low and medium density residential uses are established, it is unlikely that the land will be reverted to a lower usage in the long-term future. Commitment of land for these purposes will likely foreclose certain future use options of the land.

The project development will, in the short- and long-term result in residential uses which will likely benefit future homeowners, the landowner and private businesses.

XI PROBABLE ADVERSE ENVIRONMENTAL EFFECTS

IX. ANY PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

The following adverse environmental effects (both short- and long-term) cannot be avoided.

(1) Preservation and waste storage use of the land will be lost.

(2) The site-clearing and construction work will result in temporary fugitive dust, some disruption to traffic, and noise.

(3) Traffic will increase from the number of additional cars utilized by residents of the proposed development. Additional impacts associated with increased traffic include potential air and noise quality deterioration.

(4) The need for utility services will increase.

(5) The need for public services for fire and police protection, schools, and public recreational facilities will increase slightly.

(6) Solid waste and wastewater generated by the project will increase the need for disposal and treatment and will increase total local waste output.

SUMMARY OF UNRESOLVED ISSUES

X. SUMMARY OF UNRESOLVED ISSUES

Development Plan Designation

The project site is currently designated for Preservation and Industrial use on the City and County of Honolulu Development Plan Map. The applicant has requested a DP land use amendment for Low and Medium Density Apartment and Residential use. It should be noted that the site was designated for medium density use on the City and County's 1966 Detailed Land Use Map (DLUM). Redesignation for residential use will allow the site to be used as intended in the Hawaii Kai Master Plan.

☒ PARTIES CONSULTED

XI. ORGANIZATIONS AND AGENCIES CONSULTED DURING THE EIS PREPARATION NOTICE COMMENT PERIOD

Agencies/Organizations	Date of Comment	Date Comment Received	Date of Response
City & County			
Board of Water Supply	6/06/86	6/10/86	7/15/86
Department of Housing & Community Development	6/09/86	6/16/86	7/15/86
Department of General Planning	6/02/86	6/03/86	7/15/86
Department of Land Utilization	-	-	-
Department of Parks & Recreation	6/13/86	6/18/86	7/15/86
Department of Public Works	6/04/86	6/06/86	7/15/86
Department of Transportation Services	5/30/86	6/03/86	7/15/86
Fire Department	6/23/86	6/24/86	7/15/86
Police Department	6/03/86	6/05/86	NRN
State of Hawaii			
Office of Environmental Quality Control	6/03/86	6/06/86	7/15/86
Department of Agriculture	6/06/86	6/12/86	NRN
Department of Accounting & General Services	5/28/86	5/30/86	NRN
Department of Defense	6/02/86	6/04/86	NRN
Department of Health	6/19/86	6/24/86	7/15/86
Department of Land & Natural Resources	-	-	-
Department of Planning & Economic Development	6/20/86	6/24/86	7/15/86
Department of Social Services & Housing	-	-	-
Department of Transportation	5/27/86	6/10/86	7/15/86
University of Hawaii			
Environmental Center	-	-	-
Water Resources Research Center	6/03/86	6/06/86	NRN
Federal			
Navy	5/27/86	5/29/86	NRN
Soil Conservation Service	6/13/86	6/18/86	NRN
U.S. Army Corps of Engineers	6/04/86	6/09/86	7/15/86
U.S. Coast Guard	-	-	-
U.S. Fish & Wildlife Service	5/27/86	5/28/86	NRN

Organizations & Agencies Consulted (Continued)

Agencies/Organizations	Date of Comment	Date Comment Received	Date of Response
Community Organizations			
Hawaiian Electric Company	6/06/86	6/10/86	7/15/86
Hawaii Kai Neighborhood Board No. 1	6/19/86	6/23/86	-
Kuliouou - Kalani Iki Neighborhood Board No.2	-	-	-
Waimanalo Neighborhood Board No. 32	-	-	-
Life of the Land	-	-	-
Sierra Club	6/24/86	-	NRN
Save Queen's Beach Association	EISPN returned 6/19/86 (No forwarding address available)		

NRN: No Response Needed

XII EIS PREPARATION NOTICE COMMENTS

FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU

June 23, 1986

Mr. Fred Rodriguez, President
Environmental Communications, Inc.
P. O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

SUBJECT: PROPOSED KAISER DEVELOPMENT COMPANY GOLF COURSE
2/1A PROJECT: EISPN

We have reviewed the subject material sent us and have no additional comments at this time. As noted in the EISPN, fire service is provided by the Hawaii Kai Fire Station. This station houses an engine company (five on-duty personnel) and a ladder company (six on-duty personnel). Additional service is available from Wailupe and Waimanalo Fire Stations.

Should you have any questions, please contact Battalion Chief Kenneth Word at 943-3838.

Sincerely,

FRANK K. KAHOOHANOHANO
Fire Chief

FKK:KAW:sh

JUN 24 1986

ENVIRONMENTAL
COMMUNICATIONS
INC.

July 15, 1986

Chief Frank K. Kahoohanohano
Honolulu Fire Department
City and County of Honolulu
1455 S. Beretania Street, Room 305
Honolulu, Hawaii 96814

Dear Chief Kahoohanohano:

We are in receipt of your comments dated June 23, 1986 on the proposed Golf Course 2/1A project and we respond in the following:

Your notification of fire protection service from existing stations at Wailupe and Waimanalo will be noted in the draft EIS.

Thank you for your review and we look forward to your comments on the draft EIS.

Very truly yours,

F. J. Rodriguez

FJR:ls

FIRE DEPARTMEN.

CITY AND COUNTY OF HONOLULU

1455 S. BERETANIA STREET, ROOM 300
HONOLULU, HAWAII 96814

FRANK F. FASI
MAYOR

FRANK K. KAHOOHANOHANO
FIRE CHIEF

LIONEL E. CAMARA
DEPUTY FIRE CHIEF

July 24, 1986

Mr. F. J. Rodriguez, President
Environmental Communications, Inc.
Post Office Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

SUBJECT: GOLF COURSE 2/1A PROJECT

We received your letter dated July 15, 1986 and request your correcting our statement that fire protection service is from existing stations at Wailupe and Waimanalo. It should read: "from existing stations at Hawaii Kai and Waimanalo."

Very truly yours,

FRANK K. KAHOOHANOHANO
Fire Chief

FKK:HKK:lm

JUL 28 1986

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

FRANK F. FASI
MAYOR

TOM T. NEKOTA
DIRECTOR

June 13, 1986

Mr. Fred Rodriguez, President
Environmental Communications, Inc.
P. O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

Subject: Environmental Impact Statement Preparation Notice
Golf Course 2/1A Project - Hawaii Kai
Tax Map Key 3-9-10: Por. 1

We have reviewed the Environmental Impact Statement Preparation Notice for the proposed Kaiser Development Company Golf Course 2/1A Project and make the following comments and recommendations:

We have determined that several recreational concerns have not been adequately addressed in the notice. These concerns are as follows:

1. Park Dedication Ordinance No. 4621 - The size of the proposed project is substantial and a determination of the method of compliance with the Park Dedication Ordinance should be made now. Early determination of the method used to comply with the Ordinance will avoid delays in obtaining City approval for the proposed project.

2. Public Access to Koko Head Regional Park - The proposed project abuts Koko Head Botanic Garden and the riding stables. Presently, access to these facilities is from Kealahou Street and through the project site.

   Kaiser Development Company has indicated to our department that provisions will be made to provide vehicular access to the botanic garden and riding stable. This provision has not been included in the preparation notice.

3. Buffer Zone - The 200-feet buffer zone was primarily established to provide the project from certain discomforts emanating from the riding stable. We have also indicated to Kaiser Development Company that the park dedication requirements for lands to qualify as credit for park purposes is specific and the use of the buffer zone is questionable.

We recommend that the applicant contact our Advance Planning Section to discuss the above concerns.

JUN 18 1986

Thank you for the opportunity to comment on the Environmental Impact Statement Preparation Notice for the proposed Golf Course 2/1A Project.

Sincerely,

Tom Nekota

TOM T. NEKOTA, Director

TTN:ei

ENVIRONMENTAL
COMMUNICATIONS
INC.

F J RODRIGUEZ
PRESIDENT

July 15, 1986

Mr. Tom T. Nekota, Director
Department of Parks & Recreation
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Nekota:

We are in receipt of your department's comments dated June 13, 1986 on the proposed Golf Course 2/1A project and we respond in the following:

1. The applicant has indicated that they fully intend to comply with the Park Dedication Ordinance requirement and they plan to contact your staff to determine the guidelines necessary to achieve this mandate.

2. Public access to Koko Head Regional Park will be clearly identified in the draft EIS currently under preparation and which will be circulated for review very shortly.

3. The use of the Buffer Zone as credit for compliance with the Park Dedication Ordinance will be discussed by the applicant with your staff.

Thank you for your initial comments and we look forward to your further review of the draft EIS and comments at that time.

Very truly yours,

F. J. Rodrigues

FJR:ls

1149 PORT STREET MALL, SUITE 300 • P. O. BOX 836 • HONOLULU, HAWAII 96808 • TELEPHONE (808) 521-6361

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 523-4191

FRANK F. FASI
MAYOR

ALVIN K.H. PANG
DIRECTOR

June 9, 1986

Mr. Fred Rodriguez, President
Environmental Communications, Inc.
P. O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

Subject: EIS Preparation Notice
Kaiser Development Company

Tax Map Key:	3-9-10: Portion of 1
Area:	30 Acres
Development Plan:	Preservation and Industrial Public Facilities
Map:	Waste Transfer Facility
Zoning Map:	R-6 Residential and P-1 Preservation
State Land Use:	Urban
Proposal:	1. Preservation/Industrial to Low Density Apartments (12± Acres) 2. Medium Density Apartment (10± Acres) 3. Residential (8± Acres). Project to develop 430 apartment units and 48-single family units.

We appreciate the opportunity to comment on the EIS preparation notice for the proposed Kaiser development.

The proposal of constructing apartment and single-family units in the preservation district of the Development Plan and Zoning Map has been reviewed by the Department of Housing and Community Development (DHCD). The Department is mandated to provide housing units for low- and moderate-income families on Oahu. We note that a zoning change is needed, and in accordance with the current Departmental policy, we wish to request that at least ten (10) percent of all residential developments be set aside for these groups. This request applies to all zone changes, cluster and planned development-housing applications. Such a requirement is a reasonable means of recapturing the economic benefit

JUN 16 1986

conferred by favorable land use allocations and distributing that benefit for the general public benefit.

We are currently reviewing our policy relating to the ten percent set aside and will inform you of any specific policy adjustments adopted.

We request that the developer specify the location of the units, as well as the type of unit (1-bedroom, 2-bedroom, etc.) to be provided for low- and moderate-income families.

If you have any questions, please contact Mr. James Miyagi of our Housing Division at 523-4264, who will assist the developer in formulating a program to provide these units.

Sincerely,

for ALVIN K. H. PANG

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ.
PRESIDENT

July 15, 1986

Mr. Alvin K.H. Pang, Director
Department of Housing and Community
Development
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Pang:

We are in receipt of your department's comments dated June 9, 1986 on the proposed Golf Course 2/1A project and we respond in the following:

Your letter has been provided to the applicant for their review and further disposition. The specific request for setting aside 10% of the units for low and moderate income families is under consideration by the applicant; they plan on meeting with your staff to determine how this request can best be implemented at the zoning stage.

The second request as to specifying the location and type of units that would be made available to the low and moderate income groups will also be reviewed by the applicant.

Thank you for your initial comments and your continuing concerns.

Very truly yours,

F. J. Rodrigues

FJR:ls

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

June 6, 1986

Mr. Fred Rodriguez, President
Environmental Communications, Inc.
P. O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

Subject: Your Letter of May 22, 1986 on the Proposed Kaiser Development Company Golf Course 2/1A Project

Thank you for the opportunity to comment on the Environmental Impact Statement Preparation Notice for the proposed Kaiser Development Company Golf Course 2/1A Project.

We have no objections to the proposed golf course project.

The developer shall submit the following items for our review and approval:

1. A water master plan and supporting hydraulic calculations showing the adequacy of the water facilities during the interim and ultimate development.

2. Construction plans in conformance to the approved water master plan.

The developer is also required to pay our water system facilities charge for a source facility.

JUN 10 1986

The water requirement for medium density apartments is 400 gallons per day (gpd)/unit, not 300 gpd/unit as stated on page 6 of the project preparation notice. Please incorporate this water demand when the water master plan is submitted.

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

Very truly yours,

FOR KAZU HAYASHIDA
Manager and Chief Engineer

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ.
PRESIDENT

July 15, 1986

Mr. Kazu Hayashida
Manager and Chief Engineer
Board of Water Supply
City & County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96843

Dear Mr. Hayashida:

We are in receipt of your agency's comments dated June 6, 1986 on the proposed Golf Course 2/1A project and we respond in the following:

1. A water master plan will be developed for your agency's review and approval that will meet the requirements of the Board of Water Supply.

2. At the appropriate time, the construction drawings will be provided to your staff for their review and comment and they will be based on the water master plan.

Finally, we will correct the noted discrepancy on page 6 of our EIS Preparation Notice; this correction will be reflected in the water master plan when it is developed.

Thank you for your initial comments and continuing concern.

Very truly yours,

F. J. Rodrigues

FJR:ls

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

FRANK F. FASI
MAYOR

RUSSELL L. SMITH, JR.
DIRECTOR AND CHIEF ENGINEER

ENV 86-122

June 4, 1986

Mr. Fred Rodriguez
President
Environmental Communications, Inc.
P. O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

Re: EISPN for Kaiser Development Company Golf Course 2/1A Project (Tax Map Key: 3-9-10: Por of 1

In response to your letter dated May 22, 1986, concerning the subject project, our comments are as follows:

1. A drainage report should be submitted to the Drainage Section, Division of Engineering, for review and approval.

2. No municipal sewers are available, as the Hawaii Kai area is being served by a private sewer system.

Very truly yours,

for RUSSELL L. SMITH, JR.
Director and Chief Engineer

JUN 6 1986

ENVIRONMENTAL COMMUNICATIONS INC.

F. J. RODRIGUEZ
PRESIDENT

July 15, 1986

Mr. Russell L. Smith, Jr.
Director and Chief Engineer
Department of Public Works
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Smith:

We are in receipt of your department's comments dated June 4, 1986 on the proposed Golf Course 2/1A project and we respond in the following:

1. A drainage master plan will be prepared and submitted to the Drainage Section, Division of Engineering. Appropriate sections from this plan will be provided in the draft EIS for your staff's review and comment.

2. The privately operated sewage treatment plan will provide adequate treatment and disposal of sewage generated by this project.

Thank you for your initial comments and we look forward to your review and comments on the draft EIS.

Very truly yours,

F. J. Rodrigues

FJR:ls

1188 FORT STREET MALL, SUITE 208 • P. O. BOX 536 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-2161

DEPARTMENT OF TRANSPORTATION SERVICES

CITY AND COUNTY OF HONOLULU

HONOLULU MUNICIPAL BUILDING
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR

JOHN E. HIRTEN
DIRECTOR

JOSEPH M. MAGALDI, JR.
DEPUTY DIRECTOR

TE-2711A
PL 1.0327

May 30, 1986

Mr. Fred Rodriguez, President
Environmental Communications, Inc.
P. O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

Subject: Kaiser Development Company
Golf Course 2/1A Project
TMK: 3-9-10: Por. of 1

This is in response to your letter of May 22, 1986, regarding your EIS Preparation Notice for the above project.

Your submittal indicates that the traffic impact of the project is being studied.

The traffic study should address the following concerns:

1. The amount of vehicular traffic to be generated by the project and its impact on the surrounding streets.

2. The need for street improvements including traffic signalization on the surrounding streets to support the proposed use.

3. The cumulative effect of this project on the arterial system that will be affected.

We appreciate this opportunity to review and comment on the project.

Sincerely,

Paul McCleary
for JOHN E. HIRTEN

JUN 3 1986

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ
PRESIDENT

July 15, 1986

Mr. John E. Hirten, Director
Department of Transportation Services
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Hirten:

We are in receipt of your department's comments dated May 30, 1986 on the proposed Golf Course 2/1A project and we respond in the following:

The three comments expressed in your letter have been forwarded to the Traffic consultant, Wilbur Smith & Associates who are preparing the Traffic Impact Study at the present time. Their document will reflect the proposed mitigation measures to the concerns expressed in your comment.

Thank you for your continuing interest and concern and we look forward to your review and comments on the draft EIS.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

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

FRANK F. FASI
MAYOR

DONALD A. CLEGG
CHIEF PLANNING OFFICER

GENE CONNELL
DEPUTY CHIEF PLANNING OFFICER

VW/DGP 5/86-8624

June 2, 1986

Mr. Fred Rodriguez, President
Environmental Communications, Inc.
P.O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

Chapter 343, HRS, Environmental Impact Statement (EIS) for Proposed Development at Hawaii Kai, East Honolulu, TMK: 3-9-10: portion of 1 (DGP No. 86/EH-1)

We have received a copy of your Environmental Impact Statement Preparation Notice (EISPN) for the subject development dated May 22, 1986.

We wish to call your attention to our letter to Ms. Letitia N. Uyehara, Director, OEQC, dated April 28, 1986 (copy attached) on this subject. We are particularly concerned that you include analysis in your EIS which addresses the three potentially adverse impacts that we determined will result from this proposed development, namely:

1. A population increase projected at 1,088 people who will generate additional traffic on Kalanianaole Highway and upon Hawaii Kai streets. More detailed study of traffic impacts is needed.

2. Problems of compatibility with an environmentally sensitive area, Koko Crater, with special reference to views from Koko Crater and surrounding land uses.

3. The potential adverse impact upon the future population of the proposed project from the nearby sewage treatment plant odors and fumes should be discussed.

Sincerely,

Donald Clegg

DONALD A. CLEGG
Chief Planning Officer

Attach.

JUN 3 1986

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

FRANK F. FASI
MAYOR

DONALD A. CLEGG
CHIEF PLANNING OFFICER

GENE CONNELL
DEPUTY CHIEF PLANNING OFFICER

VW/DGP 3/86-7876

April 28, 1986

Ms. Letitia N. Uyehara, Director
Office of Environmental Quality Control
State of Hawaii
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Subject: Chapter 343, HRS, Environmental Impact Statement (EIS) Preparation Notice for Proposed Development at Hawaii Kai, East Honolulu, TMK: 3-9-10: Por. of 1

The Department of General Planning has determined that the subject applicant action requires an EIS pursuant to Chapter 343, HRS, because the proposal, which involves a City and County Development Plan amendment, may have a significant impact on the environment. This letter, together with the enclosed environmental assessment, serves as the EIS Preparation Notice. It should be published in the OEQC Bulletin under the "Register of Chapter 343, HRS Documents."

The decision to require an EIS for this project is based on Section 11-200-12, Significance Criteria, established in the State Environmental Impact Statement Rules. It has been determined that the proposed project will:

1. Involve a population increase projected at 1,088 people who will generate an additional traffic impact on Kalanianaole Highway and upon Hawaii Kai streets.

2. Potentially create problems of compatibility with an environmentally sensitive area, Koko Crater, with special reference to views from Koko Crater and surrounding land uses. There is a special problem near the entrance to Koko Crater of the intrusion of noises from human settlement upon the ambient noise level of Koko Crater.

3. Require more detailed study of:

   a. the additional traffic impact upon Kalanianaole Highway and upon Hawaii Kai streets.

   b. the potential adverse impact upon the future population of the proposed project from the nearby sewage treatment plant odors and fumes.

The following agencies should be consulted in the preparation of the EIS:

City and County

Honolulu Fire Department
Department of General Planning
Department of Parks and Recreation
Board of Water Supply
Police Department
Department of Public Works
Department of Transportation Services
Department of Housing and Community Development
Department of Land Utilization
Office of Human Resources

State of Hawaii

Department of Transportation
Department of Planning and Economic Development
Department of Land and Natural Resources
Department of Health
Office of Environmental Quality Control
Department of Agriculture
Department of Accounting and General Services,
  Division of Public Works
Department of Education
Department of Social Services and Housing

University of Hawaii

Environmental Center
Water Resources Research Center

Federal

U.S. Army Corps of Engineers
U.S. Fish and Wildlife Service
U.S. Department of Agriculture, Soil Conservation Service
U.S. Pacific Division, Naval Facilities Engineering Command
U.S. Army Engineering Division, Real Estate Branch

Community Organizations

Hawaii Kai Neighborhood Board No. 1
Kuliou - Kalani Iki Neighborhood Board No. 2
Waimanalo Neighborhood Board No. 32
Life of the Land
Sierra Club
Save Queen's Beach Association

The contact person for this EIS will be:

Mr. Dan Davidson
Vice President, Land Use
Kaiser Development Company
P.O. Box 25007
Honolulu, Hawaii 96813

If there are any questions, please contact Verne Winquist of my staff at 527-6044.

Sincerely,

E. B. CONNELL
Acting Chief Planning Officer

Enclosure

cc: Mr. Dan Davidson

ENVIRONMENTAL COMMUNICATIONS INC.

F. J. RODRIGUEZ, PRESIDENT

July 15, 1986

Mr. Donald A. Clegg
Chief Planning Officer
Department of General Planning
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Clegg:

We are in receipt of your department's comments dated June 2, 1986 on the proposed Golf Course 2/1A project and we respond in the following:

1. The applicant's Traffic consultant, Wilbur Smith & Associates is preparing a Traffic Impact Study that will be included as an appendix with the draft EIS. This document will also respond to the additional traffic to be generated by the proposed project.

2. View plane aesthetics with particular reference to Koko Crater Regional Park will be discussed in the draft EIS to the extent practicable. It should be noted at this point that the proposed residential units will be in a low rise to mid-rise configuration that will not be inconsistent with the adjacent existing residential units.

3. The nearby wastewater treatment plant has been a subject of serious concern to the applicant. MEPAC Services, Inc. who are professional operators have made major operational improvements at the facility and effective odor control is a high priority.

Thank you for your initial comments and we look forward to your review and comments on the draft EIS.

Very truly yours,

F. J. Rodrigues

FJR:ls

1164 FORT STREET MALL, SUITE 200 • P. O. BOX 538 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-2161

POLICE DEPARTMENT

CITY AND COUNTY OF HONOLULU

1455 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96814 • AREA CODE (808) 949-3111

FRANK F. FASI
MAYOR

DOUGLAS G. GIBB
CHIEF

WARREN T. PEREIRA
DEPUTY CHIEF

OUR REFERENCE EFS-JS

June 3, 1986

Mr. Fred Rodriguez, President
Environmental Communications, Inc.
P.O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

We have reviewed the Environmental Impact Statement Preparation Notice for the proposed Kaiser Development Company Golf Course 2/1A Project, and we have found nothing in it that requires comment at this time.

Thank you for this opportunity to comment on the proposal.

Sincerely,

DOUGLAS G. GIBB
Chief of Police

By
DAVID HEAUKULANI
Assistant Chief of Police
Administrative Bureau

NO RESPONSE NEEDED

JUN 5 1986

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

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

LESLIE S. MATSUBARA
DIRECTOR OF HEALTH

In reply, please refer to:
EPHSD

June 19, 1986

Mr. Fred Rodriguez, President
Environmental Communications, Inc.
P. O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

Subject: Environmental Impact Statement (EIS) Preparation Notice for the Proposed Kaiser Development Company Golf Course 2/IA Project

Thank you for allowing us to review and comment on the subject zone change. We provide the following comments for your consideration:

Wastewater Disposal

We find that the existing sewage treatment plant (STP) appears to be currently operating at a marginal point. Any sewage hookups from the subject project should be done only after the STP has been adequately expanded in capacity.

Noise

Concerns regarding the proposed residential development are directed toward probable noise impacts from areas designated as light industrial use and from the existing sewage treatment plant and golf course.

a. Noise from activities associated with industrial facilities, including vehicles utilized for deliveries and services and vehicles within off-street parking areas, can have an adverse effect on the proposed residential community. Noise from stationary equipment from such facilities, including air conditioning/ventilation units, exhaust fans and compressors, can also impact residents.

b. Noise associated with the existing sewage treatment plant operations may also have a negative impact on the residential community.

c. Noise from activities associated with the existing golf course facility, specifically from ground maintenance, can result in disturbances on residents.

Plans must be included for implementation of mitigative measures to minimize noise from those activities cited above.

Activities associated with the construction phase must comply with the provisions of Title 11, Administrative Rules Chapter 43, Community Noise Control for Oahu.

JUN 24 1986

a. The contractor must obtain a noise permit if the noise levels from the construction activities are expected to exceed the allowable levels of the regulations.

b. Construction equipment and on-site vehicles requiring an exhaust of gas or air must be equipped with mufflers.

c. The contractor must comply with the conditional use of the permit as specified in the regulations and conditions issued with the permit.

Traffic noise from heavy vehicles travelling to and from the construction site must be minimized in existing residential areas and must comply with the provisions of Title 11, Administrative Rules Chapter 42, Vehicular Noise Control for Oahu.

Air Pollution

The Environmental Impact Statement should include the potential impact on the ambient air quality as a result of increased vehicular activity from the proposed project and all other projects which were previously approved but have not started construction. Projections on the increased traffic volume and the impact on the ambient air quality should be for the associated corridors, roadways, and highways. The results should be compared to the State and Federal ambient air quality standards. Should a potential violation be determined, the report should address the mitigating actions which shall be implemented.

The use of herbicides in the maintenance of the golf course may impact the surrounding residents. The report should address this potential problem which may be compounded by the meteorological conditions, vaporization, or oversprays.

Water Pollution

The notice identifies the development of low and medium density apartments adjacent to the Hawaii Kai Golf Course and East Honolulu Community Services Wastewater Treatment Plant. The adjoining Queen's Gate residential development has been a source of many health-related complaints since June 1980. The notice should address the following concerns:

a. Exposure of residents to wastewater effluent from any future golf course irrigation.

b. Potential odor complaints due to the close proximity of the sewage treatment plant with the proposed development.

Sincerely yours,

LESLIE S. MATSUBARA
Director of Health

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ
PRESIDENT

July 15, 1986

Mr. Leslie S. Matsubara, Director
Department of Health
State of Hawaii
P.O. Box 3378
Honolulu, Hawaii 96801

Dear Mr. Matsurbara:

We are in receipt of your comments dated June 19, 1986 on the proposed Golf Course 2/1A project and we respond in the following:

Wastewater Disposal

MEPAC Services, Inc. who are professional operators of sewage treatment plants will continue to address all concerns regarding the wastewater treatment plant's operations and capacity. It is acknowledged that the deveoper must receive Department of Health approval prior to sewage connections for the subject project.

Noise

All comments regarding noise that can affect the residential development from proposed commercial and light industrial development adjacent to the residential sectors are being addressed in a study currently under way by Y. Ebisu & Associates. These concerns will be reviewed by the applicant/developer who can mitigate to the extent practicable by siting and unit location. Construction related noise will be in compliance with the Title 11, Administrative Rules Chapter 43, Community Noise Control for Oahu by the contractor on the job.

Air Pollution

Air Quality impacts attributable to vehicular traffic generated by the proposed project will be addressed in a study being prepared by Barry Root. State and Federal Air Quality Standards will be used as the criteria for compliance. Herbicide usage on the golf course proper will be controlled by the golf course staff who are by law required to be certified by the State Department of Agriculture in the commercial application of herbicides, pesticides, and fertilizers. Certification includes the knowledge of the material to be used, accurate dilution factors, consideration of wind or meteorological conditions, and other factors vital to correct usage.

Water Pollution

Use of wastewater effluent to irrigate the Hawaii Kai Golf Course was stopped in July, 1986. Any future use of wastewater effluent for irrigation purposes will be coordinated with your department.

[redacted]

Improved odor control is being implemented by MEPAC Services, Inc.

Thank you for your comments and we look forward to your review and comments on the draft EIS.

Very truly yours,

F. J. Rodriguez

FJR:ls

DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT

Ref. No. P-4396

June 20, 1986

Mr. Fred Rodriguez
President
Environmental Communications, Inc.
P.O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

Subject: EISPN for Development Plan Amendment from Industrial/ Preservation to Apartment/Residential for Golf Course 2/1A Project, Hawaii Kai

We have reviewed the subject environmental impact statement preparation notice (EISPN) and have the following comments to offer.

1. The residents of Hawaii Kai in the vicinity of the existing sewage treatment plant (STP) have complained of health problems which could be associated with the use of treated sewage effluent for golf course irrigation. The preparation notice also mentions a problem of gas collection in the STP, a possibility of a chlorine gas leak and salt water infiltration into the sewer lines.

2. The location of 430 apartment units and 48 single-family dwellings, as proposed by the subject project, will compound the problems, unless corrective actions are taken. If such problems are likely to continue, the existing Industrial and Preservation designations would be more appropriate than Residential uses.

3. Kalanianaole Highway will be impacted by the subject project. The preparation notice states that traffic generated by the subject project and the adjacent light industrial area will be addressed in a forthcoming consultant study. The study should also address the impacts that could occur if the total zoned capacity of Hawaii Kai is considered.

4. The impact of the proposed project on school facilities should also be thoroughly discussed.

JUN 24 1986

5. The draft EIS should address how the proposed development will meet the appropriate objectives, policies and priority guidelines of the Hawaii State Plan, and the policies and implementing actions of the applicable Functional Plans.

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

Very truly yours,

Murray E. Towill

Kent M. Keith

cc: Office of Environmental Quality Control
Land Use Division

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ.
PRESIDENT

July 15, 1986

Mr. Kent M. Keith, Director
Department of Planning and
Economic Development
P.O. Box 2359
Honolulu, Hawaii 96804

Dear Mr. Keith:

We are in receipt of your department's comments dated June 20, 1986 on the proposed Golf Course 2/1A project and we respond in the following:

1. MEPAC Services, Inc. who are professional operators of sewage treatment plants, will continue to address all concerns regarding the wastewater treatment plant's operations and capacity. The potential problems of gas collection in the Sewage Treatement Plant (STP), a potential chlorine gas leak, and salt water infiltration mentioned in your letter have all been resolved.

2. MEPAC Services, Inc. and the developer are and will continue to address and resolve all concerns relative to the wastewater treatment plant to the satisfaction of the State Department of Health and the affected County agencies before the proposed residential development takes place.

3. Traffic generation attributable to this project's implementation will be discussed in a traffic study developed by Wilbur Smith & Associates. Your request that the study also discuss the impacts that could occur if the total zoned capacity of Hawaii Kai is considered is the method used by the Traffic consultant.

4. State Department of Education will respond and comment on the available capacity for school facilities to accomodate the anticipated school age children that could result from this proposed project.

5. Compliance with the Hawaii State Plan and applicable Functional Plans will be included in the draft EIS.

Thank you for your comments and we look forward to your review and comments on the Draft EIS.

Very truly yours,

F. J. Rodriguez

FJR:ls

[illegible] [illegible] [illegible] STREET [illegible] 200 • [illegible] 96 • HON [illegible] WAII 968 [illegible] PHONE ([illegible]) [illegible]

GEORGE R. ARIYOSHI
GOVERNOR

JACK K. SUWA
CHAIRPERSON, BOARD OF AGRICULTURE

SUZANNE D. PETERSON
DEPUTY TO THE CHAIRPERSON

State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 So. King Street
Honolulu, Hawaii 96814-2512
June 6, 1986

Mailing Address:
P. O. Box 22159
Honolulu, Hawaii 96822-0159

Mr. Fred Rodriguez, President
Environmental Communications, Inc.
P. O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

Subject: Environmental Impact Statement Preparation Notice
Kaiser Development Company Golf Course 2/1A Project

The Department of Agriculture has reviewed the subject notice and has no comments to offer.

Sincerely,

Jack K. Suwa
JACK K. SUWA
Chairman, Board of Agriculture

cc: OEQC

NO RESPONSE NEEDED

JUN 12 1986

GEORGE R. ARIYOSHI
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
DIVISION OF PUBLIC WORKS
P. O. BOX 119, HONOLULU, HAWAII 96810

HAROLD MASUMOTO
COMPTROLLER

MARY N. TOMINAGA
DEPUTY COMPTROLLER

LETTER NO (P)1521.6

MAY 28 1986

Mr. Fred Rodriguez, President
Environmental Communications, Inc.
P. O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

Subject: Kaiser Development Company Golf Course
EIS Preparation Notice

We have reviewed the subject document and have no comments to offer.

Very truly yours,

TEUANE TOMINAGA
State Public Works Engineer

/jnt

NO RESPONSE NEEDED

MAY 30 1986

DGP 486 8693

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

FRANK F. FASI
MAYOR

DONALD A. CLEGG
CHIEF PLANNING OFFICER

GENE CONNELL
DEPUTY CHIEF PLANNING OFFICER

VW/DGP 6/86-8693

June 6, 1986

Mr. Fred Rodrigues
Environmental Communications, Inc.
P. O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodrigues:

Chapter 343, HRS, EIS for Proposed
Development at Hawaii Kai, East Honolulu
TMK: 3-9-10: Portion of 1
(DGP No. 86/EH-1)

We have received the attached letter from the State Department of Transportation (DOT). We request that you respond to all the DOT's comments and recommendations in the EIS that you are preparing for the proposed development. Please also send to DOT a copy of the Traffic Study appendix which Kaiser Development Company referred to in the Environmental Assessment and Application to amend the East Honolulu Development Plan.

Sincerely,

E. B. CONNELL
Acting Chief Planning Officer

Attach.

GEORGE R. ARIYOSHI
GOVERNOR

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

WAYNE J. YAMASAKI
DIRECTOR

DEPUTY DIRECTORS
JONATHAN K. SHIMADA Ph.D
WALTER T. M. NG
CHERYL D. SOON
ADAM D. VINCENT

IN REPLY REFER TO

STP 8.1347

May 27, 1986

Mr. Donald Clegg
Chief Planning Officer
Department of General Planning
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Clegg:

Environmental Assessment and Application to
Amend the East Oahu Development Plan -
Golf Course 2/1A Parcel
Hawaii Kai, Oahu TMK: 3-9-10: Por. 1

The subject assessment and application was reviewed and the following comments are offered.

The developer should consider an alternate access from Kealahou Street for the industrial service area. However, if the Kalanianaole Highway access is retained, then a left-turn storage lane should be provided along the highway. The proposed roadway improvements should not relieve the developer from continuing to consider long range highway alternatives.

Regarding the development's traffic impact study, our comments are as follows:

1. On pages S-2 and 14, traffic is routed onto Kalanianaole Highway (versus Hawaii Kai roadways) based on some arbitrary assumptions. We believe the diversion of traffic should be based on travel time and a reasonable level of service along both routes.

2. The eastbound A.M. peak hour volumes along Kalanianaole Highway have been steadily increasing. Consequently, the level of service along the single-lane portion of the highway should be analyzed.

3. The level of service determinations should be consistent with the criteria of the Highway Capacity Manual. We note on page 8, a .99 volume-capacity ratio is assigned a level of service E while the same ratio value of .99 is given a level of service E/F on page 22.

4. It should be indicated that traffic signals will be installed by the developer when deemed necessary by the State Department of Transportation.

5. One copy of the technical appendix should be submitted for our review.

We appreciate this opportunity to provide comments.

Very truly yours,

Wayne J. Yamasaki
Director of Transportation

GEORGE R. ARIYOSHI
GOVERNOR

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

WAYNE J. YAMASAKI
DIRECTOR

DEPUTY DIRECTORS
JONATHAN K. SHIMADA, PH.D.
WALTER T. M. HO
CHERYL D. SOON
ARTHUR V. VINCENT

IN REPLY REFER TO

STP 8.1399

June 13, 1986

Mr. Fred Rodriguez, President
Environmental Communications, Inc.
P.O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

EIS Preparation Notice (EISPN)
Golf Course 2/1A Parcel Project

We understand you recently received a copy of our comments on the same development proposal from the City Department of General Planning. Those comments were submitted as part of our review of the project's environmental assessment and application to the City to amend the East Oahu Development Plan.

Since the comments are still considered valid, please accept them as our response to your letter of May 22, 1986 on the subject EISPN.

Do not hesitate to contact us should you have any questions.

Very truly yours,

Wayne J. Yamasaki
Director of Transportation

JUN 18 1986

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ.
PRESIDENT

July 15, 1986

Mr. Wayne J. Yamasaki
Director of Transportation
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Yamasaki:

We are in receipt of your department's comments dated June 13, 1986 on the proposed Golf Course Z/1A project. Your request that prior comments provided to the City Department of General Planning dated May 27, 1986 be considered as your response to the EIS Preparation Notice is noted. Please be advised that we have complied with your request and further, these comments have been provided to the Traffic consultant retained by the applicant who will prepare the Traffic study that will address these concerns.

By copy of this response to the City Department of General Planning, we are also advising them of this action. Thank you for your continuing concern.

cc: Department of General Planning

Very truly yours,

F. J. Rodrigues

FJR:ls

GEORGE R. ARIYOSHI
Governor

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
465 South King Street, #115
HONOLULU, HAWAII 96813

LETITIA N. UYEHARA
Director

TELEPHONE NO.
548-6915

June 3, 1986

Mr. Fred Rodriguez, President
Environmental Communications, Inc.
P.O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

Subject: Kaiser Development Company Golf Course 2/1A
Project Preparation Notice

Low density apartment and residential development are planned along the existing Hawaii Kai golf course. In the past, there have been conflicts between residents and the golf course regarding the liability for damages caused by errant golf shots. We feel that this issue should be addressed along with the two major issues of traffic and sewage treatment. It appears that recent concerns raised regarding the sewage treatment facility's operation and capacity are being properly addressed which we hope will be further detailed in the EIS. The completion of the traffic impact study and its recommendation will also be essential to evaluation of this project.

Sincerely,

Letitia N. Uyehara

Letitia N. Uyehara
Director

JUN 6 1986

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ
PRESIDENT

July 15, 1986

Ms. Letitia N. Uyehara, Director
Office of Environmental Quality Control
State of Hawaii
465 South King Street, #115
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

We are in receipt of your office's comments dated June 3, 1986 on the proposed Golf Course 2/1A project and we respond in the following:

1. Your comments have been forwarded to the applicant for their input and they advise that all practicable means to mitigate errant golf balls will be taken. Measures taken to date include the posting of signs in English and Japanese advising golfers to use irons instead of woods off the tees.

2. MEPAC Services, Inc., who are professional operators of STP sewage Treatment Plant will continue to address all concerns regarding the Wastewater treatment plants operation and capacity.

3. The retained Traffic consultant will discuss in great detail the mitigative measures planned to resolve the traffic generation anticipated by this project's implementation.

Thank you for your initial comments and we look forward to your review and comments on the draft EIS.

Very truly yours,

F. J. Rodriguez

FJR:ls

1188 FORT STREET MALL, SUITE 208 • P. O. BOX 536 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-4161

University of Hawaii at Manoa

Water Resources Research Center
Holmes Hall 283 • 2540 Dole Street
Honolulu, Hawaii 96822

3 June 1986

Mr. Fred Rodriguez, President
Environmental Communications, Inc.
P. O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

Subject: Environmental Impact Statement Preparation Notice, Kaiser Development Company, Hawaii Kai, TMK 3-9-10: Por. of 1

We have reviewed the subject EISPN and have no comment at this time. Thank you for the opportunity to comment. This material was reviewed by WRRC personnel.

Sincerely,

Edwin T. Murabayashi

Edwin T. Murabayashi
EIS Coordinator

ETM:jm

NO RESPONSE NEEDED

JUN 6 1986

EQI PORTI EMPLC

GEORGE R. ARIYOSHI
Governor

STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
3949 DIAMOND HEAD ROAD, HONOLULU, HAWAII 96816-4495

ALFRED T. LUM
Major General
The Adjutant General

PAUL K. NAKAMURA
Colonel, GSC
Deputy Adjutant General

HIENG

JUN 2 1986

Mr. Fred Rodriguez, President
Environmental Communications, Inc.
P. O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

Kaiser Development Company Golf Course 2/1A
Hawaii Kai, Honolulu, Oahu

Thank you for providing us the opportunity to review the above subject project.

We have no comments to offer at this time regarding this project.

Yours truly,

Jerry M. Matsuda

Jerry M. Matsuda
Major, Hawaii Air
National Guard
Contr & Engr Officer

Enclosure

NO RESPONSE NEEDED

JUN 4 1986

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 230
FT. SHAFTER, HAWAII 96858

REPLY TO
ATTENTION OF:

June 4, 1986

Mr. Fred Rodriguez
Environmental Communications, Inc.
P.O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

Thank you for the opportunity to review and comment on the EIS Preparation Notice for Kaiser Development Company Golf Course 2/1A, Hawaii Kai, Oahu. The following comments are offered:

a. A Department of the Army permit is not required for the project.

b. The proposed golf course expansion is in a Zone D designated flood hazard area which is defined as an area of undetermined but possible flood hazard.

Sincerely,

Klauk Cheung
Chief, Engineering Division

JUN 9 1986

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

July 15, 1986

Mr. Klauk Cheung, Chief
Engineering Division
Department of the Army
U.S. Army Engineer District,
Honolulu
Building 230
Ft. Shafter, Hawaii 96858

Dear Mr. Cheung:

We are in receipt of your office's comments dated June 4, 1986 on the proposed Golf Course 2/1A project and we respond in the following:

a) We acknowledge the Department of the Army permit not being required.

b) We further acknowledge the Zone D designation for the project site.

Thank you for your initial comments and we look forward to your review and comments on the draft EIS.

Very truly yours,

F. J. Rodriguez

FJR:ls

DEPARTMENT OF THE NAVY
HEADQUARTERS
NAVAL BASE PEARL HARBOR
BOX 110
PEARL HARBOR, HAWAII 96860-5020

IN REPLY REFER TO
5090
Ser 002B/3986
27 MAY 1986

Mr. Fred Rodriguez, President
Environmental Communications, Inc.
P. O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

ENVIRONMENTAL IMPACT STATEMENT
PREPARATION NOTICE
FOR THE PROPOSED KAISER DEVELOPMENT COMPANY GOLF COURSE

The EIS Preparation Notice for the Proposed Kaiser Development Company Golf Course has been reviewed and we have no comments to offer.

Thank you for the opportunity to review the EIS Preparation Notice.

Sincerely,

HENRY L. RINNERT
[illegible], U.S. Navy
[illegible] Engineer
[illegible]sion of the Commander

NO RESPONSE NEEDED

MAY 29 1986

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
P. O. BOX 50004
HONOLULU, HAWAII
96850

June 13, 1986

Mr. Fred Rodriguez, President
Environmental Communications, Inc.
P.O. Box 536
Honolulu, HI 96809

Dear Mr. Rodriguez:

Subject: EIS Preparation Notice for Kaiser Development Company
Golf Course 1/1A Project, Hawaii Kai, Oahu

We reviewed the subject preparation notice and have no comments to offer.

Thank you for the opportunity to review the document.

Sincerely,

RICHARD H. DUNCAN
State Conservationist

NO RESPONSE NEEDED

JUN 18 1986

United States Department of the Interior

FISH AND WILDLIFE SERVICE
300 ALA MOANA BOULEVARD
P O BOX 50167
HONOLULU, HAWAII 96850

ES
Room 6307

MAY 7 1986

Mr. Fred Rodriguez, President
Environmental Communications, Inc.
P.O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

The Service has reviewed the Environmental Impact Statement Preparation Notice for the Kaiser Development Company Golf Course 2/1A Project and has no comments to offer at this time.

We appreciate this opportunity to comment.

Sincerely yours,

for Ernest Kosaka
Project Leader
Office of Environmental Services

cc: NMFS - WPPO
HDF&W
EPA, San Francisco

NO RESPONSE NEEDED

MAY 28 1986

CONSERVE AMERICA'S ENERGY

Save Energy and You Serve America!

HAWAII KAI NEIGHBORHOOD BOARD NO. 1
P. O. BOX 25804
HONOLULU, HAWAII 96825

June 19, 1986

Mr. Fred Rodriguez, President
Environmental Communications, Inc.
P.O. Box 536
Honolulu, HI 96809

Subject: Environmental Impact Statement Preparation Notice
for the Kaiser Development Company Golf Course 2/1A Project

Dear Mr. Rodriguez:

The Hawaii Kai Neighborhood Board No. 1 does not have any comments at this time.

However, we do wish to be consulted during the preparation of this EIS. We would appreciate receiving copies of the draft EIS when it is published.

Thank you.

Sincerely,
Al Kirchner
Al Kirchner
Chairman

NO RESPONSE NEEDED

JUN 23 1986

SIERRA CLUB, HAWAI'I CHAPTER
PO BOX 11070 HONOLULU, HAWAI'I 96828
(808) 946-8494

22 June 1986

Environmental Communications, Inc.
1146 Fort Street Mall, Suite 200
Honolulu, Hawai'i 96813

Re: EISPN for Kaiser Development Company
Golf Course 2/1A Project

Please put the Honolulu Group of the Sierra Club, Hawai'i Chapter on the list of those wishing to comment on the draft EIS for the subject project.

Please address copy of draft EIS as follows:

Conservation Committee, Honolulu Group
Sierra Club, Hawai'i Chapter
P. O. Box 11070
Honolulu, Hawai'i 96828

We are unable to submit timely comments on the EISPN because, although the cover letter was dated 22 May 1986, the envelope bearing it was dated 18 June 1986.

Sincerely,
James Waddington
James Waddington
Honolulu Group, Conservation Committee

JW:sem

NO RESPONSE NEEDED

JUN 24 1986

HAWAIIAN ELECTRIC COMPANY, INC. - PO BOX 2750 - HONOLULU, HI 96840-0001

EHV 2-1
HV/G

HEI

Brenner Munger, Ph.D., P.E.
Manager
Environmental Department
(808) 548-6880

June 6, 1986

Mr. Fred Rodriguez, President
Environmental Communications, Inc.
P. O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

Subject: Environmental Impact Statement Preparation Notice -
Kaiser Development Company Golf Course

We have reviewed the above EIS Preparation Notice and offer the following comments:

a. Electrical service can be provided from HECO's existing facilities in the area.

b. Reference Paragraph II, H-1 to be found on Page 8. The statement "transmission on lines will be placed underground" is misleading. Only distribution lines will be placed underground at the developer's expense. Transmission lines serving Queen's Substation in the area will remain overhead.

Sincerely,

Brenner Munger

A Hawaiian Electric Industries Company

JUN 10 1986

F. J. RODRIGUEZ
PRESIDENT

ENVIRONMENTAL COMMUNICATIONS INC.

July 15, 1986

Dr. Brenner Munger, Manager
Environmental Department
Hawaiian Electric Company, Inc.
P.O. Box 2750
Honolulu, Hawaii 96840

Dear Dr. Munger:

We are in receipt of your comments dated June 6, 1986 on the proposed Golf Course 2/1A project and we respond in the following:

a) Service availability from HECO's existing facilities in the area is acknowledged.

b) Your comment regarding paragraph II, H-1 on page 8 has been provided to the applicant's engineering staff for confirmation. Clarification will be provided in the draft EIS for your review and comment.

Thank you for your continuing concern.

Very truly yours,

F. J. Rodrigues

FJR:ls

1146 FORT STREET MALL, SUITE 200 • P. O. BOX 536 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-6361

XIII COMMENTS RECEIVED ON DRAFT EIS

XIII. COMMENTS RECEIVED FOR THE DRAFT ENVIRONMENTAL IMPACT STATEMENT PERIOD (DEIS)

ORGANIZATIONS	Date of Comment	Date Comment Received	Comment Response
City & County of Honolulu			
Board of Water Supply	9/18/86	9/23/86	10/23/86
Building Department	9/15/86	9/17/86	NRN
Department of Housing and Community Development	9/22/86	9/29/86	10/23/86
Department of General Planning	9/25/86	9/26/86	10/23/86
Department of Land Utilization	-------	-------	-------
Department of Parks & Recreation	9/15/86	9/18/86	10/23/86
Department of Public Works	9/25/86	9/30/86	10/23/86
Department of Transportation Services	-------	-------	-------
Fire Department	-------	-------	-------
Police Department	9/15/86	9/22/86	NRN
State			
OEQC	9/10/86	9/12/86	10/23/86
Department of Agriculture	9/26/86	10/02/86	10/23/86
Department of Accounting and General Services	9/08/86	9/10/86	NRN
Department of Defense	9/19/86	9/22/86	NRN
Department of Education	9/19/86	10/08/86	10/23/86
Department of Health	10/03/86	10/09/86	10/23/86
Department of Land and Natural Resources	-------	-------	-------
Department of Planning & Economic Development	10/03/86	10/07/86	10/23/86
Department of Social Services and Housing	10/09/86	10/10/86	10/23/86
Department of Transportation	-------	-------	-------
State Energy Office	9/05/86	9/10/86	NRN
University of Hawaii			
Environmental Center	9/08/86	10/10/86	10/23/86
Water Resources Research Center	9/17/86	9/22/86	10/23/86
Federal			
Department of the Army	-------	-------	-------
Department of the Navy	9/10/86	9/12/86	NRN
Soil Conservation Service	10/07/86	10/08/86	NRN

Comments Received for Draft EIS (Continued)

ORGANIZATIONS/AGENCIES	Date of Comment	Date Comment Received	Comment Response
Federal (Continued)			
U.S. Army Corps of Engineers	9/15/86	9/19/86	10/23/86
U.S. Coast Guard	-------	-------	-------
U.S. Fish and Wildlife Service	10/07/86	10/09/86	NRN
Private Organizations/Agencies			
American Lung Association	9/08/86	10/10/86	10/23/86
Hawaiian Electric Company	9/18/86	9/19/86	10/23/86
Office of Hawaiian Affairs	-------	-------	-------
Hawaii Kai Neighborhood Board No. 1	10/05/86	10/07/86	10/23/86
Kuliouou-Kalani Iki Neighborhood Board No. 2	-------	-------	-------
Sierra Club	-------	-------	-------
Waimanalo Neighborhood Board No. 32	-------	-------	-------

NRN: NO RESPONSE NEEDED

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

COPY

September 18, 1986

TO: DONALD A. CLEGG, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

FROM: KAZU HAYASHIDA, MANAGER AND CHIEF ENGINEER
BOARD OF WATER SUPPLY

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR GOLF COURSE 2/1A DEVELOPMENT, TMK: 3-9-10: POR. 1

We appreciate the opportunity to review the environmental document and have the following comments:

1. The developer should submit a detailed water master plan with supporting hydraulic calculations for our review and approval.

2. Construction plans should also be submitted for our review and approval.

3. The developer will be required to pay our Water System Facilities Charges for source.

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

KAZU HAYASHIDA
Manager and Chief Engineer

cc: Mr. F. J. Rodriguez
(Environmental Communications, Inc.)

SEP 23 1986

ENVIRONMENTAL COMMUNICATIONS INC.

October 23, 1986

Mr. Kazu Hayashida
Manager and Chief Engineer
Board of Water Supply
City & County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96843

Dear Mr. Hayashida:

Thank you for your agency's comments on the proposed Golf Course 2/1A project. Your comments as listed will be provided in the normal processing schedule as the project reaches final approval stage of the Land Use Policy review process. Please be assured that there will be compliance with the requested items and that the Project management will work closely with your agency.

Thank you for your continuing interest.

Very truly yours,

F. J. Rodriguez

FJR:ls

1136 FORT STREET MALL, SUITE 200 • P O BOX 536 • HONOLULU HAWAII 96809 • TELEPHONE (808) 521-2321

EB 86-761

September 15, 1986

MEMO TO: MR. DONALD A. CLEGG, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

FROM: HERBERT K. MURAOKA
DIRECTOR AND BUILDING SUPERINTENDENT

SUBJECT: DRAFT EIS FOR GOLF COURSE 2/1A
HANAII KAI, HONOLULU, OAHU

We have reviewed the draft EIS for the subject project and have no comments.

Thank you for the opportunity to review the draft EIS.

HERBERT K. MURAOKA
FOR Director and Building Superintendent

TH:jo
cc: J. Harada
Environmental Communications, Inc.

NO RESPONSE NEEDED

SEP 17 1986

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 523-4191

FRANK F. FASI
MAYOR

MICHAEL M.H. MOON
DIRECTOR

ROBERT MIYAGATO
DEPUTY DIRECTOR

September 22, 1986

Mr. Donald A. Clegg
Chief Planning Officer
Department of General Planning
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Clegg:

Subject: Environmental Impact Statement - Golf Course 2/1A
Hawaii Kai, Honolulu, Oahu

TMK:	3-9-10: Portion of 1
Area:	30 Acres
Existing Use:	Stockpiling Site
Development Plan:	Preservation and Industrial (Amendment)
Public Facilities Map:	Waste Transfer Facility
Present Zoning:	Residential and Preservation
State Land Use:	Urban
Proposal:	To construct 48 single-family units and 430 multi-family units.

We appreciate the opportunity to comment on the Draft EIS for the proposed golf course subdivision in Hawaii Kai, Oahu.

The proposal to construct single-family and multi-family units in the preservation and industrial districts of the Development Plan has been reviewed by the Department of Housing and Community Development.

The Department is mandated to provide housing units for low- and moderate-income families on Oahu. We note that a Development Plan change is needed, and in accordance with the current Departmental policy, we wish to request that at least ten percent of all residential developments be set aside for these groups. This request applies to all zone changes, cluster and planned development-housing applications. Such a requirement is a reasonable means of recapturing the economic benefit conferred by favorable land use allocations and distributing that benefit for the general public benefit.

SEP 29 1986

We request that the developer specify the location of the units, as well as the type of unit (1-bedroom 2-bedroom, etc.) to be provided for low- and moderate-income families.

It should be noted that we are currently reviewing our policy relating to the ten percent set aside and will inform you of any specific policy adjustments adopted.

We note that the Hawaii Kai project has problems with the East Honolulu Wastewater Treatment Plant and traffic conditions on Kalanianaole Highway. We assume that these issues will be resolved before additional developments are permitted in the area.

If you have any questions, please contact Mr. James Miyagi of our Housing Division at 523-4264, who ill assist the developer in formulated a program to provide these units.

We will retain the report for our files.

Sincerely,

MIKE MOON

cc: Mr. F. J. Rodriguez

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

October 23, 1986

Mr. Michael M.H. Moon, Director
Department of Housing and Community
Development
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Moon:

Thank you for your comments on the proposed Golf Course 2/1A project. The applicant has reviewed the specific items noted in your office's comments and advise as follows:

1. The affordable housing requirement is being negotiated with the Department of Housing & Community Development, City & County of Honolulu during the review and processing of the project's zoning application. At this preliminary stage, the final determination of units that will be developed has not been determined. The applicant will continue to work with the City staff to reach a mutually agreeable solution. Final determination of compliance will be based on requests made by the administration and the City Council.

2. The temporary problems currently being experienced at the East Honolulu Sewage Treatment Plant are being resolved with the aid of the Federal EPA and the State Department of Health. You may be assured that all problems will be resolved prior to the final development process.

Thank you for your comments and continuing concern.

Very truly yours,

F. J. Rodrigues

FJR:ls

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

FRANK F. FASI
MAYOR

DONALD A. CLEGG
CHIEF PLANNING OFFICER

GENE CONNELL
PLANNING ADMINISTRATOR

VW/DGP 8/86-9435

September 25, 1986

Mr. Fred Rodriguez, President
Environmental Communications, Inc.
P.O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

Chapter 343, HRS, Draft EIS for Proposed
Development, Golf Course 2/1A, at
Hawaii Kai, East Honolulu
TMK: 3-9-10: portion of 1
DGP No: 86/EH-1

We have received five copies of the subject Draft EIS from you.

In our letter to you regarding this subject dated June 2, 1986 we requested that the EIS include analysis to address three potentially adverse impacts. We first offer our comments below under two items listed in our June 2 letter:

"1. A population increase projected at 1,088 people who will generate additional traffic on Kalanianaole Highway and upon Hawaii Kai streets. More detailed study of traffic impacts is needed."

We note your Traffic Impact Study for Hawaii Kai Golf Course 2/1A subdivision prepared by Wilbur Smith and Associates and dated July 31, 1986. Your "bottom line" appears to be stated on page VII-20 where the net traffic increase projected on Kalanianaole Highway in the vicinity of Kalaniiki Street is estimated as follows:

	Towards Honolulu	Towards Hawaii Kai
Morning Peak Hour	50	No change
Evening Peak Hour	55	-8

SEP 26 1986

We find it difficult to understand how 1,088 new residents of the proposed Golf Course 2/1A development will only generate an additional 50 vehicles in the morning peak hour traffic on Kalanianaole Highway and a reduction of 8 vehicles during the evening peak hour traffic toward Hawaii Kai; please reevaluate these projections and explain them in detail.

"2. The potential adverse impact upon the future population of the proposed project from the nearby sewage treatment plant odors and fumes should be discussed."

We find no analysis or discussion of this potential adverse impact that we requested you to address in the EIS. While you admit that there have been problems with the wastewater treatment and disposal system, the mitigation measures planned to alleviate sewage treatment odors and fumes need to be specifically addressed in the final EIS.

We also offer four additional comments indexed according to the page number of the Draft EIS:

Page I-2

The accepting authority for this EIS is the Department of General Planning, not the Department of Land Utilization.

Page V-21

We believe that Table 5 gives an erroneous impression that all of these public parks and recreational facilities are close to the proposed Golf Course 2/1A Project. Table 5 should be revised by adding the distance in miles from the proposed project for each park or recreational facility listed.

Page VII-8

It is stated that "(t)he proposed Golf Course 2/1A project will be similar to newer developments in Hawaii Kai and is expected to attract an analogous resident market." This statement does not address the developer's plans for a substantial proportion of retired persons and/or "empty nesters." We need clarification upon this point: Is the market for this project to be "analogous to residents of newer developments in Hawaii Kai" or will the residents include a substantial number of retirees and/or "empty nesters"?

Page VII-30

There is an error of considerable magnitude under item "7. Traffic Impacts of a No Action Alternative." The trip calculations assume that 30 acres now in Preservation would be developed into industrial use. The Development Plan Land Use Map for East Honolulu designates 15± acres for industrial use at this site--not 45 acres. This error should be corrected.

Sincerely,

Donald Clegg

DONALD A. CLEGG
Chief Planning Officer

F. J. RODRIGUEZ
PRESIDENT

ENVIRONMENTAL
COMMUNICATIONS
INC.

October 23, 1986

Mr. Donald A. Clegg
Chief Planning Officer
Department of General Planning
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Clegg:

Thank you for your comments on the proposed Golf Course 2/1A project. We have reviewed the comments in conjunction with the applicant and their technical consultants, and the following responses have been prepared.

I. Traffic Impact From Proposed Project

You reference the net traffic increase table appearing on page VII-20. This table perhaps should have included more data rather than merely the "bottom line." Prior to discussing this data, a listing of the key assumptions is important. The key assumptions, reflected in this analysis, include the following:

1. The residential units would generate a similar number of vehicle trips per unit as similar types of units in Hawaii Kai now generate, as confirmed by field counts in October 1985. For example, the proposed 120 low density apartment units result in 38 morning peak hour trips traveling down Kalanianaole Highway, computed as follows:

   120 units - LDA
   .40 trips per unit
   48
   .80 (see assumption #5)
   38 trips

2. The services industrial area includes building home/improvement center, auto repair shops, and warehousing and storage areas.

3. The services industrial area activities would generate traffic volumes typical of those types of uses, as identified nationwide by the Institute of Transportation Engineers.

4. In the morning and evening peak hours, approximately 40 percent of the work trips and about 80 percent of the customer trips to and from the services industrial area would come from Hawaii Kai, with most of the balance from the East Honolulu and Waimanalo areas.

5. For the residential area, 80 percent of the exiting trips in the morning

peak hours and 48 percent of the trips entering the units in the evening peak hour would be to/from the areas of Honolulu Ewa of Kalanianaole Highway.

The above trip rates and distribution factors have been based on Hawaii Kai trip patterns to the extent such data is available. Returning to the data applicable to the project, the change in peak hour traffic on Kalanianaole Highway at Kalaniiki Street which would result from the combined Golf Course 2/1A residential and services industrial area on traffic, including the trip generation numbers, is estimated as follows:

	Towards Honolulu	Towards Hawaii Kai
Morning Peak Hour:		
Golf Course 2/1A resident trips	+105	0
Diversion of Hawaii Kai trips to services Industrial area which would otherwise travel on Kalanianaole	- 55	0
Services Industrial Area trips	0	0
Net Increase on Kalanianaole	+ 50	0
Evening Peak Hour:		
Golf Course 2/1A resident trips	+ 42	+ 76
Diversion of Hawaii Kai trips to Services Industrial Area which otherwise would travel on Kalanianaole	- 7	-114
Services Industrial Area trips	+ 20	+ 30
	+ 55	- 8

These estimated traffic increases reflect the anticipated changes in the distribution of trips into, within and from Hawaii Kai as a result the new job opportunities and new services provided to Hawaii Kai residents by the services industrial area. The services industrial area is expected to provide additional new services not presently available within Hawaii Kai and for which residents must now travel outside to the Honolulu, Kahala and Kailua areas. A large portion of the additional jobs would also likely be held by Hawaii Kai residents thus offsetting some of the future increases in the number of residents who would otherwise commute to employment areas outside Hawaii Kai.

For the morning peak hours, the Golf Course 2/1A residential project

would increase Ewa-bound Kalanianaole Highway traffic at Kalaniiki Street by 105 vehicles, while the services industrial developments would attract 55 vehicle trips from Hawaii Kai residences which would otherwise have been made on Kalanianaole Highway into Honolulu. These diverted trips are primarily work trips, with some trips also made to drop off automobiles for repairs or to pick up building materials or related goods available at the anticipated building supplies/home improvement centers.

The residential and services industrial areas are expected to add little or no Koko Head direction traffic ("No Change") to the Ewa end of Kalanianaole Highway during the morning peak hour. There could be occasional additional delivery-related trips from Honolulu to the services industrial area activities, but this would likely amount to several trips per week during the early morning peak hours.

The increases on the sections of Kalanianaole Highway closer to the project would be larger. During the morning peak hour the Golf Course 2/1A area would generate an estimated 27 and 32 trips to and from other East Honolulu areas, respectively, in addition to the trips into Honolulu, and 13 and 28 trips to and from Windward Oahu, respectively. These vehicle trips are reflected in the traffic forecasts and volume-capacity analysis.

The evening peak hour estimates reflect a similar effect on the volume of Hawaii Kai traffic at the ewa end of Kalanianaole Highway. The Koko Head direction increase in resident trips returning to the Golf Course 2/1A residential area from central Honolulu would be offset by diversion of Hawaii Kai commuter and shopping/service trips to or from the services industrial area which would otherwise have been made on Kalanianaole Highway.

As noted in the preceding table, Koko Head direction traffic would increase by 76 and 30 vehicle trips as a result of the Golf Course 2/1A residential and service industrial projects, respectively, during the evening peak hour, for a total of 106 vehicle trips. However, the services industrial activities would attract a small portion of the working, shopping, and service trips made by Hawaii Kai residents who would otherwise travel to and from central Honolulu for these trips. This diversion would reduce future increases in Hawaii Kai trips on Kalanianaole Highway by an estimated 114 trips and would produce an estimated net reduction of Kalanianaole Highway traffic by eight trips in the peak direction.

In the evening peak hour, the services industrial area uses would divert only a few trips (seven) from traveling inbound from Kalanianaole Highway. This would offset only a small portion of the estimated 42 ewa direction trips by Golf Course 2/1A residents

and the 20 trips from the services industrial area which would use Kalanianaole Highway. This would result in a net increase of 55 trips in the off peak travel direction.

II. Odor Control

MEPAC Services, Inc., operators of the EHWTP, has implemented an odor control program as a high priority assignment. Some measures are already in effect while others are in process. Odors from a wastewater plant generally result from hydrogen sulfide being released into the air as the wastewater goes through the treatment process. Longer detention time in the collection system and warmer temperatures also contribute to sewage septicity and odors.

Injection of air or oxygen into wastewater can reduce odors by chemical conversions of hydrogen sulfides to thiosulfate. Chemicals such as chlorine, hydrogen peroxide and potassium permanganate are oxidizing agents that when combined with odor causing agents form inoffensive by-products. Other chemicals such as Epoleon and DO-94 modify or mask odors.

To combat the long detention time in the collection system, chlorine is presently being added at Pump Station 4, the largest pump station in Hawaii Kai. Injection of air within the force main leaving Pump Station 4 is being investigated.

Chlorine dioxide is also being added to the plant influent (inflow) at the headworks as well as the effluent channel leaving the primary treatment tanks.

The secondary treatment process involves aeration of the primary effluent. A natural musty odor is produced and is the result of an active biological process. Masking/modifying agents such as Epoleon can help reduce odors from this source, if necessary.

The waste activated sludge holding tanks produce odors similar to the secondary treatment aeration tanks. Again, Epoleon can be used to reduce odors.

Anaerobic digesters process the sludge removed during the treatment process. As the sludge decays, gases are produced. This gas is then transported to a gas burner and burned. A propane pilot light and wind screen ensures that the flame does not extinguish and thereby prevent gases from entering the atmosphere.

Only one digester is presently being used. Repair of the second digester is scheduled to commence in October 1986. Bringing the second digester into service will increase the process time and thereby reduce odors from the sludge being dried at the sludge drying beds.

The sludge drying beds are another potential source of odors. Sludge from the anaerobic digesters are placed on drying beds to dewater prior to being hauled offsite. A second digester in operation would increase the process time and result in better degradation of the sludge. Use of Epoleon on the drying beds can help reduce odors.

Alternatives to use of chemical will also be evaluated. These include covering and scrubbing gases. However, these are long-term alternatives which must be evaluated for their cost effectiveness versus chemical treatment.

Finally, the plant expansion to 4.7 mgd in the Fall of 1987 will improve operating efficiency. This should also help reduce odors. In terms of the location of the future residential uses, a 15-acre business service park will serve as a buffer between the plant and the residential uses.

Finally, your attention is directed to Appendix H, which describes in detail, the chronological sequence of events on the East Honolulu Sewage Treatment Plant.

III. Page I-2. The error of designating the Department of Land Utilization as the accepting authority will be corrected in the Final EIS.

IV. Page V-21. The listing as shown on pages V-21-26 was intended to show the full range of recreational amenities and facilities that are located in the Hawaii Kai community. Table V has been revised to add the distance in miles from the proposed project site to the public parks and facilities listed. We are in preliminary discussions with the Department of Parks & Recreation to insure compliance with the Park Dedication Ordinance No. 4621 and as the Golf Course 2/1A project continues through the Land Use Policy review process (Development Plan, Zoning, etc.) the requirements established specifically for this project will be implemented as agreed.

V. Page VII-8. It is difficult to predict the makeup of the future residents of this project at Golf Course 2/1A since the preliminary designs are not final at this stage. It is felt that historical trends of sales and occupancy at the Hawaii Kai Golf Course have been analgous in makeup, but this does not preclude the retiree or "empty nesters" from finding this project appealing. The developer may choose to seek greater participation from the retiree market but this cannot be determined now.

VI. The error of assuming 45 acres of industrial use will be revised in the Final EIS. Pages VII-30, 31 reflect the revisions for the Traffic Impacts of No Action Alternative.

Thank you for your continuing interest and we hope that the response to your comments have been adequate.

Very truly yours,

F. J. Rodrigues

FJR:ls

Attachment

Table 5 (continued)

PUBLIC PARKS AND FACILITIES
HAWAII KAI AREA

Driving Distance from G.C. 2/1A	Existing Parks		Acreage
3.6	Hahaione Community Park		4.09
4.0	Hahaione Neighboring Park		6.20
1.2	Kamiloiki Community Park		9.98
2.1	Kamiloiki Neighborhood Park		7.00
3.0	Koko Head District Park		50.00
.6	Koko Head Sandy Beach Park		28.85
3.5	Maunalua Bay Beach Park		4.00
3.5	Hanauma Bay Beach Park		8.70
3.0	Koko Head Elementary School Park		6.74
.4	Kalama Valley Community Park		6.00
		Total	131.56
	Undeveloped Parks		
4.0	Koko Kai Beach Parks		1.15
N/A	Koko Head Park		1,057.15
		Total	1,058.30
	Other Recreational Areas		
.3	Koko Head Botanical Gardens		200.00
.2	Koko Head Stables		10.00
2.4	Koko Head Firing Range		25.00
		Total	235.00
	School Playgrounds		
	Existing:		
2.1	Kaiser High School		6.46
1.2	Kamiloiki Elementary School		0.75
3.6	Hahaione Elementary School		0.50
3.0	Koko Head Elementary School		1.60
		Total	9.31

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU HAWAII 96813

FRANK F. FASI
MAYOR

TOM T. NEKOTA
DIRECTOR

September 15, 1986

TO: DONALD A. CLEGG, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

FROM: TOM T. NEKOTA, DIRECTOR

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT
GOLF COURSE 2/1A - HAWAII KAI
TAX MAP KEY 3-9-10: POR. 1

We have reviewed the Environmental Impact Statement (EIS) for the proposed Golf Course 2/1A project and make the following comments.

Our comments of the project's EIS preparation notice dated June 13, 1986 has been inserted in Section XII of the report. The recreational concerns we expressed are significant and have not been addressed in the EIS.

The report does not adequately address the recreational impact that the project would have on our public parks in the subject area nor does it not address the method to which the project will comply with the Park Dedication Ordinance No. 4621 requirement.

We would like to apprise the applicant that as part of the planning process, our recreational concerns must be discussed and resolved now for the project to obtain City approvals and permits.

Thank you for the opportunity to comment on the report.

Tom T. Nekota
TOM T. NEKOTA, Director

TTN:ei

cc. Mr. F. J. Rodriguez, Environmental Communications, Inc.
Kaiser Development Company

SEP 18 1986

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ
PRESIDENT

October 23, 1986

Mr. Tom T. Nekota, Director
Department of Parks and Recreation
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Nekota:

Your department's comments on the proposed Golf Course 2/1A project have been reviewed by the applicant and they have indicated that they fully intend to meet the requirements of Ordinance No. 4621 (Park Dedication). They have advised that there will be discussion with your staff on the Project's impacts on the recreational needs of the area.

Finally, as this project continues through the process of land use policy review, the adequacy of the existing facilities and the need for additional facilities will be fully covered. Thank you for your continuing interest.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

INV 86-702

September 25, 1986

MEMORANDUM

TO: MR. DONALD A. CLEGG, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

FROM: RUSSELL L. SMITH, JR., DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

SUBJECT: EIS FOR GOLF COURSE 7/1A, HAWAII KAI DEVELOPMENT
HONOLULU, HAWAII (TMK: 3-9-10: POR. OF 1)

The draft EIS was reviewed by this office and we have the following comments.

1. The Hawaii Kai SIP, also known as the East Honolulu wastewater treatment plant, operates as a public utility under the ownership of the East Honolulu Community Services, Inc. (EHCS, Inc.). Kuliouou/Paiko and Portlock Roads are served by municipal sewers but are tributary areas of the treatment plant.

   The Hawaii Kai SIP operates under the National Pollutant Discharge Elimination System (NPDES) permit program, administered by the State Department of Health. The NPDES permit is renewable up to five (5) years. The present permit will expire on December 31, 1988.

   Permits contain quality requirements that must be met. In addition, each permittee must monitor his discharge to assure the Department of Health that the discharge is in compliance with the limits set by the permit.

   The designed treatment capacity of the Hawaii Kai SIP has been stated to be 3.9 mgd. Available treatment capacity is the difference between average influent (incoming) flows and designed capacity in most cases when the plant is properly operated and maintained according to the design parameters. If the strength and characteristics of the raw wastewater are different from what were assumed in the design of the plant, actual treatment capacity may be greater or less than the designed capacity.

Mr. Donald A. Clegg - 2 - September 25, 1986

   Since questions have been raised on the adequacy of the Hawaii Kai SIP, it would be appropriate that substantiating operating data be provided. The Department of Health who has regulatory control of the plant, can also verify its adequacy and the levels of operation and maintenance provided.

