Honouliuli, Ewa District, Island of Oahu, Hawaii

WEST BEACH

A FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813 • (808) 523-4432

FRANK F. FASI
MAYOR

JOHN P. WHALEN
DIRECTOR

85/EC-9(JDN)

June 21, 1985

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

Dear Ms. Uyehara:

Revised Supplemental Environmental Impact Statement (EIS)
For the Proposed West Beach Project
At Honouliuli, Ewa District, Oahu, Hawaii

We are notifying you that the above is an acceptable EIS, pursuant to Chapter 343, HRS and the State "EIS Regulations." It has fulfilled the requirements of Generic EIS as a supplemental document.

As discussed in our attached Acceptance Report, this acceptance applies only to the shared channel entrance alternative. In the event that either the parallel or separate marina channel alternative is selected, a supplemental EIS must be prepared specifically addressing the marine impacts and mitigating measures.

If there are any questions, please contact John Nakagawa of our staff at 523-4648.

Very truly yours,

John P Whalen

JOHN P. WHALEN
Director of Land Utilization

JPW:sl
cc: Mr. Fred Rodriguez

CITY AND COUNTY OF HONOLULU

FINAL SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT
FOR
WEST BEACH
HONOULIULI, EWA DISTRICT, ISLAND OF OAHU, HAWAII

Submitted Pursuant to
CHAPTER 343, HAWAII REVISED STATUTES

F. J. Rodriguez

F. J. Rodriguez
Environmental Communications, Inc.
Agent for West Beach Estates

JUNE 5, 1985
Date

Prepared by:
Environmental Communications, Inc.

Revised 6/14/85

Final Supplemental
Environmental Impact Statement
West Beach
Honouliuli, Ewa District, Island of Oahu, Hawaii

1. This Environmental Impact Statement is prepared as part of the Federal, State, and County permit actions relating to the proposed West Beach resort. Clarification is made at this time on the dual nature of the document.

   a) For the U.S. Army Corps of Engineers, it is prepared and will be processed as a Final Supplemental Environmental Impact Statement (FSEIS) for a U.S. Department of the Army Permit Application, File No. PODCO-O 1512. The Final Environmental Impact Statement (FEIS) for the Proposed West Beach Resort, November 1980, was a joint Federal-State FEIS prepared as part of a tiering process for the proposed action.

   b) For the Chapter 343, HRS requirements applicable to the State and County agencies reviewing the project in terms of compliance with their respective permit authority, i.e. Conservation District Use Application (CDUA) Department of Land & Natural Resources; Department of Land Utilization, City & County of Honolulu for Zoning requests and Special Management Area (SMA) review will be on the Final Supplemental Environmental Impact Statement (FSEIS).

   c) The City & County of Honolulu Department of Land Utilization accepted the generic EIS submitted in 1979-80 on September 19, 1980 (see following letter of acceptance). The FSEIS is submitted to meet the concerns of the DLU acceptance letter and all additional requirements provided by agencies, groups, and individuals who commented during the EISPN Consultation Period.

2. This document scopes the impacts of the proposed action at a level of planning that provides the additional detail necessary to evaluate more fully and comprehensively, the future plans that have been developed as recommended. The supplemental data in this document attempts to clearly identify significant impact areas, alternative methods which will eliminate or reduce the degree of adverse impacts, and identify significant environmental issues to be incorporated into final design planning.

3. This document was prepared as a dual purposed document which is being used to satisfy both National Environmental Policy Act and Chapter 343 HRS requirements. As such, this document was submitted for joint, concurrent review during the draft stage but will follow independent final review processes of the respective Federal, State and County acceptance procedures.

4. The Federal, State, and County agencies listed below have cooperated in the preparation of this EIS and are presently considered the lead

agencies for their respective levels of government. This does not preclude other federal or local agencies from participating in the remaining portions of the EIS.

a) The U. S. Army Corps of Engineers will evaluate a Department of the Army permit application for the construction, operation and maintenance of beach lagoons and a marina under Section 10 of the River and Harbor Act of 1899 (33 U.S.C. 403) and Section 404 of the Clean Water Act (33 U.S.C. 1344).

b) The State Department of Land & Natural Resources will evaluate the Conservation District Use Application for work in the shore waters under Chapter 205,183, Hawaii Revised Statutes and Title 13, Chapter 2 (Regulation No. 4) of the Department of Land & Natural Resources (DLNR) providing for land use regulations within a Conservation District.

c. The Department of Land Utilization, City & County of Honolulu, will review the document for change of zone, Shoreline Setback permit and Special Management Area permit applications.

d. The State Office of Environmental Quality Control provided guidance in organizing the joint EIS process and incorporating local agencies concerns.

Abstract

The applicant, West Beach Estates, proposes to construct a resort complex that will provide 5,200 residential units, 4,000 hotel/condominium units, a 42.2-acre marina with a capacity of up to 500 berths, a series of beach lagoons, commercial centers, parks, interior road systems, utility systems, a golf course, tennis courts and other urban support facilities. The project described represents the current land use plan that has been developed by the applicant. This FSEIS evaluates the impacts in terms of alternative methods and the mitigative measures designed to eliminate or reduce significantly these areas of concern. As provided, the document is an evaluation of potential environmental impacts attributable under these density levels. Specific project features will be added or deleted from the project plan depending upon costs, design changes and permit conditions imposed by the regulatory agencies. A Department of the Army permit application requesting construction, operation and maintenance of a marina and beach lagoons was submitted to the U.S. Army Corps of Engineers; the applicant plans to apply for Zoning a Special Management Area permit and Conservation District Use Application in the near future.

The total project will create approximately 47 acres of new aquatic habitat in place of terrestrial habitat. Unused, fallow agricultural and rural lands will be converted to urban uses increasing human presence in the area and increasing the resident population in the region by about 13,300 persons. Water demands will increase together with other utility demands. Communities of endangered plants have been identified and their status confirmed. Archaeological resources in the area will be affected, however,

the significant sites will be salvaged and the data will be presented for historic use. The project will also create more jobs, provide housing for various segments of the island population, and increase property and tourism tax revenues in the State. Recreational use and opportunities in the area will increase. The projects effect on Barber's Point Naval Air Station will be identified and discussed in terms of current Noise and aircraft safety hazards. Approximately 266 acres of prime agricultural lands and 133 acres of other important agricultural lands will be converted to urban uses. Joint use of the Barber's Point Deep Draft Harbor and a recreational marina will be fully discussed from both a technical and operational standpoint with the Corps of Engineers and the Harbors Division of the State Department of Transportation. Water quality in coastal water will be altered as a result of the discharges from the marina and lagoons, as well as urban storm water runoff. The degree of the impacts on the coastal zone offshore of the project will be fully evaluated through the technical studies developed on the Lagoon/Marina systems. The mitigation measures will be included in the proposed designs for the systems.

The alternatives considered in the FSEIS included reducing the size and scope of the Lagoons and Marina, alternative marina channel alignments, no action and denial of the permits. The alternatives vary the degree of environmental impacts and alterations. The No-action alternative preserves the status quo and results in no change to the environment. Denial of the permits does not prevent the developers from developing lands outside the jurisdiction of the regulatory agencies. Issues to be resolved include availability of potable water, effects on archaeological and paleontological sources, endangered species effects, land use conflicts, effects on water quality, ciguatera poisoning potential, wastewater facility planning, tsunami hazard potential, and potential saltwater intrusion and possible effects on ground water sources.

IF YOU WANT FURTHER INFORMATION CONCERNING THE FSEIS AND PERMIT REQUIREMENTS PLEASE CONTACT THE AGENCY OF RESPONSIBILITY LISTED BELOW:

Project Feature	Permit Requirements	Person to Contact
Land Use Ordinance Changes (Zoning)	Zoning Application	Mrs. Loretta Chee Department of Land Utilization City & County of Honolulu 650 South King Street Honolulu, Hawaii 96813 Phone: (808) 523-4248
Construction within the Shoreline Setback and Construction in the Coastal Zone	Shoreline Setback Special Management Area Permit	Mr. Robin Foster Department of Land Utilization City & County of Honolulu 650 South King Street Honolulu, Hawaii 96813 Phone: (808) 527-5027

Marina and bathing lagoon construction in the State Conservation District (identified as State lands)	Conservation District Use Application	Mr. Gordon Soh Department of Land and Natural Resources P.O. Box 621 Honolulu, Hawaii 96809 Phone: (808) 548-7837
State EIS Requirements	Chapter 343, HRS	Ms. Letitia Uyehara, Director Office of Environmental Quality Control 550 Halekauwila Street, Room 301 Honolulu, Hawaii 96813 Phone: (808) 548-6915
Marina and bathing lagoons construction in coastal waters and Federal EIS Requirements	Department of the Army Permit	Mr. Michael T. Lee Biologist Operations Branch, Honolulu District, U.S. Army Corps of Engineers Room 205, Building 230 Fort Shafter, Hawaii 96858 Phone: (808) 438-9258

The 1980 Final EIS for West Beach Resort prepared by the applicant and U.S. Army Corps of Engineers is adopted for use in this DSEIS.

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813 • (808) 523-4411

FRANK F. FASI
MAYOR

TYRONE T. KUSAO
DIRECTOR

79/SMA-45(SM)

September 19, 1980

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

Dear Mr. Rodriguez:

Revised Environmental Impact Statement
West Beach Resort

We have determined that the above is an acceptable Environmental Impact Statement (EIS) document for the proposed project. It should be pointed out that the acceptance of this document does not constitute approval for any land use policy changes or permit applications.

There are a number of unresolved issues which cannot be adequately addressed at this time due to the general nature of this document, but are expected to be thoroughly addressed at the time that supplemental EISs are submitted. These issues are included in the Acceptance Report, which is attached.

If there are any questions, please contact Sampson Mar of our staff at 523-4077.

Very truly yours,

TYRONE T. KUSAO
Director of Land Utilization

TTK:sl
Attach.

DEPARTMENT OF LAND UTILIZATION
79/SMA-45(SM)

September 19, 1980

ACCEPTANCE REPORT : ENVIRONMENTAL IMPACT STATEMENT (EIS)
WEST BEACH RESORT
HONOULIULI, EWA, OAHU

A. BACKGROUND

Environmental Impact Statement (EIS) was prepared for the applicant, West Beach Resorts, by Environmental Communications, Inc. The EIS was required under the provisions of Chapter 343, HRS, when the applicant made a proposal to the City and County Department of Land Utilization (DLU) to develop a resort community within the Shoreline Setback Area (Chapter 205-32, HRS) and the Special Management Area (SMA) (Ordinance No. 4529). As the agency initially receiving the request for an approval, the DLU required the preparation of the EIS. Under Section 1:24 of the Environmental Quality Commission (EQC) Regulations, "Identification of Approving Agency", DLU is also the accepting authority of the statement.

In addition to development within the Shoreline Setback Area and SMA, the project involves work within the State Conservation District and shorewaters under the jurisdiction of the U.S. Army Corps of Engineers.

In accordance with Sub-Part J. NEPA Actions, of the EQC regulations, the applicant notified the Army Corps of Engineers, the State Environmental Quality Commission, State Department of Land and Natural Resources and the DLU. This is a first attempt to prepare a single EIS document which would satisfy requirements of all pertinent government agencies.

This document was prepared as a generic or programmatic document and follows Federal guidelines of the National Environmental Policy Act of 1969 (NEPA) for content and format, as well as State EIS content requirements (Chapter 343, HRS, and Ordinance No. 4529, as amended).

It generally describes the anticipated environmental effects of the development of 640 acres of land to the maximum usage as follows:

LAND USE	APPROXIMATE ACREAGES
Hotel/condominium (7,520 units)	109.0
Residential (1,482 units)	97.9
Low/Medium Density Residential (198 units)	12.4
Commercial	16.7
Marina/Related Areas	48.0
Golf Course/Club	158.7
Beach Club	2.2
Marine Park	10.2
Tennis Courts/Related Areas	6.6
Cultural Center	11.4
Parks	67.7
Lagoon System	24.6
Restaurants	1.6
Circulation/Open Space	66.1

The proposed project would be constructed over a period of twenty years and will require land use policy changes and permits from the City and County of Honolulu, State of Hawaii, and Federal governments. In order to create a document acceptable to all three levels of government, the applicant coordinated between the various levels of government.

B. PROCEDURES

1. Under the provisions of Chapter 343, HRS, the DLU issued an EIS Preparation Notice on April 18, 1979. This was distributed by the applicant to a list of consulted parties suggested by DLU.

2. The consultation period for the EIS Preparation Notice was initiated on April 23, 1979 and terminated on June 8, 1980. This is substantially longer than the 30-day minimum consultation period required by Section 1:41(b)

of the EIS Regulations. Thirty-seven (37) parties submitted written comments during this period, and the applicant responded in writing to parties having substantive comments.

3. The Draft EIS review period officially began on July 8, 1980, although most of the Draft EISs had been sent to reviewing agencies two weeks prior to that date. The State deadline for comments was August 7, 1980; the Federal deadline for comments was August 18, 1980. Forty (40) parties commented in writing; seven (7) letters had no comments, while the remaining thirty-three (33) letters containing substantive comments requiring analysis and response.

4. The applicant requested that the response period be extended by 14 days, from August 21, 1980 to September 4, 1980. This was granted by DLU. The applicant made written responses to all comments by the end of the extended response period.

C. CONTENT

The revised EIS meets all of the basic content and style requirements specified in Section 1:42 and 1:43 of the EIS Regulations. However, as pointed out earlier in this report this document is a generic or programmatic EIS, which means that the overall project concept has been described, but the actual design details of the project have yet to be finalized. This document also incorporates 15 technical support studies which have been reviewed by private parties and governmental agencies. The applicant will be required to submit supplemental EISs for review prior to the time that a particular aspect of the proposed project is scheduled for implementation.

The following is a listing of environmental issues, which cannot be adequately answered due to the general nature of this document, but are expected to be thoroughly addressed at the time that supplemental EISs are submitted.

1. The configuration of the marina, including design details as width, length, depth, flushing characteristics, marina entrance, marine breakwater, etc.

2. The development of recreational lagoons, including design details as length, width, importation of materials, etc.

3. Salt water intrusion on the freshwater basal lens due to the development of the marina and lagoons.

4. The drainage system, including siltation basins, transmission lines, offshore impacts, and use of the golf course.

5. The sewage disposal system, including final transmission line to the Honouliuli Wastewater Treatment Plant.

6. The disposal site and method of disposal for solid waste.

7. The number and types of housing units, including low/moderate income housing.

8. The source, quantity, and commitment of domestic water, and any water conservation techniques to be employed at the project site.

9. Proposed parks within the project site including design, facilities, and access.

10. The transportation network, including roadway widths, access points, interchange designs on H-1 Freeway, implementation of a private mass transit system, parking.

11. Traffic projections based on designs of the project, and most recent external developments.

12. Noise conflicts with Barber's Point Naval Air Station, roadway noise, noise buffers and barriers.

13. The grading, flood protection, and landscaping plans, including provision for relocation and/or propagation of endangered plant species.

14. Historical/archaeological/paleontological concerns, including Federal (36 CFR 800) and State coordination (SHPO) for critical sites, including Hawaiiana, bone finds, and the OR and L Railroad.

15. Socio-economic impacts based upon the ultimate design of the project.

D. RESPONSE

Based upon the conceptual information available at this time, the applicant has made adequate responses to all comments postmarked before the end of the official review period. However, the supplemental EISs will be scrutinized to insure that prior to project implementation, the previously listed environmental issues are adequately addressed.

E. EIS ACCEPTANCE AS A JOINT CITY-STATE-FEDERAL DOCUMENT

The DLU, under the provisions of Chapter 343, HRS, required that an EIS be prepared. The DLU is the accepting authority for the City and County of Honolulu.

According to the Office of Environmental Quality Control, the marinas and lagoons involve State owned lands and therefore the EIS document must also be accepted by the governor.

The Corps of Engineers is developing their own EIS document based upon the information provided in the subject EIS and will take action on this document after action is taken at the State and County level.

E. DETERMINATION

The revised EIS is determined to be an acceptable generic/programmatic EIS under the criteria for acceptance established in Section 1:71 of the EIS Regulations. However, prior to any land use policy changes or permit applications required from the City and County of Honolulu, the applicant will be required to present a schedule of the supplemental EISs to be subsequently submitted to the various levels of government for review and determination of acceptability. All unresolved issues must be satisfactorily addressed prior to the granting of any land use policy changes or permits from the City and County of Honolulu.

APPROVED

TYRONE T. KUSAO
Director of Land Utilization

TTK:sl

2. SUMMARY

2.1 West Beach Estates, plans to develop a self-contained resort complex on 642 acres of land located in Honouliuli in the Ewa District of southwest Oahu, State of Hawaii. The total project concept plan includes residential units, resort units, a marina, a beach lagoon system, commercial centers; parks, interior road systems, utilities, a golf course, tennis courts and other necessary urban support facilities.

The applicant will be applying to the Department of Land Utilization (City and County of Honolulu) and the State Department of Land and Natural Resources, for Zoning, the Special Management Area and Conservation District Use permits, respectively, and has submitted a Department of the Army permit application to the Corps of Engineers requesting construction authorization to operate and maintain a marina and beach lagoons.

2.2 The proposed project is expected to provide employment and housing, increase recreational and cultural resources and availability, increase access to the shoreline, and improve recreational boating. Fallow agricultural land will be replaced by urban land uses increasing population in the area, water and power demands for the region. Increased traffic will alter ambient air quality with automotive emissions. Aircraft noise will affect the residents throughout the project area. Increased traffic noise will affect residents presently located along Farrington Highway. A portion of the project is located within the Barber's Point historic area and some archaeological and historic resources will be salvaged or preserved. Existing vegetation will be replaced with landscaped species. Communities of rare plants have been relocated. Some fossilized bird bones will be recovered and preserved for further scientific study. The marina and lagoons will create new aquatic habitat and potential pollution sources. Reducing the size of the development or eliminating the proposed alteration of the shoreline and work in shore waters will modify the extent of environmental impacts. The no action alternative will result in the fallow agricultural lands remaining as is, essentially preserving existing conditions.

2.3 This combined Federal and local EIS discusses the environmental consequences associated with the West Beach development. The specific permit actions and authorities applicable to the proposed action listed below do not represent all the government approvals which are required to resolve issues identified in 2.5. A flow chart showing the approvals needed to implement the project is provided on the following page. This environmental impact statement supplements the joint Federal-State Final Environmental Impact Statement for the proposed West Beach Resort, dated November 1980.

2.4 Technical verification and design stage, coordination. The technical verification and design stage has been completed. The work involved a detailed review of the marina and lagoons, including the sizing, design, modeling and engineering considerations. During this period, the work was coordinated with the Corps of Engineers, Harbors Division (State Department of Transportation), National Marine Fisheries Service, Fish and Wildlife Service (Department of the Interior), Department of Land and Natural Resources (State of Hawaii), Department of Land Utilization (City and County of Honolulu), Board of Water Supply (City and County of Honolulu), Advisory Council on Historic Preservation, Environmental Protection Agency, other Federal, State, and County agencies as determined by the Corps of Engineers.

Project Feature	Approval/ Permit Required	Agency	Authority	EIS Supplement
Work within the Shoreline Setback and Special Management Area.	Shoreline Setback Variance Special Management Area	Department of Land Utilization, City & County of Honolulu	Chapter 205, HRS Ordinance No. 84-4	Yes
Resort Development and Use	Change of Zone County Land Use Amendments	Department of Land Utilization	County Ordinances	Yes
Shoreline Construction (marina and bathing lagoons)	Conservation District Use Application	Department of Land & Natural Resources, State of Hawaii	Chapters 183, 205, HRS, Title 13 Chapter 2	Yes
Work in Coastal Waters (marina and bathing lagoons)	Department of the Army Permit	U.S. Army Corps of Engineers	Section 10, River and Harbor Act of 1899.	Yes
			Section 404, Clean Water Act of 1977.	
	Coastal Zone Management Federal Consistency Determination	Department of Planning and Economic Development	HRS Chapter 205A	Yes

FLOW CHART

PREPARATION OF THE EIS SUPPLEMENTS

ENGINEERING AND TECHNICAL STUDIES

Water Supply and Distribution System
Highway System
Drainage System and Pollution Abatement
Parks and Public Access to Shoreline
Fire Protection
Noise Abatement
Air Quality Control and Pollution Abatement
Marina/Lagoon circulation and flushing
Marina Effect on Deep Draft Harbor
Wastewater System and Pollution Abatement
Tsunami Flood Hazard Abatement

ENVIRONMENTAL STUDIES (AGENCY REVIEW OF SCOPE OF WORKS)

Littoral process impact analysis
Water quality impact analysis
Groundwater impact analysis
Marine resource survey and impact analysis

COORDINATION AND APPROVAL WITH VARIOUS AGENCIES

Archaeological and Paleontological Salvage Plan (State Historic Preservation Officer)
Endangered plant propagation (U.S. Fish and Wildlife)

AGENCY REVIEW OF PLANS AND COMPLETED ENVIRONMENTAL STUDIES

PREPARE AND PROCESS EIS SUPPLEMENTS TO RESPOND TO UNRESOLVED ISSUES

ZONING APPROVAL
SPECIAL MANAGEMENT AREA PERMIT APPROVAL
CONSERVATION DISTRICT USE PERMIT APPROVAL
CORPS OF ENGINEERS PERMIT APPROVAL
(For Marina/Bathing Lagoons)

REGULATORY AGENCIES/UTILITIES APPROVALS:

Water Master Plan
Building Permit
Sewer System Approval
Drainage Master Plan
Highway System Approval
Park Approval on Parks and Public Access

CONSTRUCTION OF THE PROPOSED PROJECT

2.5 Issues to be resolved.

(a) Potable Water. The project will increase water demand in the region. The existing water infrastructure cannot accommodate the total planned development at the present time however, Campbell Estate will be coordinating the installation of the necessary water facilities including the source for the West Beach development. The BWS is committed to provide an adequate supply of potable water for West Beach on a program currently being developed. These measures include source development storage and transmission capabilities in those areas presently drawing water from the Pearl Harbor Basin.

The Ewa Water Master Plan and West Beach Water Master Plan have been provided to BWS for their approval. These plans will provide the basis on which adequate supplies of potable water will be provided to West Beach.

(b) Archaeology and Paleontology. Portions of the project site lie within the Barber's Point Archaeological District. Archaeological surveys in the remaining portions of the project area indicate that some archaeological and paleontological sites are found in the proposed development area. Any plans to restore, salvage or preserve the sites and disposition of recovered artifacts will have to be coordinated with the State Historic Preservation Officer.

(c) Endangered Species. Communities of rare plants proposed for listing on the Federal List of Endangered Species were found in the project area. However, Campbell Estate, the landowner has taken independent action to transplant and propagate the plants clearing them from the project area. No endangered plants currently remain on the site.

(d) Land Use Conflicts and Noise. The project will not encroach upon aircraft operations at Barber's Point Naval Air Station.

(e) Marina and Beach Lagoons. At this stage of planning, the preliminary technical design of the marina and beach lagoons has been completed. The design of the flushing system for the lagoons is based on designs that most closely duplicate the lagoons fronting the Kamokila Campbell home. Marina designs are being reviewed by COE and local agencies. Joint small craft and commercial ship traffic use of the Barber's Point Deep Draft Harbor are also under review. Approvals for marina and beach lagoon construction will not be given until after evaluation and consideration of the completed design. Comparison of alternative locations and configurations and, in the case of the marina, model testing and verification has been completed.

(f) Ciguatera. Ciguatera poisoning which occurs after consuming fish containing ciguatoxin has not been linked conclusively to dredging operations, however, warning signs are recommended for posting along this shoreline.

(g) Wastewater. The wastewater is intended for treatment at the Honouliuli Wastewater Treatment Plant. Plans to connect to Honouliuli are being reviewed by the City Department of Public Works. The applicant intends to construct a separate sewer line from the project site to the Honouliuli Wastewater facility.

(h) Tsunami Hazards. Portions of the project site are located within a tsunami flood hazard area. The applicant has planned and designed the facilities and structures to minimize potential tsunami flood damage and losses including the creation of a continuous protective berm along the coastline to protect the developed sections of the site from tsunami inundation. Structures proposed by the applicant within the flood hazard area must comply with the County's building codes and Federal flood prevention requirements.

(i) Housing. Ten percent of the residential housing to be constructed will be provided for low and moderate income families. The applicant will be working with the appropriate State and City agencies to meet this objective.

(j) Groundwater. A dual source system for potable and irrigation water has been planned and will be developed by the developer for dedication to the Board of Water Supply.

(k) Public Access and Parking. Public access and parking arrangements must be coordinated with County agencies for management policies.

(l) Beachfront Design Criteria. Siting, height and volume of the buildings fronting the ocean must be coordinated with the appropriate County agencies for final review.

(m) Lagoon Construction Methods. Construction method for the lagoons and beaches must be coordinated and approved by appropriate agencies prior to construction.

(n) Affordable Housing. Definitions of affordable housing for low and moderate income families has not been clearly defined by the City and County of Honolulu. The developer has acknowledged that resonable requirements implemented after resolution of this issue will be adhered to.

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APPENDICES AND TECHNICAL STUDIES for the EIS have been printed as separate supplementary documents which were distributed in limited numbers. All technical support documents published in the appendicies are available through regional libraries. The following Technical Study Index lists all studies utilized in preparation of this document.

TECHNICAL STUDY INDEX AND BIBLIOGRAPHY

These technical studies have been prepared for the West Beach Supplemental Environmental Impact Statement (EIS) which has been prepared under the Rules & Regulations of the Environmental Quality Commission (Chapter 343, HRS) and NEPA (P.L.91-190). They reflect the current status of condition, forward from the generic EIS prepared in 1979 and accepted in 1980. As such, all comments made by the technical subconsultants are for the current condition of the project site and the proposed project as designed and presented in the EIS.

APPENDIX I - TECHNICAL STUDIES

1. A Report of the Viability of West Beach as a Resort Community and the Estimated Economic Impact; Pannell, Kerr, Forster.

2. Acoustic Evaluation of AICUZ Plan, NAS, Barber's Point, 1984, and Evaluation of HIA Air Craft Noise Impact; Revised Land Use Plans, Proposed West Beach Resort; Darby-Ebisu & Associates, Inc.

3. Air Quality Analysis for West Beach Project Oahu, Hawaii; Root, Barry D.

4. Birds of West Beach; Berger, Andrew J., Ph.D.

5. Botanical Survey of the Proposed West Beach Resort Project; Char, Winona P.

6. Occurrence and Significance of Palaeontological and Archaeological Remains in the West Beach Resorts Development Area, Oahu; Ziegler, Alan C., Ph.D.

7. Traffic Impact Analysis; Community Planning, Inc.

8. West Beach, Oahu: Archaeological Status Report; Barrera, William, Jr.

9. West Beach Project Water Pollution Implications of Project Site Storm Runoff; Dugan, Gordon L. Ph.D.

APPENDIX II - OCEANOGRAPHIC AND MARINA STUDIES:

1. Analysis of Biological Impacts of the Lagoon/Marina Development at West Beach, Oahu, Hawaii; OI Consultants, Inc.

2. Proposed West Beach Marina Hydraulic Model Investigation; U.H. James K.K. Look Laboratory of Oceanographic Engineering, Department of Ocean Engineering; Principal Investigator; Lee, Theodore T.

3. Summary of Technical Input for the West Beach Lagoons and Marina Design Development; Bathen, Karl H.; Dr.

4. Technical Evaluation and Recommendations on Design of Marine Structures; Gerritsen, F.

5. Tsunami and Hurricane Design Criteria and Recorded Wave Data Analysis for West Beach Development Area; Bretschneider, Charles L.

A complete Bibliography is included in each of the technical studies. The reviewer, if interested, should review the specific technical study if more information or references are needed.

4. LIST OF FIGURES

5. LIST OF TABLES

6. PURPOSE AND NEED OF THE PROPOSED ACTION

West Beach Estates, (WBE) proposes to establish West Beach resort, as the secondary visitor destination area on Oahu (the first being Waikiki). Favorable environmental factors such as the relatively close proximity to the Honolulu International Airport (20 minutes driving time), its dry and mild climate, its 1.9 miles of shoreline, and flat topography are advantageous for this development. The proposed project will benefit the public in the following areas: (1) it will provide employment in the construction and visitor industries, as well as create jobs in secondary and tertiary industries; (2) it will be in close proximity to a significant employee labor force; (3) it will provide taxes and revenues; (4) it will utilize available and unused land; (5) it will provide additional recreational resources to the public; (6) it will increase access to the West Beach shoreline; (7) it will provide recreational lagoons and social areas which can be utilized by the general public; (8) the project plan also envisions the conversion of the Alice Kamokila Campbell property (which has two natural lagoons) as a cultural center; (9) it will satisfy part of the demand for recreational boat berthing in the State of Hawaii.

7. DESCRIPTION OF THE PROPOSED PROJECT

7.1. Introduction

The proposed West Beach project detailed in this document represents the culmination of design work and field studies undertaken since the acceptance of the generic 1980 Final EIS for West Beach Resort. The 1980 Final EIS described project alternatives to the resort development, such as no action, total development and reduced development, where certain project features were eliminated from the development. Therefore, alternatives considered in this document discuss specific design considerations reflecting the current status of the project and specific project activities. The the purposes of the joint Federal-State Supplemental EIS, alternatives to each specific project activity are discussed in relation to the environmental consequences of each activity.

7.2 Proposed Project Concept

The applicant, West Beach Estates, proposes to develop their 642-acre parcel (Figures 1, 2 & 3) into a quality resort/residential community where visitors and residents can live in a physical environment characterized by beauty, spaciousness and uniqueness (Figure 4). The project area is enhanced by a 1.9 mile shoreline and temperate climate. Some of the recreational facilities or amenities proposed include:

a. A championship, 18-hole golf course;

b. Four swimming lagoons

c. Beach Club;

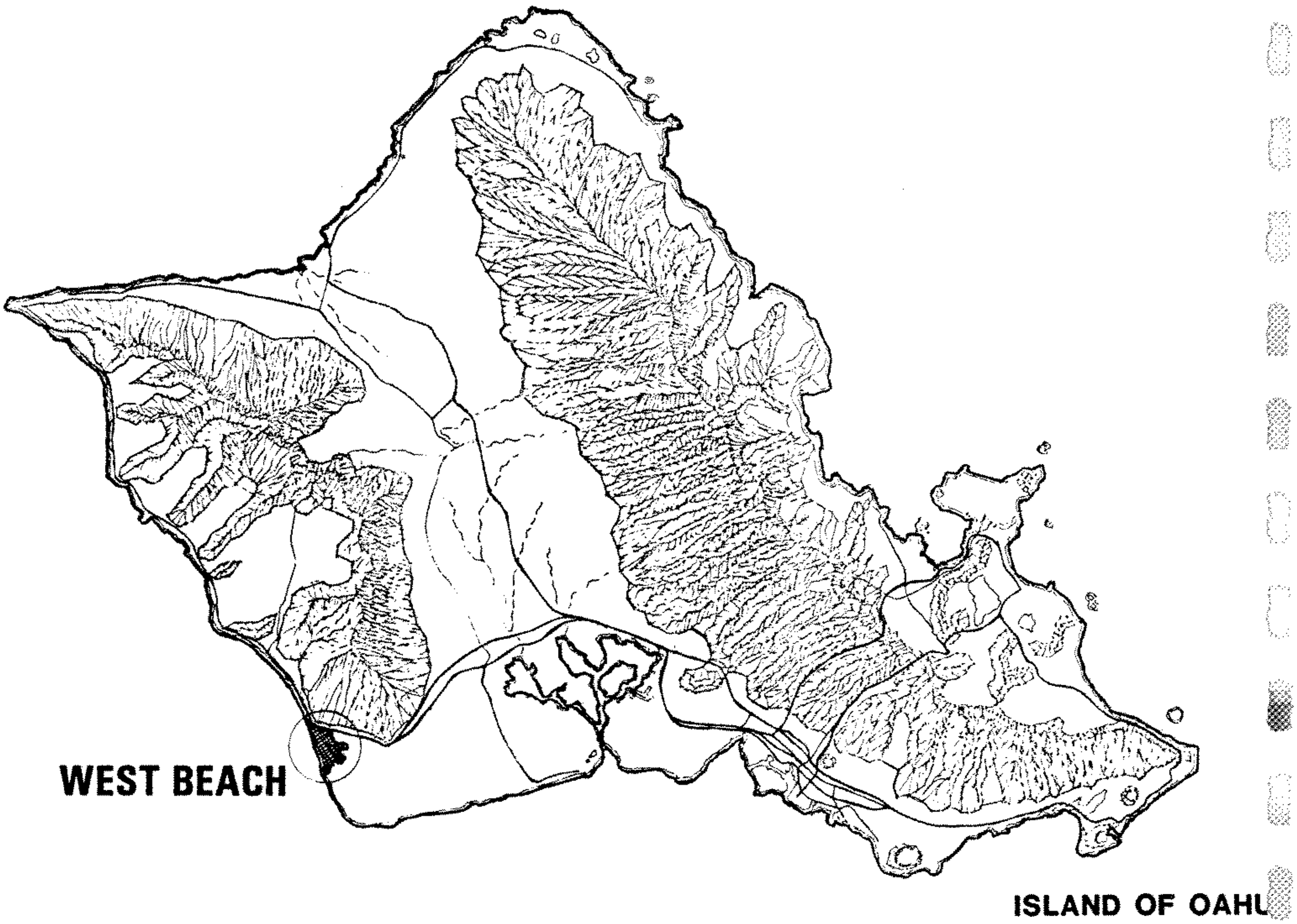
d. Marina;

e. Four public parks; and

f. Hawaiian Cultural Center.

Presently, there are only limited pockets of natural beach available for public use in the project area. West Beach intends to better utilize the nearly two mile stretch of ocean frontage by creating four naturally flushing lagoons and beaches to serve as swimming areas. Further, as more fully discussed below, this improved beach shoreline is not to be reserved for the visitor alone as public access to these lagoons are planned as shown on the Master Plan.