   The environmental impact of the effluent on the receiving waters should also be documented. Presently, the Department of Health has granted a zone of mixing (ZOM) for the Hawaii Kai ocean disposal system. The present ZOM configuration is not known; however, the proposed ZOM in 1971 is still believed to be in force (attached). Under the provisions of a ZOM, the plant effluent is allowed to be assimilated and dispersed within the ZOM without meeting water quality criteria. Outside the ZOM boundary, the diluted effluent must meet water quality standards. To ensure that the provisions of the ZOM are being met, the Department of Health usually requires the discharger to conduct receiving water sampling. No scheduled water quality sampling been performed to determine whether the discharge is meeting water quality standards outside of the ZOM.

2. The proposed residential and apartment development is located upwind of the treatment plant site. However, during kona weather and during night-time periods, wind pattern may be changed and directed towards the proposed development. Most treatment plants have some odors which can be controlled. Unless the Hawaii Kai SIP has an effective operating and maintained odor control system, the present uses at the proposed site should be maintained because of its proximity to the treatment plant site.

3. We do not have any drainage comments.

RUSSELL L. SMITH, JR.
Director and Chief Engineer

Attach.

cc: Environmental Communications, Inc.

1

SEP 30 1986

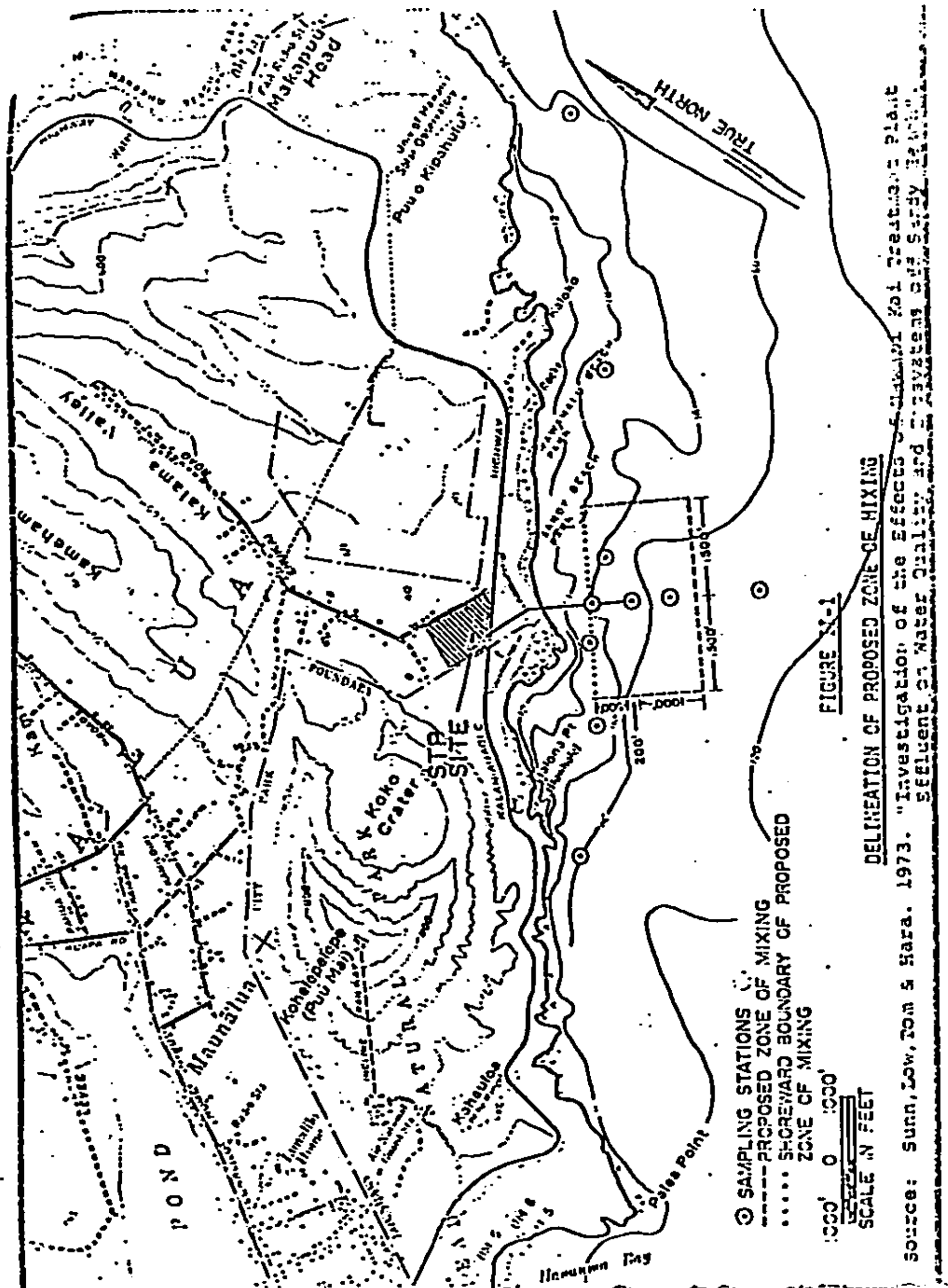


FIGURE II-1
DELINEATION OF PROPOSED ZONE OF MIXING

Source: Sunn, Low, Tom & Hara. 1973. "Investigation of the Effects of [illegible] Kai Treatment Plant Effluent on Water Quality and [illegible]"

F. J. RODRIGUEZ
PRESIDENT

ENVIRONMENTAL
COMMUNICATIONS
INC.

October 23, 1986

Mr. Russell L. Smith, Jr.
Director and Chief Engineer
Department of Public Works
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Smith:

Thank you for your comments on the proposed Golf Course 2/1A project. The comments have been reviewed by the applicant and the technical consultants involved in the mitigative measures being developed to resolve the temporary problems at the East Honolulu Sewage Treatment Plant. The following responses are provided for your review:

1. East Honolulu Wastewater Treatment Plant Adequacy of Operations

As indicated, questions have been raised about the adequacy of the East Honolulu Wastewater Treatment Plant (EHWTP). East Honolulu Community Services, Inc. (EHCS, Inc.) was cited for violation of its NPDES permit by the State Department of Health. Pursuant to a Settlement Agreement dated July 22, 1986 between EHCS, Inc., MEPAC Services, Inc. and the Department of Health as well as a subsequent Order from the U.S. Environmental Protection Agency, the EHWTP and collection system is undergoing substantial repairs, replacement and upgrade. While this work is being done, the EHWTP will not be operating efficiently because of equipment being taken out of service. This work should be substantially completed by October 31, 1986 and the EHWTP stabilized. Shortly thereafter, the State Department of Health, City's Public Works Department and the EPA will be invited to verify effluent quality limits.

These agencies, along with the City's Department of Land Utilization, are members of an Interagency Monitoring Committee organized at the request of the City Council for the purpose of satisfactorily resolving the EHWTP capacity issue and that compliance with its NPDES permit.

2. Zone of Mixing

In response to your second question, all scheduled water quality sampling has been performed to determine whether the discharge is meeting water quality standards outside the zone of mixing. The Zone of Mixing Permit requires quarterly monitoring of water quality in the zone. Thus far, 46 quarterly reports have been submitted to the Department of Health. The results of the latest four quarterly samplings are attached for your information. AFCOS does the laboratory work and Mr. Steve Dollar does the actual diving and underwater observation work.

3. Odor Control

MEPAC Services, Inc., operators of the EHWTP, has implemented an odor control program as a high priority assignment. Some measures are already in effect while others are in process. Odors from a wastewater plant generally result from hydrogen sulfide being released into the air as the wastewater goes through the treatment process. Longer detention time in the collection system and warmer temperatures also contribute to sewage septicity and odors.

Injection of air or oxygen into wastewater can reduce odors by chemical conversions of hydrogen sulfides to thiosulfate. Chemicals such as chlorine, hydrogen peroxide and potassium permanganate are oxidizing agents that when combined with odor causing agents form inoffensive by-products. Other chemicals such as Epoleon and DO-94 modify or mask odors.

To combat the long detention time in the collection system, chlorine is presently being added at Pump Station 4, the largest pump station in Hawaii Kai. Injection of air within the force main leaving Pump Station 4 is being investigated.

Chlorine dioxide is also being added to the plant influent (inflow) at the headworks as well as the effluent channel leaving the primary treatment tanks.

The secondary treatment process involves aeration of the primary effluent. A natural musty odor is produced and is the result of an active biological process. Masking/modifying agents such as Epoleon can help reduce odors from this source, if necessary.

The waste activated sludge holding tanks produce odors similar to the secondary treatment aeration tanks. Again, Epoleon can be used to reduce odors.

Anaerobic digesters process the sludge removed during the treatment process. As the sludge decays, gases are produced. This gas is then transported to a gas burner and burned. A propane pilot light and wind screen ensures that the flame does not extinguish and thereby prevent gases from entering the atmosphere.

Only one digester is presently being used. Repair of the second digester is scheduled to commence in October 1986. Bringing the second digester into service will increase the process time and thereby reduce odors from the sludge being dried at the sludge drying beds.

The sludge drying beds are another potential source of odors. Sludge from the anaerobic digesters are placed on drying beds to dewater prior

to being hauled offsite. A second digester in operation would increase the process time and result in better degradation of the sludge. Use of Epoleon on the drying beds can help reduce odors.

Alternatives to use of chemicals will also be evaluated. These include covering and scrubbing gases. However, these are long-term alternatives which must be evaluated for their cost effectiveness versus chemical treatment.

Finally, the plant expansion to 4.7 mgd in the Fall of 1987 will improve operating efficiency. This should also help reduce odors. In terms of the location of the future residential uses, a 15-acre business service park will serve as a buffer between the plant and the residential uses.

We trust that these responses adequately address the comments raised in your review of the draft EIS. Thank you for your continuing interest.

Very truly yours,

F. J. Rodriguez

FJR:ls

Attachment

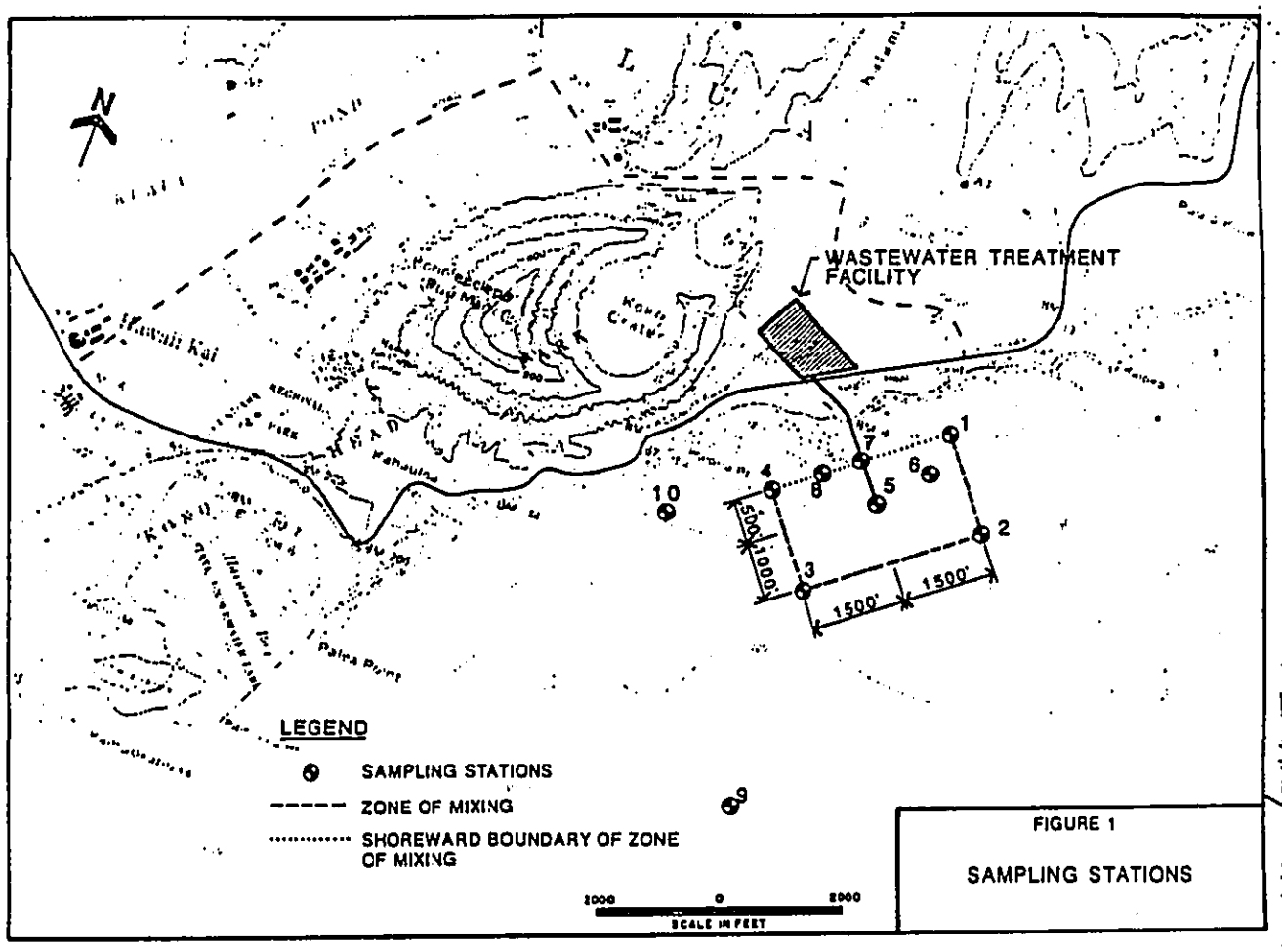


FIGURE 1

SAMPLING STATIONS

TABLE 1

FORTY-SIXTH HAWAII-KAI OUTFALL WATER QUALITY MONITORING RESULTS

August 18, 1986

Station	pH	Temp (°C)	DO Sat. (%)	DO (mg/l)	Turbidity (NTU)	TP (ug/l-P)	PO_4-P (ug/l-P)	TN (ug/l-N)	NO_2+NO_3 (ug/l-N)	Chloro-phyll-A (ug/l)	Total Coliform (#/100 ml)	Fecal Coliform (#/100 ml)
1	8.28	*	*	*	0.22	10	10	124	4	0.23	1	<1
2	8.24	*	*	*	0.18	10	8	126	1	0.11	<1	<1
3	8.24	*	*	*	0.13	11	11	119	<1	0.069	<1	<1
4	8.25	24.0	104.2	6.80	0.16	13	13	135	3	0.21	2	<1
5	8.22	26.8	92.6	6.05	0.17	22	20	140	9	0.13	TNTC	460+
6	8.24	*	*	*	0.15	12	12	137	2	0.12	46	3
7	8.24	26.8	97.9	6.42	0.30	11	11	112	10	0.11	4	<1
8	8.22	26.3	96.4	6.34	0.17	10	10	120	3	0.15	2	1
9	8.23	*	*	*	0.16	9	9	109	2	0.089	<1	<1
10	8.22	24.0	92.6	6.28	0.18	9	9	132	2	0.12	<1	<1

+ NOTE: Estimated count combined non-coliform and coliform colonies totalled over 200

* Meter malfunction

TNTC = Too Numerous To Count

TABLE 2
Substrata & Coral Cover
Hawaii Kai Sewage Outfall

August 1986

Station		Basalt	Limestone	Pocillopora Meandrina	Dead P. Meandrina	Porites Lobata	Porites Compressa	Montipora Patula	Montipora Verrucosa	Palythoa Tuberculosa	Sinularia Abrupta	Sarcothelia Edmondsoni	Montipora Flabbelata	Total Coral Cover
Deep Diffuser d=40-45'	% Cover*		30.8	9.6	5.8	37.5	-	11.5	1.9	-	-	1.9		63.4
	Frequency†		0.54	0.38	0.23	1.00	-	0.31	0.08	-	-	0.08		
Shallow Diffuser d=15-20'	% Cover	32.7	21.1	-	-	7.7	-	-	-	9.6	-	25.0	3.8	46.2
	Frequency	0.84	0.61	-	-	0.31	-	-	-	0.31	-	0.77	0.08	
Control d=35'	% Cover		46.1	9.6	7.6	25.0	9.6	1.9	-	-	-	-	-	46.3
	Frequency		1.00	0.31	0.31	0.85	0.31	0.08	-	-	-	-	-	

*Percentage of Quadrat corners covering indicated substrate or species

†Fraction of Quadrats with at least one covering of indicated species

TABLE 3
Sea Urchin Observations
August, 1986

Station		Echinometra Mathaei	Tripneustes Gratilla	Echinostrephus Aciculatus	Heterocentrotus Mamillatus	Echinothrix Diadema
Deep Diffuser d=40-45'	Relative Abundance*	121	3	42	1	2
	Frequency†	1.0	0.15	0.70	0.08	0.16
Shallow Diffuser d=20'	Relative Abundance	21	-	4	-	-
	Frequency	0.23	-	0.15	-	-
Control d=35'	Relative Abundance	208	5	37	1	-
	Frequency	1.0	0.23	0.76	0.08	-

*Total number of individuals in 13 Quadrats

†Fraction of Quadrats with at least one of the specified species

LEGEND FOR FIGURES 2-4.

Abbreviations of all species and substratum types used in the following bar graphs are listed below.

Coral Species

P.M. = Pocillopora meandrina

d. P.M. = dead Pocillopora meandrina

P.L. = Porites lobata

M.P. = Montipora patula

P.T. = Palythoa tuberculosa

S.A. = Sinularia abrupta

S.E. = Sarcothelia edmondsoni

P.V. = Pavona varians

P.C. = Porites compressa

M.F. = Montipora flabbelata

T.Coral = total coral cover

Substratum Types

L.S. = limestone

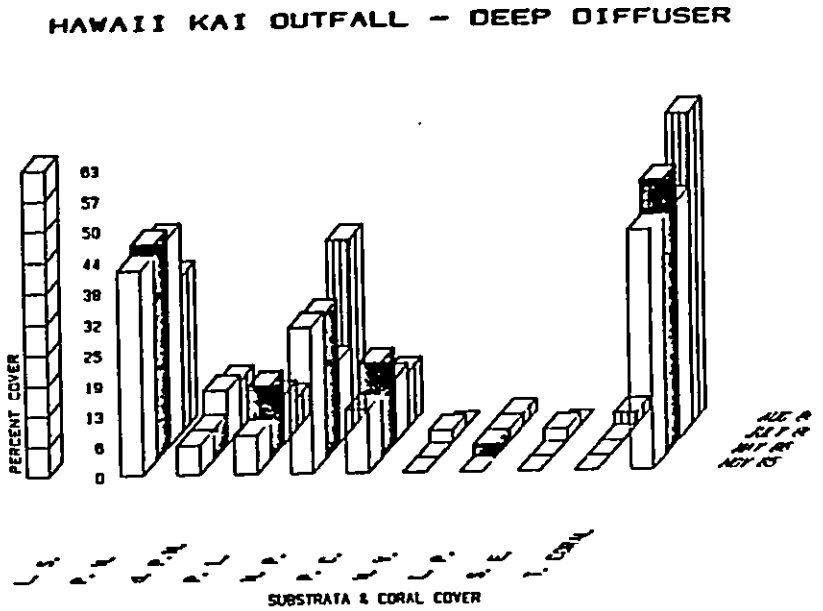


FIGURE 2.

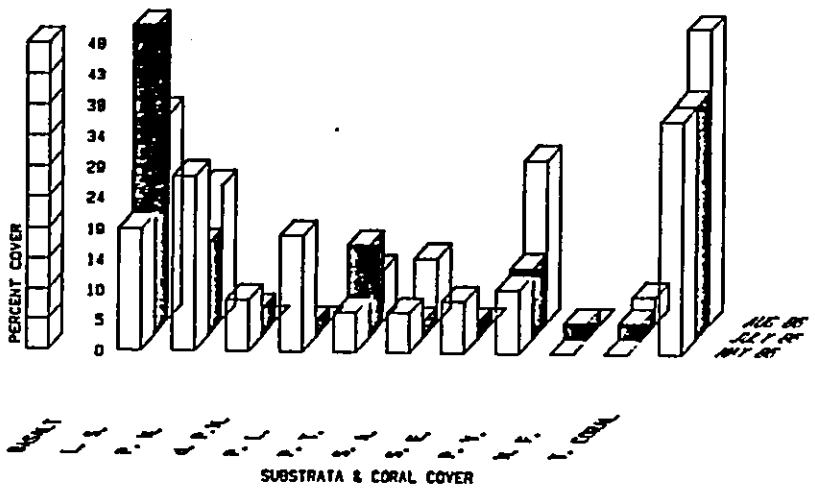


FIGURE 3.

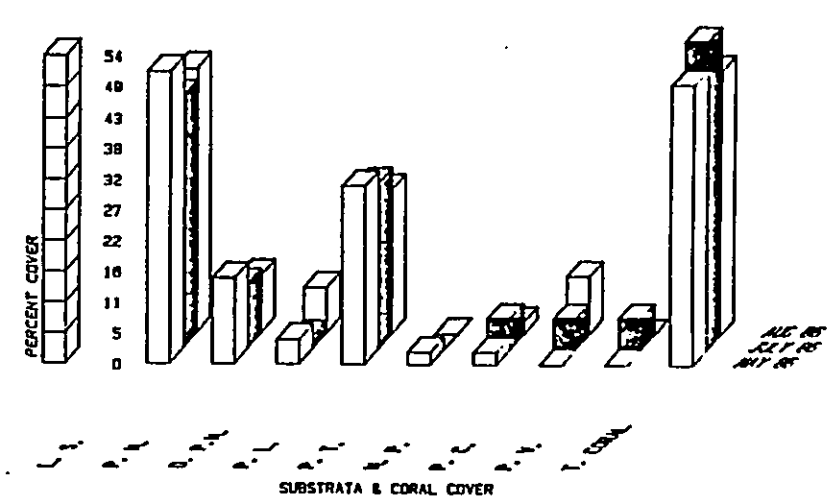
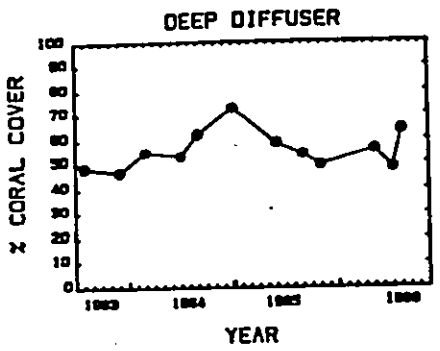
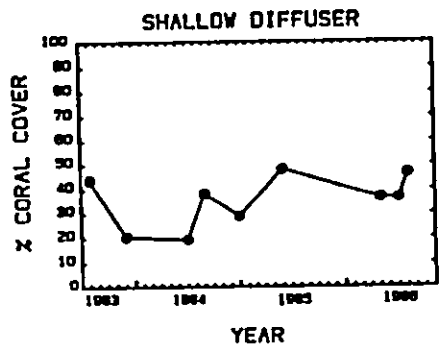


FIGURE 4.


DEEP DIFFUSER
% CORAL COVER
YEAR


SHALLOW DIFFUSER
% CORAL COVER
YEAR

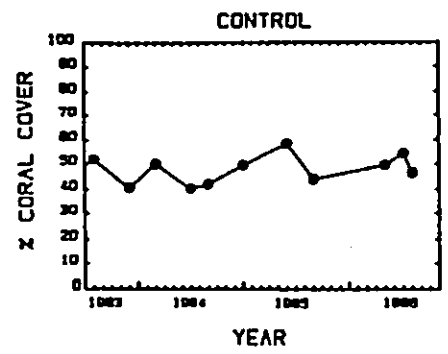

CONTROL
% CORAL COVER
YEAR

FIGURE 5.

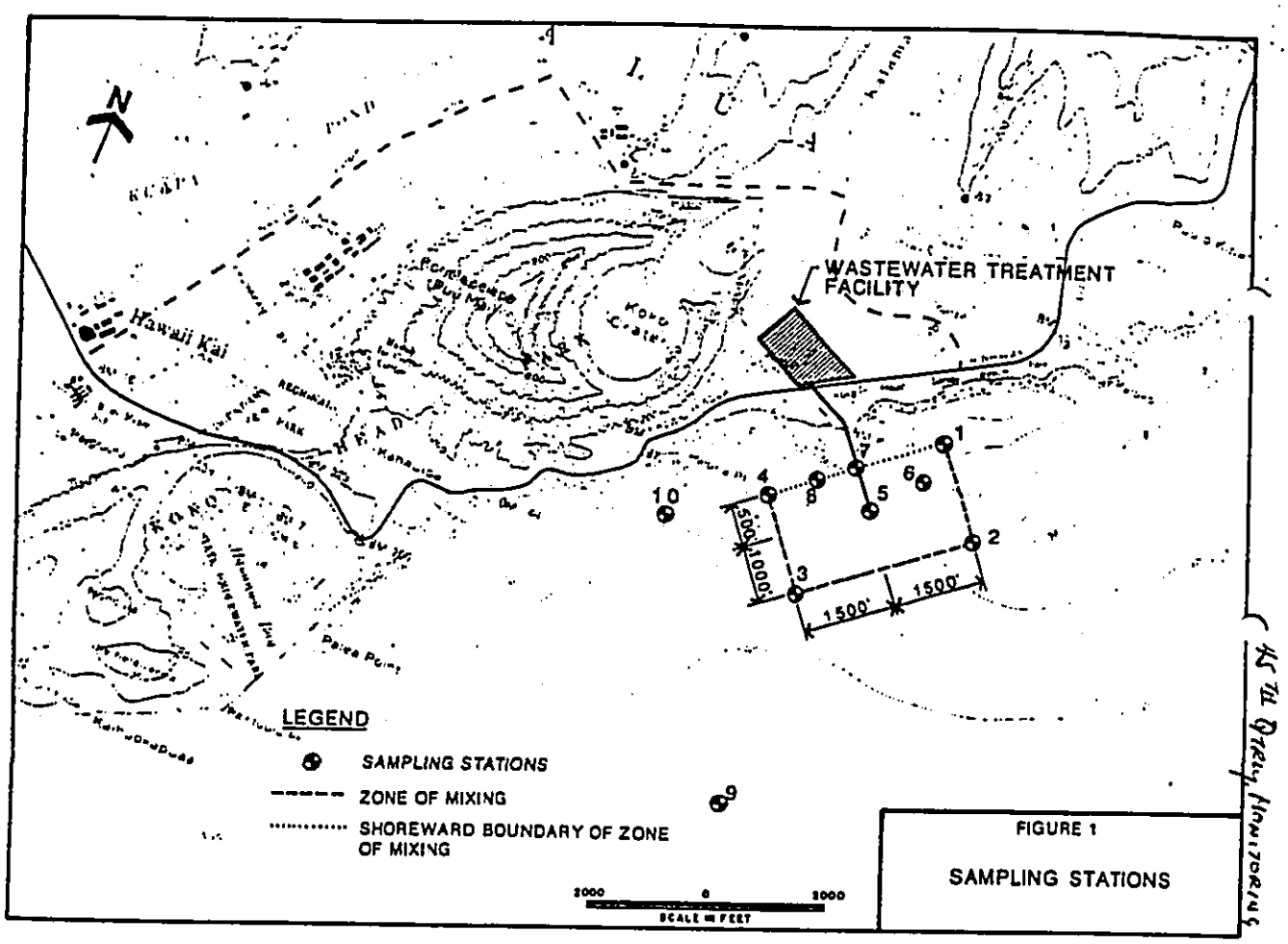


FIGURE 1

SAMPLING STATIONS

TABLE 1

FORTY-FIFTH HAWAII KAI OUTFALL WATER QUALITY MONITORING RESULTS

July 16, 1986

Station	pH	Temp (°C)	DO (mg/l)	Turbidity (NTU)	TP (ug/l-P)	PO_4-P (ug/l-P)	TN (ug/l-N)	NO_2+NO_3 (ug/l-N)	Chlorophyll-A (ug/l)	Total Coliform (#/100 ml)	Fecal Coliform (#/100 ml)
1	8.39	26.2	6.79	0.28	24	18	177	4	0.20	66	<1
2	8.43	26.3	6.79	0.25	10	5	139	1	0.063	12	<1
3	3.45	26.3	6.91	0.36	10	8	144	2	0.059	<1	<1
4	8.46	26.2	6.82	0.21	14	8	362	4	0.24	6	<1
5	8.45	26.2	6.60	0.25	13	6	171	3	0.19	<1	1
6	8.43	26.2	6.82	1.10	25	18	198	3	0.20	59*	70
7	8.44	26.2	6.84	0.18	12	8	563	3	0.17	2	<1
8	8.46	26.3	6.80	0.48	12	8	170	4	0.18	5	<1
9	8.45	26.2	6.82	0.42	8	6	156	2	0.088	2	<1
10	8.45	26.1	6.58	0.44	8	6	170	2	0.140	1	<1

* NOTE: Estimated count combined non-coliform and coliform colonies totalled over 200.

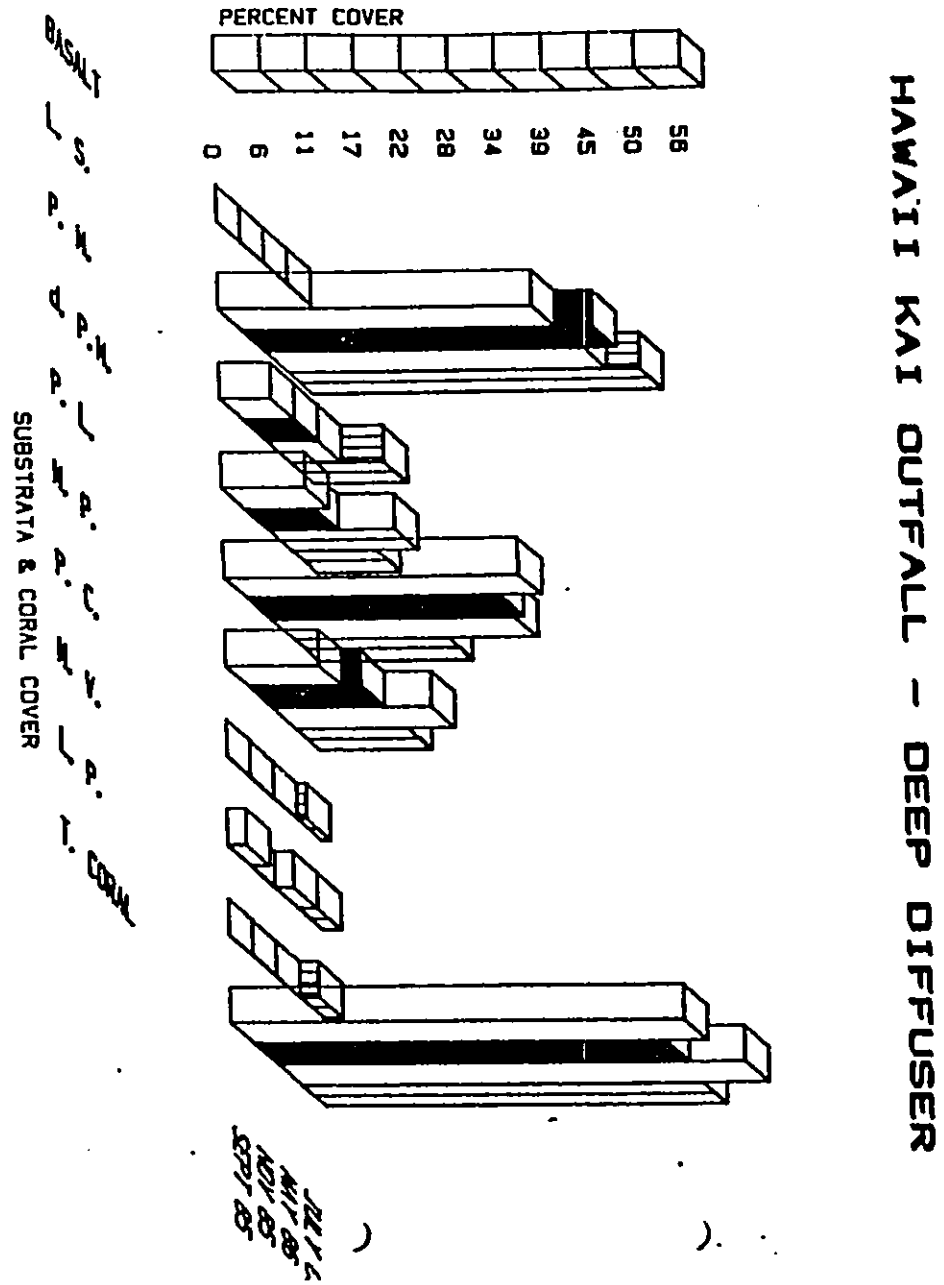


FIGURE 2

HAWAII KAI OUTFALL - DEEP DIFFUSER

LEGEND FOR FIGURE 2.

Abbreviations of all species and substratum types used in the following bar graphs are listed below.

Coral Species

P.M. = Pocillopora meandrina

d. P.M. = dead Pocillopora meandrina

P.L. = Porites lobata

M.P. = Montipora patula

P.T. = Palythoa tuberculosa

S.A. = Sinularia abrupta

S.E. = Sarcothelia edmondsoni

P.V. = Pavona variana

P.C. = Porites compressa

M.F. = Montipora flabbelata

T.Coral = total coral cover

Substratum Types

L.S. = limestone

FIGURE 3

HAWAII KAI OUTFALL - SHALLOW DIFFUSER

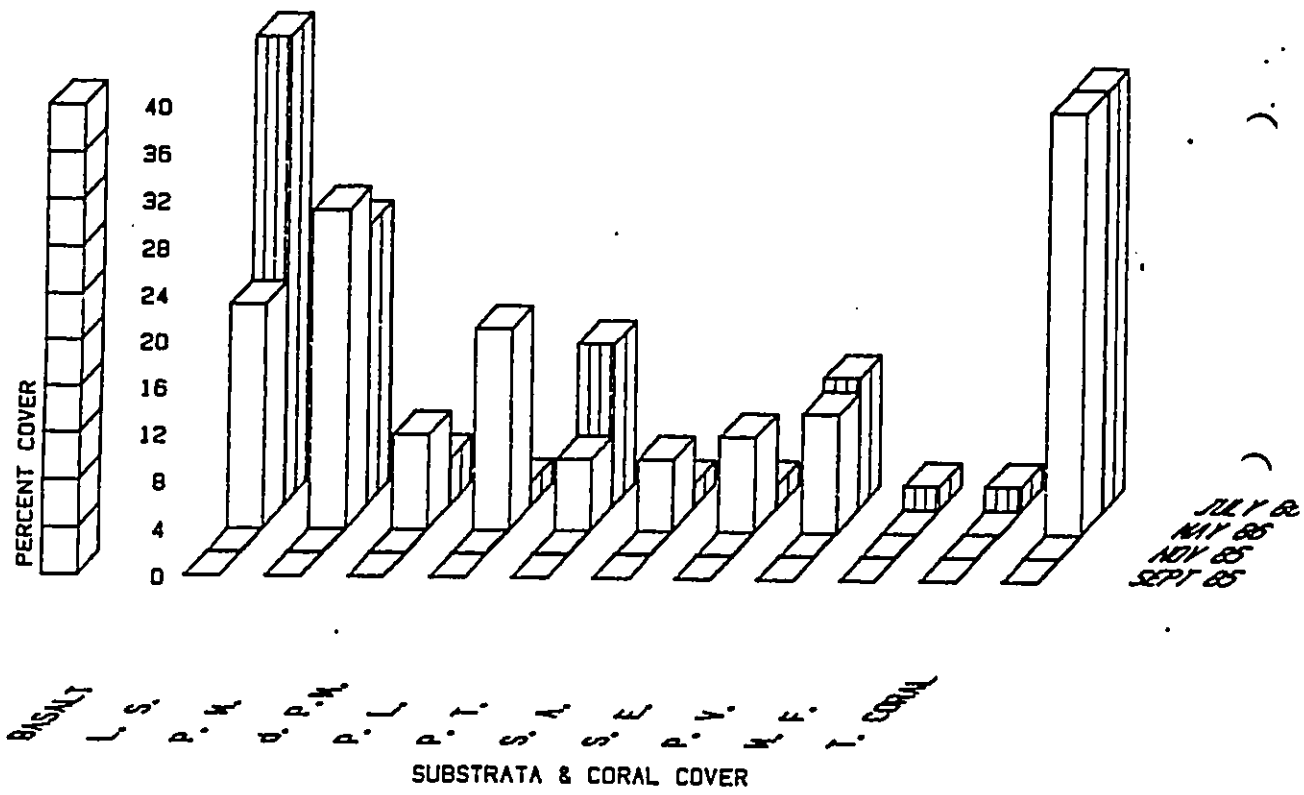


FIGURE 4

HAWAII KAI OUTFALL - CONTROL

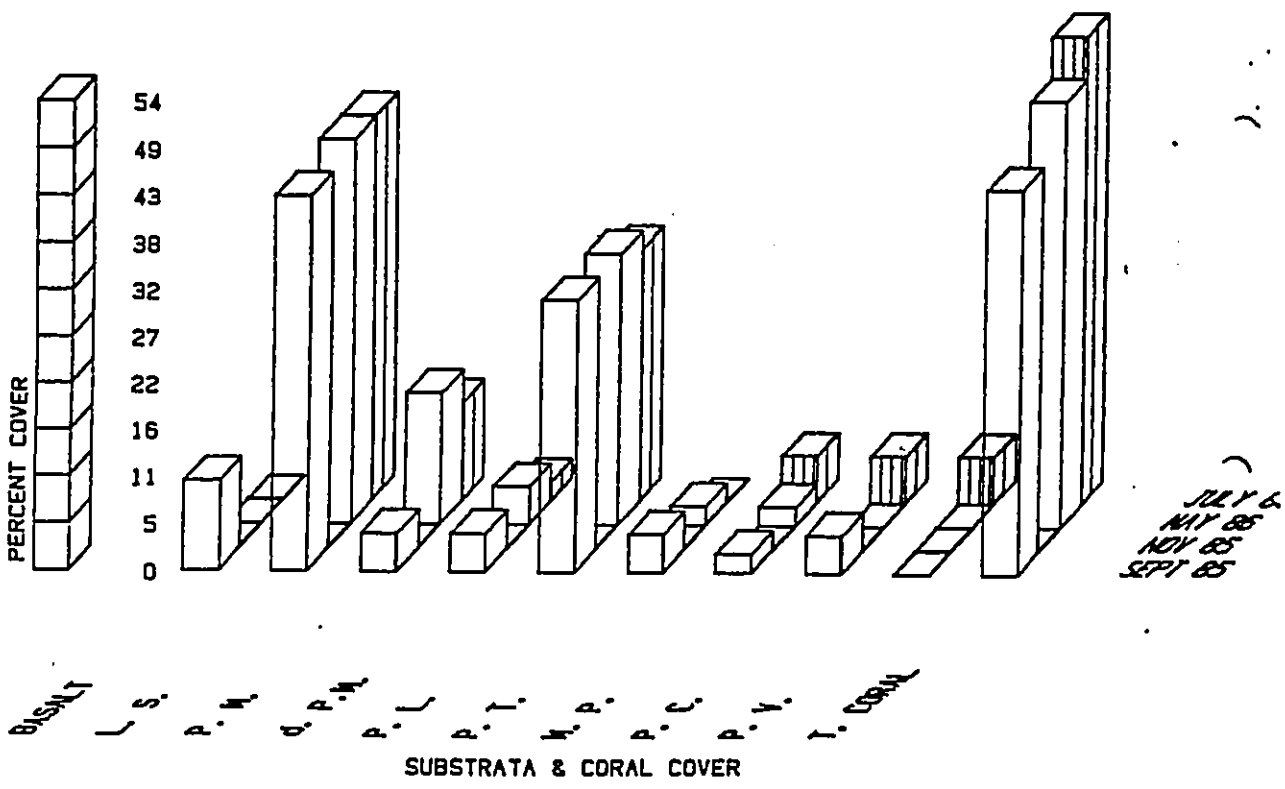


TABLE 2
Substrate & Coral Cover
Hawaii Kai Sewage Outfall
July, 1986

Station		Basalt	Limestone	Pocillopora Meandrina	Dead P. Meandrina	Porites Lobata	Porites Compressa	Montipora Patula	Montipora Verrucosa	Palythoa Tuberculosa	Sinularia Abrupta	Sarcothelia Edmondsoni	Pavona varians	Leptastrea purpurea	Montipora flabbelata	Total Coral Cover
Deep Diffuser d=40-45'	% Cover*		42.4	11.5	9.6	17.3	1.9	13.5	1.9					1.9		48.0
	Frequency†		0.72	0.23	0.23	0.61	0.08	0.46	0.08					0.08		
Shallow Diffuser d=15-20'	% Cover	48.0	13.6	3.8	1.9	13.6				1.9	1.9	11.5	1.9		1.9	36.8
	Frequency	0.64	0.38	0.15	0.08	0.46				0.08	0.08	0.46	0.08		0.08	
Control d=35'	% Cover		44.0	11.5	1.9	28.8	4.6	4.6					4.6			54.1
	Frequency		1.00	0.50	0.08	0.82	0.23	0.15					0.15			

*Percentage of Quadrat corners covering indicated substrata or species

†Fraction of Quadrats with at least one covering of indicated species

TABLE 3
Sea Urchin Observations
July 1986

Station		Echinometra Mathaei	Tripneustes Gratilla	Echinostrephus Aciculatus	Heterocentrotus Mammilatus	Echinothrix Diadema
Deep Diffuser d=40-45'	Relative Abundance*	118	1	12	4	1
	Frequency†	1.0	0.08	0.30	0.16	0.08
Shallow Diffuser d=20'	Relative Abundance	9	-	-	-	-
	Frequency	0.24	-	-	-	-
Control d=35'	Relative Abundance	151	1	22	1	-
	Frequency	1.00	0.08	0.50	0.08	-

*Total number of individuals in 13 Quadrats

†Fraction of Quadrats with at least one of the specified species

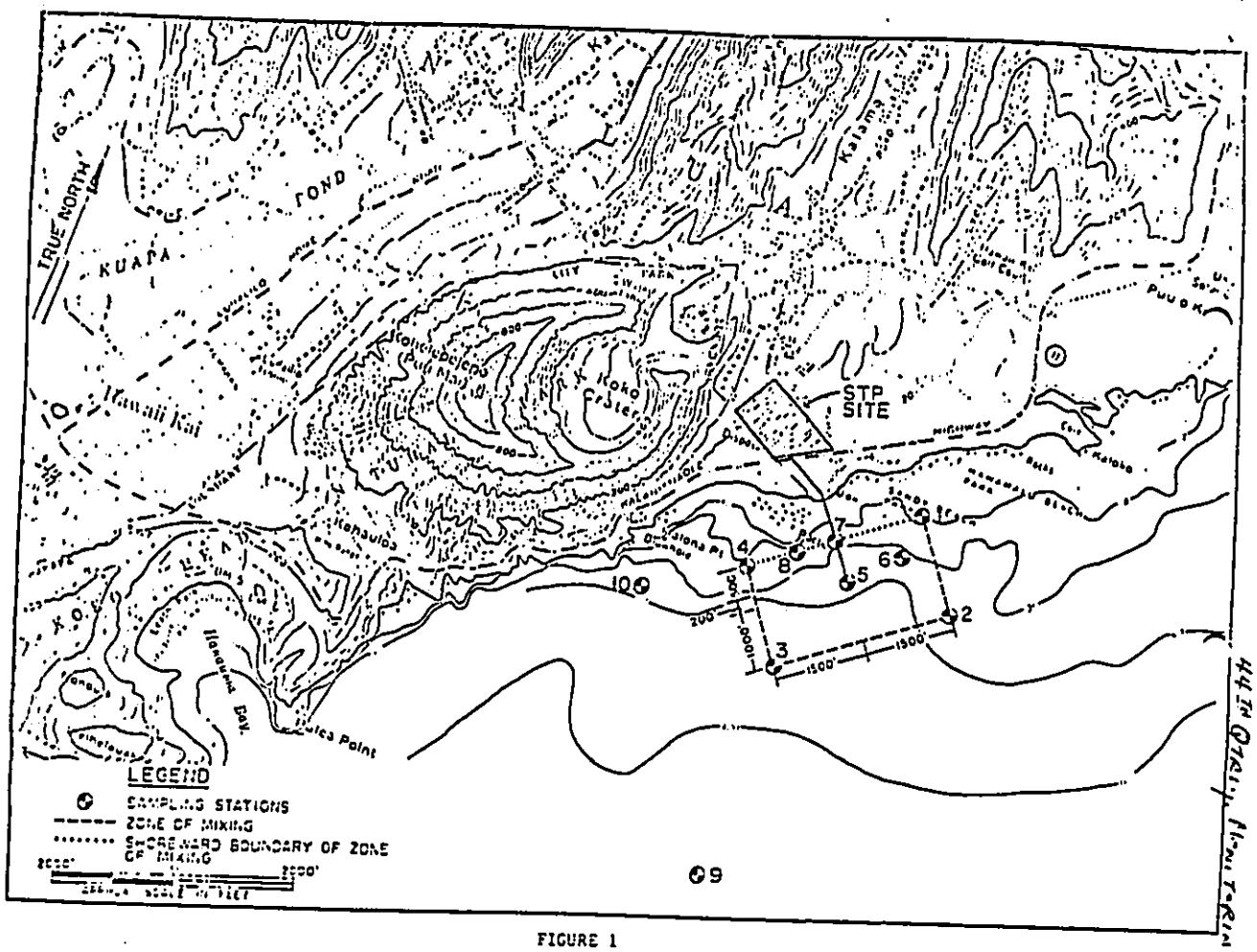


FIGURE 1

SAMPLING STATIONS

TABLE 1

FORTY-FOURTH HAWAII KAI OUTFALL WATER QUALITY MONITORING RESULTS

May 14, 1986

Station	pH	Temp+ (°C)	DO+ (mg/l)	Turbidity** (NTU)	TP (ug/l P)	PO_4-P (ug/l P)	TN (ug/l N)	NO_2+NO_3 (ug/l N)	Chlorophyll-A (ug/l)	Total Coliform (#/100 ml)	Fecal Coliform (#/100 ml)
1	8.18				11	6	150	2	0.18	1	<1
2	8.19				11	6	129	1	0.14	<1	<1
3	8.18				17	13	139	1	<0.10	<1	<1
4	8.17				15	12	136	4	0.15	<1	<1
5	8.13				75	58	338	3	0.42	63*	103*
6	8.15				12	11	154	5	0.18	4	2
7	8.17				15	10	130	6	0.24	<1	<1
8	8.15				31	20	181	3	0.21	5	2
9	8.20				11	7	110	1	<0.10	<1	<1
10	8.20				12	10	119	1	<0.10	<1	<1

* Estimated count/100 mls.
** No data.
\+ Meter malfunction.

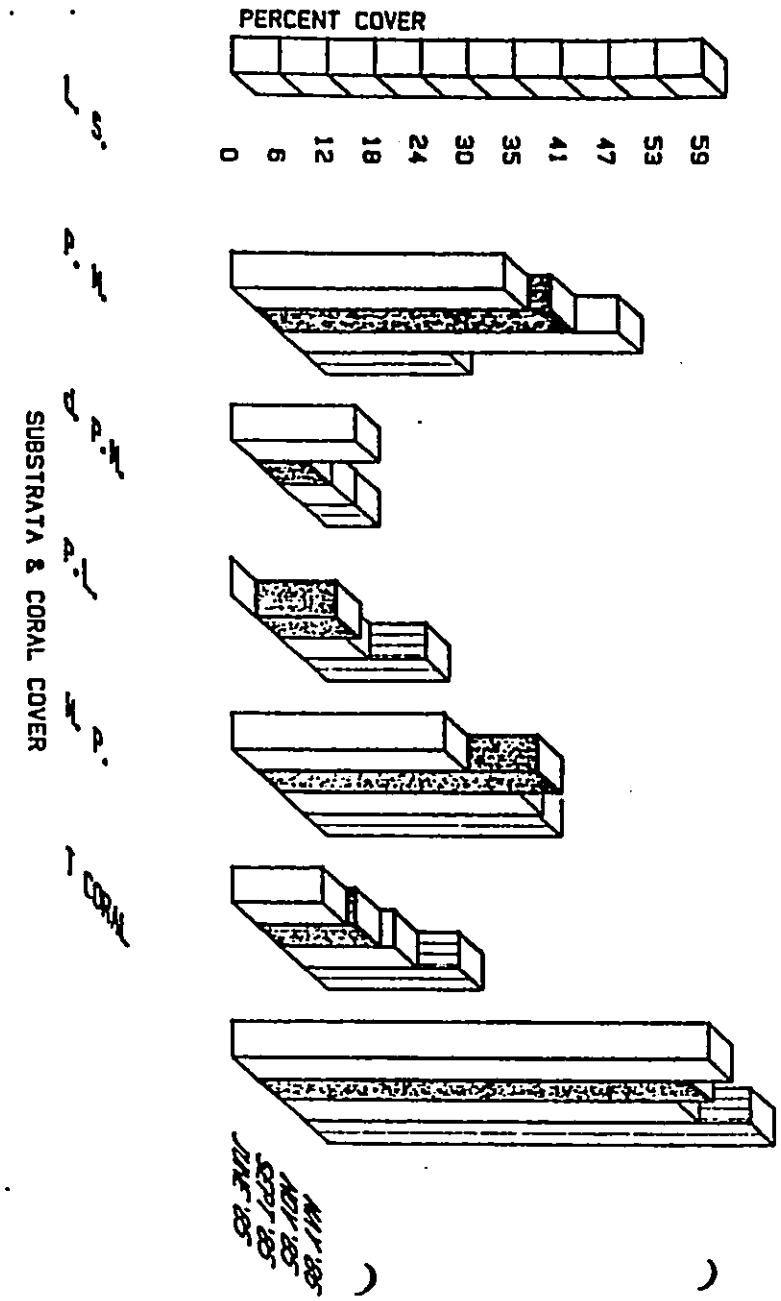


FIGURE 2

HAWAII KAI OUTFALL - DEEP DIFFUSER

LEGEND

Abbreviations of all species and substratum types used in the following bar graphs are listed below.

Coral Species

- P.M. = Pocillopora meandrina
- d. P.M. = dead Pocillopora meandrina
- P.L. = Porites lobata
- M.P. = Montipora patula
- P.T. = Palythoa tuberculosa
- S.A. = Sinularia abrupta
- S.E. = Sarcothelia edmondsoni
- P.V. = Pavona varians
- P.C. = Porites compressa
- P.X. = Pavona explanulata
- T.Coral = total coral cover

Substratum Types

- L.S. = limestone

FIGURE 3

HAWAII KAI OUTFALL - SHALLOW DIFFUSER

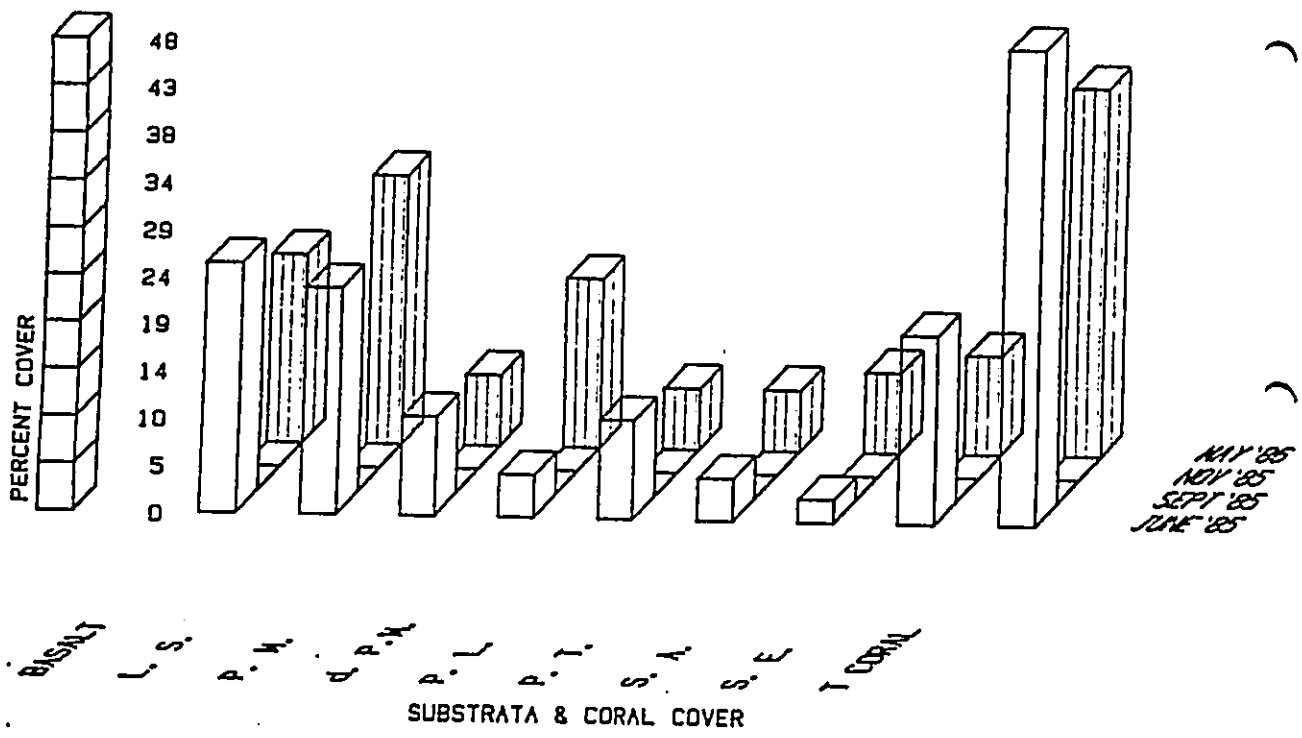


FIGURE 4

HAWAII KAI OUTFALL - CONTROL

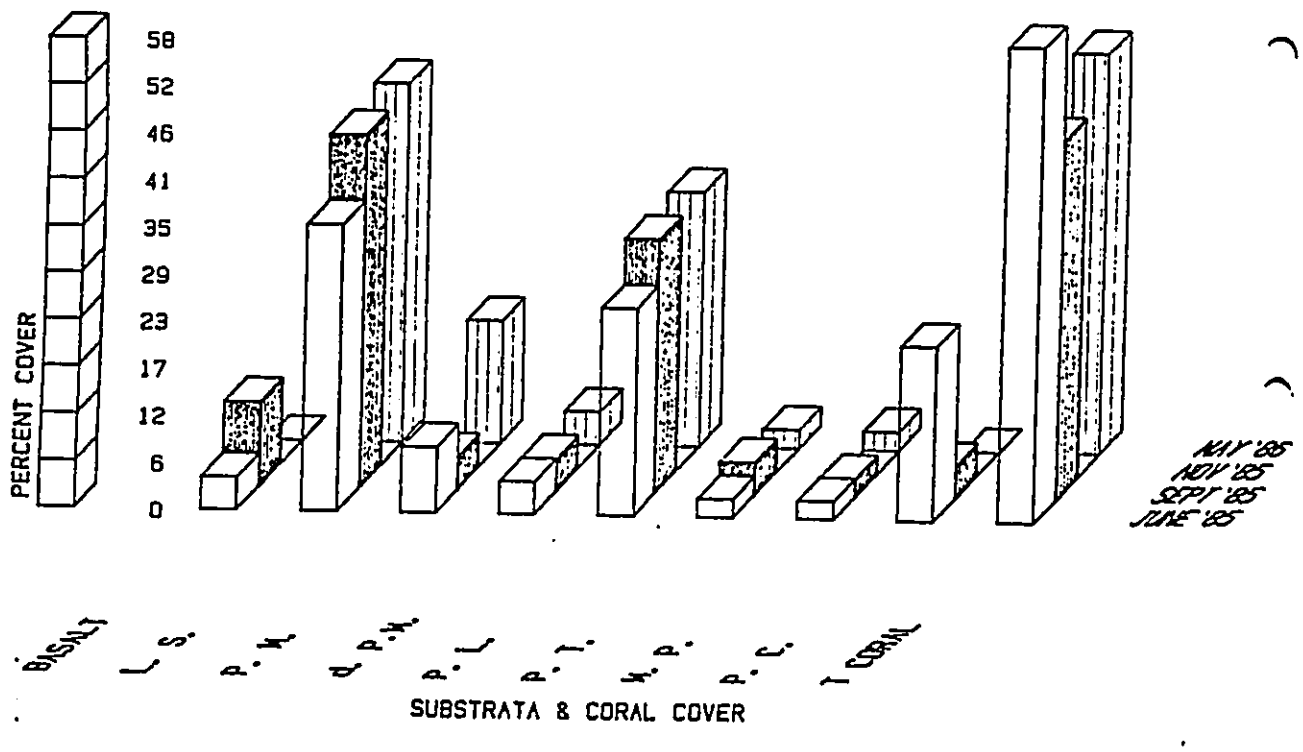


TABLE 2

Substrate & Coral Cover
Hawaii Kai Sewage Outfall

MAY 1986

Station		Basalt	Limestone	Pocillopora Meandrina	Dead P. Meandrina	Porites Lobata	Porites Compressa	Montipora Patula	Montipora Verrucosa	Palythoa Tuberculosa	Sinularia Abrupta	Sarcothelia Edmondsoni	Total Cc Cover
Deep Diffuser d=40-45'	% Cover*	-	17.3	5.8	15.4	28.9	-	19.2	1.9	-	-	-	55.8
	Frequency†		0.46	0.23	0.46	0.76		0.46	0.08				
Shallow Diffuser d=15-20'	% Cover	19.2	26.9	7.7	17.3	5.8	-	-	-	5.7	7.7	9.6	36.5
	Frequency	0.31	0.60	0.08	0.38	0.15				0.15	0.23	0.23	
Control d=35'	% Cover	-	44.2	15.4	3.8	30.77	-	1.9	-	1.9	-	-	49.4
	Frequency		0.92	0.38	0.15	0.76		0.08		0.08			

*Percentage of Quadrat corners covering indicated substrate or species

†Fraction of Quadrats with at least one covering of indicated species

TABLE 3

Sea Urchin Observations

May 1986

Station		Echinometra Mathaei	Tripneustes Gratilla	Echinostrephus Aciculatus	Heterocentrotus Mamillatus	Echinothrix Diadema
Deep Diffuser d=40-45'	Relative Abundance*	68	3	11	3	1
	Frequency†	0.84	0.15	0.30	0.15	0.08
Shallow Diffuser d=20'	Relative Abundance	5	-	-	1	1
	Frequency	0.15	-	-	0.08	0.08
Control d=35'	Relative Abundance	156	4	17	3	1
	Frequency	1.0	0.15	0.38	0.15	0.08

*Total number of individuals in 13 Quadrats

†Fraction of Quadrats with at least one of the specified species

TABLE 2
Substrate & Coral Cover
Hawaii Kai Sewage Outfall
Nov. 1985

Station	Deep Diffuser "-40-45'		Shallow Diffuser "-15-20'		Control "-35'	
	% Cover*	Frequency†	% Cover	Frequency	% Cover	Frequency
Basalt	-	-	NO DATA		NO DATA	
Limestone	42.3	.85				
Pocillopora Meandrina	5.7	.23				
Dead P. Meandrina	7.7	.31				
Porites Lobata	30.0	.75				
Porites Compressa	-					
Montipora Patula	13.5	.38				
Montipora Verrucosa	-	.				
Palythoa Tuberculosa	-	.				
Sinularia Abrupta	-	.				
Sarcothelia Edmondsoni	-	.				
Total Coral Cover	49.2					

*Percentage of Quadrat corners covering indicated substrate or species

†Fraction of Quadrats with at least one covering of indicated species

LEGEND

Abbreviations of all species and substratum types used in the following bar graphs are listed below.

Coral Species

P.M. = Pocillopora meandrina
d. P.M. = dead Pocillopora meandrina
P.L. = Porites lobata
M.P. = Montipora patula
P.T. = Palythoa tuberculosa
S.A. = Sinularia abrupta
S.E. = Sarcothelia edmondsoni
P.V. = Pavona varians
P.C. = Porites compressa
P.X. = Pavona explanulata
T.Coral = total coral cover

Substratum Types

L.S. = limestone

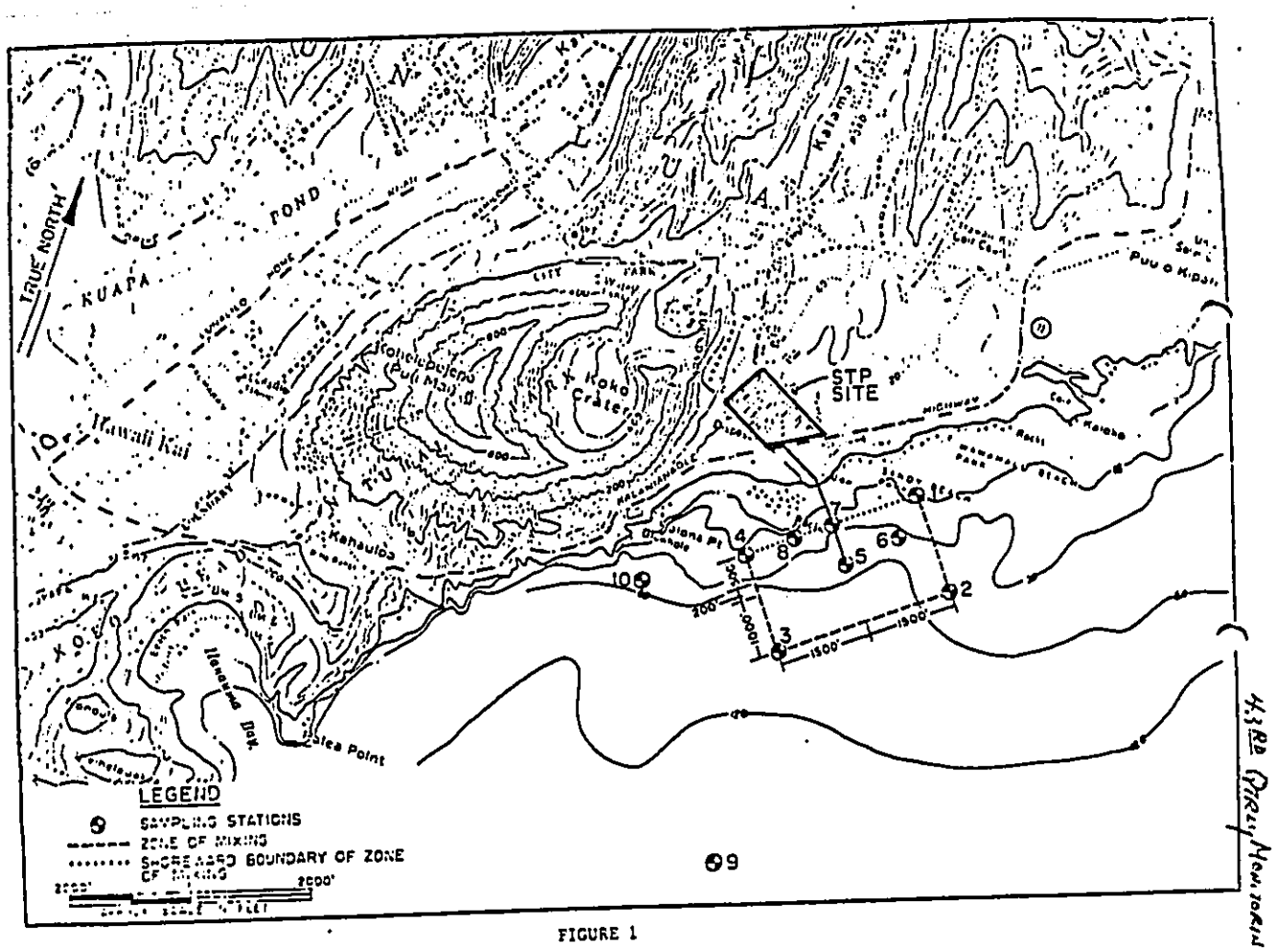


FIGURE 1

SAMPLING STATIONS

TABLE 1

FORTY-THIRD HAWAII KAI OUTFALL WATER QUALITY MONITORING RESULTS

November 13, 1985

Station	pH	Temp (°C)	DO (mg/l)	Turbidity (NTU)	TP (ug/l P)	TN (ug/l N)	NO_2+NO_3 (ug/l N)	Chlorophyll-A (ug/l)	*Total Coliform (#/100 ml)	Fecal Coliform (#/100 ml)
1	8.1	23.9	7.1	0.28	18	119	5	0.33	-	3
2	8.1	24.3	6.3	0.23	25	128	1	1.04	-	<1
3	8.1	24.3	7.2	0.15	18	115	1	0.59	-	<1
4	8.1	24.1	7.3	0.20	18	126	2	0.74	-	3
5	8.1	24.2	8.0	0.21	14	112	1	0.96	-	6
6	8.1	24.1	7.4	0.22	16	117	1	0.68	-	1
7	8.1	24.2	7.1	0.22	13	119	2	0.54	-	1
8	8.1	24.2	7.2	0.17	22	112	1	0.93	-	<1
9	8.1	24.2	7.0	0.11	11	111	1	0.59	-	<1
10	8.1	24.2	7.3	0.11	10	118	<1	0.52	-	<1

* Invalid coliform results occurred during analysis.

FIGURE 2

November 1985

HAWAII KAI OUTFALL - DEEP DIFFUSER

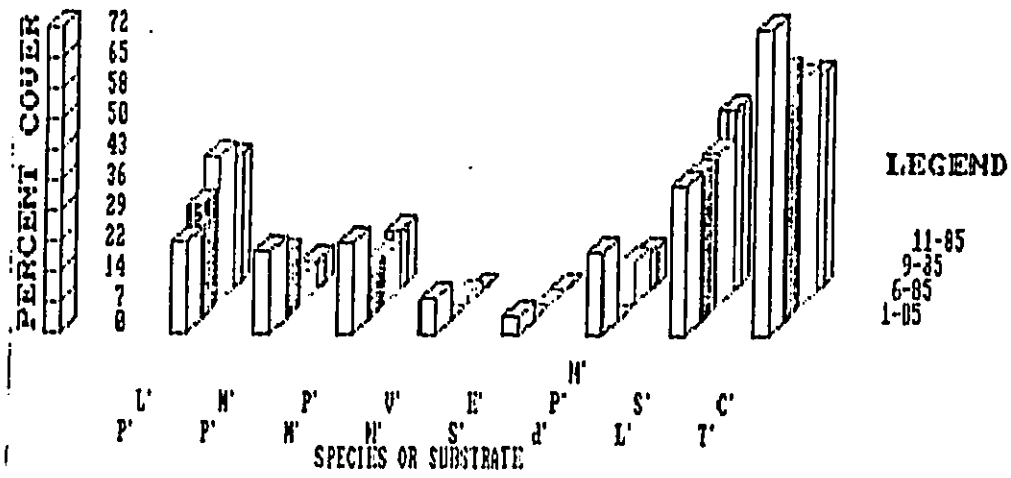


TABLE 3

HAWAII KAI SEWAGE OUTFALL
Sea Urchin Observations

November, 1985

Station		Echinometra Mathaei	Tripneustes Gratilla	Echinostrephus Aciculatus	Heterocentrotus Mammillatus	Echinothrix Diadema
Deep Diffuser d=40-45'	Relative Abundance*	84	5	18	2	1
	Frequency†	1.0	.15	.5	.15	.08
Shallow Diffuser d=20'	Relative Abundance	NO DATA				
	Frequency					
Control d=35'	Relative Abundance	NO DATA				
	Frequency					

*Total number of individuals in 13 Quadrats

†Fraction of Quadrats with at least one of the specified species

GENERAL WEATHER CONDITION DURING THE MONITORING
(November 13, 1985)

WIND:	Estimated 5 knots; East northeast
SEAS:	3-5 foot swell
CURRENT:	Estimated 1-2 knots toward Blow Hole
CLOUD COVER:	Estimated 10 percent

POLICE DEPARTMENT

CITY AND COUNTY OF HONOLULU

1455 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96814 · AND A POLICE [illegible]

FRANK F. FASI
MAYOR

DOUGLAS G. GIBB
CHIEF

MARVIN E. MORIOKA
DEPUTY CHIEF

OUR REFERENCE EFS-EFS

September 15, 1986

TO: DONALD A. CLEGG, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

FROM: DOUGLAS G. GIBB, CHIEF OF POLICE
HONOLULU POLICE DEPARTMENT

SUBJECT: GOLF COURSE 2/1A PROJECT
HAWAII KAI, HONOLULU, OAHU

We have reviewed the environmental impact statement for the Golf Course 2/1A project in Hawaii Kai and find nothing in it that requires comment by this department.

DOUGLAS G. GIBB
Chief of Police

cc: Mr. F.J. Rodriguez
Environmental Communications

SEP 22 1986

NO RESPONSE NEEDED

GEORGE R. ARIYOSHI
GOVERNOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
465 SOUTH KING STREET, ROOM 104
HONOLULU, HAWAII 96813

LETITIA N. UYEHARA
DIRECTOR

TELEPHONE NO.
548-6915

September 10, 1986

Mr. Donald A. Clegg
Chief Planning Officer
Department of General Planning
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Clegg:

Subject: Golf Course 2/1A Draft Environmental Impact Statement, Hawaii Kai, Honolulu, Oahu

We have reviewed the environmental impact statement and offer the following comments:

1. The addition of 478 units will aggravate an already congested traffic condition in East Honolulu particularly during peak hours. Mitigating measures should be implemented to alleviate this problem before proceeding with this development.

2. Problems regarding the Hawaii Kai Sewage Treatment Plant have surfaced recently in the news. There is concern regarding the design capacity of the plant and the proper operation and maintenance of the facility. The situation must be clarified and clear remedies in place prior to implementation of this development.

Thank you for providing us the opportunity to review the EIS.

Sincerely,

Letitia N. Uyehara

Letitia N. Uyehara
Director

cc: F. J. Rodriguez

SEP 12 1986

F. J. RODRIGUEZ
PRESIDENT

ENVIRONMENTAL
COMMUNICATIONS
INC.

October 23, 1986

Ms. Letitia N. Uyehara, Director
Office of Environmental Quality Control
State of Hawaii
465 South King Street, Room 104
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Thank you for your office's comments on the proposed Golf Course 2/1A project. The comments have been reviewed by the applicant's technical consultants and they will be providing the specific mitigative measures to correct existing deficiencies to the appropriate agencies who administer and regulate these areas of effort.

We will continue to work closely with the City Department of Transportation Services and State Department of Transportation in the implementation of transportation program for Hawaii Kai.

The temporary problems currently being experienced at the East Honolulu Sewage Treatment Plant are being resolved with the aid of the Federal EPA and the State Department of Health.

Please be assured that all efforts will be made to meet to the extent practicable, the concerns expressed by your Office as well as those others who have commented in these areas.

Thank you for your continuing interest.

Very truly yours,

F. J. Rodriguez

FJR:ls

GEORGE R. ARIYOSHI
GOVERNOR

JACK K. SUWA
CHAIRPERSON, BOARD OF AGRICULTURE

SUZANNE D. PETERSON
DEPUTY TO THE CHAIRPERSON

State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 So. King Street
Honolulu, Hawaii 96814-2512

Mailing Address:
P. O. Box 22159
Honolulu, Hawaii 96822-0159

September 26, 1986

MEMORANDUM

To: Mr. Donald A. Clegg, Chief Planning Officer
Department of General Planning
City and County of Honolulu

Subject: Draft Environmental Impact Statement (DEIS) for
Golf Course 2/1A
Kaiser Development Company
TMK: 3-9-10: Por. 1 Hawaii Kai, Oahu
Acres: 30

The Department of Agriculture has reviewed the subject Draft Environmental Impact Statement for Golf Course 2/1A - Residential Project and offers the following comments.

The proposal described in the subject document consists of a residential subdivision adjacent to the existing Hawaii Kai Golf Course containing 48 single-family units and 430 multi-family units. No alterations or improvements to the golf course are planned.

References to the Soil Conservation Service Soil Survey (SCS), Agricultural Lands of Importance to the State of Hawaii (ALISH) system, and the Land Study Bureau Detailed Land Classification for the Island of Oahu are correct.

Approval of the proposed project will not adversely affect the agricultural resources of the area nor the plans, programs and activities of the Department of Agriculture.

Thank you for giving us the opportunity to comment.

JACK K. SUWA
Chairman, Board of Agriculture

cc: Mr. F. J. Rodriguez

OCT 2 1986

F. J. RODRIGUEZ
PRESIDENT

ENVIRONMENTAL
COMMUNICATIONS
INC.

October 23, 1986

Mr. Jack K. Suwa, Chairperson
Department of Agriculture
State of Hawaii
1428 South King Street
Honolulu, Hawaii 96814-2512

Dear Mr. Suwa:

Thank you for your comments on the proposed Golf Course 2/1A project. Your office's review of this project's potential impacts on the agricultural resources of the area and the overall jurisdiction of the Department of Agriculture are appreciated. The "no-impact" determination is duly noted.

Thank you for your continuing interest.

Very truly yours,

F. J. Rodriguez

FJR:ls

[illegible] FIRST STREET, SUITE [illegible] • P. O. BOX [illegible] • HONOLULU, HAWAII 96820 • TELEPHONE [illegible]

(P)1881.6

SEP 8 '86

Mr. Donald A. Clegg
Chief Planning Officer
Department of General Planning
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Clegg:

Subject: Golf Course 2/1A
Hawaii Kai, Honolulu, Oahu

We have reviewed the subject document and have no comments to offer.

Very truly yours,

TEUANE TOMINAGA
State Public Works Engineer

SS:jas
cc: Mr. F. J. Rodriguez

NO RESPONSE NEEDED

SEP 10 1986

HIENG

Mr. Donald A. Clegg, Chief
Planning Officer
Department of General Planning
City & County of Honolulu
650 S. King Street
Honolulu, HI 96813

Dear Mr. Clegg:

Golf Course 2/1A
Hawaii Kai, Honolulu, Oahu

Thank you for providing us the opportunity to review the above subject project.

We have no comments to offer at this time regarding this project.

Yours truly,

Jerry M. Matsuda
Major, Hawaii Air
National Guard
Contr & Engr Officer

cc: Environmental Communications, Inc.

SEP 2 2 1986

NO RESPONSE NEEDED

DOV 7186 7681

GEORGE R. ARIYOSHI
GOVERNOR

RECEIVED
'86 SEP 24 AM 11:19
DEPT. OF GENERAL PLANNING
C & C HONOLULU

FRANCIS M. HATANAKA
SUPERINTENDENT

STATE OF HAWAII
DEPARTMENT OF EDUCATION
P. O. BOX 2360
HONOLULU, HAWAII 96804

OFFICE OF THE SUPERINTENDENT

September 19, 1986

Mr. Donald A. Clegg
Chief Planning Officer
Department of General Planning
City and County of Honolulu
650 S. King Street
Honolulu, Hawaii 96813

Dear Mr. Clegg:

SUBJECT: Golf Course 2/1A

Our review of the subject project indicates that the following student enrollment may be generated:

SCHOOL	GRADE	APPROXIMATE ENROLLMENT
Kamiloiki Elementary	K-6	25 - 40
Niu Valley Intermediate	7-8	5 - 15
Kaiser High	9-12	10 - 20

Both Niu Valley Intermediate and Kaiser High schools have sufficient capacity to accommodate the projected secondary level students. Kamiloiki Elementary School may require additional classrooms to accommodate the additional enrollment.

Should there be any questions, please contact Mr. Richard Inouye at 737-4743.

Sincerely,

Francis M. Hatanaka
Superintendent

FMH:jl

cc OBS
C. Suyat, Honolulu Dist.

F. J. RODRIGUEZ,
PRESIDENT

ENVIRONMENTAL COMMUNICATIONS INC.

October 23, 1986

Mr. Francis M. Hatanaka, Superintendent
Department of Education
State of Hawaii
P.O. Box 2360
Honolulu, Hawaii 96804

Dear Superintendent Hatanaka:

Thank you for your comments on the proposed Golf Course 2/1A project. The advice as to the projected classroom demand for student population attributable to this Project has been provided to the applicant for his information. They will be maintaining contact with your department as the proposed project continues through the extensive land use policy review process.

Thank you for your comments and continuing interest.

Very truly yours,

F. J. Rodriguez

FJR:ls

[illegible] AFFIR[illegible] ACTK[illegible] EQUAL[illegible] INTERN[illegible] OVER[illegible]

RECEIVED

'86 OCT 7 PM 2:18

DEPT. OF GENERAL PLANNING C & C HONOLULU

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

October 3, 1986

Mr. Donald A. Clegg, Chief Planning Officer
Department of General Planning
City & County of Honolulu
650 S. King St.
Honolulu, Hawaii 96813

Dear Mr. Clegg:

Subject: Draft Environmental Impact Statement for Golf Course 2/1A, Hawaii Kai

Thank you for allowing us to review and comment on the subject draft EIS. We provide the following comments:

Air Pollution

The draft EIS should clearly address that the State ambient air quality standards (SAAQS) for carbon monoxide may be exceeded should the proposed mitigative measures be unsuccessful or not implemented. The study by Barry Root indicated that carbon monoxide levels significantly above the SAAQS may result if either the proposed ride sharing program or the high occupancy vehicle lane project is unsuccessful or not implemented.

The use of herbicides in the maintenance of the golf course may impact the surrounding residents. The EIS does not and should address this potential problem which may be compounded by the meteorological conditions, vaporization, or oversprays.

Wastewater Disposal

The draft EIS should include:

1. Construction schedule for the 0.8 MGD expansion;
2. A discussion of DOH's and EPA's enforcement order. A copy of the orders should be included in the EIS;
3. A discussion of all the improvements EHCS will make on the sewerage system; and
4. A summry discussion that the Hawaii Kai WWTP operates with a NPDES permit and must meet the 30/30 effluent limits.

Sincerely yours,

JAMES K. IKEDA
Deputy Director for
Environmental Health

KS:ao

ENVIRONMENTAL COMMUNICATIONS INC.

October 23, 1986

Mr. James K. Ikeda
Deputy Director for
Environmental Health
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801

Dear Mr. Ikeda:

Thank you for your comments on the proposed Golf Course 2/1A project. The applicant and the technical consultants have reviewed the comments and they provide the following responses:

Air Pollution

1. The excerpt from Barry Root's Air Quality study will be included in the section dealing with Anticipated Impacts and Mitigative Measures. The excerpt will be on pp. VII-34.

   Herbicide usage at the Hawaii Kai Golf Course can be a factor on the proposed project but it is unlikely since the usage of these chemicals are controlled by State Department of Agriculture certification of commercial sprayers/applicators. Kaiser Development Company no longer owns the Golf Course, but a check with the current operator revealed that site specific application is the current practice, and areawide broadcasting of herbicides is not permitted.

Wastewater Disposal

2. The four items relative to the wastewater treatment plant at East Honolulu are described as requested in your comments.

   The expansion of the East Honolulu Wastewater Treatment Plant (EHWTP) to 4.7 mgd will be going out to contractor's bid month-end October 1986. By Fall 1987, the new circular clarifier should be in place and operational.

   On June 3, 1986, the Department of Health (DOH) issued a Notice and Finding of Violation (Docket No. 86-PIE-EOW-13) citing East Honolulu Community Services, Inc. (EHCS) with violations of its National Pollutant Discharge Elimination System (NPDES) permit. EHCS is a subsidiary of applicant and a public utility providing wastewater service to Hawaii Kai users. On July 22, 1986, EHCS, DOH and MEPAC Services, Inc., operators of the EHWTP, entered into a Settlement Agreement whereby EHCS agreed to a compliance schedule and an administrative penalty of $10,000, $5,000 of which was suspended pending compliance with the Settlement Agreement.

On August 1986, the U.S. Environmental Protection Agency (EPA) issued its Finding of Violation and Order for two sewer spills occurring on January 16, 1986 and June 3 and 4, 1986 and violations of effluent limits set forth in EHCS' NPDES permit.

Copies of both Finding of Violation and the Settlement Agreement are provided in Appendix H.

EHCS has met the various deadlines for compliance set forth in the EPA Order and the Settlement Agreement.

EPA's Order and the Settlement Agreement contain amongst other requirements a comprehensive maintenance system including preventative maintenance. EHCS has completed or is in the process of implementing the following:

1. An Infiltration/Inflow study has started, including TV inspection of the sewer collection lines. This study will identify areas where significant salt water may be entering the system so that corrective measures can be taken. This study will also identify lines that need repairs/replacement because of deterioration and age.

2. Ultrasonic/capacitance high wet well level detectors have been ordered for all seven pump stations. This system will reinforce the reliability of the automatic pump response at the pump stations. An engineering report of pump station safeguards and a redundancy program has been done and additional back-up equipment to ensure reliability will be provided.

3. A new baffle system is being installed at the secondary clarifiers to eliminate short-circuiting.

4. The anaerobic digester which is now out of service is scheduled for cleaning and inspection in October 1986. Repairs will then commence and the unit brought back in service thereafter.

5. The aeration diffusers are being repaired and should be completed by the end of October 1986. This should improve the efficiency of the aeration units.

6. The headworks are expected to be redesigned and rebuilt.

7. An odor control program has been implemented although not all of the work has been completed. This process will include air injection systems and use of chemicals to reduce odors. Pretreatment at the pump stations is also being implemented. Longer term alternatives are also being investigated.

8. A landscaping plan, irrigation system and repainting program for the treatment plant has begun.

9. Other normal maintenance/replacement and repair work is continuing.

The EHWTP operates under a NPDES permit and must meet certain criteria set forth in the permit including effluent discharge limitations of not more than 30 mg/l for a 30-day average for Biochemical Oxygen Demand and suspended Solids. The Permit also requires proper operation and maintenance of all systems.

Thank you for your continuing interest and concern.

Very truly yours,

F. J. Rodriguez

FJR:ls

DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT

Roger A. Ulveling

Ref. No. P-5231

October 3, 1986

The Honorable Donald A. Clegg
Chief Planning Officer
Department of General Planning
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Clegg:

Subject: Draft EIS for Kaiser Golf Course 2/1A Project, Hawaii Kai, Oahu

We have reviewed the subject draft environmental impact statement (DEIS) and offer the following comments.

1. Figure 2 (page III-3) depicts the proposed Development Plan (DP) designations of low density apartment, medium density apartment, and residential for the 30-acre parcel. It would be useful if the existing DP and County zoning were also mapped for reference in describing the proposed amendment.

2. The DEIS indicates that "steeper land" on the project site at the base of Koko Crater will remain in preservation and goes on to describe maximum building height alternatives designed to "insure protection of the view of the crater." (pp.VI-6 and VI-7) A portion of the proposed residential project may, according to the land uses described in the DEIS, alter the eastern rim of Koko Crater, thus impacting Koko Crater's geologic, scenic, and cultural values. The EIS should detail these impacts especially in light of a previous proposal by the National Park Service to designate Koko Crater as a National Natural Landmark. An overlay of the project area on a topographic map would assist in identifying preservation areas and analyzing these impacts. In addition, we recommend that lots intruding onto the slopes be retained in open space.

3. The view plane study described in the DEIS should be expanded to include views of the proposed development from Kalanianaole Highway and nearby public beaches. Koko Crater is part of the Koko Rift Zone, a prominent row of volcanic vents of post-erosional Honolulu volcanic series. This geologic complex

contains one of the best, if not the best, examples of tuff cones in the islands. The largest and best preserved cone in the Koko Rift is Koko Crater. Taken in total with the sea, Koko Crater and the adjoining cones and craters becomes one of our State's outstanding scenic areas. Its scenic beauty is based upon its wild, rugged, and natural character and is enjoyed by resident and tourist alike especially as viewed from Kalanianaole Highway and the nearby beaches.

4. Various concerns have been expressed about the odors and fumes emanating from the sewage treatment plant (STP) and their impact on adjacent residential properties. The EIS should describe expansion plans for the plant and how its increased size and volume may affect nearby residents as this area and other areas within the STP service system are developed.

5. The DEIS review of the State Housing Plan (Pg. VI-1) does not discuss the relationship of the proposed project to the housing needs of low- and moderate-income households. Priority Guidelines of the Hawaii State Plan which may relate to the proposed project include those contained in Section 226-106, HRS, affordable housing. This review should also examine relevant objectives and policies for facility systems, Section 226-14 through Section 226-17, HRS, the Hawaii State Plan.

Thank your for the opportunity to review and comment on the subject document.

Very truly yours,

Kent M. Keith

cc: Office of Environmental Quality Control
Mr. F. J. Rodriguez, President
Environmental Communications, Inc.

OCT 7 1986

P. J. RODRIGUEZ
PRESIDENT

ENVIRONMENTAL
COMMUNICATIONS
INC.

October 23, 1986

Mr. Kent M. Keith, Director
Department of Planning and
Economic Development
P.O. Box 2359
Honolulu, Hawaii 96804

Dear Mr. Keith:

Thank you for your comments on the proposed Golf Course 2/1A project. The comments have been provided to the applicant and their consultants and the following responses have been prepared.

1. The current DP and Zoning designations are provided in Section III-4,5 and the maps do not reflect these designations at the present time.

2 &

3. We regret any misunderstanding in the description of the proposed project on pages VI-6,7 that would mislead a reviewer to think that any proposed residential improvements will be sited on the slopes of Koko Crater. We have included additional photographs of the scale model of the project to show the view planes as seen from various vantage points (Kalanianaole Highway, Queen's Gate residential subdivision, and the beach areas makai of the site). These photos will provide a reviewer a clearer perspective of the proposed project site and the careful attention paid to the site planning with regard to intrusion on Koko Crater.

4. MEPAC Services, Inc., operators of the EHWTP, has implemented an odor control program as a high priority assignment. Some measures are already in effect while others are in process. Odors from a wastewater plant generally result from hydrogen sulfide being released into the air as the wastewater goes through the treatment process. Longer detention time in the collection system and warmer temperatures also contribute to sewage septicity and odors.

   Injection of air or oxygen into wastewater can reduce odors by chemical conversions of hydrogen sulfides to thiosulfate. Chemicals such as chlorine, hydrogen peroxide and potassium permanganate are oxidizing agents that when combined with odor causing agents form inoffensive by-products. Other chemicals such as Epoleon and DO-94 modify or mask odors.

   To combat the long detention time in the collection system, chlorine is presently being added at Pump Station 4, the largest pump station in Hawaii Kai. Injection of air within the force main leaving Pump Station 4 is being investigated.

   Chlorine dioxide is also being added to the plant influent (inflow) at the headworks as well as the effluent channel leaving the primary treatment tanks.

   The secondary treatment process involves aeration of the primary effluent. A natural musty odor is produced and is the result of an active biological process. Masking/modifying agents such as Epoleon can help reduce odors from this source, if necessary.

   The waste activated sludge holding tanks produce odors similar to the secondary treatment aeration tanks. Again Epoleon can be used to reduce odors.

   Anaerobic digesters process the sludge removed during the treatment process. As the sludge decays, gases are produced. This gas is then transported to a gas burner and burned. A propane pilot light and wind screen ensures that the flame does not extinguish and thereby prevent gases from entering the atmosphere.

   Only one digester is presently being used. Repair of the second digester is scheduled to commence in October 1986. Bringing the second digester into service will increase the process time and thereby reduce odors from the sludge being dried at the sludge drying beds.

   The sludge drying beds are another potential source of odors. Sludge from the anaerobic digesters are placed on drying beds to dewater prior to being hauled offsite. A second digester in operation would increase the process time and result in better degradation of the sludge. Use of Epoleon on the drying beds can help reduce odors.

   Alternatives to use of chemical will also be evaluated. These include covering and scrubbing gases. However, these are long-term alternatives which must be evaluated for their cost effectiveness versus chemical treatment.

   Finally, the plant expansion to 4.7 mgd in the Fall of 1987 will improve operating efficiency. This should also help reduce odors. In terms of the location of the future residential uses, a 15-acre business service park will serve as a buffer between the plant and the residential uses.

   Finally, your attention is directed to Appendix H, which describes in detail, the chronological sequence of events on the East Honolulu Sewage Treatment Plant.

5. The affordable housing requirement is being negotiated with the Department of Housing & Community Development, City & County of Honolulu during the review and processing of the project's zoning application. At this

preliminary stage, the final determination of units that will be developed has not been determined. The applicant will continue to work with the City staff to reach a mutually agreeable solution. Final determination of compliance will be based on requests made by the administration and the City Council.

Thank you for your comments and continuing concern.

Very truly yours,

F. J. Rodriguez

FJR:ls

4 1986

GEORGE R. ARIYOSHI
GOVERNOR

LETITIA H. UYEHARA
DIRECTOR
TELEPHONE NO.

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
465 South King Street, Room 104
HONOLULU, HAWAII 96813

September 3, 1986

Dear Reviewer:

Attached for your review is an Environmental Impact Statement (EIS) that was prepared pursuant to Chapter 343, Hawaii Revised Statutes and Chapter 11-200, Administrative Rules, EIS Rules:

TITLE: Golf Course 2/1A

LOCATION: Hawaii Kai, Honolulu, Oahu

CLASSIFICATION: Applicant Action

Your comments or acknowledgments of no comments on the EIS are welcomed. Please submit your reply to the accepting authority or approving agency:

Mr. Donald A. Clegg, Chief Planning Officer
Dept. of General Planning
City & County of Honolulu
650 S. King St.
Honolulu, HI 96813

Please send a copy of your reply to the proposing party:

✓ Mr. F. J. Rodriguez, President
Environmental Communications, Inc.
P.O. Box 536
Honolulu, HI 96809

Your comments must be received or postmarked by: October 8, 1986

If you have no further use for this EIS, please return it to the Office of Environmental Quality Control.

Thank you for your participation in the EIS process.

9/5/86
No comments:
Environmental Quality Division
DLNR

SEP 10 1986

86:PLNG/6203

October 9, 1986

Mr. Donald A. Clegg
Chief Planning Officer
Department of General Planning
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Clegg:

Thank you for the opportunity to review and comment on the Draft Environmental Impact Statement for Golf Course 2/1A in Hawaii Kai, Oahu.

In reviewing the draft Environmental Impact Statement, we note that the City and County of Honolulu, Department of Housing and Community Development has provided comments to address allocating ten per cent (10%) of the project to the low and moderate income population. However, the draft Environmental Impact Statement does not address this issue.

The Hawaii Housing Authority (HHA) would like to recommend that at least ten per cent (10%) of the units for the project be set aside for low and moderate income families. We further recommend that the developer work with the City and County Housing agency or the HHA to meet the need. We request that the developer keep HHA apprised of the progress of the development.

For any further questions, please contact Colette Sakoda of my staff at 848-3226.

Sincerely,

RUSSELL N. FUKUMOTO
Executive Director

OCT 10 1986

F. J. RODRIGUEZ,
PRESIDENT

ENVIRONMENTAL
COMMUNICATIONS
INC.

October 23, 1986

Mr. Russell N. Fukumoto
Department of Social Services
& Housing
State of Hawaii
P.O. Box 17907
Honolulu, Hawaii 96817-0907

Dear Mr. Fukumoto:

Thank you for your comments on the proposed Golf Course 2/1A project at Hawaii Kai. The applicant has reviewed your agency's comments and advises that the affordable housing requirement will be negotiated with the City & County Department of Housing & Community Development.

As the project continues through the lengthy land use policy review process, your office will be kept apprised of the progress.

Thank you for your comments and continuing concern.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

1164 FORT STREET MALL, SUITE 200 • P.O. BOX 1410 • HONOLULU, HAWAII 96806 • TELEPHONE (808) 521-2427

University of Hawaii at Manoa

Environmental Center
Crawford 317 • 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 948-7361

October 8, 1986

RE:0444

Mr. Donald A. Clegg
Department of General Planning
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Clegg:

Draft Environmental Impact Statement
Hawaii Kai Golf Course 2/1A Subdivision
Hawaii Kai, Oahu

The above cited document addresses the environmental impacts relative to the proposed residential subdivisions adjacent to the existing Hawaii Kai Golf Course. This review was prepared with the assistance of Matthew Spriggs, Anthropology; Paul Ekern, Soils and Agronomy; Scott Derrickson and Walington Yee, Environmental Center.

The key issues of concern include: traffic impacts, inadequacy of the sewage treatment plant facilities, archaeological resources, drainage, and impacts to existing park lands.

Traffic

The traffic impact study presented in Appendix C is based on "weekday morning peak hour (7-8 am)" and "weekday evening peak hour (4-5 pm)" traffic volumes. The time of the Sunday morning and evening "peak hour" is not given. Since the traffic impact study is dated July 31, 1986, we assume that the traffic data represent counts made during the summer months. If that is the case, the data will significantly understate the conditions prevalent during the 9 months of the year when school is in session and the traffic study would be inadequate. The Final EIS should indicate when the traffic counts were taken. If they represent summer conditions then a second set of data taken when school is in session should be required prior to acceptance of the Final EIS.

It is noted on pages 6-7, that the excessive traffic volumes (congestion) in recent years has resulted in a "spreading of the peak" traffic during weekdays. This peak now covers approximately a 2 hour period each morning and an additional 2 hours each evening with level of service of E and Even F over much of Kalanianaole highway. We are not as familiar with the specific peak hour periods on weekends, however, it is our understanding

that they may be even longer than the weekday peak periods and the level of service at these times varies from D to F. The Final EIS should include a table summarizing the traffic flows for each hour period, as measured over several days, for each of the intersections or roadways covered so that the peak hour(s) would be quite clear and the "average" or "usual" conditions would be apparent. In evaluating the significance of traffic impacts one needs to know if the problems extend over just 1 hour or if they persist over twice (or more) that length of time.

With the exception of the tables on pages 4 and 10, there is no indication of the input or assessment of the significance of the Sunday data. Nearly all other tables merely indicate morning and evening peak hour traffic without specifying whether the data is limited to weekend data or includes Sunday data also. Do these other tables include the Sunday morning and evening peak flows?

The concluding remarks of the traffic impact study suggest that the small increase in volume generated by the proposed development will not have a "noticeable"/"measurable" effect on the already over loaded Kalanianaole highway system. Technically this may be correct. If one assumes that the effect of yet additional cars on a highway already at LOS of E or F may not be that noticeable, i.e., if you are stopped in traffic, it makes little difference to the individual how many cars are stopped. The key unknown, however, is the duration of that LOS. Inasmuch as this project, will contribute to the cummulative traffic problem in this area, accurate and valid traffic assessment and full presentation of the data obtained should be included in the Final EIS.

Sewage Treatment Plant

The current problems with the inadequacy of the Hawaii Kai Sewage Treatment Plant are well documented and need not be repeated here except to note that regardless of the design capacity (p. VII-38) the STP cannot now handle the existing waste generated in Hawaii Kai. Therefore, to state that the plant can process an additional 500,000 gpd seems inappropriate and inaccurate at this time.

We further call attention to the proposed industrial development and its potential impact on the sewage system and the near shore environment. The ocean outfall for the Hawaii Kai sewer system is relatively short and located just offshore from one of the most heavily used beach parks outside of Waikiki. The effluent has been observed to surface under some climatic conditions. An evaluation of the sewer system and outfall may be necessary if industrial wastes are to be accommodated.

Archaeology

The present archaeological assessment only provides recommendations for future studies. It does not evaluate the existing resources, therefore, it does not provide substantive data upon which potential impacts can be measured.

We note that an intensive subsurface testing program is recommended for the undisturbed portion of the site and concur with this recommendation. However, no details of the proposed methodology are given for this survey. Will it consist of test pits, core samples, or backhoe excavated trenches? What kind of sampling strategy is to be used and so on? Clarification is needed on this issue. Hand coring would not seem to constitute a reliable method of subsurface investigation in these kinds of substrate in the experience of archaeologists working in Hawaii. Regularly spaced test pits and/or mechanical excavation are recommended in this case. Subsurface testing, adequate sampling, and rigorous methodology is needed to adequately assess the archaeological resources in this area. We would appreciate the receipt of a copy of the research design for the subsurface survey, and the final archaeological report for our records.

Drainage

On page VII-4, we note that the estimates on storm water runoff volume are based on the 1962 Rainfall Frequency Atlas of the Hawaiian Islands. There is a newer document, Rainfall Frequency Study for Oahu, published in 1984 which should be used. The 1984 values are slightly higher than the 1962 values. We bring this matter to your attention since we understand that serious drainage problems are being experienced in some of the valleys in Hawaii Kai due to inadequate sizing of the drainage systems. On Papalao Street for example, the drainage ditch cannot carry the usual runoff and frequently overflows.

Park Lands

We note that concern has been expressed by the City and County Parks Department over the proximity of the riding stables, Koko Head District Park, and the proposed residential and industrial development. These assorted and quite diveregent land uses can be mutually accomodated only by careful allotment of buffer zones and appropriate lands caping. The DEIS does not clearly indicate how these buffer zones and access roads will be incorporated.

We appreciate the opportunity to provide comments on this document.

Yours truly,

Jacquelin N. Miller
Acting Associate Director

cc F. J. Rodriguez
Patrick Takahashi
Walington Yee
Scott Derrickson

ENVIRONMENTAL COMMUNICATIONS INC.

F. J. RODRIGUEZ
PRESIDENT

October 23, 1986

Mrs. Jacquelin N. Miller
Acting Associate Director
Environmental Center
University of Hawaii at Manoa
Crawford 317
2550 Campus Road
Honolulu, Hawaii 96822

Dear Mrs. Miller:

We are in receipt of your office's comments dated October 8, 1986 on the proposed Golf Course 2/1A project. The applicant and the retained consultants provide the following responses to each comment:

1. Traffic

All of the weekday traffic counts were conducted during the school year. The counts were also taken on different days so as to achieve "average" or "usual" conditions.

In terms of weekend traffic, conditions are less congested on Kalanianaole Highway along the entire corridor than is the case on weekdays. The one exception to this is the stretch of Kalanianaole Highway impacted by Hanauma Bay traffic which runs from Kealahou Street in East Hawaii Kai. This is why data pertaining to Sunday conditions at Kealahou Street is included in the study. Sunday peak hour conditions vary depending on the location. The morning peak hour varies from between 11:00 a.m. and 2:00 p.m. The evening peak hour varies from between 3:00 p.m. and 6:00 p.m.

Regarding the impact on Kalanianaole Highway, several facts are important. Earlier this year, the Honolulu City Council approved Kaiser Development Company's Marina Zoning project. The Council did reduce the number of units, however, from 2,400 to 1,780. The Golf Course 2/1A project comprises 468 units. The planned rideshare program and traffic engineering measures that accompanied the Marina Zoning should result in a combination of travel mode change and capacity increase to accommodate both the downsized Marina Zoning project traffic and the Golf Course 2/1A traffic along Kalanianaole Highway. The 2,248 units comprising the two projects is obviously less than the 2,400 units that were in the original Marina Zoning package and will result in slightly fewer trips on Kalanianaole Highway than estimated in the 1985 Marina Zoning transportation study.

2. Sewage Treatment Plant

As indicated, questions have been raised about the adequacy of the East Honolulu Wastewater Treatment Plant (EHWTP). Pursuant to a Settlement Agreement dated July 22, 1986 between EHCS, Inc., MEPAC Services, Inc. and the Department of Health as well as a subsequent order from the U.S. Environmental Protection Agency, the EHWTP and collection system is undergoing substantial repairs, replacement and upgrade. While this work is being done, the EHWTP will not be operating efficiently because of equipment being taken out of service. This work should be substantially completed by October 31, 1986 and the EHWTP stabilized. The EHWTP can handle the existing wastewater generated in Hawaii Kai.

The expansion of the EHWTP to 4.7 mgd will be going out to contractor's bid month-end October 1986. By Fall 1987, the new circular clarifier should be in place and operational.

Your concerns over the proposed Industrial development and its potential impact on the sewage system and the near shore environment should be tempered with the fact that the proposed activity is business service park or light industrial in nature and there will be no heavy industrial uses or noxious activities that will be conducted as a part of this development. The light industrial project will provide a land use buffer for the residential development in the relationship to the existing wastewater treatment plant. In any event, the effluent discharged into the offshore waters must be in compliance with current standards established by the State Department of Health.

3. Archaeology

Discussions as contained in the Draft EIS on pp. VII-7, 8 advise that sub-surface testing can be done after the completion of the lengthy land use policy review process still remaining. The details as to the methodology to be employed will be plotted and finalized at the appropriate point in time, with qualified archaeologists retained for the work to be performed. Kaiser Development Company's committment to maintaining the archaeological integrity of any proposed development site is established historically, and this project will not be an exception.

4. Drainage

Dr. Gordon L. Dugan, has been advised that there is a more recent Rainfall Frequency Atlas available for his use in computing the storm water runoff volume. We appreciate your calling this to his attention.

All drainage facilities have been designed to meet current City & County standards and in many instances, exceed design capacity requirements. The dry climatic conditions that prevail in the Hawaii Kai area lend

themselves to periodic flash flood conditions and in these instances, it can be said that the drainage systems may not effectively control the volumes that flow over the existing drainage ditches and culverts.

5. Park Lands

The proximity of the Koko Head District Park and the adjacent riding stables will be kept in perspective by the developer as design plans become more firmly established. A buffer between the residential development and the stable is being explored. During the ensuing land use policy review process, this land use plan will become more definitive in nature, as it reflects the input of both government and the community at large. Your comments will be retained by the applicant for future consideration.

Thank you for your comments and continuing concern.

Very truly yours,

F. J. Rodriguez

FJR:ls

University of Hawaii at Manoa

Water Resources Research Center
Holmes Hall 283 • 2540 Dole Street
Honolulu, Hawaii 96822

17 September 1986

Mr. Donald A. Clegg
Chief Planning Officer
Department of General Planning
City & County of Honolulu
650 South King Street
Honolulu, HI 96813

Dear Mr. Clegg:

Subject: Draft Environmental Impact Statement for Golf Course 2/1A, Hawaii Kai, Honolulu District, Oahu, Hawaii, September 1986

We have reviewed the subject DEIS and offer the following comments:

1. A north arrow should be affixed to Fig. 5 (p. V-13) and Fig. 9 (p. VII-21).

2. An 8.4% increase in morning traffic at Lunalilo Home Road/Wailua Street (Appendix C, p. 15) may necessitate a left-turn signal from Lunalilo Home Road into Wailua because this is a difficult turn under existing conditions.

Thank you for the opportunity to comment. This material was reviewed by WRRC personnel.

Sincerely,

Edwin T. Murabayashi
EIS Coordinator

ETM:jm

cc: F.J. Rodriguez, Env. Com.

SEP 22 1986

AN EQUAL OPPORTUNITY EMPLOYER

ENVIRONMENTAL COMMUNICATIONS INC.

F. J. RODRIGUEZ
PRESIDENT

October 23, 1986

Mr. Edwin T. Murabayashi
EIS Coordinator
University of Hawaii at Manoa
Water Resources Research Center
Holmes Hall 283
2540 Dole Street
Honolulu, Hawaii 96822

Dear Mr. Murabayashi:

Thank you for your agency's comments on the proposed Golf Course 2/1A project. The Traffic consultant has been advised of your particular comments for his review. Any final determination for new signalization will have to be made by the City Department of Transportation Services.

Thank you for your continuing interest.

Very truly yours,

F. J. Rodriguez

FJR:ls

1164 FORT STREET MALL, SUITE 200 • P. O. BOX 538 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 531-1308

DEPARTMENT OF THE NAVY
COMMANDER
NAVAL BASE PEARL HARBOR
BOX 110
PEARL HARBOR, HAWAII 96860-5020

IN REPLY REFER TO
5090
Ser 002B/5931

10 SEP 1986

Mr. Donald A. Clegg
Chief Planning Officer
Department of General Planning
City & County of Honolulu
650 South King Street
Honolulu, HI 96813

Dear Mr. Clegg:

ENVIRONMENTAL IMPACT STATEMENT
GOLF COURSE 2/1A
HAWAII KAI, HONOLULU, OAHU, HAWAII

The EIS for the Golf Course 2/1A has been reviewed and we have no comments to offer. Since the Navy has no further use for the EIS, the EIS is being returned to the Office of Environmental Quality Control, by copy of this letter.

Thank you for the opportunity to review the EIS.

Sincerely,

HENRY J. RINNERT
Captain, CEC, U.S. Navy
Facilities Engineer
By direction of the Commander

Enclosure

Copy to:
Mr. F. J. Rodriguez, Pres.
Environmental Communications, Inc.
P. O. Box 536
Honolulu, HI 96809

Office of Environmental Quality Control

NO RESPONSE NEEDED

SEP 12 1986

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
P. O. BOX 50004
HONOLULU, HAWAII 96850

October 7, 1986

Mr. Donald A. Clegg
Chief Planning Officer
Department of General Planning
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Clegg:

Subject: Draft EIS - Golf Course 2/1A, Hawaii Kai, Honolulu District, Oahu

We reviewed the subject draft environmental impact statement and have no comments to make.

Thank you for the opportunity to review the document.

Sincerely,

RICHARD N. DUNCAN
State Conservationist

cc:
Mr. F. J. Rodriguez, President
Environmental Communications, Inc.
P.O. Box 536
Honolulu, HI 96809

OCT 8 1986

NO RESPONSE NEEDED

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 230
FT. SHAFTER, HAWAII 96858

REPLY TO ATTENTION OF:

September 15, 1986

Mr. Donald A. Clegg, Chief
Planning Officer
Department of General Planning
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Clegg:

Thank you for the opportunity to review and comment on the EIS for Golf Course 2/1A, Hawaii Kai, Honolulu, Oahu, dated September 1986. The following comments are offered:

a. A Corps of Engineers permit will not be required for this project if the plans as specified in the document are not changed to involve construction on the ocean side of Kalanianaole Highway. If the plans are changed, our Operations Branch (telephone 438-9258) should be contacted for permit requirements.

b. The flood hazards have been addressed on page V2 of the report covering the affected environment. The project is located in Zone D, an area of undetermined, but possible flood hazards.

Sincerely,

Kisuk Cheung
Chief, Engineering Division

Copy Furnished:

Mr. F. J. Rodriguez, President
Environmental Communications, Inc.
P. O. Box 536
Honolulu, Hawaii 96809

SEP 19 1986

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

October 23, 1986

Mr. Kisuk Cheung
Chief, Engineering Division
Department of the Army
U.S. Army Engineer District, Honolulu
Building 230
Ft. Shafter, Hawaii 96858

Dear Mr. Cheung:

Thank you for your agency's comments on the proposed Golf Course 2/1A project. The project as presently designed, will not be built in areas that would require Corps of Engineers permit compliance. Flood hazard designations are as stated, "Zone D, an area of undetermined, but possible flood hazards."

Thank you for your comments and continuing interest.

Very truly yours,

F. J. Rodriguez

FJR:ls

United States Department of the Interior

FISH AND WILDLIFE SERVICE
300 ALA MOANA BOULEVARD
P.O. BOX 50167
HONOLULU, HAWAII 96850

IN REPLY REFER TO
ES
Room 6307

OCT 7 1986

Mr. Donald A. Clegg
Chief Planning Officer
Department of General Planning
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Re: Draft Environmental Impact Statement for the Proposed Golf Course 2/1A, Hawaii Kai, Honolulu, Oahu

Dear Mr. Clegg:

We have reviewed the referenced Draft Environmental Impact Statement and have no comments to offer.

We appreciate this opportunity to comment.

Sincerely yours,

William E. Evans
for Ernest Kosaka
Project Leader
Office of Environmental Services

cc: Envir. Communications, Inc.

NO RESPONSE NEEDED

OCT 9 1986

CONSERVE AMERICA'S ENERGY

Save Energy and You Serve America!

245 North Kukui Street, Honolulu, Hawaii 96817, Telephone (808) 537-5966

AMERICAN LUNG ASSOCIATION *of Hawaii*

October 8, 1986

Mr. Donald A. Clegg, Chief Planning Officer
Department of General Planning
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Clegg:

Subject: Golf Course Z/IA

We have reviewed the subject EIS with particular attention to those sections addressing traffic and air quality impacts and have the following comments to offer.

1. EIS Pages VIII-32 & VII-33

This section on indirect air quality impacts gives a misleading picture of the project's impacts because it appears to focus on the positive aspects of EPA's emission control efforts instead of the project's impacts. A reviewer, or more importantly a decision-maker, would have a false impression of the project's impact on air quality if he or she read only the main EIS. There are very important results reported in the consultant's air quality study which are not included in the EIS Section VII Anticipated Impacts and Mitigative Measures. For example, the study (Appendix D) indicates violations of State air quality standards under present traffic conditions and also notes that if certain key assumptions turn out to be false, then standards violations will also occur in the future. Such findings are important and should be included in the main EIS and not simply left in a subconsultant's report.

2. Appendix D, p. 8

Queues at intersections are under most conditions the major source of carbon monoxide (CO) emissions. The air quality study fails to provide any specific data on queue lengths or queue emission strengths at the critical intersections. The study appears to have substituted low, free-flow speeds, e.g., 5 - 15 mph, instead of explicitly accounting for queuing. This can result in substantial underestimation of nearby CO concentrations.

An outdated mobile source emissions model (MOBILE-2) was used instead of the current MOBILE-3 model. This could also result in substantial underestimation of CO emissions and ambient concentrations.

3. Appendix D, p. 17

The 1-hour CO concentrations which are purported to represent "worst case" conditions appear to be very low when one considers the volume of peak-hour traffic in the Hawaii Kai area. These estimates seem to be the result of underestimated emissions and optimistic traffic volume assumptions.

In general, the EIS and its supporting air quality study appear to be underestimating and discounting the air quality impacts associated with continued development in the Hawaii Kai area.

Sincerely yours,

James W. Borrow
Director
Environmental Health

JWB:ct
L2430

cc: Mr. F.J. Rodrigues
OEQC
UH-Environmental Center

F. J. RODRIGUEZ,
PRESIDENT

ENVIRONMENTAL
COMMUNICATIONS
INC.

October 23, 1986

Mr. James W. Morrow, Director
Environmental Health
American Lung Association
of Hawaii
245 North Kukui Street
Honolulu, Hawaii 96817

Dear Mr. Morrow:

Thank you for your comments on the proposed Golf Course 2/1A project. The comments have been reviewed by the technical consultant who prepared the Air Quality Study and the following response is provided.

"The reviewer's comments are all valid criticisms. However, the essential conclusions of the air quality study for the project would not likely be changed if all described methodological techniques were to be employed as suggested. The simple fact remains that the highest current measured concentrations of CO at the official urban Honolulu monitoring station are only about one-third of the allowable National one-hour AQS, while a measured value above the allowable State of Hawaii AQS occurs only once or twice a year.

Traffic in Hawaii Kai is less dense than it is in urban Honolulu, and no greater concentrations of carbon monoxide should be expected there. The air quality study discloses these basic findings and properly indicates the relative degree of air quality impact that can be expected from the proposed project."

The reference made in terms of certain key assumptions turning out to be false, will be included on pp. VII-34, drawing the reference from Mr. Root's study.

Thank you for your continuing interest and concern.

Very truly yours,

F. J. Rodriguez

FJR:la

1188 FORT STREET MALL, SUITE 201 • P.O. BOX 538 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-2161

ENV-2-1
:IV/G

HEI

Brenner Munger, Ph.D., P.E.
Manager
Environmental Department
(808) 548-6880

September 18, 1986

Mr. Donald A. Clegg,
Chief Planning Officer
Department of General Planning
City & County of Honolulu
650 South King Street
Honolulu, HI 96813

Dear Mr. Clegg:

Subject: Environmental Impact Statement (EIS) for Hawaii Kai Golf Course 2/1A

We have reviewed the above statement and find that the comments we addressed in our response of June 6, 1986 on the "EIS Preparation Notice" (See Section XI) have been generally included in the discussion on electric utilities to be found on page VII - 41 of this EIS.

In addition, it should be noted that page V-19 of the subject EIS refers to scope of work for the electrical service.

Sincerely,

Brenner Munger

cc: Mr. F. J. Rodrigues, President
Environmental Communications, Inc.

SEP 19 1986

A Hawaiian Electric Industries Company

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

October 23, 1986

Dr. Brenner Munger, Manager
Environmental Department
Hawaiian Electric Company, Inc.
P.O. Box 2750
Honolulu, Hawaii 96840

Dear Mr. Munger:

Thank you for your comments on the Golf Course 2/1A project. The reference to the items listed on page V-19 are duly noted and will be retained for future use as the project continues through the land use policy review process.

Thank you for your continuing interest.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

HAWAII KAI NEIGHBORHOOD BOARD NO. 1
P. O. BOX 25804
HONOLULU, HAWAII 96825

October 5, 1986

Mr. Donald A. Clegg, Chief Planning Officer
Department of General Planning
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Clegg:

Subject: Draft Environmental Impact Statement dated September 1986 for Kaiser Development Company Golf Course 2/1A Project located in Hawaii Kai, Honolulu, Oahu

The subject Draft Environmental Impact Statement was reviewed by the Hawaii Kai Neighborhood Board. At its meeting on September 29, 1986, the Board approved the attached comments which are submitted in accordance with Office of Environmental Quality Control letter dated September 3, 1986.

Sincerely,

Al Kirchner
Chairman

Attachment

cc: Councilmember Welcome Fawcett
Mr. John E. Hirten, Director, Department of Transportation Services
Mr. Roy Kaneko, Chief, Traffic Engineering, Department of Transportation Services
Mr. John Whalen, Director, Department of Land Utilization
Mr. Wayne J. Yamasaki, Director, State Department of Transportation
Senator W. Buddy Soares
Representative Hal Jones
Representative Donna R. Ikeda
Mr. F. J. Rodriguez, President, Environmental Communications, Inc.

OCT 7 1986

HAWAII KAI NEIGHBORHOOD BOARD No. 1 COMMENTS ON DRAFT ENVIRONMENTAL IMPACT STATEMENT DATED SEPTEMBER 1986 FOR KAISER DEVELOPMENT COMPANY GOLF COURSE 2/1A PROJECT

At the outset the Hawaii Kai Neighborhood Board (hereinafter referred to as the "Board") would like to emphasize that it is not opposed to the Golf Course 2/1A Project itself. The Board does consider, however, that provisions should be made for an adequate infrastructure to support any proposed development in Hawaii Kai. Specifically, recognizing that traffic is a serious problem in the East Honolulu corridor, traffic mitigation measures should alleviate to the maximum extent possible all traffic impacts generated as a direct result of the development. With regard to the traffic impacts, the Board considers that the Draft Environmental Impact Statement (DEIS), and the Traffic Impact Study on which it is based, covering the Golf Course 2/1A development is based on invalid or questionably valid assumptions, does not adequateiy identify all impacts, does not consider all feasible alternatives, and leaves a number of questions unanswered. Consequently, the proposed traffic mitigation measures are totally inadequate to accommodate the increased traffic generated by the development in that they perpetuate and exacerbate already unacceptable traffic conditions. The following detailed comments are provided:

1. The DEIS notes throughout that the Golf Course 2/1A development is merely implementing the Hawaii Kai Master Plan as reflected in the 1966 DLUM and the East Honolulu Development Plan (although the DLUM did envision substantially higher population densities). The DEIS fails to note, however, that the DLUM also envisioned a freeway running across Hawaii Kai from Maunalua Bay Beach Park to the Queen's Beach area. This freeway has not materialized and, although the freeway reserve is still reflected on the Development Plan Public Facilities Map, it is unlikely that it will ever be built. (In this regard, it is noted that a portion of this reserve was deleted from the Public Facilities Map last year to allow the Kaiser Development Company to develop the Kaluanui 2 & 3 tracts.) As a result of this situation, a two-lane "highway" (Kalanianaole Highway from Koko Marina Shopping Center to Makapuu) and secondary roads and local streets have become de facto major arterials to handle all internal and through traffic in Hawaii Kai including the increased traffic from currently on-going and planned developments, the Golf Course 2/1A impacts and the services industrial area impacts. These streets and roads were never intended or designed as major arterials and the minimal proposed mitigation measures (restriping intersections, etc.) will not miraculously transform them into something they're not.

2. In the DEIS analyses, each of the traffic impacts and proposed mitigation measures are determined on the basis of separate, isolated and independent intersections with the apparent intent of identifying the absolute minimum roadway improvements that will bring specific intersections to Level of Service D. As a result of this approach, presently unacceptable and unsatisfactory conditions between the intersections are totally ignored by the DEIS. For example:

a. Even though mitigation measures are proposed for the Lunalilo Home Road/Wailua Street intersection, Wailua Street itself remains two lanes and therefor all traffic on this key roadway section constricts to a single lane in each direction. Improvements in the intersection will have only limited value.

b. The DEIS would continue the use of Hawaii Kai Drive as the major arterial between Lunalilo Home Road and Kalama Valley, and ignores the fact that this road passes directly in front of the Kamiloiki Elementary School and Kamiloiki Community Park thus perpetuating and exacerbating an unacceptable and inherently dangerous situation. This situation has been of considerable community concern over the last few years resulting in numerous efforts to obtain school crossing guards, in uniformed police monitoring the school crossings last year, and in the recent installation of traffic signals at Kalaiea Street. The abuse of traffic laws and speed limits along this road results in the frequent use of the school driveway as a radar site for the Honolulu Police in their "enforcement" efforts. That there is a valid and acceptable means for traffic to by-pass this area (Wailua Street extension) is not considered by the DEIS.

c. The Traffic Impact Study (page 24) concludes that the most significant traffic problems are caused by the heavy turning movements at key intersections in Hawaii Kai, and yet the elimination of these turning movements is never considered by the DEIS. Since there is a perfectly acceptable means (the realignment and extension of Wailua Street) of eliminating every turning movement between Kalama Valley and the Kealahole Street/Kalanianaole Highway intersection that would also by-pass the Kamiloiki Elementary School and Kamiloiki Community Park, this is a serious flaw in the DEIS analyses.

Although the DEIS does not recognize it as such, the streets and roads of Hawaii Kai comprise a roadway system. The Board considers that proposed mitigation measures should therefore be based on a systemic approach and comprehensive analysis and plan to provide an adequate internal and through roadway system or network rather than a patchwork of isolated, independent intersections separated by autonomous pieces of roadway.

3. With regard to the DEIS claim that the proposed mitigation measures will bring 1995 traffic service levels to Level of Service D, the Board considers that:

a. this claim is valid only if the underlying assumptions on which the study is based are totally accepted, and there is considerable doubt about the validity of these assumptions (See paragraph 4, below.); and

b. Level of Service D is not a design criteria for Hawaii Kai. Level of Service D is the lowest level of acceptability when there are absolutely no other alternatives. In this case there are other alternatives which could significantly improve the service levels but have not been considered by the DEIS.

4. The entire Traffic Impact Study is premised on the assumption that a significant amount (over one-half) of the traffic volume generated by the Golf Course 2/1A development that would head towards Honolulu via Kalanianaole Highway would instead be diverted to the services industrial development. There does not appear to be any conclusive evidence that this actually happens. In fact, the Director of the Department of Transportation Services of the City and County of Honolulu has stated publicly that while it is an admirable objective, it simply doesn't happen. The study does not offer any derivation of the number of diversions. The fact that the estimated number of diversions allow the proposed mitigation measures to achieve Level of Service D or better at affected intersections and eliminate the impact on Kalanianaole Highway during the evening peak hour appears more than coincidental. At the present time there does not appear any

reason for the Hawaii Kai community to accept arbitrary adjustments, assumptions, myths or plain wishful thinking as the basis for matters of critical community concern.

5. Even if the diversion assumptions were accepted, it is noted that the Golf Course 2/1A developments will still result in a significant increase in the morning traffic on Kalanianaole Highway; and this will still be true even if the Marina Zoning Rideshare Program were extended to this development. In this regard the DEIS's attempt to minimize the addition of between 50 and 100+ vehicles to the already saturated Kalanianaole Highway (Level of Service E) during the peak hours appears remarkably insensitive to the plight of the East Honolulu commuter. (See page 22 of the Traffic Impact Study.) Exacerbating an already unsatisfactory condition does not make it better.

6. Also in relation to Kalanianaole Highway, it should be noted that the DEIS includes the impact of the 468 Golf Course 2/1A units as being within the coverage of the Transportation Management Study for the Marina Zoning parcels, since the City Council down-sized the Marina Zoning development by 600 units. This would be valid only if the proposed Marina Zoning mitigation measures are accepted as 100% effective. Further, the DEIS does not indicate to what extent the Golf Course 2/1A development will participate in the Marina Zoning Rideshare Program, if at all. Inasmuch as the Rideshare Program is currently being tested for its effectiveness, and assuming the Rideshare Program will be applied to the Golf Course 2/1A development and the issues indicated in paragraph 9, below, can be satisfactorily resolved, it is recommended that zoning approval for the Golf Course 2/1A development be postponed until the total effectiveness of the Marina Zoning mitigation measures can be clearly and satisfactorily demonstrated.

7. While claiming significant diversions into the services industrial area, the DEIS becomes noticeably vague when it comes to identifying mitigation measures at the services industrial area access road. The lack of a definitive assessment of the traffic impacts and required mitigation measures is inconsistent with the rest of the study and is in itself unacceptable in that it defeats the very purpose of the Environmental Impact Statement process. Even a layman could make a reasonable assessment of the traffic impacts since particularly during the evening peak hours and on weekends, it would be just as difficult to make left hand turns into the services industrial area from Kalanianaole Highway as it would be to make left turns into Kealahou Street. As an absolute minimum a left-hand storage lane should be provided on the East-side approach of Kalanianaole Highway to minimize blockage of the through traffic by vehicles waiting to turn left into the services industrial area. A traffic signal inter-connected with the traffic signal at Kealahou Street should be provided.

8. With regard to specific proposed mitigation measures indicated in the DEIS:

a. Kealahou Street/Golf Course 2/1A Residential Areas Access Road (Page VII-26, paragraph 6.a.): These measures are considered adequate.

b. Kalanianaole Highway/Services Industrial Area Access Road (Page VII-26, paragraph 6.b.): These measures are considered inadequate (See paragraph 7, above.

c. Kealahou Street/Kalanianaole Highway Intersection (Page VII-27, paragraph

6.c): These measures are considered inadequate. In addition to the left-turn storage lane on the Ewa-side approach of Kalanianaole Highway, a traffic signal should also be installed. A traffic signal has already been determined to be warranted by the Traffic Impact Study for the Golf Course 5 & 6 development. Since traffic volume will increase even more as a result of the Golf Course 2/1A development, the vagueness in the DEIS is incomprehensible.

d. Hawaii Kai Drive/Lunalilo Home Road Intersection (Page VII-27, paragraph 6.d.): These measures are inadequate and unacceptable since they would perpetuate and exacerbate an already unsatisfactory and dangerous condition. See paragraph 2.b., above. Another more appropriate alternative exists: the extension of Wailua Street.

e. Lunalilo Home Road/Wailua Street Intersection (Page VII-28, paragraph 6.e.): These measures are inadequate and unacceptable in that they don't account for the fact that traffic still constricts to one lane on Wailua Street. See paragraph 2.a., above. Another more appropriate alternative exists: the widening and realignment of Wailua Street.

f. Kalanianaole Highway (Page VII-29, paragraph 6.f.): This would be valid only if proposed mitigation measures in the Marina Zoning package are accepted as 100% effective and the Golf Course 2/1A development is included in the Rideshare Program. See paragraph 6, above.

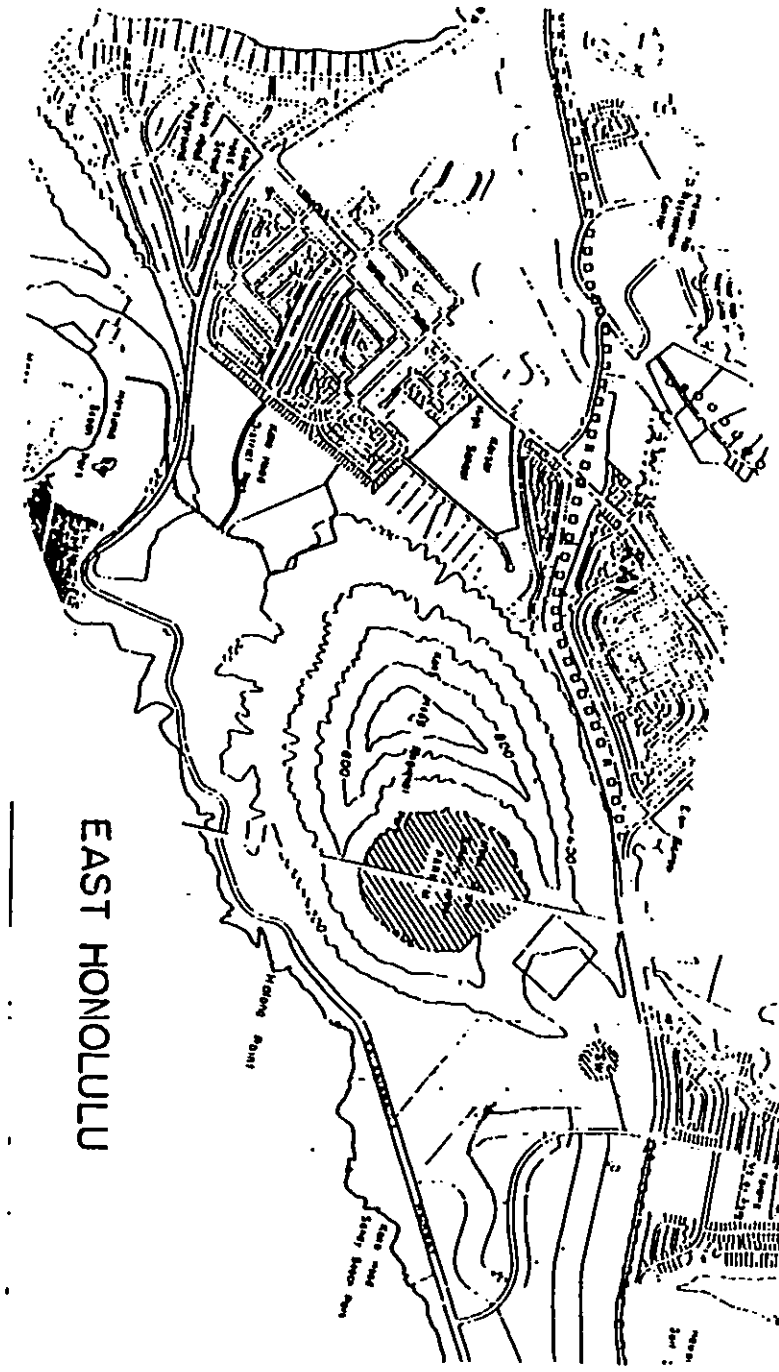
9. The Hawaii Kai Neighborhood Board is therefore unable to endorse the Golf Course 2/1A development until such time as traffic mitigation measures which are satisfactory to the Board are ensured. The Board considers the following traffic mitigation measures as the minimum acceptable to accommodate the increases in traffic generated by the Golf Course 2/1A and Services Industrial Area developments:

a. Redesign the Wailua Street/Hawaii Kai Drive intersection, widen Wailua Street to four lanes and realign Wailua Street as indicated in the Geometric Study dated January 3, 1986 which was provided to the Board by the Kaiser Development Company. This roughly conforms to the alignment of the freeway reserve. These measures have been informally recommended by Board members to Kaiser Development Company for accomplishment incident to its Marina Zoning development to not only improve the traffic situation but also to minimize future construction impacts. For its own reasons, Kaiser elected to do otherwise as indicated in its letter to the Board of January 7, 1986. This letter did acknow ledge, however, that such improvements would likely be required incident to the development of Golf Course 2/1A.

b. Extend Wailua Street across Lunalilo Home Road behind the residential area to intersect with Hawaii Kai Drive at the top of the hill behind Koko Crater. This conforms to the alignment of the freeway reserve.

c. Provide a left-hand storage lane and a traffic signal at the intersection of Kalanianaole Highway and Kealahou Street. As noted in paragraph 8.c., above, these measures should have already been accomplished incident to the Golf Course 5 & 6 developments, and were recommended by the Hawaii Kai Neighborhood Board in its testimony to the DLU Public Hearing on this project on April 1, 1986. This testimony is included in the Hearing record.

d. Provide a left-turn stoarge lane and a traffic signal at the services industrial area access road on Kalanianaole Highway. See paragraph 7, above.



MAP DEPICTING REALIGNMENT AND EXTENSION OF KALANIANAOLE STREET

EAST HONOLULU

HAWAII KAI

October 14, 1986

Mr. Al Kirchner, Chairman
Hawaii Kai Neighborhood Board No. 1
P. O. Box 25804
Honolulu, Hawaii 96825

Dear Mr. Kirchner:

Subject: GOLF COURSE 2/1A - EIS COMMENTS

This is in response to the Golf Course 2/1A EIS comments submitted to the Department of General Planning by the Hawaii Kai Neighborhood Board. We consider it appropriate in this instance to respond directly to you rather than through Environmental Communications, Inc.

As reported in the Hawaii Kai Sun Press, the comments were authored by board member Tony DePaul, who holds an administrative position with the City's Department of Transportation Services in the division seeking a rapid transit system for Honolulu. In this sense, we are very fortunate because we know he will do everything possible to ensure that Hawaii Kai is high on the priority list in being served first by this system. We will, of course, assist in this wherever possible. It is important to note, however, that Tony, although knowledgeable about transportation, is not a traffic engineer. We stand ready as we have on other occasions to arrange a meeting or meetings with our traffic engineer and Tony and other members of the Board to discuss questions and concerns. We are not suggesting that this precludes him from making comments but clearly technical knowledge is necessary to fully understand this subject.

Mr. Terry Brothers of Wilbur Smith & Associates has provided the answers that follow to Board comments 2. through 8. We have answered comments 1. and 9. Generally speaking, the Board's comments confuse desirable improvements for improvements that are required as mitigation measures. For example, a rapid transit line to Hawaii Kai right now is desirable, but surely, that does not make it a Golf Course 2/1A mitigation measure.

1. Several years ago, the State Department of Transportation elected to abandon its plans for a freeway through Hawaii Kai. One reason may have been the decreasing future population of Hawaii Kai as reflected on the applicable

KAISER

planning maps. As indicated in the Board's comment, the 1966 Detailed Land Use Map (DLUM) envisioned Hawaii Kai as a much larger community.

In any case, jurisdiction over the freeway reserve shifted from the State to the City and County of Honolulu. Traffic studies conducted over the years have indicated that portions of the freeway reserve should remain available for roadway, not freeway, purposes depending upon the level of development in Hawaii Kai. Other portions of the old freeway reserve are not needed under any realistic development scenario. Last year, with the concurrence of the City Department of Transportation Services and the support of the Hawaii Kai Neighborhood Board, the City Council deleted one unneeded portion of the road reserve.

The Board's comment questions the ability of Hawaii Kai streets to accommodate future traffic. There is no one answer to this question. Some streets can while others cannot. It is a matter of technical analysis. The Hawaii Kai roadway improvements that are part of the Marina Zoning transportation plan address roads and intersections that require mitigation as a part of the Marina Zoning. The same principle holds true for Golf Course 2/1A.

The major remaining issue with respect to the road reserve is the "Wailua Street extension." It is discussed in detail in the answer to Board Comment 9. We agree with the Board that this extension road should be built at some point. We disagree over whether it is a required mitigation measure in connection with the Golf Course 2/1A project and also over the funding.

2. The DEIS analysis did consider traffic conditions between major intersections. The existing road characteristics and traffic volumes between the intersections provide sufficient capacity to accommodate existing traffic volumes. A possible exception is Wailua Street, which is adversely affected by the Hawaii Kai Drive intersection, which has only a single lane to accommodate the commuter traffic flow in the morning. This problem will be mitigated when the intersection is widened to add a double left turn as part of the Marina Zoning transportation program.

2a. Wailua Street is the key segment due to its 40-foot width. The proposed improvements will provide additional width along Wailua Street on both sides of the Wailua Street

bridge, but leave the bridge width at 40 feet. The sections on either side of the bridge would be restriped for four lanes. Although the bridge is below the 44-foot width required for new four-lane roadways, the existing 40-foot width would permit vehicles to continue across the bridge without having to "merge" into a single lane. The constrained bridge width would likely encourage the vehicles to remain "offset" along the travel direction from one another, thus deterring passing and not providing the full capacity of a four-lane highway. Drivers of vehicles in the same direction, as a result of the offset to the "inside" and "outside" of the 20-foot lane, would be expected to shorten the interval between vehicles, which would result in a "capacity" greater than that of a two-lane roadway, but below that for a full-width four-lane roadway.

2b. The Kamiloiki Elementary School traffic signal was installed at the intersection of Hawaii Kai Drive and Kalalea Street to provide a break in traffic flow to enable students to safely cross between the school and the residential areas makai of Hawaii Kai Drive. While this traffic signal is welcome, the intersection conditions did not and do not warrant the signal on the basis of traffic volumes or accident experience.

However, the newly installed traffic signal does provide a protected pedestrian crossing interval to offset the increase in traffic that will occur as a result of future East Hawaii Kai development.

2c. The purpose of the DEIS is to identify impacts of the project and to identify where measures are feasible to mitigate these impacts. The DEIS does not have to explore a range of measures or provide a comprehensive planning study of a community's broader transportation needs. As such, the absence of a comprehensive planning study does not represent a "serious flaw" in the DEIS.

The indicated intersection improvements would fully offset the project impacts at the intersections along Kealahou Street, Hawaii Kai Drive and Lunalilo Home Road which are most directly impacted by the project. These intersection improvements are anticipated to maintain traffic service levels similar to or better than current conditions.

3a. The traffic analysis has attempted to provide a realistic assessment of traffic impacts of the Golf Course 2/1A, combined with the traffic increases from other East Hawaii Kai and Marina area developments.

1) Trip generation (number of trips) and trip distribution (origin-destination) factors have been developed from observed local travel characteristics to the extent that similar developments and information were available. Field counts from number of Hawaii Kai developments done in October of 1985 confirmed the validity of the trip generation figures.

2) In assigning trips to the roadway system, the analysis emphasized use of Hawaii Kai Drive-Lunalilo Home Road for most East Hawaii Kai trips to the Marina or Honolulu areas. The future increases in development and additional traffic signals in the Marina area will likely result in increasing use of Kalanianaole Highway past Hanauma Bay, particularly in the morning peak traffic hour when the route is lightly travelled. Therefore, the estimates of traffic on Hawaii Kai Drive, Lunalilo Home Road, and Wailua Street may be more likely to overstate the actual future volumes.

3b. While it is correct that Level of Service C is the desirable design criteria for roadways, the proposed mitigation measures will offset the significant impacts in traffic, and in several instances improve traffic conditions from those existing today.

4. The traffic analysis does not assume that one-half of the Golf Course 2/1A residential traffic would be diverted to the services industrial area.

For the morning peak hour, the analysis assigns 105 trips from the Golf Course 2/1A residential area to Honolulu via Kalanianaole Highway. This is 80 percent of the 134 morning peak hour trips from the residential units, the same factor as occurs today.

The "diversion of future trips" to the future services industrial area is from all of Hawaii Kai, not just the Golf Course project. Thus the development of a 14.8-acre services industrial area is estimated to attract 55 trips during the morning peak hour that would otherwise have been made into Honolulu on Kalanianaole Highway. This diversion amounts to

1-1/2 percent of the estimated 3,530 Hawaii Kai trips into Honolulu during the 1995 morning peak hour period. The analysis is summarized in the following table:

	Towards Honolulu	Towards Hawaii Kai
Morning Peak Hour:		
Golf Course 2/1A resident trips	+105	0
Diversion of Hawaii Kai trips to Services Industrial area which would otherwise travel on Kalanianaole	- 55	0
Services Industrial Area trips	0	0
Net Increase on Kalanianaole	+ 50	0
Evening Peak Hour:		
Golf Course 2/1A resident trips	+ 42	+ 76
Diversion of Hawaii Kai trips to Services Industrial Area which otherwise would travel on Kalanianaole	- 7	-114
Services Industrial Area trips	+ 20	+ 30
	+ 55	- 8

5. The DEIS report recognizes the existing and future congested traffic conditions on Kalanianaole Highway, assuming that the State Department of Transportation project widening the roadway to provide high vehicle lanes has not been completed by the 1995 analysis year.

With the reduction in units for the Marina Zoning project from 2,400 to 1,780, as approved by the City Council, the planned rideshare program and traffic engineering measures should result in a combination of travel mode change and capacity increase to accommodate both the downsized Marina Zoning project traffic and the Golf Course 2/1A traffic along Kalanianaole Highway. The 2,248 units comprising the two projects will result in slightly fewer trips on Kalanianaole Highway than estimated in the 1985 Marina Zoning transportation study.

6. Kaiser Development Company plans to extend all of the ridesharing program measures to the residents of the Golf Course 2/1A project. As indicated above, it is certainly valid to estimate essentially the same travel mode changes when dealing with 2,248 units as opposed to 2,400 units.

   In the matter of ridesharing program effectiveness, the program provides the flexibility to shift resources between program measures to expand those elements which may be more successful than anticipated and to reduce those which may be less successful. There are also additional rideshare measures which can be added to the program, if necessary, to meet the program objectives regarding diversion of automobile drivers to other travel modes.

7. The estimated number of left turning vehicles from Kalanianaole Highway into the industrial services driveway is at the borderline between whether a left-turn storage bay is needed or not. A left-turn storage bay would be constructed if land uses that attract high traffic volumes, such as those proposed, are located in the services industrial area.

   The traffic volumes at the services industrial driveway intersection with Kalanianaole Highway would not be likely to meet nationally established minimum traffic volume warrants needed to install a traffic signal. The warrants have been established to avoid installation of unnecessary traffic signals.

8.c. The DEIS does assume that a traffic signal will be installed at the intersection of Kalanianaole Highway and Kealahou Street.

   The vagueness regarding the DEIS recommendation for monitoring of traffic and accidents to determine the time of signal installation actually refers to whether the signal would be installed <u>prior to</u> the Golf Course 2/1A project, or as part of the project.

8.d. See Item 2.b.

8.e. See Item 2.a.

8.f. See Items 5 and 6.

9.a.
& b. These sections indicate the Board's position that an improved arterial road adjoining Koko Crater in a road reserve area and a redesign of the Wailua Street in Hawaii Kai (hereinafter collectively "Wailua Street extension" are a required mitigation measure in connection with the Golf Course 2/1A project.

   While the Wailua Street extension would be a desirable roadway improvement <u>right now</u>, it is not a traffic mitigation item triggered by Golf Course 2/1A traffic impacts. Additionally, it would be an unreasonable and unfair cost burden on Golf Course 2/1A, a 30-acre project. We agree with the Board, however, that these road improvements, costing an estimated $4 million, do make good long-term planning sense. Since the Wailua Street extension would serve the <u>existing</u> community as well as <u>island-wide</u> travel needs, it is more than reasonable to suggest that the City fund at least a major portion of these road improvements if and when they are built.

   One statement in Section 9.a. requires clarification. We wrote a letter to the Board dated January 7, 1986 discussing the Wailua Street extension, a copy of which is attached. It was indicated in the letter that the Wailua Street extension would likely be required if both the Ikekai resort project and the Golf Course 2/1A project were approved. In reference to the Wailua Street extension, the Board's comment states that the January 7th "letter did acknowledge, however, that such improvements would likely be required incident to the development of Golf Course 2/1A." Without the mention of Ikekai, this sentence unfortunately conveys the misleading impression that the earlier letter represented that we would build the Wailua Street extension in connection with Golf Course 2/1A. As you can see from our January 7th letter, this is clearly not the case.

In conclusion, it should be remembered that the land use permit process here in Honolulu is a lengthy one. In the case of Golf Course 2/1A, we are only at the Development Plan stage which means that there is still zoning and subdivision approvals to go. The entire process is likely to take <u>four to five years</u> before the first housing unit is occupied by which time we are confident that with the Board's help and the community's major traffic improvements will have occurred. For example, the State Department of Transportation is asking the Legislature for

$17.5 million to begin construction of Kalanianaole Highway. We all need to push to make sure this happens as soon as possible, because if we don't, it won't. Mahalo.

Very truly yours,

Dan Davidson
Vice President

Enclosure

cc: All Board Members
Mr. Donald A. Clegg, Chief Planning Officer, Department of General Planning
Councilmember Welcome Fawcett
Mr. John E. Hirten, Director, Department of Transportation Services
Mr. Roy Kaneko, Chief, Traffic Engineering, Department of Transportation Services
Mr. John Whalen, Director, Department of Land Utilization
Mr. Wayne J. Yamasaki, Director, State Department of Transportation
Senator W. Buddy Soares
Representative Hal Jones
Representative Donna R. Ikeda
Mr. F. J. Rodriguez, President, Environmental Communications, Inc.

HAWAII KAI

January 7, 1986

Mr. Bill Walden, President
Hawaii Kai Neighborhood Board No. 1
P. O. Box 25804
Honolulu, Hawaii 96825

Dear Mr. Walden:

Subject: HAWAII KAI ROAD IMPROVEMENTS - MARINA ZONING

In response to a request by Transportation Committee Chairman Anthony DePaul, enclosed are geometric plans showing highway and street improvements that Kaiser Development Company will undertake based upon City approval of the pending Marina Zoning request (Sheets 1 and 2). The improvements will be phased with the Marina development in coordination with City agencies. The yellow lines indicate the existing roadway configurations from the Kalanianaole Highway/Keahole St. intersection through the Wailua St./Lunalilo Home Rd. intersection. The blue lines indicate the road widenings and intersection modifications that we will construct.

Sheet 3 represents proposed improvements to Wailua St. from Hawaii Kai Drive to Lunalilo Home Road, including a realignment of Wailua St., which would likely be required by the City if the planning and zoning of the Ikekai parcel for resort use and the Golf Course 2/1A parcel for mixed residential and industrial use are granted by the City. The improvements shown on Sheet 3 are entirely dependent, therefore, on a number of approvals that we do not have. We did want to show the Board, however, that the Marina Zoning development will not in any way preclude these roadway improvements from occurring in the future. The small portion of the parcel we call Marina 8 (mauka of Wailua St. and south of Mariner's Cove) that would be impacted by the realignment of Wailua St. will not be developed by Kaiser until the alignment issue is resolved.

Please understand that precise roadway alignments must be approved by the City Department of Transportation Services and those shown on Sheet 3, particularly, have not been reviewed or approved by the City.

If you have any questions, please feel free to contact me.

Very truly yours,

Dan Davidson
Vice President, Land Use

DD:scy

cc w/ encs: Mr. Anthony DePaul

APPENDIX A

ENVIRONMENTAL ASPECTS OF STORM WATER RUNOFF·

Hawaii Kai Golf Course 2/1A Residential Project, Oahu, Hawaii

June, 1986

by

Gordon L. Dugan, Ph.D.
Environmental Consultant

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INTRODUCTION

The proposed Hawaii Kai Golf Course 2/1A Residential Project, which fronts Kealahou Street , is nestled between the existing Hawaii Kai Golf Course on the north and east, existing preservation land to the west (general open area into Koko Crater), and a light industrial area to the south. The general location of the project is shown in Figure 1, while the proposed project boundaries are outlined in Figure 2. The project covers a total area of 30 acres: 8 acres residential; 12 acres low density apartments; and 10 acres medium density apartments (Figure 2).

The project site is underlain by caprock and brackish water (chloride content is greater than 250 mg/L, which is generally regarded as the upper limit for drinking water). The general area is included in the Rock land-stony steep land association, while the specific soil for the project area is "Koko," except for approximately two acres along the edge of Koko Crater, which is considered as "Rock Land." The elevation of the project area ranges from approximately 40 ft to nearly 200 ft (Foote el al., 1972).