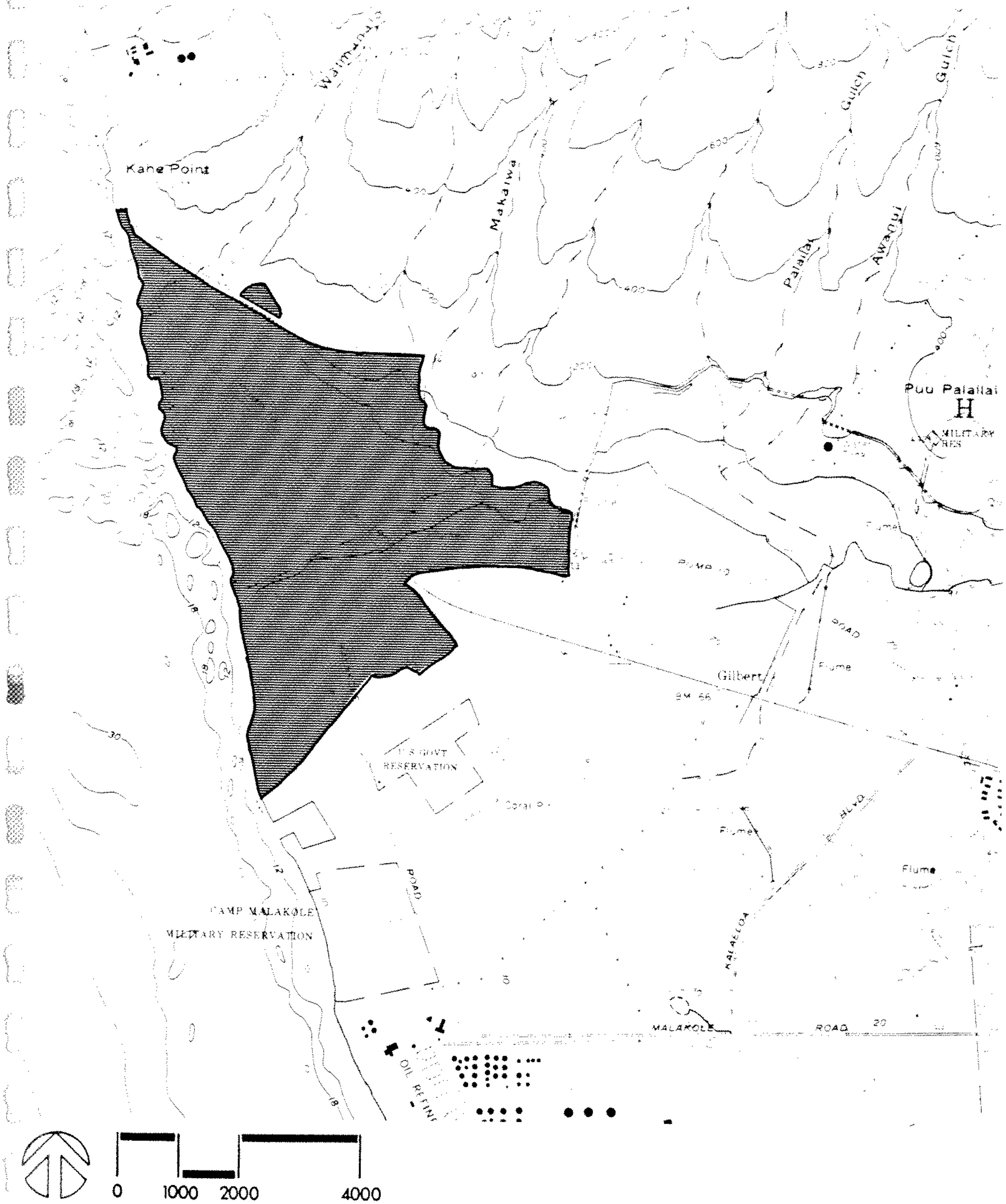
The Master Plan emphasizes the shoreline and its recreational uses. Public parks anchor one end of the project area, and the marina and adjacent parks anchor the other. The resort areas are strategically located adjacent to the lagoons. In a similar pattern, the majority of the residential units are oriented to the open space amenities, such as the golf course. Commercial activity centers are centrally located within West Beach, along the major access road.



WEST BEACH

LOCATION MAP

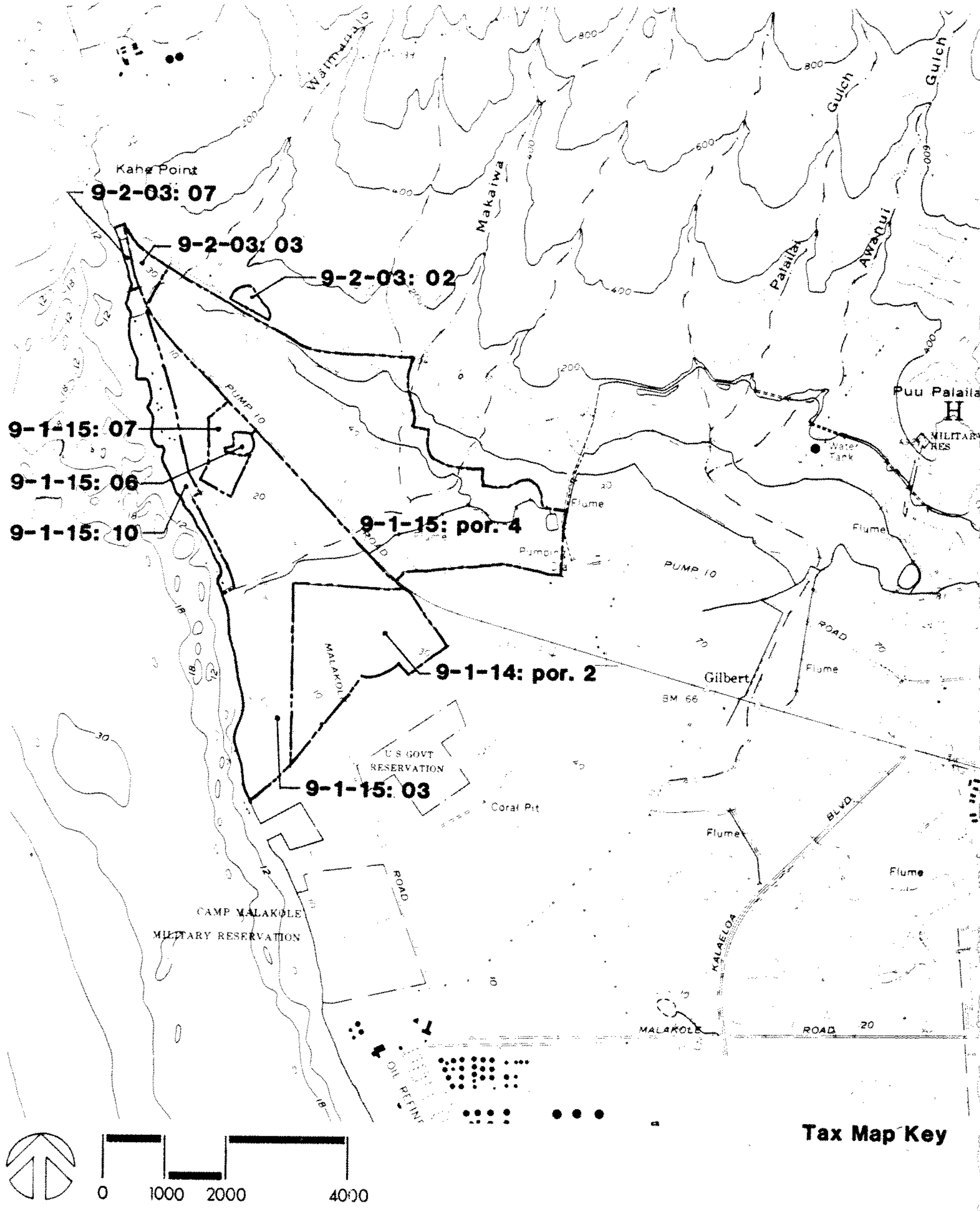
FIGURE 1



WEST BEACH

BOUNDARY MAP

FIGURE 2

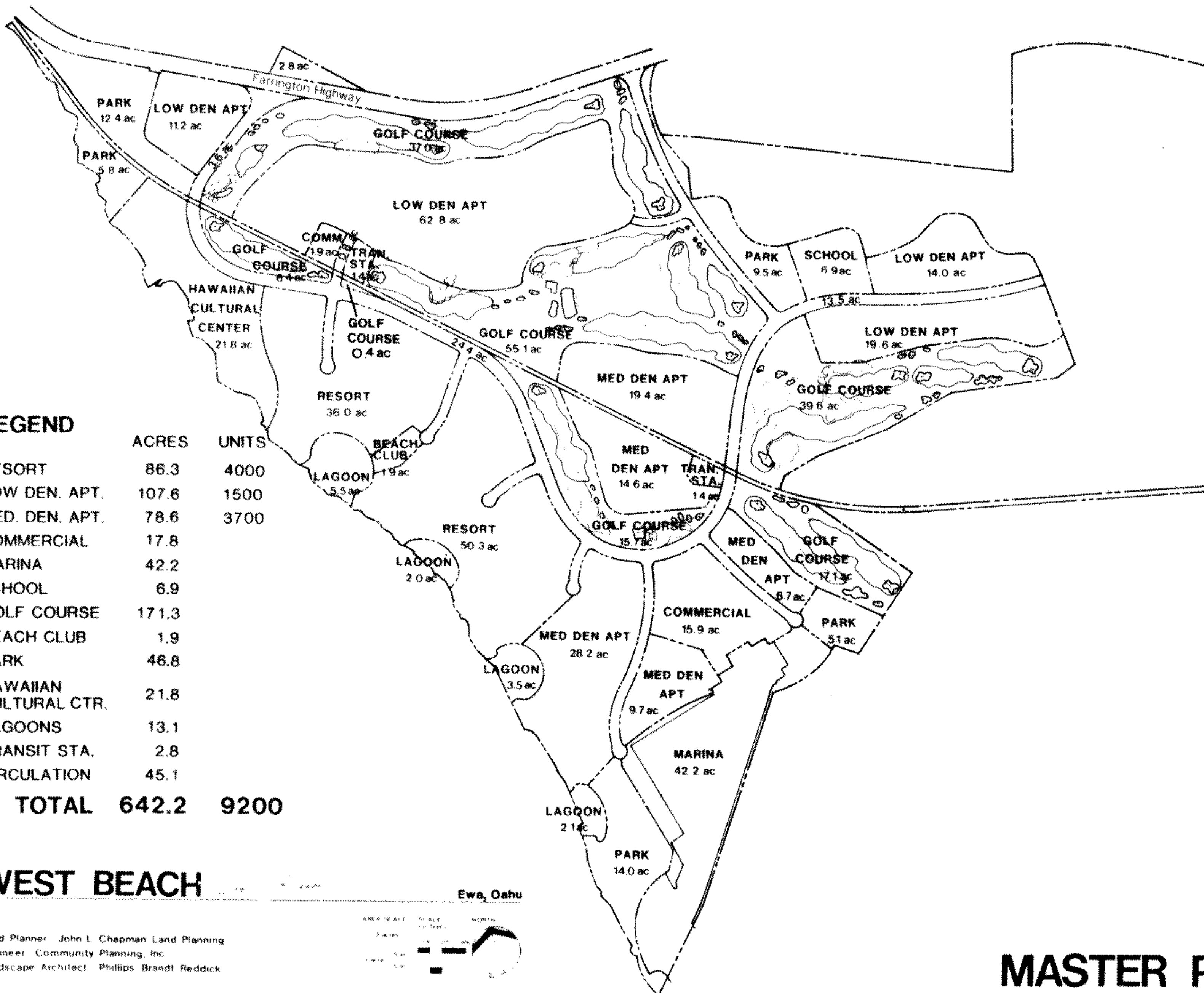


Tax Map Key

WEST BEACH

TAX MAP KEYS

FIGURE 3



LEGEND

	ACRES	UNITS
RESORT	86.3	4000
LOW DEN. APT.	107.6	1500
MED. DEN. APT.	78.6	3700
COMMERCIAL	17.8	
MARINA	42.2	
SCHOOL	6.9	
GOLF COURSE	171.3	
BEACH CLUB	1.9	
PARK	46.8	
HAWAIIAN CULTURAL CTR.	21.8	
LAGOONS	13.1	
TRANSIT STA.	2.8	
CIRCULATION	45.1	
TOTAL	**642.2**	**9200**

WEST BEACH

Ewa, Oahu

Land Planner: John L. Chapman Land Planning
Engineer: Community Planning, Inc.
Landscape Architect: Phillips Brandt Reddick

MASTER PLAN

FIGURE 4

West Beach is intended to create and maintain a feeling of spaciousness comparable to Neighbor Island destination resorts. The elements of open space, buildings and circulation will be arranged to achieve this goal. The land area for West Beach is slightly larger than Waikiki (bounded by the Ala Wai Canal, Kapahulu Avenue, and the shoreline).

Summarized below are the uses, approximate acreages, and residential and resort units contemplated at West Beach.

Table 1

SUMMARY OF USES, ACREAGE, AND UNITS

Land Use	Acres	Units
Low Density Apartment	107.6	1,500
Medium Density Apartment	78.6	3,700
Resort	86.3	4,000
Commercial	17.8	
Beach Club	1.9	
Hawaiian Cultural Center	21.8	
Marina	42.2	
Lagoons	13.1	
Golf Course	171.3	
Park	46.8	
School	6.9	
Transit Stations	2.8	
Circulation	45.1	
TOTAL	642.2	9,200

7.2.1 The Resort Area

There are approximately 4,000 visitor units proposed. The visitor units consists of hotels and resort condominiums, located on the sites designated "Resort," which are along the oceanfront. Midrise buildings at densities of approximately 45 units per acre will be utilized for the hotels and resort condominiums. Structures will vary in height up to a maximum of 150 feet and setback variations from the existing shoreline of approximately 300 feet. The project's objective will be to minimize the visual impact along the oceanfront and protect ocean viewplanes.

7.2.2 The Residential Community

5,200 residential units are proposed, with 1,500 of these designated Low Density Apartments and 3,700 of these designated Medium Density Apartments. The residential units are to be located close to the transit stations and commercial areas.

Approximately ten percent (10%) or 520 units will be built as affordable housing for low and moderate income families. The following acreages, densities and descriptions are approximate and proposed at the present time.

a. Low Density Apartments

Low Density Apartments will consist of two and three story townhouses and flats. The Low Density Apartments will be located near the golf course with the two story buildings being along the course and the three story structures on higher ground. The overall density in this area will average 14 units/acre. The unit types will vary in each of the sites, with studio, one, two, three and four bedroom units. The sizes will vary from approximately 400 square feet to 2,000 square feet. The larger units will generally be located along the primary golf course frontage with smaller units located away from the golf course.

b. Medium Density Apartments

The Medium Density Apartments will consist of two and three story townhouses and flats similar to the Low Density Apartments, and mid-rise condominiums up to 150 feet high. The Medium Density Apartment areas, which will contain 40± to 55± units per acre, will be situated near the golf course and commercial area, with the balance oriented towards the Marina, ocean or lagoons. Generally, the mid-rise condominiums will be located in the interior of each site while the townhouses and flats will have perimeter placements. The 3700 medium density studio, one, two and three bedroom units will range from 350 to 1,500 square feet in size.

7.2.3 Commercial

To achieve a fully integrated resort area, two commercial sites of 1.9 and 15.9 acres will serve the diverse needs of the residential and resort communities. A shopping center similar to San Francisco's Fisherman's Wharf will occupy the larger site. It will have amusements, attractions, restaurants and specialty shops with tourist related goods and services as well as a convenience shopping area where residents may purchase neighborhood type goods and services.

7.2.4 Recreational Amenities

Besides a beautiful location, varied amenities and activities are a prerequisite for any successful destination resort. West Beach's recreational amenities include: four oceanfront lagoons and newly created sandy beaches, an 18-hole golf course and clubhouse, a Hawaiian Cultural Center, four county public parks, a marina, beach and yacht clubs, tennis facilities, a historic railroad, and a Fisherman's Wharf type shopping center.

a. Oceanfront Lagoons and Beaches

1. Beaches

Four newly created sandy lagoon beaches will be West Beach's greatest recreational amenity. The West Beach site includes almost two miles of ocean shoreline. However, these two miles of coastline are without a suitable beach or swimming area for public use.

This ocean amenity, so necessary for a successful resort, will not, however, be reserved exclusively for the visitor. Public access to these newly created beaches and shoreline will be provided. A continuous walkway along the shoreline fronting the resort/residential areas will also be provided. Uses to be permitted within the lagoons are currently unresolved pending determination of juridictional responsibility in these areas. Shoreline maintenance will be provided by the developer or hotel operators.

2. Lagoons

The plan proposes four new ocean lagoons, ranging in size from 2.0 acres to 5.5 acres, to provide about 13.1 acres of sheltered swimming areas for use by the project's visitors, residents, and the general public. These lagoons will be similar to the lagoons presently existing at the site of the Alice Kamokila Campbell Estate, and will be spread out along the coastline from the Alice Kamokila Campbell Estate on the north to the entrance of the deep draft harbor at the southern end.

The present size, depth and configuration for the lagoons are based on extensive analysis of the water and soil conditions at the four new proposed sites and at the existing Alice Kamokila Campbell lagoon.

The lagoons (like the marina discussed below) are designed to take advantage of the existing limestone shoreline. Lagoon development will provide greater access to the ocean and the existing shoreline. This will be achieved through designed reduction of the existing basaltic ledge at strategic access points so as not to create unsafe tidal channels which could prove dangerous to swimmers. In this way, the same natural method that currently flushes the swimming lagoons on the Alice Kamokila Campbell site can be employed to flush the new lagoons. It is planned that sand already existing behind the basaltic shoreline will be used to line the new lagoons the sandy beaches.

b. Golf course and Clubhouse Facilities

An 18-hole course with a driving range and a clubhouse will be sited through the residential areas of the project to create and preserve desirable open space and viewplanes. The course will be open to the general public with priority to West Beach's residents and tourists.

c. Marina

A 42.2-acre marina with about 500 slips for pleasure and commercial boats is planned for the southern tip of the project adjacent to the Barber's Point Deep Draft Harbor. Presently, there is no sheltered coastline to provide locations for boat launching, berthing or mooring. The marina, with its launching ramp, will provide a convenient place for the residents of West Beach, as well those presently living in the surrounding communities, to launch their boats.

As with the lagoons, detailed environmental analysis is being used in its design. Presently, the marina is planned to use the existing Barber's Point Deep Draft Harbor entrance channel. The marina's configuration and depth will ensure maximum moderation of wave action in the entrance channel and promote safe navigation. Orientation and final dimensions of the marina will provide proper tidal flushing of the basin to avoid stagnation. Final determination on entry-exit alternatives is being reviewed and discussed with the U.S. Army Corps of Engineers, and the State Department of Transportation.

The 500 slips will be for pleasure craft and commercial boat use. It is anticipated that the commercial use of the facilities will be for fishing, charters, and excursions. Among the marina's facilities are: boat launch and haul out facilities, fueling and boat repair facilities, public conveniences, and restaurants.

d. Tennis Facilities

Tennis facilities, along with other recreational opportunities, will be provided by the individual hotels and condominiums for hotel guests, condominium residents, and their guests.

e. Beach and Yacht Clubs

The beach and yacht clubs, to be located along the oceanfront and marina, respectively, will afford member residents and tourists of West Beach easy access and use of the shoreline and marina.

f. Hawaiian Cultural Center

This facility will preserve the natural lagoons and the historic resources of the former Alice Kamokila Campbell Estate. It will be a privately owned and operated cultural facility, open to the public, where the arts and crafts of the Hawaiian Culture, (which may include a luau operation) will be practiced and perpetuated.

g. Public County Park Space

Four parks totalling approximately 50 acres will constitute the public county park system at West Beach. Two large beach parks will be provided, one at the primary entrance to the project area and the other adjacent to the marina. A passive park will be provided adjacent to and oriented towards the deep draft harbor. A Community Park will be provided within the residential area, adjacent to the proposed elementary school, to meet the resident's active recreational needs.

h. Historic Railroad

A historic railroad right-of-way connecting Pearl Harbor and Lualualei bisects the property in an east-west direction. It is anticipated that this railroad will be rejuvenated and function similar to the Lahaina-Kaanapali Railroad on Maui.

7.2.5 Major Utility and Infrastructure Requirements

a. Access and Circulation

West Beach is conveniently located close to major Oahu highway systems. These include Farrington Highway and Interstate Highway H-1. Estimated travel time from Honolulu International Airport to the project area is approximately 20 minutes. Farrington Highway is presently a four-lane divided facility which terminates east of the project area and becomes Interstate Highway H-1. The State plans to widen the section of the highway between Kunia and Palailai interchanges to three lanes in each direction.

Ingress and egress to the project area will be provided by two interchange connections (one, a structural interchange and the other an at grade crossing) to Farrington Highway, at the Waianae and Honolulu ends of the project. From these connection points, access to the various activity areas of the project will be achieved by a loop road system. This will be designed as a four-lane divided parkway with extensive landscaping within the right-of-way. A series of cul-de-sac roads will branch off the parkway and provide access to the various resort, residential, commercial and recreation facilities. The cul-de-sac roads which connect to shoreline-oriented areas of the project also provide public access and parking to a shoreline walkway system which will serve the shoreline.

Transportation planning will also provide a system of pedestrian and bicycle ways throughout the project to provide a means of non-vehicular circulation. Plans also call for consideration of an internal tram system for internal mobility between the resort and other planned use and activity areas. While the proposed resort destination may be served by express bus service from Honolulu, future planning considerations envision a fixed right-of-way mass transit system. A reserved alignment is designated in the plan, following the existing railroad right-of-way which runs through the center of the site. Two transit station sites are planned within the project area, where the parkway intersects with the transit right-of-way. These alternate modes of tranportation are intended to provide residents and visitors to West Beach with transportation options, heightened convenience, and reduced reliance on the private car.

The total development at West Beach is expected to generate approximately 35,000 external auto trips per day. Of this, some 31,500 auto trips per day will utilize Farrington Highway east of the project, and the remainder will utilize Farrington Highway west of the project.

When the estimated daily traffic generated by the project is added to the estimated volume of future daily traffic projected for Farrington Highway, it can be concluded that the present highway has adequate 24-hour capacity. However, when peak hour traffic is considered, Farrington Highway is inadequate in the morning for Honolulu bound traffic. This inadequacy, which occurs between the Palailai Interchange and the project's east at-grade intersection, requires an additional Honolulu bound lane on Farrington Highway. Another alternative, which is proposed by West Beach and preferred by the State's Department of Transportation, is the extension of the project's major road (presently terminates in dead-end at the project's east boundary) to Kalaeloa Boulevard. Kalaeloa Boulevard, a four-lane divided highway, which serves as access for the Campbell Industrial Park, connects to the Interstate H-1 Highway at the Palailai Interchange. The cost for providing the additional required laneage, whether by widening of Farrington Highway or extension of the project's major road, will be borne by West Beach.

With the State's planned widening to six lanes of the roadway between Palailai and Kunia Interchanges, the Interstate H-1 Highway will have adequate capacity for the project's estimated traffic. The planned mass transit changes will improve traffic conditions further.

It should also be pointed out that much of the traffic generated by the resort facilities would occur during off-peak hours.

b. Roads

Access to and from Farrington Highway will be provided by major streets with 100 feet and 80 feet rights-of-way. The major thoroughfare will contain 16-foot median strips while the secondary streets will have 12-foot median strips. Parkways along both streets will be 10 feet wide. The developer intents to construct a freeway interchange (subject to approval by the appropriate governmental agencies).

c. Major Landscaping Plan

Extensive landscaping is contemplated for the entire project. This landscaping plan will emphasize the tropical Hawaiian flora as a background setting comensurate with a major destination resort. There will also be major landscaping features for the 18-hole golf course as well as the condominium residential sectors above the major berm road. Where possible, the applicant proposes to use indigenous plants (plants native to Hawaii and adaptable to the Ewa plain) for landscaping.

The overall image envisioned for this resort will be one of tropical beauty. The essential elements that will be utilized to create this image are: the use of coconut palms planted extensively throughout the resort grounds as the dominant plant material; and, the frequent use of water features as aesthetic and recreational amenities (such as lagoons, lakes, waterfalls, ponds, streams, etc.).

The dominant perception of the completed resort should be one of landscape continuity which will be achieved by requiring adherence to three established landscape character zones; Tropical, Streetscape, and Inland Zones.

A "Tropical/Hawaiian" landscape character is designated for all parcels adjacent to the resort's shoreline, lagoons, and marina. The salt spray from the shoreline surf dictates consideration of salt-tolerant plant species for these areas. Due to its harsh environmental conditions, the landscape treatments for the Shoreline State Conservation land will be limited to hardy, salt-tolerant, indigenous plant materials which can survive with minimal maintenance care. These seashore plant materials include Coconut Palms, Beach Morning Glory, "Ilima and Beach Naupaka. Natural paths and viewing platforms will also be provided along the State Conservation shoreline land bordering this resort site. The lagoon islands will be planted and irrigated by a permanent brackish water system.

The Streetscape Zone includes all road rights-of-way to be constructed within the resort and dedicated to the City and County of Honolulu for public circulation use. Mature Coconut Palms will be planted to visually identify and accentuate the Primary Entry/Exit for Farrington Highway travellers. Flowering shrub and ground cover massings will also line these areas.

The Inland Zone is situated along the upper elevations of the project site mauka of the Tropical and Streetscape Zones. The plant materials for this zone should be responsive to the relatively intense sun exposure and occasional windy conditions of this environment. The planned 18-hole international championship golf course occupies a major portion of the Inland Zone.

d. Sanitary Sewage System

The proposed permanent solution for sewage disposal for the estimated 2.5 MGD average daily flow is connection to the City's Honouliuli Sewage Treatment Plant and outfall. The proposed plan for sewage disposal from the project area is to construct collector sewer lines within the project roadways.

Sewage will then be conveyed by gravity flow to two pump stations within the project area. From there, the collected sewage will be pumped into an interceptor sewer for transport and discharged into the Honouliuli Wastewater Treatment Plant. The total distance for the pipe system from West Beach to Honouliuli is approximately six miles. The proposed improvements will be designed to City and County of Honolulu standards and after construction dedicated for operation and maintenance. The City and County of Honolulu, Department of Public Works, has approved the concept of the proposed plan to sewer the West Beach project.

e. Solid Waste Disposal

The project area will be serviced by the City and County of Honolulu Division of Refuse and by private refuse collection companies. Regularly scheduled service will be provided, usually two days a week. Collected waste will then be transported to a public landfill site and/or the Palailai Quarry, which is accepting refuse for landfill at the present time.

Additionally, the City and county plans to implement new landfill facilities in Leeward Oahu, which will be available to service the West Beach area.

f. Water System

Since the project area is the central core of the secondary urban center, the Board of Water supply has agreed to support the West Beach-Makakilo area by insuring the necessary water facilities are provided. (BWS November 29, 1983).

> "Consequently, our resources and capital improvement program have been directed toward meeting that (secondary urban center) obligation."

When fully developed, the West Beach project will require approximately 4.5 million gallons of water per average day based upon a BWS modified dual water system standard (BWS March 19, 1977).

The water system facilities will include wells, pumps, transmission mains, appurtenances, and water storage reservoirs.

The water system is being studied for design and construction as a dual system providing separate storage and distribution facilities for domestic and irrigation water in accordance with the Ewa Water Master Plan which was approved by the Board of Water Supply on July 26, 1984. A water master plan for West Beach, Campbell Industrial Park and the Barbers Point Deep Draft Harbor has been submitted to BWS (February 28, 1985) and is pending approval.

The irrigation water source for the planned golf course, open spaces and landscaped areas will be obtained from wells near or on the site using brackish water previously pumped from an existing on-site plantation well. The demand for potable consumption is being reviewed and evaluated by both the State and City to determine source availability as well as the volume permitted to be pumped from the Pearl Harbor Basin. The proposed water facilities have been filed with the Department of General Planning as an amendment to the Ewa Public Facilities Map.

An adequate water source for the dual system will be provided by a cooperative effort of the land owner, Campbell Estate, and the Board of Water Supply.

g. <u>Drainage System</u>

West Beach is located below several well-defined drainage basins. Existing improvements along Farrington Highway, Nanakai Gardens and Honokai Hale Subdivisions channelize the flow from these drainage areas into culverts and lined channels.

Presently, storm runoff flows through the fallowed cane field area of the project area in unimproved channels and depressions. Erosion occurs during large storms, but as the area is generally dry and these storms occur infrequently, they have not necessitated improvement.

In similar manner, the project's major drainage system which is designed to accommodate the peak storm flow as established by the Department of Public Works of the City and County of Honolulu will consist of grassed drainageways through the proposed golf course as well as designated green belt areas. Lining of these drainageways may be required where velocities are erosive. This may occur mainly in the steeper sections of the golf course and park areas.

The flatter portions of the golf course will be designed to pond and retain runoff from intense storms.

The storm runoff will be conveyed within natural drainageways or, if necessary, within improved channels and discharged into the marina at a controlled rate as is the present practice today at the Ala Wai Small Craft Basin, Keehi

Lagoon, Honolulu Harbor, and Kaneohe Bay. In the initial phases of development, the marina area will be partially dredged to provide a depression for desilting storm water runoff.

On the west side of the project, storm runoff will be discharged into the ocean at an existing drainage discharge point. This will minimize the storm water runoff as much as possible from the shoreline lagoon areas as well as the hotel/condominium sectors. For the storms of lesser intensity, the permeable characteristic of the coral base will absorb storm water via percolation. Hotel and condominium sites will be graded to drain the storm runoff away from the lagoons.

All drainage systems within the streets and project areas will be designed in accordance with City and County standards.

h. Electric and Telephone

Both the Hawaiian Telephone Company and Hawaiian Electric Company have reviewed the preliminary plans and program, and indicated the availability of service for the West Beach project.

Telephone service will be readily available to serve West Beach as respective areas are developed over time. The applicant will furnish all necessary support structures within the project. These include underground ducts or buried cable trenches, which will be furnished in accordance with Hawaiian Telephone Company standards.

Electrical service for the project area will be made available and will be supplied by Hawaiian Electric Company, in accordance with its Tariff. The project will require two 44,000 kv lines and a substation. Onsite transmission lines will be placed underground at the cost of the developer (HECO 6/30/80).

7.2.6 Public Services and Facilities

a. Schools

Public education enrollment is dependent on permanent residents at West Beach. Past experience of the Department of Education indicates that enrollment can be estimated based on the number of resident households, the type of housing, and the purchase price of such housing.

The planned addition of 5,200 residential units will generate additional student enrollment that must be accommodated by existing schools in the vicinity and a future school site provided for in the West Beach plan. The Department of Education has reviewed the West Beach plan and projected student enrollment by school type. They have compared these projections to the capacity of existing schools. Their conclusions are that Ilima and Campbell secondary schools can easily accommodate the anticipated enrollment of from 110 to 310 secondary school students. Barber's Point and Makakilo Elementary Schools have sufficient capacity to accommodate elementary grade students generated by West Beach, estimated between 150 to 350 elementary grade students. The West Beach plan provides a site for an elementary school with adjacent park space for student use should it be required. The school site would be developed when the West Beach population has generated sufficient students to justify a new school facility.

b. Police and Fire Protection

It was estimated that when fully developed, the number of people present at West Beach would average about 21,100. This average is a conservative figure based on a projected resident population of 13,300 and a projected visitor population of 7800. Based on the present Oahu ratio of police employees, to de-facto population, (2.5 police employees per 1,000 populace), there would be a need for 50-60 police employees to cover the area, as well as patrol cars and assorted equipment.

At present there is one engine company at each of the fire stations at Nanakuli and Makakilo. Assessment of fire protection requirements as the result of examining existing services and discussing the nature of the project with Fire Department personnel indicates that the construction of 5,200 residential units and 4,000 resort units in the project would necessitate the equivalent of an additional fire station with an engine company and a hook-and-ladder company. This would require a total of 33 additional staff and appropriate equipment and buildings. Major fires in the region would require that personnel and equipment from neighboring stations also respond. A proposed amendment to the Ewa Development Plan, Public Facilities Map has designated a new fire station at the Campbell Industrial Park. Planning and design will continue to be coordinated with the Fire Department.

c. Public Access

Once development begins, the West Beach project will provide access to the shoreline fronting the proposed parks as well as the resort/residential areas. Both visitors and residents will have access, via designated easements, to the newly created shoreline and the proposed swimming lagoons. This will mean that the recreational value of this site will increase dramatically.

Additionally, such facilities as comfort stations, showers and parking will also be provided. These facilities and beach rights-of-way will be coordinated with the Department of Parks and Recreation, City and County of Honolulu. Public access will be provided along the newly created shoreline. Public access for the proposed lagoons to be developed fronting the resort/residential areas, and the project's need to comply with the City's Park Dedication Ordinance 4621 will require coordination and discussions with the City's Department of Parks and Recreation.

d. Health Care Facilities

Existing health and medical care facilities are located in Waianae, Ewa Beach, and Waipahu. These consist of medical clinics and physician offices. The nearest hospital facility, a private community hospital is in Wahiawa.

Emergency medical services are provided by the City and County of Honolulu Department of Health. Ambulance service is presently located at the Waipahu Fire Station. In the early stages of West Beach development, ambulance service would be provided by the Waipahu facility. Ultimately, as the West Beach population grows, it would be anticipated that ambulance service would be provided from the new fire station facility to be located at Campbell Industrial Park, which will serve the West Beach community.

Future plans for community hospital facilities will greatly improve the accessiblity of comprehensive health care facilities to the West Beach community. New hospital facilities, which have recently been approved by the State Department of Health, include a 136-bed facility in Waipahu and a 116-bed facility at Pearl Ridge. The action by the Board of Health recognizes the importance of Ewa as a growing population center and the need to provide hospital facilities to serve the new communities planned in the Ewa District.

7.2.7 Costs.

The costs for the off-site and on-site improvements will be financed by the applicant. Public funds will be necessary for such services and utilities as (1) pro-rata share of water development if other "public uses" are served; (2) collection of solid waste from park(s), school; (3) costs in providing public services (i.e. police, teachers, firemen, fire station, school buildings, and personnel costs); (4) cost involved in permit processes and approvals and inspection of work items. The applicant's major off-site (indirect) costs include the interchange and intersection connections along Farrington Highway, construction of the sewer line to Honouliuli Wastewater Treatment Plant, resevoirs, wells, and transmission lines for the water system.

7.2.8 Phasing

West Beach is a very complex development which is dependent upon a very detailed and continuous development plan. The actual construction schedule in any given year could vary according to market conditions at that time. Therefore, the number of units in each development period discussed below is an approximation based upon current market conditions.

A. Site Preparation Phase

The initial phase of construction will involve off-site improvements and site preparation of the overall West Beach projct.