According to the latest available rainfall maps (DOWALD, 1982) it appears that the long-term annual rainfall for the project area is approximately 35 in., even though at the present time the vegetation appears quite dry in the general area. However, the annual rainfall for 1983, 1984, and 1985 were considerably below normal at most weather stations on Oahu, and up to the present (June 1, 1986) the rainfall at the Honolulu International Airport's U.S. Weather Bureau Station is less than 25% of the normal annual for this time of year. The vegetation for the area is generally grass, brush, and Koa haole.

LIST OF FIGURES

LIST OF TABLES

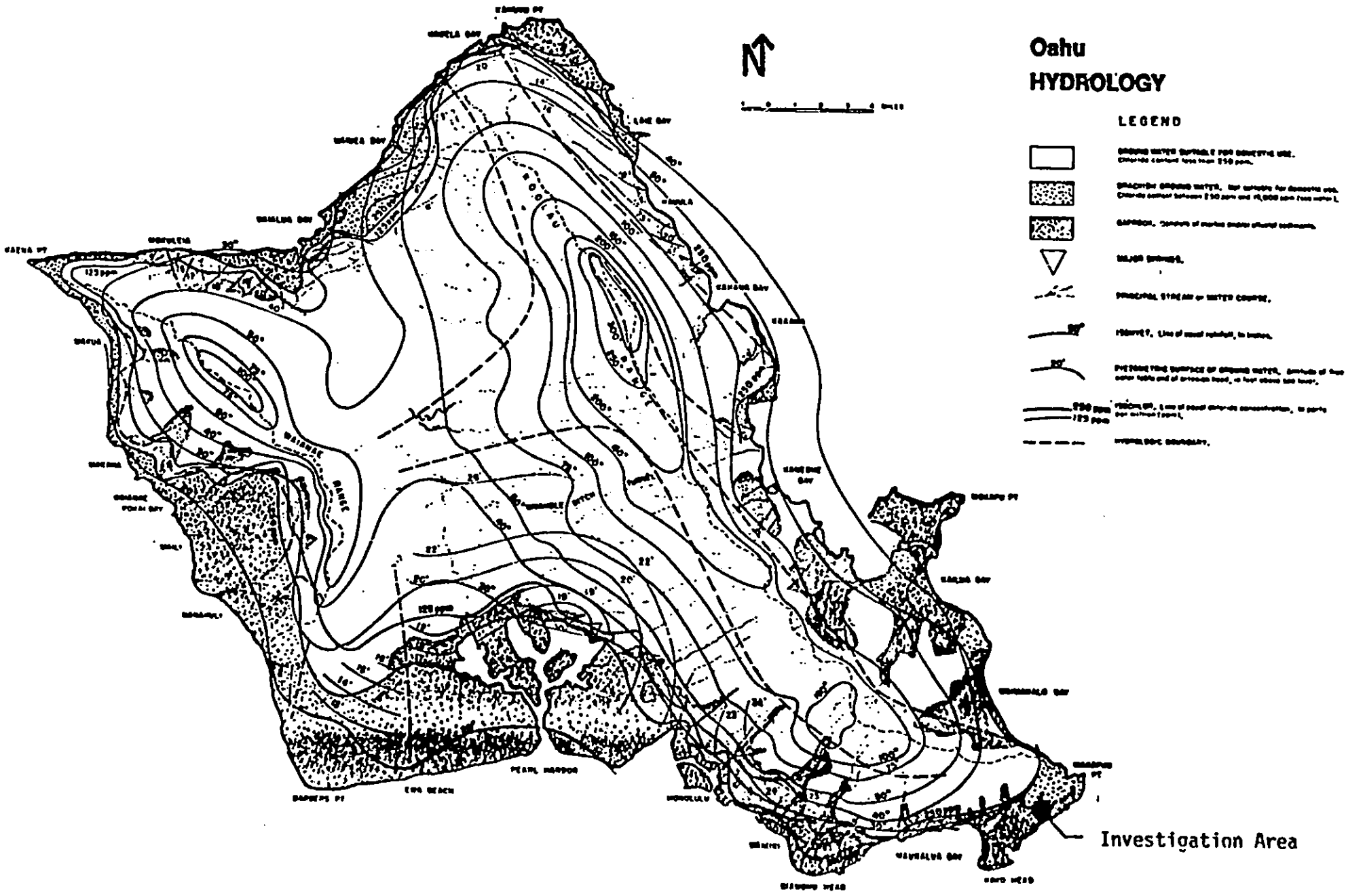

Figure 1. Hydrologic and Geologic Characteristics of Oahu
(Source: "2020 Plan," Board of Water Supply, City and County of Honolulu, pg 13, 1971)

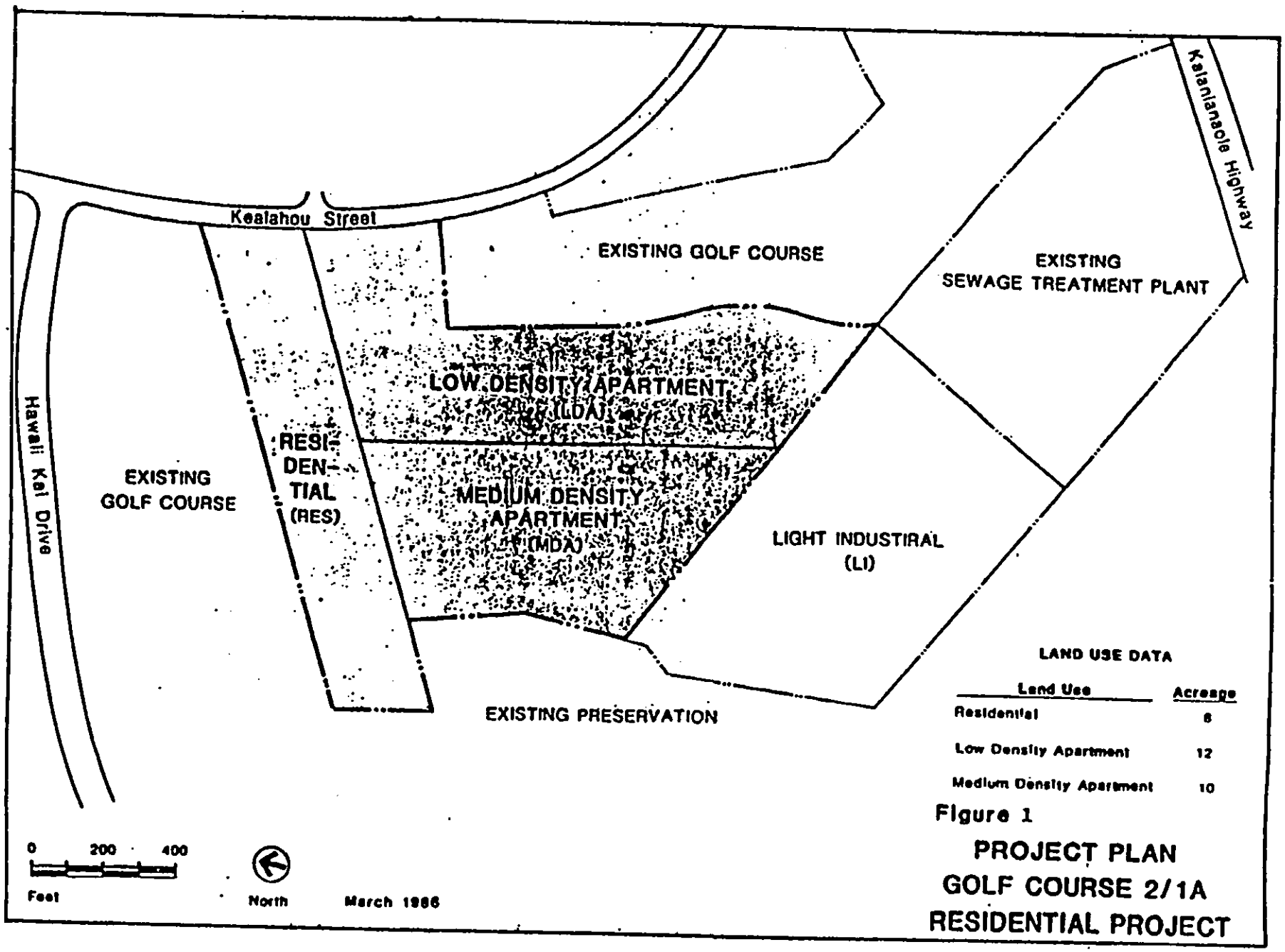

Figure 2. Site Location and Boundary Configurations for the Hawaii Kai Golf Course 2/1A Residential Project, Oahu

The existing paved narrow Koko Head Stables Road traverses through the proposed project's residential and low density apartment areas. An unpaved access road, starting approximately perpendicular to the Koko Head Stables Road, travels in the general direction through the proposed low density apartments to the nearby existing Kawaii Kai Sewage Treatment Plant (Figure 2). The general area near the intersection of Koko Head Stables Road and the access road has or is being used as a dumping area for refuse and construction debris. Also it appears that truck loads of soil have been deposited along the access road near the approximate middle of the low density apartment area.

Except for a few acres along the lower edge of Koko Crater near the Koko Head Stables there is essentially no upper surface water drainage across (from above) the proposed project area, inasmuch as the existing drainage from the interior of Koko Crater and the general area around Koko Stables is diverted down a concrete lined drainage ditch which flows into the large concrete lined drainage ditch that parallels Hawaii Kai Drive, crosses under Kealahou Street and eventually flows to the ocean.

Associated with urban development projects such as is being herein proposed are alterations in surface water runoff resulting from increasing the area of impervious surfaces, through development of roof tops, roadways, parking lots, and the like. Interest in these runoff changes is generally a result of concern over two factors -- one, public safety, and two, environmental impact. The first factor requires the identification of changes in peak discharge rates, the magnitudes of which are necessary for designing adequate drainage structures to prevent flooding, while the second concern requires identification of the changes in total runoff volume, as well as sediment, nutrient, and other constituent loads, and the effects these will have on the ecosystem of the natural resource serving as the "sink." It is this second concern, environmental impact resulting from increased runoff volume and sediment and nutrient loads, and its probable effect on subsequent receiving waters (coastal) that is under study in the present investigation as herein reported.

PURPOSE AND SCOPE

The purpose of this study is to evaluate the environmental impact of the proposed Hawaii Kai Golf Course 2/1A Residential Project as it relates to surface water runoff. From an assemblage of baseline hydrologic and water quality data, an estimate of the existing and projected volume and quality characteristics of surface water runoff will be made, along with an assessment of the environmental impact resulting from this runoff, in the form of written comments.

METHODOLOGY

The methodology used in this study consisted of assembling, analyzing, and interpreting existing data from federal, state, and county agencies, as well as from on-site surveys of field conditions.

Inasmuch as the scope of work consisted of estimating the alterations in volume and quality of surface water runoff resulting from the proposed project, it was necessary to identify those factors that affect runoff generation and runoff quality for both pre-and post-development conditions.

Methods currently available to estimate the surface water runoff volume from a specific storm event requires the determination of reasonable rainfall-runoff coefficients for varying magnitude and duration storms, and for

different land management, vegetation, soil, and soil moisture conditions, to name but a few hydrologic factors. In most practical situations, it is not considered feasible, due to the numerous influencing factors, to determine varying rainfall-runoff coefficients; rather, it is more practical for design and evaluation purposes to use a single coefficient for a particular land-use over a given rainfall-intensity range. However, in order to circumvent a major portion of the unavoidable error created by using a constant rainfall-runoff coefficient, a method developed by the Hawaii Environmental Simulation Laboratory (HESL) of the University of Hawaii was utilized to determine representative storm water volumes under varying conditions (Lopez, 1974; Lopez and Dugan, 1975).

The HESL method is based on an incorporation of U.S. Soil Conservation Service (SCS) data and U.S. Weather Bureau data from the "Rainfall-Frequency Atlas of the Hawaiian Islands" (1962). The SCS data involves the use of soil maps (Foote et al., 1972) and SCS-derived curve numbers obtained from empirical data, including precipitation, soil and changing soil moisture conditions, and vegetative cover information from the classification of thousands of soils throughout the nation. These soils were classified into four groups, labeled A, B, C, and D, with Class A having the highest water intake rates and Class D soils the lowest. These curve numbers, modified for Hawaiian conditions, pertain only to non-urban conditions. For urban conditions, the HESL method utilized information published by Miller and Viessman (1973).

Once the increase in surface water runoff volume had been established, it was necessary to determine the runoff quality for pre- and post-development conditions.

Inasmuch as there is no water quality information for storm water runoff from the predeveloped (1986) project area itself, nitrogen and phosphorus levels of 1.26 mg/L and 0.13 mg/L, respectively, were used for the present (1986) conditions. These values, which were based on information

published by Loehr (1972), were derived from nitrogen outputs of 3 lb/acre-yr and phosphorus outputs of one order of magnitude less; an annual rainfall of 35-in.; and a rainfall-runoff coefficient of 0.3.

Representative suspended solids values in storm water runoff from the proposed predeveloped (1986) project area are again difficult to determine, inasmuch as it is commonly presumed, by mainly indirect methods, that the majority of the annual suspended solid load is carried by the heavy storm water runoff events which tend to occur on an infrequent basis. For the present study the concentration of suspended solids was based on composite measured and estimated suspended solids load per unit area from various Oahu streams, including those out of the entire Kaneohe Bay Drainage Basin, as reported by Jones et al. (1971). Following this reasoning the suspended solids concentration value for predeveloped conditions for comparative purposes was set at 1,500 mg/L.

Quality data for urban storm water (post-development conditions) is sparse, both locally and nationally. Loehr (1974) compiled urban storm water runoff quality data collected from throughout the United States, as well as from a few international locations. As expected, the data are diverse. Locally, Fujiwara (1973) reported urban storm water quality data collecied from storm drains in different drainage areas of Honolulu, as shown in Table 1. For the present study, his results were used to simulate post-development runoff quality, which were, respectively, 0.60, 0.57, and 250 mg/L, for nitrogen, phosphorus, and suspended solids. Attention is likewise drawn to the heavy metal content in residential runoff, especially with respect to iron, chromium, copper, lead, and zinc.

Applying these concentrations to the post-development runoff volumes, the projected sediment and nutrient loads from the project site could then be estimated.

Table 1

Representative Storm Water Quality Data for a Honolulu Residential Area[a/*]

All units in mg/L except total coliform, fecal coliform, and fecal strep which are listed as No./100 mL.

Constituent	Concentration
Total Solids	511
Suspended Solids	252
COD	142
BOD	10
Dissolved Oxygen	7.1
NO_3-N	0.211
TKN	0.381
Total P	0.57
Ortho P	0.27
Grease	2.8
Lead	0.407
Chromium	0.013
Zinc	0.512
Copper	0.036
Iron	0.377
Total Coliform	83,000
Fecal Coliform	1,965
Fecal Strep	6,393

[a/] Storm water samples collected on Aupuni Street near Nuhelewai Stream.

* Values obtained from Fujiwara (1973).

SURFACE WATER RUNOFF ALTERATIONS

Quantity

The estimated storm water runoff and constituent changes due to the proposed Hawaii Kai Golf Course 2/1A Residential Project (30 acres) are shown in Table 2. The values presented, it must be emphasized, are for comparative purposes only, and are not intended to be representative of the accuracy implied by the practice of reporting results to one decimal place. This was done primarily for convenience of calculations and balancing.

Since approximately 28 acres of the proposed project area is "Koko" soil, which is listed by SCS as Class "B" soil, the entire site is assumed to be be Class B, inasmuch as the remaining site only had about two acres of unclassified (by SCS hydrologic rating) "Rock Land," and the roadways only amount to approximately one-half acre.

As can be readily observed in Table 2, there is essentially no storm runoff volume for the 1-yr, 1-hr duration storm for existing 1986 (pre-development) conditions; however, as the storm duration and recurrence interval increases the predevelopment conditions approaches about 2/3 of full development conditions. Among other factors causing this difference is that as the intensity and duration of the storm increases the ability of the soil to accept water decreases which approaches the less permeable conditions that would normally occur under full developed conditions, as a result of roofs, sidewalks, etc.

TABLE 2

Estimated Storm Water Runoff Volume and Constituent Changes due to the Proposed Hawaii Kai Golf Course 2/1A Residential Development, Oahu, Hawaii

Storm[a]			Storm Water Runoff											
			Hydraulic			Nitrogen[b]			Phosphorus[c]			Suspended Solids[d]		
			Development		Δ	Development		Δ	Development		Δ	Development		Δ
Duration	Recurrence Interval	Quantity	1986	Full		1986	Full		1986	Full		1986	Full	
hr	yr	in.	AF/event	AF/event	AF/event	lb/event	lb/event	lb/event	lb/event	lb/event	lb/event	ton/event	ton/event	ton/event
1	1	1.4	0.0	2.0	+ 2.0	0.0	3.2	+ 3.2	0.0	3.1	+ 3.1	0.00	0.68	+ 0.68
1	5	2.0	0.1	3.3	+ 3.2	0.4	5.4	+ 5.0	0.1	5.2	+ 5.1	0.26	1.13	+ 0.87
1	10	2.4	0.3	4.3	+ 4.0	1.2	7.0	+ 5.8	0.1	6.6	+ 6.5	0.70	1.45	+ 0.75
1	25	2.7	0.6	5.0	+ 4.4	1.9	8.1	+ 6.2	0.2	7.7	+ 7.5	1.13	1.69	+ 0.56
1	50	3.0	0.8	5.7	+ 4.9	2.8	9.3	+ 6.5	0.3	8.8	+ 8.5	1.65	1.93	+ 0.28
1	100	3.5	1.3	6.9	+ 5.6	4.5	11.2	+ 6.7	0.5	10.7	+ 10.7	2.67	2.34	- 0.33
24	1	3.2	1.0	6.2	+ 5.2	3.4	10.0	+ 6.6	0.3	9.6	+ 9.3	2.03	2.10	+ 0.07
24	5	6.8	6.3	15.0	+ 8.7	21.6	24.4	+ 2.8	2.2	23.2	+ 21.0	12.88	5.10	- 7.78
24	10	8.5	9.6	19.2	+ 9.6	32.9	31.3	- 1.6	3.3	29.8	+ 26.5	19.56	6.53	- 13.03
24	25	10.3	13.3	23.7	+ 10.4	45.8	38.7	- 7.1	4.6	36.7	+ 32.1	27.23	8.05	- 19.18
24	50	12.0	17.1	27.9	+ 10.8	58.6	45.6	- 13.0	5.9	43.3	+ 37.4	34.88	9.49	- 25.39
24	100	13.5	20.5	31.7	+ 11.2	70.3	51.7	- 18.6	7.0	49.1	+ 42.1	41.86	10.76	- 31.10

a) From U.S. Weather Bureau "Rainfall Frequency Atlas of the Hawaii Islands" (1962).

b) Based on a nitrogen value of 1.26 mg/L for 1986 conditions and 0.60 mg/L for "Full" development.

c) Based on a phosphorus value of 0.13 mg/L for 1986 conditions and 0.57 mg/L for "Full" development.

d) Based on a suspended solids value of 1500 mg/L for 1986 conditions and 250 mg/L for "Full" development.

As would be generally expected the greatest calculated incremental storm runoff volume (11.2 acre-ft/event) resulted from the 100-year storm with a 24-hour duration, as shown in Table 2. These values (acre-ft/event) represent a volume of water and should not be confused with peak discharge rates which represent the maximum volume of storm water runoff discharged per unit of time (e.g., cfs). Peak discharge rates are required for engineering design or proposed drainage facilities and ascertaining the capacity of existing facilities, while total runoff volume provides a more realistic estimate of impact on water quality.

Quality

Besides the changes in the volume of storm water runoff, the quality of the various constituents being transported is of equal, if not more importance. However, as previously mentioned estimates of water quality concentrations resulting from significant storm water runoff that occurs at the most only a few times a year is very perplexing, especially since information on this subject essentially only became available at both the local and national level in the 1970's.

The summation of nitrogen, phosphorus, and suspended solids loads from both present (1986) and projected (full) residential development for storms of 1- and 24-hour duration at recurrence intervals of 1-, 5-, 10-, 25-, 50-, and 100-years are shown in Table 2. The incremental changes per storm event for the present and projected development conditions for the various duration and recurrence interval storms indicate that from the least to the greatest amount of rainfall: nitrogen increases for the 1-hr duration storms and then decreases when the intensity (> 10-yr recurrence interval) of the storms increase; phosphorus increases from 3.1 lb/event to 49.1 lb/event; and suspended

solids shows general increases for the 1-hr duration storms and then general decreases (except for the 24-hr/1-hr storm) for the 24-hr duration storms.

As previously stated it must be emphasized that the constituent values are only for comparative purposes, and should not be taken as absolute values. Overall then (between pre-and-post developed conditions), the output of nitrogen is about the same and phosphorus is expected to increase in the run-off, while suspended solids increase slightly for the lower intensity/duration storms, and then generally decrease for the higher intensity/duration storms. The decreased amount of exposed soil in residential areas tend to reduce the quantity of the suspended solids load at the higher intensity/duration storm events even though the total quantity of storm water increases.

The hydrologic and water quality aspects of the surface water runoff were only considered for the present and projected conditions. However, increases in constituent loads will undoubtedly result from construction activities, especially if a significant storm occurs during the interim period between earth moving operations and soil stabilization completion. The impact of construction activities can be minimized by adhering to strict erosion control measures

Other water quality constituents of general concern include biocides and heavy metals. Typically the biocides presently being used tend to break down more readily in comparison to the more long lasting types of a few years ago; consequently, except for agricultural runoff, the types and concentrations are usually considered insignificant. On the other hand heavy metals do apparently increase somewhat as a result of urbanization; however, the possible long-term effect, if any, that increased heavy metals may have upon the biological life of the receiving waters (fronting ocean with essentially unconfined water movement) at the concentrations expected in residential runoff (Table 1) is presently undefined.

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APPENDIX B

HAWAII KAI, OAHU: ARCHAEOLOGICAL RECONNAISSANCE

Prepared for:

Environmental Communications Inc.
1146 Fort Street Mall
Honolulu, Hawaii 96813

Prepared by:

William Barrera, Jr.

CHINIAGO INC.
1040 B Smith Street
Honolulu, Hawaii 96817

JUNE 1986

I. INTRODUCTION

An archaeological reconnaissance of approximately 30 acres was conducted at Hawaii Kai, Oahu (Figures 1 and 2). The work performed consisted of the following:

1) An inspection of State Historic Preservation Office USGS maps and Tax Maps showing known historic site locations,

2) An inspection of McAllister's *Archaeology of Oahu*,

3) An inspection of Summers and Sterling's *Oahu Sites*, and

4) A field check during which one person walked the property searching for evidence of archaeological or historic sites.

Evidence of extensive prior disturbance by heavy equipment was plain, and a supervisor who was on the site at the time of the inspection stated that the project area had once served as a borrow pit for nearby construction projects. At the time of the field visit a portion of the property was being used for the dumping of discarded materials (Figure 3).

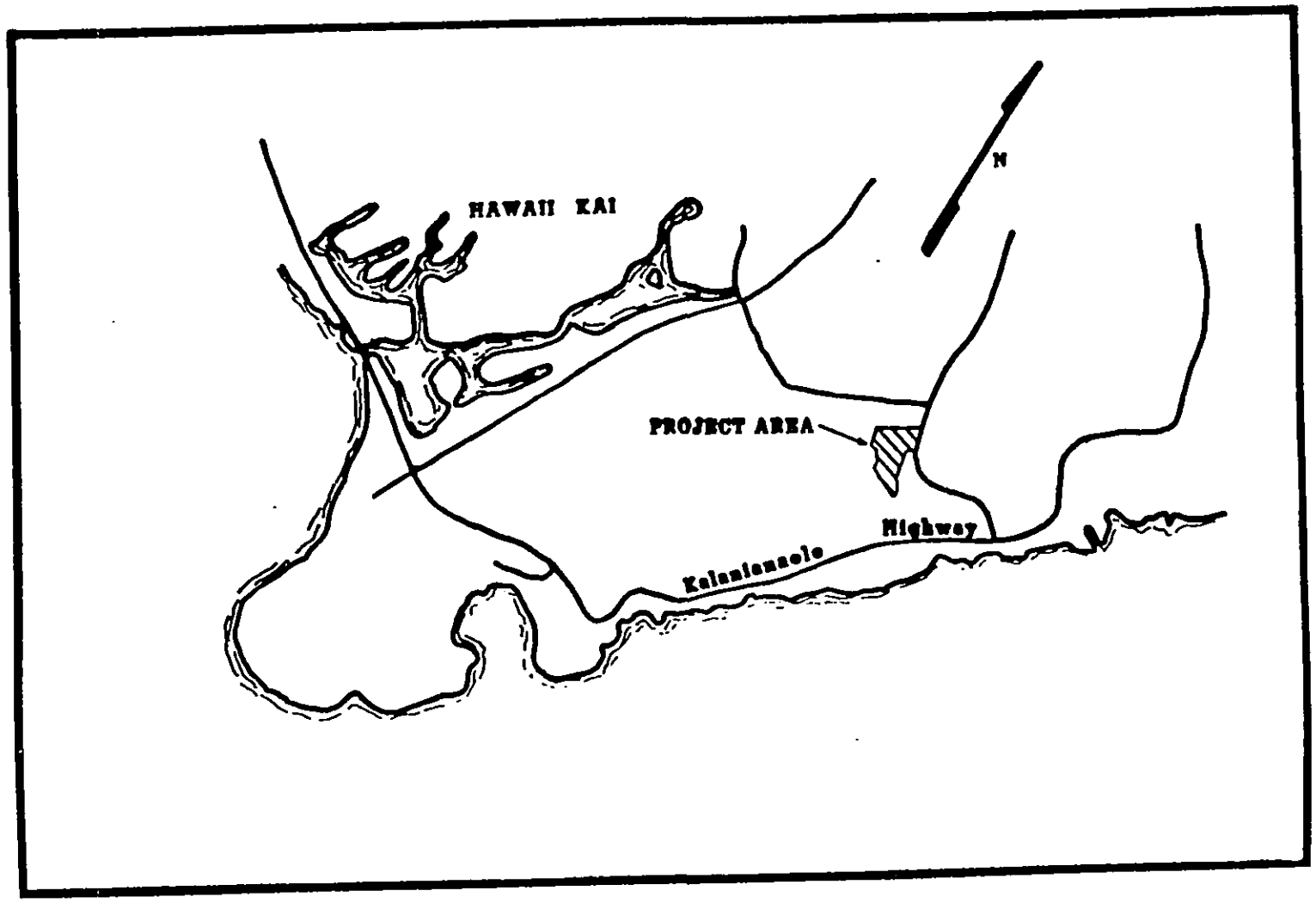

Figure 1. Location of Project Area.

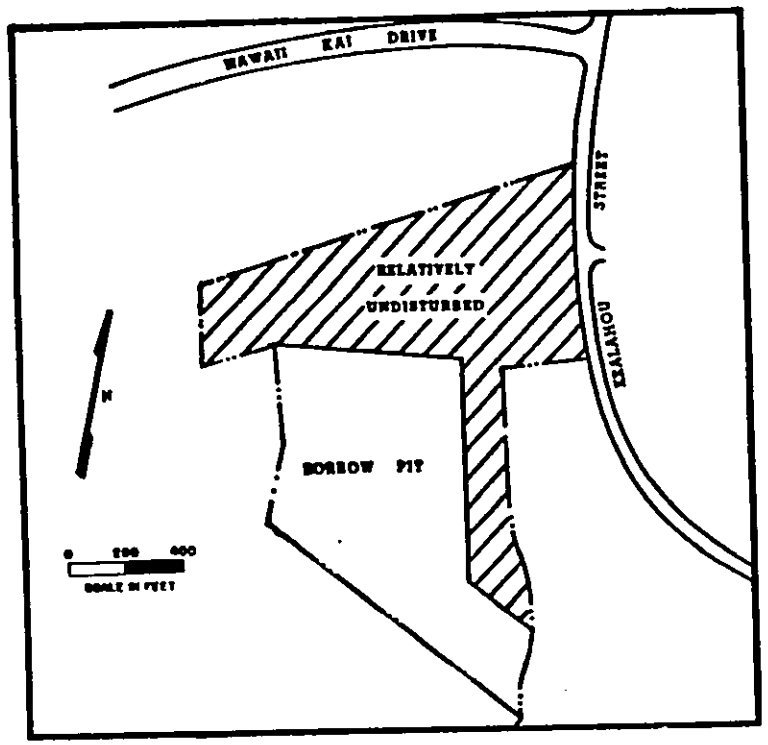

Figure 2. Map of Project Area

II. RESULTS OF LITERATURE SEARCH

Although no sites were indicated on the maps at the State Historic Preservation Office, McAllister [1933:65] had described two sites which, judging from his inadequate map, may have been situated in or near the project area:

> "Site 36. House site on the low ridge of Koko Crater, Makapuu side.
>
> "Only a few of the foundation stones of the house remain; they are insufficient to give an idea of size. A low wall was formed about the site by placing large stones on end. It is approximately

Figure 3. View of Borrow Pit Area, Looking Southwest

> 85 feet wide and much longer. On the Makapuu side of the crater, south of and lower than the house, is a series of three terraces, in poor state of preservation, which were probably used for agricultural purposes. Though the site is old, it may be post-European."
>
> "Site 37. Terraces, northwest slope of Koko Crater, facing Kamiloiki Valley.
>
> "A series of terraces from 12 to 20 feet wide run across the slope of the land. The terraces are low and unfaced, not more than 1 foot above each other, with the stones gathering in clearing [sic] placed along the edges. Seventeen terraces were counted along one slope. One area which was mounded up had a considerable number of larger stones scattered about and was probably a house site."

The only site indicated to be near the property by Summers and Sterling [1978] was McAllister's Site 37, discussed above.

III. RESULTS OF FIELD INSPECTION

The field inspection located no historic or archaeological sites on the property. This was not unexpected, considering the extent of disturbance by heavy machinery to which the parcel has been subjected. Only one area, situated between the access roads and the golf course on the north and northeast sides of the parcel, remains relatively untouched.

IV. RECOMMENDATIONS

That portion of the property which served as a borrow pit is definitely clear of archaeological or historical remains, and construction may proceed there without concern for any such sites. However, the situation is not so clear for the relatively undisturbed portion, as it is possible that sub-surface remains are present. This possibility is indicated by McAllister's observation of Sites 36 and 37 in the vicinity. Even though these particular house sites and terraces may have been situated outside of the project area, their documented former presence strongly suggests that sites were distributed throughout the entire area. If the surface evidence of these sites (stone walls, terraces, etc.) has been destroyed by relatively minor earthmoving activities (scraping of the ground surface during grubbing of vegetation, for example) important sub-surface deposits containing valuable data in the form of midden remains, artifacts, charcoal deposits and cultural layers may still be present.

We therefore recommend that an intensive survey, to consist of extensive sub-surface testing, be conducted on the relatively undisturbed portion of the project area prior to any construction activity. These investigations can be done after land use policy changes have been completed, as long as there is a commitment to proper archaeological study of any significant remains that might be found.

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APPENDIX C

HAWAII KAI

GOLF COURSE 2/1A SUBDIVISION
TRAFFIC IMPACT STUDY

Prepared for

KAISER DEVELOPMENT
COMPANY

Wilbur Smith and Associates

HAWAII KAI GOLF COURSE 2/1A SUBDIVISION
TRAFFIC IMPACT STUDY

prepared for
Kaiser Development Company

by

Wilbur Smith and Associates

July 31, 1986

CONTENTS

ILLUSTRATIONS

TABULATIONS

SUMMARY

The Golf Course 2/1A area is located on the Koko Crater side of Kealahou Street between Hawaii Kai Drive and Kalanianaole Highway. The Kaiser Development Company is proposing that approximately 30 acres of this area be developed for residential uses, and the balance of the area be used for industrial-related and preservation purposes.

This traffic analysis reflects development of the residential section as follows: 48 single family residences, 120 low-density apartment units, and 300 medium density apartment units. The analysis also reflects the development of a 14.3-acre services industrial area within the Golf Course 2/1A area. Access to the residential area is planned from Kealahou Street, while access to the services industrial area is planned from Kalanianaole Highway. Full occupancy of both the residential and industrial area is expected by 1995.

When fully occupied, it is estimated that the Golf Course 2/1A development would generate the following numbers of vehicle trips:

	PEAK HOUR TRIPS	
Peak Period	To Project	From Project
Weekday Morning		
- Residential	52	134
- Services Industrial	140	89
Total	192	223
Weekday Evening		
- Residential	138	101
- Services Industrial	222	266
Total	360	367

The above vehicle trip estimates do not reflect any potential trip reductions that might result from the extension of the planned Marina Zoning rideshare measures to the future residents of the Golf Course 2/1A development.

The projection of 1995 traffic conditions included the following assumptions regarding new development in Hawaii Kai and the nearby East Honolulu areas:

1. The completion of ongoing and approved projects within Hawaii Kai (including nearby Golf Course 4, 5 and 6 residential projects) and along the Kalanianaole Highway Corridor between Hawaii Kai and the beginning of the H-1 Freeway.

2. Development of the Hawaii Kai Marina Zoning tract and implementation of the proposed traffic mitigation program as approved by the Honolulu City Council.

The residential and services industrial area vehicle trips were added to roadways based on the following travel route assumptions:

- All trips to or from the Golf Course 2/1A residential units were assumed to travel to the Marina area or to Honolulu via Hawaii Kai Drive.

- Traffic generated by the services industrial portion of the development were assumed to use either Hawaii Kai Drive or Kalanianaole Highway depending on the origin/destination of the trip.

  - Kalanianaole Highway would be used by vehicle trips to or from the areas outside Hawaii Kai (e.g., East Honolulu, Honolulu, and points windward) as well as for trips to and from residential projects and commerical centers located adjacent to Kalanianaole Highway in the Hawaii Kai Marina area.

  - Hawaii Kai Drive would be used by vehicle trips to or from other locations within Hawaii Kai.

Based on these traffic routing assumptions, an estimated 70 percent of the morning peak-hour trips between the Golf Course 2/1A project and points Ewa of East Hawaii Kai were routed on Hawaii Kai Drive. For the evening peak hour, 75 percent of the trips to/from the Ewa direction were routed on Hawaii Kai Drive.

Note that the total estimated project trips during both the morning and evening peak hours are almost evenly balanced between trips to and from the project, as indicated in the trip generation summary on the preceding page. This balance of trips entering and leaving the project area results from the proposed mix of residential and services industrial uses. The presence of the services industrial uses would minimize project impacts on area traffic conditions in two different ways:

1. The majority of the services industrial area trips would be made in the "off-peak" travel direction. The increase in traffic volumes in the "off-peak" direction can be accommodated at most intersections without affecting the capacity provided for the peak direction traffic movements.

2. The new employment opportunities and services offered by the services industrial development would attract some Hawaii Kai trips that would otherwise be made into Honolulu on Kalanianaole Highway. This diversion of Hawaii Kai trips to the services industrial area is estimated to reduce future traffic increases by approximately 50 and 100 peak-direction trips during the morning and evening peak hour periods, respectively, on the Ewa end of Kalanianaole Highway at the H-1 Freeway. This reduction would offset all (during evening) or a portion (during morning) of the peak-hour, peak-direction trips generated by the proposed Golf Course 2/1A residential development.

Impact on Hawaii Kai Roadways

In the immediate vicinity of the site, the concentration of project traffic would add to future traffic congestion and delays expected at the unsignalized intersection of Kealahou Street and Kalanianaole Highway during the weekday evening peak traffic period.

The Golf Course 2/1A project traffic would also increase the traffic which circulates through Hawaii Kai during weekday commute periods using a route along Hawaii Kai Drive, Lunalilo Home Road, and Wailua Street. The estimated increase

in traffic along this route would contribute to possible operational problems at several of the intersections where large turning volumes occur.

The analyses results indicate, however, that the additional traffic generated by the Golf Course 2/1A project would not require the construcion of the Wailua Street extension to Hawaii Kai Drive at Kamehame Ridge. Project traffic impacts identified for Hawaii Kai area roadways could be mitigated through the implementation of local intersection improvements. The mitigation measures identified to address the future traffic problems within Hawaii Kai include:

1. Install a traffic signal at the intersection of Kealahou Street and Kalanianaole Highway. A left-turn storage lane should be provided on the Ewa side approach of Kalanianaole Highway to minimize blockage of the through traffic by vehicles waiting to turn left onto Kealahou Street.

2. At the intersection of Hawaii Kai Drive and Lunalilo Home Road, re-stripe the intersection to allow left turns to be made from both of the existing lanes on the makai side approach of Hawaii Kai Drive. Also, the curb and sidewalk on the southeast corner should be reconstructed to provide a larger turning radius so that buses could turn right onto Hawaii Kai Drive without swinging across the roadway center line.

3. Restripe Kealahou Street to provide left-turn storage lanes at the intersection with the Golf Course 2/1A and Queen's Gate access roads. On-street parking should be restricted along this section of Kealahou Street.

4. A left-turn storage lane may be needed on the Ewa-side approach of Kalanianaole Highway at the services industrial area access road. The need for a left-turn lane should be further investigated as actual activities for the site are better defined.

5. Reconstruct the Mauka side of Wailua Street at the Lunalilo Home Road intersection to accommodate the increase in right turn traffic volumes at this intersection.

Impact on Kalanianaole Highway

Projected 1995 traffic conditions on Kalanianaole Highway reflect traffic generated by Hawaii Kai infill and Marina Zoning projects, by ongoing or approved projects in the other sections of East Honolulu, and by the Golf Course 2/1A project. The assessment of future traffic conditions assumes the roadway improvements and rideshare measures identified in the Marina Zoning Transportation Study are implemented.

Traffic projections indicate that the proposed Golf Course 2/1A project would add approximately 50 vehicles to the morning peak direction of travel (towards Honolulu) on Kalanianaole Highway at the Kalaniiki Street "bottleneck" adjacent to Kalani High School, and no increase to the off peak direction (towards Hawaii Kai). During the evening peak hour, the project would result in a net reduction of 8 vehicles in the peak direction traffic flow and an increase of 55 vehicles in the off-peak direction flow at the Kalaniiki Street location.

The Golf Course 2/1A project traffic is not expected to impact Kalanianaole Highway beyond those impacts previously identified for the Hawaii Kai Marina Zoning parcels. The Honolulu City Council approved fewer units than requested by Kaiser Development Company for the Marina Zoning Kaluanui I parcel. The estimated increase in Kalanianaole Highway peak hour, peak direction traffic from the Golf Course 2/1A project is less than the number of estimated future trips "eliminated" by the City Council action "down-sizing" the Kaluanui I development from the size included in the Marina Zoning traffic analysis (400 approved units versus 1,020 proposed units).

The traffic increases projected for the Golf Course 2/1A development do not reflect any trip reduction as a result of the Marina Zoning rideshare program. It is recommended that these ridesharing incentives be extended to new residents of the Golf Course 2/1A development. This would result in an estimated reduction of 10 to 12 peak hour, peak direction trips from the volumes included in the impact analysis for Kalanianaole Highway.

The traffic conditions along Kalanianaole Highway could also be improved if any of the following occur:

1. If the current rideshare program proves to be more successful in the future than projections indicate, then the resulting reductions in peak-hour traffic on Kalanianaole Highway may offset the Golf Course 2/1A traffic increases.

2. If a substantial retirement living market is attracted to either the Marina Zoning or Golf Course 2/1A projects in Hawaii Kai, a significant reduction in peak hour (commute) trips on Kalanianaole Highway could result. The trip making characteristics of the retirement housing development would have an offsetting (if part of Marina Zoning) or reducing (if part of Golf Course 2/1A) effect on the number of Golf Course 2/1A trips projected on Kalanianaole Highway during peak traffic periods.

3. The planned implementation of the proposed State DOT Median HOV (High Occupancy Vehicle) Lane Project on Kalanianaole Highway has the potential of improving projected 1995 traffic conditions to a level equal to or better than existing conditions.

Conclusions

In conclusion, proposed Golf Course 2/1A project traffic would have a modest impact on peak-hour traffic conditions at several identified intersections located within Hawaii Kai. The impacts at these Hawaii Kai intersections can be mitigated through the implementation of minor intersection improvements and would not require any major street realignments or extensions.

INTRODUCTION

Golf Course Subdivision 2/1A is located on the Koko Crater side of Kealahou Street in the eastern portion of Hawaii Kai. As depicted in Figure 1, the Golf Course 2/1A area is situated approximately midway between Hawaii Kai Drive and Kalanianaole Highway with frontage only along Kealahou Street.

Current development proposals indicate that the project would include approximately 30 acres of residential uses and approximately 14.8 acres of light industrial (service oriented) land use. Access to the residential area, located within the mauka portion of the site, would be via Kealahou Street. The service industrial area of the site which abuts the sewage treatment plant would be provided access via Kalanianaole Highway. Separate internal circulation systems have been proposed for the residential and services industrial areas of Golf Course 2/1A to improve the compatibility of the two adjacent uses.

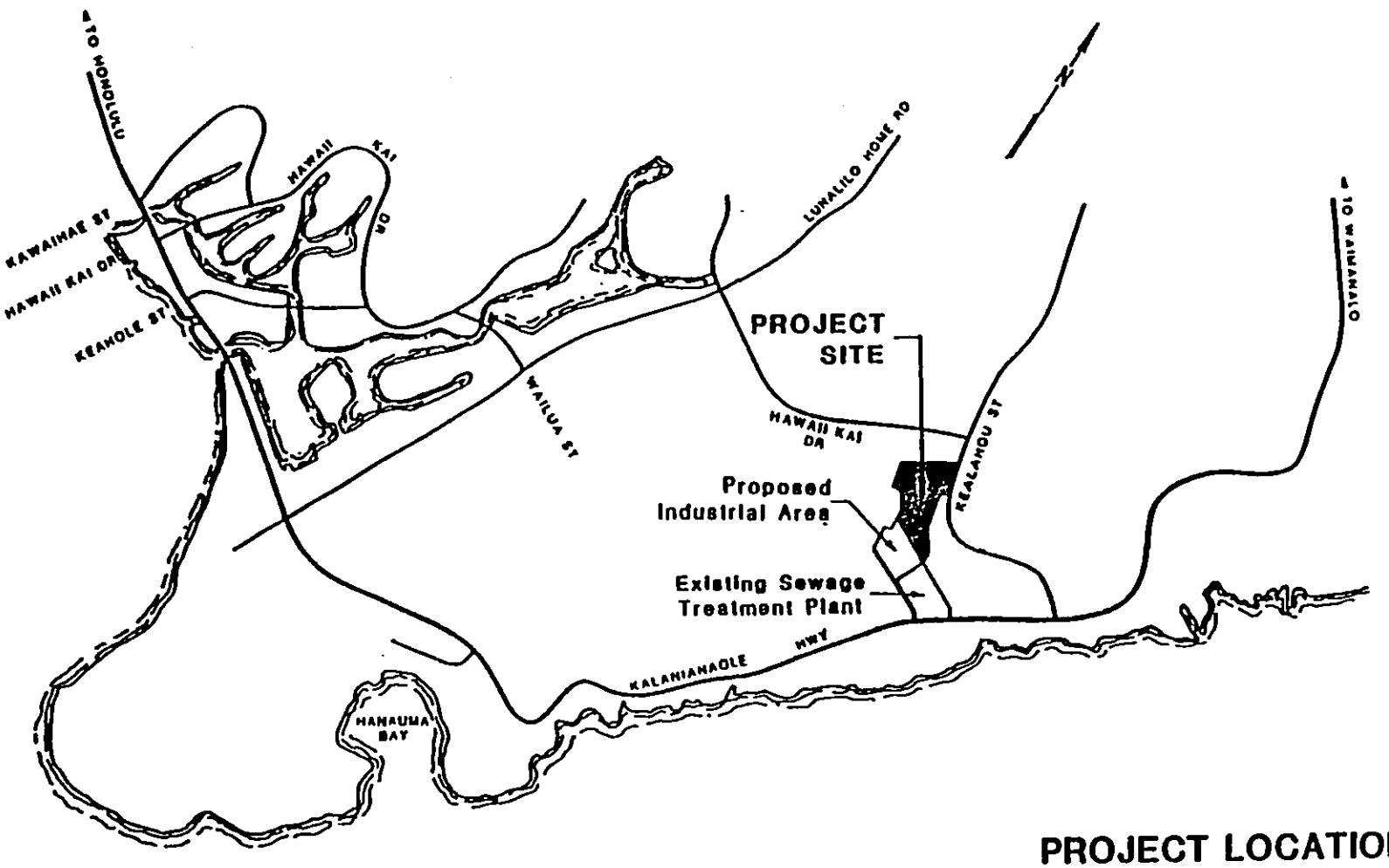
The purpose of this study is to assess the existing traffic conditions in the area, and to assess the impacts of Golf Course 2/1A development traffic on the area roadway system. This analysis addresses:

1. Effects of the projected traffic increases on the adjacent intersections of Kealahou Street with Kalanianaole Highway and with Hawaii Kai Drive;

2. Project impact on other critical intersections within Hawaii Kai; and

3. The increases in traffic volumes on Kalanianaole Highway attributable to the development of the Golf Course Subdivision 2/1A area.

Based upon a start of construction in 1990, completion of sales and full occupancy of the subdivision is expected by 1995. Travel forecasts used in the analyses reflect the development of the ongoing and approved projects in Hawaii Kai, including the Marina Zoning parcels as recently approved by the Honolulu City Council. The travel analysis also reflects the traffic increases expected from developments along Kalanianaole Highway between Hawaii Kai and the H-1 Freeway.



PROJECT LOCATION
GOLF COURSE 2/1A
RESIDENTIAL PROJECT

FIGURE 1

Wilbur Smith and Associates

EXISTING CONDITIONS

The area which comprises Golf Course 2/1A is currently undeveloped land. Hawaii Kai Championship Golf Course borders Golf Course 2/1A on the mauka and windward sides except for a 600-foot frontage along Kealahou Street near Hawaii Kai Drive. On the Koko Head and makai sides, the project site is bordered by Koko Head Park and the sewage treatment plant, respectively.

Area Roadway System

Kalanianaole Highway is a primary state highway which provides access between the central Honolulu urbanized area, East Honolulu (including Hawaii Kai) and the southern part of the Koolaupoko area. Makai of the project site, Kalanianaole Highway provides two travel lanes within a 100-foot wide right-of-way. Kalanianaole Highway continues as a two-lane facility in the Ewa direction to Lunalilo Home Road, where the roadway widens to four lanes. Because of the relatively undeveloped character of the area and unrestricted sight distances, the posted speed limit is 45 miles per hour adjacent to the project area. The speed limit decreases to 35 miles per hour in the Makapuu area and toward Hanauma Bay.

Kealahou Street is a 40-foot wide roadway with curb-and-gutter and 4-foot wide sidewalks within a 56-foot wide right-of-way. The street is striped for one lane in each direction. Although marked turn lanes are not provided on Kealahou Street at the intersections with Kalanianaole Highway and with Hawaii Kai Drive, those vehicles waiting to turn left do stop sufficiently close to the centerline to permit through and right-turn vehicles to pass. Kealahou Street continues mauka of the Hawaii Kai Drive intersection to serve the Kalama Valley residential areas. The speed limit on Kealahou Street is 30 miles per hour.

Hawaii Kai Drive connects the Golf Course and Kalama Valley areas to the commercial and residential land uses in the Marina area of Hawaii Kai. Hawaii Kai Drive currently terminates at the T-intersection with Kealahou Street. The 40-foot wide roadway, located within a 56-foot wide right-of-way, is striped for two lanes in each direction.

At present, the intersections along Kealahou Street are stop sign-controlled. The Kealahou Street approach is controlled by a stop sign at Kalanianaole Highway. Stop signs control all three approaches at the Kealahou Street intersection with Hawaii Kai Drive. The intersection of Hawaii Kai Drive and Lunalilo Home Road is traffic signal-controlled.

Hawaii Kai Traffic Volumes

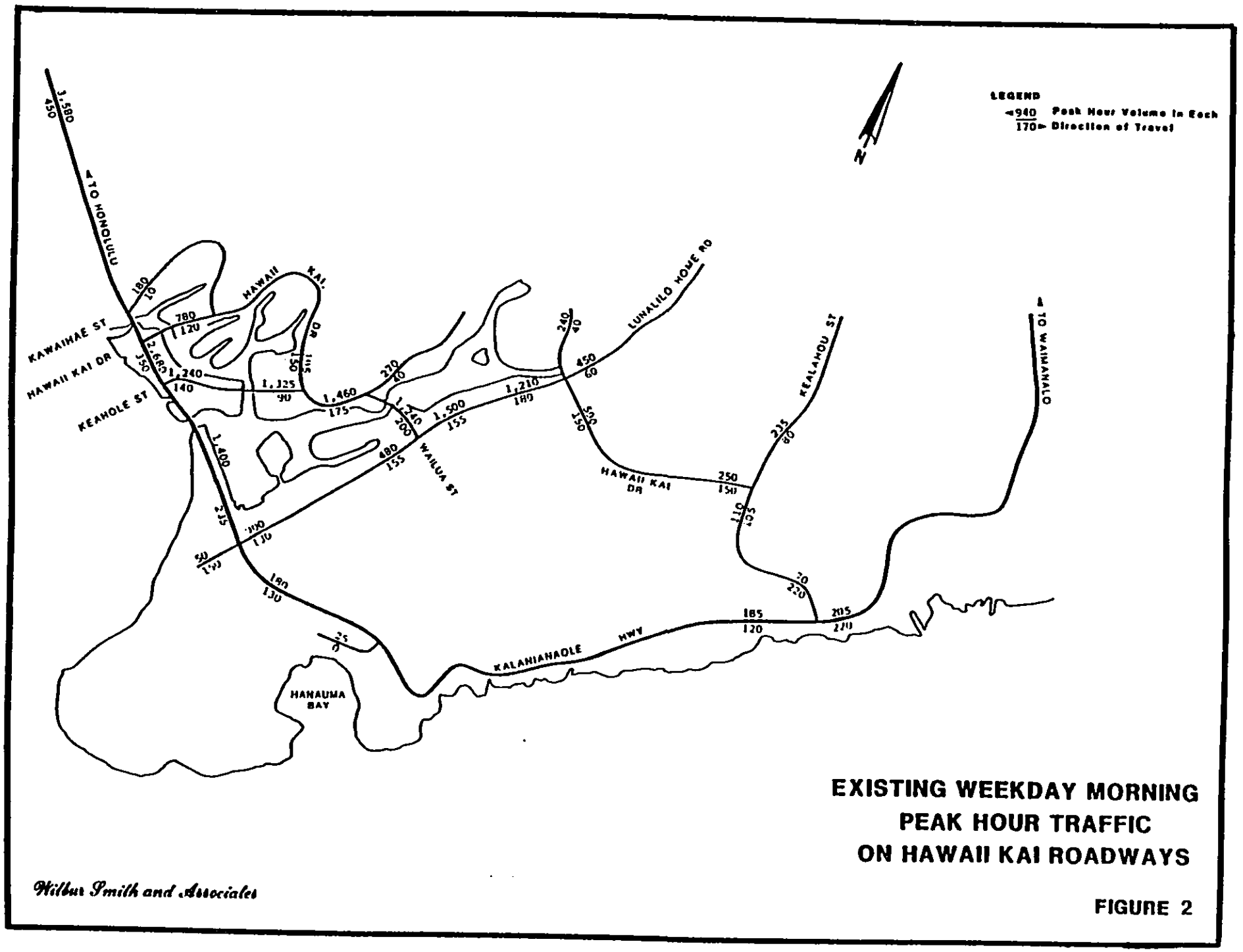
Weekday 24-hour traffic volumes range between 8,000 and 9,000 vehicles on Kalanianaole Highway at Kealahou Street. Weekday volumes approximate 4,000 to 5,000 vehicles on Kealahou Street, and over 6,000 vehicles on Hawaii Kai Drive.

The weekday morning peak hour (7 to 8 A.M.) traffic volumes, as shown in Figure 2, are generally lower than the weekday evening peak period. The pattern and volume of turning movements at the intersections indicate that present commuter traffic from Kalama Valley and Golf Course subdivisions primarily use Hawaii Kai Drive, rather than Kalanianaole Highway, for travel to central Hawaii Kai and Honolulu. Hawaii Kai Drive and Kealahou Street are also used by most of the traffic travelling between central Hawaii Kai and Windward Oahu.

Weekday evening peak hour (4 to 5 P.M.) volumes, as depicted in Figure 3, are approximately 50 percent higher than morning peak hour volumes on Kealahou Street, and two to three times the morning peak hour volumes on Kalanianaole Highway. Kealahou Street volumes approximate 350 vehicles and Kalanianaole Highway some 800 vehicles. The larger increases on Kalanianaole Highway primarily reflect greater use by recreational traffic in the midday and afternoon periods. Weekday evening peak hour traffic movement patterns also indicate the predominant use of Hawaii Kai Drive for Ewa-direction travel between central Hawaii Kai and the East Hawaii Kai area. As in the morning peak hour, Kealahou Street is used by trips between Hawaii Kai and Windward Oahu.

Hawaii Kai Traffic Conditions

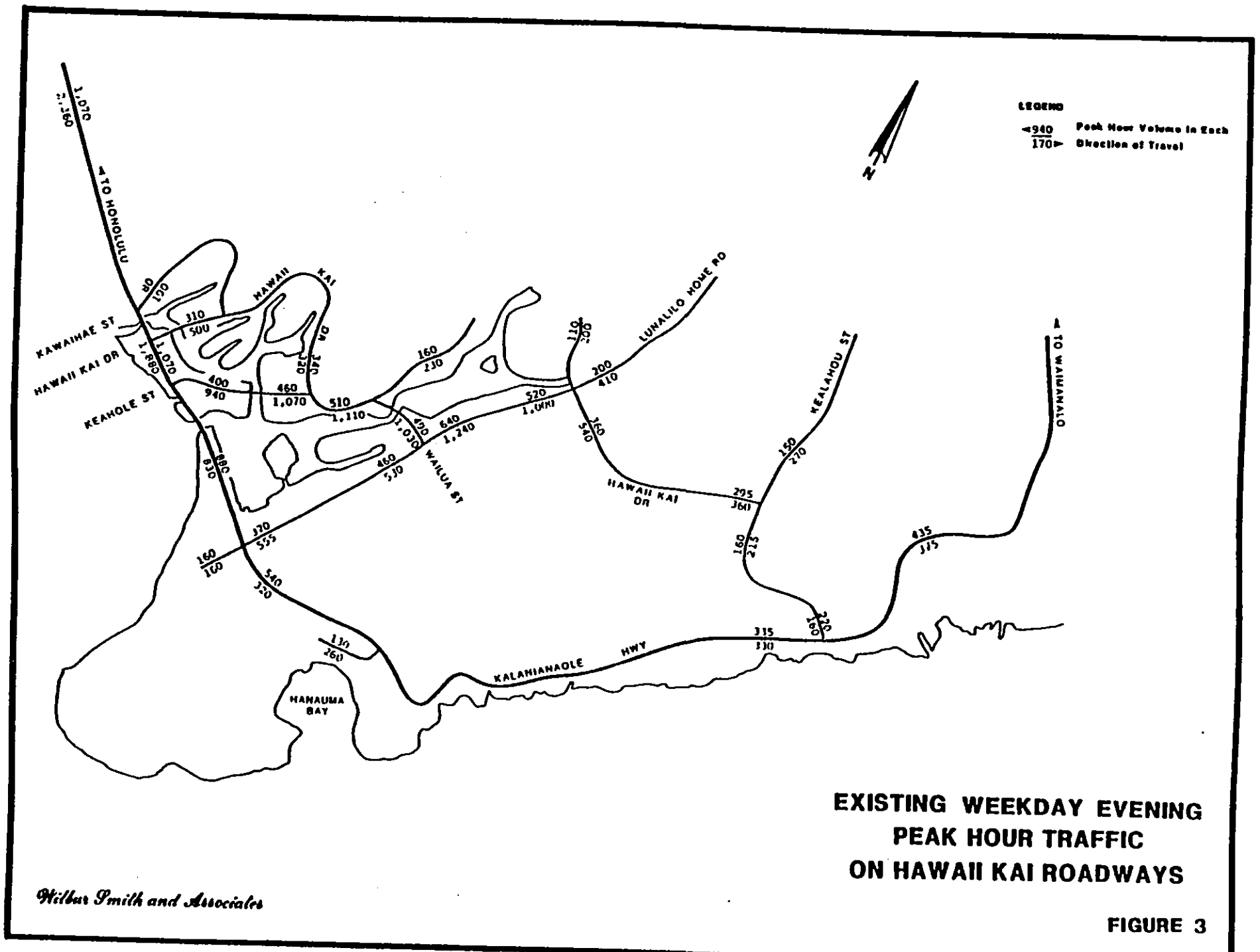
Existing roadway conditions were evaluated using several methodologies involving basic volume-capacity and level of service concepts. The various methodologies used in the assessment of quality of traffic service at study area



EXISTING WEEKDAY MORNING PEAK HOUR TRAFFIC ON HAWAII KAI ROADWAYS

Wilbur Smith and Associates

FIGURE 2



EXISTING WEEKDAY EVENING PEAK HOUR TRAFFIC ON HAWAII KAI ROADWAYS

Wilbur Smith and Associates

FIGURE 3

intersections are described in Appendix A. The following sections present the results of the analyses of current traffic conditions at key site access intersections within the Hawaii Kai area.

The Kealahou Street intersections were analyzed relative to the adequacy of the present stop sign controls, and whether current conditions warrant installation of traffic signals. Adequacy of the present stop sign controls were tested relative to the procedures set forth in Chapter 10, "Unsignalized Intersections," of the Proposed Chapters for the 1985 Highway Capacity Manual.(1) Warrants for traffic signal installation were tested against criteria specified in Section 4C, "Warrants for Signals," of the Manual on Uniform Traffic Control Devices.(2)

Field observations were also made at each intersection during weekday and weekend peak traffic periods.

Kalanianaole Highway/Kealahou Street Intersection - At this "T" intersection, any congested conditions and delays would initially affect the left and right-turn movements from stop sign-controlled Kealahou Street. These movements were analyzed relative to the procedures outlined in Transportation Research Circular 281. The service levels with current volumes are:

	LEVEL OF SERVICE (3)		
	Kealahou Street		Kalanianaole
Peak Hour	Left-Turn	Right-Turn	Left-Turn
Weekday Morning	B	A	A
Weekday Evening	D	A	A
Sunday Morning	F	B	A
Sunday Evening	F	A	A

The analysis indicates that traffic operations are satisfactory on weekdays. The analysis, however, also indicates that the heavier through traffic volumes on Sundays are likely to result in longer than acceptable delays for left-turns from Kealahou Street.

(1) Proposed Chapters for the 1985 Highway Capacity Manual, Transportation Research Circular 281, prepared by Transportation Research Board, June, 1984.
(2) Manual on Uniform Traffic Control Devices, U. D. Department of Transportation Federal Highway Administration, 1971.
(3) Service level descriptions are given in Appendix A.

The results of a more detailed signal warrant analysis indicated that Sunday conditions marginally meet the warrant for installation of a traffic signal at the intersection. The volume of left turn movement and accidents also indicate the desirability of a left-turn storage lane on Kalanianaole Highway to remove the vehicles waiting to turn left from the through traffic lane.

Kealahou Street/Hawaii Kai Drive Intersection - This "T" intersection operates at an acceptable level of service. Current weekday and Sunday volumes are approximately one-half of the intersection capacity with the present three-way stop sign control.

Other Key Access Intersections - The results of the volume-capacity analyses conducted for other key project access intersections within the Hawaii Kai are presented in Table 1 below.

Table 1
EXISTING LEVEL OF SERVICE FOR KEY INTERSECTIONS WITHIN HAWAII KAI

	MORNING PEAK HOUR		EVENING PEAK HOUR	
INTERSECTION	Volume-Capacity Ratio	Level of Service	Volume-Capacity Ratio	Level of Service
Kalanianaole Hwy./Hawaii Kai Dr.	.39	D	.65	B
Kalanianaole Hwy./Keahole St.	.79	C	.91	E
Kalanianaole Hwy./Lunalilo Home Rd.	.57	A	.74	C
Lunalilo Home Rd./Wailua St.	.83	D	.56	A
Lunalilo Home Rd./ Hawaii Kai Dr.	.32	D	.52	A
Hawaii Kai Dr./Keahole St.	.51	A	.57	A
Hawaii Kai Dr./Wailua St.	.90	E	.67	B

The major traffic movement in the morning peak period is the large volume of commuter traffic travelling from the residential areas through Hawaii Kai towards Downtown Honolulu. Traffic from the East Hawaii Kai areas generally use a route following Hawaii Kai Drive and Lunalilo Home Road to Wailua Street. At Wailua Street, the majority turn right and travel a route along Wailua Street, Hawaii Kai Drive, and Keahole Street. A portion of the traffic at Wailua Street intersections continues through on Lunalilo Home Road to Kalanianaole Highway.

This traffic route results in very heavy left turn volumes during the morning peak hour from Hawaii Kai Drive makai onto Lunalilo Home Road and from Wailua Street onto Hawaii Kai Drive, and a heavy right turn volume from Lunalilo Home Road onto Wailua Street. The heavy turning movements result in Level of Service D conditions at the Lunalilo Home Road intersections with Hawaii Kai Drive and Wailua Street, and Level of Service E conditions at the intersection of Wailua Street with Hawaii Kai Drive. (See Table 1 for volume-capacity ratios at these intersections.)

The return commuter movement in the evening peak hour results in large turning volumes at these same intersections. However, the slightly lower evening peak hour volumes and the fewer conflicts for the turning movements enable these movements to be made with less disruption to overall intersection operations.

Kalanianaole Highway Traffic Conditions

Kalanianaole Highway is a divided highway in a 120-foot wide right-of-way from the H-1 Freeway to Kirkwood Street. The divided section has three lanes in each direction Ewa of West Hind Drive, and three Ewa and two Koko Head direction lanes between West Hind Drive and Kirkwood Street. Between Kirkwood Street and Hawaii Kai, the roadway is a four-lane undivided highway, with left-turn lanes provided only at East Halemaumau, Hawaii Kai Drive, Keahole Street and Lunalilo Home Road.

Current roadway facilities and public transit services along Kalanianaole Highway are intensely used throughout the morning and evening peak travel periods. Traffic volumes have equalled or approached the capacity of the critical (bottleneck) intersections in recent years. This has resulted in a "spreading" of the

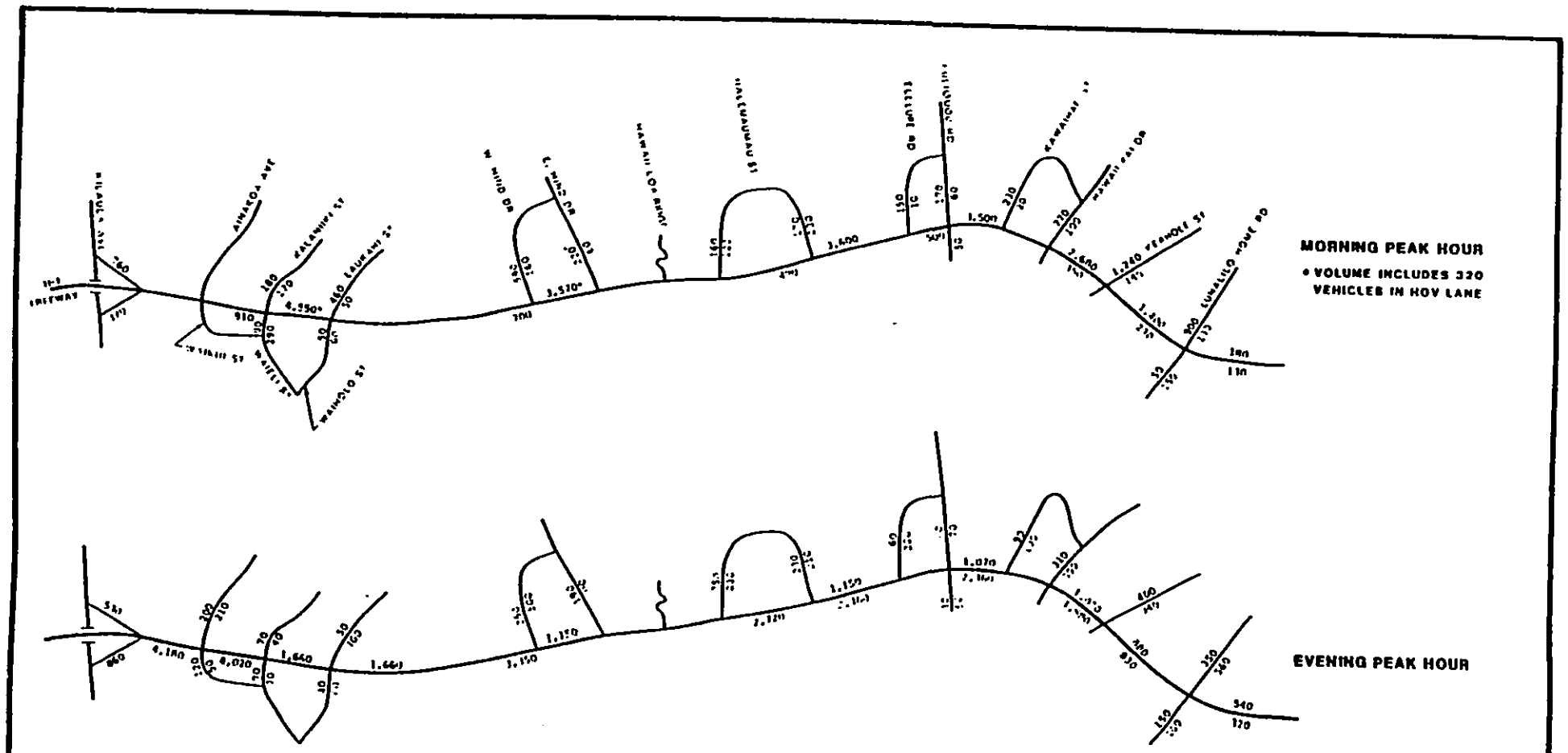
peak traffic volumes over a long period, either by encouraging drivers to leave earlier or later than the highest volume period, or by slowing and metering traffic through the capacity-constrained locations.

Directional morning and evening peak hour traffic volumes are depicted in Figure 4 for Kalanianaole Highway and for major streets intersecting with Kalanianaole Highway. The volumes reflect the peak one-hour volume at each location during the morning and evening peak traffic periods.

Inbound peak hour volumes to Honolulu increase from approximately 3,000 vehicles to the Hawaii Kai area to some 4,500 vehicles prior to reaching Interstate H-1. Off-peak (Koko Head) direction volumes range between 300 and 900 vehicles. Highest cross street volumes occur on the major Hawaii Kai roadways and on West Hind Drive, Laukahi Street and Kalaniiki-Waieli Streets.

Peak direction traffic volumes along Kalanianaole Highway during the evening peak hour are generally 15 to 30 percent lower than the morning peak hour volumes at the same location, while the off-peak direction volumes tend to be double the morning off-peak direction volumes. As shown in Figure 4, cross street traffic volumes approximate the morning volumes on Kalaniiki and Waieli Streets, which reflect the absence of school-related traffic in the evening peak hour.

Estimated capacity utilization and Level of Service at the key intersections is presented in Table 2.



EXISTING PEAK HOUR TRAFFIC
KALANIANAOLE HIGHWAY

FIGURE 4

Wilbur Smith and Associates

Table 2

EXISTING LEVEL OF SERVICE FOR KEY INTERSECTIONS
ALONG KALANIANAOLE HIGHWAY

INTERSECTION	MORNING PEAK HOUR Volume-Capacity Ratio	MORNING PEAK HOUR Level of Service	EVENING PEAK HOUR Volume-Capacity Ratio	EVENING PEAK HOUR Level of Service
Kalanianaole Hwy./Ainakoa Ave./ Waikui St.	N/A	N/A	.93	E
Kalanianaole Hwy./Kalaniiki St./ Waieli St.	.99	E	.93	E
Kalanianaole Hwy./ Laukahi St./ Waiholo St.	.95	E	.85	D
Kalanianaole Hwy./West Hind Dr.	.88	D	.86	D
Kalanianaole Hwy./ East Halemaumau St.	.87	D	.93	E
Kalanianaole Hwy./ Kuliouou Rd.	.92	E	.90	E

FUTURE TRAFFIC CONDITIONS

Full development and occupancy of the Golf Course 2/1A project is expected by 1995. In addition to Golf Course 2/1A, area traffic will also be affected by development of other nearby Hawaii Kai projects and by continued increases from Hawaii Kai Marina area development and from through traffic between Honolulu and Windward Oahu. Analysis of future traffic conditions reflect the increases from each of these sources. The analysis was made for the weekday peak hour traffic periods.

Future Traffic Increases Without Project

Traffic will increase within the immediate area as a result of adjacent Hawaii Kai developments including Golf Course projects 4, 5 and 6, and Kalama Valley, as well as more general increases resulting from additional Oahu residents and tourists.

Adjacent Hawaii Kai Development - By 1995, Kaiser Development Company expects that the approximately 335 single-family dwelling units in Golf Course 4, 5 and 6 projects and 173 units in Kalama Valley (6B, 8, 9 and Ocean View areas) will be constructed and occupied. These projects are included in the Marina Zoning projects and the resulting traffic impacts of these projects are documented in the related Hawaii Kai Transportation System Management Study.[6]

The future trips to and from these developments were distributed to other areas of Hawaii Kai, to Windward Oahu, East Honolulu and central Honolulu areas, using the estimated current distribution characteristics for the Hawaii Kai area, as indicated by present traffic volumes. The assignment of future Golf Course and Kalama Valley traffic to either Hawaii Kai Drive or to Kalanianaole Highway was based on the current usage of these routes as evident in the turning movement patterns at the intersections of Kealahou Street with these roadways.

(6) Hawaii Kai Transportation Management Study, prepared by Wilbur Smith and Associates, September 1985.

The estimated traffic for Golf Course 4, 5 and 6, and Kalama Valley developments would result in a 40 and 49 percent increase in weekday morning and evening peak hour traffic, respectively, at the intersection of Kealahou Street and Hawaii Kai Drive. The developments would contribute smaller increases to the traffic movement at the intersection of Kealahou Street and Kalanianaole Highway. Increases at this intersection would total 16 percent and 32 percent for weekday morning and evening peak hours, respectively.

Future Traffic Conditions Without Project

Traffic operations were assessed at several area intersections which would provide access to the proposed Golf Course 2/1A project. The identification of future (1995) traffic conditions at these locations without the proposed project provides a basis for evaluation of the project-related impacts.

Kalanianaole Highway/Kealahou Street Intersection - Future traffic increases from other Hawaii Kai parcels and from outside the Hawaii Kai area would significantly increase delays for: 1) left-turn traffic at the Kealahou Street approach to Kalanianaole Highway; and 2) thru-traffic at the windward-bound approach on Kalanianaole Highway, which would be periodically blocked by traffic waiting to turn left into Kealahou Street. As indicated in the table below, these traffic delays would occur primarily during the evening weekday peak hour and during peak periods on weekends.

	LEVEL OF SERVICE		
	Kealahou Street		Kalanianaole
Peak Hour	Left-Turn	Right-Turn	Left-Turn
Weekday Morning	B	A	A
Weekday Evening	E	A	B
Sunday Morning	F	B	A
Sunday Evening	F	C	D

Kealahou Street/Hawaii Kai Drive Intersection - Projected 1995 traffic without the Golf Course 2/1A project would result in Level-of-Service B conditions or better at this three-way stop-controlled intersection.

Other Key Access Intersections - Volume-capacity and traffic service levels for pre-project conditions at other intersections located along principal access routes which would serve the project site are summmarized in Table 3.