Off-Site Improvements

- The highway interchange will be constructed in accordance with State DOT requirements to accommodate the projected traffic volumes.
- The entire off-site water system, including wells, reservoirs, and transmission lines will be constructed to meet BWS requirements.
- All of the off-site sewerage improvements, including sewer force main and interceptor to Honouliuli STP, will be constructed in accordance with DPW guidelines.
- All off-site electrical and telephone improvements will be completed.

Site Preparation

- Mass grading of the entire site will be done in the first phase of construction. Work will probably commence with the partial dredging of the lagoons and marina up to the shore area. The excavated material will be used in the mauka areas for fill and contouring material for the golf course, hotel sites and residential units. All building sites will be graded to provide a building pad upon which the hotel, residential and commercial units will be constructed.

- All on-site infrastructure will be constructed according to City and County standards. The improvements will include water, sewer, drainage, electrical, telephone and cable television infrastructure, up to the property lines of the various building sites. Improvements will be constructed within the proposed roadway rights-of-way.

- The proposed roadway will be constructed in conjunction with the proposed infrastructure improvements. Roadway construction will commence in those areas where mass grading and infrastructure construction could be ongoing in more than one area at any given time.

B. Initial Development Phase

As site preparation of the various development sites is completed, work can commence on the final construction of the golf course, the various buildings and other structural improvements. Work in this phase will occur in a general pattern from the Kahe Point end of the project site and progress toward the deep draft harbor end. However, construction of any of the building sites could be started prior to the complete implementation of the site preparation phase. It is anticipated that all development will be either completed or under construction within a period of ten (10) years from the start of construction.

- Golf course construction will commence upon completion of the mass grading within the golf course area. Mass grading of the upper project site will be completed prior to the completion of the golf course. This will insure that heavy equipment will not have to traverse the golf course once it is finished.

- Once the marina and lagoons have been dredged, final construction of these features will commence. This will include construction of the lagoon bottoms and beach areas, and the marina structural improvements. The shoreline areas of the lagoons and the channel opening of the marina will be breached as construction of these other features are being completed.

- The public easement area facilities, including walkways and landscaping, will be constructed.

- As soon as their building pads are set, construction of the hotel, commercial and residential units can commence.

8. THE AFFECTED ENVIRONMENT

The proposed West Beach project site consists of 642± acres situated in Honouliuli, on the southwestern end of Oahu (see Figure 1). The island of Oahu (594 square miles) is the third largest island in the Hawaiian Islands chain. The Hawaiian Islands are centrally located in the Pacific Ocean, extending northwest to southeast from about 155° to 179° W. longitude and 19° to 28° N. latitude. There are eight major islands in the Hawaiian chain. Honolulu, the state capitol, is located on the island of Oahu. The State of Hawaii is noted for its unique blend of ethnic cultures, its natural beauty, and its subtropical climate, as well as its strategic location in the Pacific.

The land area of the State totals 6,425 square miles. The island of Hawaii also known as the "Big Island," accounts for 4,034 square miles. The remainder is divided among the islands of Maui (729), Oahu (594), Kauai (549), Molokai (261), Lanai (140), Niihau (70), Kahoolawe (45), and 11 islets, rock atolls, or exposed reef (totaling 4 square miles). The major islands are all of volcanic origin and are very mountainous. Elevations range from sea level to 13,796 feet, with many peaks in excess of 2,500 feet.

8.1 General Site Conditions

Presently 642± acres of the project site are vacant and unused (figure 2). About 162 acres were used for sugar cultivation by Oahu Sugar Company Limited until August, 1983, when the last harvest occurred. Oahu Sugar has discontinued all sugar cultivation within the site.

Ten (10) additional acres of the total site, which were part of the former residence of Alice Kamokila Campbell, are currently used as a luau site.

8.2 Surrounding Uses

The northern boundaries of the project follow along Farrington Highway except for an area which abuts the existing Honokai Hale and Nanakai Gardens residential subdivisions located along Farrington Highway. The eastern boundaries of the property abut fallow agricultural lands formerly planted in sugarcane and existing undeveloped lands. The southern boundaries of the site abut the existing Malakole barge basin (site of the Barbers Point deep draft harbor which is currently under construction). The western boundaries follow along the shoreline from the barge basin to Farrington Highway. The Hawaiian Electric Company's Kahe Power Plant is located approximately .5 miles north of the project site.

8.3 Geology

With the exception of a strip of area less than 1,000 feet wide that abuts a portion of the Farrington Highway property line, caprock underlies the proposed West Beach project site. Generally, the entire Ewa Plain area, below an elevation of approximately 100 feet, consists of caprock. Caprock, largely comprised of different types of terrestrial and marine sedimentary deposits, form a wedge that retards the seaward movement of fresh groundwater from the inland basaltic aquifer. Varying degrees of permeability are found in the different deposits of caprock. However, the overall effect is that caprock has a low permeability in comparison to that of the fresh basaltic aquifer.

A study conducted for the Barbers Point Deep Draft Harbor (R.H. Dale 1968) indicates that the Deep Draft Harbor was excavated within the coralline aquifer to a depth of approximately 40 feet. Since the coral aquifer and the Waianae Volcanic Series aquifer are independent of each other due to the aquiclude that separates them, the proposed adjacent marina and lagoons will have no effect on the potable water supply of the Waianae Volcanic Series aquifer.

8.4 Soils

The soils included in the proposed project fall within the Lualualei Fill land-Ewa association (reference: Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii, prepared by the U.S. Department of Agriculture, soil Conservation Service, issued August, 1972). This association is characterized by deep, nearly level to moderately sloping, well drained soils. Specifically within the site are coral outcroppings, five soil series (Ewa, Jaucas, Keaau, Lualualei and Mamala), with Lualualei and Keaau series each having five and three sub-series, respectively. With two exceptions, the various soil and cover types are characterized by slow runoff and an erosion hazard which is classified as slight. The exceptions are Mamala Stony Silty Clay Loam (Mnc) located in a narrow band near the Barbers Point side (south) of the property and Lualualei Extremely Stony Clay (LPE) situated generally within 500 feet of the Farrington Highway property line. The runoff for Mnc is considered very slow to medium, with an erosion hazard of slight to moderate; whereas, the runoff for LPE is classified medium to rapid, and erosion moderate to severe.

8.5 Topography

The site of the proposed project is characterized by relatively gently slopes that range from 0 elevation (sea level) at the shoreline to a maximum of about 100 feet at the northern boundaries of the project site. As indicated, two-thirds of the site are presently vacant and unused fallow sugarcane lands formerly leased by Oahu Sugar Company. The remainder of the site (except for the Alice Kamokila Campbell estate) consists of an extensive coverage of shrubs such as kiawe, haole koa, and grasses. The nearly two miles of shoreline is characterized by emerged calcareous reef with limited pockets of sandy beaches.

8.6 Climate

The West Beach project site, situated on the Ewa Plain (also referred to as the Honouliuli Plain) is considered by Hawaii standards to be generally hot and dry. The average annual precipitation for the entire Ewa Plain is approximately 20 inches, while the temperature of the normal, average warmest month is within two degrees of downtown Honolulu. The average temperature range for West Beach is between 72°F and 80°F. Winds are predominately from a northeasterly direction (tradewinds). Winds from a southeasterly direction (Kona wind) may be expected 5 to 8 percent of the time.

8.7 Cultural Heritage

The project site was part of the ancient Hawaii ahupuaa (a major division of land) of Honouliuli. The name was later used by James Campbell for a ranch he owned that encompassed approximately the same boundaries of the ahupuaa. Hawaiian legend does not accord much importance to the Ewa District. However, recent archaeological investigations found archaeological and paleontological resources in the area previously unknown to science. The find qualified the Barber's Point Archaeological District as being eligible for inclusion to the National Register of Historic Places, however, the site has not been nominated for inclusion into the Register. A portion of the project site lies within the archaeological district.

In 1873, James Campbell purchased the Honouliuli Ranch. Campbell bored the first artesian well near West Loch (Pearl Harbor) in 1879, thereby providing a vital and economically profitable resource to this area. A large parcel of land was subsequently leased to Ewa Plantation for sugarcane cultivation.

Extensive sugarcane cultivation in the late 1800's led to the construction of Oahu Railway and Land Company (OR&L) Railroad. Although no longer in use today, the railroad's right-of-way (40 feet) has been nominated to the National Register of Hitoric Sites and Places.

The portion of the site bordering the sea was not used for growing sugarcane, but it was cleared up and recontoured in 1942 for the construction of three Army Camps.

The portion of the property bordering the sea was later reoccupied by Mrs. Alice Kamokila Campbell (a daughter of James Campell) after the war. Mrs. Campbell maintained two ponds along the shoreline area and had palms and other native trees planted replacing the abundant kiawe (algaroba) trees surrounding her home. Mrs. Campbell lived on and off at the estate for three decades until 1968 when she moved to San Francisco. A portion of the estate is presently used for holding luaus and other affairs.

8.8 Socioeconomic Conditions

8.8.1 The Island of Oahu

The island of Oahu is under the jurisdiction of the City and County of Honolulu. It is the most populated (1980 population 762,565) and urbanized island; versus the State's population of 964,691 in 1980. The island of Oahu is divided into seven districts: Honolulu (1980 pop. - 365,048), Koolaupoko (1980 pop. - 109,373), Koolauloa (1980 pop. - 14,195), Waialua (1980 pop. - 9,849), Wahiawa (1980 pop. - 41,562), Waianae (1980 pop. - 31,487), and Ewa

(1980 pop. - 191,051). The population figures provides a fairly good comparison of those areas which are urbanized. The project is located within the Ewa District, but is nearer to the Waianae population centers (Nanakuli, Waianae, Maili). In recent years population in the Ewa District, has grown the most rapid (44.4 percent from 1970 to 1980) in comparison to the other districts of Oahu. This has been the result of suburban developments outside metropolitan Honolulu. The increasing cost of land and the scarcity of land resulted, in the late 1960's in the development of single-family homes, shopping centers, and industrial areas in the Ewa District. The development of a Freeway system (H-1) also facilitated commuting between metropolitan Honolulu and the Ewa District. This urbanization has and is continuing to reduce the large acreages of sugarcane and pineapple fields which once dominated land use.

8.8.2 Oahu's Economy

The decline of the sugarcane and pineapple industries is occurring Statewide. Hawaii's natural environment has lured many visitors (both from the mainland U.S. and in recent years from Japan) to the islands. Since the early 1970's visitor expenditures ($3.7 billion in 1982) have surpassed Federal Defense expenditures ($1.7 billion in 1982), followed by sugar ($ 352 million in 1982) and pineapple ($ 206 million in 1982). Currently, tourism accounts for 30 percent of all civilian jobs, personal income and tax revenues in the State.

Economic forecasts (governmental and private) show that the visitor industry will continue to be the primary source of new jobs and income in the future. However, the City has placed a limit on the number of hotels which can be developed in Waikiki, the primary tourist center in Oahu. Coupled with the rapid development of resort complexes on the neighbor islands, such as Kaanapali and Lahaina in Maui, Kohala and Kona on the Big Island, and Princeville and Poipu on Kauai, Oahu may not keep up with the overall State visitor revenue increases in future years.

8.8.3 Anticipated Tourism Growth

It is a common industry opinion that the visitor growth experienced in Hawaii during the past two decades (1963 - 1982), 12.8 percent annual growth, will not be experienced to the year 2000. Pannell Kerr Forster has projected annual growth of 3.0 percent during this period. The years 1980 and 1981 saw a stabilization of State visitor growth due to inflation, unemployment and rising air fares; 1982 has ushered in the 4 millionth annual visitor to the State with a strong surge in growth; 1983 and beyond are expected to bring continued growth.

As the Hawaii tourism industry regains a growth posture, additional facilities to accommodate the transient visitors on Oahu will be required if the natural increases in the market are to be assimilated. Due to constraints of the Waikiki Special Design District, limitations on accommodations growth will continue to be imposed and, therefore, appropriate sites away from Waikiki will afford an alternate resort experience on Oahu.

In order to plan for the future of Oahu's transient visitors the market's needs must be projected. Table 2 illustrates a visitor projection for the

State of Hawaii to the year 2000. This projection is in accord with the growth criterion used by the State Tourism Plan, Department of Planning and Economic Development. This is based on growth rates of approximately five percent (5%) between 1982 - 1985, four percent (4%) from 1986 - 1990, two and one-half percent (2.5%) between 1991 and 1995 and one percent (1%) between 1996 - 2000.

In order to compute demand for transient accommodations, demand variables must be analyzed and applied to the projected State visitors. Table 3 illustrates these historic variables from 1970 to 1983 and a projection to the year 2000. In accordance with the trend of a smaller percentage of State visitors staying on Oahu, the study projected this decrease to continue, providing a greater share of total visitors to the Neighbor Islands.

The percentage of Oahu visitors staying in transient accommodations peaked in 1976 at 95 percent and has decreased since that time. It is the opinion of resort economist that this trend will reverse itself (as is already evident in 1981 - 1983) whereby a greater percentage will stay in hotels and condominiums as alternative types of accommodations become less available (partially as a result of a growing shortage of primary housing for Oahu's residents).

The average length of stay of visitors has also decreased reflecting the shift to a greater percentage of FIT (free independent travelers) visitors and fewer tour/group visitors. This trend is projected to stablize at 4.75 nights.

The double occupancy factor (the average number of persons staying in a hotel room) increased from 1.92 in 1972 to 1.96 in 1982. This variable is expected to stabilize at 1.95 persons per occupied room.

Table 4 is presented to illustrate the computational use of these variables in projecting the annual demand for transient accommodations.

Table 5 shows the existing and anticipated supply of rooms on Oahu. The HVB (Hawaii Visitors Bureau) provides this data three times annually and these numbers are current as of May, 1983. Presented below are the specific future projects:

Project	Planned Units	Date Fully Operational
Halekulani	456	January, 1984
*The Hobron (596)	417	July, 1984
*The Waikiki Beach Tower (140)	98	July, 1984
*The Mandarin Tower (580)	406	January, 1985
Aloha Tower Plaza Hotel	500	January, 1987

*These properties are condominium developments designed to be used for transient visitor usage. Figures in parentheses are total units available, where the planned units is an estimate of the number to be used for transient use.

Table 6 shows a comparison between the projected demand and supply of

TABLE 2

VISITOR PROJECTION - STATE OF HAWAII
1983 - 2000

		Westbound				Eastbound				Summary Total	
	Year	State Visitors	Annual Increase	Annual Trend Growth	Approximated Trend Growth	State Visitors	Annual Increase	Modified Trend Growth	Approximated Trend Growth	State Visitors	Annual Rate of Growth
Actual	1961	248,540				71,267				319,807	
	1962	279,625	12.5			82,520	15.8			362,145	13.2
	1963	332,680	19.0			96,460	16.9			429,140	18.5
	1964	460,290	38.4	22.8		103,635	7.4	15.9		563,925	31.4
	1965	576,218	23.2	26.3		119,701	15.5	22.0		686,919	21.8
	1966	686,886	21.1	25.3		148,570	24.1	24.4		835,456	21.6
	1967	893,103	30.0	20.8	18.5	231,715	56.0	26.0	16.5	1,124,818	34.6
	1968	1,015,844	13.7	18.7	17.5	298,727	28.9	27.3	15.5	1,314,571	16.9
	1969	1,181,029	16.3	16.0	16.5	345,983	15.8	20.8	14.5	1,527,012	16.2
	1970	1,326,135	12.3	14.9	15.5	420,835	21.6	15.4	13.5	1,746,970	14.4
	1971	1,430,325	7.9	15.4	14.5	388,619	(7.7)	14.0	12.5	1,818,944	4.1
	1972	1,782,737	24.6	13.4	13.5	461,640	18.8	12.2	11.5	2,244,377	23.4
	1973	2,067,861	16.0	10.9	12.5	563,091	22.0	8.5	10.5	2,630,952	17.2
	1974	2,184,620	5.6	12.6	11.5	601,869	6.9	11.7	9.5	2,786,489	5.9
	1975	2,207,417	1.0	9.3	10.5	621,688	3.3	7.9	8.0	2,829,105	1.5
	1976	2,551,001	15.6	8.0	9.5	668,550	7.5	2.6	7.5	3,219,551	13.8
	1977	2,763,312	8.3	7.6	8.5	670,355	.3	7.0	6.0	3,433,667	6.6
	1978	3,030,999	9.7	6.8	7.5	639,310	(4.6)	8.0	5.5	3,670,309	6.9
	1979	3,139,455	3.6	3.2	6.5	821,076	28.4	8.1	5.0	3,960,531	7.9
	1980	3,036,933	(3.3)	3.8	6.0	888,372	8.2	8.4	5.0	3,934,504	(.7)
	1981	2,974,791	(2.1)		5.5	959,832	8.0		5.0	3,934,623	.2
	1982	3,278,519			8.2	964,397			0.5	4,242,916	7.8
Projected	1983	3,409,700			4.0	1,002,900			3.9	4,412,600	4.0
	1984	3,580,200			5.0	1,053,000			5.0	4,633,200	5.0
	1985	3,753,100			4.8	1,102,500			4.7	4,855,600	4.8
	1986	3,926,900			4.6	1,152,100			4.5	5,079,000	4.6
	1987	4,099,700			4.4	1,202,800			4.4	5,302,500	4.4
	1988	4,270,700			4.2	1,254,500			4.3	5,525,200	4.2
	1989	4,439,000			3.9	1,307,200			4.2	5,746,200	4.0
	1990	4,605,000			3.7	1,359,500			4.0	5,964,500	3.8
	1991	4,748,300			3.1	1,407,100			3.5	6,155,400	3.2
	1992	4,889,300			3.0	1,450,700			3.1	6,340,000	3.0
	1993	5,027,600			2.8	1,489,900			2.7	6,517,500	2.8
	1994	5,159,900			2.6	1,527,100			2.5	6,687,000	2.6
	1995	5,285,300			2.4	1,562,200			2.3	6,847,500	2.4
	1996	5,397,800			2.1	1,593,500			2.0	6,991,300	2.1
	1997	5,496,500			1.8	1,620,600			1.7	7,117,100	1.8
	1998	5,579,000			1.5	1,644,900			1.5	7,223,900	1.5
	1999	5,649,300			1.3	1,661,300			1.0	7,310,600	1.2
	2000	5,701,800			0.9	1,674,600			0.8	7,376,400	0.9

TABLE 3

HOTEL DEMAND VARIABLES
ISLAND OF OAHU

	Percent To Oahu	Percent Using Hotels	Average Length of Stay	Double Occupancy Factor
1970	N/A	87.2	5.13	N/A
1971	N/A	87.9	5.08	N/A
1972	96.4	91.2	5.10	1.92
1973	94.0	91.4	5.16	1.93
1974	92.3	93.3	4.97	1.92
1975	90.7	93.2	5.02	1.93
1976	89.7	95.1	5.07	1.95
1977	86.9	92.5	4.85	1.97
1978	85.2	91.3	4.84	1.97
1979	82.7	89.9	4.81	1.96
1980	80.1	89.4	4.89	1.94
1981	78.4	90.6	4.86	1.94
1982	80.7	91.2	4.76	1.96
1983	80.5	91.7	4.75	1.95
1984	80.3	92.2	4.75	1.95
1985	80.1	92.7	4.75	1.95
1986	79.9	93.2	4.75	1.95
1987	79.7	93.7	4.75	1.95
1988	79.5	94.0	4.75	1.95
1989	79.3	94.0	4.75	1.95
1990	79.1	94.0	4.75	1.95
1991	78.9	94.0	4.75	1.95
1992	78.7	94.0	4.75	1.95
1993	78.5	94.0	4.75	1.95
1994	78.3	94.0	4.75	1.95
1995	78.1	94.0	4.75	1.95
1996	77.9	94.0	4.75	1.95
1997	77.7	94.0	4.75	1.95
1998	77.5	94.0	4.75	1.95
1999	77.3	94.0	4.75	1.95
2000	77.1	94.0	4.75	1.95

TABLE 4

PROJECTED ROOM NIGHTS REQUIRED
ISLAND OF OAHU
1983 - 2000

ear	Projected State Visitors	Percent to Oahu	Oahu Visitors	Percent Utilizing Hotels	Visitors Utilizing Hotels	Average Length of Stay	Annual Visitor Nights	Double Occupancy Factor	Annual Hotel Room Nights
983	4,412,600	80.5	3,552,100	91.7	3,257,300	4.75	15,472,200	1.95	7,934,500
984	4,633,200	80.3	3,720,500	92.2	3,430,300	4.75	16,293,800	1.95	8,355,800
985	4,855,600	80.1	3,889,300	92.7	3,605,400	4.75	17,125,700	1.95	8,782,400
986	5,079,000	79.9	4,058,100	93.2	3,782,200	4.75	17,965,300	1.95	9,213,000
987	5,302,500	79.7	4,226,100	93.7	3,959,800	4.75	18,809,300	1.95	9,645,800
988	5,525,200	79.5	4,392,500	94.0	4,129,000	4.75	19,612,700	1.95	10,057,800
989	5,746,200	79.3	4,556,700	94.0	4,283,300	4.75	20,345,800	1.95	10,433,700
990	5,964,500	79.1	4,717,900	94.0	4,434,800	4.75	21,065,500	1.95	10,802,800
991	6,155,400	78.9	4,856,600	94.0	4,562,200	4.75	21,684,800	1.95	11,120,400
992	6,340,000	78.7	4,989,600	94.0	4,690,200	4.75	22,278,500	1.95	11,424,900
993	6,517,500	78.5	5,116,200	94.0	4,809,300	4.75	22,844,000	1.95	11,714,900
994	6,687,000	78.3	5,235,900	94.0	4,921,800	4.75	23,378,400	1.95	11,988,900
995	6,847,500	78.1	5,347,900	94.0	5,027,000	4.75	23,878,400	1.95	12,245,300
996	6,991,300	77.9	5,446,200	94.0	5,119,400	4.75	24,317,400	1.95	12,470,500
997	7,117,100	77.7	5,530,000	94.0	5,198,200	4.75	24,691,400	1.95	12,662,300
998	7,223,900	77.5	5,598,500	94.0	5,262,600	4.75	24,997,400	1.95	12,819,200
999	7,310,600	77.3	5,651,100	94.0	5,312,000	4.75	25,232,100	1.95	12,939,500
2000	7,376,400	77.1	5,687,200	94.0	5,346,000	4.75	25,393,400	1.95	13,022,300

TABLE 5

INVENTORY OF EXISTING AND PLANNED TRANSIENT ACCOMMODATIONS
ISLAND OF OAHU

	Existing, May 1983			Anticipated Additional Units (Scheduled Completion Date)			(Existing and Anticipated Units)		
	Competitive	Noncompetitive	Total	1984	1985	1987	Competitive	Noncompetitive	Total
Waikiki	29,373	733	30,106	714	664		30,751	733	31,484
Ala Moana	1,544	121	1,665				1,544	121	1,665
Honolulu	-	61	61			500	500	61	561
Airport	579	118	697				579	118	697
Leeward Oahu	196	1,118	1,314				196	1,118	1,314
Windward Oahu *	487	280	767				487	280	767
Total	32,179	2,431	34,610	714	664	500	34,057	2,431	36,488

* Existing units at Turtle Bay Resort are included in the Windward Oahu totals. An additional 1500 units are planned for completion by the year 2000.

rooms to the year 2000. This approach to planning Oahu's tourism industry future directly analyzes all of the necessary visitor market variables. As Table 5 indicates, 2 projected need for approximately 5,400 additional transient rooms in 1990, 10,700 by 1995 and 13,500 by 2000.

8.8.4 Social Impact of Development

This section has been added to the Final SEIS to respond to comments received on the lack of discussion on this subject. The introductory statement summarizes what has taken place to date during recent State Land Use Commission hearings as well as Development Plan public hearings.

Socioeconomic impacts on the adjacent residential districts particularly Waianae, Ewa, and Waipahu have been the subject of varied discussions, depending on the view perspective one takes. The applicant considers Waianae as a vast labor pool that can be aided in great measure by West Beach's development. There will be employment opportunities for those Waianae residents that choose to take advantage of the various jobs that will be made available. These jobs will range from entry level maintenance jobs to management level jobs that will be offered to those applicants that will or can meet the qualifications for these skill level positions. There is a positive attitude being taken by the applicant in the sense that they want to hire more local residents rather than off-island employees.

It should be stated at this point that there have been large numbers of supporters turning out for the West Beach project at the various public hearings conducted by the City Council, City Planning Commission, and DGP for Development Plan amendments, and other reviews of the project. There are many people seeking employment and an opportunity to be self-sustaining; there are also many people that are opposed to the project and view West Beach as a threat to their lifestyle. This is unfortunately, a common happening whenever a major project of this size is offered for approval. We cannot take one position over the other, but instead, we would refer all governmental agencies to the attendance records and large numbers of citizens testifying on behalf of West Beach at the public hearings held to date.

a. Demographic: Whether the development will:

(1) Increase or decrease the residential population. Development of West Beach will increase Ewa DP district by 10,400 people (5200 dwelling units x 2.0/unit). Whether there will be additional increases in the Waianae DP District is speculative at best since the resident population at West Beach according to the Housing market profile determined by Chaney, Brooks & Company, the housing consultants to West Beach, will be made up of a different residential type of population. "These households will be representative of the entire range of the population from a socio-economic point of view, and will have a varying household makeup, including singles (young and old), young marrieds, empty nesters and small families."

(2) Increase or decrease the visitor population. Development of West Beach will increase the visitor population by approximately 6240 visitors. This is based on

4000 visitor units x 1.95 occupants per unit=7800 visitors x .85% occupancy rate=6240 visitors. These calculations were provided by Pannell, Kerr, Forster economic consultants for West Beach.

(3) Demographic data taken from the 1980 census and the 1984 State of Hawaii Data Book are presented in summarized narrative form for a basis of comparison. Additional data by individual tracts are available in the above referenced materials. For the purpose of the comparisons made below, Ewa District was defined by census tract numbers 84, 85, 86.01 and 86.02. Waianae District was defined by tracts 96.01, 96.03, 96.04, 97 and 98.

Population Growth

	Honolulu	Ewa	Waianae
1970	630,528	19,328	24,077
1980	762,565 (+21%)	23,797 (23%)	31,487 (+31%)
1983	783,350 (+3.3%)	24,494 (+2.9%)	31,883 (+1.2%)

Age Characteristics
According to the 1980 census, Waianae had a significantly younger (nineteen years and under) population compared to Honolulu County. Accordingly, the working population was proportionatly smaller. Ewa also exhibits this tendency although the working age population is larger than Honolulu County's as a whole.

Place of Birth
According to 1980 census, almost half (48%) of Ewa's residents were born locally which is slightly lower than Honolulu County (55%). Waianae has a significantly larger local born population of 76%.

Years of Schooling
Both Ewa and Waianae have higher than Honolulu County highschool completion rates (36%) with 41 and 40% respectively. However, four year college completion rates for Ewa (30%) and Waianae (19%) are significantly below the Honolulu County rate of 40%.

Journey to Work
Both Ewa and Waianae show higher than Honolulu county useage of private transportation (including car pools) for work related travel. Both study districts also exhibit lower useage of public transportation.

Labor Force
Labor force distinctions between Ewa and Waianae are markedly different in total labor force numbers. While Ewa's labor force consist of 70% of all persons 16 years and older (a figure on par with Honolulu County), Waianae has a much smaller labor force of 54%. Compared to Honolulu County's unemployment rate of 4.6%, Ewa and Waianae have higher rates of 6.4 and 7.7% respectively.

Income Levels in 1979
Median and mean incomes for Honolulu County households were $21,077 and $25,180 respectively. Ewa median income was similar ($20,184) although lower as a whole which is reflected in the mean ($20,455). Waianae median and mean incomes are significantly lower at figures of $15,552 and $18,254 respectively.

(4) Change the character or culture of the neighborhood. If one is to take the "neighborhood" to mean the most adjacent community (Honokai Hale), there is no question that there will be a change in the character of the neighborhood. From a contrasting single family detached residential community to a multi-family residential, resort, recreational, and commercial master planned community, there is a distinct difference. Further, if one is to extend the cultural differences to the adjacent Waianae District, the rural district differences are more pronounced.

Social impacts on Waianae may occur from development of West Beach; however, the questions of whether these impacts are discernible or not is debatable.

The residents and tourists of West Beach could take advantage of the resources of Waianae such as beaches, parks, commercial shopping facilities, theaters, etc., and no doubt, some will do so. However, there will be ample amenities planned within the project and there are attractive, comparable resources avaialble elsewhere. The questions is: what proportion of the residents and visitors will use the resources of Waianae and how frequently will this happen? The anticipated use of Waianae's resources by West Beach residents and visitors is expected to be minimal. At the present time, there is no incentive for people outside of Waianae to go there for their normal activities of recreation, shopping, or entertainment. This is due largely to the fact that the rural makeup of Waianae is such that the developed resources available have been established for the primary use of the Waianae community. It is not and has not been considered a regional attraction for shopping or entertainment. The beaches and parks are world renowned for the offshore fishing and swimming, but for visitors, the trend is to go to Waikiki first, then to the balance of the island tourist destinations (Sea Life Park, Polynesian Cultural Center).

If the residents of Waianae, or even a small portion of the residents/businesses of Waianae make an effort to attract the potential market that is in West Beach, impacts, both positive and negative could become larger. On the positive side, more money will be spent in Waianae, generating income and jobs. The negative side is that there will be more people doing business in Waianae, a development that some people in the community will resent. This trend towards more increased economic activity is a statewide trend and involves both tourism and business in general.

Crime as a subject was found by Fujii and Mak (1980) to have a statistically significant relationship between tourism and reported crime and also between unemployment and crime. The relationship between tourism and crime can be questioned on theoretical and methodological grounds. However, the study indicates that as tourism increases in an area so will the rate of crime. There are then two potentially counteractive events taking place: 1) the increase in tourism could lead to an increase in reported crimes; 2) the increase in employment could lead to a reduction in the crime rate.

Employment will be provided for Waianae residents, with more jobs available for women than men. The increase in the number of jobs is a benefit, both in the social context of increasing employment in a high unemployment region as well as from the increased income for those people receiving employment. However, this could lead to some disruption of social norms in traditional families where male, head of household, roles are suddenly change by gender equality. This type of phenomena occurs whenever jobs for females open up in a low income or high unemployment areas.

Possible housing impacts include: 1) increased demand by employees of the proposed development seeking housing, and 2) increased demand due to increased household incomes in Waianae resulting from the development (a result of expenditures from West Beach residents; tourists visiting and shopping in Waianae as well as from the increased incomes of current resdents of the area employed at West Beach). The social tradeoff occuring from increased income due to economic growth is an increased demand for housing, which is generally reflected in an increase in the cost of housing. The question then is of social benefit and tradeoff with increased incomes and higher housing costs, or with lower incomes and probably higher rates of unemployment and cheaper housing. This decision is best left to the Waianae community to answer since it is their community's future that is at question. Another issue of importance is where employment centers for the project are. Many of the employees will come from Waianae and also from Waipahu, Ewa, Makakilo, Mililani, and other sectors in Leeward Oahu, As such, they will be coming from established households and will probably find it to their advantage not to move either to West Beach or Waianae.

b. Land Use Commission Testimony on Social Impacts

Included for review and full disclosure are summarized comments of public witnesses' testimony provided at recent State Land Use Commission public hearings. These summarized testimonies reflect both positions. Page numbers are indicated in parenthesis so that reviewers may verify if they wish, the Transcript of Proceedings that were the source of these summarized testimony.

Testimony of Representative Peter Apo

Representative APO is in favor of the WB project mainly because there's lack of jobs in the Waianae/Nanakuli area and also because the Leeward area is in need of a major economic center or some major economic activity. (34)

APO feels that Waianae/Nanakuli are losing the cream of their youth to other communities because there are no jobs in the area. Without the cream of their youth, they lose any hope for building a strong political or leadership base within the community. (35-36)

APO feels that those community groups who want to practice a subsistence lifestyle are opposed to WB mainly because they do not have any alternatives to turn to when these types of projects are developed. Therefore, APO has introduced a resolution asking for a study to look into options of providing State lands for these people who want to have a subsistence lifestyle. (37-38)

APO is not in favor of the proposals that they have for the transportation system in the Ewa area. He is in favor of looking into mass transit systems. (39-40)

(The Chairman clarifies at this time that the Commission is treating this application of WB as a petition for a boundary amendment from agricultural to urban district, and not as a reopening of the pevious petition nor are they accepting evidence or findings from the previous petition.) (41-42)

Testimony of Charles Dick Beamer

BEAMER is President of Ewa Beach Community Association and a member of the Ewa Neighborhood Board. (42)

BEAMER states that the Ewa Beach Community has always been in favor of the WB project because of its job opportunities for the community and also because it will provide recreational and social amenities that are lacking in the Leeward area. They also feel that once WB is designated as a resort area it will increase their tax base. (42-43)

Testimony of Kermit Brown

BROWN is a retired school teacher who lives in Waianae. BROWN is in favor of the WB project mainly because of the opportunity for jobs in the area. He is also in favor because of the opportunity to use the facility along with the WB which they haven't been able to use before. (44-45)

Testimony of Koco Bungo

BUNGO resides on Haleakele Avenue, which is part of the Old Homestead area. BUNGO and several of the residents in her area are for the WB project again because of the employment opportunities for the people in the area. They also feel that the project will meet the recreational, social and educational needs of the people living in the area. (46-48)

Testimony of Archie Cox

COX lives in Honokai Hale, subdivision nearest to WB. Majority of people in Honokai Hale are for WB because they need jobs. (55)

COX feels they need jobs in their area for their children. 90% of families in their subdivision have to go to town to work. (55-56)

COX feels that his children should have a chance like anyone else to apply for the jobs at WB, being that they live in the area and know the area. (56)

COX's position would not change even if Honokai residents did not have priority for the jobs at WB. Feels that you have to go out and fight for jobs. (57-58)

Residents of Honokai at first rebelled about the project but after meetings with developer about big hotels blocking the ocean, most of the community is now for the project. (59)

Testimony of Frank Commendador

COMMENDADOR recently moved to Woodlawn Terrace but was raised in Waianae and is presently President of Puu Heleakala Community Association (located 3 miles from West Beach). (60)

COMMENDADOR is personally in favor of the project, and after discussions with the Board of Directors in 1982, 1983 and May 1984, the vote was unanimously in favor of the project. (60)

Testimony of Melvin Dumancas

DUMANCAS is a Waianae resident speaking in favor of WB. He feels that WB will provide an economic base for job opportunities and housing and also that they will use whatever recreational facilities are developed. (60-62)

DUMANCAS is a presently unemployed but was formerly a quality control technician with Kaiser Cement. (62)

Testimony of Charles Rasmussen, Jr.