Table 3
INTERSECTION VOLUME-CAPACITY SUMMARY
1995 CONDITIONS WITHOUT GOLF COURSE 2/1A[a]

INTERSECTION	MORNING PEAK HOUR V/C	MORNING PEAK HOUR LOS	EVENING PEAK HOUR V/C	EVENING PEAK HOUR LOS
Lunalilo Home Rd./Hawaii Kai Dr.	0.97	E	0.64	B
Hawaii Kai Dr./Wailua St.	0.64	B	0.86	D
Lunalilo Home Rd./Wailua St.	0.94	E	0.77	C

(a) Intersection conditions reflect ongoing projects, plus the planned Marina Zoning development and traffic mitigation measures as approved by the Honolulu City Council.

V/C - Volume to Capacity Ratio
LOS - Level of Service. See Appendix A for description.

Golf Course 2/1A Project Traffic Increases

As proposed, the Golf Course 2/1A development would contain the following:

- 48 single-family residences;
- 120 low density apartment units;
- 300 medium density apartment units; and
- 14.3 acres of service oriented industrial development.

The development plans indicate that a single access roadway would be provided from Kealahou Street to serve the residential development area. A second access roadway would be constructed from Kalanianaole Highway along the Koko Crater side of the sewage treatment plant to provide exclusive access to and from the services industrial park. No direct access would be provided between the adjacent residential and industrial uses.

The trip increases from the Golf Course 2/1A development and the traffic analyses in this section do not include any trip reduction as a result of the planned Marina Zoning rideshare program. Potential trip reductions for the Golf Course 2/1A area as a result of these measures are discussed under "Mitigation Measures."

Trip Generation - The residential and service oriented industrial trip rates used to estimate Golf Course 2/1A traffic, and the resultant estimated vehicle trips for the weekday morning and evening peak hour trips are summarized in Table 4. Residential trip rates (per housing unit) used in the study were derived from standard rates developed by the Institute of Transportation Engineers (ITE).[5] The services industrial area trip rate is a composite of trip rates for the various anticipated land uses. The composite rate used in the analyses represents one-quarter of the area occupied by a home improvement center, one-quarter with automobile servicing and repair shops, and one-half with warehousing and storage facilities. Specific individual rates used in developing the composite rate were obtained from ITE trip rates[6] and San Diego Association of Governments trip rates.[7]

(5) Trip Generation - Third Edition, 1982, Institute of Transportation Engineers.
(6) Ibid.
(7) Traffic Generators, 1984, San Diego Association of Governments.

Table 4

TRAFFIC INCREASES FROM
GOLF COURSE 2/1A DEVELOPMENT
1995

PEAK HOUR PERIODS	PEAK HOUR TRIP RATES PER UNIT[a] To Project	From Project	PEAK HOUR TRIPS To Project	From Project
Weekday Morning				
Single family residences	.21	.55	10	26
Low density town homes	.10	.40	12	48
Medium density apartments	.10	.20	30	60
Service Industrial[b]	9.50	6.00	140	89
Total			192	223
Weekday Evening				
Single family residences	.63	.37	30	17
Low density town homes	.40	.20	48	24
Medium density apartments	.20	.20	60	60
Service Industrial[b]	15.00	18.00	222	266
Total			360	367

(a) Trip rates. Sources: "Trip Generation," Institute of Transportation Engineers, Third Edition, 1982, and "Traffic Generators," San Diego Association of Governments, 1984.

(b) Service industrial trip rates are trips per acre.

As presented in Table 4, the project would generate an almost equal number of inbound and outbound trips during each of the peak traffic periods. The near balance of in and out trips results from the proposed mix of residential and service industrial uses. A comparison of the morning and evening trip generation shows that during the evening peak hour the project would generate 75 percent more trips than during the morning peak hour (727 total trips in or out versus 415). This is primarily due to the expected higher level of activity which would occur at the services industrial development during the afternoon period.

The highest one-hour trip generation period would occur during the evening peak hour with a total of 360 inbound trips and 367 outbound trips.

Trip Distribution - The distribution of vehicle trips between areas within Hawaii Kai and to/from outside locations was based on the same assumptions used in the Marina Zoning Traffic Study. The assignment of Golf Course 2/1A trips to the Hawaii Kai roadways, however, was based on the following assumptions regarding the utilization of Hawaii Kai Drive versus Kalanianaole Highway.

- All trips to or from the residential units were assumed to travel to the Marina area or to Honolulu via Hawaii Kai Drive.

- Traffic generated by the service industrial portion of the development were assumed to use either Hawaii Kai Drive or Kalanianaole Highway depending on the origin/destination of the trip.

  - Kalanianaole Highway would be used by vehicle trips to or from the areas outside of Hawaii Kai (e.g., East Honolulu, Honolulu, and points windward) as well as for trips to and from residential tracts and commercial centers located adjacent to Kalanianaole Highway in the Hawaii Kai Marina area.

  - Hawaii Kai Drive would be used by vehicle trips to or from other locations within Hawaii Kai.

Based on these traffic routing assumptions, 70 percent of the morning peak hour and 75 percent of the evening peak hour project trips between the site and points Ewa of East Hawaii Kai were assigned to Hawaii Kai Drive. These assumptions would result in a conservative assessment of project-related traffic impacts on Hawaii Kai Drive. These assumptions would also provide a realistic assessment of whether Wailua Street should be extended to Hawaii Kai Drive at Kamehame Ridge to accommodate the Golf Course 2/1A traffic increases.

1995 Hawaii Kai Traffic Volumes With The Project - Estimated 1995 traffic volumes with the project were derived by combining the traffic forecasts for the Golf Course 2/1A with existing traffic volumes and with the forecast increases from Marina Zoning parcels and other infill projects. The estimated total 1995 peak hour traffic volumes (including Golf Course 2/1A traffic) on Hawaii Kai roadways are presented in Figures 5 and 6.

The combined traffic estimated for the Golf Course 2/1A residential and services industrial uses would result in the following increases to traffic volumes at key intersections:

INTERSECTION	PERCENT INCREASE Morning Peak Hour	PERCENT INCREASE Evening Peak Hour
Kealahou St./Hawaii Kai Dr.	81.2	22.2
Kealahou St./Kalanianaole Hwy.	33.8	27.2
Hawaii Kai Dr./Lunalilo Home Rd.	12.3	16.6
Lunalilo Home Rd./Wailua St.	8.8	6.5
Hawaii Kai Dr./Wailua St.	1.0	2.6

Impact on Hawaii Kai Roadways

The existing and planned roadways in Hawaii Kai were assessed relative to the adequacy of the major access intersections to accommodate project traffic increases, and to identify potential operational or capacity problems. The analysis focuses on the Kealahou Street and Kalanianaole Highway intersections with the planned Golf Course 2/1A entrance roadways; the Kealahou Street intersection with Kalanianaole Highway and Hawaii Kai Drive; the Hawaii Kai Drive

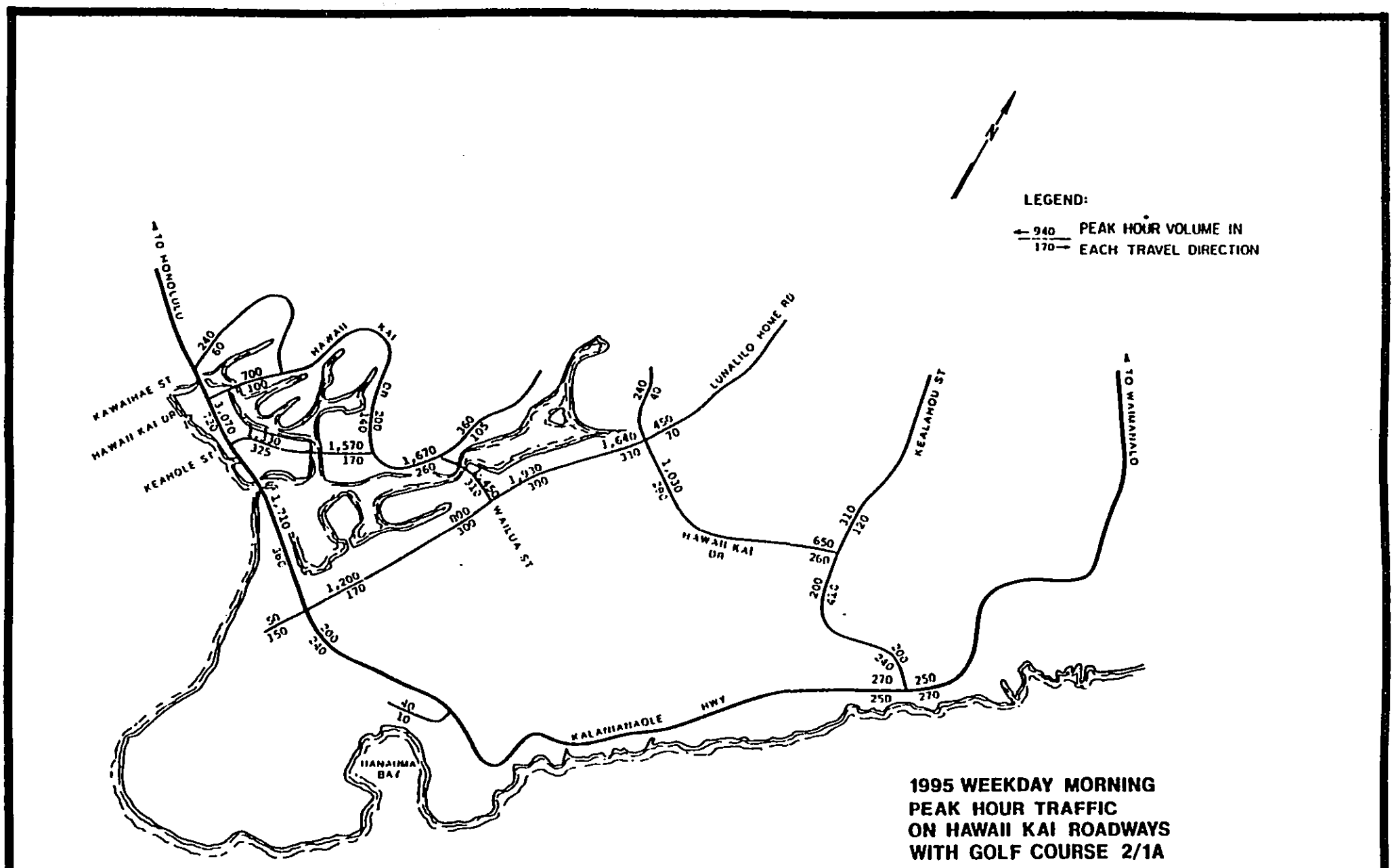


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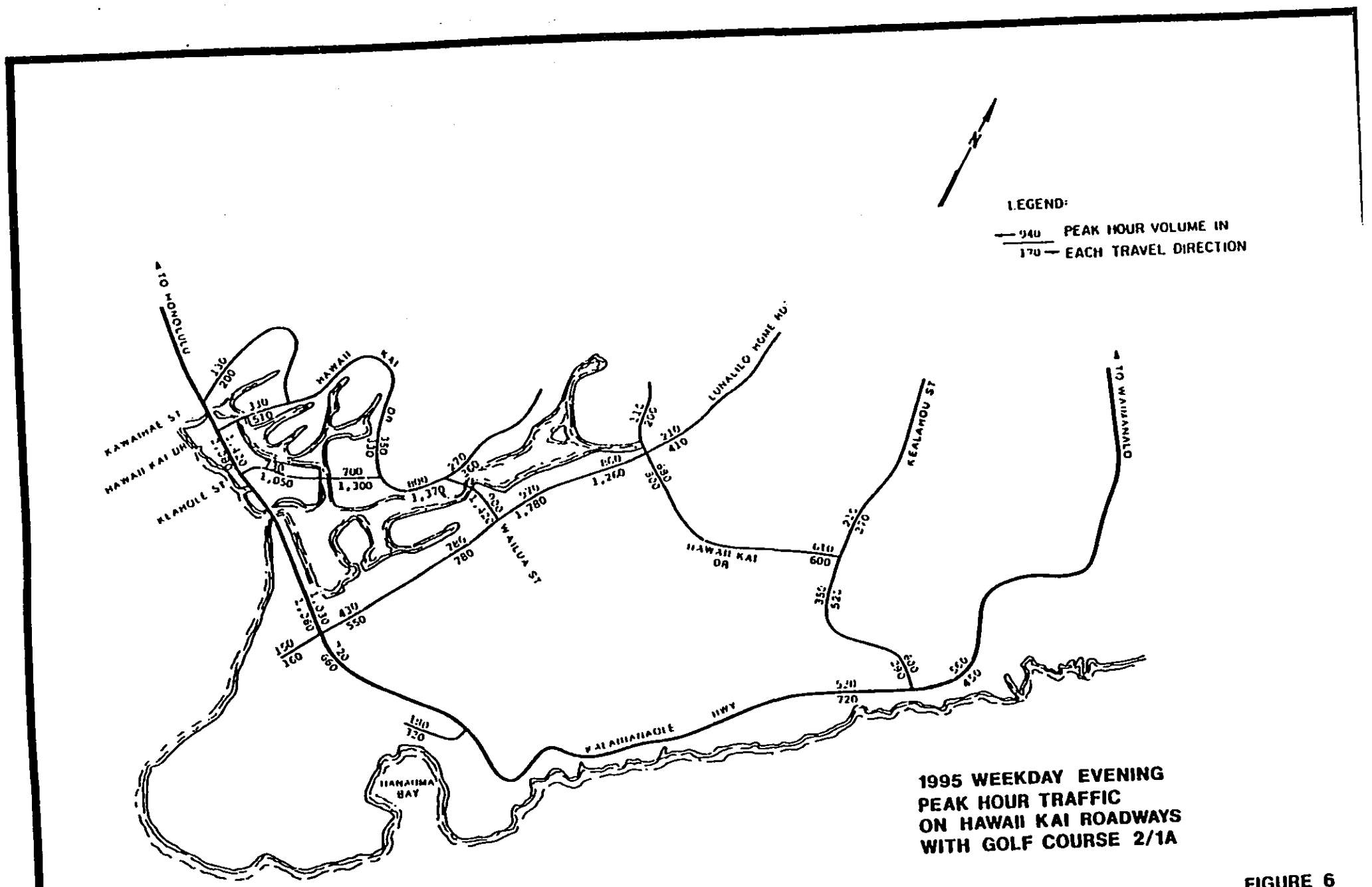
FIGURE 5



1995 WEEKDAY EVENING
PEAK HOUR TRAFFIC
ON HAWAII KAI ROADWAYS
WITH GOLF COURSE 2/1A

FIGURE 6

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intersection with Lunalilo Home Road and Wailua Street; and the Lunalilo Home Road intersection with Wailua Street.

Morning and evening peak hour traffic movements and volume-capacity/level of service analysis worksheets for these key intersections are presented in a separate technical appendices.

Golf Course 2/1A Access Roadway Intersections - The access road for the Golf Course 2/1A residential development is planned to intersect Kealahou Street opposite the current access road for the Queen's Gate residential area. Projected 1995 volumes at this intersection should not result in any lengthy delays to traffic entering and exiting these residential areas during the peak traffic periods, based on stop sign control for the Golf Course 2/1A and Queen's Gate roadways.

Conditions at the intersection of the services industrial area access road with Kalanianaole Highway will be dependent upon the proportion of traffic turning left (versus right turns) from the access road onto Kalanianaole Highway. With stop sign control of the services industrial access road, intersection conditions could decline to Level of Service E for the weekday evening peak hour if the majority of the exiting traffic turn left towards Waimanalo and Kealahou Street. This could result in delays to traffic exiting from the services industrial area onto Kalanianaole Highway. However, whether or not a problem occurs would depend upon the types of uses actually located in the services industrial area, as opposed to the uses assumed in this analysis. The intersection conditions should be reassessed when a more reliable description becomes available for the industrial area activities.

Kealahou Street/Kalanianaole Highway Intersection - The assessment of 1995 conditions without Golf Course 2/1A determined that the critical left-turn movement from Kealahou Street to Windward-bound Kalanianaole Highway would operate at Level of Service E during the weekday evening peak hour and at Level of Service F during the Sunday peak hour period. Without Golf Course 2/1A, increases in the number of vehicles turning left from Kalanianaole Highway at the intersection would increase the potential for periodic blockage and delay to windward direction through traffic.

The additional Golf Course 2/1A traffic would primarily increase the right turn volume from Kealahou Street and the left turn volume from Kalanianaole Highway onto Kealahou Street. Projected 1995 traffic volumes with Golf Course 2/1A were analyzed assuming the existing stop sign control is continued. The results, summarized in Table 5, indicate that weekday morning peak hour traffic should be able to make turns at the intersection without excessive delays. During the evening peak hour, however, traffic turning left from Kealahou Street would experience extensive delays while waiting for gaps in Kalanianaole Highway traffic flows. The increased number of left turns from Kalanianaole Highway at the intersection would also increase the blockage and delay of through traffic. The Golf Course 2/1A traffic increases would further increase the need for installation of traffic signal controls at this intersection.

A volume-capacity analysis of the intersection with traffic signal controls indicates that the intersection would operate at Level of Service F during the weekday evening peak hour. This indicates the need for geometric improvements to the intersection such as the addition of a left-turn lane on Kalanianaole Highway.

A summary of post-project volume-capacity ratios and service levels at the Kalanianaole Highway-Kealahou Street intersection (assuming signalization) is presented in Table 6.

Kealahou Street/Hawaii Kai Drive Intersection - The Golf Course 2/1A residential and services industrial developments would result in significant increases in traffic turning movments at this three-way stop sign-controlled intersection. However, based on analysis procedures prescribed in the Transportation Research Circular 281, the intersection should continue to operate at Level of Service C or better and would not require any improvements.

Other Key Access Intersections Within Hawaii Kai - The Golf Course 2/1A residential and services industrial projects would increase estimated 1995 traffic volumes along the major access routes between Golf Course 2/1A and the Marina area by as much as 17 percent above volumes which would occur without these developments. As indicated in Table 6, the projected traffic increases would result

Table 5
LEVEL OF SERVICE WITH STOP SIGN CONTROL
KEALAHOU STREET - KALANIANAOLE HIGHWAY
WITH GOLF COURSE 2/1A

PEAK HOUR PERIOD	LEVEL OF SERVICE (a) Kalanianaole Left-Turn	Kealahou Right Turn	Kealahou Left Turn	KEALAHOU LEFT TURN DEFICIENCY(b) (Peak Hour Vehicles)
Weekday Morning	A	A	C	--
Weekday Evening	C	A	F	182

(a) Level of Service — Expected Delay to Turning Movement Traffic

A	Little or no delay
B	Short traffic delays
C	Average traffic delays
D	Long traffic delays
E	Very long traffic delays
F	Extreme delays which usually warrant intersection improvement.

(b) Based on Level of Service D capacity.

Table 6

1995 LEVELS OF SERVICE FOR
HAWAII KAI INTERSECTIONS
WITH AND WITHOUT GOLF COURSE 2/1A
(Without Project Mitigation Measures[a])

	MORNING PEAK HOUR				EVENING PEAK HOUR			
	Without Project		With Project		Without Project		With Project	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
Kalanianaole Hwy./Kealahou St.	.27	A	.35	A	.72	C	1.01	F
Hawaii Kai Dr./Lunalilo Home Rd.	.97	E	1.11	F	.64	B	.70	C
Hawaii Kai Dr./Wailua St.	.64	B	.65	B	.86	D	.88	D
Lunalilo Home Rd./Wailua St.	.94	E	.97	E	.70	C	.76	C
Kalanianaole Hwy./Kawaihae St.	.89	D	.91	E	.82	D	.82	D
Kalanianaole Hwy./Hawaii Kai Dr.	.89	D	.91	E	.75	C	.76	C
Kalanianaole Hwy./Keahole St.	.88	D	.90	E	.82	D	.82	D

(a) Analysis reflects implementation of roadway and rideshare improvements identified as part of the Marina Zoning program, but does not reflect either the impact of Marina Zoning rideshare programs on Golf Course 2/1A traffic or any additional roadway improvements for the Golf Course 2/1A project (See Potential Mitigation Measures).

V/C - Volume-capacity ratio.

LOS - Level of service. See Appendix A for description.

in conditions at or approaching Level of Service F at the intersections of Hawaii Kai Drive/Lunalilo Home Road and Lunalilo Home Road/Wailua Street during the morning peak hour.

At the Hawaii Kai Drive/Lunalilo Home Road intersection, the problem would result from the left turn from Hawaii Kai Drive onto Lunlalilo Home Road, which would increase to an estimated 995 vehicles during the morning peak hour. With the existing single left turn lane, the left turn movement alone would require over 65 percent of the available traffic signal green time.

A right turn volume of 1,320 vehicles is projected from Lunalilo Home Road onto Wailua Street during the morning peak hour. With the existing lane configuration at this intersection, the conflicting volumes of this right turn movement and the left turn movement from Lunalilo Home Road onto Wailua Street would approach the available intersection capacity.

Mitigation measures would be required at these two Lunalilo Home Road intersections to maintain Level of Service D conditions or better during the peak traffic periods.

The Golf Course 2/1A traffic would result in small increases in the volume-capacity ratios at Kalanianaole Highway intersections with Keahole Street, Hawaii Kai Drive,and Kawaihae Street. For the morning peak hour period, the volume-capacity ratios increase from .88-.89 without the project to .90-.91 with the project.

During the afternoon peak hour, the intersections in the Marina section of Hawaii Kai are expected to operate at Level of Service D or better.

1995 Traffic Conditions On Kalanianaole Highway With the Project

The analysis of projected 1995 traffic conditions along Kalanianaole Highway between Hawaii Kai and the H-1 Freeway reflects the existing roadway facilities, plus the inclusion of planned new traffic signals at Nenue Street, Hawaii Loa Ridge access road, and Kawaihae Street; the planned left-turn lanes at West Halemaumau, Kuliouou and Kawaihae Streets; the proposed pedestrian bridge near

Kalaniiki Street; and the Marina Zoning rideshare program. It does not, however, reflect the capacity increases which would result from completion of the State DOT's median HOV lane widening project.

The evaluation of morning peak hour traffic conditions is based on the assumption that a total of 440 vehicles would be allowed to use the contraflow High Occupancy Vehicle (HOV lane). This reflects an increase of 120 peak hour buses, vanpools and carpools using the HOV lane in 1995 over 1984 usage.

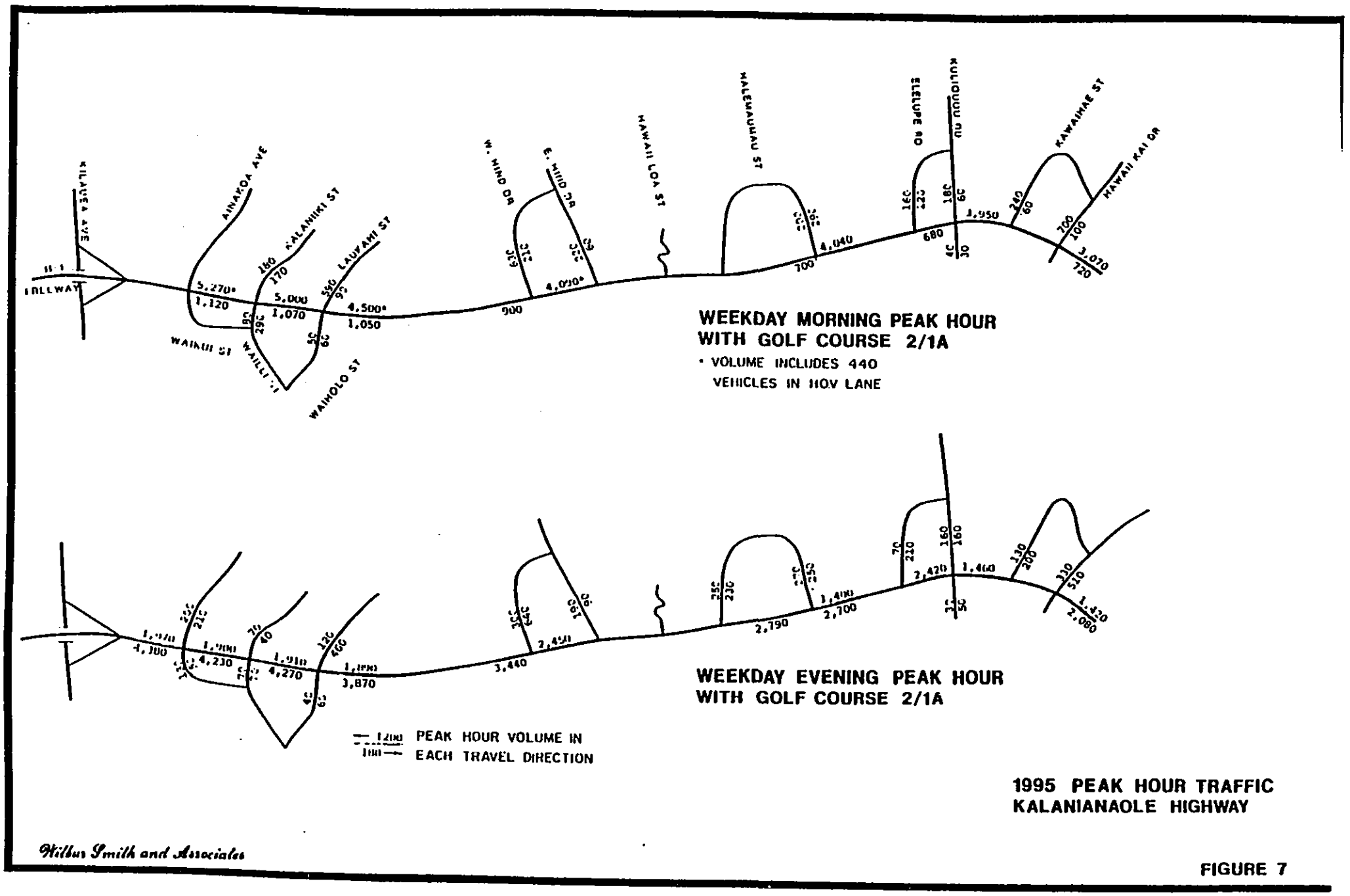
Total directional peak hour traffic volumes are presented in Figure 7. The net traffic increases[8] projected on Kalanianaole Highway (at Kalaniiki Street) as a result of the Golf Course 2/1A residential and services industrial developments are estimated as follows:

	Towards Honolulu	Towards Hawaii Kai
Morning Peak Hour	50	No Change
Evening Peak Hour	55	-8

During the morning peak hour, the Golf Course 2/1A residential and industrial projects would add a net increase of approximately 50 vehicles to the peak-direction volumes on Kalanianaole Highway in the vicinity of Kalaniiki Street. This estimated net increase represents the addition of 105 work trips made by Golf Course 2/1A residents to Honolulu, minus the diversion of 55 Hawaii Kai resident trips to the services industrial development which are currently being made to Honolulu via Kalanianaole Highway.

Evening peak hour traffic projections indicate that the development of Golf Course 2/1A would result in a small net decrease in Hawaii Kai-bound (peak-direction) trips. The reduction in traffic would be due to the increased number of Hawaii Kai trips being made within Hawaii Kai, rather than these trips being made to outside locations using Kalanianaole Highway. This shift in travel patterns is expected to result from the increase in jobs and new services provided by the

(8) Note that these traffic increases do not reflect the application of Marina Zoning rideshare measures to the Golf Course 2/1A project. Potential Golf Course 2/1A project traffic reductions which would result from the rideshare program are discussed in the "Mitigation Measures" section.



1995 PEAK HOUR TRAFFIC
KALANIANAOLE HIGHWAY

Wilbur Smith and Associates

FIGURE 7

services industrial development, which would more than offset the added work trips between the new Golf Course 2/1A residential development and Honolulu.

Results of the volume-capacity analysis of projected 1995 peak-hour traffic conditions indicate that the Kalanianaole Highway intersection at Kalaniiki Street, East Halemaumau Street and Kuliouou Street would all be operating near capacity with or without Golf Course 2/1A. As noted in Table 7, traffic added by Golf Course 2/1A during the morning peak hour would only increase the volume-capacity ratios at these intersections by between 0.01 and 0.02. This nominal increase in the volume-capacity ratios would not represent a noticeable difference in traffic congestion and delay experienced by vehicles using these intersections during the morning peak hour.

Traffic added by Golf Course 2/1A during the evening peak hour would have no measurable effect on the volume-capacity ratios or service levels at the key intersections.

Projected intersection turning movements and volume-capacity/level of service analysis worksheets are included in a separate technical appendix for key intersection locations along Kalanianaole Highway.

Table 7

1995 LEVELS OF SERVICE FOR INTERSECTIONS
ON KALANIANAOLE HIGHWAY
WITH AND WITHOUT GOLF COURSE 2/1A[(a)]
(Without Project Mitigation Measures)

	MORNING PEAK HOUR				EVENING PEAK HOUR			
	Without Project		With Project		Without Project		With Project	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
Kalanianaole Hwy./Kalaniiki St.	.98	E	.99	E	.93	E	.93	E
Kalanianaole Hwy./E. Halemaumau St.	.97	E	.99	E	.97	E	.97	E
Kalanianaole Hwy./Kuliouou Rd.	.97	E	.99	E	.82	D	.84	D

V/C - Volume to Capacity Ratio

LOS - Level of Service. See Appendix A for description.

(a) Analysis reflects implementation of roadway and rideshare measures identified as part of the Marina Zoning program, but does not reflect any special mitigation measures for Golf Course 2/1A.

POTENTIAL MITIGATION MEASURES

Although most of existing and planned roadways/intersections in Hawaii Kai would provide sufficient capacity to accommodate traffic increases with the Golf Course 2/1A project, several would require mitigation measures to maintain acceptable conditions (Level of Service D or better). The key intersections where mitigation mesures may be necessary include: Kealahou Street and Kalanianaole Highway; Wailua Street and Lunalilo Home Road; and Hawaii Kai Drive and Lunalilo Home Road. The problems at these intersections would result in the addition of traffic from Golf Course 2/1A, Marina Zoning and infill projects to the already heavy turning movements at these intersections.

Kalanianaole Highway would also experience increased traffic flows and congestion in the 1995 projection year. The Golf Course 2/1A project would contribute approximately 50 vehicles along Kalanianaole Highway towards Honolulu during both the morning and evening peak hour periods. This would have a minor adverse effect on peak direction travel conditions during the morning peak hour, but would not significantly affect evening conditions.

Roadway modifications which could be implemented to alleviate or minimize future traffic problems are discussed in the following sections.

Hawaii Kai Roadways

Service levels at the identified problem intersections could be improved through implementation of the mitigation measures as discussed in the following paragraphs. A summary of volume-capacity ratios and service levels with implementation of the proposed mitigation measures is presented in Table 8.

Kealahou Street/Kalanianaole Highway Intersection - Future potential mitigation measures include:

1. Addition of a left-turn storage lane on the Ewa-side approach of Kalanianaole Highway. This would reduce delays to through traffic.

Table 8
VOLUME-CAPACITY ANALYSIS
WITH PROPOSED MITIGATION MEASURES

LOCATION	MORNING PEAK HOUR V/C	MORNING PEAK HOUR LOS	EVENING PEAK HOUR V/C	EVENING PEAK HOUR LOS
Kalanianaole Hwy./Kealahou St.	.35	A	.73	C
Hawaii Kai Dr./Lunalilo Home Rd.	.82	D	.55	A
Lunalilo Home Rd./Wailua St.	.87	D	.52	A

V/C - Volume-capacity ratio.
LOS - Level of service. See Appendix for descriptions.

2. Future installation of traffic signal controls to reduce delays to Kealahou Street traffic turning left onto Kalanianaole Highway. Traffic volumes and accidents should be monitored to determine when conditions warrant traffic signal control.

The combination of these measures would provide 1995 weekday peak hour service levels of C or better with the Golf Course 2/1A project.

Hawaii Kai Drive/Lunalilo Home Road Intersection - The following mitigation measure could improve 1995 traffic service levels to D or better during peak periods.

- Revise the pavement markings and signing on the makai intersection approach on Hawaii Kai Drive to allow left turns from both the existing left-turn lane and from the curb lane, which is currently marked as a thru/right-turn lane.

This measure would provide additional capacity for the large number of vehicles turning left during the morning peak hour and allow more efficient use of the existing combination thru/right-turn lane, which currently is underutilized. Lunalilo Home Road, on the makai side of the intersection, currently has two makai-bound lanes and therefore would not require any widening to receive the double left-turn movement from Hawaii Kai Drive. Consideration should be given, however, to relocating the stop bar on the makai side approach of Lunalilo Home Road to improve the left turn radius from Hawaii Kai Drive.

In addition, the curb and sidewalk on the southeast corner should be reconstructed (cut back) to provide a larger turning radius. This would allow buses and other vehicles with long wheelbases to turn right onto Hawaii Kai Drive without swinging across the roadway center line.

Lunalilo Home Road/Wailua Street Intersection - To minimize congestion during the morning peak hour, the following mitigation measure could be implemented:

- Widen Wailua Street along the mauka side and provide channelization to permit a continuous right-turn traffic movement. As an alternative, the widening may be used to allow a right turn movement from two lanes on Lunalilo Home Road onto Wailua Street.

The increased right-turn capacity would require less signal "green" time to serve the heavy right turn movement, and would improve the morning peak hour operations from Level of Service E to D.

Kealahou Street/Golf Course 2/1A Access Road - No capacity problems are expected at this intersection. However, traffic operations and safety could be improved by the following measures:

1. Restripe Kealahou Street to provide a left-turn storage lane on both Kealahou Street approaches to this intersection;

2. Provide separate right-turn and left-turn lanes on the Golf Course 2/1A access road approach; and

3. Prohibit on-street parking along Kealahou Street from Hawaii Kai Drive to the Golf Course 4 roadway.

The left-turn lanes on Kealahou Street would minimize any blockage of through traffic by vehicles waiting to turn into the Golf Course 2/1A or Queen's Gate residential areas, and reduce the potential for rear-end accidents.

Kalanianaole Highway/Services Industrial Area Access Road - Whether or not improvements are appropriate for this intersection would depend upon the actual activities which locate in the services industrial area, versus the uses reflected in this analysis.

This analysis assumed several high traffic-generating uses would locate in the services industrial area, including a home improvement center and automated repair shops. With these high traffic generators, the projected left-turn volume

from the Ewa-side approach of Kalanianaole Highway into the access road (100 vehicles in the evening peak hour) approximates the minimum number of turning vehicles warranting provision of a left-turn lane to separate the left-turn vehicles from through traffic. If several such high traffic generators are located in the services industrial area, then a left-turn storage lane may be needed on Kalanianaole Highway.

The access road intersection volumes are not expected to meet warrants for installation of traffic signal controls. However, signal controls may be desired in the future to provide breaks in Kalanianaole Highway traffic for Sandy Beach and the services industrial area to exit onto Kalanianaole Highway. Future consideration could be given to the State providing a new Sandy Beach access road which intersects Kalanianaole Highway opposite the services industrial access road, and the installation of signal controls at the new four-legged intersection.

Kalanianaole Highway

The Golf Course 2/1A project is not expected to impact Kalanianaole Highway beyond those impacts previously identified.(9) The Honolulu City Council approved fewer units then requested by Kaiser Development Company for the Marina Zoning Kuluanui 1 parcel. The estimated increase in Kalanianaole Highway peak hour, peak direction traffic from the Golf Course 2/1A project is less than the number of estimated future trips "eliminated" by the City Council action "down-sizing" the proposed Kaluanui 1 development (400 approved units versus 1,020 proposed units).

The traffic increases presented for the Golf Course 2/1A development do not reflect any trip reduction as a result of the Marina Zoning rideshare program. It is recommended that the program ridesharing incentives be extended to new residents of the Golf Course 2/1A development. This would result in an estimated reduction of 10 to 12 peak hour, peak direction trips from the volumes included in the impact analysis for Kalanianaole Highway.

(9) op.cit., Hawaii Kai Transportation Management Study.

Future traffic conditions along Kalanianaole Highway could also be improved if any of the following events occur:

1. If the current rideshare program proves to be more successful in the future than projections indicate, then the resulting reductions in peak-hour traffic on Kalanianaole Highway may offset the Golf Course 2/1A traffic increases.

2. If a substantial retirement living market is attracted to either the Marina Zoning or Golf Course 2/1A projects in lieu of residential development currently proposed, the lower trip-making patterns of retirees could result in a significant reduction in morning peak hour trips on Kalanianaole Highway. The lower trip making characteristics of retirees could fully offset or reduce the number of Golf Course 2/1A trips projected on Kalanianaole Highway.

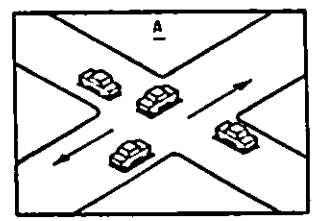
3. The planned implementation of the proposed State DOT Median HOV (High Occupancy Vehicle) Lane Project on Kalanianaole Highway has the potential of improving projected 1995 traffic conditions to a level equal to or better than existing conditions.

APPENDIX A

INTERSECTION LEVEL OF SERVICE CONCEPT

LEVEL OF SERVICE A *Volume/Capacity Ratio= 0 - 0.59*

- Free flow conditions
- No vehicle waits longer than one signal indication

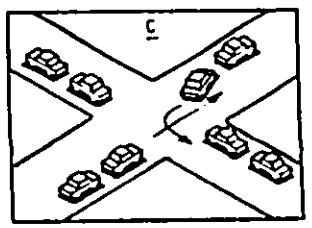


LEVEL OF SERVICE B *Volume/Capacity Ratio=0.60 - 0.69*

- Stable traffic flow
- Motorists rarely wait through more than one signal indication

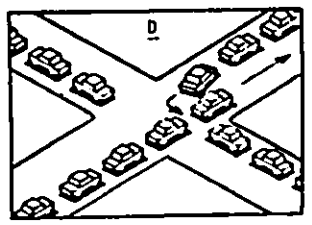
LEVEL OF SERVICE C *Volume/Capacity Ratio=0.70 - 0.79*

- Stable and acceptable flow but speed and maneuverability somewhat restricted due to higher volumes
- Motorists intermittently wait through more than one signal indication
- Occasional backups behind left turning vehicles



LEVEL OF SERVICE D *Volume/Capacity Ratio=0.80 - 0.89*

- Extensive delays at times
- Some motorists, especially left turners, may wait through one or more signal indications, but enough cycles with lower demand occur to prevent excessive backups
- Maneuverability restricted

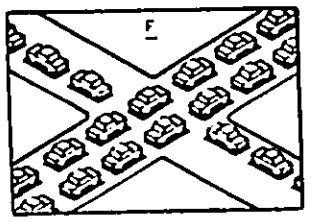


LEVEL OF SERVICE E *Volume/Capacity Ratio=0.90 - 0.99*

- Very long queues may create lengthy delays, especially for left turning vehicles
- Volume at or near capacity
- Unstable flow

LEVEL OF SERVICE F *Volume/Capacity Ratio=1.00 or greater*

- Backups from locations downstream restrict movement at intersection approaches
- Forced flow conditions
- Stoppage for long periods due to congestion
- Volumes drop to zero in extreme cases



APPENDIX D

AIR QUALITY STUDY

FOR THE

PROPOSED GOLF COURSE 2/1A SUBDIVISION

HAWAII KAI, OAHU, HAWAII

Prepared by

Barry D. Root
Kaneohe, Hawaii

June 6, 1986

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FIGURES

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SUMMARY

1. The proposed Golf Course 2/1A Subdivision involves site preparation and construction of a residential and light industrial (service oriented) complex on about 44 acres of land in the eastern portion of Hawaii Kai.

2. Present air quality in the project area is estimated to be very good since there are no major contributing sources of air pollutant emissions other than vehicles traveling on nearby roadways. An existing sewage treatment plant located adjacent to the site creates a potential for the release of objectionable odors, but the prevailing trade winds should carry these odors away from the proposed housing area in most instances, and under normal operating conditions the plant should produce no detectable airborne effluents.

3. Except for dust emissions during the construction phase of the development, no significant short term direct air quality impacts are expected. Adequate control measures exist to limit the impact of windblown dust, but special care will have to be exerted to insure that previously developed residential areas are not subjected to excessive levels of particulate pollution from construction activities.

4. The service industrial portion of the project might include some direct emitters of air pollutants. Future use of this site has not been determined, but activities considered to be likely tenants, such as a home improvement center, would be low level emitters, and any potential candidates for the site would have to possess a high degree of compatibility with the residential character of the area for both economic and environmental reasons.

5. Indirect air quality impacts are expected to result from new demands for electrical energy. This impact is most likely to occur in the vicinity of existing power plants such as the Kahe Plant on the Waianae coast where increased levels of particulates and sulfur dioxide can be expected. Maximum use of solar energy designs in project development can at least partially mitigate the magnitude of this impact. New methods of generating electrical power such as wind or ocean thermal energy conversion may eventually also play a mitigative role in this regard.

6. Increased traffic generated by the Golf Course 2/1A project will increase emissions of carbon monoxide and nitrogen dioxide in the Hawaii Kai area and along the Kalaniannole Highway corridor leading to Honolulu.

7. Modeling of current and projected worst case concentrations of carbon monoxide at particularly congested intersections along the Kalaniansole Highway corridor and within the Hawaii Kai area indicate that the most critical locations are at the Kalaniiki intersection during morning rush hour and at the Keahole intersection in the evening. Present worst case carbon monoxide levels at these locations are estimated to be higher than allowable State of Hawaii Air Quality Standards.

8. The traffic impact study for the Golf Course 2/1A project assumes that a sufficient amount of interaction between Hawaii Kai residential traffic and the proposed service industrial area will occur to almost totally offset the contribution of Golf Course 2/1A traffic to peak hour conditions along the Kalaniansole corridor. The air quality modeling approach used for this study assumes that no interaction between these uses will occur and assigns maximum commuter traffic levels to roadways between the project and urban Honolulu. The modeling study also assumes that the Marina Zoning parcels will be completed as proposed and that there will be a ten percent growth in non-Hawaii Kai traffic along this corridor between project completion in 1995 and the year 2005. It is also assumed that a Kalaniiki Street pedestrian overpass will be constructed by 1995 and that the ride sharing program recommended in the Hawaii Kai Transportation Management Study will be successful, but reductions in traffic that would occur as a result of the planned State DOT Median High Occupancy Vehicle Lane Project are not included.

9. Detailed mathematical modeling using the above assumptions results in projected carbon monoxide concentrations after project completion that are within allowable State and National Ambient Air Quality Standards even under worst case traffic and meteorological conditions. For that reason no specific air pollution mitigation measures other than those proposed in the traffic impact study for the project are deemed to be necessary.

1. PROJECT DESCRIPTION

The proposed Golf Course 2/1A project involves site preparation and construction of a residential and light industrial (service-oriented) complex on about 44 acres of land located on the Koko Crater side of Kealahou Street in the eastern portion of Hawaii Kai as shown in Figure 1.

The existing site is undeveloped, nearly level land with a sparse cover of scrub vegetation. The proposed service industrial area (about 14.8 acres) is to be located immediately adjacent to the existing sewage treatment plant while the residental development will occupy the mauka 29.3 acres of the site.

Construction is expected to start in 1990 with completion of sales and full occupancy of the subdivision anticipated by 1995.

Roadway access to the residential area will be via Kealahou Street with direct connection to Kalaniansole Highway near Sandy Beach or via an indirect route over Hawaii Kai Drive to Lunalilo Home Road and thence via a variety of routes through Hawaii Kai.

The purpose of this study is to describe existing ambient air quality in the project area and along the major access routes leading to and from the project and to estimate the magnitude of any increase in air pollutant concentrations resulting from actions related to the proposed project.

2. AIR QUALITY STANDARDS

State of Hawaii and National Ambient Air Quality Standards (AQS) have been established for six classes of pollutants as shown in Table 1. An AQS is a pollutant concentration level not to be exceeded over a specified sampling period which varies for each pollutant depending upon the type of exposure neceessary to cause adverse effects. Each of the regulated pollutants has the potential to cause some form of adverse health effect or to produce environmental degradation when present in sufficiently high concentration.

National AQS for particulates and sulfur dioxide have been divided into primary and secondary levels. Primary AQS are designed to prevent adverse health impacts while secondary AQS refer to welfare impacts such as decreased visibility, diminished comfort levels, damage to vegetation, animals or property, or a reduction in the overall aesthetic quality of the atmosphere. State of Hawaii AQS for all six pollutants have been set at a single level which is in some cases significantly more stringent than the lowest comparable national limit.

National AQS are based on 40 CFR Part 50, while State of Hawaii AQS are set in Chapter 11-59, Hawaii Administrative Rules. This chapter was recently amended (March 25, 1986) to make Hawaii AQS for particulates and sulfur dioxide essentially the same as the most stringent National limits.

3. PRESENT AIR QUALITY

There are no ambient air quality monitoring stations within the immediate vicinity of Hawaii Kai. Under prevailing trade wind conditions there is no industrial activity for thousands of miles upwind and it is reasonable to assume that present air quality is quite good.

The only significant sources of man-made air pollution in the area are motor vehicles traveling within the Hawaii Kai development or on nearby Kalaniannole Highway. There is no agricultural activity requiring open field burning on east Oahu. The proximity of a sewage treatment plant presents the potential for the release of objectionable odors, but the prevailing trade winds should carry these odors away from the proposed housing area in most instances, and under normal operating conditions the sewage treatment plant should produce no detectable airborne effluents.

Natural air pollutant producers which could affect Hawaii Kai air quality include the ocean (sea spray), plants (aero-allergens), dust, and perhaps a distant volcanic eruption on the island of Hawaii. Concentrations of pollutants from these kinds of sources should be fairly uniform for most Oahu locations.

The nearest long term air pollution monitoring station to the project is located in Waimanalo on the other side of the Koolau Mountains. Only particulates are measured at Waimanalo and for the past 15 years readings there have been running less than half the allowable State and National AQS. In fact, the station was specifically chosen to provide an estimate of background particulate levels in the air arriving over Oahu.

Oahu-wide air pollution monitoring data indicates that State of Hawaii ambient air quality standards for particulates, sulfur dioxide, nitrogen dioxide, and lead are currently being met at most locations.

On the other hand, carbon monoxide and ozone readings from urban Honolulu indicate that allowable State of Hawaii standards for these vehicle related air pollutants are being violated at a rate of more than once per year. Ozone is an indicator of the formation of photochemical pollutants in the air, a condition which tends to develop if the air mass over the islands has been fairly stable with little wind flow for a period stretching over several days.

Concentrations of carbon monoxide are more directly related to vehicular emissions and tend to be highest during periods of rush hour traffic. Carbon monoxide would thus be the pollutant most likely to cause difficulty in meeting allowable State of Hawaii AQS as a result of new residential development on Oahu.

4. DIRECT AIR QUALITY IMPACT OF PROJECT CONSTRUCTION

During the site preparation and construction phases of this project it is inevitable that a certain amount of fugitive dust will be generated. Field measurements of such emissions from apartment and shopping center construction projects has yielded an estimated emission rate of 1.2 tons of dust per acre of construction per month of activity. This figure assumes medium level activity in a semi-arid climate with a moderate soil silt content. Actual emissions of fugitive dust from this project can be expected to vary daily depending upon the amount of activity and the moisture content of exposed soil in work areas. Fortunately the project site is relatively level and little dirt moving should be required for project construction. On the other hand, the project site currently presents a rather dry and dusty appearance. Improving the area with houses and suburban landscaping may actually decrease the amount of airborne dust produced by the area over the long term.

One major generator of fugitive dust during project development is construction equipment moving over unpaved roadways. This problem can be substantially mitigated by completing and paving roadways and parking areas as early in the development process as possible. Because some construction will be taking place in close proximity to existing residential areas, dust control will have to be an item of special concern throughout the construction phase of the project.

Heavy equipment at construction sites will also emit some air pollutants in the form of engine exhausts. The largest equipment is usually diesel-powered. Carbon monoxide emissions for large diesel engines are generally about equal to those from a single automobile, but nitrogen dioxide emissions from this type of engine can be quite high. Fortunately, nitrogen dioxide emissions from other sources in the area should be relatively low and the overall impact of pollutant emissions from construction equipment should be minor compared to levels generated on roadways nearby.

5. AIR QUALITY IMPACT OF INCREASED ENERGY UTILIZATION

As proposed, the Golf Course 2/1A project would contain the following: 48 single-family residences; 120 low density apartment units; 300 medium density apartment units; and 14.8 acres of service oriented industrial development.

Estimating about 1,800 square feet average size for the single family residences; 1,200 square feet average size for low density apartment units; and 1,000 square feet average for the medium density apartment units yields a single family floor space of about 530,000 square feet. Energy consumption rates at the power plant for single family residential units with all-electric kitchens and water heaters are about 55,000 BTU per square foot; for similarly equipped apartments the rate is 45,000 BTU per square foot. Thus this project could require about 25 billion BTU of energy per year at the power plant, or about 4,300 barrels of oil if the demand were to be met totally by burning fuel oil, to meet the needs of the residential portion of the development. At this time the detailed land use of the proposed service industrial area is not known, but energy usage would in all likelihood be more than double that of the residential area.

The major impact of burning fuel oil to meet this increased energy demand will be increased levels of sulfur dioxide and particulates in the vicinity of existing power plants, primarily the Kahe Power Plant on the Waianae coast.

This energy requirement could be reduced substantially by the installation of solar water heating on all new units. It is also possible that the new demand could be met by means other than burning fuel oil. Generation of electrical energy by wind power and by using ocean thermal energy conversion are two such possibilities.

6. INDIRECT AIR QUALITY IMPACT OF INCREASED TRAFFIC

Once construction is completed the proposed project is not in itself likely to constitute a major direct source of air pollutants. By serving as an attraction for increased motor vehicle traffic in the area, however, the project must be considered to be a significant indirect air pollution source.

Motor vehicles, especially those with gasoline-powered engines, are prodigious emitters of carbon monoxide. Motor vehicles also emit some nitrogen dioxide and those burning fuel which contains lead as an additive contribute some lead particles to the atmosphere as well. The major control measure designed to limit lead emissions is a Federal law requiring the use of unleaded fuel in most new automobiles. As older cars are removed from the vehicle fleet lead emissions should continue to fall. In fact, effective January 1, 1986, the Federal Environmental Protection Agency has revised the allowable lead amount in gasoline to 0.1 grams per gallon. At the beginning of 1985 the standard was 1.1 grams per gallon. The EPA is also advocating a total ban on lead in gasoline to take effect as early as 1988.

Federal control regulations also call for increased efficiency in removing carbon monoxide and nitrogen dioxide from vehicle exhausts. By 1995 carbon monoxide emissions from the vehicle fleet then operating are mandated to be only a little more than half the amounts now emitted.

7. CARBON MONOXIDE DIFFUSION MODELING

In order to evaluate the future air quality impact of projected increases in traffic associated with the proposed Golf Course 2/1A Project in view of the previously described government mandated decreasing emission rates per vehicle, it was necessary to carry out a detailed carbon monoxide modeling study. The study was designed to yield carbon monoxide concentration values which could be compared directly to allowable State and National Ambient Air Quality Standards.

Four critical receptor sites were selected for analysis; two along the Kalaniansole Highway corridor and two in the immediate vicinity of Hawaii Kai.

Site 1 is on the mauka side of Kalaniansole Highway near the existing bus stop at the Kalaniiki Street intersection. This intersection was selected for analysis because the traffic impact study for the project identified it as the major bottleneck to peak morning traffic flow along Kalaniansole Highway. The particular position of site 1 with respect to the intersection was selected because that spot would be most likely to have the highest levels of automobile-generated air pollutants, specifically carbon monoxide, under worst case morning peak hour traffic and meteorological diffusion conditions.

Site 2 is located on the makai side of Kalaniansole Highway near the East Halemauau Street intersection, where the most significant evening rush hour traffic congestion along the Kalaniansole Highway corridor outside the immediate Hawaii Kai vicinity is expected to occur.

The locations of sites 1 and 2 are shown in Figure 2. Both sites are located several miles west of Hawaii Kai.

Site 3 is located in Hawaii Kai at the intersection of Wailua Street and Hawaii Kai Drive. Some of the morning traffic from the Golf Course 2/1A Project would be likely to pass through this intersection following the path of least distance in the direction of urban Honolulu.

Site 4 is located at the intersection of Kalaniansole Highway and Keahole Street, where evening rush hour traffic would enter Hawaii Kai on the least distance path from Honolulu to the Golf Course 2/1A Project.

The locations of sites 3 and 4 are shown in Figure 1.

Expected worst case morning peak hour carbon monoxide concentrations at sites 1 and 3 and worst case evening peak hour concentrations for sites 2 and 4 were computed for study years 1985, 1995, and 2005. Computations were made for traffic conditions with and without the proposed Golf Course 2/1A Project.

Traffic volumes for study years were determined using the traffic impact study for the project and the Hawaii Kai Transportation Management Study by Wilbur Smith and Associates of February, 1985. The traffic impact study for the project assumes that mitigative measures proposed in the 1985 Transportation Management Study (such as a comprehensive ridesharing program and a pedestrian overpass at Kalaniiki Street) will be implemented by 1995. The traffic impact study for the project also assumes a significant interaction between Hawaii Kai and service industrial area traffic such that the Golf Course 2/1A Project as a whole will result in only minimal changes in the peak hour volumes that would occur without the project.

This air quality study was designed to evaluate the worst possible case regarding the impact of traffic from the Golf Course 2/1A project. In order to do that the trip generation data presented in the traffic impact study for the project was assigned to roadways using the assumption that there would be no interaction between Hawaii Kai traffic and service industrial traffic, i.e. all workers and patrons of the service industrial area would come from outside the Hawaii Kai area and all residents of the project would commute outside the area for work and services. Traffic volumes for 2005 were determined using the assumption that there will be a 10 percent increase in non-Hawaii Kai traffic along the Kalanianaole Highway corridor between 1995 and 2005, but that Hawaii Kai will be essentially completed by 1995, with no significant growth thereafter.

The existing peak hour vehicle mix in the project area is estimated to be 74% gasoline-powered automobiles, 14% light duty gasoline-powered trucks and vans, 1% heavy duty gasoline-powered vehicles, 5% diesel-powered automobiles, 1% diesel-powered light duty trucks, 4% diesel-powered trucks and buses, and 1% motorcycles. The same vehicle mix was assumed for all study years.

Intersections at all four critical receptor sites are signalized. Where signal lights would control traffic flow, average vehicle speeds were assumed to be 5 mph upstream from red signal lights and 15 mph downstream from signals or turns. In the off peak and high occupancy vehicle lanes of Kalanianaole Highway traffic was assumed to move at 25 mph in unimpeded flow.

For all computations a temperature of 68 degrees F was assumed with 20 percent of vehicles operating in the 'cold start' mode for all sites except site 3 where a morning cold start percentage of 75 was assumed for traffic operating within the Hawaii Kai area.

The EPA computer model MOBILE 2 was run using the above parameters to produce vehicular carbon monoxide emission estimates for each of the years studied.

The EPA computer model HIWAY 2 was used to calculate carbon monoxide concentrations at each of the selected critical receptor sites for each scenario studied. Stability category 4 was used for determining diffusion coefficients. This stability category represents the most stable (least favorable) atmospheric condition that is likely to exist in a suburban area such as this.

To simulate worst case wind conditions a uniform wind speed of one meter per second was assumed with the worst case wind direction for site 1 from the southeast; for site 2 from the northeast; and for sites 3 and 4 from the east. For each receptor site concentrations were computed at a height of 1.5 meters to simulate levels that would exist within the normal human breathing zone. Background contributions of carbon monoxide from sources or distant roadways not directly considered in the analysis were assumed to be zero.

Results of the carbon monoxide study are presented in Table 2. For sites 1 and 4 worst case existing carbon monoxide levels are estimated to be higher than allowable State of Hawaii air quality standards, but by 1995 projected emissions reductions and the mitigation measures proposed in the Hawaii Kai Transportation Management Study are predicted to lower carbon monoxide levels to within allowable limits whether the Golf Course 2/1A Project is developed or not.

There are two important qualifications to the above conclusion. While including projected traffic from all proposed development in the Hawaii Kai area and along the Kalanianaole corridor, the above analysis assumes that the ride sharing program proposed in the Hawaii Kai Transportation Management Study will be totally successful. If it should turn out that this ride sharing program is totally unsuccessful and a pedestrian overpass is not constructed at Kalaniiki Street, then modeling work done for the Marina Zoning project in 1985 indicates that morning worst case carbon monoxide levels there could rise to slightly over 15 milligrams per cubic meter. This level is significantly above the allowable State of Hawaii limit, although it is still within allowable National AQS.

On the other hand, the above analysis does not consider the proposed State DOT Median HOV (High Occupancy Vehicle) Lane Project which has the potential to reduce traffic congestion along the Kalanianaole Highway corridor by about as much as the ride sharing program would. In any case, the expected 1995 contribution by Golf Course 2/1A traffic to projected peak hour carbon monoxide levels at the Kalaniiki Street intersection is on the order of 0.2 milligrams per cubic meter.

The significant contribution of Golf Course 2/1A traffic to projected worst case peak hour carbon monoxide levels at the Keahole Street intersection arises from the fact that almost all traffic generated by the project during the evening peak hour (in either direction) would pass through this intersection. There would be a significant demand for green signal time in all directions and thus long queues in all lanes located upstream from the signal light. In this case project traffic serves to increase volume in the off peak direction and thus there are likely to be significant queues even when the peak direction traffic has the green light. Even the maximum project-related traffic generation assumptions used for this study, however, fail to produce worst case carbon monoxide levels above the allowable State of Hawaii one hour standard.

Average one hour traffic volumes during the peak eight hour period are about 80 percent of the peak hour level. Eight hour carbon monoxide levels are estimated by multiplying the peak hourly values by this traffic volume ratio and a 'meteorological persistence factor' of 0.6 which is recommended in EPA modeling guidelines to account for the fact that meteorological dispersion conditions are more variable (and hence more favorable) over an eight hour period than they are for a one hour period. Multiplying projected peak hour carbon monoxide levels by this combined factor of about 0.5 will yield values that are about half those shown in Table 2. The State of Hawaii eight hour AQS for carbon monoxide is also one half the one hour standard. Thus the conclusions reached above regarding the State of Hawaii one hour standard will hold with respect to the eight hour standard as well.

All carbon monoxide concentrations calculated in the foregoing analysis are well within the less stringent National one and eight hour AQS whether the proposed project is undertaken or not.

8. MITIGATIVE MEASURES

A. SHORT TERM

As previously indicated the only direct short term adverse air quality impact that the proposed project is likely to create is the emission of fugitive dust during construction. State of Hawaii regulations stipulate the control measures that are to be employed to reduce this type of emissions. Primary control consists of wetting down loose soil areas. An effective watering program can reduce particulate emission levels from construction sites by as much as 50 percent. Other control measures include good housekeeping on the job site and pavement or landscaping of bare soil areas as quickly as possible.

B. LONG TERM

Once completed, the proposed Golf Course 2/1A Project is expected to have little direct impact on the air quality of the surrounding region. The service industrial area included in overall project plans could house some direct emitters of air pollutants. Activities considered as likely tenants of this area, such as a home improvement center, would be low level emitters, however, and any potential candidates for the site would have to possess a high degree of compatibility with the residential character of the area for both economic and environmental reasons.

Indirect long term impacts in the form of increased air pollutant emissions from power plants serving new residences in the project area can be mitigated somewhat by planning and implementing solar energy design features to the maximum extent possible.

Other indirect long term air quality impacts are expected in those areas where traffic congestion can potentially be worsened by the addition of vehicles traveling to and from the proposed project. Project planners can do very little to reduce the emission levels of individual vehicles, but the Hawaii Kai Transportation Management Study and the Traffic Impact Study for the project describe several proposed roadway improvements and and a comprehensive ride sharing program that could significantly decrease traffic congestion along the roadways leading to and from the project.

Carbon monoxide modeling conducted as a part of this report indicates that the transportation management strategies described in the traffic studies for the Hawaii Kai area and for this project in particular will be adequate to ensure compliance with State and National air quality standards even under worst case traffic and meteorological dispersion conditions. In addition, these findings do not consider potential decreases in traffic congestion along the Kalianaole Highway corridor that could result from implementation of the proposed State DOT Median High Occupancy Vehicle Lane Project.

Because the stringent national vehicular emissions reduction program now being pursued is entirely the product of perpetually changing government regulations, it is always possible that economic conditions or other factors could lead to an early abandonment of the program. If that were to occur, then the projected pollutant levels presented in this study could be too optimistic. On the other hand, it is possible that technological innovation may lead to new vehicular power systems that produce few or none of the currently regulated atmospheric pollutants.

In any case, this study indicates that currently proposed mitigative measures for traffic congestion along roadways leading to and from the project area should be sufficient to meet existing air quality requirements and no further air pollution mitigation measures are proposed. It is noted, however, that tall, dense vegetation can provide some screening of residential areas from larger airborne particulates generated along roadways and near construction areas. It is thus recommended that whereever possible such vegetative cover be included in landscaping plans with plantings occuring as early in the development process as practicable.

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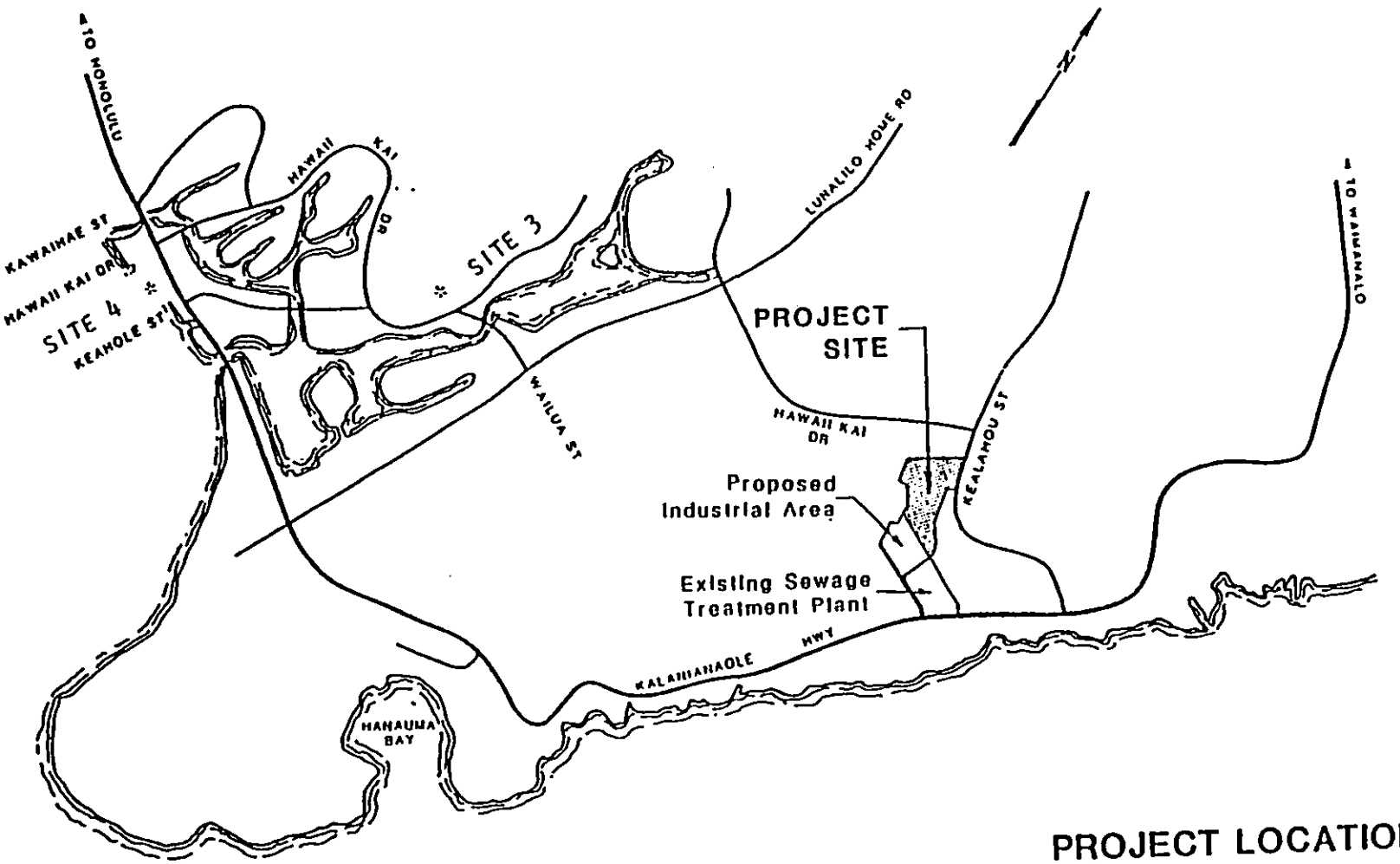

* Location of Carbon Monoxide Receptor Sites

PROJECT LOCATION
GOLF COURSE 2/1A
RESIDENTIAL PROJECT

Figure 1

Wilbur Smith and Associates

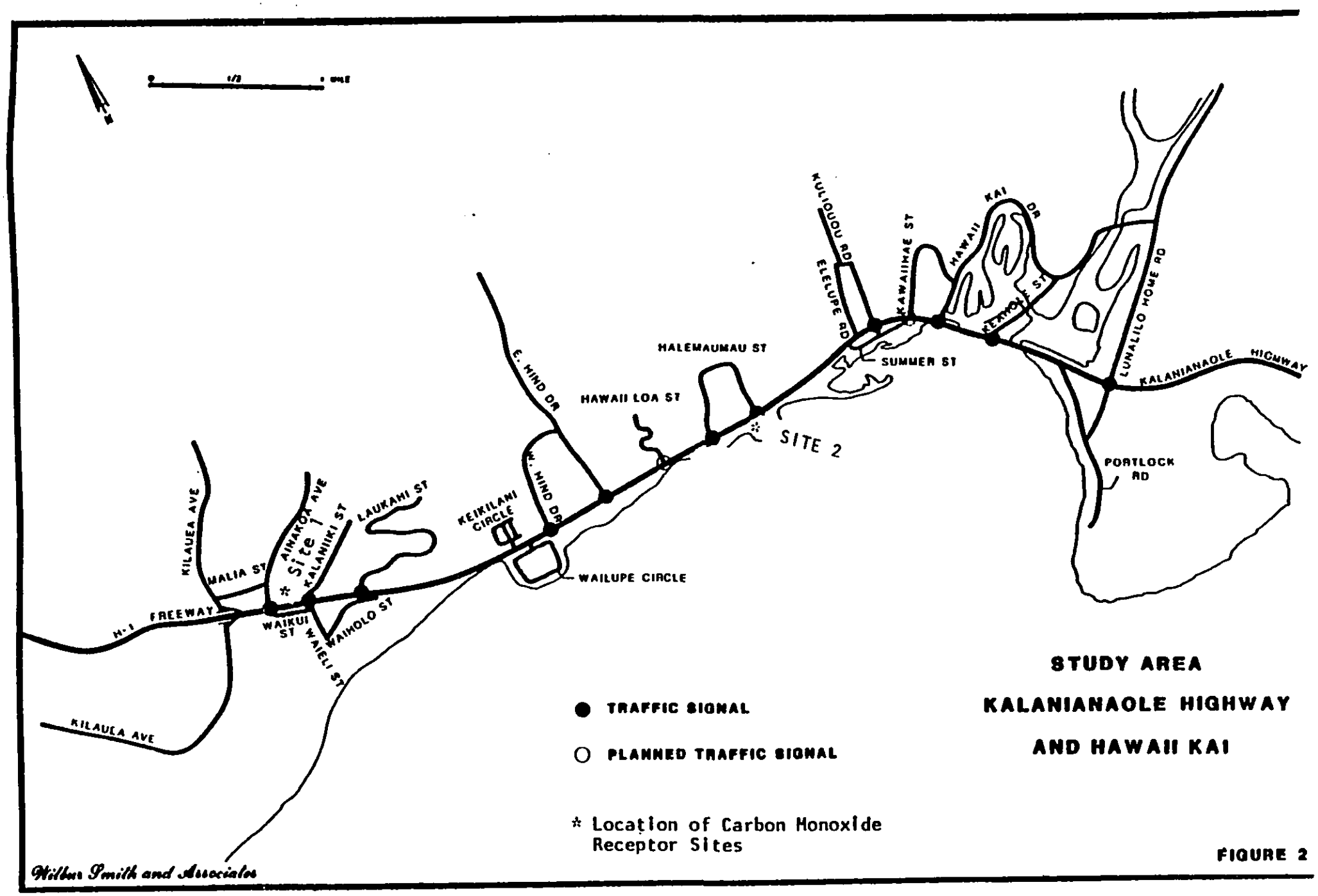
KULIOUOU RD
ELELUPE RD
KAWAIIHAE ST
HAWAII KAI DR
KEAHOLE ST
LUNALILO HOME RD
KALANIANAOLE HIGHWAY
HALEMAUMAU ST
SUMMER ST
E. HIND DR
HAWAII LOA ST
SITE 2
PORTLOCK RD
KILAUEA AVE
AIHAKOA AVE
Site 1
KALANIIKI ST
LAUKAHI ST
KEIKILANI CIRCLE
W. HIND DR
WAILUPE CIRCLE
MALIA ST
H-1 FREEWAY
WAIKUI ST
WAIOLI ST
WAIHOLO ST
KILAUEA AVE
TRAFFIC SIGNAL
PLANNED TRAFFIC SIGNAL
* Location of Carbon Monoxide Receptor Sites
STUDY AREA
KALANIANAOLE HIGHWAY
AND HAWAII KAI
Wilbur Smith and Associates

FIGURE 2

TABLE 1

SUMMARY OF HAWAII AND NATIONAL AMBIENT AIR QUALITY STANDARDS
(Micrograms per Cubic Meter)

POLLUTANT	SAMPLING PERIOD	AMBIENT AIR QUALITY STANDARDS NATIONAL Primary	NATIONAL Secondary	HAWAII
Particulates	Annual Geometric Mean	75	60	60
	Maximum 24-Hour Average	260	150	150
Sulfur Dioxide	Annual Arithmetic Mean	80	—	80
	Maximum 24-Hour Average	365	—	365
	Maximum 3-Hour Average		1300	1300
Nitrogen Dioxide	Annual Arithmetic Mean	100		70
Ozone	Maximum 1-Hour Average	240		100
Carbon Monoxide (milligrams per cubic meter)	Maximum 8-Hour Average	10		5
	Maximum 1-Hour Average	40		10
Lead	Calendar Quarter	1.5		1.5

TABLE 2

RESULTS OF PEAK HOUR CARBON MONOXIDE ANALYSIS
(Milligrams Per Cubic Meter)

	1985	1995	2005
SITE 1			
Without Golf Course 2/1A	10.3	6.2	6.7
With Golf Course 2/1A		6.4	6.9
SITE 2			
Without Golf Course 2/1A	8.6	5.2	5.2
With Golf Course 2/1A		5.6	5.7
SITE 3			
Without Golf Course 2/1A	6.5	4.6	4.6
With Golf Course 2/1A		5.0	5.0
SITE 4			
Without Golf Course 2/1A	10.1	6.5	6.5
With Golf Course 2/1A		7.8	7.8

STATE OF HAWAII AQS: 10
NATIONAL AQS: 40

Note: See Figures 1 and 2 for location of receptor sites.

APPENDIX E

TRAFFIC NOISE IMPACT STUDY
FOR THE PROPOSED
GOLF COURSE 2/1A SUBDIVISION
HAWAII KAI, OAHU

PREPARED FOR
ENVIRONMENTAL COMMUNICATIONS, INC.

BY
Y. ERISU & ASSOCIATES

JUNE, 1986

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I. SUMMARY

The existing and future traffic noise levels in the vicinity of the Hawaii Kai Golf Course 2/1A Subdivision project were evaluated for their potential impact on present and future residences. The influence of predicted traffic volume increases from previously approved or planned Hawaii Kai projects were included with the traffic volume increase associated with the current Golf Course 2/1A proposal. The increases in future traffic noise levels in the immediate vicinity of the project are anticipated to be manageable, and the proposed project should be capable of meeting federal noise standards for residences.