RASMUSSEN is a resident of Ewa Beach and is also in favor of the WB development because of the many job opportunities that will be provided for the unemployed in Waianae and Nanakuli. (64-67)

Testimony of George Doman

DOMAN is a resident of Maili and is in favor of WB because of the job opportunities and for what WB will offer for the future for the children of Waianae Coast. (69-71)

Testimony of Kiyabu-Sabala

KIYABU-SABALA is a resident of Ewa Beach and is in favor of the WB project also because of the jobs that will be provided to the residents of the area and improved services. (71-73)

Testimony of Mike Crozier

Representative CROZIER is a resident of Makakilo and he's in favor of WB and states that the people of Makakilo have supported WB for the last 5 years. Again, the main reason for support was the opportunities that WB will provide to the young people entering in the job market. (76-78)

Testimony of William Crabbe

CRABBE is a resident of Waianae and is in favor of WB because of the job opportunities it will produce for the Waianae Coast. He also feels that WB will create a better source of tax revenue for both City and State. (78-81)

Testimony of Robert Hoffman

HOFFMAN is a resident of Makakilo and is a small businessman in Waipahu and a member of the Neighborhood Board No. 23. He feels that this is a chance for them to them to bring development into Ewa and the Waianae Coast, and at the same time bring in new jobs for their people. (81-84)

Testimony of Senator James Aki

AKI represents the 19th Senatorial District (District of West Beach) and feels that this is a very important project for their district because they have been searching for a strong economic base in the Leeward area. He also feels that the economic aspects and social aspects will be beneficial to this area. (90-92)

AKI states that the Senate has not taken any position on this project since this district has been recently apportioned. (93)

AKI states that the State has developed 2 exploratory wells, one in Makaha Valley and one in Waianae Valley. If the wells prove productive, it will help the Waianae people as far as WB taking water away from them. (94-96)

As far as improvement of the transportation system for the Waianae area, AKI is aware that the existing highway which has been developed into a 4-lane highway is sufficient to take care of this project and developments that are planned in the area. (96)

AKI has discussed this project for many years with various people in his district and the consensus is that they need jobs and some economic development in the area. (96-97)

Testimony of Manuel Matthias, Jr.

MATTHIAS is a resident of the Waianae area and is presently employed with a local construction firm. MATTHIAS is basically concerned with the unemployment situation as previous speakers. (97-98)

MURAKAMI questions MATTHIAS as to whether he assumes that the jobs at WB will be given to local people. MATTHIAS replies that at least they will be given an opportunity to try for these jobs. (99)

Testimony of Glenn Oamilda

OAMILDA is a resident of Ewa Beach and is given his testimony on behalf of Ewa Neighborhood Board No. 23. He states that the Board is in favor of WB project and has spoken at all the public hearings regarding WB. (100-101)

Testimony of Kihei Niheu

NIHEU is an educated person who went to Kamehameha and who holds 2 degrees, one in hotel management and tourism. He has had the opportunity of working in the Waianae/Nanakuli area.

NIHEU is against the project because he feels that this is another rich foreign investor coming in to make money for themselves and not to take care of the people. (120-129)

Testimony of John Kelly

KELLY is on social security and lives in the Black Point area. He is active in Na Opio (one of the intervenors) and in recent years has become involved in helping to preserve the control of the local development and to sustain an economy and a lifestyle that doesn't degrade the people of Hawaii with higher and higher rates of unemployment, rising crime and the other disadvantages of urban development. He feels that the State and the governmental agencies have not informed or is not concerned with the lifestyles or economic situation of the Waianae people. (129-144)

c. Economic: Whether the development will affect:

(1) The rate and pattern of economic growth and development. According to Pannell, Kerr, Forster in "A Report of the Viability of West Beach as a Resort Community and the Estimated Economic Impact" May, 1984, the following economic impacts are calculated:

State Unemployment Tax	$ 850,000
Gross Income Tax	8,030,000
State Personal Income Tax	4,779,000
Real Property Tax	$10,695,000
(1983 dollars)	$24,354,000

This economic impact analysis is based on an annual generation of income assuming that the entire complex is complete and operating at a stabilized level.

(2) The diversity of employment. On a regional basis, the answer would be yes since the principal employment center would be resort oriented and consistent with the State's number one industry. Supporting industries, primarily in the service fields would also not be diverse in the true definition of the term.

(3) The availability of jobs. Yes, is the answer here since West Beach will generate approximately 6,156 jobs based on the different activity employment centers anticipated at West Beach. These range from hotels, resort condominiums, commercial retail, commercial restaurants, Luau and Hawaiiana activities, Hawaiian Cultural Center, Golf course/club, Beach Club, Marina related Complex Tram/Jitney System, Maintenance/Security, Management/Administration, and other service oriented jobs, full time and part time.

(4) The employment wage rate. Prevailing wage rates that have been established by Industry negotiated union labor contracts for resort industries, as well as prevailing market acceptance job wage scale for private industry activities will be paid at West Beach.

State Department of Labor listed the following Hours and Earnings of Workers in Selected Industries (March, 1985).

	Avg. Weekly Earnings		Avg. Weekly Hours		Avg. Hourly Earnings	
	State	Honolulu	State	Honolulu	State	Honolulu
Contract Construction	$635.80	$647.11	37.8	38.2	$16.82	$16.94
Food and Kindred Products	306.68	326.24	37.4	38.7	8.20	8.43
Communications & Utilities	524.15	518.25	42.1	42.1	12.45	12.31
Hotels	241.63	243.70	33.7	33.8	7.17	7.21

Hawaii Dept. of Labor, April, 1985

(5) The principal economic activities on Oahu. West Beach should impact the principal economic activities on Oahu in a competitive way, since the development of an off-Waikiki resort destination and a master planned residential district are now available only at Kuilima on the North Shore. Visitor Industry growth within the Primary Urban Center has been discouraged and the City Administration resort policy is to promote these new hotels outside Waikiki.

d. Housing: Whether the development will affect:

(1) The availability of housing. Chaney, Brooks & Company determined in their study of the "Housing and Population (Oahu)" November 15, 1983, "that Housing is considered to be in short supply for the following reasons:

1. The need to overcome the present level of substandard housing (dilapidated and/or overcrowded housing).

2. The need to create a vacancy factor in the order of magnitude of 5 percent of the total housing inventory to allow a freedom of choice as to type and location of living accommodations, to stabilize pricing through competitive forces.

3. The need to accommodate changes in the life cycle of housing requirements of individuals as to the population moves through the various phases of undoubling from parental home, family formation, child-bearing years, divorce or empty nester to senior citizen, widow, or widower.

4. The need to accommodate a growing population.

West Beach presents a major and highly desirable component of the solution to Oahu's long term housing needs."

(2) The quality of housing. West Beach has established a preliminary market analysis that has been established on the buyer profile identified earlier. This market buyer is seeking the amenities and design features that are reflected in the West Beach planned community which will offer the recreational amenities (golf course, marina, resorts) not offered in competitive residential communities.

(3) Speculation in land and housing. This is highly unlikely in view of today's high mortgage interest rates. Unlike the early 1970's when interest rates were still being offered at a single digit rate, today's rates are difficult to absorb on a monthly mortgage on an investment/speculative purchase basis.

(4) Property values of existing homes. West Beach can affect property values of comparable residential units as development costs, replacement costs, and other higher priced development associated costs continue to escalate.

9. ENVIRONMENTAL CONDITIONS AND CONSEQUENCES

9.1 Water Pollution Implications of Project Site Storm Runoff

Proceeding with the method published by HESL (Lopez and Dugan 1978), the calculated weighted mean surface water runoff for 1 -hr, 6-hr, and 24-hr storms at recurrence intervals of 1, 5, 10, 25, 50, and 100-yr, developed for both the east and the west drainage area, are presented in Tables 6 and 7, respectively. The developed project's open water surfaces, 41.5 acres of Marina and lagoons for the east drainage area and a 5.5 acre lagoon for the west drainage area, were not included in the developed project results, because they did not transmit runoff.

The quantity of rainfall produced by the given storms, which varied from 1.3 to 13.0 in., and the corresponding surface runoff, in acre-feet/event, for present (1984) conditions and full developed conditions, and the incremental difference that is predicted to result if the proposed project is completed are also included in the tables. The values presented in Tables 6 and 7, it must be emphasized, are for comparative purposes only and are not intended to be representative of the accuracy implied by the practice of not rounding off the recorded values, which was primarily for convenience of calculations and balancing.

As would be generally expected, the greatest calculated incremental storm runoff volumes for the two drainage acres resulted from the 100-yr storm with a 24-hr duration, as shown in Tables 6 and 7. These values (acre-ft/event) represent a volume of water and should not be confused with the peak discharge values for design purposes which represent the maximum volume of storm water runoff discharged per unit of time (e.g. cfs). Peak discharge values, required for the engineering design of the proposed drainage facilities and ascertaining the capacity of existing facilities can be obtained by following the procedures outlined in the City and County of Honolulu's "Storm Drainage Standards" (Dept. of Public Works, 1969).

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

Inasmuch as there is water quality information for storm water runoff from the project site, nitrogen and phosphorus values of 1.10 mg/L and 0.11 mg/L, respectively, were used for the present (1984) conditions. These values, which were based on information published by R.C. Loehr (1972), that involved a study of reported information from rural and agricultural land under different land management conditions, were derived from nitrogen outputs of 2 lb/acre-yr and phosphorus outputs of one order of magnitude less; and annual rainfall of 20 in.; and a rainfall-runoff coefficient of 0.40. The nitrogen and phosphorus output values reported by Loehr (1972), that represent the nearest situation to the one under review, ranged from 1 to 3 lb/acre-yr for nitrogen and a magnitude less for phosphorus.

TABLE 6

Estimated Storm Water Runoff and Constituent Changes due
to the (1984) Proposed 642 acre West Beach Project, Leeward Oahu, Hawaii

East Drainage Area to Marina (Only Within Project Boundaries)

Storm a)			Storm Water Runoff											
Duration	Recurrence Intvl	Quantity	Hydraulic			Nitrogen b)			Phosphorus c)			Suspended Solids d)		
			Development		△	Development		△	Development		△	Development		△
			1984	Full		1984	Full		1984	Full		1984	Full	
hr	yr	in.	AF/evnt	AF/evnt	AF/evnt	lb/evnt	lb/evnt	lb/event	lb/evnt	lb/evnt	lb/evnt	tons/evnt	tons/evnt	tons/evnt
1	1	1.3	2.2	17.8	+ 15.6	6.4	29.0	+ 22.6	0.6	27.6	+ 27.0	4.4	6.0	+ 1.6
1	5	2.0	7.4	32.4	+ 25.4	22.2	52.9	+ 30.7	2.2	50.2	+ 48.0	15.2	11.0	- 4.2
1	10	2.3	10.4	39.3	+ 28.9	31.2	64.1	+ 32.9	3.1	60.9	+ 57.8	21.3	13.4	- 7.9
1	25	2.5	12.7	44.1	+ 31.4	37.8	72.0	+ 34.2	3.8	68.4	+ 64.6	25.8	15.0	- 10.8
1	50	2.8	16.2	51.7	+ 35.5	48.4	84.3	+ 35.9	4.8	80.0	+ 75.2	33.0	17.6	- 15.4
1	100	3.1	20.2	59.3	+ 39.1	60.5	96.8	+ 36.3	6.1	91.9	+ 85.8	41.3	20.2	- 21.1
6	1	2.2	9.3	36.9	+ 27.6	27.9	60.2	+ 32.3	2.8	57.2	+ 54.4	19.0	12.6	- 6.4
6	5	4.2	37.1	89.3	+ 52.2	111.0	145.7	+ 34.7	11.1	138.4	+127.3	75.7	30.4	- 45.3
6	10	5.2	55.3	118.6	+ 63.3	165.3	193.5	+ 28.2	16.5	183.8	+167.3	112.7	40.3	- 72.4
6	25	6.3	78.5	152.9	+ 74.4	234.8	249.3	+ 14.5	23.5	236.9	+213.4	160.1	51.9	-108.2
6	50	7.0	94.4	174.5	+ 80.1	282.2	284.5	+ 2.3	28.2	270.3	+242.1	192.4	59.3	-133.1
6	100	8.1	121.5	209.9	+ 88.4	363.2	342.3	- 20.9	36.3	325.2	+288.9	247.6	71.3	-176.3
24	1	3.2	21.7	61.5	+ 39.8	65.0	100.4	+ 35.4	6.5	95.3	+ 88.8	44.3	20.9	- 23.4
24	5	6.5	84.0	158.5	+ 74.5	251.0	258.5	+ 7.5	25.1	245.6	+220.5	171.2	53.9	-117.3
24	10	8.2	123.9	213.2	+ 89.3	370.4	347.6	- 22.8	37.0	330.3	+293.3	252.6	72.4	-180.2
24	25	10.0	172.3	273.0	+100.7	515.0	445.3	- 69.7	51.5	423.0	+371.5	351.2	92.8	-258.4
24	50	11.0	200.8	307.0	+106.2	600.3	500.7	- 99.6	60.0	475.7	+415.7	409.3	104.3	-305.0
24	100	13.0	260.6	375.9	+115.3	779.2	613.0	-166.2	77.9	582.4	+504.5	531.3	127.7	-403.6

a) From U.S. Weather Bureau Rainfall-Frequency Atlas of the Hawaiian Islands (1962).
b) Based on a nitrogen value of 1.10 mg/l for undeveloped (1984) conditions and 0.60 mg/l for full development.
c) Based on a phosphorus value of 0.11 mg/l for undeveloped (1984) conditions and 0.57 mg/l for full development.
d) Based on a suspended solids value of 1500 mg/l for undeveloped (1984) conditions and 250 mg/l for full development (suspended solids are know refered to as non-filterable solids).

TABLE 7

Estimated Storm Water Runoff and Constituent Changes due
to the (1984) Proposed 642 acre West Beach Project, Leeward Oahu, Hawaii

West Drainage Area (Only Within Project Boundaries)

Storm a)			Storm Water Runoff											
Duration	Recurrence Intvl	Quantity	Hydraulic			Nitrogen b)			Phosphorus c)			Suspended Solids d)		
			Development		△	Development		△	Development		△	Development		△
			1984	Full		1984	Full		1984	Full		1984	Full	
hr	yr	in.	AF/evnt	AF/evnt	AF/evnt	lb/evnt	lb/evnt	lb/evnt	lb/evnt	lb/evnt	lb/evnt	tons/evnt	tons/evnt	tons/evnt
1	1	1.3	1.5	6.9	+ 5.4	4.4	11.3	+ 6.9	0.4	10.8	+ 10.4	3.0	2.4	- 0.6
1	5	2.0	4.5	12.7	+ 8.2	13.4	20.7	+ 7.3	1.3	19.6	+ 18.3	9.1	4.3	- 4.8
1	10	2.3	6.1	15.3	+ 9.2	18.2	24.9	+ 6.7	1.8	23.6	+ 21.8	12.4	5.2	- 7.2
1	25	2.5	7.2	17.1	+ 9.9	21.6	27.8	+ 6.2	2.2	26.5	+ 24.3	14.7	5.8	- 8.9
1	50	2.8	9.0	19.8	+10.8	26.8	32.4	+ 5.6	2.7	30.7	+ 28.0	18.3	6.7	- 11.6
1	100	3.1	10.9	22.7	+11.8	35.5	37.0	+ 1.5	3.6	35.1	+ 31.5	22.2	7.7	- 14.5
6	1	2.2	5.5	14.4	+ 8.9	16.4	23.4	+ 7.0	1.6	22.2	+ 20.6	11.2	4.9	- 6.3
6	5	4.2	18.6	33.4	+14.8	55.6	54.5	- 1.1	5.6	51.8	+ 46.2	37.9	11.4	- 26.5
6	10	5.2	26.2	43.7	+17.5	78.3	71.8	- 6.5	7.8	67.7	+ 59.9	53.4	14.9	- 38.5
6	25	6.3	35.4	55.4	+20.0	105.8	90.4	-15.4	10.6	85.9	+ 75.3	72.1	18.8	- 53.3
6	50	7.0	41.4	62.9	+21.5	123.8	102.5	-21.3	12.4	97.4	+ 85.0	84.4	21.4	- 63.0
6	100	8.1	51.5	74.9	+23.4	153.8	122.1	-31.7	15.4	116.0	+100.6	104.9	25.4	- 79.5
24	1	3.2	11.6	23.5	+11.9	34.7	38.3	+ 3.6	3.5	36.4	+ 32.9	23.6	8.0	- 15.6
24	5	6.5	37.1	57.4	+20.3	110.9	93.7	-17.2	11.1	89.0	+ 77.9	75.6	19.5	- 56.1
24	10	8.2	52.3	76.0	+23.7	156.5	123.9	-32.6	15.7	117.7	+102.0	106.7	25.8	- 80.9
24	25	10.0	69.6	96.1	+26.5	208.2	156.7	-51.5	20.8	148.9	+128.1	141.9	32.7	-109.2
24	50	11.0	79.6	107.5	+27.9	237.9	175.2	-62.7	23.8	166.5	+142.7	162.2	36.5	-125.7
24	100	13.0	100.0	130.3	+30.3	299.1	212.5	-86.6	29.9	201.9	+172.0	203.9	44.3	-159.6

a) From U.S. Weather Bureau Rainfall-Frequency Atlas of the Hawaiian Islands (1962).
b) Based on a nitrogen value of 1.10 mg/l for undeveloped (1984) conditions and 0.60 mg/l for full development.
c) Based on a phosphorus value of oil mg/l for undeveloped (1984) conditions and 0.57 mg/l for full development.
d) Based on a suspended solids value of 1500 mg/l for undeveloped (1984) conditions and 250 mg/l for full development (suspended solids are now refered to as nonfilterable solids).

Representative suspended solids values in storm water runoff from the proposed project site 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 estimation purposes, and considering the results from the analysis of sporatic storm water runoff samples during heavy storms, a value of 1500 mg/L was used for the present (1984) situation.

The concentration of water quality constituents of storm water runoff from urban areas is very sparse both locally and nationally; however, R.C. Loehr (1974) published a compilation of urban storm water runoff quality data collected throughout the United States with a few from international locations. As would be expected, the results are at times somewhat diverse. There is, however, a study of urban storm water runoff quality collected from storm drains in different drainage areas of Honolulu; the results of which were presented in a University of Hawaii graduate Civil Engineering student Master of Science Thesis (Fujiwara, 1973). For comparative purposes the results of average storm water runoff values for residential areas of Honolulu, rounded-off to 0.60 mg/L, 0.57 mg/L, and 250 mg/L for nitrogen, phosphorus, and suspended solids, respectively, were used to simulate complete project development conditions.

The summation of nitrogen, phosphorus, and suspended solids loads from both present (1984) and full development conditions for storms of 1 and 24-hr duration at recurrence intervals of 1, 5, 10, 25, 50, and 100-yr are shown in Tables 6 and 7. As can be observed from the Tables, the incremental changes per storm event for the present (1984) and full project 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 lower level storms and decreases for the higher level storms; phosphorus increases for all given storm conditions; and suspended solids, except for the lowest level storm, decreases.

It must again be emphasized, as was the case for the hydraulic aspects, that the constituent values are only for comparative purposes, thus the indicated decrease in nitrogen output for higher level storms as a result of development should be construed as essentially having no apparent changes; the phsophorus output would be an increase while the total suspended solids load should generally decrease as the level of the storms increase.

The apparent reason for the phosphorus increase is that organic soils readily absorb phosphorus, thus, water that has percolated through the soil or has been in intimate contact with the soil usually has a low phosphorus concentration, whereas, storm water runoff from the developed areas with usually only small areas of exposed soil tend to transport a higher concentration of phosphorus. Conversly, the decreased amount of exposed soil in residential areas tend to decrease the quantity of the suspended solids load even though the total quantity of storm water runoff increases.

The hydrologic and water quality aspects of the surface water runoff were only considered for the present (1984) and completed, developed project conditions; however, increased constituent loads will undoubtably result from construction activities, especially if a significant storm occurs during the interim period between earth moving operations and soil stablization completion. The impact of construction activities can be minimized by adhering to strict erosion control measures, particularly those specified in the City and County of Honolulu's (1972) Grading Ordinance.

9.2 The Marina and Lagoon System - Environmental Conditions and Impacts

9.2.1 Lagoon Configurations and Concepts

Lagoon alternatives were evaluated for the West Beach project. If no man-made lagoons and swimming beaches were created, only two small existing lagoons at the Alice Kamokila Campbell Estate (the future Hawaiian Cultural Center) would be available to serve the West Beach Project. These small lagoons, all located on the north end of the project site, would have been too far from the proposed hotel and condominium sites to the south. Therefore, the provision of no new beach areas was deemed unacceptable for the intended project use.

A second alternative examined at the time of the Final Environmental Impact Statement submitted in September, 1980 was to create two lagoons, designated a north and a south lagoon to lie approximately parallel to the site coastline. The two lagoons would have been approximately 7 and 11 acres in size. Both lagoons would have adjoined a common wave trap and reservoir pond located in the central portion of the site coastline. This alternative was dropped in subsequent design development for several reasons. These lagoons would have had length to width ratios of 5:1 or 6:1 and required a wave trap entrance and one way circulation. Proper flushing would have been provided by seasonally varying tidal prism, wave induced flushing and standby pumping. Upon further study of the existing lagoons at the Campbell Estate, it was felt that more natural man-made lagoons could be created by modeling the new lagoons after the already existing lagoons. This would insure better flushing without relying on mechanical pumping. In addition, these new natural shaped lagoons could be spread along the entire coastline creating a valuable amenity for all coastal sites while creating a more individual character for each lagoon.

For these reasons, the lagoon concept presented in this environmental impact statement was selected.

Any discussion of potential impacts on the West Beach coast and nearshore waters from the proposed lagoons must be related to a specific range in lagoon size and configuration. The existing nearshore circulation patterns, background water quality, site heat budget and meterology, coastal wave climate and bathymetry, and lagoon flushing needs were the primary environmental considerations in developing a conceptual lagoon plan. Once the conceptual plan was determined, several analyses were completed to examine the potential performance of the lagoons. These included examination of the lagoon tidal prism (the tidal prism is that amount of water that enters the marina during each tidal change), natural and induced flushing schemes, source water injection rates, potential lagoon water quality alteration while passing through the lagoons, lagoon circulation, stratification, mixing and overturn, and anticipated extremes of several water quality parameters.

9.2.2 Existing Kamokila Campbell Lagoons

A detailed examination of three natural coastal lagoons existing at the site was completed. These lagoons include a northern most semi-circular 1.0 to

1.16 acre (a function of tidal height) lagoon, 1.27 to 1.75 million gallons in volume and 4.3 ft. average depth. The lagoon is sand lined including a wide sand beach, and has basalt and coral barrier, with breaks, across the entrance. As such it closely resembles the intended four lagoons to be added along the site coastline and was therefore closely examined to determine how the lagoon successfully maintains its high aesthetic quality year-round.

The remaining two existing Kamokila lagoons are south of and adjacent to the northern most lagoon (referred to locally as Paradise Cove). These two are smaller, 0.35 and 0.45 acre (approximately 0.2 and 0.45 million gallons) and shallower (1.9 ft. and 3.6 ft. average depths). The southern most lagoon is primarily open to the ocean and receives incoming wave activity directly on the sand beach.

The Paradise Cove hypsography shows that a considerable amount of daily flushing occurs via the active introduction of coastal water by incoming waves topping a shoal reef shelf at the entrance. Water exits this lagoon principally via a 7 ft. to 9 ft. deep channel located toward the seaward central area of the lagoon entrance. A consistent seaward flow of 10 to 25 cm/sec was observed in this channel below the 2 foot depth. Circulation in this lagoon enters both ends and over the shallow 2 foot deep northern third of the entrance and exits via the deeper central channel.

The sand lining the lagoon is graded from coarse cobble and small boulders in the deeper central area to medium coarse sand with a 6° to 12° slope at the water line, to medium and fine sand on the beach berm and back slope. Wave forms in the predominently sand lined bottom indicate active incoming wave activity strikes the beach, sorting the lagoon lining materials for maximum stability.

Field observations taken showed that at incoming 2 foot swell and wind chop the northern most lagoon was flushing approximately 4 times the lagoon volume per day. Incoming waves during the days of observation were found to account for a flushing volume up to 12.7 to 1 over the daily tidal prism. The maximum flushing rate was computed as 23 times/day with approximately 4 foot incoming waves of 8 to 10 second period. Exiting velocities in the central channel varied from 10 to 60 cm/sec (0.2 to 1.2 kts).

Clearly the high quality of the existing lagoons is related to the high quality of incoming coastal water, the active wave and tidal flushing mechanism, the beach stability and the absence of prolific biota even in the presence of nutrient laden infiltrating water (later estimated at 0.1 to 1.0 ft./day local permeability). Later estimates showed that up to one tenth the lagoon volume of ground water from the surrounding area likely infiltrates daily. This brackish water of approximately 1 to 24 $^{o}/oo$ mixes with the incoming coastal water and flushes from the lagoon daily. The lagoon salinity exhibits only a slight 1 $^{o}/oo$ drop in salinity again indicating a working and active natural flushing mechanism.

The developers intent in adding four larger lagoons along the project coastline is to duplicate the performance of the existing lagoons as much as possible. The subsequent design developed intended to accomplish that goal, recognizing that extreme storm events of adversed seasonal conditions may prevail when the lagoons will not be asthetically optimum in terms of water quality.

9.2.3 Nearshore Circulation Patterns

The nearshore area is defined here as extending from the coastline seaward to the 100-foot depth. Offshore eddies affecting both the nearshore flow strengths and directions, are believed to exist off Barbers Point. They vary between 2 nm to 20 nm in size, appear to move anticyclonic (clockwise) during November to February, cyclonic (anti-clockwise) during April to September, and move in variable patterns for the remaining months (Figures 5 and 5a).

At the coastline, tidal flooding flows move west to northwest and ebbing flows south to south southeast. The maximum observed ebb strength was 65 cm/sec. (1.3 kts) and maximum flood strength was 75 cm/sec (1.4 kts). The currents reverse direction with each tidal change and generally range in strength between 10 to 50 cm/sec (0.2-1.0 kts). Resultant currents moving approximately parallel and slightly offshore at speeds of 40 to 60 cm/sec (0.8-1.1 kts) are most often observed.

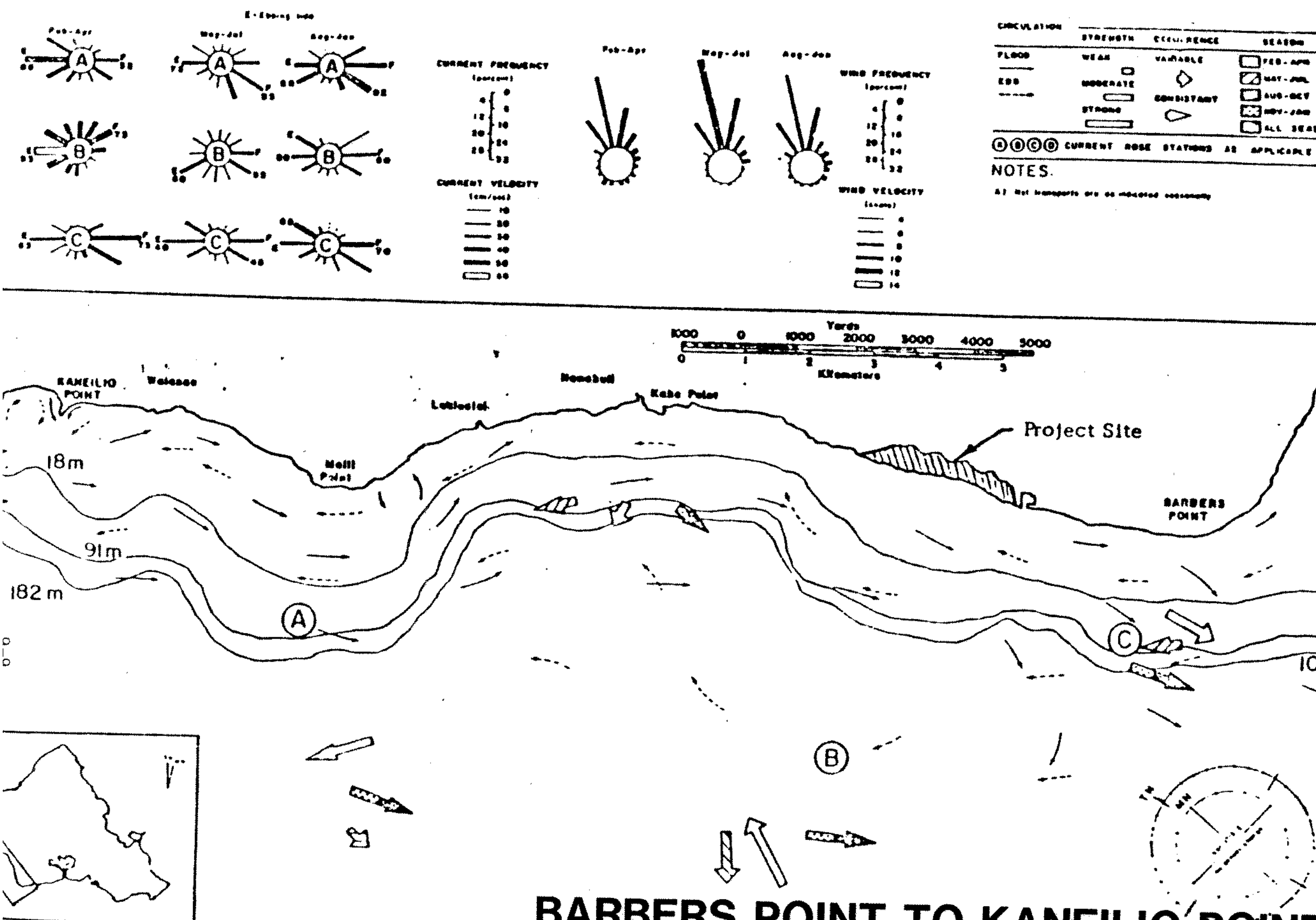
The maximum current believed to exist in the area offshore of the site shoreline is 1.5 kts during calm wind conditions and 2.0 during Kona storm conditions.

The typical net daily flows move water southward along the coastline during August to April. This net flow is strong (>7nm/day) and directionally consistent during August to January, but directionally variable during February to April. During May to July the net flows moves northwest, and is weak in strength (< 2 1/2 nm/day).

Waves impinging on the coastline also create longshore circulation cells close to the beach. Historical data and the bathymetry in the area suggest a northward movement beginning at about the location of the existing natural coastal ponds, and southward movement southeast of the ponds. The field data indicated a northward movement from late winter to mid summer and a southward transport the remainder of the year. The strengths of either flow would be greatest during periods of significant winter storm activity or summer swell. In general the annual net transport is north-northwest.

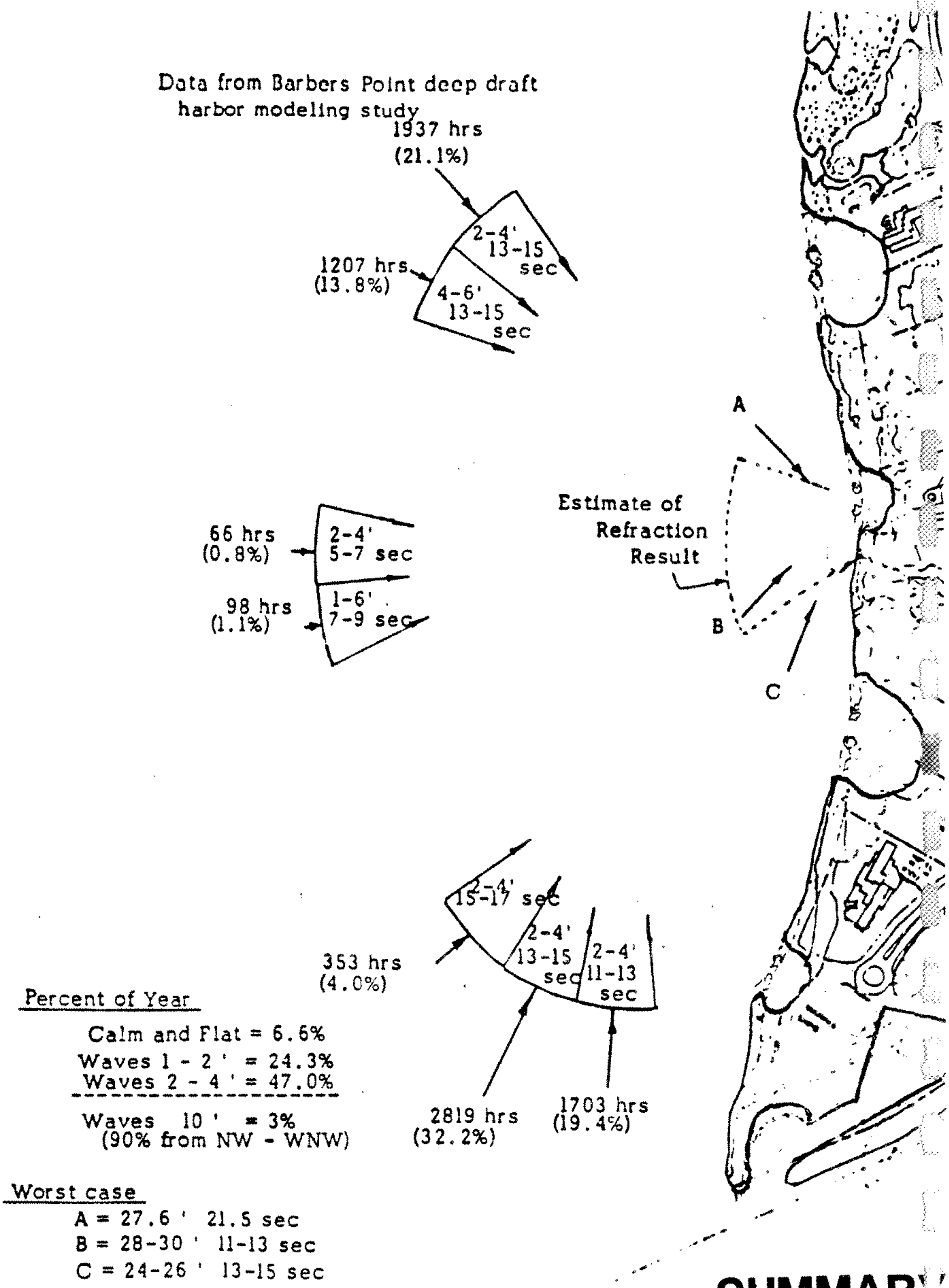
The site nearshore circulation affects both the source water entering the lagoons and the removal of water leaving the lagoons from the area. The lagoons' entrance were located on the coastline in areas that will optimize existing nearshore flows and limit feedback where possible.

The nearshore circulation patterns found off the project coastline in the past suggest that water reaching the lagoon entrance areas arrived primarily from the north and offshore during May to July and September to December, especially during flooding tides. Tradewinds blowing toward offshore would tend to move most, but not all, of the water leaving the Barbers Point harbor toward the west and northwest, angularly away from the coastline during



BARBERS POINT TO KANEILIO POINT

FIGURE 5



WEST BEACH

SUMMARY OF WAVE DATA

FIGURE 5..

most ebbing tides. During periods of strong ebb tides and Kona or weak winds harbor water and coastal water from the south mixed with offshore water, could reach the southern most lagoon entrance area on the site shoreline. Though harbor water would be diluted between 10 to 50:1 with coastal water, the mix could reach this lagoon entrance. This is unavoidable during these conditions. Such conditions may occur 20 to 35 days per year.

The nearshore drift is southward 3/4 of the year. The harbor is 1/2-mile south and the Kahe Hawaiian Electric cooling water discharge is 1 1/2 miles north. The central area of the site coastline appears to offer the optimum positioning for the lagoons. The coastal bathymetry of nearshore shoal and channel areas also suggests discharging exiting storm runoff water at the site extreme north and/or south.

It is also important that no coastal storm drainage or other land originated discharge be allowed in this central shoreline area, and preferably be minimized in the northern half of the site shoreline.

The nearshore flows parallel the beach, with typical strengths of 0.6 to 1.0 kt. It is believed up to 2.0 kts maximum occur in the area. This current is beyond the capability of most swimmers. If coastal swimming is to be allowed, or small coastal beach facilities provided, they will need natural or manmade limitations to contain swimmers close to shore. In addition, people should be kept clear of the lagoon entrance areas, particularly during periods of strong incoming surf for their safety. During times of extreme turbulence, warning signs will be posted for the swimmers safety.

9.2.4 Background Water Quality

Data have been taken both north (Kahe and Waianae) and south (Hawaiian Independent Refinery and Barbers Point) of the site, but few directly off the site coastline. These past data have been applied to either helping establish water quality standards for Hawaiian waters or to solving site specific discharge or environmental problems. Dr. Paul K. Bienfang's 1979 report summarizes the published water quality standards and criteria for both open coastal waters and artificial basins.

Considering all applicable data, it is possible to list the probable annual limits of several pertinent water quality parameters likely to be found in the intended lagoons during the year. These properties are:

Temperature (°C)	22.0 - 27.0
Salinity (^{o}/oo)	33.50 - 35.10
Density (gm/cm^3)	1.025 - 1.027
Dissolved Oxygen (mg/l)	6.0 - 8.0
Nitrate (micro gm/l)	0.10 - 20.0
Nitrite (micro gm/l)	0.13 - 30.0
Ammonia (micro gm/l)	0.20 - 10.0
Total Nitrogen (mg/l)	.02 - 0.80
Phosphate (micro gm/l)	0.20 - 0.30
Total Phosphorous (mg/l)	0.003 - 0.065
Secchi Depth (ft)	10 - 60
ph	8.0 - 8.6
B.O.D. (mg/l)	0.4 - 1.8
Total Coliform (col/100 ml)	0 - 5
Suspended Load (ml/m^3)	0.5 - 4.3

These results are most meaningful when compared with the more offshore, supposedly pristine, waters and with the state's water quality standards. A 1970 Oahu Water Quality Program Comparison showed the project offshore waters to be comparable to the coastal water off Diamond Head, Waikiki, and Magic Island. Temperature and salinity variations are typically the same, dissolved oxygen remains annually above 75% saturation, visibility (secchi depth) is high, turbidity below the standards, B.O.D. low, and ph acceptable. Nutrient concentrations, however, are expected to vary seasonally above the acceptable geometric mean but should remain below the "not to exceed 10% of the time" limit for wet open coastal waters. It is not known, however, how much time each year this limit is approached.

The coastal waters off the project are, on occasion, the receiving waters for local discharges north and south of the site and the source water for the lagoons. Thus far, the coastal water appears to have remained relatively pristine, indicating an effective net flushing of the area despite these neighboring pressures. Nutrients, particularly nitrogen forms, do presently exceed the state's water quality standards for wet open coastal waters for short periods in winter months primarily as a result of ground water percolation from the coast during months of increased rainfall. In that the lagoons will also be receiving ground water seepage high in biota stimulating nitrate-nitrogen (i.e. up to 10 times the coastal water nutrient level) both the coastal source water and lagoon water are expected to show an increase in nitrogen during winter months when rainfall increases. Daily natural flushing rates will also vary with local wave activity and the prevailing tidal profile. The combination of a small daily tidal change and calm winds and seas, following a recent winter storm, would likely provide insufficient flushing for short periods of time. These periods might extend from a few hours to a day or two. At these times the lagoons water quality would need monitoring of the temperature, salinity, and nutrient levels, to determine if restricted use is needed during these unusual conditions.

9.2.5 Site Meterology

The characteristic weather found at the project site is discussed in Bathen 1973. Briefly, air temperatures at the site vary day/night from 77°/60°F winter to 85°/70°F summer. The area is dry with rainfall averaging less than 20 in/year. Data show that most showers occur in the West Beach area during the early pre-dawn hours.

The spring and summer extend from approximately April to November and include the period of strong northeast trade winds from about June to September and the transitional periods just preceding and following. During this season, wind direction ranges from northerly through easterly, and occasionally southerly, but predominately blows from speeds at the lagoon location should average 12.2 kts, but will range seasonally up to 25 or 30 kts. About 30% of the time the local speed exceeds 12 to 15 kts.

The fall and winter is reasonably well-defined by a weakening of the northeast trade winds and the appearance of westerly winds and frontal influence from the north temperate zone. These westerly winds, known locally as Kona storms, are mostly typically represented by strong winds and high waves from the south to southwestern quadrant. The year-to-year variations in the Kona conditions at the site are considerable. Some winters no Kona storms appear and in other years there may be four to five strong storms. Generally, during the winter months (December to March) winds from the southwestern quadrant should be present 10% to 15% of the time, but Kona winds are expected to occur most often during January.

The historical data record a maximum sustained wind speed in the site area of 40 kts, with gusts to 83 kts, on January 13-14, 1970. In contrast, calm conditions exist 1.5% of the year, usually during the winter months. Kona conditions, from storm conditions to Kona calm or light onshore winds are expected to occur at the lagoon site about a total of thirty days per year.

The annual mean tradewind streamlines remain essentially orthogonal to the West Beach coastline. This wind blowing directly offshore remains quite consistent year to year. The north-south alligned central part of the site coastline, i.e. the proposed location of the four lagoons, is curved slightly landward. This would help move the water leaving the lagoons away from the site toward the discharge end of each lagoon. The major influence of the predominant tradewinds at the lagoon sites, will be to create a cross lagoon exiting flow which will cause typical surface currents up to 15 cm/sec (0.1 to 0.5 kts) averaging about 10 cm/sec. This will aid overturn and mixing in each lagoon, helping replace bottom waters.

When the wind strength increases, as during storms or early spring periods, dust and debris will blow from the beaches bordering the lagoon and hotel area. Strong winds of 40 kts, for example, will cause cross lagoon current drifts of up to 20 cm/sec (0.4 kts), and small lagoon surface waves up to one-half foot in height. The wind transported particulate material reaching the lagoon surface will be quickly mixed vertically throughout the lagoon waters.

During onshore or southerly Kona winds, the surface wind and debris effect on the lagoons will depend upon the height of the buffer zone, or ridge, separating the coastline and lagoons and the amount of loose material this ridge contains. Water leaving each lagoon exit will, in this onshore wind case, have difficulty leaving the discharge area. Depending upon the alignment of the wind to the shoreline, some of the discharged water could recirculate within two to four hours. During such Kona storm conditions, this is unavoidable and lagoon operations may necessitate restricting access to the lagoons.

9.2.6 Lagoon Sizing and Hypsography

Each final lagoon shape, size and hypsography (volume distribution) is primarily a decision based on land use and planning needs. The area paralleling the coastline, allocated for the lagoons, dictates the limiting size of each lagoon. Four lagoons were planned sized from 2.0 to 5.5 acres (at msl), vaying in shape from semi-circular to oval. The lagoon concepts developed include long curved beaches with cusp-like ends, deep central areas and shoal entrance barrier islands. The entrance islands are primarily indigenous basalt and sand. Depths of 6 to 7 feet at mean lower low water were chosen. Average depths will be 5.4 to 6.3 feet.

A variety of final lagoon sizes and shapes were specified ranging from a large lagoon with an entrance width of approximately 600 feet and reach of 500 feet, and smaller lagoons with entrance widths of 500 to 530 feet and reaches of 200 to 370 feet.

The volume becomes important when considering flushing. Since it is necessary to maximize the daily exchange of water, the lagoons are as shallow as the intended use will allow.

The sizing criteria developed considered maximizing the flushing potential, not restricting the flow into or out of the lagoon nor allowing currents at the lagoon entrance to normally exceed 1.5 kts. Using medium coarse to coarse grade sand on the bottom and entry slopes of 6° to 12° (1:10 to 1:5) the flow must be limited within the lagoon to insure sand is not excessively transported along the lagoon beach. Thus, an entrance cross-sectional profile for the lagoon includes a shoal shelf area (-1 ft. at msl) on each side of a deep centrally located exit channel. The deep central portions of each lagoon is a constant depth to insure all benthic waters are uniformly flushed. The entrance and exit areas are sufficiently large to directly reach and flush both the lagoon surface and bottom waters.

The lagoons benefit in storm protection from retaining the existing coastal ridge seaward of the lagoon beaches, retaining much of the existing hard coastal material and coral armored terraces. The selection of the site central shoreline area for locating the lagoons takes advantage of the local bathymetry for a natural 30:1 wave run-up plus aid in flushing using the nearshore circulation patterns. Adjacent nearshore deep channels in the bathymetry will also aid removal of deep exiting water.

Most of the grading around the lagoons, excepting the lagoon beaches, must be directed away from the lagoon waters, particularly those surrounding grounds containing vegetation that receive regular treatment with plant fertilizers, plant control chemicals, or pesticides. Also, no direct storm runoff from urban areas, streets, hotels or parking areas should be allowed to reach the lagoons. The results of adding these nutrients (primarily nitrates and phosphate), bacteria, solids and particulate substances, hexane soluble materials, hydrocarbons, oils, tar, waxes and debris would each degrade the aesthetics of the lagoon waters.

Nutrient addition from runoff could, if entering the lagoons, stimulate growth in the phosphate limited case of lagoon waters causing initial change toward eutrophication. Fecal coliform bacteria tend to decay in salt water and sunlight within a few hours but can be a potential health hazard if concentrations reach 1000 col/100 ml. Hexane soluble hydrocarbons, oils, tar and waxes can coagulate and gather at the line or result in a thin film across the lagoon surface. In this case, the aesthetics of the lagoon surface water would become visually objectionable when floatable concentrations of about 1.5 mg/m^2 are reached. Land oriented beach use debris is immediately objectionable if allowed to reach the lagoons.

9.2.7 Tidal Prism

The mean diurnal tidal range at the site coastline is 1.9 feet, with the tide being predominately mixed in character, i.e. two unequal highs and lows per day of 1.3 feet typical change. The greater annual observed tidal changes in the area of approximately 3.0 feet, occur three to four times each year. The time of the tide at the site follows the Honolulu tide by 15 to 18 minutes.

Using an annual daily average tidal change of 2.0 feet, the amount of this tide that can enter the lagoons, i.e. the tidal prism, can be computed. The amount depends upon the lagoon dimensions, the entrance crossectional configuration and smoothness. These factors establish the amount of restriction to the incoming and outgoing flow. Tidal prisms thus ranged from 2.23×10^5 to 6.38×10^5 $ft.^3$.

The computation results show that the average daily flushing velocity in the deep central channel for the above tidal prisms will range from 0.54 ft./sec to 1..3 ft./sec. The estimated maximum exiting velocities for the lagoons should range between 23 to 48 cm/sec (0.5 to 0.9 kts) during typical tidal and wave conditions. As noted earlier, during extreme storm events water exit velocities at the lagoon exit center could exceed 1.5 kts.

A tidal rise in the lagoons essentially equivalent to the tidal rise at the coastline is anticipated. During the maximum tide and diurnal conditions the tidal prism increases from an average 52% to 92% of the lagoon volume per day, while during days of minimum tidal change 30% is exchanged per day.

9.2.8 Flushing Criteria

A practical way to evaluate the minimum acceptable rate of flushing for the lagoons was to examine the performance and water quality conditions existing in the Kamokila lagoons along with several other large salt water artificial ponds, tanks or lagoons in Hawaii. Considering the resident time of infiltrated water in local harbors also provides some measure of infiltration rate and flushing vs. tendency toward eutrophication.

The performance of seven manmade or modified salt bodies of water, in addition to the site Kamokila lagoons, were considered and information was obtained on each. Primary concern was in determining the body volume, turnover rate (flushing) in terms of body volumes per day, the amount of recirculated or new water, the source of this new water and any special treatment given either the new or recirculated water.

These results, along with several comments received in obtaining this information indicate two flushing criteria exist:

1) For public-oriented marine viewing tanks flushing rates of 4 to 5 times and up to 30 times per day are employed. Five times per day appears to be a working minimum to keep the water suitably clear for unobstructed viewing. Chemical treatment is commonly used to control disease of the tank inhabitants and chlorination, mechanical scrubbing or sand filtering are used to control tank algal growth.
2) In large natural open lagoons, flushing rates vary from 2/3 times to 3 times per day. In these cases no treatment is employed, and in two cases the water flow is restricted to flow one way only.

As noted in the previous section, the Kamokila lagoons (i.e. Paradise Cove lagoon) are actively flushed via incoming waves and the daily tidal prism. Flushing rates during field observations ranged from 4 to 23 times per day. Typically rates of 3 to 10 times per day likely exist in these high quality natural lagoons on the project site.

An interesting comparison exists between the Hilton Hawaiian Village lagoon and the Magic Island lagoon. Though the Hilton lagoon flushes more of its volume one way, it draws source water from the partially degraded water inside their coastal beach reef. This lagoon was also initially filled, leaving a silt and clay bottom with fine sand leading to the less than desirable water quality existing in the lagoon today. The nutrient accumulation problem in this case is becoming more severe each year.

In contrast, the Magic Island lagoon is larger, flushes less of its volume daily and is restricted in bottom water exchange yet its water quality is markedly better. This is due to better source water, more aeration due to the wave trap like action of the breaks in the lagoon breakwater, and the clean, medium grade sand bottom over a hard subbottom material. If the Magic Island lagoon water, flushed now 2/3 times per day, were receiving a more active flow throughout its 10-foot depth and if its flushing were increased to three times or better per day, its water quality would improve even more over its present acceptable condition.

Considering all results, including the bioconstraints and recommendations of consultant Dr. P.K. Bienfang, it is evident that a minimum daily average flushing of 3 times the lagoon volume per day is advisable. Greater flushing rates will provide a greater margin of safety. Rates as high as 5 to 10 times the lagoon volume per day, however, will likely occur often depending upon the incoming waves. A trade off of acceptable water quality for the use intended vs. the desire to obtain water quality identical to coastal waters (never better than coastal water) must be made.

The central shoreline area of the site contains a natural ramplike coral terrace with slopes of 23:1 to 40:1. Thus, the shoreline acts as a natural wave runup ramp for incoming surf. Wave flushing of the lagoons is expected to exceed the tidal prism by 10 or more times per day. In the absence of all wave activity for periods longer than 6 hours the flushing would be limited to tidal exchange, i.e. a 1/4 to 1/2 times volume flushing rate.

Thus, importance is placed upon comprehensively knowing the low end of the wave spectrum at the site coastline. Figures and Tables included show a summary of historical wave data and information applicable to the site coastline.

The historical results indicate that 341 days of the year waves and swell greater than one foot in height reach the shoreline. Waves up to 30 feet are predicted for the area during severe storm conditions, but waves between 1 to 6 feet in height predominate during the year. But more important, calm conditions or waves and swell less than 1-foot in height exist, statistically, for 24 days per year. Exactly when these days occur, or how many consecutive hours exist with absolutely flat seas and no incoming swell, is not known for the site area. Interest is usually placed on the upper limit of wave height. Though this is also of interest when considering storm runup and structural strength, it is of no assistance in estimating the lower limiting condition, i.e. when wave induced flushing would be minimal.

Since the summer brings South Pacific swells and wind waves to the south and west coasts of Oahu, and winter brings the north Pacific waves and local wind waves to the coast, the calm periods tend to exist in either late summer when the tradewinds weaken or during mid-winter when Kona winds can bring calm conditions. It is felt, however, that absolutely calm water along the shoreline, without even swell occurring, happens rather rarely, perhaps a few day per year and up to 10 to 20 consecutive hours each occurrence.

The directions of incoming waves will be refracted by the local bathymetry. Considering the range of incoming directions and the offshore bathymetry, it is evident that most waves approach the coastline within 45° of orthogonal to the beach. The nearshore bathymetry also refracts the incoming waves with most waves probably impinging the shoreline within 30° of orthogonal. These conditions are helpful for both wave induced flushing longshore transports.

<u>Sea Engineering</u> field wave data, as analyzed by Bretschneider and Gerritsen were taken for over 10 months. These results, discussed in Bretschneider's and Gerritsen's reports, were considered in the lagoon design and are the basis for the estimates of the anticipated lagoon flushing rates.

Existing flushing rates in similar local and California salt water lagoons (2/3 to 5 times volume/day) vary as widely as the observed water quality in each lagoon. The past 9 acre Barbers Point harbor, with a single entrance, was believed to flush infiltrated brackish ground water out in approximately 1/2 day. The new deep draft harbor is to flush infiltrated ground water out within 2 to 15 days. In these cases, euthrophication is essentially assured. Control of the phytoplankton growth in the West Beach lagoons places lower limits on the flushing rates, with recommendations given keyed to the observed permeability rates, and phosphorus and nitrogen concentrations as reported in the Harding Lawson field report. The follow-on pre-construction work will reexamine the site conditions throughout each lagoon site.

The conservative suggested minimum flushing criteria is 3 to 4 time/day, preferably greater. Physical constraints of the entrance configuration, circulation and sand movement in the lagoons, along with keeping the design within reasonable sized limits, suggest flushing rates will range up to 20 times per day. In comparison, the anticipated lower limit is greater than that presently found in the Magic Island lagoon.

9.2.9 Infiltration Injection Rates

Lagoon source water is composed of both incoming coastal sea water and infiltrating brackish ground water. Both will be entering the lagoons continuously, though neither at a day-to-day consistent rate. The incoming coastal water will vary with the coastal conditions, tides and wave activity present. The infiltration will vary with the seasonal rainfall and local storm activity.

A general description of the geology in the project area has been given by Bathen, (1973) and Dr. P. Bienfang (1979). It need not be repeated here. Figures provided show the locations and bore stratification data for seven historical borings taken in 1969 for the West Beach project. These data, Barbers Point core boring results along with project field data taken by Harding Lawson Associates provide the basis for the infiltration permeability and ground water quality estimates.

The data show permeabilities of 0.2 to 6.5 ft/day. Harding Lawson suggested the site rates may range from 0.1 to 10.0 ft/day. This is equivalent to infiltration rates of 0.75 to 74.8 gal/ft^2/day. Historical estimated rates of infiltration for the site area range between 13.2 gal/day/ft^2 to 15.5 gal/day/ft^2 for the lagoon sides and 1.0 gal/day/ft^2 to 1.8 gal/day/ft^2 for the lagoon bottom. The data also show that the lagoon sites are composed primarily of sandy silts and clayey silts and silty sand with densely comented coral fragments. In most cases the lagoon bottoms, prior to lining, are expected to be medium dense to dense materials (i.e. 15 to 300 blows/ft.). Permeability may thus tend to be toward the lower end of the HLA predicted range.

It is estimated that a 5.5-acre surface area lagoon, 8 feet deep (ref. msl) will receive between 0.25 mgd to 0.5 mgd. This water is less saline (6.2^o/oo-25.5^o/oo) than the incoming sea water (34-35^o/oo) and therefore, bouyant. Considering the lagoon volume, in this case 11.25 million gallons, and a non-flushing condition the infiltrating water will comprise approximately 2% to 5% of the lagoon volume. It would comprise 6% to 25% of a twice daily 2-foot tidal prism inflow or up to 1/2 of the daily tidal prism. In general, infiltrating ground water is anticipated to comprise between 1% to 6% of the lagoon volumes for 2.0 to 5.5 acre lagoons. In the presence of a minimum

3 to 4 lagoon flushing rate, the lagoon waters would contain a daily average of approximately 1/2% to 3% infiltrated water at any time.

A wide range of hydraulic permeability and infiltration rates exist in the literature for Oahu. The field data taken for the program provide more site specific permeability rates and geological profiles. The result of incoming infiltrating water is expected to have minimal effect on the lagoon salinity. Dissolved oxygen of 2.8 to 5.1 ppm. BOD_5 less than 2, and total coliform concentration less than 4/100 ml in the infiltration water should not create any problem. Nutrient values are however, higher than coastal waters.

9.2.10 Potential Water Quality Changes

Changes in the lagoon water quality, both of advantage and disadvantage when compared to the quality of the source coastal water, would occur from several processes. These include aeration via incoming waves, infiltration of nitrogen and phosphorus rich ground water, runoff from the beach areas immediately surrounding the lagoons, changes in the heat exchanged at the surface, evaporation, precipitation, nutrient exchange with lagoon lining material, biota uptake of nutrients, changes in organic loading, potential changes in composition of biota, and changes due to human usage of the lagoon water and surrounding beaches.

Incoming water will vary in suspended sand and silt load according to the amount of wave and swell activity existing at the shoreline. Loading would vary, depending upon swell direction and time of year. Suspended loads of approximately 0.5 ml/m^3 for 4.3 ml/m^3 are typical for the area. Suspended sand annually averages 3.0 ml/m^3 during tradewind, southern swell and northwest swell conditions, and silt 2.3 ml/m^3. Portions of the suspended sand may migrate toward the lagoon exits during periods of high incoming waves depending upon particle size and amount of wave activity. Suspended silt sized beach particles (smaller than 50 microns in diameter) could leave the lagoons and enter the coastal waters. The mixing and flushing rate occurring within the lagoons at the time of entry will determine whether the material settles out or remains suspended and subsequently flushed from the lagoons. Suspended load would generally be greatest when wave activity is greatest, as therefore would be flushing and mixing. The quality and sorting of the beach sand and lining materials chosen will establish the amount of suspended load.

Incoming water will be at or near dissolved oxygen saturation. Further aeration apparently occurs in the incoming waves keeping the dissolved oxygen high in incoming waters. Harding Lawson found lagoon water super-saturated in dissolved oxygen (11 mg/L). Oxygen concentrations are expected to range from 6.0 mg/l to 11.0 mg/l.

As discussed in the heat budget section, some heating of lagoon water is anticipated during transit from entrance to exit. This is due to changes in the heat budget from wind shading of the area from surrounding buildings, higher daytime air temperatures on shore, and the shallow character of the lagoons. The amount of heating will depend on the prevailing flushing rate, and may vary seasonally or daily from 0.1°C to 0.6°C. Infiltrating ground water, however, tends to be slightly cooler than coastal water resulting in offsetting a portion of the local heating effect. In all, it is estimated the lagoon waters will show a summer warming trend of approximately 1/2°C in transiting the lagoons with a flushing rate of 3 to 4 times per day.

Incoming brackish ground water seepage through both the lagoon bottom and sides will bring nutrients to lagoon waters. The brackish infiltrating ground water in the area is expected to contain 1.0 to 7.0 mg/l nitrate (average 2.9 mg./l) phosphate. Coastal sea water contains seasonally between 0.13 to 3.0 micro gm/l nitrate and 0.2 to 0.3 micro gm/l phosphate. The rate per day of incoming ground water is estimated to range between 2% to 5% of the lagoon volume, or 6% to 25% of a typical 2-foot tidal prism. The resulting concentration primarily of nitrogen components for the vertically mixed condition, will vary with prevailing flushing rate. At the flushing rate of three times per day steady nitrate concentrations in the lagoon are expected to range from 6 micro gm/l to 50 micro gm/l, and phosphate concentrations from 10 micro gm/l to 30 micro gm/l. These values are several times the related concentrations in the incoming coastal water. At an increased flushing rate of up to 20 times per day these concentrations would drop proportionately lower but still exceed the coastal waters.

Incoming ground water is also less saline than the coastal waters. The result will be dilution of the incoming lagoon sea water. If the ground water enters the lagoon uniformly over each square foot in contact with lagoon sea water, then with a 3 times flushing rate and the anticipated well-mixed condition, the infiltrated brackish waters will be quickly mixed with the lagoon water. Depending upon flushing rate, ground water of 6.5 ^{o}/oo to 25 ^{o}/oo will comprise a small fraction of the lagoon volume. This could affect lagoon stratification in the absence of mixing by diluting the lagoon surface waters but the effect is minimal, i.e. less than 1 ^{o}/oo. If, in the worst winter time case, infiltrated water were confined to a 2-foot tidal prism, the salinity in this surface layer would drop 1.5 to 3.0 ^{o}/oo.

Changes in lagoon water quality will result from aeration of incoming water, transport out of suspended beach sand and silt, heating and cooling of lagoon water from the balance of the heat exchanged at the surface and cool infiltrating ground water, nutrient injection in the incoming ground water, and biological uptake and release. The latter effects of assimilation by pelagic phytoplankton and uptake by benthis of sessile organisms have been estimated by Bienfang.

Except for the nitrogen and phosphorus nutrient injections in the infiltrating ground water, the remaining water quality changes are expected to be minimal. The potentially high rate of nutrient injection is primarily responsible for specifying a flushing rates of 4 times daily or better. Data need to be taken during the construction phase to better map the exact geologic character of the bed at the lagoon sites, and the rate of ground water infiltration and its chemical properties to determine if any extreme condition needs further consideration. In any case, the lagoon waters mixing and flooding should be monitored to maintain aesthetically acceptable water quality.

9.2.11 Bacteriological Injection

Bacteriological data is usually limited to coliform bacteria. The coastal waters off the lagoon site areas are historically very low in the coliform concentration. Total coliform (including fecal coliform) concentrations of 2 colonies/100 ml have been found during winter months offshore following storm conditions. The neighboring discharge sources of the Conoco refinery area, the streams north of the project site in the Kahe and Maile area, and the proposed new Barbers Point Harbor are each potential sources of enteric bacteria, nutrients, floatables and toxic material. The most likely source, however, for coliform bacteria reaching the lagoons will be the vegetation and ground surrounding the lagoons. Fecal coliform and pathogenic bacteria can also enter the water directly through human usage. The coliform concentrations found both in the ground water and in the Kamokila Lagoon were considered negligible (i.e. less than 4 col/100 ml).

Considering the typical coliform decay rates in Hawaiian waters (90% in 30 to 45 minutes) and the apparent lack of major fecal or pathogenic bacteria sources in the area, bacteriological (coliform) problems should be minimal.

9.2.12 Coastal Neighboring, Pollutant Sources and Feedback

Objectional water quality or toxic materials could enter the central coastal area, site of the lagoon intakes, and be drawn into the lagoons. As noted earlier, the offshore and coastal currents would be expected to bring water to the entrance area from the north to northwest for about half the year and from the south quadrant for the remaining half. The nearest site of concern for the source of objectionable water would be the Barbers Point Harbor and the West Beach Marina. During ebbing tides and offshore blowing tradewinds Harbor water would tend to move twice daily northwest, toward and somewhat away from the site coastline. Also, during seasonal periods of significant incoming southerly or southwesterly swell and sea, statistically a minimum of 302 hours/year, or 13 days/year, the wave induced longshore transport would move the ebbing harbor water northward along the coastline. It would entrain surrounding open coastal water and become diluted in its objectional concentrations, but reach the lagoon intake areas within 1 to 3 hours. Primarily, the small 2.16 acre southern most proposed lagoon would be affected.

Exactly what concentrations of what materials of concern will exist in this mix of harbor and coastal water cannot be said definitively at this point without specific knowledge of the new Barbers Point Harbor water quality. Estimates were made by Dugan (1984) of the storm data for the existing water quality and the rates runoff for 1 and 24 hour durations, 1, 5, 10, 25, 50 and 100 year events. He used nitrogen and phosphorus concentrations of 0.6 and 0.5 mg/l respectively. The phosphorus is 2 to 5 times greater than lagoon infiltrating ground water and, along with suspended solids of 250 mg/l, could impose severe loading on lagoon waters if allowed to reach the lagoon entrances. The southern most lagoon may receive this stress during storm periods along with other pollutant loading resulting from the intended commercial use of the Barbers Point harbor, i.e. the addition of sulphides, bacteria, oils, tars, floatables, hexane solubles, particulate material, trace metals and toxic materials.

Dugan results show severe storm runoff loading could occur for storms over 6 and 24 hour duration, recurring 50 and 5 years respectfully. The routing of storm drainage from the project coastal waters to the Barbers Point Harbor of the proposed West Beach Marina will add seasonally to the loading in these neighboring waters. When this occurs and flushes out of the Harbor-Marina area it will likely be of concern during times when the coastal drift is northwest, or during winter Kona storm periods when rainfall can be significant and much of Oahu's coastal waters receive large amounts of storm runoff containing fine suspended silt.

If the project storm drainage exists, the coastline north at the project northern boundary, discharged storm runoff could reach the lagoon intake areas within 2 to 4 hours, especially during conditions of northwest swell and sea, statistically 973 hours/year, or 41 days/year. In this case, dilution with coastal water should be greater than a similar discharge from the south.

Coastal storm water discharged at the site northern boundary and/or Barbers Point Harbor exiting water can reach the lagoon intake area during specific conditions of sea and swell directions and/or net drift of the nearshore coastal waters. It is estimated that these conditions could exist between 13 to 41 days per year. The severity of this condition will depend upon the concentrations of undesirable materials in either neighboring sources. This subject is yet resolved in the proposed Barbers Point deep draft harbor case. In the case of storms, however, severe stress can occur at several conditions below the 24 hour 100 year storm. The historical data clearly show island wide prolific sediment discharge occurs during severe winter storms, as throughout the 1978 to 1979 anamalously wet winter. The coastal waters almost uniformly degrade for a few days until dispersed and flushed away from the shore by open coastal water transports. During these periods, it may be wise to devise methods to segregate from the coastal waters or use standby pumping to accomplish the required aeration filtering and/or chemical control of biostimulation.

9.2.13 Marina Alternative Configurations and Concepts

A marina is proposed as an integral part of the West Beach Project due to the developer's perceived need for marina facilities at this new water-oriented resort and by analysis of the documented demand for additional boat slips on the island of Oahu especially to serve the population between Keehi Lagoon to the south and Pokai Bay to the north. In addition, original plans for the deep draft harbor at Barbers Point had included a small boat marina as a part of the proposed development plan. The alternative of not developing a marina was rejected by the developer because it would be detrimental to the success of the West Beach resort as well as deny boat access to the public for a considerable length of shoreline.

The location of the marina adjacent to the deep draft harbor was seen as a compatible use as well as a buffer for the residential development at West Beach from the deep draft harbor to the south. During the development of the Conceptual Design for the West Beach resort, numerous marina size alternatives were investigated. The final size of the Marina proposed in the EIS is based on the developer's desire to provide a marina of approximately 500 slips and maintain an appropriate buffer between the residential areas of West Beach and the Deep Draft Harbor.

Alternative entrances to the marina have been studied as a separate issue being discussed with the U.S. Army Corps of Engineers, State of Hawaii Department of Transportation, Harbors Division and United States Coast Guard. Also, physical hydraulic model testing has been done at the University of Hawaii's J.K.K. Look Laboratory for Oceanographic Engineering. The results of this testing are contained elswhere in this Supplemental Environmental Impact Statement.

Various marina configurations were considered during the development of the West Beach design effort, each change attempting to meet updated land planning and development cost needs. Marinas sized from a few 100 slips to over a thousand slips were sketched. The design marina was selected as a 33.9 acre (42.2 acre including land acreage) approximately triangular facility 2900 feet long overall, by 950 feet wide at the widest point. The main 2050 foot long marina portion is associated with an 870 foot long spending beach area connected to either the Barbers Point deep draft harbor via a 400 to 450 foot wide channel or directly to the ocean via a 200 foot wide channel. These three configurations used for the specific design marina dimensions and entrance shapes to complete the technical analyses of probable circulation patterns, flushing, seiche conditions, heat budget and infiltration. The potential coastal and environmental impact of the facility was also of interest. Depths in the marina will range ± 15 feet mean lower low water in the entrance channel and throughout the remainder of the marina. The average is expected to be 16 feet deep at mean sea level (m.s.l.).

The hypsographic computations considered the boundries of the marina to be verticale throughout. An incidental inaccuracy is introduced in the sloping sea walls along the entrance channel. As such, the final marina would be 33.9 acres, with a minimum overall volume at mllw of 820,844 cu. yds. (165.8 million gallons). The marina portion of the facility is 551,122 cu. yds. (111.3 million gallons) in volume and remaining the same for each entrance configuration.

The narrowest restriction in the facility is the 330 foot wide channel between the marina portion and a cresent shaped spending beach across from the opening to the Barbers Point harbor channel or the ocean. At this point, 4,500 ft^2 (approximately at msl) vertical crossection exists. The marina entrance is proposed to either connect directly with or adjacent to the main entrance channel for the adjacent 90-acre Barber's Point deep draft harbor or possess a seperate channel directly to the ocean. As such, the specific entrance configuration is an item of final agreement between the developer and those state and federal agencies with jurisdiction over the deep draft harbor.