In order to minimize traffic noise impacts on future Golf Course 2/1A residents and to not preclude federal assistance on the project, future traffic noise levels were calculated and free-field traffic noise contours constructed. The locations of existing and planned residences in relationship to these noise contours were used to identify potential impact areas.

Overall, the majority of the proposed project residences will not be impacted by traffic noise. At most, two single family residences along Kealahou Street may be exposed to traffic noise levels above FHA/HUD standards. The use of sound attenuating walls or increased setback distances are the recommended noise mitigation measures for these two homes.

Traffic noise impacts from the residential/apartment components of the proposed subdivision are not expected to be significant. Minimally to moderately significant traffic noise impacts from the proposed light industrial component of the project are expected to be localized to existing Hawaii Kai residences which front Kalanianaole Highway between Hanauma Bay and Lunalilo Home Road.

Additional discussion and recommended mitigation measures for minimizing possible impacts and conflicts between the proposed apartment and light industrial lots were provided.

II. PURPOSE AND METHODOLOGY

The purpose of this noise study was to predict and evaluate the motor vehicle traffic noise increases associated with the proposed Hawaii Kai Golf Course 2/1A developments. The scope of the noise study was limited to existing and future residential developments within Hawaii Kai which may be exposed to increased traffic noise as result of the proposed developments. A specific objective was to determine setback requirements of proposed residential units for compliance with FHA/HUD noise standards.

Traffic noise predictions for the existing conditions and for the Year 1995 following completion of the proposed Golf Course 2/1A development were performed using traffic data from the Wilbur Smith Traffic Study (Reference 1) and the Federal Highway Administration (FHWA) Noise Prediction Model (Reference 2). Traffic data entered into the noise prediction model were: peak hour volumes; average vehicle speeds; and estimates of traffic mix. Traffic noise predictions for non-project sources in the Year 1994 were performed using traffic data from the Marina Zoning Traffic Study (Reference 3). These Year 1994 noise predictions were used to represent the future conditions without the development of the proposed Golf Course 2/1A project.

Areas affected by predicted increases in future traffic noise levels were isolated by comparing future traffic noise levels with FHA/HUD noise standards (Reference 4). The relative contributions of non-project and project related traffic to the total noise levels were also indicated.

For residences within traffic noise impact areas, possible noise mitigation measures are described. These measures include the use of minimum setback distances for new construction, and the use of walls to attenuate traffic noise at existing and future residences.

III. NOISE DESCRIPTORS AND THEIR RELATIONSHIP TO LAND USE COMPATIBILITY

Two noise descriptors currently used to relate traffic noise levels to land use compatibility, and to assess environmental noise in general, are the Equivalent Noise Level (Leq) and the Day-Night Average Sound Level (Ldn). Both of these descriptors are averages of instantaneous A-Weighted sound levels as read on a standard Sound Level Meter. In traffic noise evaluations, the averaging period for the Leq descriptor is usually an hour, and more specifically, the peak hour of traffic. In all evaluations, the minimum averaging period for the Ldn descriptor is 24 hours (by definition). Additionally, sound levels which occur during the nighttime hours of 10:00 PM to 7:00 AM are increased by 10 decibels (dB) prior to computing the 24-hour average by the Ldn descriptor.

TABLE 1 presents current federal standards and acceptability criteria for residential land uses exposed to various levels of environmental noise. As a general rule, noise levels of 55 Ldn or less occur in rural areas or urbanized areas which are shielded from high volume streets. Noise levels typical of communities on Oahu are shown in FIGURE 1. In urbanized areas, Ldn levels generally range from 55 to 65 Ldn, and are usually controlled by motor vehicle traffic noise. Residences which front major roadways are generally exposed to levels of 65 Ldn, and as high as 72 Ldn when the roadway is a high speed freeway. Due to noise shielding effects from intervening structures, residences which are located within interior lots are exposed to lower exterior noise levels of 60 Ldn or less.

For the purposes of determining noise acceptability for funding assistance from federal agencies (FHA/HUD and VA), an exterior noise level of 65 Ldn or lower is considered acceptable. This standard is applied nationally (see Reference 4), including Hawaii. Because of our open living conditions, the predominant use of naturally ventilated dwellings, and the relatively low

TABLE 1

EXTERIOR NOISE EXPOSURE CLASSIFICATION
(RESIDENTIAL LAND USE)

Noise Exposure Class	Day-Night Sound Level	Equivalent Sound Level	Federal Standard (1)
Minimal Exposure	Not Exceeding 55 Ldn	Not Exceeding 55 Leq	Unconditionally Acceptable
Moderate Exposure	Above 55 Ldn But Not Above 65 Ldn	Above 55 Leq But Not Above 65 Leq	Acceptable (2)
Significant Exposure	Above 65 Ldn But Not Above 75 Ldn	Above 65 Leq But Not Above 75 Leq	Normally Unacceptable
Severe Exposure	Above 75 Ldn	Above 75 Leq	Unacceptable

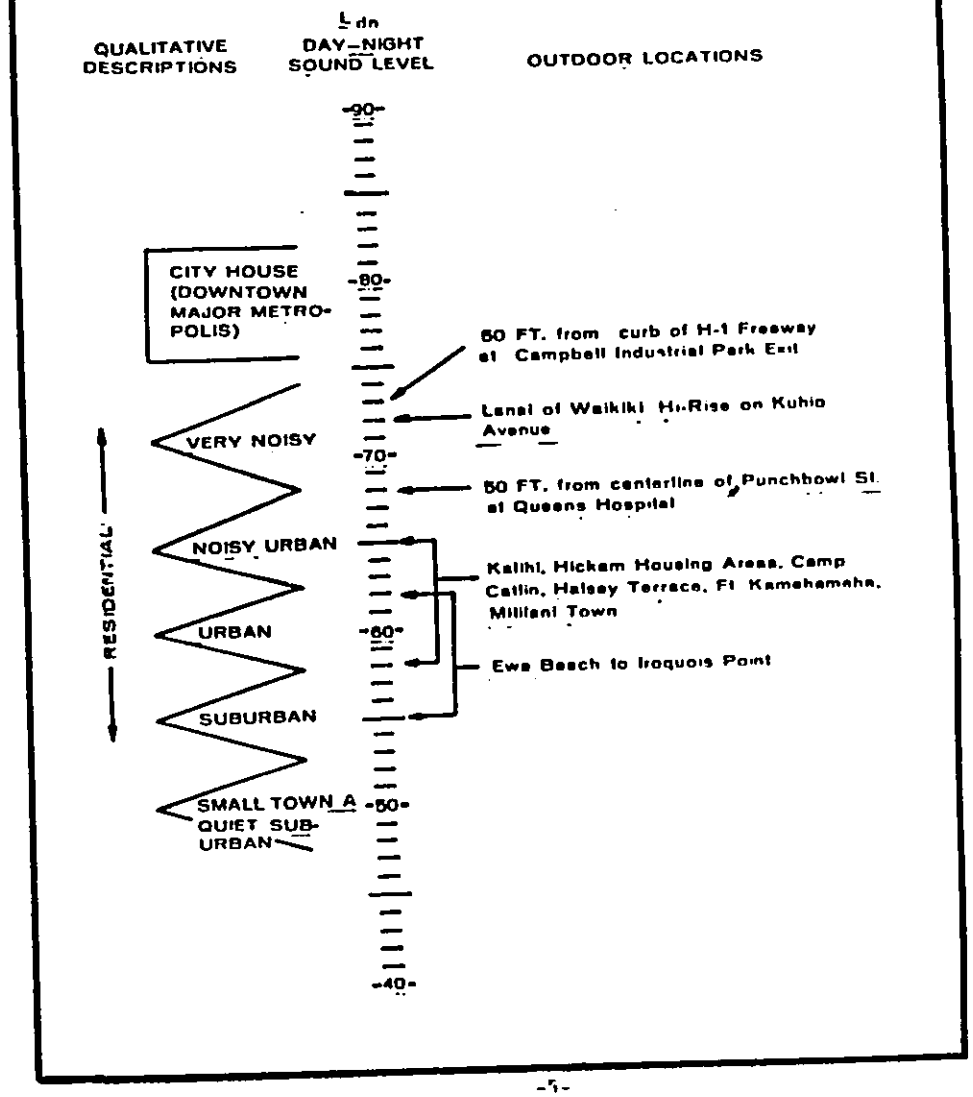
Note: (1) Federal Housing Administration, Veterans Administration, Department of Defense, and Department of Transportation.

(2) FHWA uses the Leq instead of the Ldn descriptor. For planning purposes, both are equivalent if: (a) heavy trucks do not exceed 10 percent of total traffic flow in vehicles per 24 hours, and (b) traffic between 10:00 PM and 7:00 AM does not exceed 15 percent of average daily traffic flow in vehicles per 24 hours.

Source: Reference 5.

FIGURE 1

RANGE OF EXTERIOR BACKGROUND AMBIENT NOISE LEVELS



exterior-to-interior sound attenuation afforded by these naturally ventilated structures, an exterior noise level of 65 Ldn does not eliminate all risks of adverse noise impacts. For these reasons, and as recommended in Reference 6, a lower level of 55 Ldn is considered as the "Unconditionally Acceptable" (or "Near-Zero Risk") level of exterior noise. However, after considering the cost and feasibility of applying the lower level of 55 Ldn, government agencies such as FHA/HUD and VA have selected 65 Ldn as a more appropriate regulatory standard.

IV. EXISTING TRAFFIC NOISE ENVIRONMENT

The existing traffic noise environment along the Hawaii Kai roadways which would service this project are in the "Moderate Exposure, Acceptable" and "Significant Exposure, Normally Unacceptable" categories. This condition is typical for residential subdivisions on Oahu where the first row of homes fronting a subdivision roadway are setback between 50 to 75 feet from the roadway's centerlines (see FIGURE 1). Traffic noise levels along the first row of homes fronting a major roadway generally represent the worst case (or highest) levels for homes of a subdivision. Traffic noise levels at interior lots (second row of homes from the roadway, for example) are generally in the "Minimal Exposure, Unconditionally Acceptable" to "Moderate Exposure, Acceptable" categories, with 5 to 10 Ldn lower noise levels resulting from shielding and distance effects. An exception occurs for mid- and high-rise structures which are not shielded from the roadway by intervening low-rise units.

Results of calculations of existing traffic noise levels along the six Hawaii Kai roadway sections of interest and along Kalanianaole Highway are shown in TABLES 2 thru 7. In the tables, the section of Lunalilo Home Road inland (or mauka) of the Wailua Street intersection is indicated as the north section. The section of Lunalilo Home Road seaward (or makai) of Wailua Street is labeled as the south section. The traffic volumes used for each roadway section represent averages of the intersection volumes contained in Reference 1. The traffic noise levels shown in the tables only apply when unobstructed line-of-sight conditions exist to the roadways. These conditions would generally occur at the first row of homes fronting the roadway, within any open space or parking lot, and at the upper levels of a mid- or high-rise structure.

FIGURE 2 depicts the location of the existing 65 Ldn traffic noise contours at the intersection of Hawaii Kai Drive and Kealahou Street in the immediate vicinity of the project. It

LOCATION	SPEED (MPH)	VPH	**** HOURLY LEQ IN dB @ 50' *** AUTO	MT	HT	ALL VEH
EXISTING WEEKDAY PM PEAK HR. TRAFFIC:						
Lunalilo Home Rd. (North)	30	1,700	63.8	55.8	62.2	66.5
Lunalilo Home Rd. (South)	30	958	61.3	53.3	59.7	64.0
Wailua Street	35	1,520	65.2	56.9	62.7	67.5
Keahole Street	35	1,435	65.0	56.6	62.5	67.3
Hawaii Kai Drive	35	680	61.7	53.4	59.2	64.1
Kealahou Street	30	380	57.3	49.3	55.7	60.0
1995 WEEKDAY PM PEAK HR.TRAFFIC:						
Lunalilo Home Rd. (North)	30	2,435	65.4	57.3	63.8	68.1
Lunalilo Home Rd. (South)	30	1,275	62.6	54.5	61.0	65.2
Wailua Street	30	2,320	65.2	57.1	63.6	67.8
Keahole Street	30	1,965	64.5	56.4	62.9	67.1
Hawaii Kai Drive	35	1,345	64.7	56.3	62.2	67.0
Kealahou Street	30	880	61.0	52.9	59.4	63.6

Note: Assumed traffic mix of 98% Autos, 1% Medium Trucks, and 1% Heavy Vehicles.

TABLE 2

COMPARISONS OF EXSITING AND FUTURE TRAFFIC NOISE LEVELS IN HAWAII KAI

TABLE 3

EXISTING AND FUTURE DISTANCES TO 65 AND 60 Ldn CONTOURS IN HAWAII KAI

STREET SECTION	65 Ldn SETBACK (FT) EXISTING	65 Ldn SETBACK (FT) FUTURE	60 Ldn SETBACK (FT) EXISTING	60 Ldn SETBACK (FT) FUTURE
Lunalilo Home Rd. (North)	63	80	136	172
Lunalilo Home Rd. (South)	43	52	93	112
Wailua Street	74	77	159	166
Keahole Street	71	69	153	149
Hawaii Kai Drive	43	68	93	147
Kealahou Street	23	41	50	88

Notes: All setback distances are to the roadway centerlines.
See TABLE 2 for traffic assumptions.
Ldn assumed to be equal to PM Peak Hour Leq.

TABLE 3

EXISTING AND FUTURE DISTANCES TO 65 AND 60 Ldn CONTOURS IN HAWAII KAI

STREET SECTION	65 Ldn SETBACK (FT) EXISTING	65 Ldn SETBACK (FT) FUTURE	60 Ldn SETBACK (FT) EXISTING	60 Ldn SETBACK (FT) FUTURE
Lunalilo Home Rd. (North)	63	80	136	172
Lunalilo Home Rd. (South)	43	52	93	112
Wailua Street	74	77	159	166
Keahole Street	71	69	153	149
Hawaii Kai Drive	43	68	93	147
Kealahou Street	23	41	50	88

Notes: All setback distances are to the roadway centerlines.
See TABLE 2 for traffic assumptions.
Ldn assumed to be equal to PM Peak Hour Leq.

TABLE 4

TRAFFIC NOISE INCREASES ASSOCIATED WITH THE PROJECT IN HAWAII KAI

STREET SECTION	EXISTING Ldn	FUTURE Ldn	TOTAL INCREASE	PROJECT INCREASE
Lunalilo Home Rd. (North)	66.5	68.1	1.6	0.1
Lunalilo Home Rd. (South)	64.0	65.2	1.2	-0.2
Wailua Street	67.5	67.8	0.3	0.2
Keahole Street	67.3	67.1	-0.2	0.0
Hawaii Kai Drive	64.1	67.0	3.0	1.4
Kealahou Street	60.0	63.6	3.7	1.6

Note: All Ldn values calculated at 50 FT distance from roadway centerline.

LOCATION	SPEED (MPH)	VPH	***** HOURLY LEQ IN dB **** AUTO	MT	HT	ALL VEH
EXISTING WEEKDAY PM PEAK HR. TRAFFIC:						
Waimanalo Side of Ikekai	45	810	65.5	56.7	61.6	67.4
Between Kealahou St. & Ikekai	45	810	65.5	56.7	61.6	67.4
Between Hanauma Bay & Kealahou St.	40	665	63.2	54.7	60.0	65.3
Between Lunalilo H. Rd. & Hanauma	35	860	62.7	54.4	60.2	65.1
Ewa of Lunalilo Home Road	35	1,710	65.7	57.4	63.2	68.1
Ewa of Keahole St.	35	2,880	68.0	59.6	65.5	70.3
1995 WEEKDAY PM PEAK HR.TRAFFIC:						
Waimanalo Side of Ikekai	45	1,010	66.5	57.7	62.5	68.4
Between Kealahou St. & Ikekai	45	1,010	66.5	57.7	62.5	68.4
Between Hanauma Bay & Kealahou St.	40	1,240	66.0	57.4	62.7	68.0
Between Lunalilo H. Rd. & Hanauma	35	1,380	64.8	56.5	62.3	67.1
Ewa of Lunalilo Home Road	35	2,110	66.6	58.3	64.1	69.0
Ewa of Keahole St.	35	3,420	68.7	60.4	66.2	71.1

Note: Assumed traffic mix of 98% Autos, 1% Medium Trucks, and 1% Heavy Vehicles.

TABLE 5

COMPARISONS OF EXISTING AND FUTURE TRAFFIC NOISE LEVELS ALONG KALANIANAOLE HWY.

TABLE 6

EXISTING AND FUTURE DISTANCES TO 65 AND 60 Ldn CONTOURS
ALONG KALANIANAOLE HIGHWAY IN 1995

STREET SECTION	65 Ldn SETBACK (FT) EXISTING	65 Ldn SETBACK (FT) FUTURE	60 Ldn SETBACK (FT) EXISTING	60 Ldn SETBACK (FT) FUTURE
Waimanalo Side of Ikekai	72	84	155	181
Between Kealahou St. & Ikekai	72	84	155	181
Between Hanauma Bay & Kealahou St.	52	79	112	170
Between Lunalilo H. Rd. & Hanauma Bay	50	69	108	149
Ewa of Lunalilo Home Road	80	92	172	198
Ewa of Keahole St.	113	127	243	274

Notes: All setback distances are to the roadway centerlines.
See TABLE 5 for traffic assumptions.
Ldn assumed to be equal to PM Peak Hour Leq.

TABLE 7

TRAFFIC NOISE INCREASES ASSOCIATED WITH THE PROJECT
ALONG KALANIANAOLE HIGHWAY

STREET SECTION	EXISTING Ldn	FUTURE Ldn	TOTAL INCREASE	PROJECT INCREASE
Waimanalo Side of Ikekai	67.4	68.4	1.0	0.8
Between Kealahou St. & Ikekai	67.4	68.4	1.0	0.8
Between Hanauma Bay & Kealahou St.	65.3	68.0	2.7	1.4
Between Lunalilo H. Rd. & Hanauma Bay	65.1	67.1	2.1	1.0
Ewa of Lunalilo Home Road	68.1	69.0	0.9	-0.1
Ewa of Keahole St.	70.3	71.1	0.8	-0.1

Note: All Ldn values calculated at 50 FT distance from roadway centerline.

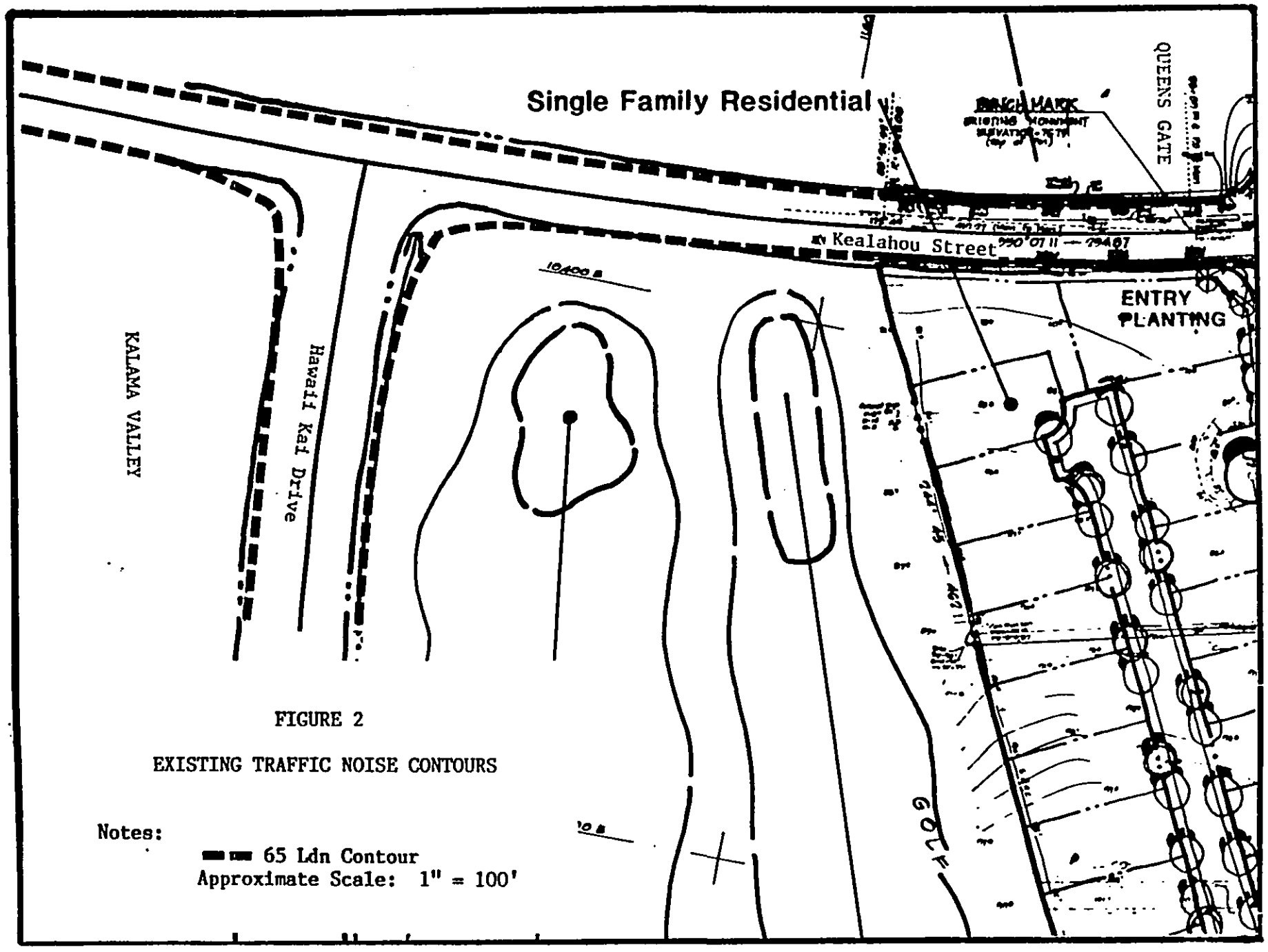


FIGURE 2

EXISTING TRAFFIC NOISE CONTOURS

Notes:

65 Ldn Contour

Approximate Scale: 1" = 100'

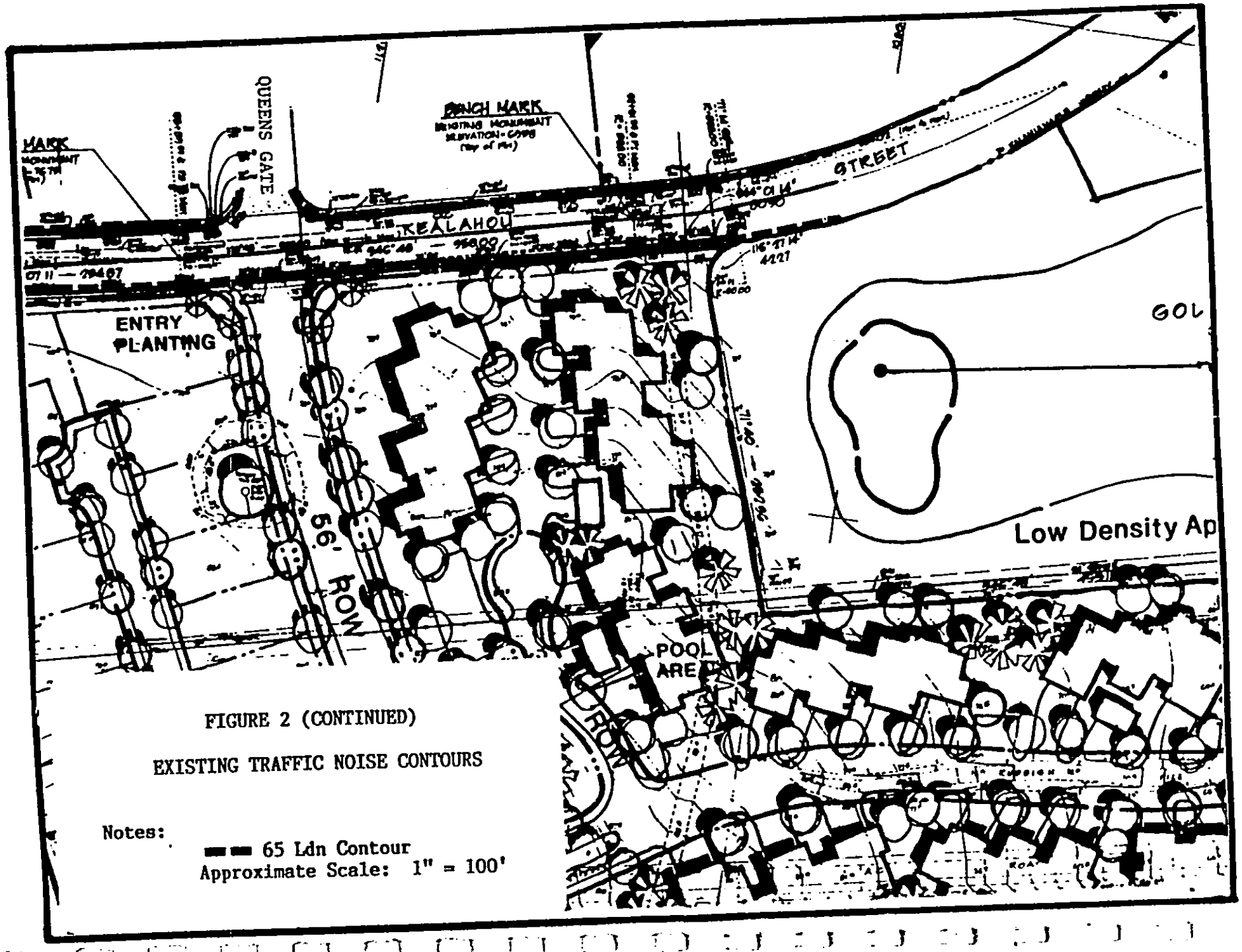


FIGURE 2 (CONTINUED)

EXISTING TRAFFIC NOISE CONTOURS

Notes:

▬▬ 65 Ldn Contour
Approximate Scale: 1" = 100'

should be noted that the contour lines shown represent the free-field noise condition, and do not take into account the excess sound attenuation effects of existing walls and other structures. However, from FIGURE 2, it can be concluded that the setbacks of the proposed Golf Course 2/1A homes are generally adequate for the existing traffic noise levels, since all of the proposed homes are located outside the existing 65 Ldn contours.

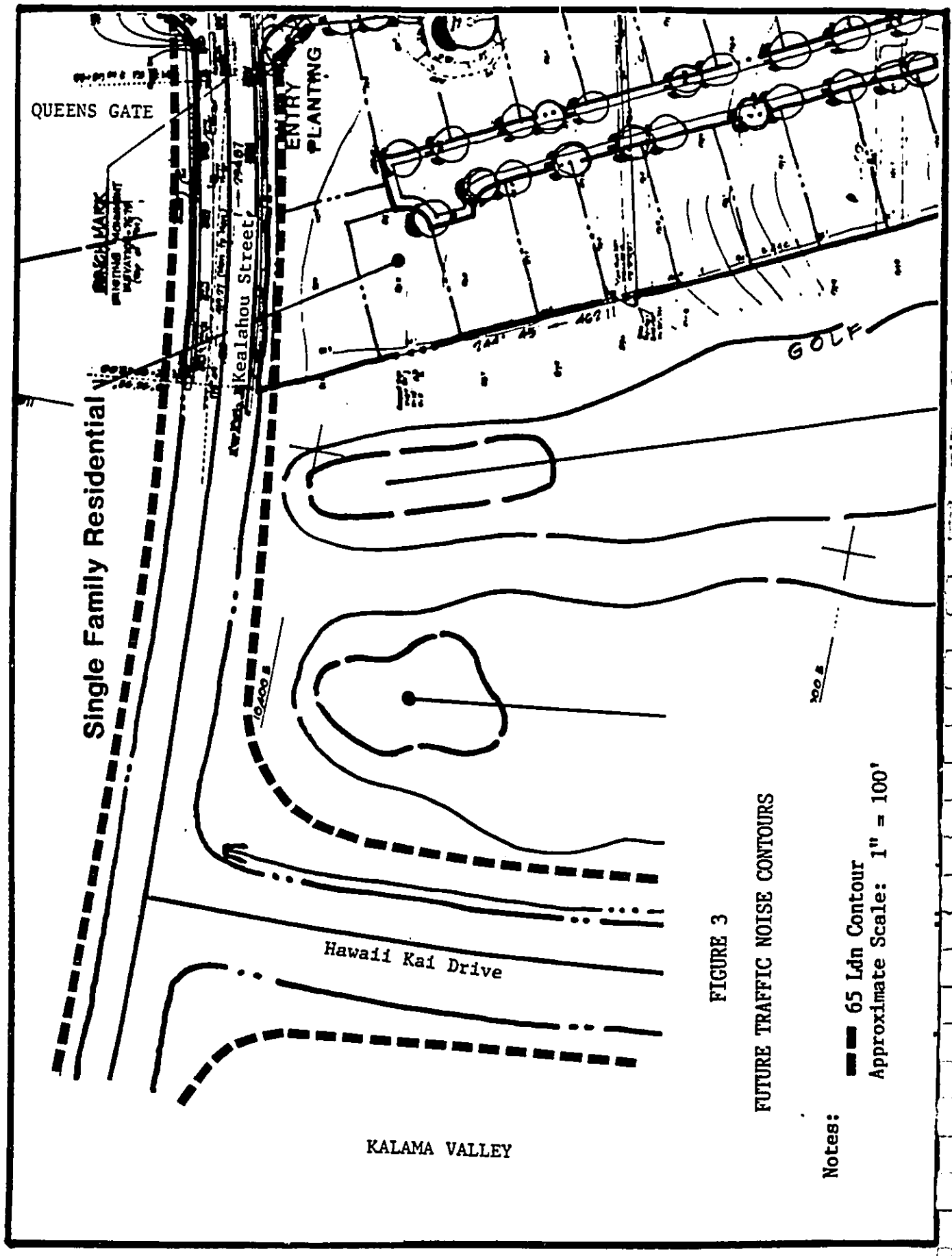
V. FUTURE TRAFFIC NOISE ENVIRONMENT

Predictions of future traffic noise levels were made using the traffic volume assignments of References 1 and 3. The results of the Year 1995 noise predictions are summarized in TABLES 2 thru 7, and resulting Year 1995 traffic noise contours are depicted in FIGURE 3. It should be noted that the Year 1995 traffic noise levels represent the combined influence of previously approved or proposed projects within Hawaii Kai (such as the Marina Zoning project) plus the current Golf Course 2/1A proposal.

From TABLE 4, project plus non-project traffic noise increases of 0 to 3.7 dB are predicted to occur between the current period and 1995 along the roadways interior to Hawaii Kai. The larger increases of 3.0 to 3.7 dB are associated with the relatively low volume roadways (Hawaii Kai Drive and Kealahou Street) which are in the immediate vicinity of the proposed project. Approximately 1.4 to 1.6 dB of traffic noise increases on these two roadways are associated with project related traffic. For the higher volume roadways within Hawaii Kai, whose 65 Ldn contours are beyond the 50 FT setback line, total traffic noise increases are predicted be less, and to range from 0 to 1.6 dB, with insignificant project contributions of less than 0.5 dB.

TABLES 5 thru 7 contain traffic noise predictions along sections of Kalaniannole Highway in the Hawaii Kai area. From TABLE 7, total traffic noise increases are expected to be highest along the section between Lunalilo Home Road and Kealahou Street, and in the order of 2.1 to 2.7 dB. Project related traffic is predicted to contribute 1.0 to 1.4 dB to the total noise levels along this section of the highway. Along the remainder of the highway, and in particular, toward Ewa and Waimanalo, traffic noise increases associated with the project are predicted to be between 0 and 0.8 dB. This is due to the relatively low traffic volumes predicted for the project as compared to the current high traffic volumes on the highway.

From FIGURE 3 and TABLE 3, the majority of the proposed


QUEENS GATE
ENTRY PLANTING
Kealahou Street
GOLF
Single Family Residential
Hawaii Kai Drive
KALAMA VALLEY
FIGURE 3
FUTURE TRAFFIC NOISE CONTOURS
Notes:
65 Ldn Contour
Approximate Scale: 1" = 100'

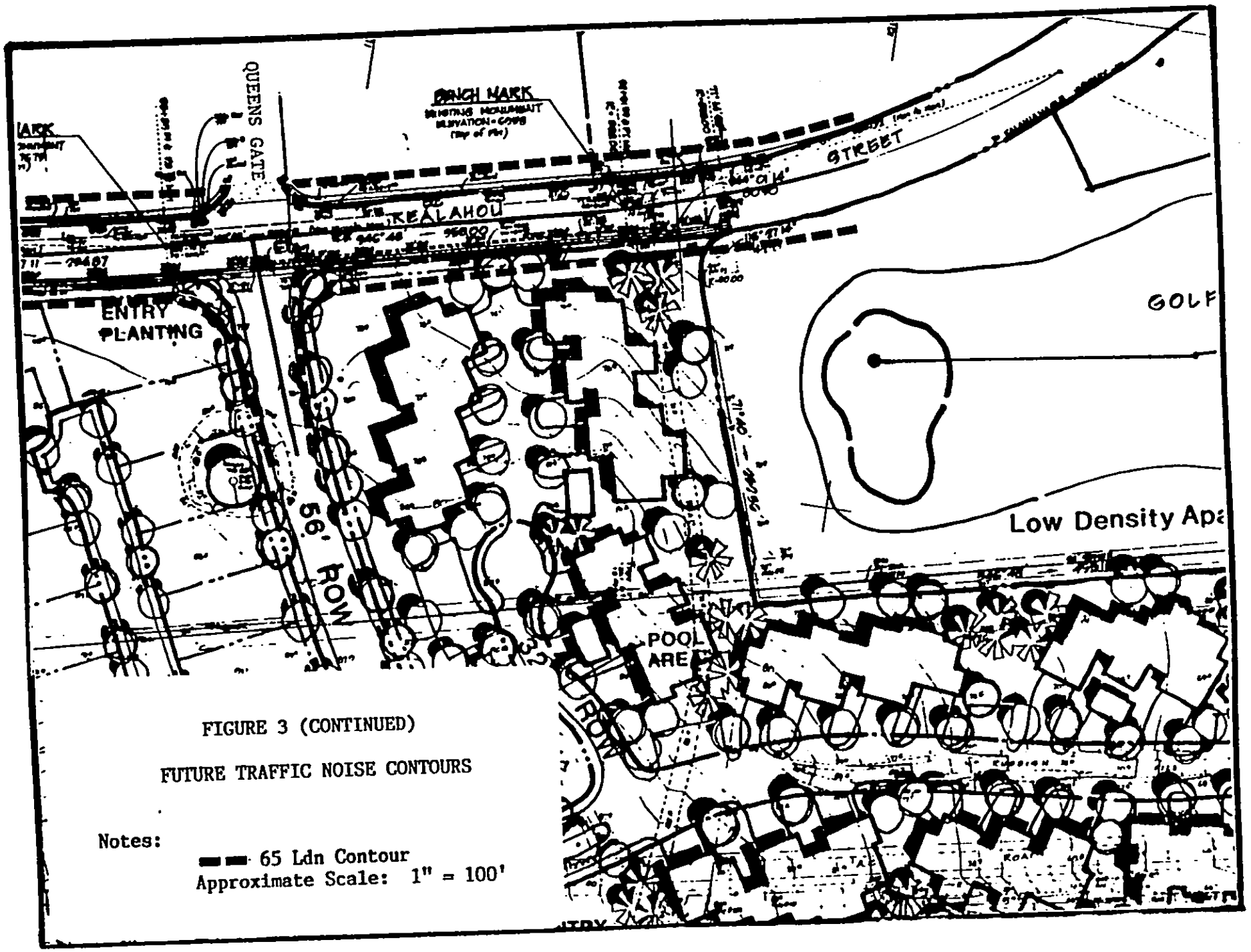


FIGURE 3 (CONTINUED)

FUTURE TRAFFIC NOISE CONTOURS

Notes:

▬▬ 65 Ldn Contour
Approximate Scale: 1" = 100'

dwelling units of the project are predicted to be outside the 65 Ldn traffic noise contours associated with Hawaii Kai Drive and Kealahou Street. At the entrance to the proposed subdivision on Kealahou Street, 239 in and out trips are projected during the PM peak hour (TABLE 4 of Reference 1). This projected volume of traffic is relatively low, and traffic noise levels along the subdivision entrance roadway are predicted to be approximately 62 Ldn along the Right-of-Way. Proposed low and medium density apartment units are sufficiently set back from Kalaniamaole Highway to be outside the highway's 65 Ldn contour line. As such, sound attenuation measures should not be required to meet the FHA/HUD noise standard of 65 Ldn for the majority of the units within the proposed project.

From FIGURE 3, the future 65 Ldn contour line is predicted to enter the two northernmost, single family lots which front Kealahou Street. If the homes on these two lots cannot be situated outside (or south of) the 65 Ldn contour line shown, noise mitigation measures would probably be required to meet the FHA/HUD noise standard.

VI. DISCUSSION OF PROJECT RELATED TRAFFIC NOISE IMPACTS AND POSSIBLE NOISE MITIGATION MEASURES

From TABLE 4, the increases in traffic noise levels attributable to the project are less than 0.5 dB for the high volume roadways, and 1.4 to 1.6 dB in the immediate vicinity of the project along Hawaii Kai Drive and Kealahou Street. An increase in traffic noise of less than 0.5 dB should not be perceptable and is not considered to be significant. Increases in traffic noise of 1.4 to 1.6 dB are considered to be moderately significant, but these larger increases are predicted to occur along the quieter roadways in the vicinity of the project.

In absolute terms, Year 1995 traffic noise levels along the Hawaii Kai Drive and Kealahou Street should not exceed 65 Ldn at 68 and 41 FT setback distances, respectively, from the roadways' centerlines. Existing setback distances of Kalama Valley homes are in the order of 80 to 100 FT from the centerline of Hawaii Kai Drive. Existing setback distances of Queens Gate homes are in the order of 40 to 60 FT from the centerline of Kealahou Street. From FIGURE 3, all, but possibly two, of the proposed dwelling units are predicted to be outside the 65 Ldn traffic noise contours. Therefore, existing and planned residences along the roadways in the immediate vicinity of the proposed project should remain in the "Moderate Exposure, Acceptable" noise exposure category. Additionally, the majority of existing Kalama Valley and Queens Gate homes are shielded from traffic noise by walls. For these reasons, future traffic noise impacts resulting from the proposed Golf Course 2/1A subdivision are not expected to be significant.

For the two single family residences of the Golf Course 2/1A project which may be within the Year 1995 65 Ldn contour, the use of larger setback distances from the roadway centerlines is a possible noise mitigation measure. TABLE 3 and FIGURE 3 provide the required setback distances to the future 65 Ldn contour line. The construction of sound attenuation walls is another standard

mitigation measure, particularly for shielding single-story residences from traffic noise. In general, the wall height requirements become excessive (in the order of 10-plus feet) when multi-story residences are involved in traffic noise mitigation efforts. For this reason, this noise mitigation measure is generally limited to ground floor residential units. For single story residences where the increased setback distance option does not exist, the construction of sound attenuation walls has been widely applied.

Where none of the above mitigation measures are feasible, the remaining options are air conditioning the affected residential spaces or sound-treating ventilation openings (windows) to increase their exterior-to-interior noise reduction properties. The use of air conditioning within residences is not common, and is not considered a practical option for subdivision residences. The use of sound-treated windows has been applied at selected mid-rise structures in Hawaii for the purpose of meeting FHA/HUD noise standards.

Along Kalaniansole Highway, project related traffic noise impacts should be minimal (less than 0.8 dB) in all areas except for the section between Lunalilo Home Road and Hanauma Bay. Along this section of the highway, traffic associated with the light industrial subdivision is predicted to increase noise levels by 1.0 dB at existing Hawaii Kai residences north and south of the highway between Hanauma Bay and Lunalilo Home Road. This degree of increase is considered to be minimally to moderately significant, and will be difficult to perceive during the build-out period of the light industrial subdivision. In absolute terms, project and non-project traffic noise levels are predicted to be above 65 Ldn by the Year 1995 along Kalaniannole Highway. The use of sound attenuating walls to shield existing residences from the traffic noise is a possible noise mitigation measure. For those residences which are elevated above the grade of the highway, the use of sound attenuating walls may not be feasible, and the addition of air conditioning or sound attenuating windows are the only other noise mitigation possibilities. The ultimate use of a particular noise mitigation measure may depend upon other considerations besides noise, such as economic cost, aesthetics, and technical feasibility.

VII. OTHER NON-TRAFFIC NOISE CONSIDERATIONS

The possibility of adverse noise or operational impacts exits along the proposed common boundary between the light industrial and apartment lots of the proposed subdivision. Because these lots are removed from the highway, background ambient noise levels are expected to be low, and in the order of 45 to 50 dB, and noise from light industrial activities may be audible along the common boundary line with the apartment units. Light industrial users will be required to not exceed state and county noise limits at the common boundary line, and this should prevent excessive noise levels at the neighboring apartment units.

It may be necessary to control the type of tenants or, as a minimum, to advise light industrial subdivision tenants of the possibility of noise complaints from the neighboring apartments, and of their responsibilities for compliance with the state and county noise regulations. If development of single family residences or apartments beyond the south or west boundaries is a long range possibility, control or precautionary measures should be extended to include those subdivision boundary lines.

The following noise mitigation measures should be considered to minimize the possibility of conflicts along the common boundary between the light industrial and apartment lots:

a. Locate light industrial tenants with the noisiest operations toward a boundary line which is not anticipated to be noise sensitive, such as the east boundary line, adjacent to the Wastewater Treatment Plant.

b. Avoid locating light industrial tenants or noisy equipment near a noise sensitive boundary line, unless the tenant's noisy operations or equipment can be housed within a dense structure which blocks the visual line-of-sight between the tenant's operations or equipment and the noise sensitive neighbor.

c. Maximize buffer distances between the noise sensitive dwelling units and the light industrial boundary line, and provide intervening structural barriers (stairways, solid walls, utility rooms, etc.) to block the visual line-of-sight between the noise sensitive units and the industrial lots.

APPENDIX F

DEMOGRAPHIC IMPACT ANALYSIS
FOR THE PROPOSED
GOLF/COURSE 2/1A
HAWAII KAI, CITY AND COUNTY OF HONOLULU, HAWAII
KAISER DEVELOPMENT COMPANY

August 1986

Prepared for
Environmental Communications, Inc.
by
Triad Evaluations

I. INTRODUCTION

Identification of social and economic impacts on any given proposed development are subjective at best, however, the need for such analysis are desirable and required under current City planning criteria. In light of such objectives, the identification of potential social impacts of a proposed development upon local residents is best addressed by obtaining a good understanding of the area prior to development. Demographic characteristics prior to development offer a degree of objectivity which can serve as a fairly solid foundation on which potential impacts can be addressed. This report is intended to provide objective background data which can serve as a starting point for prognostication of potential social and cultural impacts.

This presentation was developed systematically with the intent of identifying possible impacts based on empirical and quantitative data. Three primary analytical aspects were utilized in formulation of the social impact forecast presented here.

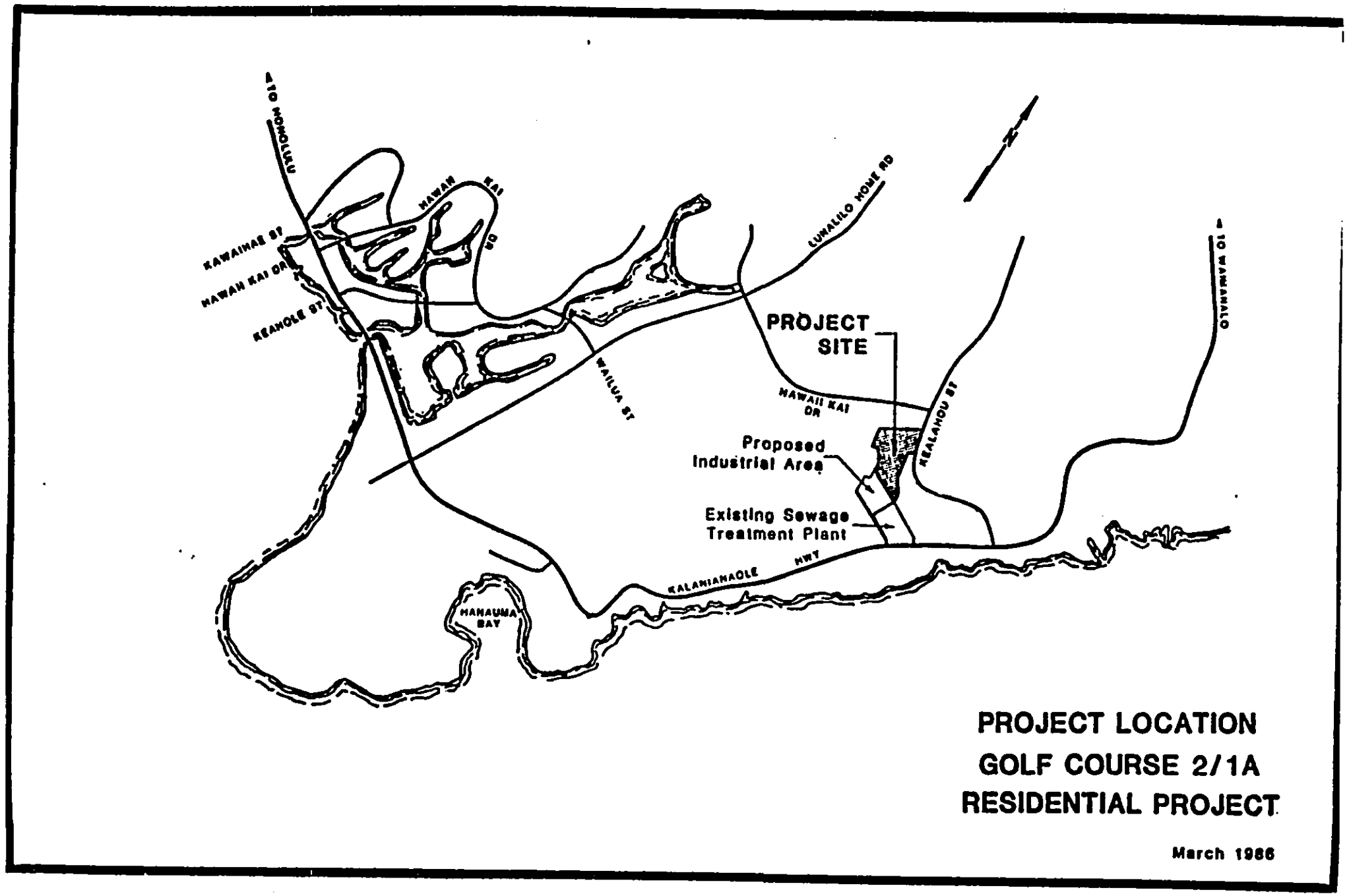
Baseline data for the subject area was recorded through a systematic analysis of available demographic data on socio-economic characteristics in the vicinity. For comparative purposes, Honolulu County statistics were also used as reference mean. From these statistics, conclusions were drawn from the analysis of these findings with respect to demographic concerns outlined in Section 10, Social Impact of Development, Ordinance 83-6, City and County of Honolulu. The concerns addressed in this report as outlined in Section 10, 2,a are: whether the development will increase or decrease the visitor population; and whether the development will change the character or culture of the neighborhood.

II. PROJECT DESCRIPTION

The proposed development, which is located in Hawaii Kai makai of Kalama Valley between Koko Crater and Hawaii Kai Golf Course, is planned as a mixed use subdivision consisting of 130 low density apartments, 300 medium density apartments, and 48 single family detached dwellings. A portion of the project is targeted for the retirement community.

The site consists of 30 vacant acres with limited on-site access. Disuse of the parcel is readily noticeable in it's disheveled appearance. The site has been planned for residential development since the adoption of the Hawaii Kai Master Plan in 1961. State Land Use Designation for the site is urban while City and County Development Plan Designations are Preservation and Industrial on the Land Use Map, and Waste Transfer Facility on the Public Facilities Map. The closest residential use is the Hawaii Kai Queen's Gate Subdivision and the Laulima O Hawaii Kai project which is currently under construction.

A five-year completion time frame is planned for the incremental development. The actual construction schedule will be dependent on prevailing market conditions however.



PROJECT LOCATION
GOLF COURSE 2/1A
RESIDENTIAL PROJECT

March 1986

III. GOLF COURSE 2/1A REGIONAL PROFILE: Socio-Economic Demographics

The proposed Golf Course 2/1A residential project lies in the eastern most portion of the master planned Hawaii Kai community which includes Hawaii Kai, Kalama Valley, and Queens Gate subdivision.

More specifically, the project site lies within U.S. Bureau of the Census tract number 1.05, which is bounded by Kealahou Street and Hawaii Kai Drive to the north, Kuapa Pond to the west, and Kalanianaole Highway to the south. The east end of the area is bounded by the shoreline. A portion of the Hawaii Kai community which lies east of Kuapa Pond and below Hawaii Kai Drive is contained within the tract while the Queens Gate subdivision, which is adjacent to the proposed project, is not. The Laulima of Hawaii Kai project, which is currently under construction, is located adjacent to the project site and is also included in CT 1.05.

For comparative purposes in this report, the study area will include census tracts 1.02, 1.03, 1.04, and 1.05, which will be considered as the surrounding community. This study area includes the residential areas of Hahaione Valley, Mariners Ridge, Portlock, Hawaii Kai, Queens Gate, and Kalama Valley. The Bureau of the Census recognizes the Hawaii Kai neighborhood as consisting of tracts 1.02, 1.03, 1.04, and 1.05.

A. Population

Population figures are presented below for three general areas relative to the proposed project. Figures for the local, immediate area (CT 1.05) are indicative of trends within the easterly portion of Hawaii Kai. Area figures which are comprised of the Hawaii Kai neighborhood tracts, reflect regional trends, and finally, County figures are provided for overall comparative purposes.

Table 1
Population Growth for Project Area, Hawaii Kai Neighborhood, and Honolulu County

	Project Area (CT 1.05)	Hawaii Kai	Honolulu County
1970	5,580	12,572	630,528
1980	5,550 (-.5%)	25,603(+104%)	762,565(+21%)
1984	5,490(-1.1%)	27,074(+5.7%)	805,300(+5.6%)

Source: The State of Hawaii Data Book 1985

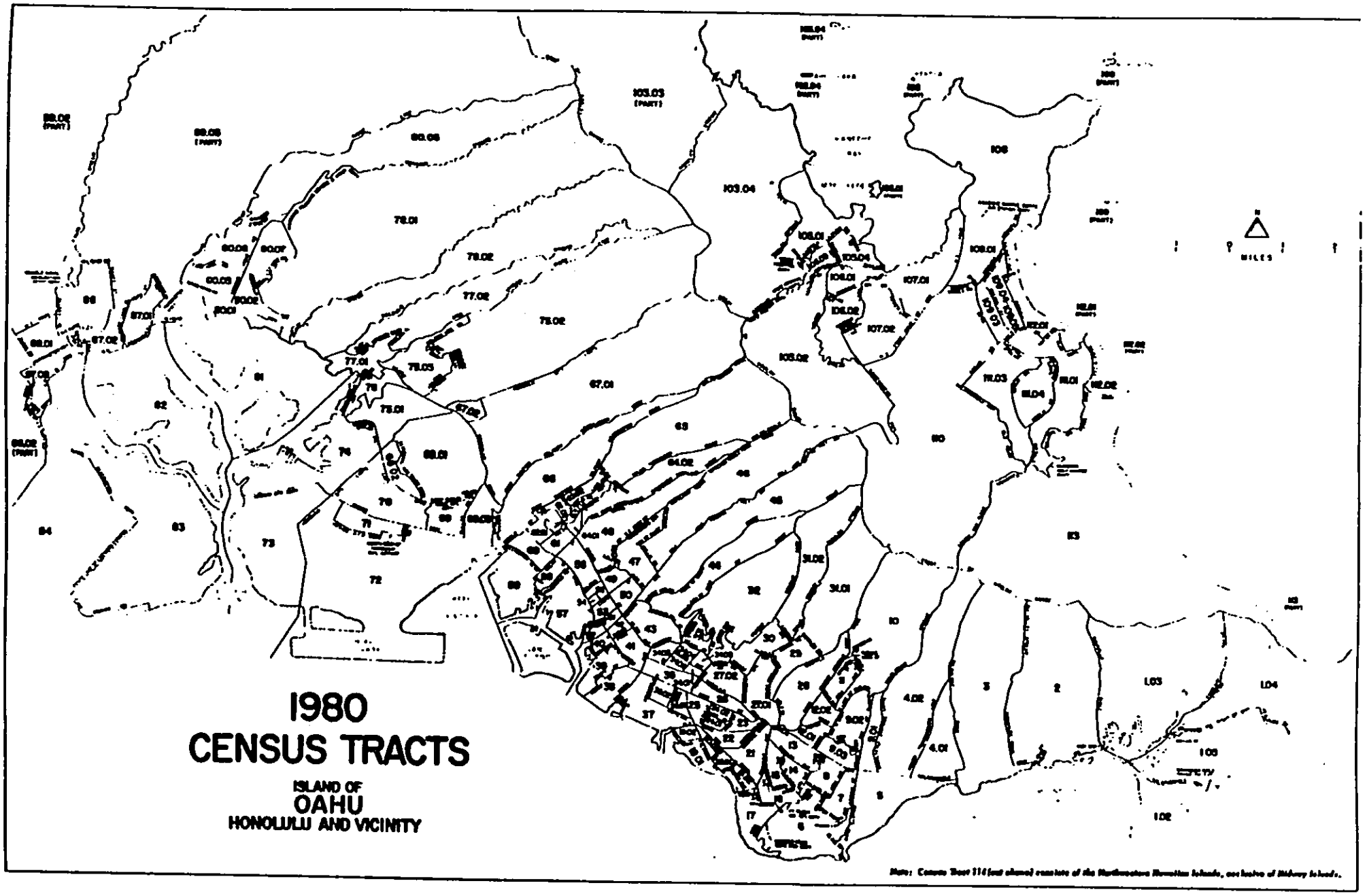
Hawaii Kai experienced tremendous growth from 1970 to 1980 with a population increase of 104% overall. This growth is significantly greater than the Honolulu County average and emphasizes the areas importance as a fast growing residential community. Development from 1980 to 1984 however, noted an increase of only 5.7%. Growth within the project CT noted decreases in population from 1970. This apparent discrepancy is a result of the pattern of development within the Hawaii Kai proper as shown in Table 2.

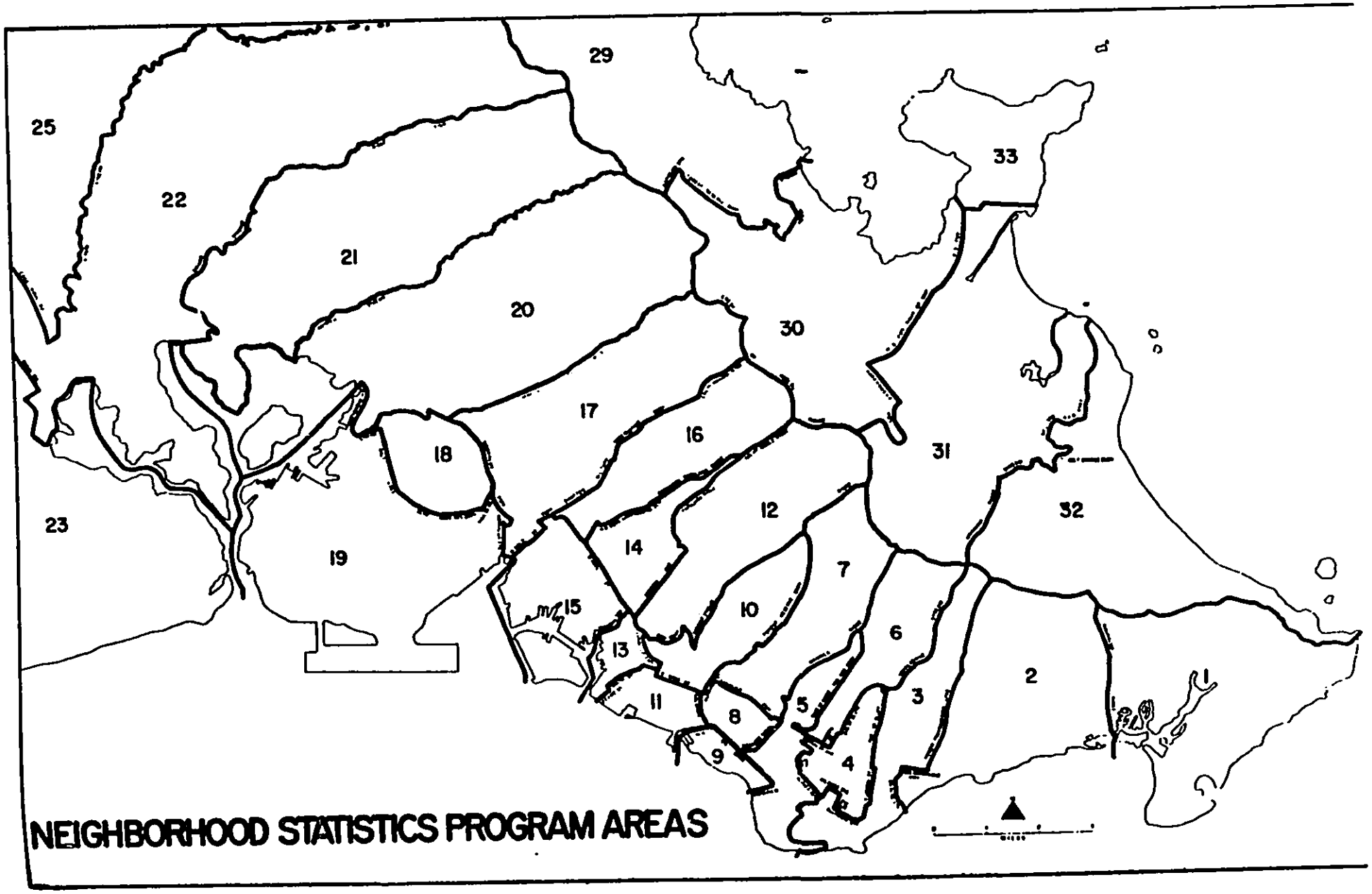
Table II
Population Growth within the Hawaii Kai Neighborhood

	CT 1.02	CT 1.03	CT 1.04	CT 1.05
1970	1,915	3,243	1,834	5,580
1980	2,067(+8.0%)	10,784(+233%)	7,202(+293%)	5,550(-.5%)
1984	2,067(+0.0%)	11,883(+10.2%)	7,(+6.0%)	5,490(-1.1%)

Source: The State of Hawaii Data Book 1985

Census Tract 1.02, the Portlock area, noted no growth from 1980 to 1984 and only a marginal increase since 1970. The minor increase is indicative of the stable, well established area.


1980
CENSUS TRACTS
ISLAND OF
OAHU
HONOLULU AND VICINITY
MILES



NEIGHBORHOOD STATISTICS PROGRAM AREAS

Census Tract 1.03 and 1.04 on the other hand, noted significant gains during the 1970's as a result of the development of the newer Kalama Valley, Queens Gate, and Hahaione Valley areas. Growth in these areas since 1980 are analogous to Honolulu County's increase.

The project area, CT 1.05, showed a slight decrease in population. The population for this CT primarily consist of the older, established residences of Hawaii Kai east of Kuapa Pond. This change is probably a result of decreases in household size due to offspring out-migration or the net change from the in-migration of smaller families.

B. Number of Households

The average household size within the Hawaii Kai neighborhood was 3.37 for 7,921 occupied housing units during 1980.[1] The 1980 Census also produced a similar average of 3.4 persons per household from 7,518 households and a base population of 25,603. These figures are similar to the Honolulu County mean of 3.3.

Table III
Number of Households in 1980

	CT 1.02	CT 1.03	CT 1.04	CT 1.05	Honolulu County
Population - 1980	2,067	10,784	7,202	5,550	762,565
Number of Households	599	3,462	1,947	1,510	230,214
Mean per Household	3.45	3.11	3.70	3.68	3.3

1. Bureau of the Census, 1980 Census of Population and Housing, Neighborhood Statistics Program, Hawaii, PHC 80-SP1-13 (1983).

The mean household sizes for the area reflect the suburban nature of the neighborhood with the exception of CT 1.03. CT 1.03 contains a number of higher density dwellings rather than detached single family residences.

C. Projected Population Increase:

The mean household figures discussed earlier are largely representative of single family detached dwellings, however the proposed project will consist of mixed densities with 130 low density, 300 medium density and 48 single family detached units.

The Department of General Planning utilizes general household size guidelines of 3 for low density apartments, 2 for medium density apartments, and 3.3 for single family dwellings. Application of this multipliers would result in a population increase of approximately 1,148 residents.

Attributes unique to the project suggest adjustments to these multipliers, however, larger mean household sizes within the Hawaii Kai study area for single family dwellings and the lower sizes for the possible retirement community market should be reflected correspondingly.

Table IV

Project Population Projections

	DGP Guideline[2] (Household Coefficient)	Units	Project Adjusted (Household Coefficient)	Units
Low Density Apartment 130 Units	(3.0)	390	(2.6)	338
Medium Density Apartment 300 Units	(2.0)	600	(1.8)	540
Single Family Detached 48 Units	(3.3)	158	(3.4)	163
	Total	1148	Total	1041

2. Department of General Planning

A conservative (high) adjusted projection of 1041 is slightly lower than but similar to DGP estimate of 1148. From these figures an approximate net gain of 1100 is proposed. This gain would result in a 20% increase over the 1984 CT 1.05 population and a 4% change in the overall Hawaii Kai Neighborhood.

D. Population Distribution Policies

The City and County of Honolulu General Plan population projections are based on the most recent population projection series produced by the State Department of Planning and Economic Development. These projections, for year 1990 to 2005, indicate a progressive decline in the average annual growth rate as shown below:

Table V

DPED Population Projections for City and County of Honolulu

Year	Resident Population	Previous 5 Years Average Annual Growth Rate
1990	859,300	1.06%
1995	896,900	0.86%
2000	925,700	0.63%
2005	954,500	0.61%

Department of General Planning population distribution percentage guidelines for the eight Island Development Plan areas are listed in Table VI. This table lists: the estimated 1984 Population Projections; the General Plan percentage guidelines for each DP area; the expected Year 2005 population based on these guidelines; and, the actual adjusted 1985 projection for Year 2005. The actual adjusted projection is based on capacity and expected demands rather than percentages.

As indicated in Table VI, the General Plan targets the East Honolulu District for 6.2 to 6.8% of the total island population. These figures result in a 59,179 to 64,906 population for 2005 compared to the 1984 population of 45,600. The proposed Golf Course 2/1A project will result in a population increase of approximately 1,100 persons which should be easily accomodated by the current General Plan Guideline figures.

DEVELOPMENT PLAN AREAS

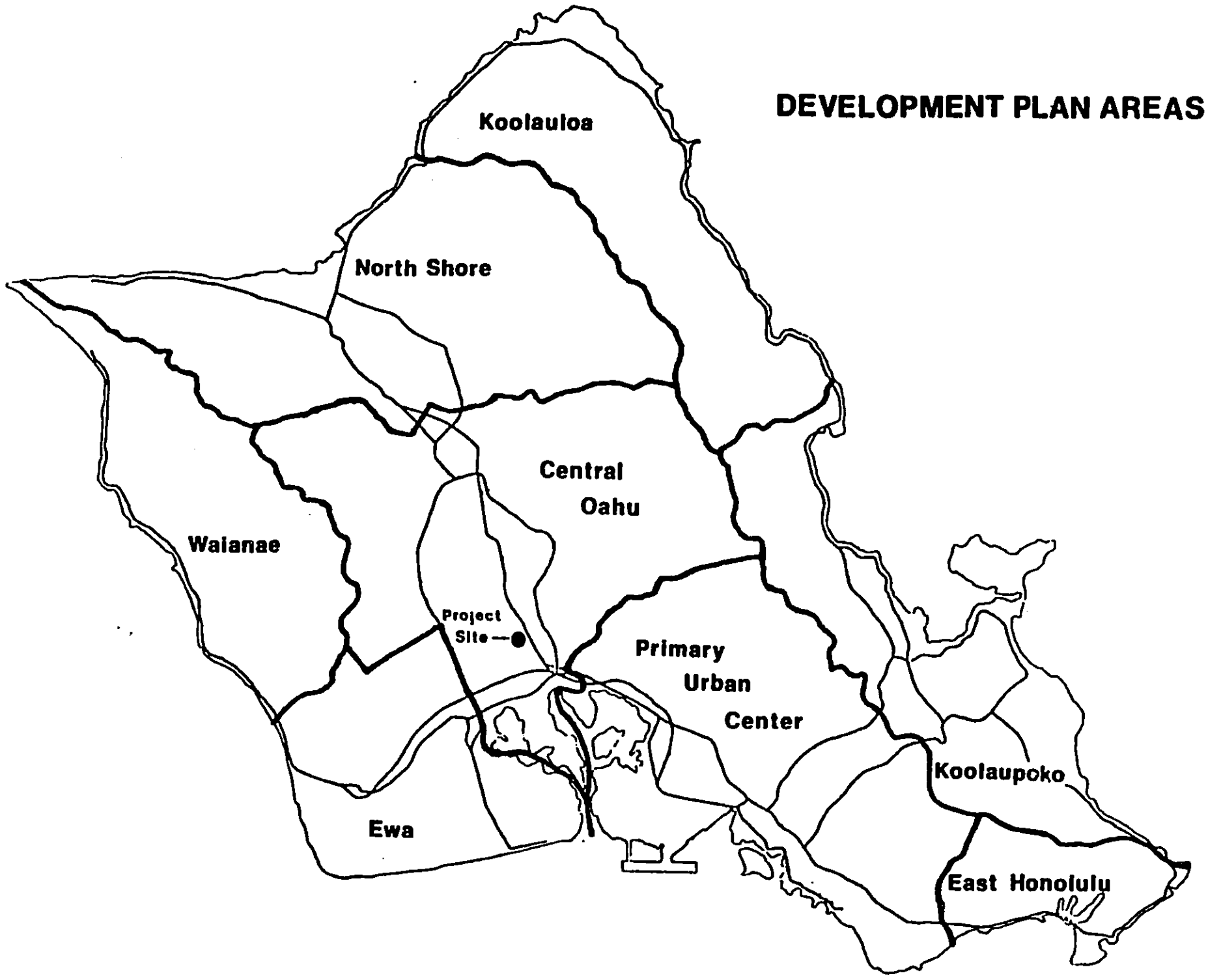


Table VI
Development Plan Area Population Guidelines

DP Area	1984 Population	Year 2005 General Plan Percentage Guidelines	Year 2005 General Plan Actual Guidelines	Expected Year 2005 Population
Primary Urban Center	436,800	47.5 - 52.5	453,388 - 501,113	480,000
Ewa	36,000	9.0 - 10.0	85,905 - 95,450	83,100
Central Oahu	114,400	12.8 - 14.2	122,176 - 135,539	139,800
East Honolulu	45,600	6.2 - 6.8	59,179 - 64,906	58,500
Koolaupoko	113,300	12.4 - 13.6	118,358 - 129,812	124,200
Koolauloa	12,100	1.3 - 1.5	12,409 - 14,318	13,800
North Shore	14,000	1.6 - 1.8	15,272 - 17,181	15,600
Waianae	33,400	4.2 - 4.6	40,089 - 43,907	39,300
Total	805,300	95.0 -105.0	906,775 - 1,002,225	954,500

Source: City and County of Honolulu, Department of General Planning, "Residential Development Implications of the Development Plans," 1985.

E. Social Characteristics:

1. Age:

The Hawaii Kai's age distribution reflects a well established community predominantly comprised of young families with school aged children. Census Tracts 1.03 and 1.04 also indicate a fairly large population in the 25-34 year bracket. These two tracts are relatively recent developments which include higher density housing in Hahalone Valley and single family detached dwellings of Kalama Valley. This distribution suggest younger households are being extablished in the newer sections of Hawaii Kai.

Table VII

Age Groups (1980)

	Honolulu County	Hawaii Kai	1.02	1.03	1.04	1.05
Under 5	60,154 (7.9%)	1,551 (6.1%)	78 (3.8%)	626 (5.8%)	580 (8.1%)	267 (4.8%)
5 - 9	56,771 (7.4%)	2,074 (8.1%)	153 (7.4%)	766 (7.1%)	818 (11.4%)	337 (6.1%)
10 - 14	58,528 (7.7%)	2,751 (10.7%)	250 (12.1%)	1133 (10.5%)	839 (11.6%)	529 (9.5%)
15 - 19	69,715 (9.1%)	2,819 (11.0%)	235 (11.4%)	1089 (10.1%)	689 (9.6%)	806 (14.5%)
20 - 24	89,371 (11.7%)	1,448 (5.7%)	117 (5.7%)	585 (5.4%)	304 (4.2%)	442 (8.0%)
25 - 34	143,456 (18.8%)	3,874 (15.1%)	195 (9.4%)	1811 (16.8%)	1183 (16.4%)	685 (12.3%)
35 - 44	89,330 (11.7%)	4,986 (19.5%)	354 (17.1%)	2088 (19.42%)	1609 (22.3%)	935 (16.8%)
45 - 54	74,775 (9.8%)	3,239 (12.7%)	336 (16.3%)	1344 (12.5%)	750 (10.4%)	809 (14.6%)
55 - 64	65,097 (8.5%)	1,875 (7.3%)	244 (11.8%)	875 (8.1%)	287 (4.0%)	469 (8.5%)
65 - 74	35,932 (4.7%)	687 (2.7%)	71 (3.4%)	346 (3.2%)	106 (1.5%)	164 (3.0%)
75+	19,436 (2.5%)	299 (1.2%)	34 (1.6%	121 (1.1%)	37 (0.5%)	107 (1.9%)
Total Population	762,565	25,603	2,067	10,784	7,202	5,550

2. Place of Birth

The Hawaii Kai community reflects simlar characteristics to Honolulu County in places of birth of it's residents with a slightly higher percentage of Mainland born and a slightly lower percentage of foreign born. A break down of individual census tracts shown have significant differences however. The census tracts in the Kalama Valley, Queens Gate and East Hawaii Kai areas are comprised of fairly "local" families with a large number of Hawaii born and relatively few foreign born. The Portlock and Hahalone Valley areas (CT 1.02, 1.03) however, have a noticeably larger mainland born constituency. Conversely, the number of Hawaii born is small in comparison to the Hawaii Kai area and Honolulu County.

Table VIII
Place of Birth

	Honolulu County	Hawaii Kai	CT. 1.02	CT 1.03	CT 1.04	CT. 105
Hawaii	420,120 (55%)	13,360 (52%)	673 (31%)	4,320 (40%)	4,515 (63%)	3,852 (69%)
Mainland	229,234 (30%)	9,880 (39%)	1,165 (54%)	5,220 (49%)	2,158 (30%)	1,337 (24%)
Foreign	113,211 (14.8%)	2,363 (9%)	328 (15%)	1,145 (11%)	529 (7%)	361 (7%)

3. Years of School Completed

Hawaii Kai residents are well educated with over 90% receiving high school degrees and almost two-thirds receiving some college education. The college completion rate is also significantly higher in comparison to Honolulu County's figures.