All environment analyses considered the marina portion of the facility the same for each entrance concept. The land surrounding the marina would be, in part, land altered during construction of the West Beach development and, the remaining eastern part bordering the deep draft harbor. It is assumed in the subsequent work that all grading around the marina will be such that surface runoff will be directed away from the facility. Two exceptions are recognized for the direct routing of storm runoff drains to the marina and tsunami protection grading at the marina borders.

The marina final hypsography will be verified based on the physical model tests. This includes marina circulation, flushing, seiche behavior, and entrance configuration. However, the maximum marina surface and mean depth will not change. Therefore, the hypsography results summarized above, were used for flushing computations, and the design shape used for seiche computations. Unlike the lagoon concept development, where flushing and lagoon asthetics established the shape, the marina wa designed to meet development needs. The resulting hypsography will in turn then establish the environmental conditions that will occur in the marina.

9.2.14 Tidal Prisms

The tidal prism is that amount of water than enters the marina during each tidal change. It is usually given as a fraction, or part, of the basin water depth or volume at some defined tidal reference level. The geometry and smoothness of the basin and its connection to the ocean determine whether a restriction to the incoming and outgoing tidal flow will exist or the marina will have a free unimpeded tidal exchange. In computing the tidal prism a mean lower low water (mllw) reference was used (i.e., marina depth at mllw of 15 feet).

The diurnal tidal range at the project coastline generally varies from 1.3 feet to 2.9 feet (mean of 1.9 feet). The tide is predominately mixed-semi-diurnal in character throughout the year, i.e. two unequal highs and lows per day. Annually observed greater tidal changes in the area, i.e. diurnal changes of approximately 3.8 feet, occur a few times each year. However, a conservative average daily tidal exchange of 2.0, feet considered constant throughout the year, was chosen for this work. The time of this tide at the site would follow the Honolulu tide by 10 to 13 minutes during the year.

The tidal prism computation results show the marina tide is impeded a negligible amount for a 4,500 square foot cross-sectional entrance channel. The entrance configuration is constructed to absorb incoming swell and surf, being wider and possible deeper, will further insure the tidal prism is not restricted.

The tidal prism for a typical 2-foot tidal change is 14.8×10^6 gallons, or approximately 13% of the marina volume. The exchange ocurring over a single 12-hour, 25-minute tidal change will depend upon the prevailing semidiurnal tidal profile. With a 2 foot semi-diurnal tide a typical daily volume change of 27% of the marina volume would occur. During spring tides, this daily change could reach 33%. This does not however consider the efficiency of the exchange process nor consider the volume of infiltrating water, storm runoff or the evaporation - precipitation balance. Flushing involves some knowledge of mixing within the confined boundries of the marina.

9.2.15 Infiltration of Ground Water

Ground water from the surrounding aquifier will infiltrate the marina sides and bottom. The rate of entry of this brackish water will depend upon the amount and head of ground water existing in the area, changing locally season-to-season with rainfall and the variation of hydraulic permeability of the soils.

The geology of the area indicates the marina will lie entirely in the seaward most coastal zone containing an approximately 200 feet thick coral aquifier base. Beneath this brackish aquifier exists an aquiclude zone of alluvium and marine sediments above the basal aquifier. Bore data from seven holes taken in 1969 for the West Beach project and four new holes at the marina site by Harding Lawson Associates are available, though the seven historical holes lie well out of the area proposed for the marina. However, the project data plus data taken for the proposed Barbers Point deep draft harbor just to the southeast can be and were used to estimate the geology in the marina area and the hydraulic permeability.

Just northwest of the marina the geological stratification has been shown to include 6-inch to 18-inch soils layer, a coral sand layer, and dense structured coral layer overlying open-structured coral to the 10-foot depth below mean sea level (msl). The dense coral has typically the lower hydraulic permeability, i.e. lower than the coral sand or open structure coral. Harding Lawson estimates permeability rates of 0.1 to 10 ft/day throughout the West Beach site. In the marina area, 15 feet below msl, principally medium dense to dense sediments exist (i.e. 20 to 108 blows/ft) of grey-white to light brown cemented, saturated, sediments. This material surprisingly exhibited, however, a rapid pump off rate indicating a high permeability. The sediments must be quite inhomogenous or fractured from spot to spot.

The existing neighboring Barbers Point harbor is approximately 38 feet deep. It apparently cuts vertically downward through the coral sand, dense-structured coral, open-structured coral, and possibly some alluvial silt and sand, in that order. As such, it breaks several more permeable materials than the marina excavation might, were the marina depth limited to 16 feet below msl. Thus, as in the lagoon case, infiltration rates, as justified by historical data and HLA field data are expected to range between 0.1 to 10.0 ft/day permeability, but may tend toward the lower end of this range. The highest permeability found by HLA was approximately 48.6 gal/day/ft^2 in the marina area.

Using the highest infiltration rate, it is estimated that the 33.9-acre surface area marina 16 feet deep could receive between 4.3 mgd to 5.0 mgd of infiltrating ground water. This water will be less saline (25.5 ^{o}/oo observed) than the incoming sea water (approximately 34.8 ^{o}/oo) and therefore buoyant. Considering the overall marina volume at msl, in this case 165.8 million gallons, and a non-flushing condition, the infiltrating water will comprise approximately 2.6% to 3.0% of the marina volume. As such, it could comprise approximately 21% of a typical diurnal 2-foot tidal prism classifying the marina as a wet embayment.

The above estimates assume the local foothills and mountains receive less than 20 inches of rainfall per year, typical for the Waianae district. This area averages approximately 100 mgd rainfall dispersed as 15 mgd in overland stream runoff to the coast, 75 mgd evapotranspiration, and up to 10 mgd ground water seepage. Thus, a marina infiltration rate of 4.3 to 5.0 mgd is conservative since the neighboring deep draft harbor and coastal waters should receive a major portion of infiltrating water from the surrounding lands. This conservative rate could, however, be exceeded during periods of significant storm activity.

The incoming brackish ground water may vary in salinity from 6 $^{o}/oo$ to 26 $^{o}/oo$. In that it is less saline than the incoming tidal flow, the marina may tend to become slightly stratified, with a lighter, shallow, less saline surface layer existing in the marina throughout the year, similar to the experience found in the neighboring Barbers Point harbor.

The infiltrating water will add to the net amount of water leaving the marina daily. This assymetry in inflow/outflow should add to the water daily exiting the marina slightly increasing the outgoing tidal prism.

If for example, a 2-foot diurnal tidal prism is considered, and a 4 mgd infiltration rate (evaporation approximately equaling precipitation), the outgoing mean flow at the marina entrance over a 6-hour period for varying semi-diurnal tidal changes would be 1.1 cm/sec. Peak velocities might therefore reach 3 cm/sec (0.06 knots) in the entrance channel during ebbing tides. Offshore blowing winds might tend to increase the exiting slow surface slightly. If the stratification were to limit the outflow to a buoyant 3 to 4-foot thick layer at the surface, the exiting flows could increase to perhaps 0.1 knot. It appears therefore, that infiltrating ground water is not expected to cause any difficult flow conditions in the marina.

Incoming storm runoff, to be routed into the marina at the three locations, like infiltration will add substantial nutrient loading to the marina waters. The storm runoff, however, could in the extreme event, also add a substantial flow to the marina. Dugan (1984) has estimated that the project's east drainage area could deliver 375.9 acre-ft/event to the marina during 24 hours for the 100 year recurrance interval, i.e. the most severe storm. This is almost equivalent to three quarters of the total marina volume, exiting the marina entrance in 24 hours; capable of producing a maximum outgoing flow of 17 to 25 cm/sec in a 3 to 4 foot surface layer. This could cause navigational difficulties for small boats using the marina channel during such an extreme event. U.S. Coast Guard rules of navigation will govern entry and exit into the Marina during storm conditions.

9.2.16 Stratification and Water Quality

Incoming solar radiation, the balance of precipitation and evaporation, and infiltrating ground water will act to alter the temperature and salinity of the water in the marina. The first two act at the surface and the latter through the sides and bottom of the marina. In the absence of vigorous mixing or overturn within the marina, i.e. that occurring from an active circulation and wave action, stratification will likely develop.

A warm, less saline surface layer will form and overlie a cooler, more saline subsurface layer. The salinity of the lower layer would be maintained by exchange with water in the deeper incoming tidal flows. The amount of stratification in the surface layer would vary diurnally with daily heating and cooling, but variations seasonally with infiltrating ground water, rainfall changes and heat budget changes will be more significant.

It has been previously noted that the marina waters are expected to be at least 0.1°C warmer annually than the adjacent coastal waters. If this heating effect is limited to the upper few feet of the water column, the temperature stratification may be up to 0.4°C. In additional, diurnal heating and cooling could result in up to 0.5°C additional change, peaking during mid-day hours. Overall, the increase in temperature toward the surface may annually average just under 1°C.

Infiltrating ground water is expected to range in salinity between 6 to 26 $^{o}/oo$. The estimated typical daily infiltration rate was given earlier at approximately 5 mgd. If vigorous mixing were to occur throughout the water column, of 20% infiltrating ground water, the marina salinity would drop 0.4 $^{o}/oo$. If in the worst case 6 $^{o}/oo$ water were to enter the marina, primarily from the sides, and mix with the surface 2-foot layer the salinity in this layer would drop approximately 5 $^{o}/oo$. If this same process occurred but with 20 $^{o}/oo$ infiltrating ground water, the surface layer salinity would drop 2.5 $^{o}/oo$.

A weak but consistent surface stratification is thus very likely to be evident in the marina annually; being most evident during winter storms. In comparison, the existing Barbers Point harbor presently demonstrates a measurable stratification. Wind blowing across the marina surface will likely thus induce different circulation patterns, one in a shallow surface layer a few feet thick and a second in the subsurface layer just beneath. Such two (and three) layered systems have been observed for example in Pearl Harbor. In the case of the marina, density differences top to bottom in the water column are expected to exist throughout the year due to approximaterly a 0.1°C to 1.0°C and 0.4 $^{o}/oo$ to 5.0 $^{o}/oo$ vertical gradient of temperature and salinity.

The incoming water from infiltrating ground water will be high in nutrients, particularly in nitrogen. Periodic incoming storm runoff will be low in salinity and high in phosphorus and suspended solids. In the limiting case given by Dugan (1984) for suspended solids of 127.7 tons/24 hour 100 year storm the solids entering the marina would either settle to the bottom or remain suspended in the water for subsequent flushing from the marina. Given typical particle size distribution in suspended load the settleable portion would be distributed approximately within a few hundred feet of the discharge point and would accumulate to a few millimeters thick; i.e. typically 500 ft and 2 to 3 mm/event.

Incoming brackish ground water is expected to contain 1.0 to 8.5 mg/l total nitrogen, 0.05 to 0.25 mg/l total phosphorous and 260 to 330 mg/l bicarbonate. Storm runoff water has been estimated by Dugan (1984) to contain 0.6 mg/l total nitrogen and 0.57 mg/l of total phosphorus. In comparison, the coastal waters in the area have been found to contain 0.15 to 0.38 mg/l of total nitrogen and 0.003 to 0.065 of total phosphorous, i.e. generally comparatively low levels of these nutrients. Thus, the mean ratios of ocean water to storm runoff to infiltrating ground water would be for total nitrogen 1:3:25 and total phosphorus 1:17:3. Infiltrating water will be the prime source for nitrogen and storm runoff of phosphorus for the marina waters.

If 5 mgd of infiltrating brackish ground water and the remaining marina background (coastal) water are considered well mixed upon reaching the marina entrance, the exiting water quality, in the limiting case (not including storm runoff) would contain approximately 0.4 mg/l total nitrogen, 0.04 mg/l total phosphate, 12.2 mg/l bicarbonate, and have a temperature 0.2°C warmer than 0.4 °/oo lower than coastal waters. The nitrogen is about twice coastal waters with little difference in phosphorus from coastal water. However, during storm periods and attendant storm runoff with high phosphorus concentrations, the above ambient nitrogen load and an added phosphorous loads could cause both nitrogen and phosphorus levels in water exiting the marina to be 2 to 3 times typical coastal water concentrations, for the duration of the storm event. In the presence of the stratification induced by a buoyant discharge the surface layer water exiting the marina daily will likely contain the highest nutrient concentrations.

In general nutrient concentrations in the marina will be greater than coastal waters and during storms greater than lagoon waters. The marina will receive a greater portion of ground water infiltration per square foot of marine surface area than the lagoons (i.e. the marina is deeper) plus potentially receive periodic injection of storm runoff. In addition, the marina use is exploitive and its hypsography restricts flushing more than in the case of the coastal lagoons.

The dissolved oxygen concentrations expected in the marina will principally be a function of the marina water temperature oxygen uptake by the marina phytoplankton community, and replacement of oxygen via vertical and horizontal mixing of new water with resident water. Dissolved oxygen concentrations in the coastal waters is expected to seasonally range from 6.0 to 7.5 mg/l and for infiltrating ground water from 2.8 to 4.8 ms/l. Within the marina, if circulation and mixing is sluggish toward the bottom, dissolved oxygen concentration may be depressed to 3 to 4 mg/l. In extreme cases within the marina sediments, dissolved oxygen may drop to 1 to 2 mg/l as has been observed in Pearl Harbor and the Ala Wai Canal.

9.2.17 Circulation in the Marina

Circulation in the marina will be established by several factors. These include the marina physography and orientation to the prevailing winds, the daily tidal exchange, and the stratification within the marins.

The marina is on the eastern most end of the project border. It extends approximately 3,300 feet longitudinally landward at approximately a 40° angle to the coastline. The landward most 2,050 foot portion of the marina is approximately triangular, 950 feet across. As such the prevailing tradewinds will blow in the seaward direction angularly across the marina. The flow at the surface will thus tend to move toward the downwind (west) corner of the marina (as will much of the floating debris). Overturn will be aided by this cross marina seaward flow.

It has been shown in a preceding section that the marina waters should typically exhibit some weak vertical stratification throughout the year. This will be due primarily to heating at the surface and to infiltrating brackish ground water with salinities between 6 $^{o}/oo$ to 26 $^{o}/oo$. A warmer, less saline surface layer varying in thickness throughout the marina should be evident at all times of the year. The separation of this surface layer from cooler, more saline subsurface waters will depend upon the degree of mixing existing in the marina from day-to-day. This mixing will be induced by the wind, wind waves in the basin, obstructions to the flow (as from slips and pilings), harbor use by small craft, and circulation patterns set up within the marina.

The basin shape and orientation to the prevailing winds will be the principal factors in establishing the overall horizontal patterns of flow within the marina. The prevailing offshore blowing trades strike the 2,050 foot long border of the marina with the Barbers Point harbor blowing almost across the 950 foot width of the marina. A weak southwest cross marina net daily flow at the surface is expected that will tend to transport buoyant surface water angularly across the marina. The thickness of the less buoyant surface layer should be greater on the western side of the marina, with the surface layer thickness increasing toward the entrance of the marina. Some downward sinking of water on the west side would be compensated for by a weak vertical motion upward along the eastern side of the marina. The seaward and across basin wind drift in the shallow surface layer would be compensated by a much weaker eastward moving subsurface flow.

This two-layer wind induced circulation in a varying stratified case will cause a very slow mixing and overturn of the marina waters. An analysis of expected circulation rates, amount of stratification differences within the marina, and tidal flows was made to estimate the degree of mixing and exchange of resident water with incoming coastal water and infiltrating water. It was estimated that the residence time of marina portion of the facility without inducting flushing artificially, would be between two to five days. These overturn rates are 2 to 3 times slower than the maximum theoretical overturn rates computed by comparing the marina volume and tidal prism.

During flooding tides water entering the marina via the entrance channel all entrance concepts should exhibit subsurface movement upwind into the basin, particularly along the Barbers Point harbor seawall. During periods of weak tradewinds or Kona southerly winds this flow will likely be evident at the surface, though weak, unless the basin is receiving a significant volume of fresh water storm runoff. Flooding tidal flows into the basin may be up to 0.3 kts, the stronger flows found in the subsurface layer and toward the entrance.

A typical flooding current profile would show weak incoming flow surface and an increase in strength in the subsurface layer. This flow will move around obstructions and corners in varying eddy patterns. During ebbing tides the exiting flow throughout the water column should be seaward but be strongest and first to change seaward in the surface layer. The maximum outgoing flows could reach 0.4 kts during strong tidal changes or periods of significant storm runoff.

Both incoming and outgoing flows will tend to diminish in strength further into the marina. Care was taken in shaping the marina to avoid creating stagnant areas or debris traps, particularly on the western (downwind) side and landward most portion of the basin.

9.2.18 Flushing Schemes and Limits

Flushing criteria for the previous lagoon concept was established with the intent of providing as optimum and quality of water for recreational contact use as possible or practical, given the source coastal water quality and anticipated lagoon environmental conditions. Flushing rates in terms of lagoon volumes per day are obtainable. The necessity to dilute infiltrating nutrient laden ground water to control biostimulation and produce lagoon stability were used to establish a minimum desirable flushing rate. The marina criteria is not as stringent and is established principally by marina hypsography, stratification, circulation and the prevailing tidal prism.

Flushing of the marina under typical conditions would be accomplished through the mixing of entering water with resident water and the subsequent removal of this mix via the daily tidal changes and the net daily outflow from infiltrating ground water. The efficiency of this process is judged by the difference in water quality of the entering and exiting water. Given these data, the effectiveness of the mixing and exchange processes can be evaluated.

The marina is considered to typically receive up to an additional 5 mgd of infiltrating ground water. The ground water will be the least saline and most nutrient laden water entering the marina. The marina entering coastal waters will be the most saline and low in nutrient concentrations. Within the marina varying mix of these source waters will exist, acted upon by the resident biota, further altering marina water quality.

The tidal prism for a 2.0 foot tidal change in the overall marina is 22.1 million gallons. In the minimum case of one two-foot diurnal tidal change occuring in 24 hours and 50 minutes 13% of the marina volume would enter and leave daily, carrying an additional 3% of the total volume in net ground water exiting flow. Thus, this minimum volume leaving daily is approximately 26.5 million gallons, representing 16% of the marina volume. This volume is increased to 53 mgd 32% in the case of two semidiurnal tides. If completely new water were exchanged each tidal cycle the marina overturn would occur in about two days. In practice, the process mixing and flushing is not, however, that efficient.

Considering the anticipated stratification and circulation within the marina a slow, three to five day, turnover may be expected. Experience from other bays and harbors in Hawaii in the presence of similar phenomena, particularly in partially stratified cases, shows similar turnover rates for shallow flat bottom basins with an unhibited subsurface flow. The incoming infiltrating ground water will add to the daily net outflow. Though the maximum theoretical turnover volumes can sum to one-third of the marina volume in practice between 6% to 11% of the total marina volume is expected to be turned over daily. The most active exchange will occur in the surface layer and least active in the bottom waters. The surface 2 to 3 feet might be flushed daily while the bottom waters will take several days.

Flushing of the marina is a function of several factors. Among them are the marina hypsography and orientation to the coastline and prevailing winds, the infiltration in storm runoff volume and tidal prism, the wave environment both in and outside of the marina, water quality and stratification anticipated within the marina, and the coastal circulation at the marina entrance. Evaluating each factor, combining and weighing their individual importance while considering seasonal extremes for each is required to develop an estimate for marina flushing. The resultant flushing rate is usually given in days per marina turnover volume.

Analyses were completed for the project's preferred marina configuration (the marina entrance channel within the deep draft harbor entrance) and determined a typical marina flushing rate of 3 to 5 days. The analyses considered that the marina's landward most portion was connected to a deeper wave absorber portion which in turn was directly connected to the Barbers Point Deep Draft Harbor. This concept provides the optimum suppression of incoming waves and therefore the most benign marina environment.

The two other marina entrance configuration i.e., a parallel entrance channel adjacent to the Barbers Point Deep Draft Harbor entrance channel and a completely separate marina entrance channel, provide a more active marina environment. In addition, the separate marina entrance configuration has more direct communication with the coastal waters. Therefore, though the flushing input conditions in the landward portion of the marina are similar for all three marina concepts, the difference in entrance hypsography wave environment and alignment to the coastline are expected to provide different flushing rates for each concept. The most benign and, therefore, most protective marina environment would possess the longest flushing rate. Any other concept with more direct, open connection to the near shore environment would have added mixing and thus an increased flushing rate, i.e., a shorter residence time.

The flushing analyses were repeated for the two remaining entrance configurations. These analyses considered the inner portions of the marina to be identical for each concept, while having considerable differences in the entrance hypsography, incoming waves, and circulation at the entrance. Comparative factors were computed for each parameter and were combined to determine the overall effect. Results were compared to the favored concept of shared use of the deep draft harbor channel. In this way, a direct comparison of flushing estimates for each entrance channel was developed. The base factor of 1.0 was assigned to the favored concepts; i.e., 1.0 x residence time (3 to 5 days).

The parallel entrance channel concept's overall comparable factor was found to be 0.87. This concept has a more active wave environment, and increased hypsography. The net result is an improvement in flushing, i.e., slightly shorter residence time, 2.6 to 4.4 days.

The separate marina entrance concepts overall comparable factor was estimated at 0.93 (2.8 to 4.7 days). In this case, the incoming wave environment is more active, but the entrance hypsography is slightly more restricted than the parallel channel scheme. However, the channel alignment communicates more readily with the higher quality coastal waters. The end result is an improvement in flushing compared to the shared entrance but not as much as, in terms of total volume, the parallel entrance channel concept.

9.2.19 Winds and Waves in the Marina

Tradewinds at the site are expected to vary in strength annually from 5 to 20 knots, averaging 12.2 knots. The predominant tradewind direction is from 070° true. Trades are expected to occur up to 90% of the summer days and 50% of the winter days. Periods of calm occur 1.5% of the year. Kona conditions of weak winds and Kona storms with winds from the south and west quadrant may occur a few days each year. Storm wind speeds generally reach 30 knots. The strongest wind, reported as observed at the site on January 3-14, 1979, was 40 knots sustained, gusting to 83 knots.

The trades predominate throughout the year and will thus be responsible for producing the typical wave climate found within the marina. Surf, swell and storm surge entering the marina will of course be the far more significant wave activity that could cause damage within the basin if not removed at the marina entrance by the proposed spending beach. The subject of sea state conditions at the marina entrance is discussed by Gerritsen (1984). The tradewinds blowing across the marina will, however, induce circulation, as has been discussed earlier, plus establish a wind chop within the marina with reasonably consistent wave activity.

It is estimated that under typical tradewind conditions small 0.1 to 0.3 foot waves with 1.5 to 2.0 second periods are expected in the marina. During extreme conditions of strong trade or 40 kt Kona winds, the fetch across the marina could allow waves up to 1.3 feet in height to develop. In this case, the western and seaward most portions of the marina will have the greatest wave activity from tradewinds. This side will also tend to accumulate most of the surface debris and floatables reaching the harbor from use of marina and surrounding grounds. During Kona storms, the landward-most berths of the marina will experience the greatest wave activity.

9.3 Conceptual Design of Lagoons

The West Beach Project has as one of its major features the development of a number (4) of lagoons lined with sandy beaches (Figures 7,8 and 9). The lagoon concept evolved from elongated basins connected with the ocean by channels or ducts to provide the necessary flushing to semi-circular or ellipitically shaped areas in which the beaches are shaped and maintained by natural wave action.

The latter are modelled after the existing natural lagoons of the adjacent Campbell estate to the north of the project.

For the lagoons, the general design criteria may be defined as follows:

(a) Beaches must be naturally stable but may fluctuate in slope and plan-form due to the dynamics of ocean waves and nearshore processes.

(b) Flushing must be adequate to maintain clean water.

(c) Entrance structures must be stable to withstand wave action under all conditions.

(d) Swimming and bathing must be safe under common conditions; unsafe conditions of high swell.

9.3.1 Stability of Lagoon Beaches

The stability problem has three important aspects.

* expected beach slope

* expected plan form

* expected changes in beach slope and plan form as a result of changing wave and tide conditions.

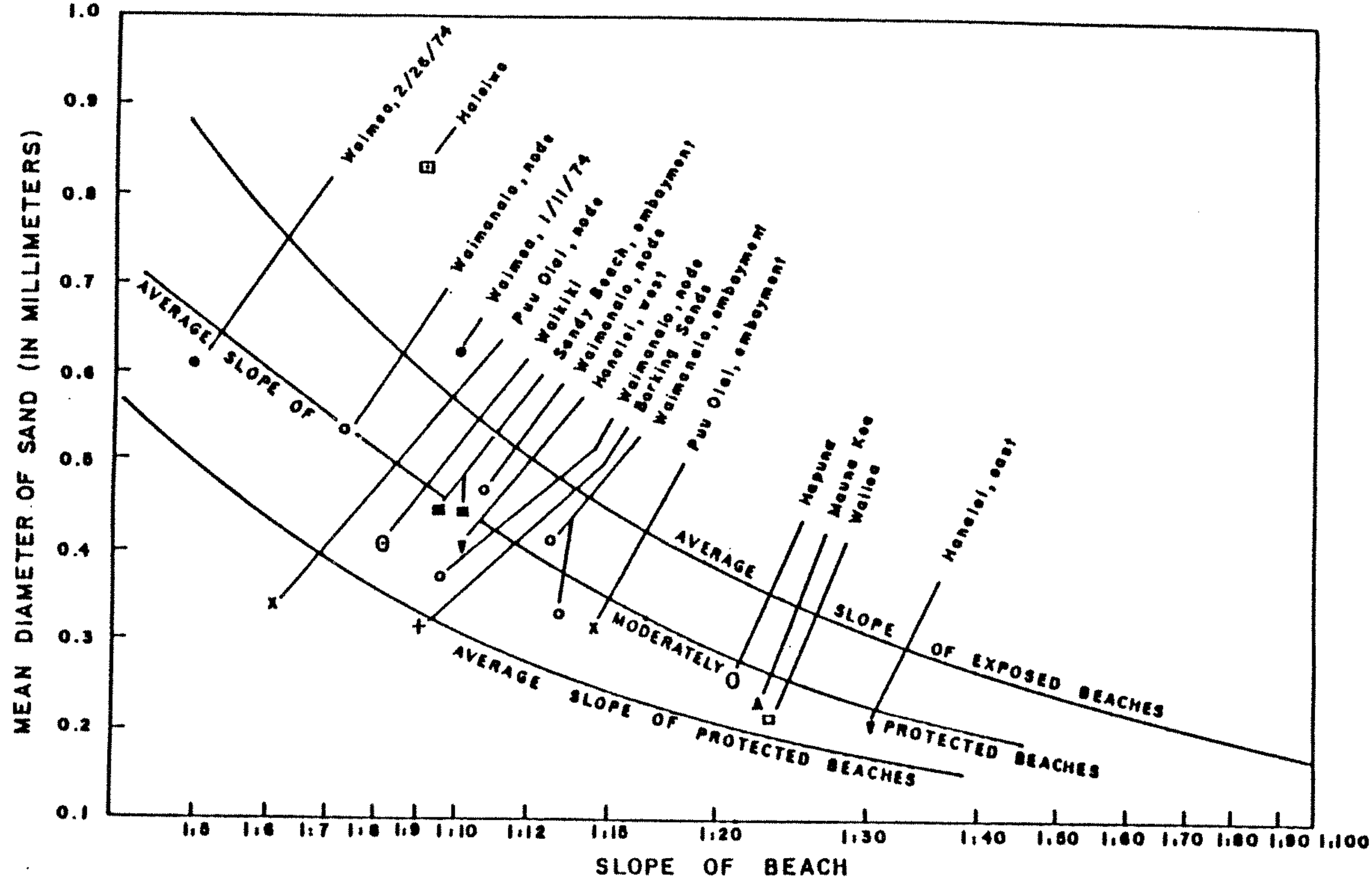
9.3.2 Beach Slope

In order to make an estimate of the prevalent beach slope, the two dominant parameters are: wave characteristics and sediment characteristics.

It has been known from observations on many beaches that the slope of a beach varies depending on the characteristics of the beach sediments and the degree of wave exposure (Gerritsen, 1978).

As far as the characteristics of the sediment are concerned, various factors play a part but the most significant one is the grain size of the beach material.

Figure 6 shows the relationship between beach slope and sand size at mid-tide for a number of Hawaiian beaches. In this figure three curves are drawn:



Relationship between beach slope and sand size at mid-tide for Hawaiian beaches

WEST BEACH

BEACH SLOPE AND SAND SIZE

FIGURE 6

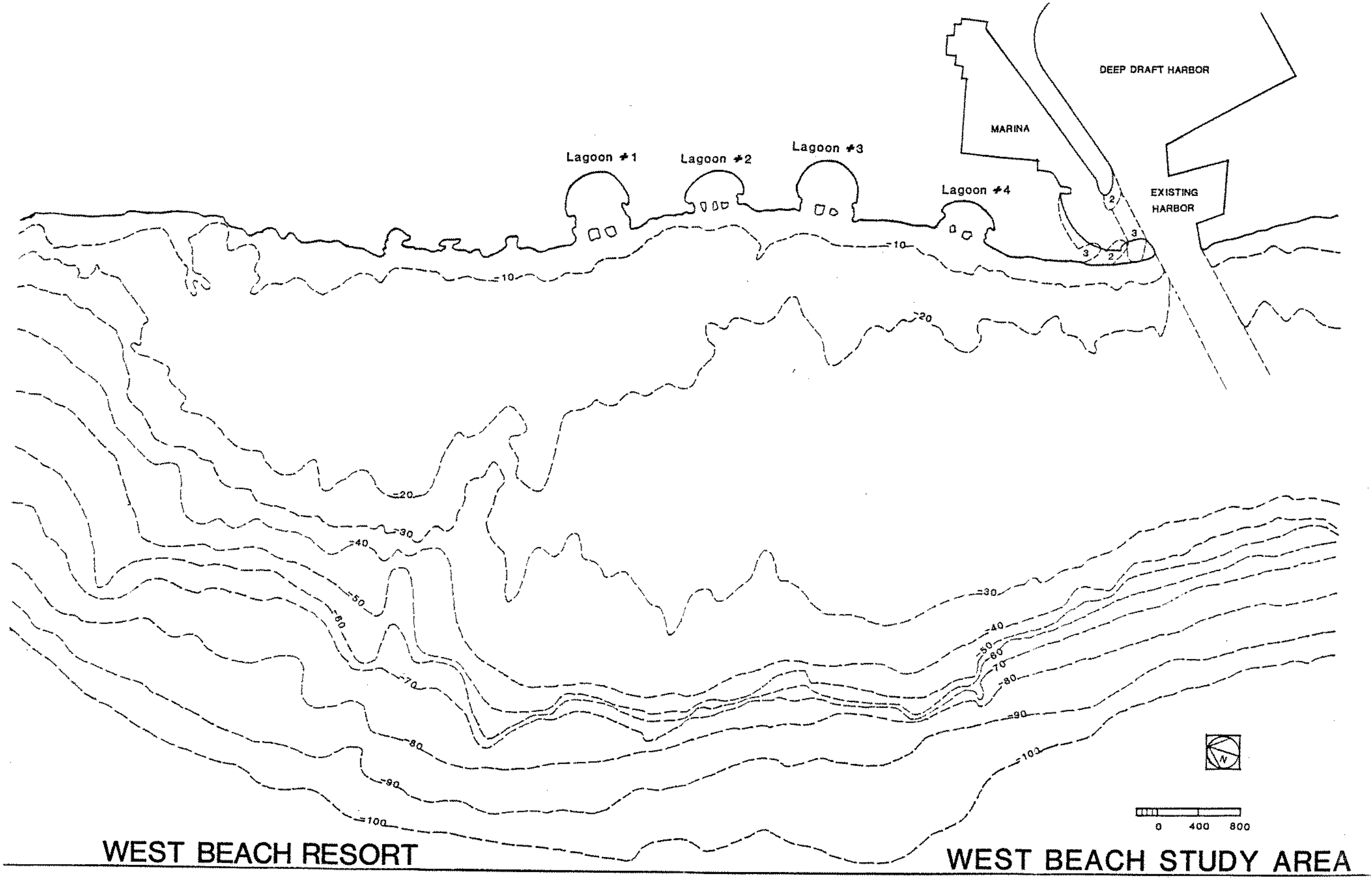
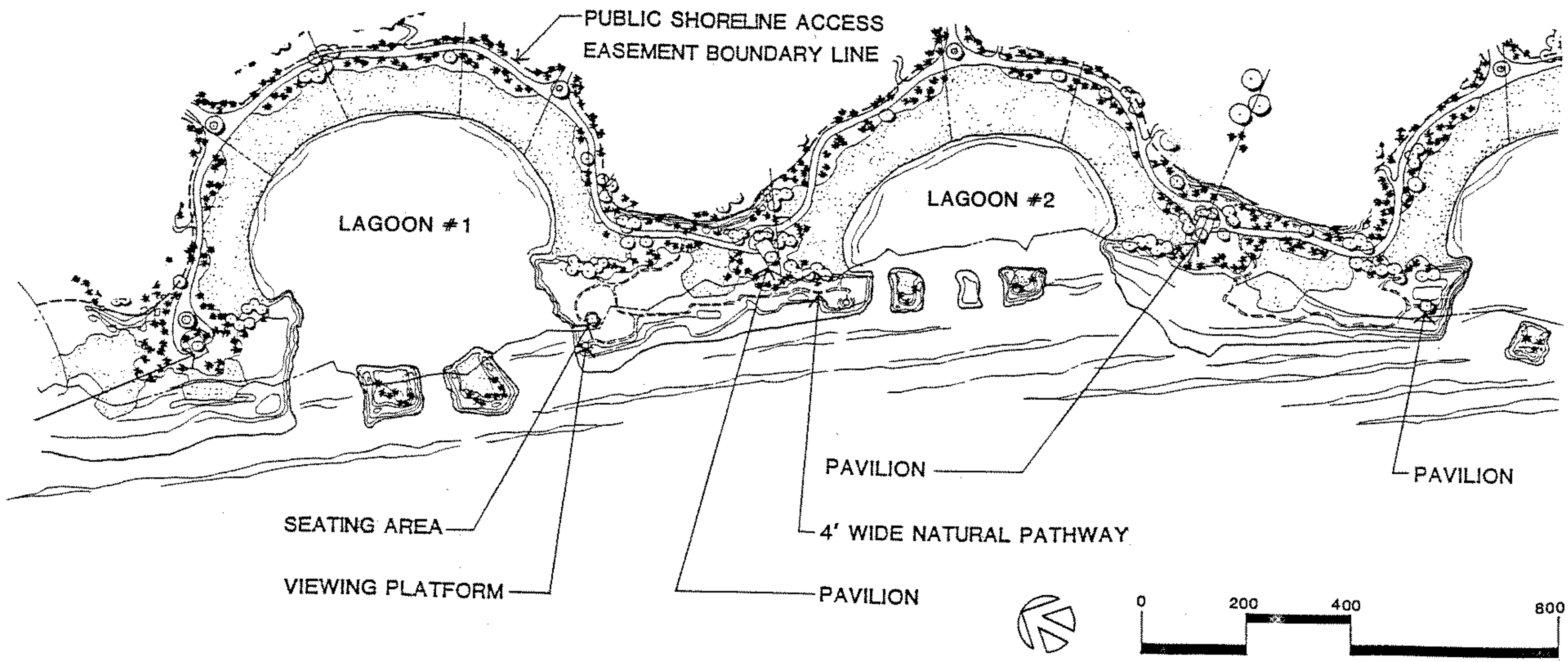

DEEP DRAFT HARBOR
MARINA
EXISTING
HARBOR
Lagoon #1
Lagoon #2
Lagoon #3
Lagoon #4
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
N
0 400 800
WEST BEACH RESORT
WEST BEACH STUDY AREA

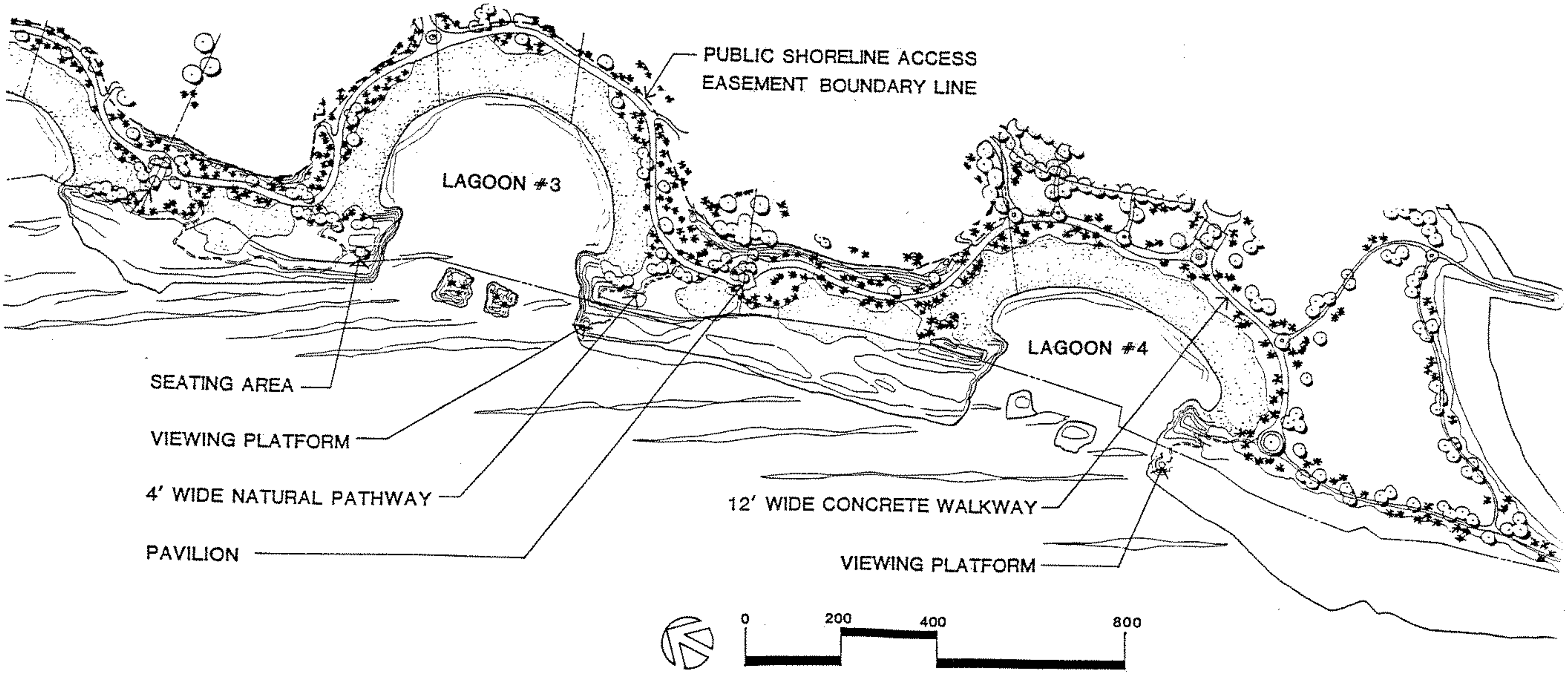
FIGURE 7



WEST BEACH RESORT

PROPOSED LAGOONS

FIGURE 8



WEST BEACH RESORT

PROPOSED LAGOONS

FIGURE 9

For exposed beaches, for moderately protected beaches and for protected beaches. These curves are taken from Bruun (1976) (original source Bascom (1951)) and have reference to mainland beaches; they show that on the whole Hawaiian beaches fit the characteristics of mainland beaches. Wave exposure is not a sharply defined term; it indicates, however, that generally high exposure is characterized by high waves as well as high period.