Table IX
Education

	Honolulu County	Hawaii Kai	CT 1.02	CT 1.03	CT. 1.04	CT. 1.05
% Highschool Graduates	75.6%	90.9% (Avg.)	93.8%	92.3%	92.1%	85.4%
College 1-3 Years	78,386 (18%)	3,498 (23%)	302 (23%)	1,568 (24%)	605 (25%)	623 (20%)
College 4 or More Years	93,201 (22%)	5,603 (38%)	596 (46%)	2,657 (41%)	1,434 (36%)	916 (29%)
Total	40%	61%	69%	65%	61%	41%

4. Labor Force:

Hawaii Kai contains a large percentage of employable age persons. This accounts for a total work force which is slightly higher than the County-wide average of 69%. Hawaii Kai's work force also exhibits a high employment rate with most of it's population employed by the civilian sector.

Table X
Labor Force

	Honolulu County	Hawaii Kai	CT 1.02	CT 1.03	CT 1.04	CT 1.05
Persons 16 Years & Older	574,903	18,571	1,665	7,876	4,776	4,254
Total Labor Force	397,889 (69%)	13,560 (73%)	1,040 (63%)	5,848 (74%)	3,738 (78%)	2,934 (69%)
Civilian Labor Force	339,863	13,407	1,040	5,772	3,675	2,920
Employed	324,113 (95.4%)	13,077 (97.6%)	997 (95.9%)	5,620 (97.4%)	3,590 (97.7%)	2,874 (98.4%)
Unemployed	15,750 (4.6%)	326 (2.4%)	43 (4.1%)	152 (2.6%)	85 (2.3%)	46 (1.6%)

5. Occupation

The Hawaii Kai work force contains a large proportion of professional service employed. A significant proportion of Hawaii Kai's residents are employed in managerial, professional specialty, and professional and related service occupations. A low percentage of service and labor oriented occupations is also noted.

The majority of the Hawaii Kai work force is employed by the private sector (73%) which is proportionately reflected in government employed. However, this distribution is not significantly different from Honolulu County. Census Tract 1.02 exhibits some unique characteristics from the general Hawaii Kai neighborhood in it's low percentage of government workers and it's high percentage of self-employed.

Table XI
Occupation & Selected Industries

	Honolulu County	Hawaii Kai	CT 1.02	CT 1.03	CT 1.04	CT 1.05
Employed - 16 Yrs. & Older	324,113	13,081	997	5,620	1,590	2,874
Managerial Professional Specialty	79,934(16%)	5,261(27%)	501(32%)	2,512(30%)	1,316(25%)	932(22%)
Technical, Sales, Admin. Support	109,521(23%)	4,814(24%)	381(25%)	1,964(23%)	1,349(26%)	1,100(26%)
Service Occupations	56,939(12%)	1,436(7%)	33(2%)	602(7%)	424(8%)	377(9%)
Farming, Forestry, Fishing	5,838(1%)	59(.3%)	6(.3%)	42(.4%)	------	11(.2%)
Precision, Production, Repair	36,546(8%)	831(4%)	57(4%)	275(3%)	284(5%)	215(5%)
Operator, Fabricators, Laborers	35,335(7%)	600(3%)	19(1%)	225(2%)	107(4%)	239(5%)
Manufacturing	24,982(5%)	705(4%)	82(5%)	244(3%)	222(4%)	157(4%)
Wholesale, & Retail Trade	79,644(16%)	3,702(18%)	220(14%)	1,387(16%)	796(15%)	649(16%)
Professional & Related Services	59,927(12%)	2,796(14%)	255(16%)	1,244(15%)	719(13%)	578(14%)
Private Wages & Salary Workers	231,719(69%)	9,555(73%)	761(76%)	4,145(74%)	2,556(71%)	2,093(73%)
Government Workers	75,058(23%)	2,651(20%)	102(10%)	1,055(19%)	832(23%)	662(23%)
Local Government Workers	10,583(3%)	387(2%)	5(1%)	100(2%)	118(3%)	84(3%)
Self-Employed Workers	16,312(5%)	820(6%)	122(12%)	399(7%)	196(5%)	101(4%)

6. Income in 1979:

Hawaii Kai has a comparatively high income level with median and mean incomes of $36,232 and $39,892, respectively. This represents levels almost 40% higher than the County median and mean of $21,077 and $25,180. The percentage of households with incomes over $35,000 is more than twice that of Honolulu County figures and reinforces the professional trend in the area work force (Table XII).

Home ownership is extremely high in Hawaii Kai with 82% owning their home while only 18% rent. Both homeowners and renters show significantly higher incomes than the Honolulu County counterparts. The lowest percentage (74%) of owner occupied households in Hawaii Kai were located in CT 1.03 which contains several higher density developments.

Table XII
Income in 1979

	Honolulu County	Hawaii Kai	CT 1.02	CT 1.01	CT 1.04	CT 1.05
Households	210,931	7,476	652	3,422	1,914	1,488
Less than 10,000	48,665(23%)	960(5%)	60(9%)	191(6%)	56(3%)	53(4%)
10,000 - 14,999	41,153(20%)	805(11%)	56(9%)	478(14%)	101(5%)	170(11%)
15,000 - 24,999	68,496(30%)	2,584(34%)	130(20%)	1,073(31%)	799(41%)	582(40%)
25,000 - 34,999	33,443(14%)	2,156(29%)	163(25%)	948(28%)	591(31%)	456(31%)
50,000 and more	19,774(9%)	1,571(21%)	243(37%)	732(21%)	389(20%)	207(14%)
Median Income	$21,077	$36,232	$42,164	$34,490	$35,186	$33,989
Mean Income	$25,180	$39,892	$47,933	$36,893	$38,752	$35,991
Owner-Occup. Households	115,290(50%)	6,163(82%)	579(74%)	2,519(74%)	1,790(92%)	1,275(87%)
Median Income	$30,248	$37,813	$44,090	$37,339	$35,201	$34,623
Mean Income	$33,693	$41,634	$51,098	$39,551	$38,484	$37,482
Renter-Occup. Households	115,641(50%)	1,313(18%)	73(11%)	903(26%)	144(8%)	191(13%)
Median Income	$13,912	$26,188	$20,104	$26,345	$34,521	$23,750
Mean Income	$16,693	$30,334	$22,828	$29,478	$42,996	$26,016

7. Mode of Transporation to Work:

Use of private transportation to work is very high within Hawaii Kai with 88% utilizing private vehicles. Use of public transportation, however, is similar to the County wide public transportation average. Census Tract 1.02 noted the highest use of private vehicles and the lowest use of public transporation (Table XIII).

The Hawaii Kai mean travel time to work is generally higher than the County wide mean of 22.6 minutes.

Table XIII
Transportation To Work

	Honolulu County	Hawaii Kai	CT 1.02	CT 1.03	CT 1.04	CT 1.05
Workers 16 Yrs. & Over	344,523	12,819	962	5,482	3,515	2,460
Private Vehicle	282,479(76%)	11,321(88%)	882(91%)	4,762(87%)	3,139(89%)	2,538(89%)
Public Transport.	37,042(10%)	1,053(8%)	27(3%)	515(9%)	276(8%)	235(8%)
Other	50,002(14%)	445(4%)	53(6%)	205(4%)	100(3%)	87(3%)
Mean travel time to work, minutes	22.6	----------	27.4	29.0	24.5	29.8

IV. CHANGE IN VISITOR POPULATION

The 1985 visitor count was 4,855,580 for the State of Hawaii. Visitor industry projections for the Year 2000 estimate an increase up to 7.8 million people and almost 8.2 million for the Year 2005.

The proposed Golf Course 2/1A project does not include any facilities which will lodge or attract visitors therefore, no increase is expected on the present or estimated future tourist counts.

V. CONCLUSION

Hawaii Kai presents many interesting facets in its composition and characteristics. Taken as a whole, the Hawaii Kai area, appears as a solid residential community which reflects its long range planning and development. The community is fairly homogeneous in its social and economic characteristics but the community shows marked differences when compared to Honolulu County.

A. The Existing Social Environment

The community is predominantly comprised of fairly young but established families with household sizes similar to the County average. The community has a sizeable base of local born residents which compares similarly to the County, however, it also notes a larger number of mainland born and a small percentage of foreign born.

The median household income for Hawaii residents is significantly higher than the County average and reflects the upper-middle class status which is marked by other socio/economic indicators. Employment within the area is very high with a large percentage of the work force employed in professional and related fields. A very large number of families in the area own their own homes which is indicative of the non-transient nature of its residents.

As a master planned community, Hawaii Kai seems self contained and well integrated throughout its' older and newer sections.

This sense of integration is probably a result of planning beyond the pure residential type subdivision. This development, as a comprehensive, cohesive community, presents a recognizable community identity.

Although housing types range from high density apartments to large single family detached dwellings, and older homes to the very new, a degree of flexibility and acceptance is present. An underlying factor in this diversity is the homogeneity of the community's social and economic characteristics. The extremely high percentage of home ownership also indicates financial and emotional commitments to their homes and neighborhood. It can be assumed that there is a strong desire to maintain or enhance their existing, stable lifestyle and change can be accepted if it is innocuous or beneficial to the community.

B. The Proposed Project:

The proposed Golf Course 2/1A project will be similar to the newer developments within Hawaii Kai and is expected to attract an analogous resident market. The developer has indicated that the quality of this development will be very good and it's location along the Hawaii Kai Golf Course is considered premium siting. In this respect, the proposed development, when completed and occupied, should reflect similar socio-economic characteristics.

The possibility of also targeting the retirement community should not alter significantly the characteristics except in age and household size. The inclusion of a retirement population will result in a more balanced age distribution in Hawaii Kai as well as decreasing household sizes. In this case, the addition of a larger retirement population will also decrease traffic in the area.

The proposed development will increase the Hawaii Kai population by 4% and the immediate project area (CT. 1.05) by 20%. However, this increase is relatively small and should not significantly increase needs for services and should be absorbed into the larger community without difficulty.

C. Community Integration:

With the development of the proposed Golf Course 2/1A project some changes will occur on the existing community, however, the changes should not be unexpected to existing residents since changes of a similar nature have already occured through out Hawaii Kai. Again, this project represents an additional phase of the Hawaii Kai Master Plan and the mixed residential use proposed for the project reflects the evolution and maturation of the community. The development will serve as a continuation of the original Master Plan concept.

Social impacts occuring as a result of the new development should be positive and enhancing to the existing community since it will introduce some very desireable housing in a previously vacant and untended site. As the project is developed over it's five year build out plan any resultant impacts wll occur gradually and should not be traumatic.

The stability of the surrounding community suggest that there is a good ability to adapt and adjust to change. With a solid upper middle class foundation that is relatively young and well educated, the area's residents present a dynamic and maturing group. The high rate of home ownership also indicates that existing residents have made financial and emotional commitments and are motivated to maintain or enhance their existing lifestyle. This does not mean the residents are not open to change. Past developments, and the evolving nature of the total Hawaii Kai area suggests residents are also flexible. With the development of the proposed project, a large portion of the mainstream new residents are anticipated to share similar socio-economic characteristics with similar values and goals, the behavior norms between the existing population and new residents should be consistent.

As a planned, well designed, and desireable project, the proposed Golf Course 2/1A development should be afforded a smooth transition and assimilation in it's physical, economic, and social characteristics. In this context, the project represents a new positive step in the evolution of Hawaii Kai.

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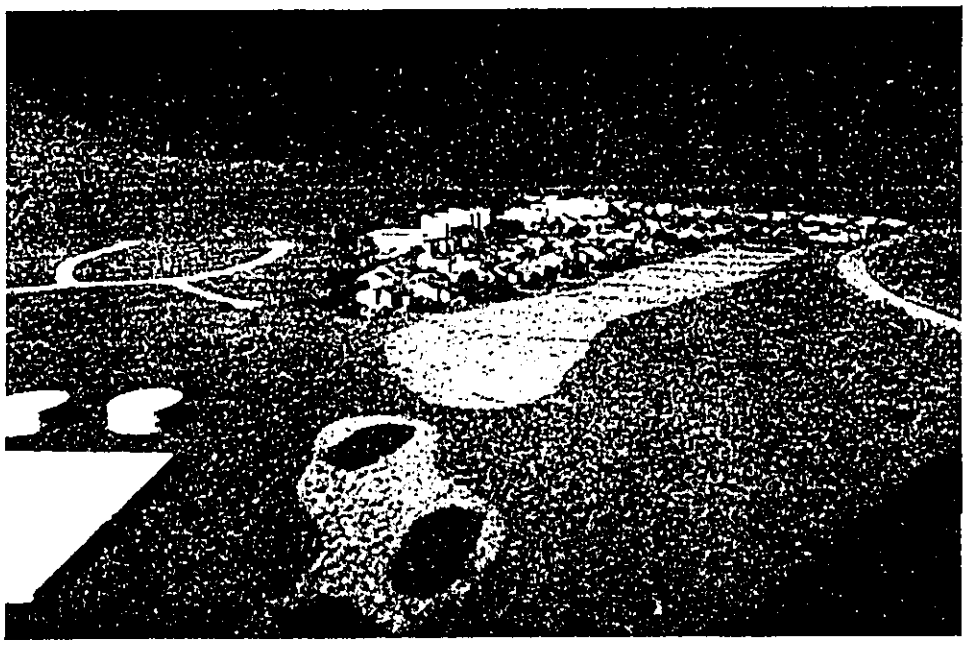
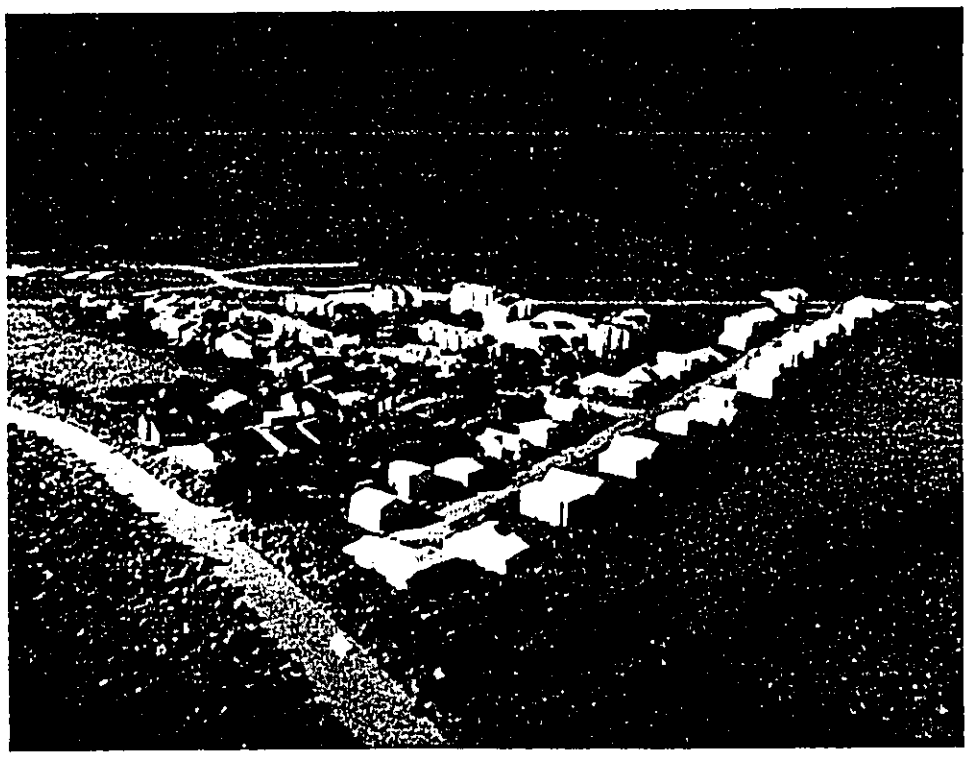
APPENDIX G



View 1A

View 2A



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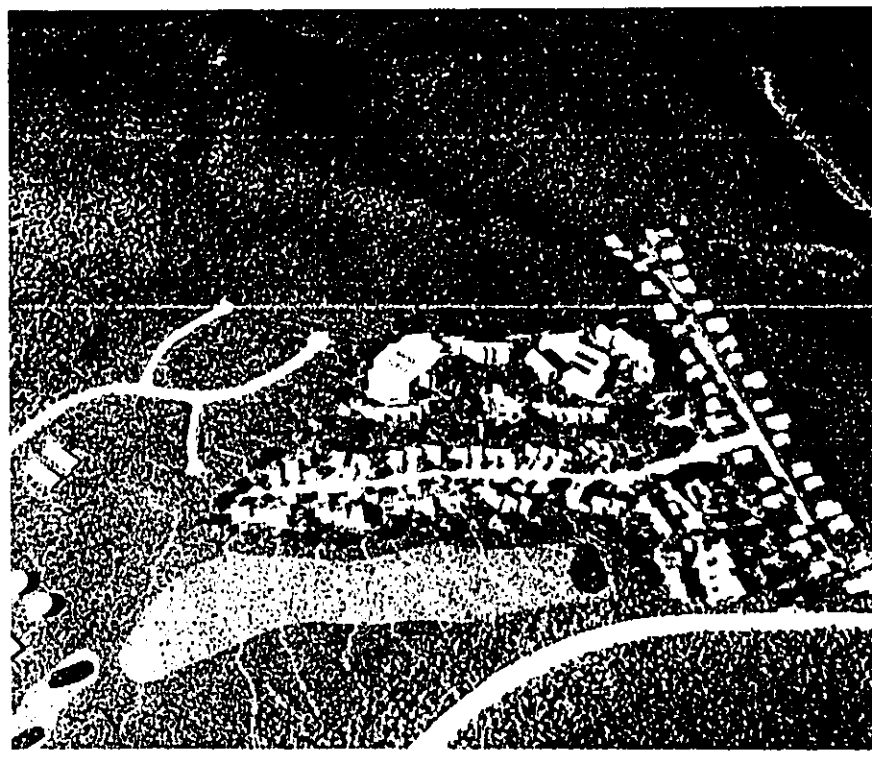
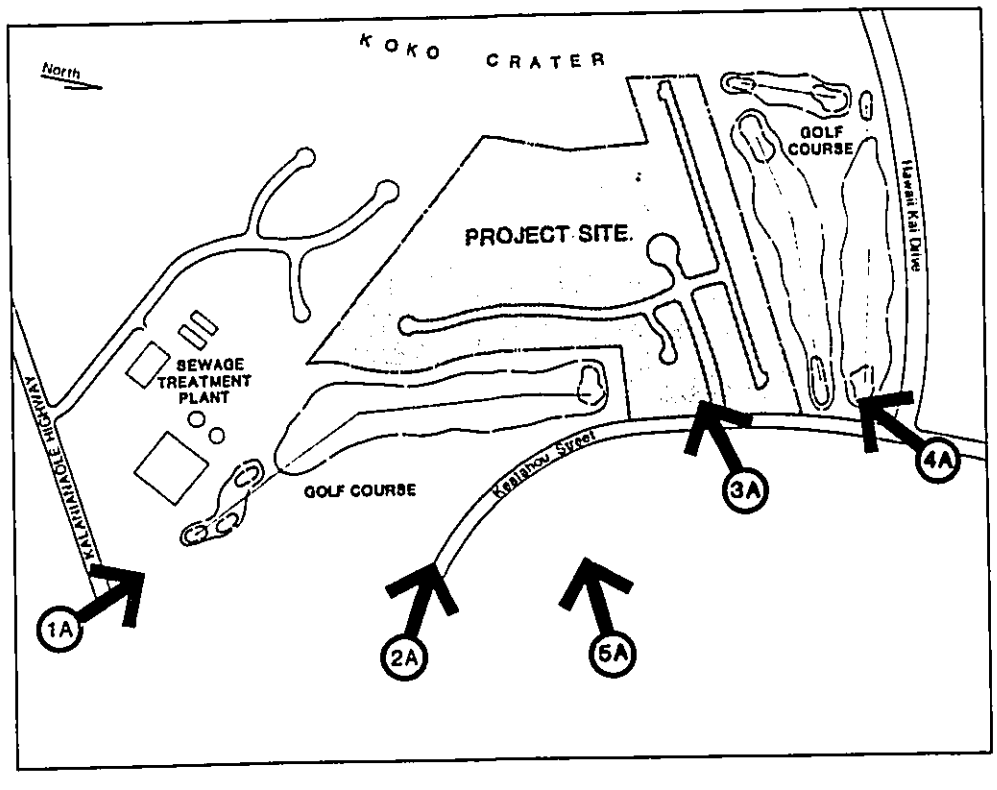


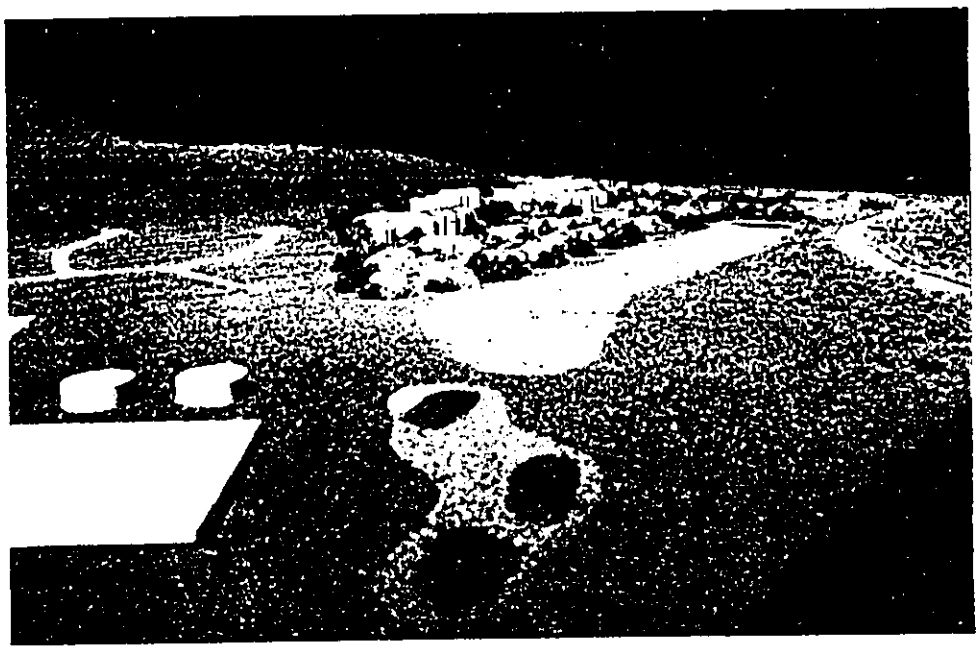
View 5A

View 3A



VIEW PLANE ANALYSIS "A"

Utilizing 3-Story Model



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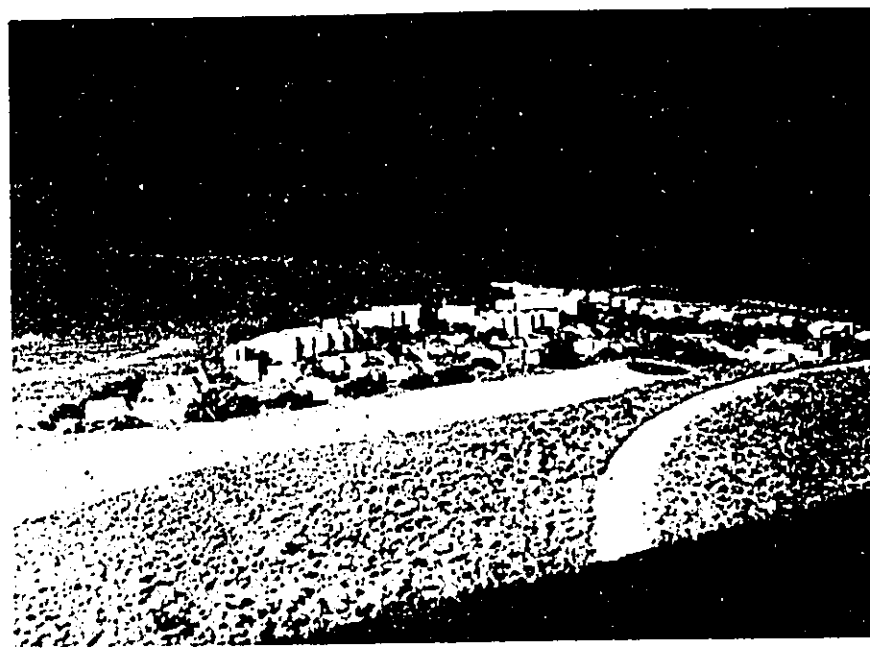

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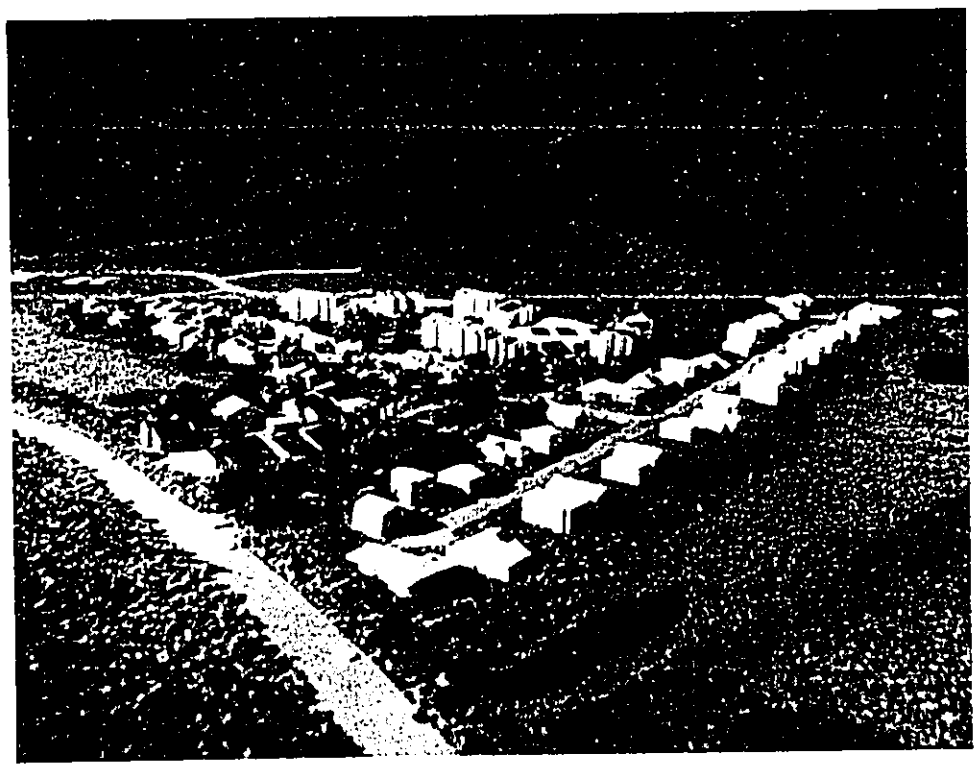

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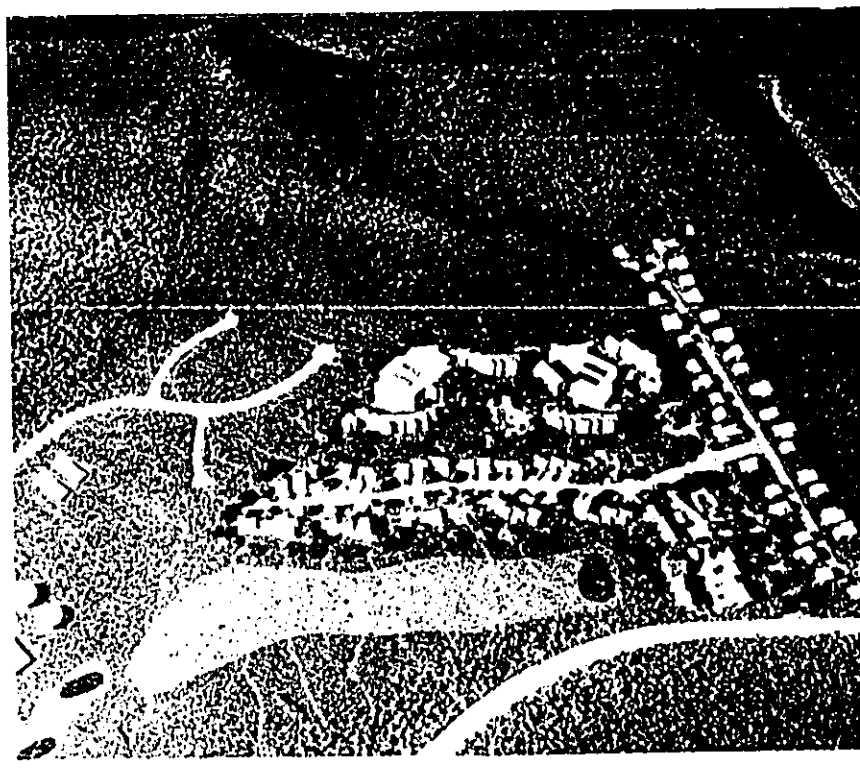

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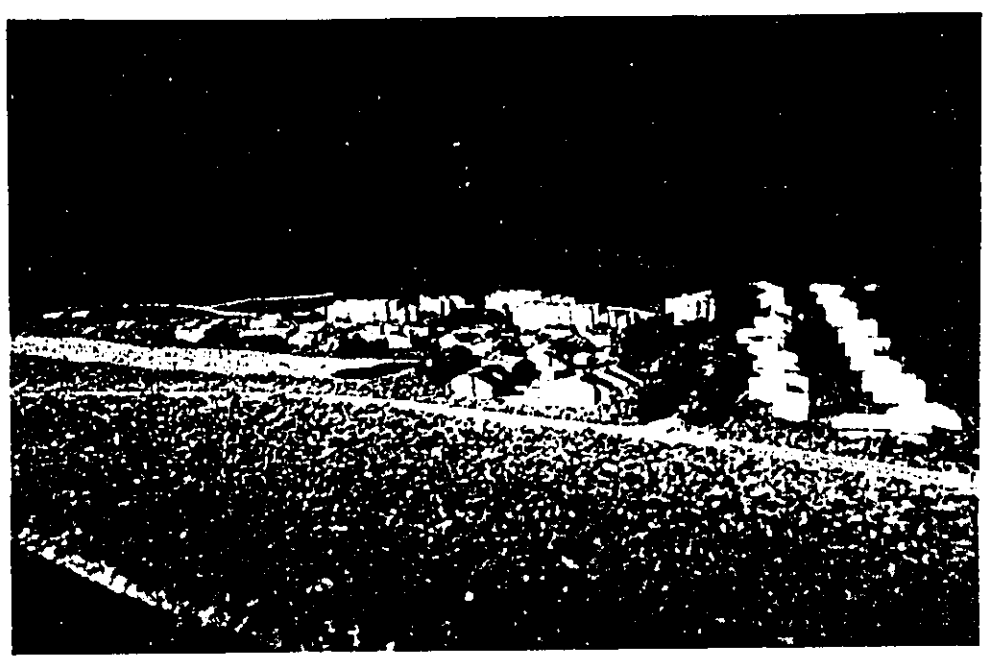

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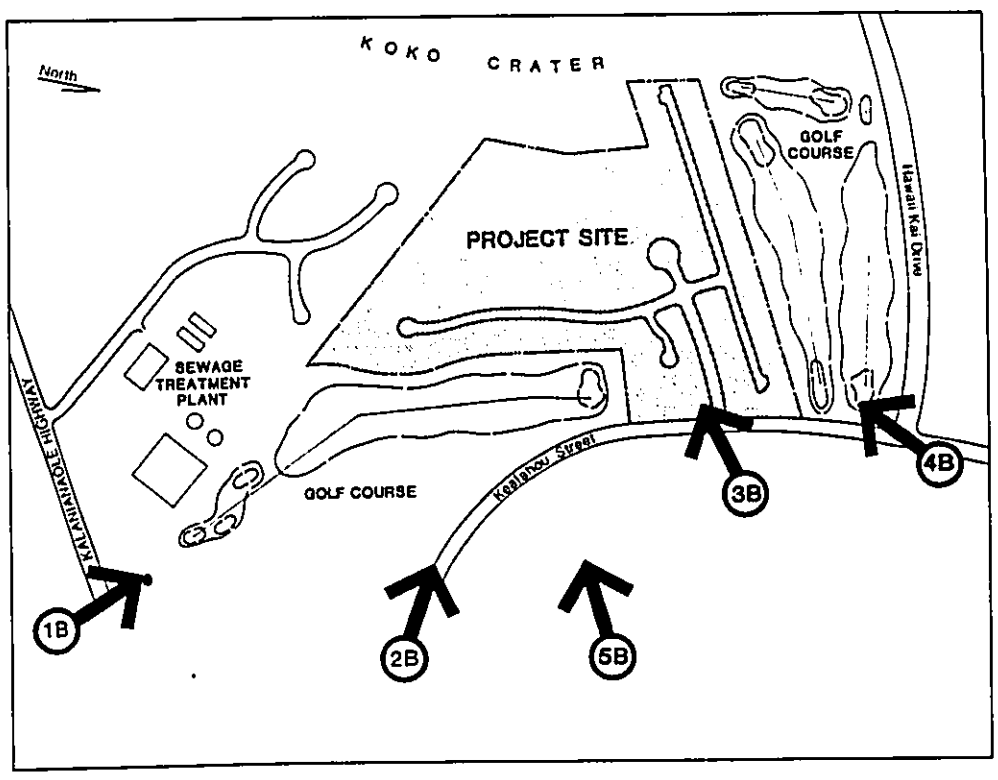
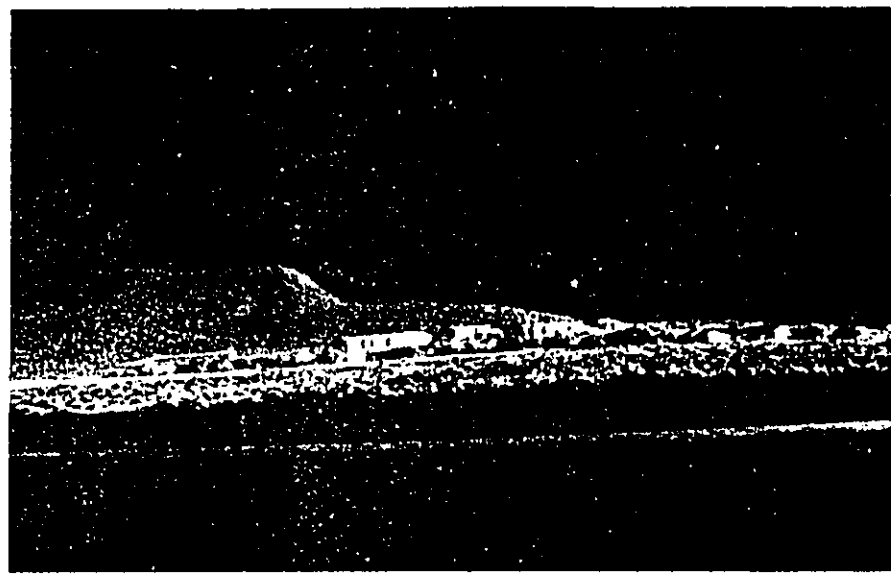


VIEW PLANE ANALYSIS "B"

Utilizing 6-Story Model

View 1C



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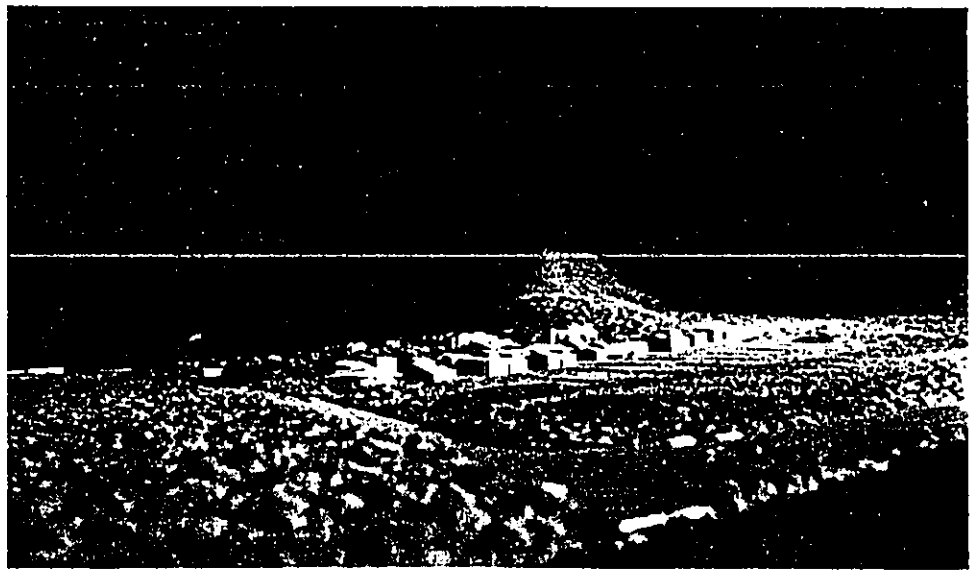

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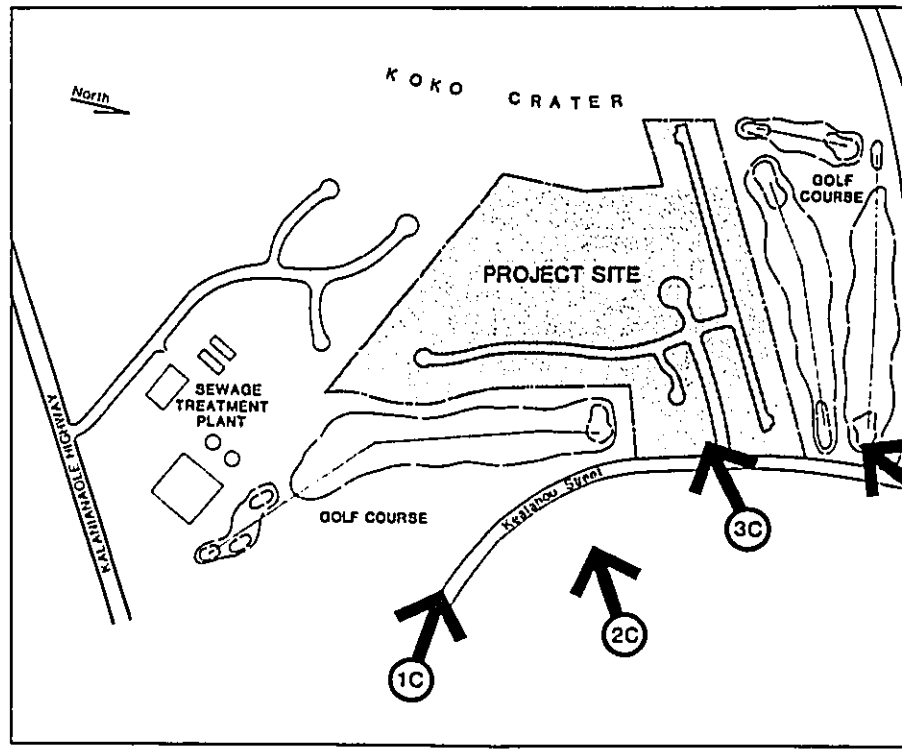

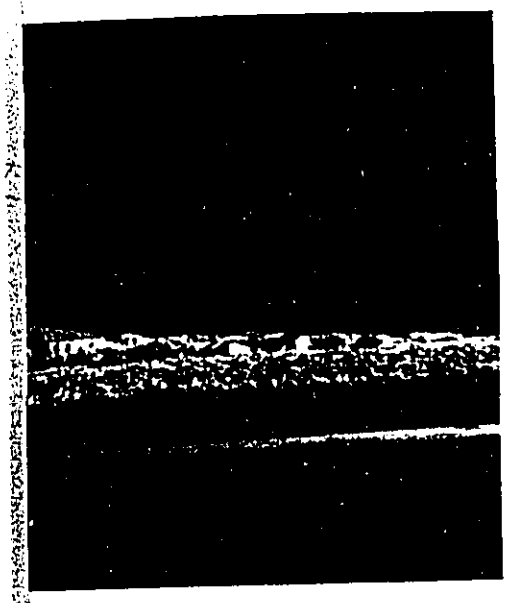

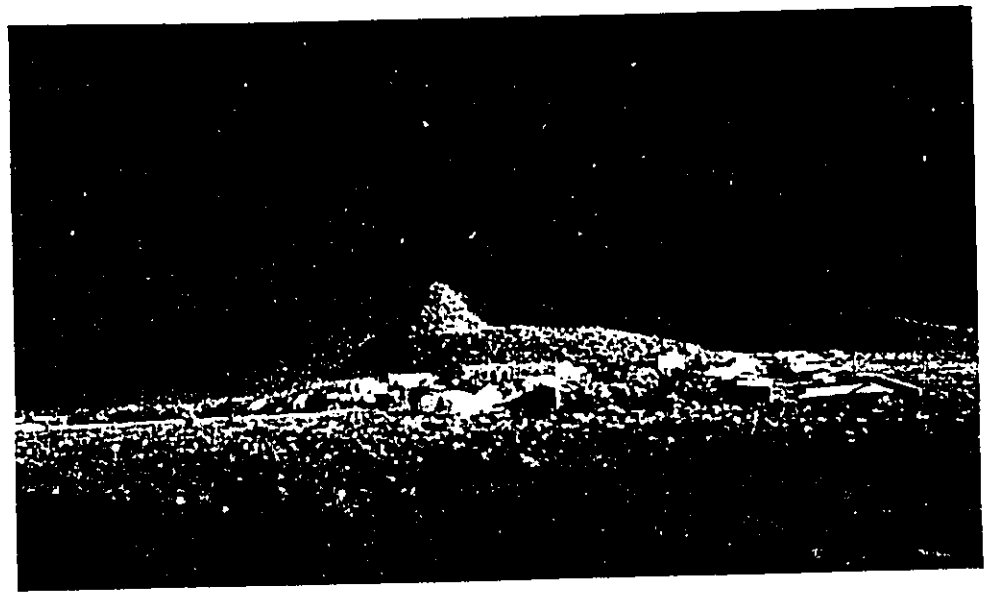

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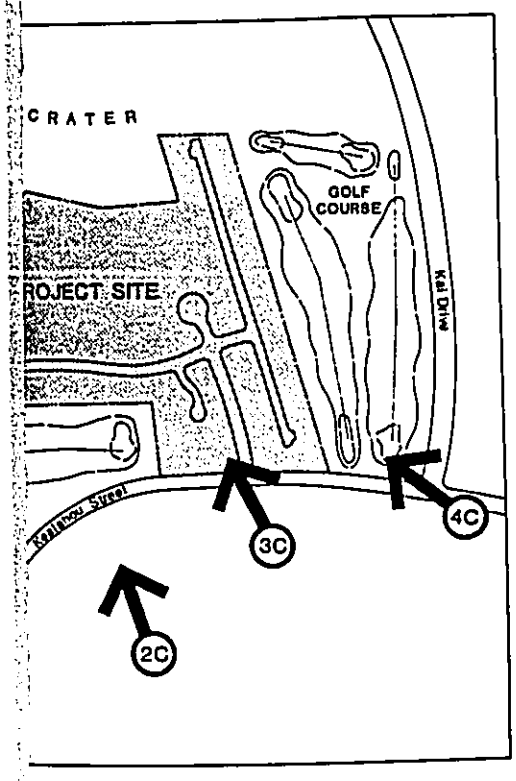

VIEW PLANE ANALYSIS "C" (EYE LEVEL)

Utilizing 6-Story Model

APPENDIX H

IN THE DEPARTMENT OF HEALTH

STATE OF HAWAII

DEPARTMENT OF HEALTH, STATE OF HAWAII, Complainant, vs. EAST HONOLULU COMMUNITY SERVICES, INC., Respondent.	DOCKET NO. 86-PIE-EOW-13 EAST HONOLULU COMMUNITY SERVICES, INC. NOTICE AND FINDING OF VIOLATION; ORDER; CERTIFICATE OF SERVICE

NOTICE AND FINDING OF VIOLATION

The Department of Health, State of Hawaii brings it's action against the above-named party under Hawaii Revised Statutes, Chapters 321 and 342 and complains of East Honolulu Sewage Treatment Plant, hereinafter "RESPONDENT," as follows:

A. AUTHORITY

1. Hawaii Revised Statutes, hereinafter "HRS," Sections 342-2 and 342-32 authorize the Director of Health to administer HRS, Chapter 342 and to prevent, control, and abate water pollution in the State.

2. HRS, Sections 342-3 and 342-32 authorizes the Director to promulgate rules and regulations concerning water pollution.

3. HRS, Section 321-1 authorizes the Director to oversee and care for the health and lives of the people of the State.

4. HRS, Section 342-8 authorizes the Director to issue this Notice and Finding of Violation, and the attached Order.

5. Violators of HRS, Chapter 342 or rules and regulations promulgated thereunder are subject to the remedies provided in HRS, Sections 342-8, 342-11, 342-11.5 and 342-12.

6. HRS, Section 342-11.5 provides that:

> "Administrative Penalties. In addition to any other administrative or judicial remedy provided by this chapter, or by rules and regulations promulgated under this chapter, the director is authorized to impose by order the penalties specified in section 342-11(c). Factors to be considered in imposing an administrative penalty include the nature and history of the violation and of any prior violations, and the opportunity, difficulty, and history of corrective action. It is presumed that the violator's economic and financial conditions allow payment of the penalty, and the burden of proof to the contrary is on the violator. In any judicial proceeding to recover the civil penalty imposed, the director need only show that notice was given, a hearing was held or the time granted for requesting a hearing has run without such a request, the civil penalty was imposed, and that the penalty remains unpaid."

7. HRS, Section 342-33(a) provides that:

> "No person, including any public body, shall discharge any pollutant into state waters, or cause or allow any pollutant to enter state waters except as in compliance with the provisions of this chapter, rules adopted pursuant to this chapter, or a permit issued by the director."

8. Administrative Rules, hereinafter "AR," Title 11, Chapter 55, Section 3 provides that:

"No person shall violate any provision of §342-33, HRS."

9. AR, Title 11, Chapter 55, Section 35 provides that:

"Any person who violates any provision of this chapter or the terms and conditions of any permit issued pursuant to this chapter shall be subject to the penalties and remedies provided in chapter 342, Hawaii Revised Statutes."

B. STATEMENT OF FACTS

1. NPDES Permit No. HI 0020303 was issued to RESPONDENT by the State of Hawaii, Department of Health, on January 1, 1984, and expires on December 31, 1988, according to the provisions of Title 11, Chapter 55 of the AR, and Chapter 342, HRS, and Section 402 of the Federal Water Pollution Control Act. Said permit authorizes the discharge of wastewater to the waters of the State of Hawaii from the East Honolulu Sewage Treatment Plant (EH STP) and requires the permittee to abide by certain general and specific conditions.

2. As stated in Part I.A. Effluent Limitations and Monitoring Requirements (based upon a design treatment capacity of 0.171 m^3/sec., or 3.9 mgd).

"discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristics	30-Day Average
BOD_5 (5-day biological oxygen demand)	30 mg/l
TSS (total suspended solids)	30 mg/l

3. An NPDES Compliance Sampling Inspection was conducted by the Department of Health (DOH) personnel on December 2nd through the 6th of 1985. Sampling results show EH STP to be in violation of the NPDES permit effluent limits for BOD_5 and TSS (30 mg/l, 30-day average). (Attachment A)

4. A second week of sampling was conducted by the DOH during March 3-7, 1986. The results also show EH STP to be in violation with the effluent limits for BOD_5 and TSS. (Attachment B)

5. The following is a summary of the laboratory results during the two sampling weeks.

	12/2-6/85	3/3-7/86
BOD_5 (effluent) 30-day average	41.5 mg/l	45.75 mg/l
TSS (Effluent) 30-day average	41.3 mg/l	49.5 mg/l

6. As stated in Part II.A.8. (Proper Operation and Maintenance) of the NPDES Permit No. HI 0020303, the RESPONDENT is required to "at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes, but is not limited to, effective performance, adequate funding, adequate operator staffing and training, adequate laboratory and process controls including appropriate quality assurance procedures."

7. On February 6, 7, 12, and 13, 1986, an operation and maintenance (O&M) inspection conducted by the DOH noted several maintenance problems. (Attachment C)

8. On April 1, 1986, field measurements indicate the flow is not being properly monitored. Flow readings from the Cipoletti weir and the effluent flow meter differed by 22 percent (%), exceeding guidelines permitting ten (10) percent differentiation. (Attachment D)

9. The following deficiencies were noted in the O&M inspection report (conducted on February 6, 7, 12, and 13, 1986):

(a) Chlorination System

(1) No chlorine detection or alarm system at the chlorine storage facility.

(2) The chlorine injection system has not been inspected.

(3) Operators are not knowledgeable of the handling of chlorine and the emergency safety procedures in the event of a gas leak.

(b) Deficiencies with Digesters

(1) No records exist of regular maintenance of the digesters after construction of the units. The average useful life of a digester is twelve (12) years assuming it is cleaned and inspected once every five years.

(2) The stairway leading to the primary digester roof is also in very poor condition and needs immediate work before anyone is allowed to use it.

(3) Based on an external inspection of the primary digester's floating cover, a potentially explosive gas mixture (methane with air) may be present in the attic of the digester where there should be only air.

(4) The condition of the safety related devices on both the primary and secondary digesters are poor. For example, the secondary digesters's pressure relief valve was venting gas to the atmosphere. Also gases were bubbling out to the atmosphere along the side walls around the parameter of the digester.

(5) The gas mixers and heaters are inoperable.

(6) No training of the operators with special emphasis on the activated sludge process. The operators have very little knowledge of the activated sludge process.

(c) There is no process control being performed at the plant such as, dissolved oxygen, pH, TSS/VSS, 30-minute settling, etc.

(d) There exists no appropriate prevention maintenance schedule.

For example, the primary digester is seriously corroded. The stairway needs to be repaired, gas mixers, and heaters are inoperable, etc.

(e) Record keeping is essentially non-existent at the plant. For example, there are no detailed records of maintenance, cleaning, and inspection of the primary and secondary anaerobic digesters.

(f) At present, four full-time operators are employed at the plant. An analysis performed assuming that full process testing was being performed, process control was being used, adequate records were kept, and an adequate maintenance management system, the four full-time operators employed at the plant are insufficient. The analysis recommends six full-time positions.

C. FINDINGS

On the basis of the provisions of Authority and Statement of Facts cited above, it is hereby found and determined that:

1. The RESPONDENT was found to be operating the East Honolulu STP in violation of Part I.A. (Effluent Limitations and Monitoring Requirements) for the 30-day average of BOD_5 and TSS during the period 12/2-6/85 and 3/3-7/86.

2. The RESPONDENT also violated Part II.A.8. (Proper Operation and Maintenance) of the NDPES Permit No. HI 0020303 for East Honolulu STP by not "properly operating and maintaining all facilites and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes, but is not limited to, effective performance, adequate funding, adequate operator staffing and training, adequate laboratory and process controls, including appropriate quality assurance procedures."

3. The RESPONDENT is therefore subject to the provisions of HRS, Sections 342-2, 342-11, 342-11.5 and 342-12 including penalties not to exceed $10,000 for each day of violation.

DATED: Honolulu, Hawaii, JUN -3 1986

JAMES K. IKEDA
Deputy Director for
Environmental Health

APPROVED AS TO FORM:

HERBERT Y. HAMADA
Deputy Attorney General

IN THE DEPARTMENT OF HEALTH

STATE OF HAWAII

DEPARTMENT OF HEALTH, STATE OF HAWAII, Complainant, vs. EAST HONOLULU COMMUNITY SERVICES, INC., Respondent.	DOCKET NO. 86-PIE-EOW-13 EAST HONOLULU COMMUNITY SERVICES, INC. ORDER

ORDER

Pursuant to Hawaii Revised Statutes, Chapters 321 and 342, Administrative Rules, Title 11, Chapter 55, and the attached Notice and Finding of Violation, made in Docket No. 86-PIE-EOW-13 the East Honolulu Sewage Treatment Plant, hereinafter "RESPONDENT," is hereby ordered to:

A. Cease and desist, within thirty (30) days of the date of this Order, from violating the effluent limitations set forth in Part I.A. (Effluent Limitations and Monitoring Requirements) of the NPDES Permit No. HI 0020303, East Honolulu Community Services, Inc.

B. Submit to the Director of Health within twenty (20) days after this Order becomes final.

1. A plant capacity study performed by an independent consultant, a person not connected with the operation and maintenance

of the plant, to determine the average day flow design rating of the plant, and to determine what modifications may be necessary in order for this plant to process its design flow of 3.9 MGD. Calibration of flow meter must also be performed and reported.

2. Compliance schedule aimed at correcting the deficiencies as listed in the Statement of Facts, paragraph no. 9 of the Notice and Finding of Violation shall include but not be limited to:

(a) Installation of a chlorine detector alarm system at the chlorine storage facility;

(b) Inspection of the chlorine injection system thoroughly and replacing of all corroded parts;

(c) Investigation of the feasibility of an enclosed injection system;

(d) Training of all operators in the handling of chlorine and the emergency safety procedures;

(e) Inspection and repair of the digesters to insure safe and proper operations. This shall include but not be limited to:

(1) stairway leading to the primary digester roof.

(2) safety related devices such as pressure relief valves.

(3) gas mixers.

(4) heaters.

(f) Training of all the operators on the activated sludge process; and

(g) Implementation of a process control program to include or be equivalent to but not be limited to the following:

Location	Tests	Frequency	Type
Plant Influent	BOD/TSS/VSS	Twice/Week	Comp.
Removed Grit	TSS/VSS	Twice/Week	Grab
Primary Clarifier			
Effluent Channel	BOD/TSS/VSS	Twice/Week	Comp.
Sludge Underflow	TSS	Twice/Week	Grab
Bottom of Clarifier	Depth of Blanket	Optional as Desired	
Aeration Basins			
Effluent of Each Basin	BOD/TSS/VSS	Twice/Week	Comp.
Throughout Basins*	D.O.	Daily	Grab
Basin Contents	pH	Daily	Grab
Basin Contents	TSS/VSS	Daily	Grab
Basin Contents	30-minute settling	Daily	Grab
Basin Contents	Respiration Rate	Daily	Grab

* An initial D. O. profile should be taken of each basin to determine dead spots. Then, sampling points at certain locations and depths can be set. These points should remain the same each day.

NOTE: Testing for relative nitrogen series on the basins may also prove useful. Microscopic examination would also prove useful.

Location	Test(s)	Frequency	Type
Secondary Clarifiers			
Effluent of Each	BOD/TSS/VSS	Twice/Week	Comp.
Sludge Underflow	TSS	Twice/Week	Grab.
Throughout Each Basin*	Depth of Blanket	Daily	--

RAS and WAS flows should also be measured.

* The depth of blanket should be taken at various locations to determine the high, low, and average spots.

NOTE: Testing for relative nitrogen series may also prove useful. The information gathered above should then be used to calculate F/M ratios, MCRTs, SVIs, and unit process efficiencies. By using trend charts, problems can be anticipated before they occur and the proper process adjustments made to insure a stable operation.

(h) Implementation of a process control program for the anaerobic digesters. The tests should include but not be limited to:

Location	Test(s)	Frequency	Type
Primary Digester			
Influent	Flow	Continuous	
Influent	VSS	Twice/Week	Grab
Contents	pH	Daily	Grab
Contents	Volatile Acids	Twice/Week	Grab
Contents	Alkalinity	Twice/Week	Grab
Contents	Temperature	Twice/Day	Grab
Gas	% CO_2/Methane	Once/Week	Grab
Secondary Digester			
Influent	Flow	Continuous	Grab
Influent	VSS	Twice/Week	Grab
Effluent	VSS/pH	Twice/Week	Grab
Supernatant	BOD	Once/Week	Grab
Supernatant	TSS	Once/Week	Grab
	Flow	Continuous	

This information should then be plotted on trend charts for process control.

NOTE: The process control tests listed in 2.(g) and 2.(h) are in addition to those tests required by the NPDES permit. Other tests may also be valuable for operational cost optimization.

3. A comprehensive preventive maintenance management system for the plant and its pump station. This shall include but not be limited to the following:

(a) A full maintenance staffing complement based on organizational charts, staffing guidelines, and outstanding maintenance tasks.

(b) A work order system, schedule chart, and priority list to prevent excessive backlogs.

(c) An equipment numbering system or other identification system for all major items of equipment.

(d) A system for maintaining nameplate data and other essential information (i.e. supplier information, purchase date and cost, size, model, type, serial number) for all major items of equipment.

(e) The frequency of preventive maintenance (PM) tasks based on manufacturer's recommendations, routine inspections, and trend analysis.

(f) Full recording of preventive and corrective maintenance tasks performed including man-hours, spare parts used, individuals performing the job, and all related costs. These costs should be broken into categories such as preventive maintenance, corrective maintenance, major repair and

replacement. The maintenance cost and failure history can be used short and long term budget preparation and projections for replacement of weak components. (Cost codes or charge numbers for specific maintenance jobs would also be useful.)

(g) Files of as-builts and related drawings (i.e. updates) and related documents.

(h) A system to expedite outside contracts if a job is beyond the capabilities of the existing maintenance staff.

(i) A storeroom which includes a complete spare parts inventory list, established minimum and maximum quantities of parts for that list, an item locater system, a storeroom ticket or withdrawal for inventory control, and a purchase order system.

(j) Continually updated maintenance organizational charts, job titles, and job descriptions.

(k) A maintenance training program other than on-the-job training.

(l) Routine planned shutdown of equipoent for inspection by designated and qualified staff.

(m) A bookkeeping system in the area of the operations log book, laboratory records, process control (including any changes, upsets, or unusual conditions), and maintenance tasks.

C. Submit to the Director of Health within ten (10) days after this Order becomes final, a certified check payable to the State of Hawaii in the amount of Ten Thousand Dollars ($10,000) for past effluent limit violations, during the period 12/02/85 and 03/07/86.

This Order and Notice and Finding of Violation are effective and become final twenty (20) days after receipt, unless before the twenty (20) days expire the Respondent submits a written request to the Director for a hearing before the Director pursuant to Hawaii Revised Statutes, Section 342-8(a)(2). If a hearing is requested, it will be held on a date to be scheduled later. The hearing will be conducted in accordance with Chapter 91, Hawaii Revised Statutes, and the Rules of Practice and Procedure of the Department, and the hearing will address the issues raised by the Notice and Finding of Violation in this case. Parties may present evidence and argument on any issue raised by any paragraph in the Notice and Finding of Violation or otherwise raised by this case. Parties may be presented by legal counsel at their own expense. After such hearing, this Order will be affirmed, modified, or rescinded by the Director.

Please direct the written request for a hearing, if any, and all inquiries concerning this case to:

Mr. Paul P. Aki, Chief
Pollution Investigation and Enforcement Branch
Hawaii State Department of Health
P. O. Box 3378
Honolulu, Hawaii 96801
Telephone: 548-6355

Failure to comply with this Order may subject the RESPONDENT to additional penalties and measures under Hawaii Revised Statutes, Chapter 342 as amended.

DATED: Honolulu, Hawaii, JUN -3 1986

JAMES K. IKEDA
Deputy Director for
Environmental Health

APPROVED AS TO FORM:

HERBERT Y. HAMADA
Deputy Attorney General

Attachment A

POLLUTION INVESTIGATION AND ENFORCEMENT BRANCH
State Department of Health
P. O. Box 3378
Honolulu, Hawaii 96801

NPDES Compliance Monitoring Report

Permittee: East Honolulu Community Services, Inc.

Facility: East Honolulu Sewage Treatment Plant

Permit No.: HI 0020303

Date of Inspection: December 2-6, 1985

Report Prepared By: Ralph I. Morita

Date Prepared: January 2, 1986

EPA

United States Environmental Protection Agency
Washington, D.C. 20460

NPDES Compliance Inspection Report

Form Approved
OMB No. 2040-0003
Approval Expires 7-31-85

Section A: National Data System Coding

Transaction Code	NPDES	yr/mo/day	Inspection Type	Inspector	Fac Type
N	15 HI0020303	85/12/02	S	S	1

Remarks

Reserved	Facility Evaluation Rating	BI	CA	Reserved

Section B: Facility Data

Name and Location of Facility Inspected	Entry Time	Permit Effective Date
East Honolulu Sewage Treatment Plant 8900 Kalanianaole Highway Honolulu, HI 96825	8:30 a.m. [X] AM [ ] PM	01/01/84
	Exit Time/Date: 9:00a.m. (12/06/85)	Permit Expiration Date: 12/31/88

Name(s) of On-Site Representative(s)	Title(s)	Phone No(s)
Riley Smith	Associate Managing Engineer	395-2331
Kevin Sera	Operator	395-1155

Name, Address of Responsible Official	Title	Contacted
Lucien P. Wong P. O. Box 25007 Honolulu, HI 96825	Vice President and General Manager	[ ] Yes [X] No
	Phone No.: 395-2331	

Section C: Areas Evaluated During Inspection

(S = Satisfactory, M = Marginal, U = Unsatisfactory, N = Not Evaluated)

S	Permit	S	Flow Measurement	N	Pretreatment	S	Operations & Maintenance
S	Records/Reports	S	Laboratory	N	Compliance Schedules	S	Sludge Disposal
S	Facility Site Review	U	Effluent/Receiving Waters	S	Self-Monitoring Program		Other:

Section D: Summary of Findings/Comments *(Attach additional sheets if necessary)*

see attached FINDINGS.

Name(s) and Signature(s) of Inspector(s)	Agency/Office/Telephone	Date
Ralph I. Morita	Department of Health Pollution Investigation & Enforcement Br. NPDES Section (ph. 548-6155)	December 2, 1985

Signature of Reviewer	Agency/Office	Date

Regulatory Office Use Only

Action Taken	Date	Compliance Status
Review operations for following months.	1/7/86	[X] Noncompliance [ ] Compliance

EPA Form 3560-3 (Rev. 3-85) Previous editions are obsolete.

FINDINGS

Department of Health (DOH) personnel T. Kawamoto, A. Teruya, and R. Horita conducted an NPDES Compliance Sampling Inspection (CSI) of the East Honolulu Community Services Company's (EHCS) Sewage Treatment Plant (STP) on December 2-6, 1985. NOTE: The Company was previously called the Hawaii Kai Community Services Company (HKCS). Riley Smith, Associate Managing Engineer, Sewers Operation; and Kevin Sera, Operator, represented the facility during the inspection. In this report, the names HKCS and EHCS will be used interchangeably, dependent on the name of the company at that time.

The East Honolulu STP provides secondary treatment for about 3.0 MGD of domestic wastewaters from the Hawaii Kai and Kalama Valley Subdivisions, located on the eastern coast of the Island of Oahu, Hawaii. The facility's design average day flow is 3.9 MGD. Effluent from the facility is discharged by gravity flow to an ocean outfall off the shores of Sandy Beach. (Refer to the DOH NPDES CSI dated December 10-14, 1984 for more information on the EHCS STP operations and treatment units.)

The facility has four men who work eight hours a day, five days a week (Monday through Friday). The system is in operation seven days a week, 24 hours a day. An alarm system continuously monitors the facility and the collector system pump stations (PS) for power outages and the PS for high level alarms. The alarm system automatically calls a 24-hour answering service, the EHCS office, and the homes of Riley Smith and Kevin Sera when problems arise. The facility personnel run their own pH, BOD, and TSS analyses. If other analyses are required, the samples are sent to Food Quality Laboratory or M&E Pacific. Grab samples are collected hourly from the Headworks (before the bar screen) and the chlorine contact chamber (CCC) and are manually composited for the NPDES permit parameters (BOD and TSS). Sampling for total coliform is done at the discharge end of the irrigation pump line to the Hawaii Kai Golf Course when applicable. Once a month, M&E Pacific runs a diagnostic test of the facility processes. Every quarter, M&E Pacific does testing at the outfall for the facility's Zone of Mixing (ZOM) permit. Minor repair and maintenance work are done by the facility personnel, with major repair work contracted out. Primary power to the facility is provided by the Hawaiian Electric Company (HECO), with standby generators at the facility and at seven PS for emergency power.

EAST HONOLULU COMMUNITY SERVICES, INC.
East Honolulu Sewage Treatment Plant
NPDES Permit No. HI 0020303

The DOH issued the HKCS a Finding of Violation and Order (FOV) dated February 5, 1985 (Docket No. 84-PIE-EOW-16) for discharging raw sewage from their pump stations (PS) #1, 2, 4, 5, and 7 on August 18, 1984, due to a HECO power outage. The HKCS response letter dated February 19, 1985 indicated standby generators were being installed at PS #1-7 and at the STP, to prevent further discharges of raw wastewaters due to HECO power outages. The DOH inspection found all the standby generators to be operational by March 1985.

The DOH later issued the HKCS a Minor Violation letter dated July 19, 1985 for being in apparent violation of its NPDES permit effluent limitations for total coliform, based on the facility's Discharge Monitoring Report (DMR) for the period April 1, 1985 through June 30, 1985. In a July 31, 1985 response letter, the HKCS indicated that the STP stopped sending effluent to the Hawaii Kai Golf Course from June 1985. At that time, the HKCS did not feel that it could consistently meet their NPDES permit limit for total coliform of 23 colonies/100 ml (median value). No effluent has been sent to the golf course since June 1985.

During the inspection, the DOH personnel observed or were informed that:

1. In a letter dated October 24, 1985, the DOH was officially notified that the name of the company was changed from the HKCS to the EHCS. Subsequently, the treatment facility is now called the East Honolulu STP. This was a change in name only and does not indicate any changes in ownership or personnel.

2. In an attempt to address the problem with the effluent quality going to the Hawaii Kai Golf Course, the HKCS bought a new chlorinator (1000 pounds/day capacity) and cleaned out the CCC. These efforts did not improve the reliability of the effluent quality (to the satisfaction of the HKCS personnel), so no effluent has been sent to the golf course since June 1985. The EHCS personnel are still reviewing the problem with the effluent quality. It is noted that the EHCS will notify the DOH when effluent will again be sent to the golf course.

3. The DOH conducted a sampling program on the facility effluent going to the Hawaii Kai Golf Course from June 4-19, 1985 (in conjunction with the previous NPDES CEI dated 12/10-14/84). The DOH personnel collected two samples per day, whenever possible. The median value for the seven samples collected was 13 colonies/100 ml (MPN). At that time, the DOH informed Riley Smith that the effluent quality appeared to be getting worse towards the end of the month. Riley Smith said he would check the facility operations for possible causes. The facility later stopped pumping effluent to the golf course because it could not consistently comply with the total coliform limits (refer to comment #2).

4. The wet well for the bar screen is covered with a fiberglass panel for odor control. The influent wastewaters generate a lot of hydrogen sulfide (H_2S) gas. At this wet well, the interior walls are badly corroded. The bar screen was replaced with stainless steel about two years ago because of corrosion problems.

5. The grit chamber (GC) controls have been modified to operate four times a day, for a one hour duration. DIACHLOR is still used at the GC for odor control.

6. Primary Clarifier (PC) #3 was down for routine maintenance work. The shoes and chains for the scrapper mechanism (horizontal redwood flights) were being replaced with plastic pieces. The scum collector pipe was also being replaced with a PVC pipe. These changes were done to reduce corrosion and wear on the PC parts. It is noted that the other PC will also receive the plastic parts when they go down for their routine maintenance. AQULEX 288 and 312 (combined) is no longer used at the PC. It did not prove to be economical to continue using the flocculants.

7. The four combination high rate aeration tank/secondary clarifier (AT/SC) units were all in service at the time of the inspection. The one conventional AT/SC unit was having trouble with the operations of the scrapper mechanism. Some horizontal redwood flights in the SC were floating too high in the water and were having trouble passing under the concrete barrier wall separating the SC and the overflow weirs. The flights got stuck at the wall and caused the motor for the scrapper mechanism to trip off. This operational problem upset the facility's treatment system. The effluent quality in the CCC was grey in color and cloudy in appearance (with floatable solids). The East Honolulu STP personnel were seen working on this problem for the entire week (five days) of the DOH inspection.

8. The effluent collection channel walls had a lot of algal growth. This may contribute to problems in the effluent quality. It is noted that the effluent still receives chlorination before it is discharged through the outfall.

9. The weir at the CCC is calibrated semi-annually. The CCC perimeter wall was built up about 12 inches (1-1/2 bricks) to prevent surface runoff from entering during heavy rainfall. It is noted that the PS #4 venturi meter is not in service and is being replaced by a pressure differential flow meter.

10. The primary digester (PD) roof has a slight leak that sometime causes odor problems. During the DOH inspection, the odors from the PD was moderate. CHEMZYME is added to help the digestion process. Dried sludge from the drying beds (DB) is used by a landscaper (Lang's) with sawdust soil to make a soil conditioner.

11. The railings and pipings at the facility have all been repainted. The standby generators are all housed in sound-proof buildings (concrete block). The EHCS is working on the development of a Queen's Beach resort. It is anticipated that this proposed development will tie into the collector system at PS #6. Riley Smith was informed by the DOH personnel that if the average daily flow going through the STP exceeds the design average daily flow, then the NPDES permit limits for mass emission (8.34 x mg/l x MGD = lbs/day) will take precedence over the 30-day average concentration of 30 mg/l. This means that as the actual average daily flow exceeds the design average daily flow, the allowable concentration level will decrease from 30 mg/l.

12. The laboratory oven and incubator are calibrated weekly. The facility laboratory has a new oven and an electronic scale (SARTORIUS I-1800). The scale was last calibrated in June 1985 using standardized weights.

13. TABLE NOS. 1 and 2 (DOH Laboratory Results and Field Measurements) contain the results of the DOH sampling. TABLE NO. 3 contains the EHCS sampling results (the M&E Pacific Laboratory, the East Honolulu STP Laboratory, and the Food Quality Laboratory results).

14. The EHCS has not engaged any consultant firms to review or upgrade the facility operations at this time. The EHCS personnel are still trying to determine if it is necessary.

The EHCS is operating the East Honolulu STP in violation of its NPDES permit effluent limits for BOD and TSS of 30 mg/l (30-day average), but the facility is in compliance with its 7-day average of 45 mg/l. It is noted that the facility experienced an operational problem in their conventional AT/SC unit, and this caused a slight upset in the treatment system. The DOH will monitor the facility performance more closely from this point in time. The permittee's self-monitoring program was found to be in compliance with the terms and conditions of its NPDES permit.

EAST HONOLULU C...NITY SERVICES, INC.
East Honolulu Sewage Treatment Plant
NPDES Permit No. HI 0020303

TABLE NO. 1

DOH Laboratory Results

Date	BOD_5 (mg/l) Influent	BOD_5 (mg/l) Effluent	TSS (mg/l) Influent	TSS (mg/l) Effluent
12/02-03/85	77	45	92	38
12/03-04/85	77	41	88	39
12/04-05/85	68	38	80	46
12/05-06/85	78	42	96	42
4-Day Average:	75	41.5	89	41.3

TABLE NO. 2

Field Measurements

Date	Time (a.m.)	Flow (MGD)	pH	Temperature ^{o}C
12/03/85	8:45	3.143	6.8	26
12/04/85	8:30	2.679	6.7	27
12/05/85	8:33	3.491	6.9	27
12/06/85	8:40	3.106	6.8	28

TABLE NO. 3

EHCS Sampling Results

Date	BOD_5 (mg/l) Influent	BOD_5 (mg/l) Effluent	TSS (mg/l) Influent	TSS (mg/l) Effluent
12/03-04/85 (M&E Pacific)	--	24.5	--	43
12/04-05/85 (East Honolulu STP)	--	30	--	35
12/04-05/85 (Food Quality Laboratory)	77.8	45.8	155	50.7

NOTE:
1. The DOH and the EHCS split samples on Wednesday (12/04/85) and Thursday (12/05/85). The samples were collected by the DOH automatic time proportional ISCO samplers and were manually composited by the DOH personnel. M&E Pacific did the analyses on the Wednesday sample (12/03-04/85), and the STP Laboratory and Food Quality Laboratory both did analyses on the Thursday sample (12/04-05/85) for the EHCS.
2. No total coliform samples were taken because no effluent was being sent to the golf course.