The beach slope is usually taken as an average slope between the M.L.W. and M.H.W. water lines. In some instances this slope extends itself seaward to the breaking point.

Regarding the slope of beaches, some beaches in exposed areas are characterized by one or more offshore bars, on which the waves break. In less exposed beaches this is usually not the case, although some minor bar(s) may be present.

The beaches of the West Beach lagoons may be considered to be in the category moderately exposed beaches, and therefore, the middle curve of Figure 6 may be applicable.

In the design of the beaches, we have a choice to select the sand diameter. It is preferable to select a coarse beach sand with average diameter of 1/2 - 1 mm and an estimated beach slope of 1:5 to 1:6.

The fairly steep beach slope induces a wave run-up, which is higher than for a beach of lesser steepness. However, the coarse sand is much less likely to go into suspension in the breaking waves.

If a coarse sand is selected, the loss of sand from the beach by induced currents is consequently also of lesser magnitude.

Due to the shape of the plan-form, the beaches at the two corners of the semi-circular or elliptical bay are less exposed and the beach slope may be expected to be somewhat reduced in these areas. Furthermore, some sorting of beach material will take place whereby the finer particles will move to the more protected sections.

For design purposes, it is assumed that opposite the middle of the gap, the beach slope will be 1:6, ranging from -3 to +6 ft. (M.S.L.) In the more protected areas on the side, the beach slope will be reduced to an estimated value of 1:8.

In nature, most natural beaches conform to a parabolic cross-sectional shape. For design purposes, the proposed beaches have a 1:12 slope below -3 ft. to -6 ft. Below this level, a slope of 1:50 to -8 ft. is assumed.

The above gives a schematized representation of the parabolic beach profile.

Due to the impact of wave action, a sorting of beach sediment also will take place along the beach profile. The largest particles are found in the vicinity of the plunging point of the breaking wave.

9.3.3 Plan Form

In order to evaluate the expected plan form of the beaches, conditions at the entrance must be specified.

The philosophy of entrance design involves in general, the creation of two wide and shallow entrance areas, in which waves break at all times and by which wave induced mass transport enters the lagoon. A relatively deep and narrow section provides the opening, through which the wave induced flow can return to the ocean.

With an assumed entrance profile, wave energy flux entering the lagoons can be estimated.

A methodology has been developed to calculate equilibrium plan forms under given wave impact and has applied to the West Beach lagoons (Gerritsen and Dayananda, 1984). In this method the following assumptions are made:

1) Waves approach the coastline at right angles. With small apertures (as in the case under study) the effect of wave direction on plan form is assumed to be small.

2) The diffraction of the waves inside the lagoons is calculated using the numerical method of La Combe.

3) The wave pattern before reaching the beach slope, is also obtained by calculating the wave patterns from the propagation of energy flux (Huygens's method)

4) On the beach slope wave refraction is taken into consideration.

5) Equilibrium plan-form conditions were then obtained by calculating radiation stress components parallel and perpendicular to the coast and the resultant gradients in water level.

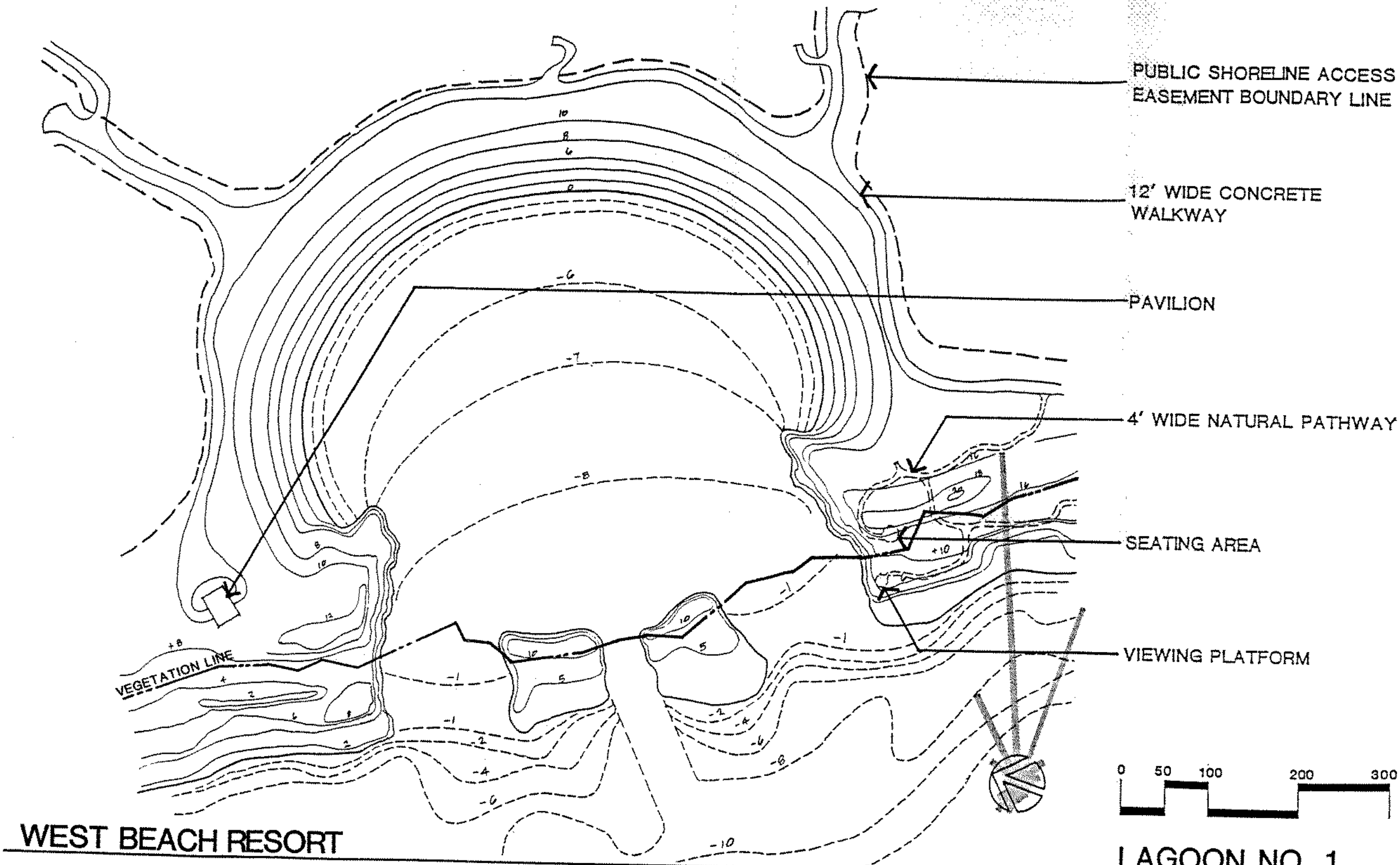
An equilibrium shape is obtained when the resultant longshore velocity equals zero. Results of the various calculation for the lagoons #1-4 are given in Figures 10 through 13. For details of the methodology reference is made to Gerritsen and Dayanada (1984).

9.3.4 Beach Dynamics

The calculated beach slopes and plan form are subject to change due to changes in wave characteristics and water level conditions, such as:

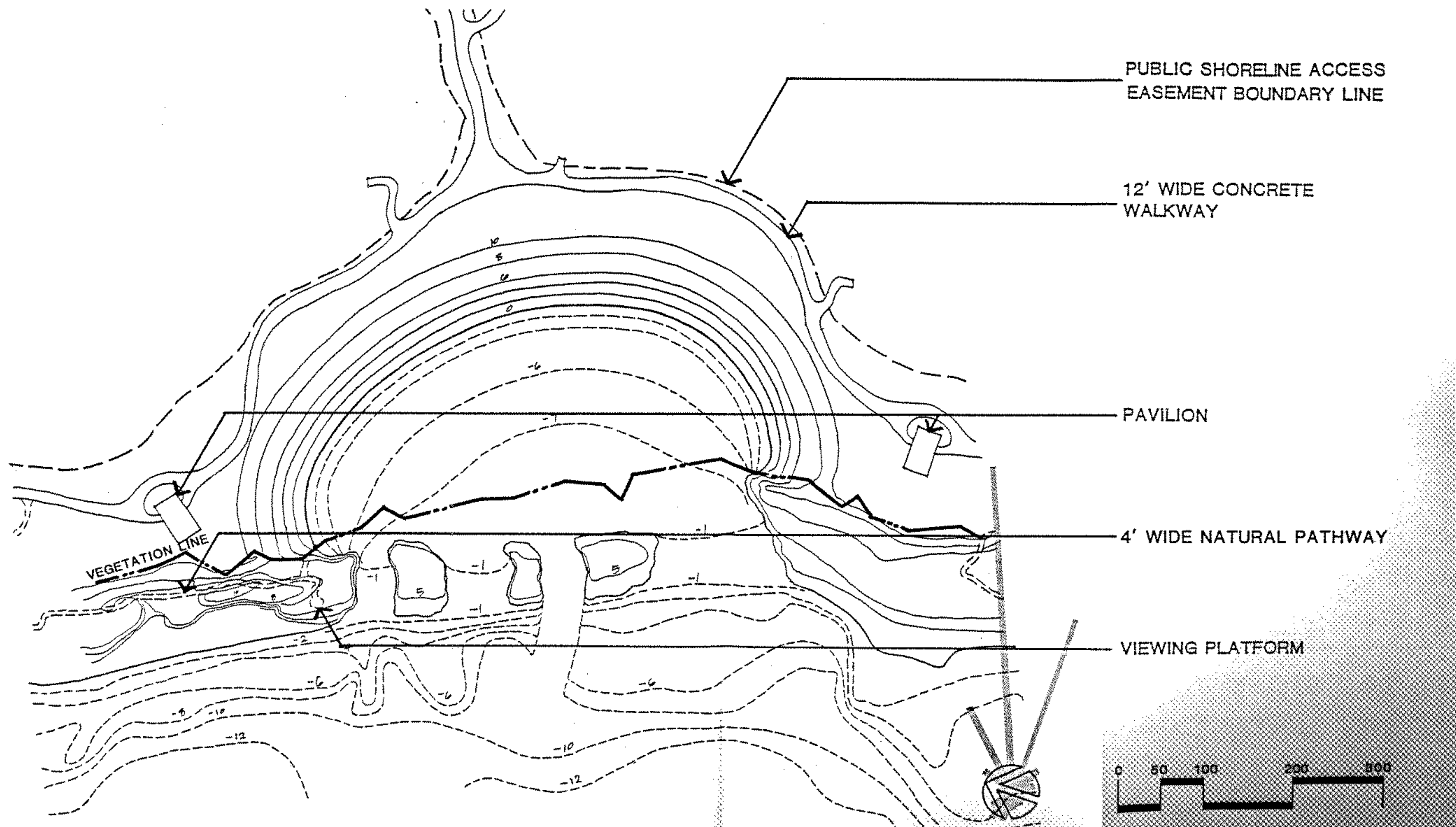
(1) During high swell conditions, the water level outside the lagoon will be considerably increased (2-3 ft) due to wave set-up.

    This changes the ratios between energy fluxes through the shallow portions and deep portions of the gap and thereby influence the shape of the plan form.



LAGOON NO. 1

FIGURE 10

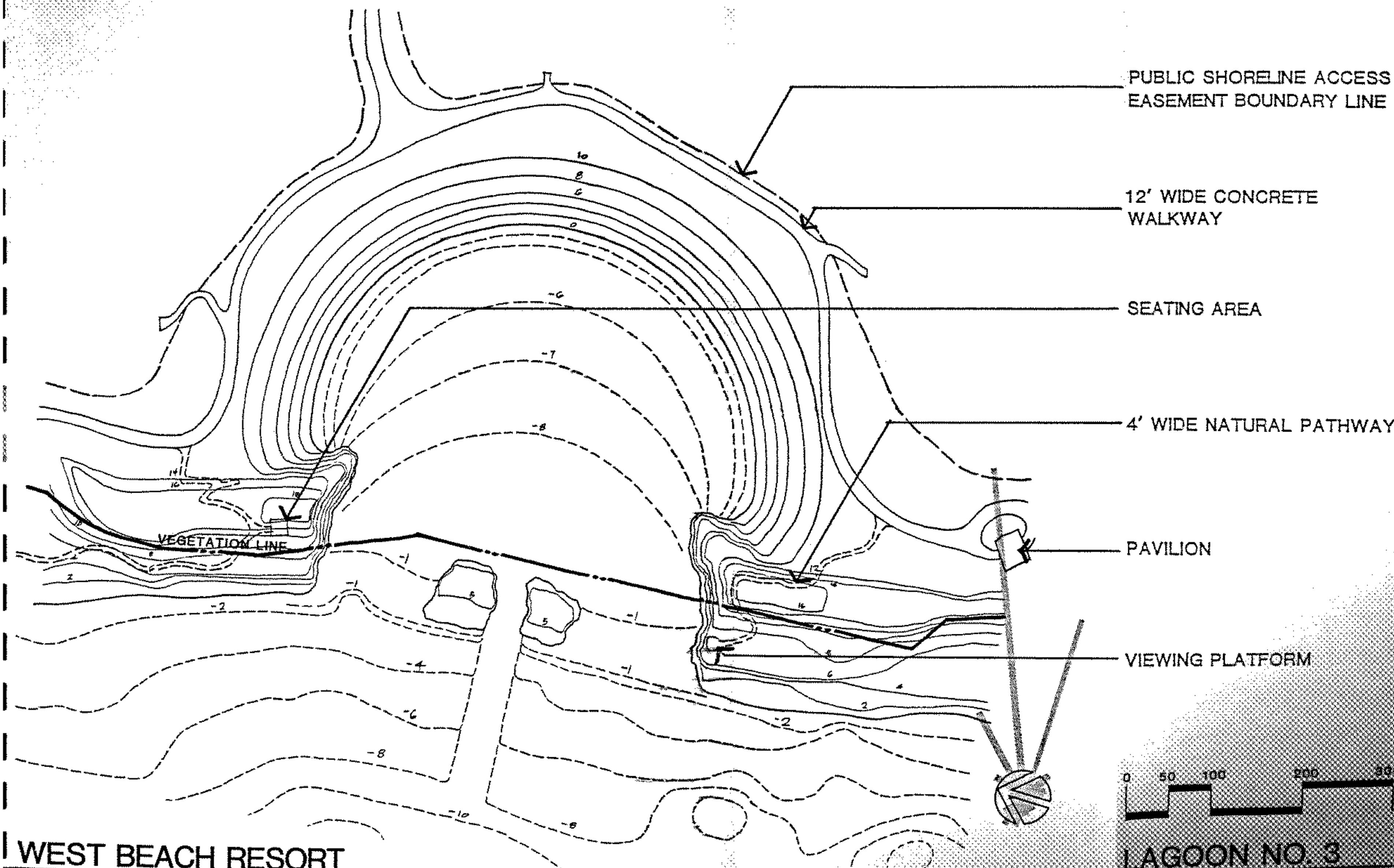


WEST BEACH RESORT

LAGOON NO. 2

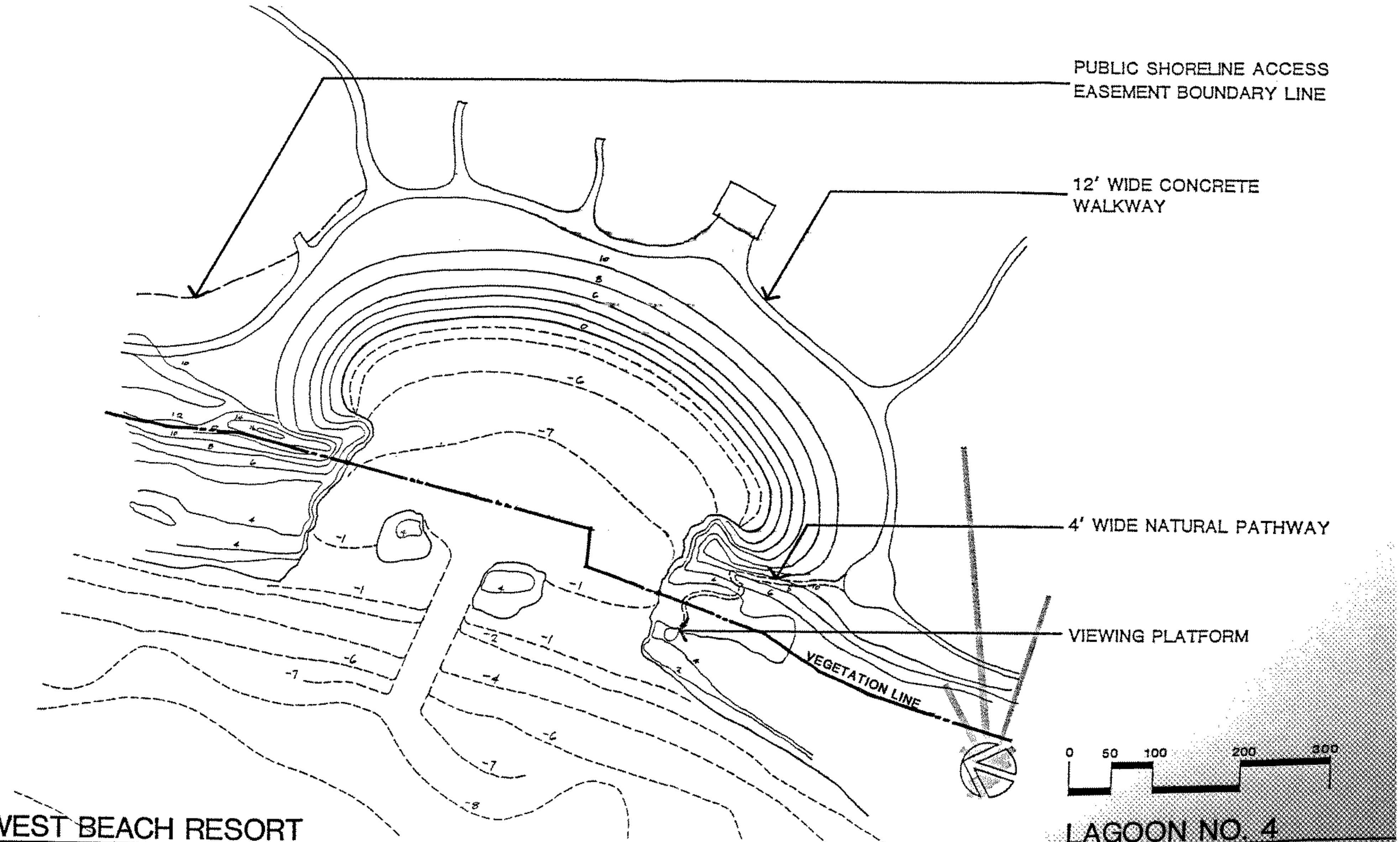
FIGURE 11

WEST BEACH RESORT



LAGOON NO. 3

FIGURE 12



WEST BEACH RESORT

LAGOON NO. 4
FIGURE 13

A distinct wave direction difference from the normal (perpendicular) one will also affect the shape of the beach making it asymmetrical rather than symmetrical.

(2) During those conditions more energy will pass through the gap and the beaches will tend to erode, depositing the material in deeper sections.

(3) During high swell conditions wave group effects will be considerable thereby inducing a long period oscillation of the water level in the lagoon and on the beach. Due to this effect wave run-up will be increased which will affect the level of the berm.

(4) Changes in beach profile and planforms will also be induced due to the effects of hurricanes, such as Hurricane Iwa in November, 1982.

(5) In view of the above wave and beach dynamics, it will be necessary to leave sufficient space between the proposed average beach profile and any structures. This includes the proposed walkway along the beach.

9.3.5 Entrance Structures

It is assumed that the local barrier of beach rock, that runs along the entire project, is of such quality that it will withstand wave action at the entrance.

Further studies on the quality of this rock are necessary to evaluate whether or not this rock has the assumed structural integrity.

At this point in time, it is furthermore assumed that no further protective works are necessary to restrict the maximum wave action entering the lagoon.

In this respect, it will be necessary to take a closer look at the conditions that are assumed to constitute safe swimming conditions and their frequency of occurrence.

Such analysis will then reveal whether or not it will be necessary to design protective structures outside the lagoon entrance to limit maximum wave energy inside the lagoons. According to A.A. Yee Division, Leo A. Daly consulting engineers, the most recent studies conducted under the winter field program have indicated that additional structures are not necessary.

9.3.6 Safe Swimming Conditions

Safe swimming conditions are characterized by the following criteria:

(1) wave heights not to exceed a maximum wave height

(2) wave induced currents not to exceed maximum values

(3) return flow through gap not to exceed maximum values

(4) long period water level fluctuations not to exceed certain magnitude. The following criteria are suggested:

* Wave heights inside lagoons not to exceed 2.5 ft.

* Wave induced currents not higher than 1.5 kn in shallow entrance area

* Wave induced return flow through middle gap not to exceed 1.5 knots

* Long period water level fluctuations not to exceed 0.5-1 ft.

Lagoons will be designed in such a manner that under operational conditions the above criteria will be met. During extreme weather and/or wave conditions, these limits may be exceeded but timely warnings should be given to advise against swimming under those conditions.

A special study is presently underway to evaluate waves and currents during winter conditions at the existing Kamokila Lagoons. This study will provide valuable additional information for the detailed designing of the West Beach lagoons.

It must be noted that long period oscillations induced by surf beat and by wave group effect on breaking induce strong velocities in entrance cross-section. These velocities also depend on the depths of the entrance sections.

9.4 Conceptual Design of the Marina

The proposed marina at West Beach covers approximately 33.9 acres of water area and is intended to provide private slips for sail and power boats, slips for commercial boats for charter fishing and dinner cruises, a public boat launching ramp and support facilities such as fuel dock, pump out facilities, car parking and some modest repair facilities.

The Marina is approximately 2,900 ft. long (including 900 ft. of entrance channel) and is 950 ft. wide at its widest point. The basin will be 15 ft. deep below MLLW and will have a minimum channel width of approximately 200 ft.

From a navigational point of view design requirements differ for the marina basin and entrance channel. In the entrance channel, allowable wave heights are higher than in the basin.

Specific elements to be considered in the design are:

- Configuration, size and orientation of the basin, adequate to meet project requirements;

- An entrance channel that provides safe navigation conditions to the marina;

- Measures to prevent wave action from entering into the basin;

- Measures to reduce wave agitation in basin;

- Measures to prevent serious sedimentation of entrance channel.

A short discussion of several design considerations is given in this report.

9.4.1 Marina Entrance

In this section, we will discuss entrance location and special measures required for dissipating wave energy.

Conceptually there are three possible locations for the entrance to the marina:

- entrance inside deep draft harbor,

- separate traffic lanes in an enlarged combined entrance channel for both commercial and recreational navigation,

- separate entrances for deep draft harbor and marina.

The solution to be selected must meet the following requirements:

- safe manuevering for incoming and outgoing boats (adequate width of shipping lanes)

- adequate orientation with respect to prevailing winds;

- absence of strong circulatory flow patterns (eddies) which adversely affect navigation and promote sedimentation in entrance;

- absence of strong wave reflection and confused seas;

- adequate vision for both traffic entering and leaving marina and in areas where commercial and recreational traffic lanes interfere;

- minimum adverse effect on the littoral drift and consequently on the stability of adjacent shorelines.

The alternative design solutions for the marina entrance have been tested in a hydraulic model in the J.K.K. Look Laboratory of the University of Hawaii.

9.4.2 Wave Conditions in Marina Entrance

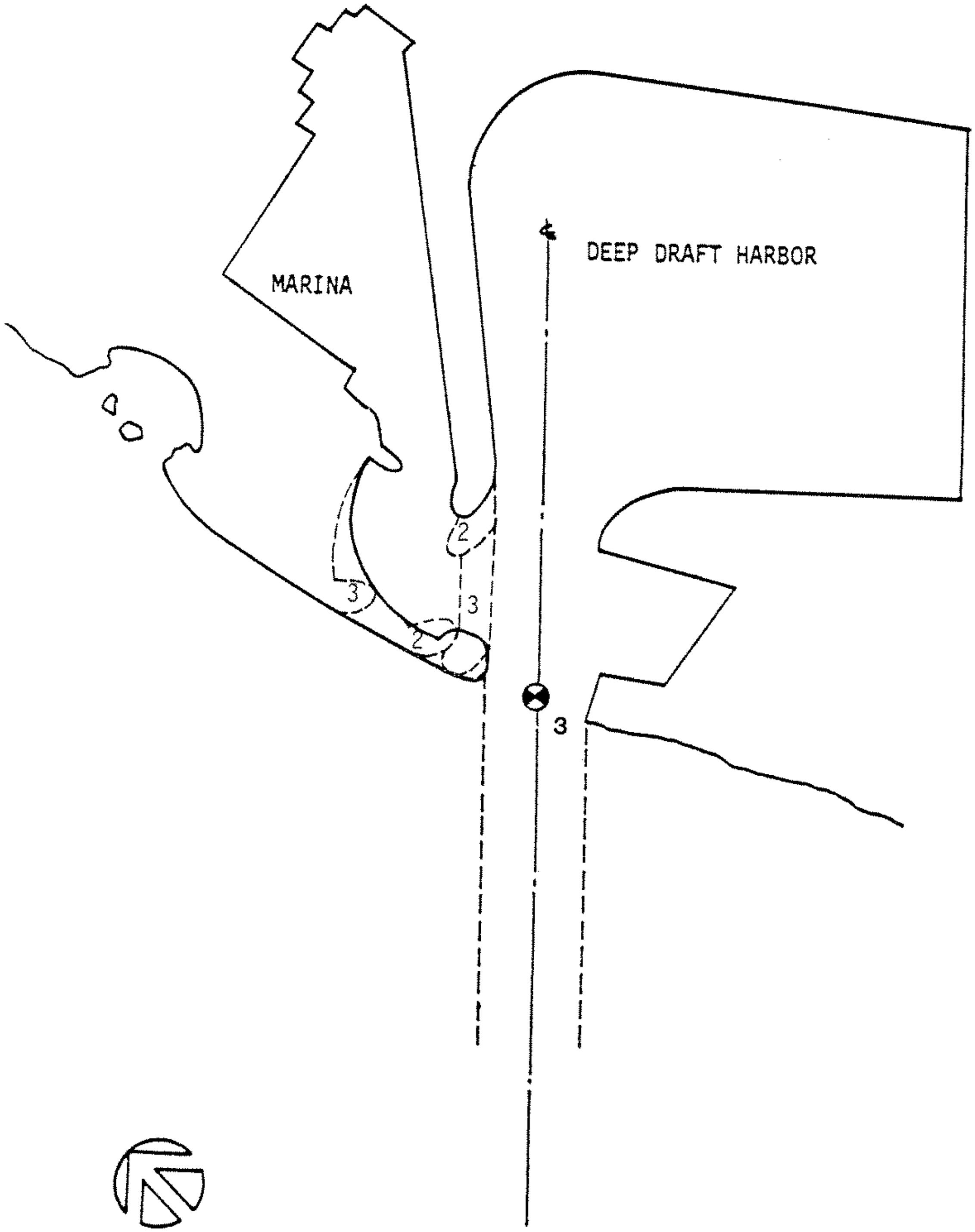
It is of interest, both with respect to marina design and navigational concerns, to make an estimate of the wave height at the marina entrance. For the joint channel solution, the marina entrance is defined as the area represented by measuring station #3 in the deep draft harbor model study (Figure 14).

9.4.3 Separate Channel

For the separate channel, a location at the crossing of the axis of the approach channel and the original shoreline defines the entrance area.

When a separate entrance of 25 ft. depth is dredged, wave energy will decrease along the axis of the channel in shoreward direction due to channel refraction.

Refined calculations could be made to determine wave conditions at the marina



WEST BEACH

LOCATION
TEST STATION 3

FIGURE 1

entrance (as defined above), but in view of the model studies conducted at the J.K.K. Look Laboratory, such calculations were not felt necessary.

Nevertheless, an estimate has been made of the reduction in wave height in the channel; such estimate is presented in Figures 15 and 16. In Figure 15, the ratio between the estimated wave height at the entrance and the deep water height is plotted against the deep water wave height.

It is estimated that the wave height at the entrance is 50-75% of the deep water wave height which ratio varies with wave height. In Figure 16, the estimated wave height at the entrance is plotted against the deep water wave height.

9.4.4 Joint Use Channel or Parallel Channel

Model studies carried out previously give information on wave height in station #3 (Figure 14) These data may be used to obtain insight into wave height conditions at the entrance to the channel (Look Lab Report #8, 1970)

Diagrams similar to Figure 16 may be drawn to determine the wave height at Station #3 (H_3) versus the wave height in deep water (H_o).

It appears that both the wave period and the wave direction affect this ratio.

Although the data are for selected conditions and some trends seem not well defined, the following general conclusion can be drawn.

1. For the directions W-WNW-NW waves in the entrance are generally higher than for the more southerly directions.

2. There is a dependency on both wave height and wave period.

3. For wave heights in deep water of 14 ft. and a wave period of 8 seconds the wave height at station #3 reaches its highest value (of the date plotted), of 9 ft. (Figure 17).

4. Waves larger than 20 ft. were not tested in the original Barbers Point Deep Draft Harbor model so that no information on the wave heights in Station 3 is available for those conditions. It is estimated that during a hurricane (H_s = 35 ft) waves in the entrance may reach values of above 10 ft.

The completed model study provides additional information on this condition.

The observation that waves from the direction S-SW do not generate the highest waves in the entrance channel is not directly obvious, because the channel has an orientation toward S.W.