Attachment II

POLLUTION INVESTIGATION AND ENFORCEMENT BRANCH
STATE DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801

NPDES COMPLIANCE MONITORING REPORT

Permittee:	East Honolulu Community Services, Inc.
Facility:	East Honolulu Sewage Treatment Plant
Permit No:	HI 0020303
Date of Inspection:	March 3-7, 1986
Report Prepared By:	Ralph I. Morita
Date Prepared:	April 30, 1986

EAST HONOLULU COMMUNITY SERVICES, INC.
East Honolulu Sewage Treatment Plant
NPDES Permit No. HI 0020303

FINDINGS

Department of Health (DOH) personnel T. Kawamoto, A. Teruya, and R. Morita conducted a follow-up sampling inspection of the East Honolulu Sewage Treatment Plant (STP) on March 3-7, 1986. It is noted that this facility was formerly called the Hawaii Kai STP.

The DOH personnel conducted the follow-up inspection in conjunction with its annual NPDES Compliance Sampling Inspection (dated December 2-6, 1985), to ascertain the compliance of the facility with its NPDES effluent limits for BOD and TSS. The results of the DOH Laboratory in Honolulu can be found in TABLE NO. 1 (Additional Sampling for the East Honolulu STP).

The East Honolulu STP had marginal quality effluent during the last DOH NPDES Compliance Sampling Inspection (dated December 2-6, 1985). Refer to TABLE NO. 2 (DOH NPDES Inspection Sampling Data) for the results obtained from the DOH inspection.

According to the results of the DOH sampling inspections (shown in TABLE NOS. 1 and 2), the East Honolulu STP is in violation of its NPDES permit effluent limits for BOD and TSS.

TABLE NO. 1
Sampling for the East Honolulu STP (3/3-7/86)

	BOD (mg/l)		TSS (mg/l)	
Date	Influent	Effluent	Influent	Effluent
03/03-04/86	81	67	58	52
03/04-05/86	63	33	101	54
03/05-06/86	66	38	54	37
03-06-07/86	70	45	51	55
4-Day Average	70	45.75	66	49.5

NOTE:
1. The DOH personnel setup portable ISCO time proportional samplers at the Headworks (influent) and at the chlorine contact chamber (effluent) on March 3, 1986.
2. The samples collected were manually composited by the DOH personnel, based on the facility flow totalizer charts.
3. The DOH Laboratory in Honolulu performed the analyses for BOD and TSS.

TABLE NO. 2
DOH NPDES Sampling Data (12/2-6/85)

	BOD (mg/l)		TSS (mg/l)	
Date	Influent	Effluent	Influent	Effluent
12/02-03/85	77	45	92	38
12/03-04/85	77	41	88	39
12/04-05/85	68	38	80	46
12/05-06/85	78	42	96	42
4-Day Average	75	41.5	89	41.3

Attachment C

EAST HONOLULU (HAWAII KAI) SEWAGE TREATMENT PLANT OPERATION AND MAINTENANCE INSPECTION REPORT

On February 6, 7, 12, and 13, 1986, Paul Ciesla of the State Department of Health (DOH) performed an operation and maintenance (O&M) inspection of the East Honolulu Sewage Treatment Plant (STP). Prior to October 1985, the plant was known as the Hawaii Kai STP. Riley W. Smith, Associate Managing Engineer, and Kevin Sera, plant operator, represented East Honolulu Community Services, Inc. during the inspection.

Although the facility's reported monthly effluent quality averages have been below NPDES permit limits (30 mg/l BOD/TSS) for the last two years, results during two consecutive sampling inspections by DOH were greater than 30 mg/l for both BOD & TSS. Additionally, residents of Hawaii Kai have complained of odors; there was a recent raw sewage spill to the marina from a sewage pump station; and the facility could not meet total coliform requirements for effluent reuse and therefore discontinued the use of the effluent for golf course irrigation. Thus, this inspection was performed to determine if the operation and maintenance at the facility was in any way responsible for these problems.

The operation and maintenance criteria used in this report are from the EPA guidelines for federally funded treatment plants. The said guidelines were used as they represent minimum industry standards applicable to sewage treatment plants. If these guidelines are not met, a plant would not be eligible for federal/state funding under the Clean Water Act. The East Honolulu Community Services, Inc. was not federally funded as it is privately owned and operated.

EPA guidelines are not only used for funding determinations, but also for determining whether or not a facility is in compliance with the O&M clause contained in their NPDES permit. The O&M clause reads as follows:

"Facilities Operation

This permitee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permitee to achieve compliance with the terms and conditions of this permit."

Plant Description

The East Honolulu STP is an activated sludge facility with a reported design capacity of 3.9 MGD. The facility was constructed in four phases.

Phase I was completed in 1964. It consisted of screening and grit removal facilities, one primary clarifier, one primary digester, a chlorine contact chamber, and sludge drying beds.

Phase 2 was completed in 1966. A second primary clarifier and additional sludge drying beds were added. The chlorine contact chamber was also expanded.

Phase 3 was completed in 1969. Secondary treatment was added in the form of four separate high-rate activated sludge basins. Two aerobic sludge digestion tanks were also added along with a sludge control building and additional drying beds.

Phase 4A was constructed in 1974. It included a third primary clarifier, a secondary digester, and a fifth activated sludge basin designed to operate in the conventional loading range with step-feed and step-air flexibility. (The function of the aerobic digestion tanks was changed at that time. One tank was converted into a waste sludge aeration/holding tank and the other into a digester supernatant aeration/holding tank.)

A portion of the effluent has been used for golf course irrigation with the remainder discharged by gravity through an ocean outfall extending 1,400 feet from the Sandy Beach shoreline and terminating in 46-feet of water. As previously mentioned, as of July 1985, the effluent is no longer used to irrigate the golf course due to difficulty in meeting total coliform limits. Figure 1 shows a general plant schematic of major units.

FINDINGS

The inspection documented a substantial number of deficiencies which contribute to the problems mentioned in the beginning of this report and which will, if not corrected, contribute to the frequency and seriousness of future problems. From a non-regulatory standpoint, these deficiencies also result in excessive or unnecessarily high operational costs. The following is a detailed discussion of the deficiencies noted during our inspection.

Safety

Two serious safety problems exist at the plant which pose a threat to the operators as well as the general public. The first involves the storage of chlorine gas. Chlorine is stored on-site in one-ton cylinders. The cylinders are kept from rolling with small pieces of two by four which are inadequate. The State's Division of Occupational Safety and Health should be consulted immediately to correct this violation. There is also no detection or alarm system should there be a chlorine gas leak. This is exacerbated by the fact that the plant is manned only eight hours/day. Chlorine gas detection devices which are sensitive enough to be used in this open air facility should be installed immediately. Several options regarding the response to an alarm are available. The facility must choose an option, coordinate the system with the proper emergency response agency (probably fire department) and establish an emergency operating plan with notification and evacuation procedures in case of a gas leak. The chlorine injector system should also be evaluated and possibly upgraded with safety in mind. All corroded parts must be replaced immediately. (Chlorine gas is toxic and fatal in small dosages).

The second safety problem involves the anaerobic digesters especially the primary digester. The metal parts of the digesters, which are 21 years old, have outlined their useful life. Based on an external inspection of the floating cover and with similar digesters on Oahu, it is believed a potentially explosive gas mixture (methane with air) may be present in the attic of the digester where there should be only air. If the methane to air mix is in a certain ratio, a very small spark, even static electricity, could set off an explosion. This problem is made worse by the inadequate inspection and cleaning of numerous safety devices. (More specific information at the digesters is included in the "Anaerobic Digestors" section.)

The stairway leading to the digester roof is also in very poor condition and needs immediate work before anyone is allowed to use it.

Training and Qualifications

This by far is the single greatest problem area contributing to the deficiencies at the treatment plant. The operators are attempting to do their job as best as they know how, but they have received no training other than outdated on-the-job training that was provided several years ago. Of the four operators, only one is new to the field (9 months). The remaining three have been on-the-job for 20, 15 , and 12 years respectively. However, they have very little knowledge of the activated sludge process. The main reason for their lack of knowledge is that they are exempt from the State's mandatory wastewater treatment operator certification requirements. HRS Section 340B reads as follows:

> "(4) 'Wastewater treatment plant' means the various facilities used in the treatment work wastewater, including a wastewater reclamation plant, but excluding a private sewage treatment plant with actual flows greater than 2.0 million gallons per day, with a valid discharge permit issued pursuant to chapter 342, and without a record of adjudged violations of any permit conditions at any time for the life of the permit.

Based on the foregoing, the East Honolulu STP is the only treatment plant in the State which does not fall under the State's mandatory operator certification program. This exemption serves no useful purpose and is a detriment to the community, the public, the wastewater industry, and worst of all to the operators themselves whose career development and education have been hindered. Technology changes and training opportunities have passed the operators by. They are in need of extensive training in order for them to operate the plant properly. The certification process would have encouraged the operators to maintain parity and professional contact with other operators in the State.

Process Control Testing

Absolutely no meaningful process control testing is being performed at this plant. (This is not to be confused with NPDES influent/effluent monitoring.) According to the operators the plant is "being run by feel".

The most striking visual observation was the presence of a white sudsy foam on the surfaces of all the aeration tanks. The mixed liquor was lacking color and was definitely not the light chocolate-brown color expected of healthy activated sludge. Additionally, the secondary clarifier effluent was very cloudy. These are all indicators of a low mixed liquor suspended solids (MLVSS) concentration resulting in a young, low density sludge.

Measurements to determine the depth of the sludge were taken in the final clarifiers at various locations with the following results:

Final Clarifier #1 — No sludge blanket could be found in the tank

Final Clarifier #2 — Dark mat of old septic sludge burped to the surface when sampler reached bottom in one area of tank. Dispersed dark sludge was found towards the hopper end of the tank but could not be considered a normal sludge blanket.

Final Clarifier #3 — Approximately 1-2 inches of dark septic sludge was found at bottom.

Final Clarifier #4 — Approximately 2 feet of sludge was found but only in an area which was sloping into the hopper. The sludge appeared very dark.

Final Clarifier #5 — No definite sludge blanket could be found but isolated areas of disposed sludge were located.

The depth of blanket readings indicated that no sludge is entering the final clarifiers. (The small amount of septic sludge on the bottom appeared to be due to the fact that the redwood flights are not scraping the clarifier bottom clean — this is not unusual but does indicate operational difficulties.)

At the time of inspection, the operators noted that they were wasting sludge from the clarifiers. Observation of the waste activated sludge (WAS) stream, indicated that they were overwasting as the stream was low in solids.

A 30-minute settling test using a 1000 ml graduated cylinder, was performed on each of the five (5) activated sludge basins. In Basins #1 through #4, (High Rate Basins), no good floc was visible, only a cloudy liquid. No settling occurred during the time period. In Basin #5 (the conventional system), after 10 minutes, sludge had settled to the 950 ml mark and remained there. After 20 minutes it began to rise and disperse. Thus, no worthwhile settling was taking place and appearance of the sludge further confirmed the low MLSS.

Dissolved oxygen (D.O.) readings were taken using both a submersible probe and portable meter from DOH as well as the probe and portable meter from the treatment plant laboratory. Correlation between the two meters was good and showed that in all the basins and at different depths and locations, dissolved oxygen levels ranged from 3.2 to 6.1 mg/l and averaged 4.2 mg/L. The D.O. level further indicated the low MLSS concentrations in the aeration basins. Normal D.O. levels in a properly operated activated sludge basin range between 1 to 3 mg/l as aerobic microorganisms utilize much of the oxygen supply.

Finally, to confirm the actual of MLSS concentration, samples of each aeration basin were analyzed yielding the following:

Aeration Basin #1	102 mg/l
Aeration Basin #2	142 mg/l
Aeration Basin #3	192 mg/l
Aeration Basin #4	220 mg/l
Aeration Basin #5	136 mg/l

Aeration basins #1 through #4 are designed as high rate systems. A low MLSS concentration would be expected since the high rate system operates in a high food/organism (F/M) range. However, the actual MLSS values are exceptionally low. High rate systems operate well only when the MLSS sludge settles rapidly and consistently. It should be noted that for high rate systems, operator skills are critical as the system requires precise process monitoring and controls.

Basin #5 was designed as a conventional basin which should operate in a lower F/M range with a corresponding higher MLSS (commonly 1600-2500 mg/l). This system can not operate well as a secondary treatment unit with a 136 mg/l MLSS concentration level.

Thus, all of the activated sludge basins in this plant were being operated extremely poorly. All basins were overwasting sludge. The plant is fortunate that it has two extra large basins, one for WAS and the other for digester supernatent. These appear to be compensating for some of the operational errors caused by lack of process control.

Although the NPDES effluent monitoring reports indicate BOD or TSS values less than 30 mg/l, it is felt that the results may not be accurate. An analysis of the BOD/TSS data since 1979 shows that the results can be correlated to the person who was performing the analysis during a given time period. Since 1982, the same group has been responsible for the testing for which the results have been the lowest. Further work should be performed to examine sampling procedures, locations, times, and laboratory methods. If the samples are taken in or after the chlorine contact chamber, substantial organic removals may be occurring as the result of oxidation by the chlorine. The chlorine usage seems to indicate this is occurring. The operators were having problems meeting total coliform limits when discharging to the golf course despite using very high dosages of chlorine. If the effluent quality is good, then less chlorine will be available in solution for killing coliform. Chlorine will usually oxidize organics such as BOD and TSS first and then kill bacteria. Also, coliform organisms are frequently "sheltered" from chlorine inside suspended solid particles. Hence, the higher the TSS, the higher the coliform. The operators noted that they occasionally add chemicals to enhance their settling. (It was not certain where the points of addition were due to mixed opinions and a lack of records). This again is an additional operating expense that can probably be minimized or eliminated by proper process control. Over oxidation due to excessive air may also be contributing somewhat to BOD removals. This again is costly, and is evident by conditions observed.

Design Inflexibility

Process control is critical due to a design deficiency in the final clarifiers. The units have an average sidewater depth of nine feet which was considered acceptable when the plant was constructed. However, by today's standards, final clarifiers are built with a sidewater depth of at least 12 feet deep to account for less than optimum sludge settleability. Thus, there is little or no margin for error in process control at this plant. Some metering may be necessary to aid operations.

Also, there appears to be inflexibility with regards to the return activated sludge system. It is very difficult to measure the volume being wasted and returned. It is also very difficult to change the discharge rate on one airlift pump without affecting the discharge rates on all the airlifts within the system. Some redesign may be necessary or a system balancing method may have to be devised. Further work will be required to determine the extent of this problem. Due to these and other inflexibilities, the plant may not be able to effectively treat the design flow of 3.9. mgd. A plant capacity analysis should be performed as this will have an effect on future development.

Record Keeping

Record keeping is essentially non-existent at the plant. If there were an upset, it would be virtually impossible to reconstruct the circumstances leading to that situation.

Maintenance Management System

Although maintenance is being performed at the East Honolulu STP, the system is disorganized. The preventive maintenance schedules appear to have developed mostly from on-the-job training and experience rather than being generated from equipment manufacturers specifications. Written procedures are not formalized. This does not appear to have had any visual (cosmetic) effect on the plant units but unseen problems may exist. (Obvious problems resulting from faulty maintenance procedures exist with the digesters and pump stations and are discussed elsewhere in this report.) The facility is fortunate in that they are able to contract out a large amount of their maintenance work if necessary. The ultimate goal of a maintenance management system is to maintain equipment in the best operable condition at reasonable cost. Timely performance of preventive maintenance tasks will minimize the need for costly corrective maintenance and aid in the achievement of this goal. Improved equipment performance achieved

through a good preventive maintenance system will manifest itself in a reduction of equipment failures, shortened equipment down time when failures do occur, and a decrease in the number of major and expensive equipment overhauls required.

Improved equipment performance will also have the parallel effect of reducing process upsets, thus resulting in more consistent effluent quality. The ability of plant personnel to respond to emergency situations will be enhanced by assured availability of sufficient reserve or standby equipment when needed.

Anaerobic Digesters

The most seriously deteriorated unit at the plant is the primary anaerobic digester which may be directly responsible for most of the odors. This unit is 21 years old. The average useful life of a digester is 12 years assuming it is cleaned and inspected once every five years. Although no records exist, it is rumored that this digester may have been cleaned 15 years ago.

As stated in the safety section, there appears to be digester gas inside the attic of the digester dome where only air should exist. Digester gas contains methane gas. When one volume of methane is mixed with approximately ten volumes of air, a very small spark (even static electricity) could set off an explosion. Digester gas is explosive in a methane to air ratio from 1:5 to 1:20. The most explosive ratio is 1:10. Gas can enter the attic either through holes in the gas dome or holes in the ceiling plate. Based on experience with digesters of similar age on Oahu, the condition of the metal (including thickness) must be checked throughout the dome. This is best done by draining the digester and inspecting the ceiling plate frame underneath as well as from inside the attic. It will not be sufficient to merely patch holes if the integrity of the remaining metal is in question.

The condition of the safety related devices on both the primary and secondary digesters is poor. The secondary digester's pressure relief valve was venting gas to the atmosphere and was another source of odors. On both digesters it is not certain when the flame traps or drip traps were last checked and cleaned, or what the condition of the gas line pressure regulators and check valves are. No detailed records of maintenance exist. The sediment and drip trap assembly should be checked monthly and the entire unit disassembled and inspected annually. The flame traps should be disassembled annually and washed out in a safe solvent. Pressure regulators should be adjusted routinely to values less than system pressures. Check valves should be inspected and cleaned annually.

An additional odor source is the gas which is bubbling out to the atmosphere along the sidewalls around the perimeter of the digesters. The gas should be migrating towards the gas dome and not towards the perimeter. The most common cause of this is a scum blanket which is blocking the correct pattern of gas migration. Further support for the presence of a scum blanket is provided by the fact that mixing is accomplished only by recirculation which is a poor method. The gas mixers were inoperable. Mixing accomplishes several tasks in a digester. It insures a homogeneous mixture throughout which allows for good contact between active microorganisms and incoming undigested sludge, it allows for a uniform temperature which is important to life cycle of microorganisms, and it serves to prevent and break up the scum blanket which may arise.

Since the primary digester has not been cleaned in 15 to 20 years, it is very likely that there are several feet of sand and grit which has accumulated on the bottom. The more grit there is, the less volume there is available for active digestion to occur. As digestion time is a function of volume, a smaller volume reduces digestion time. This leads to a lower reduction in volatile solids and can contribute to a sludge which does not dewater well or one that requires expensive chemicals to augment dewatering. Furthermore the sludge has more odor, and a poor quality supernatant return stream which causes additional odors and increases the plant loadings and poor quality effluent. (As stated early, this plant has its own basin to treat its supernantant return which is a large benefit.) Also, the digester contents are not heated. The lower a digester temperature is, the slower the reaction rate. The temperature of the digester contents at the plant is estimated to be 82°C based on other unheated digesters in the islands. A digester's optimum performance is at 95°C. At 95°C, the digestion time required is about 21 days. At 82°C, the digestion time required is about 36 days. The lower temperature further contributes to digester problems by effectively reducing volume.

Another unfortunate problem is that no process testing is performed to evaluate exactly how well these digesters are performing. Normal, minimal process testing includes temperature, pH, alkalinity, volatile acids, and records of quantities of sludge pumped. This information is normally used to assess digester performance as well as to avoid upsets by using trend charts to predict problems in advance. Gas analysis is also frequently used. The waste gas burner at the East Honolulu STP frequently burns too yellow indicating a poor quality gas and frequently goes out entirely. This is another source of odors.

Pump Station

Seven pump stations are part of the East Honolulu sewerage system. All have emergency generators and alarm systems. DOH personnel visited each of the stations and found them to be in very good condition with a few exceptions. A common problem with the pump stations was that the dehumidifier and ventilation blower had been turned off in most of the stations. It has not been determined exactly why this was so. In some stations, the switch which turns on the ventilation blower as soon as the entrance hatch is opened was inoperable. These blowers are safety devices and must be operable. The dehumidifiers are vital to protecting electrical circuitry by preventing condensation.

Pump station #3 had heavier corrosion on its pump casings than the other stations (which had virtually none). Operators reported much of the equipment had recently been overhauled but poor record keeping (as previously mentioned) does not allow easy verification. It appeared that some mechanical work was necessary in pump station #4. One of the three existing pumps was noisy and one other appeared to have the beginnings of a bearing problem.

The man lift at pump station #7 was out of service and under repair during inspection. This is the same station which flooded and bypassed raw sewage into Hawaii Kai Marina on January 17, 1986. After conversations with the operators, it appears that this bypass was caused by human error. The staff had removed the #1 motor for repair and did not close the inlet isolation valve fully or install a blind flange when they left for the evening. Raw sewage flowed into the drywell through the valve and flooded the station. The sump pump could not keep up with the flow. The flooding caused a short circuit of the entire electrical system. Thus, the remaining pump could not operate to draw down the wet well. Raw sewage overflowed through the wet well bypass. A high water level/power failure alarm did sound and was responded to. Portable pumps had to be brought on site as the situation was more complicated than the alarm system was originally designed for. Since that incident, each station now has a liquid level sensor in each dry well to detect any rising water that the sump pump is incapable of removing.

The alarm system was successfully demonstrated during the inspection. If a high wet well level, dry well water level, or power failure is sensed, an automatic dialing system contacts a 24-hour answering service, the East Honolulu Community Services Company office, Riley Smith's home and Kevin Sera's home. The sequence is repeated until the alarm is responded to and turned off.

The human error with the isolation valve and flange could have been avoided if preventive maintenance procedures were spelled out in writing as part of a maintenance management system.

Operators reported that the electrical systems have been checked one year ago when the emergency generators were installed.

Staffing

The plant is presently staffed eight hours/day, seven days/week. Four full-time operators are employed at the plant. One engineer supervises the plant, but he is off-site and not necessarily involved with full time plant operations. (An alarm system and a standby generator are on-site to compensate for periods when the plant is not manned.)

Presently, the operators are responsible for operation and preventive maintenance at the plant and pump stations. All other work is generally contracted out. A staffing analysis was performed by DOH using EPA guidelines. The analysis was performed assuming that full process testing was being performed and process control was being used. It also assumed adequate record keeping and an adequate maintenance management system. The analysis recommends six full-time positions. Four of these positions would be in the operations category and two would be in the maintenance category. This assumes that the operators perform some but not all of the laboratory, clerical, and yardwork tasks. (It assumes many of the more complex laboratory tasks as well as some yard work would be contracted). Supervisory tasks would mostly be performed by the existing engineer. For further clarification, the task descriptions (taken from the EPA Staffing Manual) are attached as Appendix A.

Additional Observations

The pattern of the air roll in several of the aeration basins was uneven indicating possible plugged diffusers or leaks. Air leaks in the above ground headers were also noted.

Conclusions

(1) Poor operation and maintenance procedures at the East Honolulu STP are directly responsible for decreased effluent quality, odors, and probably higher operational costs.

(2) The cause of the raw sewage spill into Hawaii Kai Marina on January 17, 1986 was human error which might have been avoided if a maintenance management system (with well written maintenance procedures) was developed and implemented. The plant has improved its alarm system since that spill.

(3) The chlorine storage area and the primary digester are two serious safety hazards which should be corrected immediately.

(4) The operators are very poorly trained and have little or no knowledge of the activated sludge process. As a result, no process control is being performed. Based on visual observations and the process testing performed in this study, the reported effluent results are questionable and could be caused by possible errors in sampling or laboratory testing. Otherwise, the results are being achieved by the addition of costly chemicals and large amounts of air (power costs). The presence of the two large basins to aerate WAS and digester supernatant compensates for some of the operational errors.

(5) There is some inflexibility in the plant which may require modification in order for the plant to perform at its rated capacity of 3.9 MGD.

(6) If the plant is to be operated and maintained properly, staffing levels must increase or additional work must be contracted out.

Recommendations

(1) Install a chlorine alarm system at the chlorine storage facility and replace any deteriorated couplings on the injection system. Investigate the feasability of an enclosed injection system. Secure the cylinders from rolling with a better system than now exists. Coordinate the alarm system and emergency procedures with the closest fire department. All operators should be knowledgeable of such procedures and of chlorine handling safety procedures.

(2) Develop and implement a plan to eliminate the cause of the gas in the attic of the primary digester. The plan should include a decision as to whether to abandon this digester or whether to clean and renovate the unit. The plant should address the digester safety devices as well as the heater. Immediate provisions should be made to repair or replace the primary digester stairway as it should not be used in its present condition.

(3) Inspect, clean, and repair all safety devices on the secondary digester. Determine the reasons for gas bubbling along the sidewalks and correct this condition. If it is determined to be due to a scum blanket, clean the digester or break up the scum blanket. Determine the reason for gas venting from the pressure relief valve and correct this condition. The decision to rehabilitate or abandon the gas mixers and the heater should also be made.

(4) Provide immediate training to the operators with special emphasis on the activated sludge process. Based on this inspection, it appears that the "Facilities Operation" clause of the NPDES permit has been violated. This would mean that the East Honolulu STP is no longer exempt from the State's mandatory certification of wastewater treatment plant operators. Thus, the operators should immediately pursue certification from the State.

(5) Initiate a process control program for the activated sludge system. This will require certain process control tests, equipment purchases, and the use of trend charts to make process control decisions. The minimum process control tests should include but not be limited to the following:

Location	Tests	Frequency	Type
Plant Influent	BOD/TSS/VSS	Twice/Week	Comp.
Removed Grit.	TSS/VSS	Twice/Week	Grab

Primary Clarifier			
Effluent Channel	BOD/TSS/VSS	Twice/Week	Comp.
Sludge Underflow	TSS	Twice/Week	Grab
Bottom of Clarifier	Depth of Blanket	Optional as Desired	

Aeration Basins			
Effluent of Each Basin	BOD/TSS/VSS	Twice/Week	Comp.
Throughout Basins(l)	D.O.	Daily	Grab
Basin Contents	pH	Daily	Grab
Basin Contents	TSS/VSS	Daily	Grab
Basin Contents	30-minute settling	Daily	Grab
Basin Contents	Respiration Rate	Daily	Grab

(l) An initial D.O. profile should be taken of each basin to determine dead spots. Then, sampling points at certain locations and depths can be set. These points should remain the same each day.

Note: Testing for relative nitrogen series on the basins may also prove useful. Microscopic examination would also prove useful.

Location	Test(s)	Frequency	Type
Secondary Clarifiers			
Effluent of Each	BOD/TSS/VSS	Twice/Week	Comp.
Sludge Underflow	TSS	Twice/Week	Grab.
Throughout Each Basin (l)	Depth of Blanket	Daily	——

RAS and WAS flows should also be measured.

(l) The depth of blanket should be taken at various locations to determine the high, low, and average spots.

Note: Testing for relative nitrogen series may also prove useful.

The information gathered above should then be used to calculate F/M ratios, MCRTs, SVI's, and unit process efficiencies. By using trend charts, problems can be anticipated before they occur and the proper process adjustments made to insure a stable operation.

(6) Initiate a process control program for the anaerobic digesters. The tests should include but not be limited to:

Location	Test(s)	Frequency	Type
Primary Digester			
Influent	Flow	Continuous	
Influent	VSS	Twice/Week	Grab
Contents	pH	Daily	Grab
Contents	Volatile Acids	Twice/Week	Grab
Contents	Alkalinity	Twice/Week	Grab
Contents	Temperature	Twice/Day	Grab
Gas	% CO_2/Methane	Once/Week	Grab
Secondary Digester			
Influent	Flow	Continuous	
Influent	VSS	Twice/Week	Grab
Effluent	VSS/pH	Twice/Week	Grab
Supernatant	BOD	Once/Week	Grab
Location	Test(s)	Frequency	Type
Supernatant	TSS	Once/Week	Grab
	Flow	Continuous	

This information should then be plotted on trend charts for process control.

Note: The process control tests listed in 5 and 6 are in addition to those tests required by the NPDES permit. Other tests may also be valuable for operational cost optimization.

(7) The effluent sampling points, times, and laboratory methods should be re-evaluated by DOH, plant personnel, and possibly a third laboratory to determine potential sources of error.

(8) The facility should establish a maintenance management system for the plant and its pump stations. It is recognized that a few elements of a system already exist. But according to the best available federal guidelines, a good maintenance management system should include but not be limited to the following:

(a) A full maintenance staffing complement based on organizational charts, staffing guidelines, and outstanding maintenance tasks. Excessive backlogs should not exist.

(b) A work order system, schedule chart, and priority list, again without excessive backlogs.

(c) An equipment numbering system or other identification system for all major items of equipment.

(d) A system for maintaining nameplate data and other essential information (i.e. supplier information, purchase date and cost, size, model, type, serial number) for all major items of equipment.

(e) Frequency of preventive maintenance (PM) tasks based on manufacturer's recommendations, routine inspections, and trend analysis.

(f) Full recording of preventive and corrective maintenance tasks performed including man-hours, spare parts used, individuals performing the job, and all related costs. These costs should be broken into categories such as preventive maintenance, corrective maintenance, major repair and replacement. The maintenance cost and failure history can be used short and long term budget preparation and projections for replacement of weak components. (Cost codes or charge numbers for specific maintenance jobs would also be useful.)

(g) Files of as-builts and related drawings (i.e. updates) and related documents.

(h) A system to expedite outside contracts if a job is beyond the capabilities of the existing maintenance staff.

(i) A storeroom which includes a complete spare parts inventory list, establishd minimum and maximuim quantities of parts for that list, an item locater system, a storeroom ticket or withdrawal for inventory control, and a purchase order system.

(j) Continually updated maintenance organization charts, job titles, and job descriptions.

(k) A maintenance training program other that on-the-job training.

(l) Routine planned shutdown of equipment for inspection by designated and qualified staff.

(9) The facility needs to implement a better record keeping system in the area of the operations logbook, laboratory records, process control, (including any changes, upsets, or unusual conditions), and maintenance tasks. Entries should be signed or initiated by the operator making them.

(10) The facility should hire two more full time personnel in order to keep up with the required workload.

(11) A plant capacity study should be performed to determine what modifications may be necessary in order for this plant to process its design flow of 3.9 MGD. Future Hawaii Kai development efforts should not be based on the 3.9 MGD WWTP until its capacity is verified. (The actual capacity may be above or below 3.9 MGD).

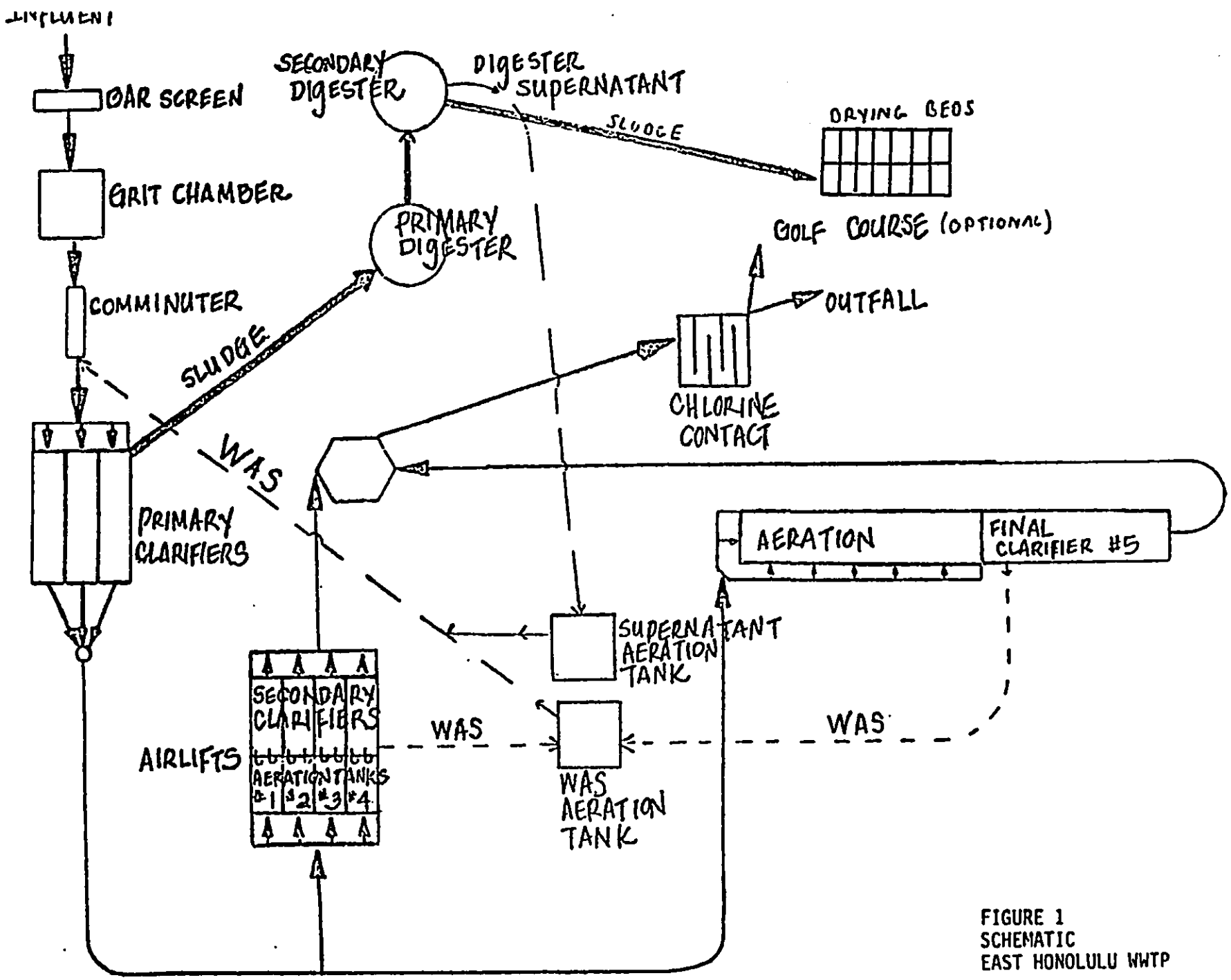

FIGURE 1
SCHEMATIC
EAST HONOLULU WWTP

NOT TO SCALE

Attachment D

POLLUTION INVESTIGATION AND ENFORCEMENT BRANCH
STATE DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801

NPDES COMPLIANCE MONITORING REPORT

Permittee:	East Honolulu Community Services, Inc.
Facility:	East Honolulu Sewage Treatment Plant
Permit No:	HI 0020303
Date of Inspection:	April 1, 1986 .
Report Prepared By:	Ralph I. Morita
Date Prepared:	April 30, 1986

FINDINGS

Department of Health (DOH) personnel T. Kawamoto, A. Teruya, and R. Morita conducted a flow monitoring inspection of the East Honolulu Sewage Treatment Plant (STP) on April 1, 1986. The DOH had some concerns on the accuracy of the facility's flow metering device and performed a spot check on the flow measurement. It is noted that this facility was formerly called the Hawaii Kai STP. Riley Smith (Associate Managing Engineer, Sewers Operations) represented the facility during the inspection.

During the inspection, the DOH personnel noted the following:

1. A rod and transit was used to determine if the Cipolletti weir crest was level. The rod readings on both ends of the weir crest was 7.91 feet, indicating that the weir crest was level. However, portions of the metal weir was noted to be corroded. Riley Smith said a fiberglass weir is planned to replace the existing metal weir.

2. The rod reading for the effluent in the chlorine contact chamber (CCC) was 7.26 feet (to the top of the water; rod reading taken along the CCC wall, at a point about 32 inches perpendicular to the face of the weir). The head (H) of water passing over the crest of the Cipolletti weir was then determined to be 0.65 feet (H = 7.91 feet - 7.26 feet = 0.65 feet); the rod reading was taken at 2:00 p.m.

3. Riley Smith provided the following design data for the Cipolletti weir:

   a. width across top of weir = 45 inches;

   b. width across bottom of weir (crest length) = 36 inches; and

   c. slope of weir opening = 1:4 (horizontal:vertical).

   The design data provided indicated that the Cipolletti weir to be acceptable in configuration.

4. Based on the given design parameters (crest length = 36 inches), the DOH personnel calculated the flow to be 3.421 mgd (ref.: Stevens Water Resources Data Book, 2nd Edition). At that time, the facility flow totalizer indicated the instantaneous flow reading to be 2.8 MGD. This represents about a 22 percent (%) deviation in readings.

5. Another rod reading for the effluent was taken at a point along the CCC wall, about 60 inches perpendicular to the face of the weir (time was 2:05 p.m.). The second rod reading was also 7.91 feet. It is noted that the facility flow totalizer uses a float in a wet well, at the location of the first rod reading (see comment #2). The two rod readings seem to indicate that the location of the facility wet well is appropriate (at this time) for determining the H over the weir crest.

6. MEPAC Services, Inc., began contract operations of the facility on this day. The MEPAC personnel are aware of the problem and are working to resolve it.

The DOH inspection indicates that there is an apparent flow metering problem at the East Honolulu STP. The facility should resolve this problem as soon as possible, especially in respect to future plans to add more domestic connections to the collection system (from a proposed new subdivision in the area).

IN THE DEPARTMENT OF HEALTH

STATE OF HAWAII

DEPARTMENT OF HEALTH, STATE OF HAWAII, Complainant, vs. EAST HONOLULU COMMUNITY SERVICES, INC., Respondent.	DOCKET NO. 86-PIE-EOW-13 CERTIFICATE OF SERVICE

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that I served the document(s) listed herein by mailing, postage prepaid, certified mail, on JUN -3 1993, a copy of those document(s) to the person(s) and address(es) indicated.

DOCUMENT(S):

1. Notice and Finding of Violation
2. Order
3. Attachments A, B, C, and D

PERSON(S) SERVED AND ADDRESS(ES):

Mr. Edwin S. Ohta, Vice President
East Honolulu Community Services, Inc.
7120 Kalanianaole Highway
Honolulu, HI 96825

DATED: Honolulu, Hawaii, JUN -3 1993

Paul F. Aki

PAUL F. AKI, CHIEF
Pollution Investigation and
Enforcement Branch

ANT/rg
cc: Attorney General, State of Hawaii
EPA, Region 9, Water Management Division,
AZ-NV-HI Branch, W-4

S E T T L E M E N T A G R E E M E N T

THIS SETTLEMENT AGREEMENT entered into this 22nd day of July, 1986, by and between the DEPARTMENT OF HEALTH, STATE OF HAWAII (hereinafter collectively referred to as "Department"), and EAST HONOLULU COMMUNITY SERVICES, INC., a Nevada corporation, (hereinafter referred to as "EHCS") and MEPAC SERVICES, INC, a Delaware corporation (hereinafter referred to as "MEPAC").

WHEREAS, Department is empowered to prevent, control and abate water pollution in the State of Hawaii,

WHEREAS, EHCS is the owner of the private wastewater treatment facility located at Hawaii Kai, Honolulu, Oahu, Hawaii; and

WHEREAS, EHCS has contracted with MEPAC to provide Wastewater treatment facility management services and MEPAC assumed operational control of EHCS's Hawaii Kai wastewater treatment facility as of April 1, 1986; and

WHEREAS, Department, pursuant to its authority issued on June 3, 1986 a Notice of Finding of Violation and Order against EHCS in Docket No 86-PIE-EOW-13 setting forth a number of alleged violations and proposed order to EHCS to implement and consider a variety of safeguards and recommendations; and

WHEREAS, EHCS does not agree with all of the matters stated in the Notice of Finding of Violation in Docket No. 86-PIE-EOW-13 and had requested a hearing. EHCS has nonetheless considered and is willing to comply with the safeguards and recommendations set forth herein.

WHEREAS, the parties are desirous of entering into an administrative settlement of all matters raised by Department's Notice of Finding of Violation.

NOW THEREFORE, the Department EHCS and MEPAC mutually agree as follows:

1. Full Compliance With Order in Docket No. 86-PIE-EOW-13

EHCS agrees that it has or will comply, by the dates set forth, the items set forth in Departments Order of June 3, 1986:

A. EHCS shall comply with the NPDES Permit No. HI 0020303, East Honolulu Community Services, Inc. and will not violate the effluent limitations set forth in Part I.A. (Effluent Limitations and Monitoring Requirements).

B. EHCS shall submit to the Director of Health within twenty (20) days after this agreement or sooner:

1. A plant capacity study performed by an independent consultant, a person not connected with the operation and maintenance of the plant, to determine the average day flow design rating of the plant, and to determine what modifications may be necessary in order for this plant to process its design flow of 3.9 MGD. Calibration of flow meter must also be performed and reported.

2. EHCS agrees and represents that it has or shall comply with correcting the deficiencies set forth below:

(a) EHCS has installed a chlorine detector alarm system at the chlorine storage facility;

(b) EHCS has inspected the chlorine injection system thoroughly and has replaced all corroded parts;

(c) EHCS shall investigate the feasibility of an enclosed injection system;

(d) EHCS has initiated and will continue in the training of all operators in the handling of chlorine and the emergency safety procedures;

(e) EHCS has initiated and will continue in the inspection and repair of the digesters to insure safe and proper operations. This shall include but not be limited to:

(1) EHCS shall repair the stairway leading to the primary digester roof and primary digester roof on or before December 31, 1987.

(2) EHCS has installed safety related devices such as pressure relief valves on digesters in operation.

(3) EHCS has repaired gas mixer on digester in operation.

(4) EHCS shall complete repairs on the heater on or before December 31, 1987.

(f) EHCS initiated operator training on the activated sludge process on April 1, 1986; and

(g) By November 17, 1986, EHCS shall implement a process control program to include or be equivalent to the following:

EAST HONOLULU WASTEWATER TREATMENT
PLANT PROCESS CONTROL PROGRAM

Location	Tests	Frequency	Type
Plant Influent	BOD/TSS/COD	Once/Week	Comp.
	Settleable Solids	Once/Week	Grab
	pH/TEMP/DO		
	Chlorides/ Chlorine Res/	Daily	Grab
Grit Removal	TS/VS	Once/Week	Grab
Primary Clarifier			
Primary Effluent	BOD/COD/ Settleable Solids	Once/Week	Grab
	TSS/VSS/pH/ DO	Daily	Grab
Sludge Underflow	TS/VS	Twice/Week	Grab
Sludge Blanket	Depth	Daily	---
Aeration Basins			
Basin Contents	DO/MLSS	Daily	Grab
	MLVSS/DO/	Daily	Grab
	Settleometer	Daily	Grab
	Respiration Rate/Micro	Twice/Week	Grab

Secondary Clarifiers			
Secondary Effluent	DO/BOD/COD/ TSS	Once/Week	Grab
Sludge Underflow	MLSS/MLVSS	Daily	Grab
Sludge Blanket	Depth	Daily	---
Plant Effluent	BOD/COD/TSS	Once/Week	Comp
	Settleable Solids	Once/Week	Grab
	pH/DO/TSS/ Chlorine Res	Daily	Grab
Anaerobic Digestion			
Primary Digester			
Influent	TS/VS/pH	Twice/Week	Grab
Contents	pH/ Temperature	Daily	Grab
	Vol. Acids/ Alkalinity	Twice Week	Grab
Gas	% CO2/CH4	Once/Week	Grab
Secondary Digester			
Influent	TS/VS/pH	Twice/Week	Grab
Effluent	TS/VS/pH	Twice/Week	Grab
Supernatent	TS/VS/pH/ BOD	Once/Week	Grab

3. In addition to its existing maintenance programs, EHCS shall complete and place into operation a comprehensive preventive maintenance management system for the plant and its pump stations. This shall include but not be limited to the following:

(a) EHCS has implemented a full maintenance staffing complement based on organizational charts, staffing guidelines, and outstanding maintenance tasks.

(b) By November 17, 1986, EHCS shall institute a work order system, schedule chart, and priority list to prevent excessive backlogs.

(c) By July 21, 1986, EHCS shall institute an equipment numbering system or other identification system for all major items of equipment.

(d) By September 21, 1986 EHCS shall institute a system for maintaining nameplate data and other essential information (i.e. supplier information, purchase date and cost, size, model, type, serial number) for all major items of equipment.

(e) By November 17, 1986, EHCS shall establish the frequency of preventive maintenance (PM) tasks based on manufacturer's recommendations, routine inspections, and trend analysis.

(f) By November 17, 1986, EHCS shall institute a full recording of preventive and corrective maintenance tasks performed including man-hours,

spare parts used, individuals performing the job, and all related costs. These costs should be broken into categories such as preventive maintenance, corrective maintenance major repair and replacement. The maintenance cost and failure history can be used in short and long term budget preparation and projections for replacement of weak components. (Cost codes or charge numbers for specific maintenance jobs would also be useful.)

(g) EHCS has established files of as-builts and related drawings (i.e. updates) and related documents.

(h) EHCS has established a system to expedite outside contracts if a job is beyond the capabilities of the existing maintenance staff.

(i) EHCS has under construction and will complete by November 17, 1986 a storage area which includes a complete spare parts inventory list, established minimum and maximum quantities of parts for that list, an item locater system, a storage area ticket or withdrawal for inventory control, and a purchase order system.

(j) EHCS has and will continually update maintenance organizational charts, job titles, and job descriptions.

(k) EHCS has initiated and will continue a maintenance training program other than on-the-job training.

(l) By November 17, 1986, EHCS shall institute an operation system for routine planned shutdown of equipment for inspection by designated and qualified staff.

(m) By November 17, 1986, EHCS shall implement a book keeping system in the area of the operations log book, laboratory records, process control (including any changes, upsets, or unusual conditions), and maintenance tasks.

2. Administrative Penalty and Other Expenditures

The parties acknowledge that the Department's Order in Docket No. 86-PIE-EOW-13 proposed an administrative penalty against EHCS in the amount of Ten Thousand Dollars ($10,000). The parties agree that in lieu thereof, EHCS shall, within ten (10) days from the date of execution of this agreement, make payment to Department, in the form of a certified check payable to the State of Hawaii in the amount of Five Thousand Dollars ($5,000) for violations alleged in Docket No. 86-PIE-EOW-13. Department agrees that it shall suspend imposition of the other Five Thousand Dollars ($5,000) pending compliance by EHCS of the terms of this agreement.

3. Right of Inspection and Reporting Requirements

Department shall have the right to inspect the Hawaii Kai wastewater treatment facility and the records of

said facility to insure compliance with the terms of this agreement. Department shall also have the right to obtain reports on the operation of said facility and EHCS's compliance with this agreement. By execution of this agreement, Department does not in any way acknowledge or agree that the representations of EHCS contained herein that certain corrective actions have been taken have, in fact, occurred and shall have the right to obtain from EHCS and/or MEPAC verification of said corrective action in any manner deemed appropriate by Department. EHCS and/or MEPAC shall, in a timely manner, keep Department informed of all corrective actions agreed to in this agreement.

4. Extensions of Time

In the event EHCS is unable for any reason to meet the time deadlines for any of the corrective actions set forth in this agreement, EHCS shall immediately notify Department and, with a showing by EHCS of good cause, Department may, at its discretion, extend said deadline(s).

5. Admissions

The parties agree that the terms of this agreement or the payment of any sums hereunder shall be construed strictly as a compromise of a contested claim and shall not be construed as an admission of liability of any person or corporations.

6. Release and Dismissal

Department acknowledges that by executing this agreement, it shall dismiss and withdraw its Notice of Finding of Violation and Order in Department of Health, State of Hawaii vs. East Honolulu Community Services, Inc., Docket No. 86-PIE-EOW-13. Nothing herein shall prevent Department from instituting any action against EHCS for

EHCS's failure to comply with the terms of this agreement or any future violations of the law or Departments rules and regulations.

7. MEPAC

MEPAC agrees with EHCS and Department that so long as MEPAC is the operator of the Hawaii Kai wastewater treatment facility, that MEPAC shall perform all of the obligations of EHCS under paragraphs 1 and 4 herein. MEPAC and EHCS agree with each other that MEPAC shall perform such obligations and be compensated therefore pursuant to the agreement dated March 24, 1986 between MEPAC and EHCS.

IN WITNESS WHEREOF, these presents have been duly executed.

APPROVED AS TO FORM
HERBERT Y. HAMADA
Deputy Attorney General
State of Hawaii

DEPARTMENT OF HEALTH
STATE OF HAWAII

By _____
For Its DIRECTOR OF HEALTH

EAST HONOLULU COMMUNITY SERVICES, INC.

By _____
Its Vice President

MEPAC SERVICES, INC.

By _____
Its Vice President

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

2 1986

DHL AIRBILL NO. 35531230

In Reply
Refer To: IX-FY86-97

2 6 AUG 1986

Mr. Edwin Ohta, Vice President
East Honolulu Community Services
7120 Kalanianaole Hwy.
Honolulu, Hawaii 96825

Dear Mr. Ohta:

Pursuant to Sections 308(a), 309(a)(3), (a)(4) and (a)(5)(A) of the Clean Water Act, as amended [33 U.S.C. §1318(a), §1319(a)(3), (a)(4) and (a)(5)(A)] (hereinafter the Act), enclosed are a Finding of Violation and Order for the East Honolulu Sewage Treatment Plant (East Honolulu STP) and for the collection system feeding into the STP.

On July 22, 1986, the State of Hawaii Department of Health (DOH) and East Honolulu Community Services, Inc. (EHCS) signed a settlement agreement that dismissed and withdrew a June 3, 1986 Notice of Violation and Order issued against EHCS by DOH. This settlement agreement requires EHCS to pay a $5,000 penalty and improve the operation and maintenance of the STP. EPA decided to issue this Finding of Violation and Order because the settlement agreement between EHCS and DOH did not address the unauthorized discharges from the collection system that occurred on January 17 and June 3, 1986 nor did it address the issue of chronic NPDES permit violations.

The enclosed Finding of Violation relates to the failure of the East Honolulu Community Services (EHCS) to comply with Section 301(a) of the Act [33 U.S.C. §1311(a)] and conditions I.A.1.a., I.A.1.b., and II.A.8. of NPDES Permit No. HI0020303.

Section 301(a) of the Act prohibits any discharge of pollutants to waters of the United States unless authorized by a National Pollutant Discharge Elimination System (NPDES) permit. NPDES Permit No. HI0020303 does not authorize the discharge of untreated sewage from the collection system feeding the East Honolulu STP to the waters of the United States. Conditions I.A.1.a. and I.A.1.b. of NPDES Permit No. HI0020303 set discharge limits for the East Honolulu STP. Condition II.A.8. requires proper operation and maintenance of facilities used to achieve compliance with NPDES Permit No. HI0020303.

The enclosed Order requires EHCS to achieve and maintain compliance with the 85% removal requirement for BOD and TSS set in NPDES Permit No. HI0020303 and to minimize the adverse effects of salt water infiltration upon the operation and performance of the East Honolulu STP by March 30, 1987. The Order also requires EHCS to take all steps necessary to ensure that unauthorized discharges cannot occur from the collection system by December 30, 1986, to develop a preventive maintenance management system by September 30, 1986 and to ensure monitoring reliability with a quality assurance test by December 30, 1986. To achieve these goals, the Order sets the following compliance schedule:

By September 30, 1986:

Item 5	Submit five-year summary of sewage overflows
Item 6	Prepare preliminary engineering plan to ensure sewage overflows cannot occur
Item 7	Develop preventive maintenance management system
Item 8(a)	Submit current monitoring procedures
Item 8(b)	Prepare preliminary description of quality assurance test.

By November 30, 1986:

Item 8(c)	Perform quality assurance test
Item 8(d)	Submit QA test results and analysis of sampling reliability

By December 30, 1986:

Item 2	Prepare preliminary engineering plan to achieve and maintain compliance with 85% removal rate
Item 4	Ensure sewage overflows from the collection system cannot occur
Item 8	Ensure reliability of sample results
Item 9(a)	Conduct infiltration study
Item 9(b)	Prepare preliminary engineering plan to minimize adverse effects of infiltration

By March 30, 1987:

Item 1	Achieve, maintain compliance with 85% removal rate
Item 9	Minimize adverse effects of infiltration

Neither the application for an NPDES permit nor compliance with this Order nor compliance with NPDES Permit No. HI0020184 authorizes the discharge of wastewater from the collection system to waters of the United States. This Order is not and shall not be interpreted to be an NPDES permit.

Any violation of the terms of the enclosed Order or violations of Section 301(a) of the Act or continued violations

of NPDES permit No. HI0020303 could subject EHCS to a civil action for appropriate relief pursuant to Section 309(b) of the Act [33 U.S.C. §1319(b)] under Section 309(d) of the Act [33 U.S.C. §1319(d)]. In addition, Section 309(c)(1) of the Act [33 U.S.C. 1319(c)(1)] provides that willful or negligent violations shall be punished by a fine of not less than $2,500 or more than $25,000 per day of violation, or imprisonment for not more than one year, or by both.

If you have any questions concerning this matter, please contact John Hamill at (415) 974-8345.

Sincerely yours,

Frank M. Covington
Director, Water Management Division

Enclosures

cc: James K. Ikeda, DOH (w/o encl.)
Paul Aki, DOH (w/ encl.)

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 9

In the Matter of East Honolulu Community Services, Inc. East Honolulu Sewage Treatment Plant and Collection System Honolulu, HI Under Section 308(a), 309(a)(3), (a)(4) and (a)(5)(A) Clean Water Act, as amended 33 U.S.C. §1318(a), §1319(a)(3), (a)(4) and (a)(5)(A)	FINDING OF VIOLATION AND ORDER Docket No. IX-FY86-97

Under Sections 308(a), 309(a)(3), (a)(4) and (a)(5)(A) of the Clean Water Act [33 U.S.C. §1318(a), §1319(a)(3), (a)(4) and (a)(5)(A)], this Finding of Violation and Order (Docket No. IX-FY86-97) is issued this date to the East Honolulu Community Services, Inc. (EHCS) by the Director of the Water Management Division of EPA, Region 9 pursuant to the authority delegated to him by the Administrator and the Regional Administrator of EPA.

FINDING OF VIOLATION

On the basis of the following facts, the Director of the Water Management Division of EPA, Region 9 finds that EHCS is in violation of conditions I.A.1.a., I.A.1.b., and II.A.8., of National Pollutant Discharge Elimination System (NPDES) Permit No. HI0020303 as issued on January 1, 1984, and in violation of Section 301(a) of the Clean Water Act (hereinafter the Act) [33 U.S.C. §1311(a)]. This Finding is made on the basis of the following facts:

1. The State of Hawaii Department of Health (DOH), under the authority of Section 402(a) of the Act, as amended [33

U.S.C. §1342(a)], issued NPDES Permit No. HI0020303 to EHCS on January 1, 1984 to become effective on that date and to expire on December 31, 1988. The permit authorizes the discharge of treated domestic sewage from the East Honolulu Sewage Treatment Plant (East Honolulu STP) to the Pacific Ocean at Sandy Beach. The Pacific Ocean is a water of the United States.

2. NPDES Permit No. HI0020303 as issued on January 1, 1984 contains certain general and specific conditions; including the following:

   a. Condition I.A.1.a. which sets certain discharge limits and monitoring requirements for biochemical oxygen demand (BOD), suspended solids (TSS), total coliform bacteria and pH;

   b. Condition I.A.1.b. which sets 85% removal requirements for BOD and TSS as determined by the comparison of the arithmetic mean values for the BOD and TSS of influent and effluent samples collected in a period of 30 consecutive days;

   c. Condition II.A.8. which requires the permittee to at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes, but is not limited to, effective performance, adequate funding, adequate operator staffing and training,

adequate laboratory and process controls including appropriate quality assurance procedures. This provision requires the operation of back-up or auxilliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

3. EHCS failed to comply with effluent limitations set forth in condition I.A.1.a. of NPDES Permit No. HI0020303 in that the discharge monitoring reports submitted to EPA during the period from January 1, 1984 to June 30, 1986 show the following violations:

   a. EHCS exceeded the 30-day average effluent concentration limit for total coliform bacteria during at least five (5) months;

   b. EHCS exceeded the 30-day average effluent concentration limit for TSS during at least one (1) month;

   c. EHCS exceeded the 30-day average effluent loading limit for BOD during at least one (1) month;

   d. EHCS exceeded the 30-day average effluent loading limit for TSS during at least one (1) month;

   e. EHCS exceeded the 7-day average effluent concentration limit for TSS during at least one (1) week;

4. EHCS failed to comply with effluent limitations set forth in condition I.A.1.b. of NPDES Permit No. HI0020303 in that the discharge monitoring reports submitted to EPA during the period from January 1, 1984 to June 30, 1986 show that EHCS failed to achieve the removal of at least 85% of the BOD

from the sewage treated by the East Honolulu STP as determined by the comparison of influent and effluent 30-day average values during at least twenty-five (25) months and at least 85% of the TSS during at least twenty-seven (27) months.

5. EHCS failed to comply with condition I.A.1.a. of NPDES Permit No. HI0020303 in that:

   a. Sampling results from an NPDES Compliance Sampling Inspection conducted by Hawaii Department of Health (DOH) staff on December 2 through 6, 1985, showed EHCS to be in violation of NPDES permit effluent limits for BOD and TSS;

   b. Sampling results from a second week of sampling conducted by DOH staff on March 3 through 7, 1986 showed EHCS to be in violation of NPDES permit effluent limits for BOD and TSS.

6. EHCS failed to comply with Condition II.A.8. of NPDES Permit No. HI0020303 in that on August 5, 1985, an EPA inspector inspected the East Honolulu STP and reported the following operational and maintenance problems:

   a. Salt water infiltration into the collection system contributes almost half of the flow entering the East Honolulu STP;

   b. EHCS performs no process monitoring;

   c. EHCS does not keep and use a comprehensive preventive maintenance system which clearly defines and schedules all maintenance tasks, records the tasks as they are

completed and ensures that all maintenance is routinely accomplished on time;

d. During 1985, EHCS's reports for values for BOD and TSS have not been sufficiently accurate. EHCS never reported any BOD and TSS effluent concentrations in excess of 30 mg/l and 35 mg/l respectively while values obtained by DOH during one week of monitoring averaged 41 mg/l each.

7. Section 301(a) of the Act prohibits the discharge of any pollutants to waters of the United States except in compliance with Section 301, 302, 306, 307, 318, 402, and 404 of the Act, [33 U.S.C. §1311, 1312, 1316, 1317, 1328, 1342 and 1344]. Compliance with Section 301(a) of the Act includes, but is not limited to, compliance with the requirement that any discharge be authorized by a valid National Pollutant Discharge Elimination System (NPDES) permit.

8. EHCS violated the requirements of Section 301(a) of the Act in that:

a. On January 16, 1986 approximately 100,000 gallons of raw sewage spilled from pump station No.7 into the Hawaii Kai Marina;

b. On June 3, 1986 approximately 151,000, gallons of raw sewage spilled from pump station No.1 into the Hawaii Kai Marina and Maunalua Bay.

The discharges of raw sewage from pump station Nos. 7 and 1 constitute point source discharges of pollutants under the

definitions of the Clean Water Act. The Hawaii Kai Marina and Maunalua Bay are waters of the United States.

9. EHCS holds NPDES Permit No. HI0020303 for the East Honolulu STP. However, this permit does not authorize the discharge of untreated sewage from any portion of the collection system feeding the STP including pump station Nos. 7 and 1 into waters of the United States.

10. Appendix A, attached hereto and made part of this Finding of Violation and Order, contains the applicable effluent limits set in NPDES Permit No. HI0020303 and the values reported by EHCS in DMRs submitted for the period from January 1, 1984 to June 30, 1986. Appendix B, attached hereto and made part of this Finding of Violation and Order, contains the applicable effluent limits set in NPDES Permit No. HI0020303 and the results of sampling conducted by DOH.

ORDER

Taking these Findings into consideration, and considering the potential environmental and human health effects of the violations as well as all good faith efforts to comply, EPA has determined that compliance in accordance with the following requirements is reasonable. Pursuant to Sections 308(a), 309(a)(3), (a)(4) and (a)(5)(A) of the Clean Water Act [33 U.S.C. §1318(a), §1319(a)(3), (a)(4) and (a)(5)(A)], IT IS HEREBY ORDERED that EHCS comply with the following requirements:

COMPLIANCE WITH NPDES PERMIT EFFLUENT LIMITS

1. By March 30, 1987, EHCS shall take all steps necessary to achieve and maintain compliance with the 85% removal requirements for BOD and TSS set in NPDES Permit No. HI0020303.

2. By December 30, 1986, EHCS shall prepare and submit a preliminary engineering plan outlining the steps to be taken to achieve and maintain compliance with the 85% removal requirements for BOD and TSS. This preliminary engineering plan shall include the following:

   a. An assessment of the major causes of past violations of the 85% removal requirements for BOD and TSS;

   b. A detailed description of all equipment, construction, additions, modifications and operating procedures to be used to achieve and maintain compliance with the 85% removal requirements for BOD and TSS;

c. A schedule of compliance, not to extend past March 30, 1987, that lists the following dates:

1. The beginning and ending dates of any construction necessary to achieve and maintain compliance with the 85% removal requirements for BOD and TSS;

2. The dates new operating procedures, identified in response to item 2(a) of this Order, will take effect.

EHCS may combine the response to this item with the response required for items 9(a) and 9(b) of this Order.

3. Immediately upon receipt of this Order, EHCS shall achieve and maintain compliance with all other effluent limits and monitoring requirements set in NPDES Permit No. HI0020303 except those for the 85% removal requirements for BOD and TSS.

CEASE DISCHARGES FROM THE COLLECTION SYSTEM

4. By December 30, 1986, EHCS shall take all steps necessary to ensure that discharges of untreated sewage cannot occur from any portion of the collection system feeding the East Honolulu STP. Upon completion of the steps, EHCS shall submit a notice indicating the completion date. Neither compliance with this Order nor with NPDES Permit No. HI0020303 nor application for an NPDES permit authorizes the discharge of untreated sewage from the collection system feeding the East Honolulu STP.

5. By September 30, 1986, the EHCS shall submit a summary of sewage overflows from the collection system feeding the

East Honolulu STP occurring between October 1, 1981 and September 30, 1986. This summary shall include the following:

a. A list of each sewage overflow by date and location and a short description of the cause of each overflow, the duration, an estimate of the overflow volume and the measures taken to cease the discharge;

b. A map of the collection system feeding the East Honolulu STP showing the current location of each major collection line, each lift station and each sewage overflow identified in response to item 5(a) of this Order.

6. By September 30, 1986, EHCS shall prepare and submit a preliminary engineering plan outlining the remaining steps to be taken to ensure that discharges of untreated sewage cannot occur from any portion of the collection system feeding the East Honolulu STP. This preliminary engineering plan shall include the following:

a. A detailed description of all equipment, construction and operating procedures to be used to ensure that discharge of untreated sewage cannot occur from any portion of the collection system feeding the East Honolulu STP;

b. A schedule of compliance, not to extend past December 31, 1986, that lists the following dates:

1. The beginning and ending dates of any construction necessary to ensure that discharges of untreated

sewage cannot occur from any portion of the collection system feeding the East Honolulu STP;

2. The dates new operating procedures, identified in response to item 6(a) of this Order, will take effect.

COMPLIANCE WITH OPERATION AND MAINTENANCE REQUIREMENTS

7. By September 30, 1986, EHCS shall develop and institute a comprehensive preventive maintenance management system and a process monitoring schedule for the East Honolulu STP and the collection system feeding the STP and submit detailed descriptions of both the comprehensive preventive maintenance management system and the process monitoring schedule.

8. By December 30, 1986, EHCS shall take all steps necessary to ensure that sample results submitted in the DMRs are reliable. In order to determine reliability, EHCS shall proceed in accordance with the following schedule:

   a. By September 30, 1986, EHCS shall submit a detailed description of the sampling and analyses procedures currently used to obtain the sample results;

   b. By September 30, 1986, EHCS shall submit a preliminary description of a Quality Assurance (QA) test to determine the reliability of the sample results reported for BOD and TSS;

   c. By November 30, 1986, EHCS shall perform the QA test and submit the QA test results;

d. By November 30, 1986, based on the results of the QA test, EHCS shall submit an analysis of the reliability of the current sampling and analyses procedures used to obtain sample results. This analysis shall include a QA improvement plan that outlines any new procedures necessary to ensure the reliability of the sample results and a schedule for the implementation of any new procedures not to extend past December 30, 1986.

9. By March 30, 1987, EHCS shall take all steps necessary to minimize the adverse effect of salt water infiltration on the operation and performance of the East Honolulu STP. Minimization of the adverse effects of salt water infiltration shall proceed in accordance with the following schedule:

a. By December 30, 1986, EHCS shall conduct a comprehensive study of salt water infiltration into the collection system and the effect this infiltration has on the operation and performance of the STP. This study shall include, a map of the collection system showing the locations of salt water infiltration, an estimate of infiltration flow rates and an assessment of the effects of salt water infiltration on STP operation and performance;

b. By December 30, 1986, EHCS shall prepare and submit a preliminary plan outlining the steps to be taken to minimize the adverse effects of salt water infiltration on the operation and performance of the STP. This

preliminary engineering plan shall include the following:

1. A detailed description of all equipment, construction and procedures to be used to minimize the adverse effects of salt water infiltration on the operation and performance of the STP;
2. A schedule of compliance, not to extend past March 30, 1987, that lists the beginning and ending dates of any construction or procedures to be used to minimize the adverse effects of salt water infiltration on the operation and performance of the STP.

INTERIM EFFLUENT LIMITS THROUGH MARCH 30, 1987

10. Upon receipt of this Order through March 30, 1987, EHCS shall achieve the removal of at least 70% of the BOD and TSS from the sewage treated by the East Honolulu STP as determined by the comparison of influent and effluent 30-day average values.
11. Upon receipt of this Order through March 30, 1987, EHCS shall each week monitor the BOD and TSS concentrations of both the influent into the East Honolulu STP and the effluent from the STP and report the results in the discharge monitoring reports.

SUBMISSIONS

12. All applications, certifications and reports submitted pursuant to this Order shall be signed by a principal

executive Officer of EHCS and shall include the following statement:

> I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

13. This Order is not and shall not be interpreted to be an NPDES permit under §402 of the Act [33 U.S.C. §1342], nor shall it in any way relieve the East Honolulu Community Services, Inc., of obligations imposed by the Act or any State or Federal law.

14. All submissions shall be mailed to the following addresses:

U.S. ENVIRONMENTAL PROTECTION AGENCY
215 Fremont Street
San Francisco, California 94105
Attn: Steve Fuller

HAWAII DEPARTMENT OF HEALTH
P.O. Box 3378
Honolulu, HI 96801
Attn: Paul Aki, PIE

8-26-86
Date:

Frank M. Covington
Director, Water Management Division

APPENDIX A
to EPA Finding of Violation and Order No. IX-FY86-97

East Honolulu Community Services, Inc.
East Honolulu Sewage Treatment Plant

TABLE OF PERMIT VIOLATIONS
FROM DMRs SUBMITTED FOR THE PERIOD BETWEEN
JANUARY 1, 1984 and JUNE 30, 1986

APPENDIX A
TABLE OF PERMIT VIOLATIONS FROM THE DMRs

East Honolulu Community Services, Inc.
NPDES Permit No. HI0020303

PERMIT SECTION	REQUIREMENT	MONTH/ YEAR	REPORTED VALUE	DAYS OF VIOLATION
§I.A.1.a.	EFFLUENT LIMITATION for 30-Day Average Loading BIOCHEMICAL OXYGEN DEMAND (BOD): 976 kg/d	04/86	1013	30
	Total Days of Violation 30-Day Av BOD Loading Lim:			30
§I.A.1.a.	EFFLUENT LIMITATION for BOD PERCENT REMOVAL: 85%	01/84	81.1	30
		03/84	81.8	30
		04/84	76.6	30
		05/84	83.1	30
		06/84	83.8	30
		07/84	83.1	30
		10/84	79	30
		11/84	83	30
		12/84	76	30
		01/85	82	30
		02/85	82	30
		03/85	80	30
		04/85	76	30
		06/85	81	30
		07/85	80	30
		08/85	78	30
		09/85	82	30
		10/85	79	30
		11/85	78	30
		12/85	69	30
		01/86	67	30
		02/86	60	30
		03/86	67	30
		04/86	59	30
		05/86	68	30
	Total Days of Violation BOD PERCENT REMOVAL Limit:			750

APPENDIX A (continued)
TABLE OF PERMIT VIOLATIONS FROM THE DMRs

East Honolulu Community Services, Inc.
NPDES Permit No. HI0020303

January 1, 1984 through June 30, 1986

PERMIT SECTION	REQUIREMENT	MONTH/ YEAR	REPORTED VALUE	DAYS OF VIOLATION
SI.A.1.a.	EFFLUENT LIMITATION for 30-day Average SUSPENDED SOLIDS (TSS) Loading: 976 kg/d	04/86	1204	30
	Total Days of Violation 30-day Av TSS Loading Lim:			30
SI.A.1.b.	EFFLUENT LIMITATION for TSS PERCENT REMOVAL: 85%	02/84	83.3	30
		03/84	82.4	30
		04/84	81.9	30
		05/84	82.2	30
		06/84	80.9	30
		07/84	79.8	30
		08/84	80.2	30
		09/84	79.6	30
		10/84	78	30
		11/84	80	30
		12/84	76	30
		01/85	78	30
		02/85	79	30
		03/85	77	30
		04/85	77	30
		05/85	77	30
		06/85	75	30
		07/85	81	30
		08/85	81	30
		09/85	81	30
		10/85	83	30
		11/85	75	30
		12/85	65	30
		01/86	70	30
		02/86	64	30
		03/86	68	30
		04/86	55	30
	Total Days of Violation TSS PERCENT REMOVAL Lim:			810

APPENDIX A (continued)
TABLE OF PERMIT VIOLATIONS FROM THE DMRs

East Honolulu Community Services, Inc.
NPDES Permit No. HI0020303

January 1, 1984 through June 30, 1986

PERMIT SECTION	REQUIREMENT	MONTH/ YEAR	REPORTED VALUE	DAYS OF VIOLATION
§I.A.1.a.	EFFLUENT LIMITATION for 7-day Average (TSS) Concentration: 45 mg/l	04/86	57	7
	Total Days of Violation 7-day Av TSS Conc Limit:			7
§I.A.1.a	EFFLUENT LIMITATION for 30-day Average TOTAL COLIFORM BACTERIA:	07/84 10/84 04/85 05/85 06/85	28 95 41 25 49	30 30 30 30 30
	Total Days of Violation 30-day Average TOTAL COLIFORM BACTERIA Limit:			150
§I.A.1.a.	EFFLUENT LIMITATION for 30-day Average (TSS) Concentration: 30 mg/l	04/86	36	30
	Total Days of Violation 30-day Av TSS Conc Limit:			30

APPENDIX B
to EPA Finding of Violation and Order No. IX-FY86-97

East Honolulu Community Services, Inc.
East Honolulu Sewage Treatment Plant

TABLE OF PERMIT VIOLATIONS
FROM DOH SAMPLING INSPECTIONS

APPENDIX B
TABLE OF PERMIT VIOLATIONS FROM DOH SAMPLING INSPECTIONS

East Honolulu Community Services, Inc.
NPDES Permit No. HI0020303

PERMIT SECTION	REQUIREMENT	SAMPLING PERIOD	AVERAGE VALUE	DAYS OF VIOLATION
§I.A.1.a.	EFFLUENT LIMITATION for 30-Day Average BOD Concentration: 30 mg/l	12/2-6/85	41.5	30
		3/3-7/86	45.8	30
	Total Days of Violation 30-Day Av BOD Conc Limit:			60
§I.A.1.a.	EFFLUENT LIMITATION for 30-Day Average TSS Concentration: 30 mg/l	12/2-6/85	41.3	30
		3/3-7/86	49.5	30
	Total Days of Violation 30-Day Av TSS Conc Limit:			60
§I.A.1.a.	EFFLUENT LIMITATION for 7-Day Average BOD Concentration: 45 mg/l	3/3-7/86	45.8	7
	Total Days of Violation 7-Day Av BOD Conc Limit:			7
§I.A.1.a.	EFFLUENT LIMITATION for 7-Day Average TSS Concentration: 45 mg/l	3/3-7/86	49.5	7
	Total Days of Violation 7-Day Av TSS Conc Limit:			7