Apparently under waves from the S.W. wave refraction will divert much wave energy away from the channel leading to lower waves in the entrance area.

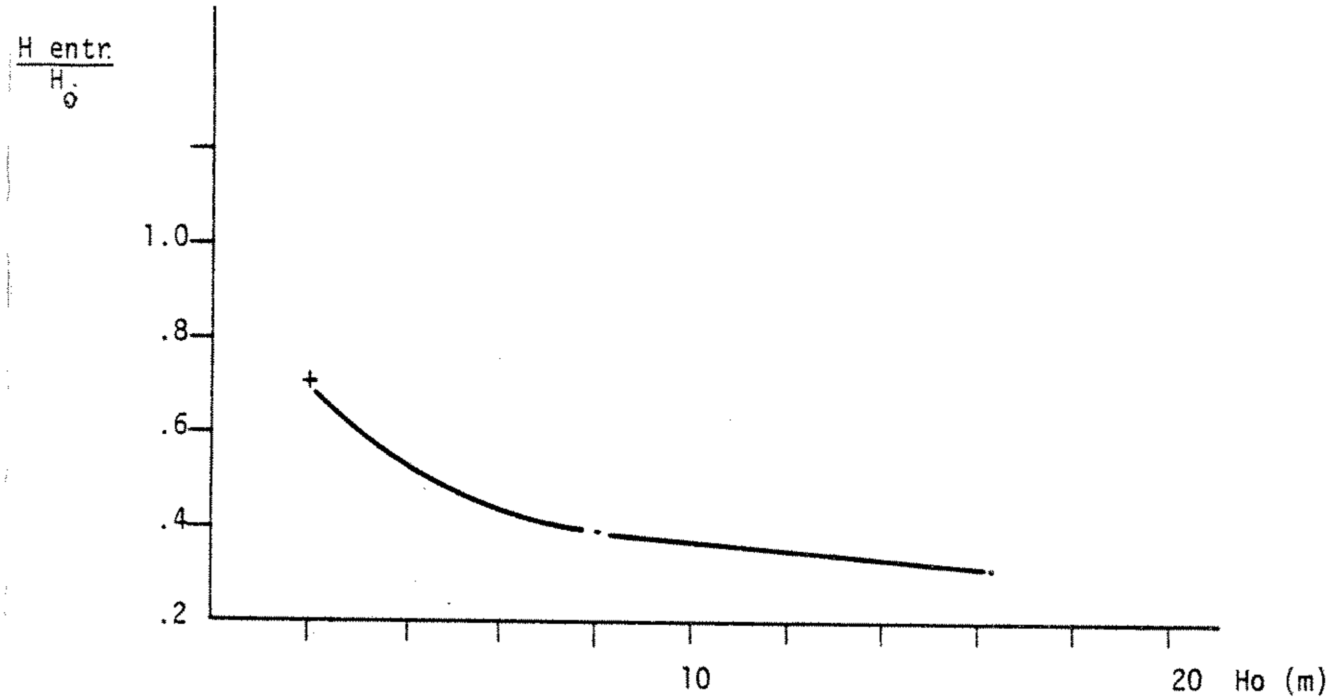


FIGURE 15

ESTIMATED RATIO OF WAVE HEIGHT AT MARINA ENTRANCE AND IN DEEP WATER

SEPARATE ENTRANCE CHANNEL

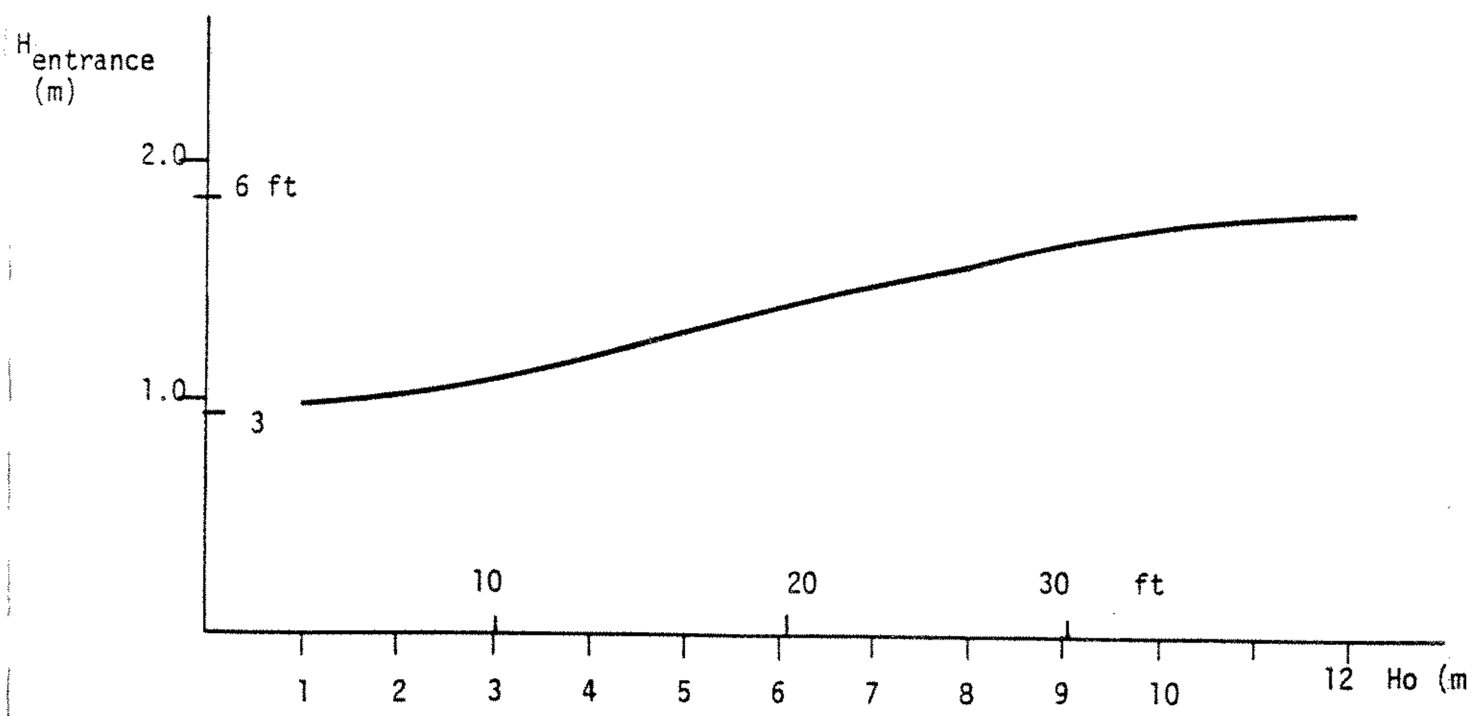
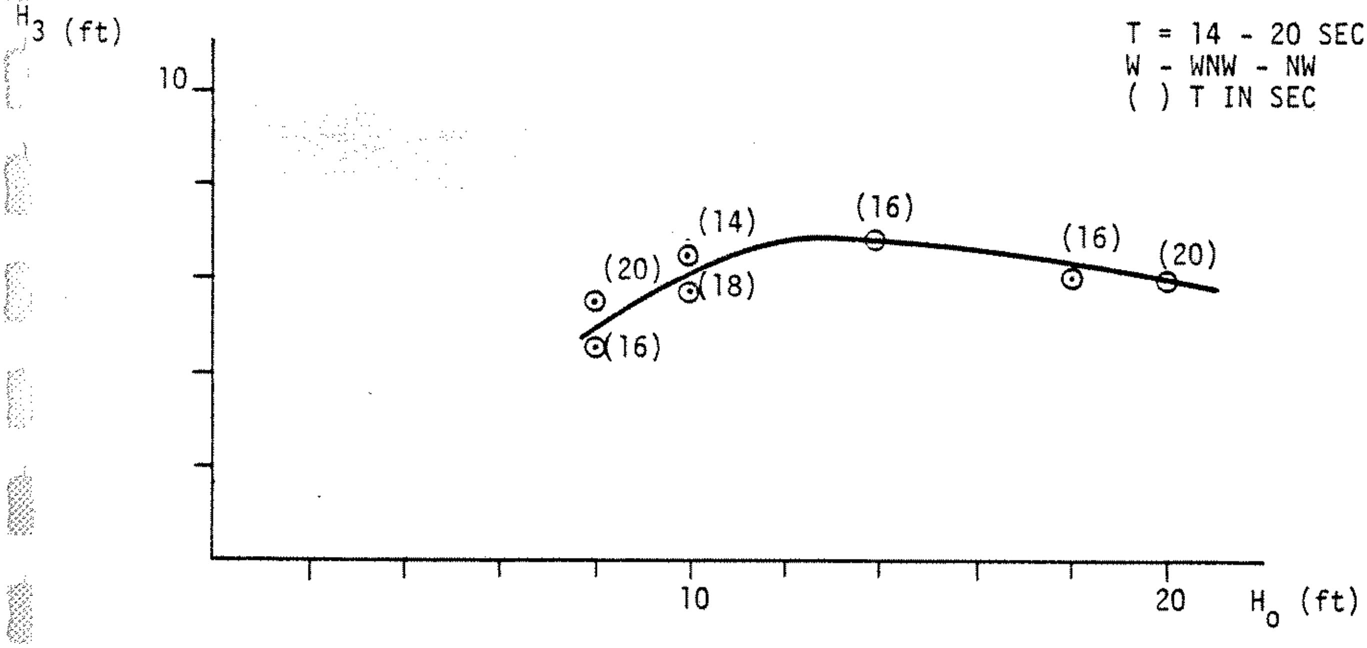


FIGURE 16

ESTIMATED WAVE HEIGHT AT MARINA ENTRANCE-SEPARATE ENTRANCE CHANNEL



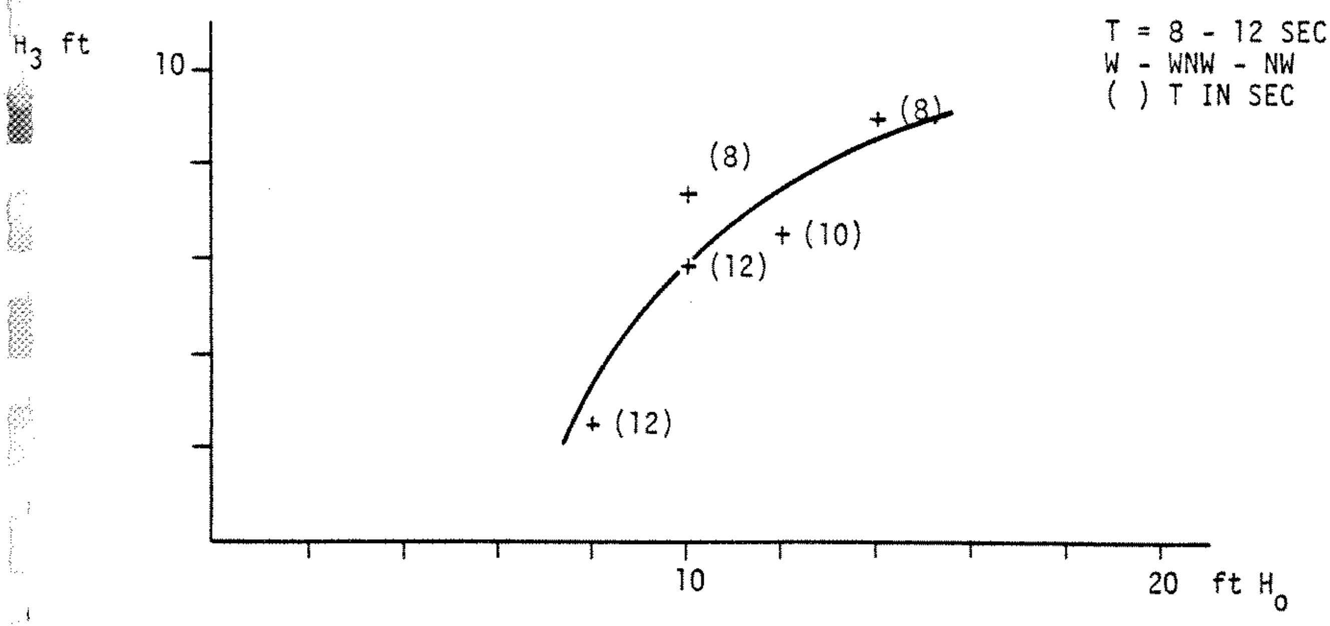


FIGURE 17

WAVE HEIGHT IN ENTRANCE CHANNEL OF DEEP DRAFT HARBOR (STA #3)
DIRECTION W - WNW - NW

(SOURCE : HYDRAULIC MODEL STUDY)

9.4.5 Entrance Inside Deep Draft Harbor

This solution utilizes the 450 ft. wide and 42 ft. deep entrance channel to the deep draft harbor and thereby provides an all weather safe access route to the marina (Figure 18). This includes storm conditions and thus, is an important advantage.

The nearby small boat harbor at Waianae do not provide all-weather access.

Using the existing deep draft harbor channel will furthermore have a minimum adverse impact on the coastal environment outside the entrance; there is no adverse impact on littoral drift conditions. With the entrance to the marina located off of the deep draft harbor entrance channel, no offshore dredging would be required. Consequently, no existing coral or offshore habitat would need to be removed to create an entrance for the marina.

A solution that involves the marina entrance inside the deep draft harbor must be designed in such a way that it maximized wave energy dissipation. One of the ways to do this is to provide a so-called spending beach (slope 1:10 or less) arrangement. The proposed solution (Figure 18) has such an arrangement. Such a solution is believed to also have a favorable effect on the wave environment of the deep draft harbor.

A marina entrance inside the deep draft harbor may be located near the entrance or further inside the harbor basin. A location close to the ocean has two distinct advantages:

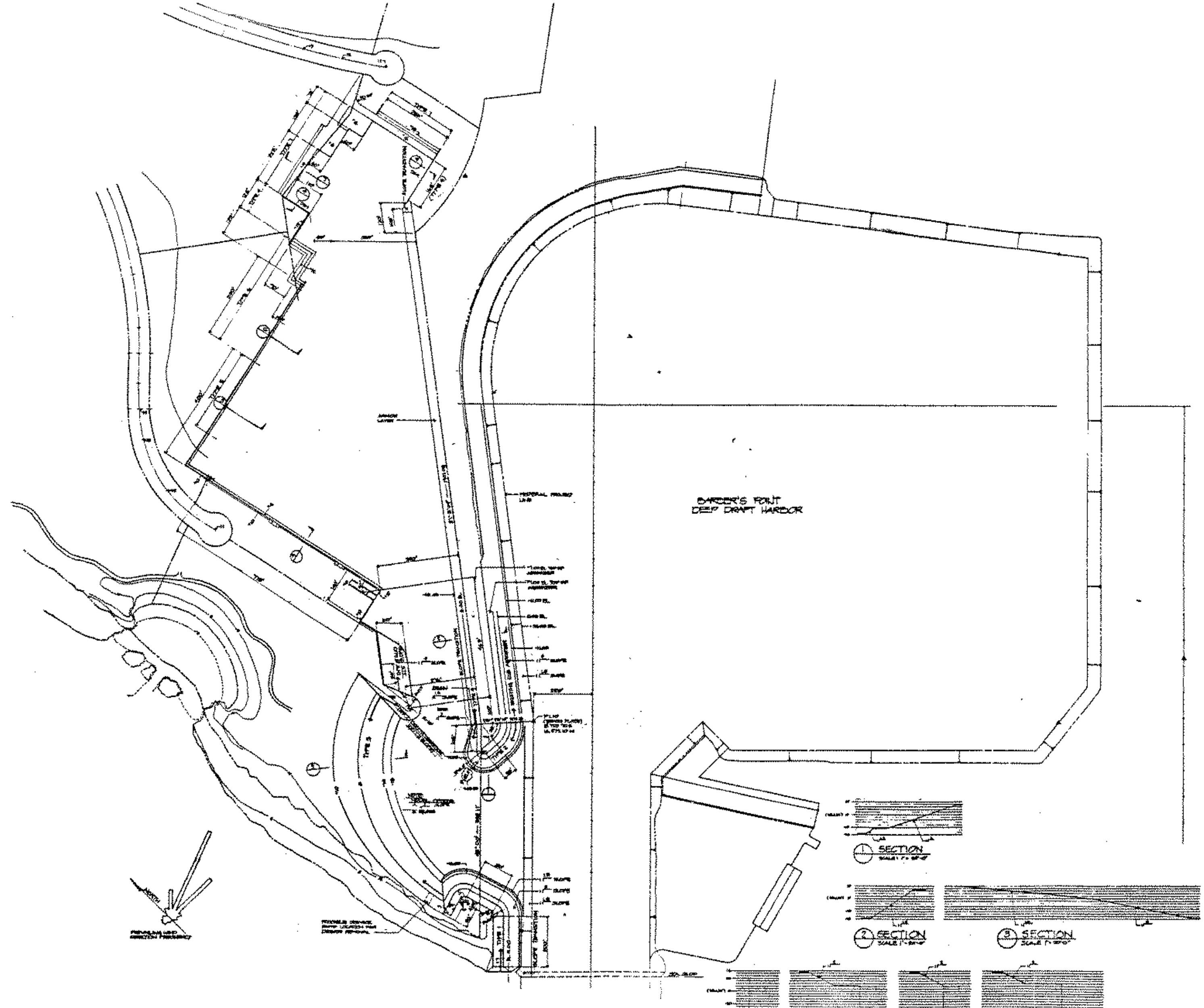
(1) excitation of long waves will be smaller;

(2) no interferences between boats entering the marina and commercial ships in the process of berthing.

The disadvantage of this solution is the joint use of the entrance channel by both commercial and recreational vessels and the possibility of a collision. It is recognized that the U.S. Army Corps of Engineers did not design the deep draft harbor entrance channel for joint use by commercial and recreational vessels. However, expected commercial traffic densities are low and a joint use of the existing channel could therefore be considered. A proper warning system should then be installed to secure collision free traffic. Furthermore, a proper warning system may alleviate some or all of these problems. Maintenance responsibility of a joint useage channel is currently unresolved but will be an issue to be addressed by State Department of Transportation Harbors Division.

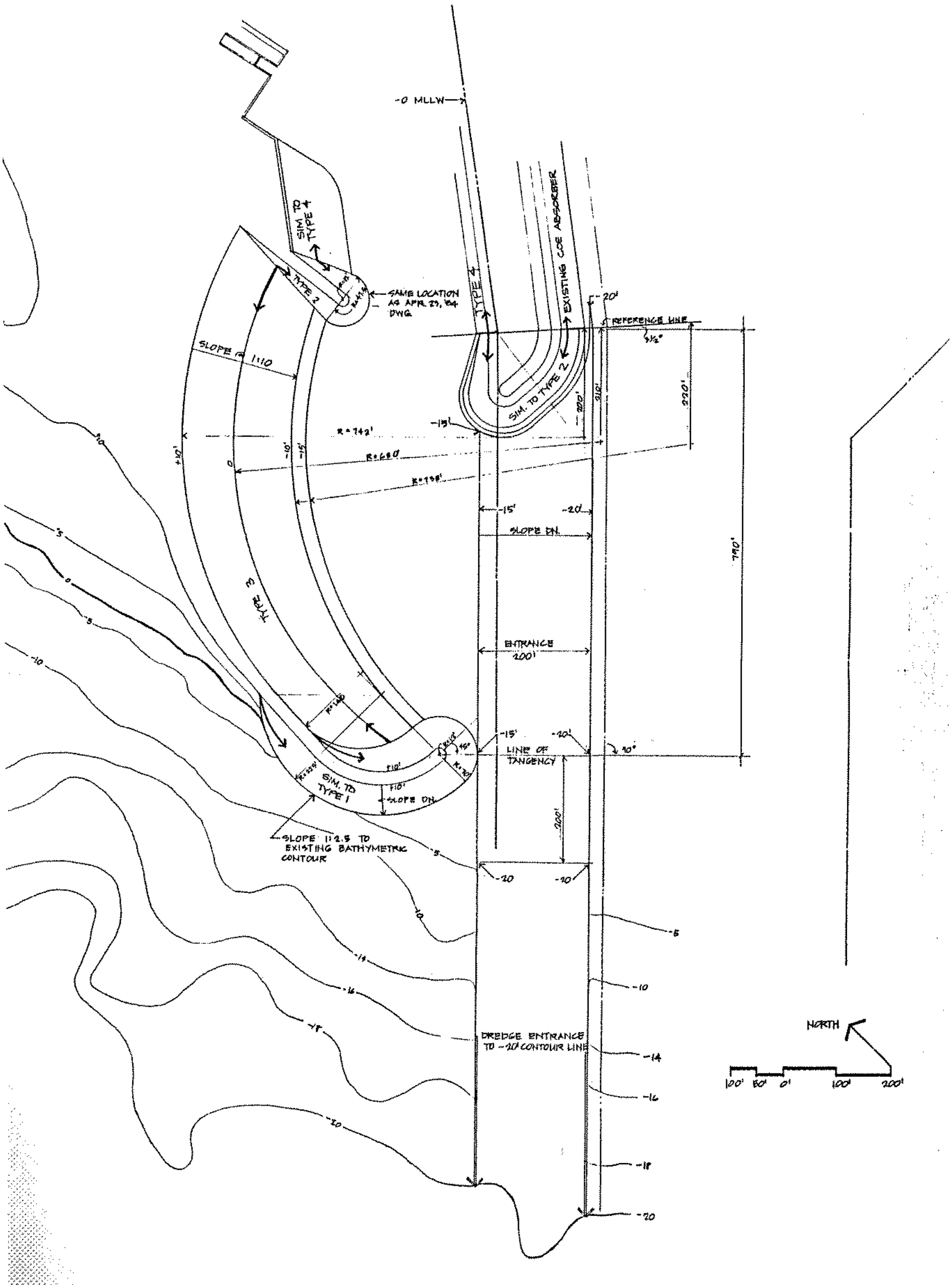
9.4.6 Separate Traffic Lanes In Combined Entrances

This solution has the advantage of separating the traffic flows for the marina and the deep draft harbor, potentially reducing the risk of collision (Figure 19).



WEST BEACH RESORT

PROPOSED MARINA



WEST BEACH RESORT

PARALLEL CHANNEL OPTION

FIGURE 19

This solution invites more energy into the marina given the same width of entrance. A reduction of the entrance width to the marina may be necessary. The impacts of this solution on the deep draft harbor has been studied in the hydraulic model. This option may expose the existing barge harbor basin to more direct wave attack from NW waves. The favorable effects on reducing wave height in the deep draft harbor may not be as significant as in the first solution with a joint entrance channel.

This alternative would require the removal of a 200 foot wide section of the shoreline as well as entail offshore dredging approximately 650 feet offshore (to the -20 contour) for a width of 200 feet removing any existing coral or benthic habitat in this area.

Construction of this entrance would increase the dredging costs for the marina an additional 13%."

9.4.7 Separate Entrances

A separate entrance is likely to improve the water quality in the marina because there is no direct connection between the two basins (Figure 20). Water in the commercial harbor is likely to have a lower standard because of pollution associated with activities in this basin.

The major advantage is the complete separation of the two different flows of navigational traffic so that danger of collision is at a minimum.

For a separate marina entrance, a depth of 25 ft. below MLLW was selected in order to reduce the number of days that the entrance becomes unnavigable because of waves breaking in the channel.

Even with a 25 ft. depth of the channel, such condition is expected to occur several days per year.

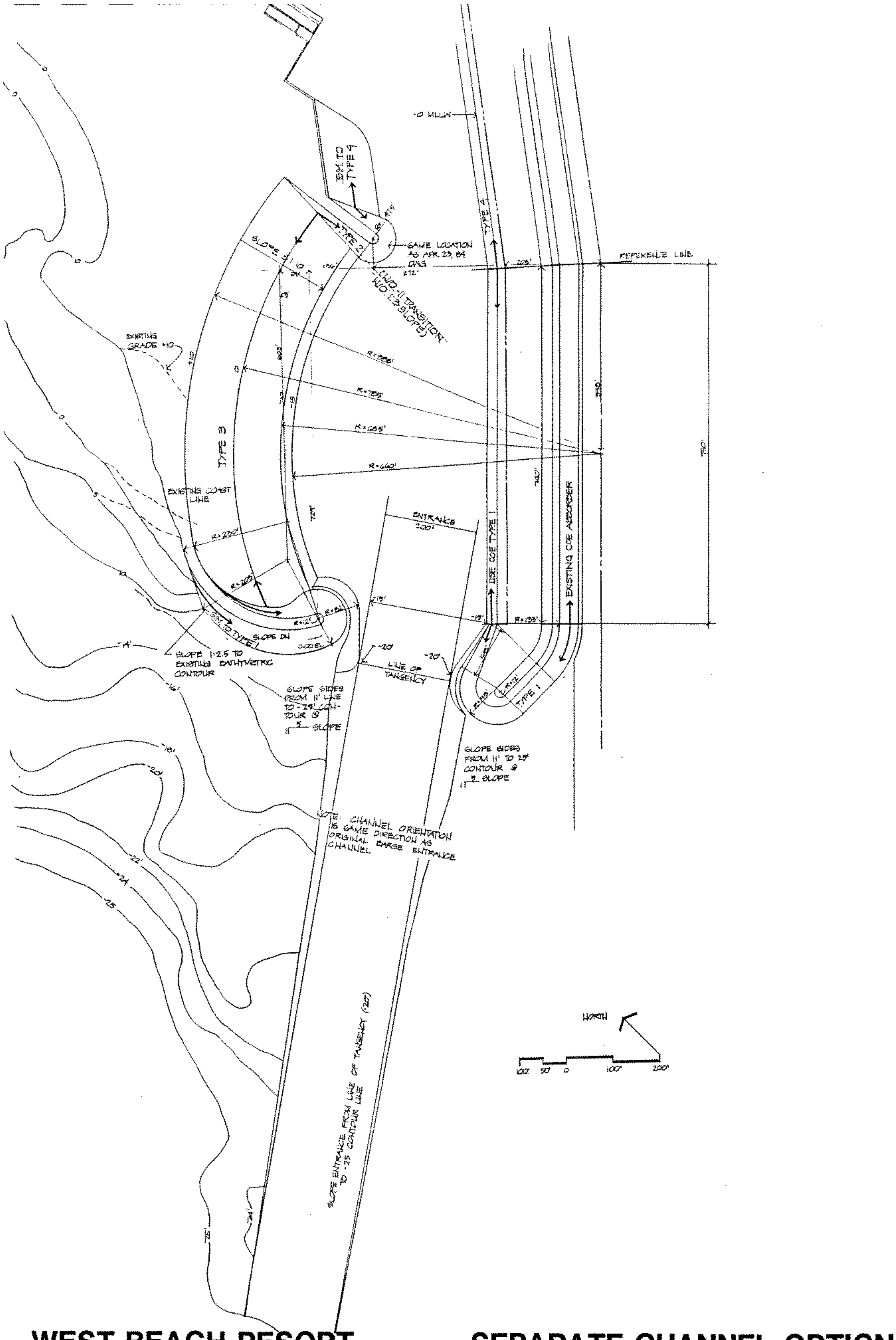
In the marina basin, waves are reduced in height and a depth of 15 ft. below M.LL.W is therefore, adequate.

When waves break in the marina entrance channel conditions are hazardous for entering vessels. Under those circumstances, yachts could still use the deep draft harbor as a harbor of refuge, but such use of the deep draft harbor channel is undesirable because of safety and other reasons, (e.g. lack of adequate docking facilities for yachts in big harbor).

A yacht owner may make the wrong decision by trying to use the marina channel despite its unsafe condition due to breaking waves, and may thereby get himself into a hazardous situation.

Furthermore, a separate harbor entrance will have a greater adverse impact on the offshore environment because of necessary dredging and of impact to the shoreline and offshore bottom in the immediate vicinity of the entrance.

Sedimentation of the channel, which is likely to occur, will require regular maintenance dredging. A 200 foot wide section of shoreline would need to be



WEST BEACH RESORT **SEPARATE CHANNEL OPTION**

FIGURE 20

removed and an offshore channel dredged approximately 1500 feet long (to the -25 contour) and 200 feet wide. Therefore, all existing coral and benthic habitat in this area would be removed by dredging. Construction of this separate entrance channel would increase dredging costs for the marina approximately 12%."

9.4.8 Marina Basin

The size, configuration and orientation of the marina basin were determined by planning considerations of external circumstances, such as the required distances from deep draft harbor hazard zones.

Depending on boat size the available harbor will provide space for 350 to 500 boats, making the marina one of average size.

In the design of boat slip arrangements, attention must be paid to the following aspects:

- predominant winds and short period "chop";
- wave absorption devices;
- avoidance of debris traps;
- flushing of debris;
- adequate manuevering space;
- adequate depth (15 ft. below MLLW)

With respect to wave absorption the long breakwater facing the south side of the harbor will be constructed as a wave absorber.

The other walls are conceived as vertical sheet pile walls; the docks and piers will be of the floating type.

9.4.9 Other Hydraulic Considerations

Other hydraulic considerations that may affect the efficiency of the marina are:

* response to long period and short period waves
* adequate flushing;
* sedimentation traps (for run off)

The long period waves of interest are tsunami waves, weather induced oscillations (hurricanes) and surf beat.

The harbor's own frequencies are away from the expected excitation frequencies of the ocean so that no special problems are anticipated (see K. Bathen, 1984).

The location of the marina entrance near the ocean boundary suggests that major interaction phenomena between the two harbor basins are unlikely.

9.4.10 Hydraulic Model Investigations -West Beach Marina

I. Description of Test Program

Hydraulic model investigations were conducted at the J.K.K. Look Laboratory of Oceanographic Engineering in Honolulu. Dr. T.T. Lee served as Principal Investigator.

Two types of model studies were conducted:

(1) A three-dimensional undistorted model, scale 1:100, covering the proposed marina, the adjacent Barbers Point Deep Draft Harbor, Barge Harbor, and the adjoining ocean area.

(2) A two-dimensional undistorted model in the wave flume, scale 1:10, for evaluating alternative marina boundary designs for wave energy absorption.

The objective of the three-dimensional model was to test the wave characteristics of three proposed entrance design concepts for the West Beach Marina (Figures 18, 19 and 20).

The objective of the two-dimensional studies in the wave flume was to evaluate the wave reflection coefficients of various structures: a sloping (1:10) spending beach, the vertical walls in the marina's berthing areas, and Igloo wave absorbers. Igloos are a specific type of vertical wave absorbers used in harbor basins. In the case of the West Beach Marina they are being considered for the entrance area as an alternative to the spending beach and as wave absorber in front of vertical walls in the marina basin.

The model test results will be used to select the best design for the marina with (i) minimum wave action within the marina boundaries; (ii) minimum adverse effect on the Barber's Point Deep Draft Harbor; (iii) acceptable navigation conditions for vessels entering the marina or the Deep Draft Harbor.

Seven test plans were studied as follows:

Plan O - The Deep Draft Harbor without the marina

Plan I - Marina entrance perpendicular to the harbor channel with spending beach and without Igloos.

Plan II - Marina entrance perpendicular to the harbor channel with Igloo wave absorbers.

Plan III - Marina with entrance parallel to the harbor channel with spending beach.

Plan IV - Marina with entrance parallel to the harbor channel with Igloo wave absorbers.

Plan V - Marina with separate entrance and spending beach.

Plan VI - Marina with separate entrance and Igloo wave absorbers.

Test conditions in the three-dimensional model included waves with periods of 6, 8, 12, 14, 15 and 20 seconds and heights of 12, 18 and 36 feet. Wave directions included S45°W, S22.5°W, S67.5°W, and W. The wave generators were located approximately at the 150 ft depth contour. The test water levels were +3.0 ft for moderate wave conditions and +4.0 ft for storm wave conditions.

In the two-dimensional model wave periods were 6, 12, 15 and 20 seconds with heights ranging from 1 to 4 ft. In this model, the effect of a section of floating marina pier on the wave reflection coefficient against a vertical wall was also investigated.

The results of these hydraulic model studies led to the following conclusions.

II. Conclusions

I. Impact on Wave Conditions in the Deep Draft Harbor

It was found during the test of the harbor without the marina (Plan O) that under certain conditions (e.g. H = 18 ft, T = 6 sec., Direction = S45°W) wave conditions at the berthing site in the Deep Draft Harbor exceeded a wave height of 4 ft. Under these conditions the maximum wave heights in the barge harbor near the entrance exceeded 10 feet.

Both Plans I and II, involving a perpendicular marina entrance, have a moderating influence on the wave heights in the deep draft harbor. Under the conditions listed above, waves at the berthing site are reduced to below 4 ft; the wave height in the barge harbor is reduced from about 10 ft to about 4 ft.

Plans III and IV, involving a parallel entrance, also have a moderating effects on the deep draft harbor waves but to a somewhat lesser degree than Plans I and II. Plans V and VI, with a separate marina entrance, do not have any significant effect on the wave conditions in the Deep Draft Harbor.

It is concluded that from a wave impact point of view, Plans I and II are superior to the other plans. There is no adverse impact on the wave conditions in the deep draft harbor. On the contrary improvements may be expected. Plans III and IV, although less effective than Plans I and II, have acceptable wave conditions. Plans V and VI appear to be less acceptable with respect to wave conditions than the other plans.

2. Wave Conditions in Marina

For Plans I and II wave heights inside the marina basin are below the maximum allowable limit of 2.0 ft under all tested conditions. For Plans III and IV, wave heights exceed this level in a small number of test conditions. The same is observed for Plans V and VI.

It may be concluded that Plans I and II are better than the other plans.

A comparison between the three-dimensional test results of the conditions without and with Igloos at Stations 4 and 5 shows only minor differences between the two solutions. Based on the two-dimensional testing, it is likely that due to scale effects under prototype conditions, the spending beach solution will be better because of its lower reflection coefficient, especially for longer period waves.

3. <u>Wave Conditions in Entrance Channel</u>

Wave conditions in the entrance channel are important because they signify the navigation hazards when entering the marina under adverse wave conditions. In Plans I and II, the deep draft harbor channel allows relatively safe entering of yachts because its greater depth induces breaking of only very large waves which occur infrequently.

During certain test conditions (18 foot wave height, 14 second period and S22.5°W wave direction) in Plans I and II wave heights in the vicinity of the perpendicular entrance may reach or exceed 10 feet. Such conditions make entering hazardous, and these plans should provide sufficient maneuvering space to allow safe entering. It should be added that such conditions are uncommon and that under such circumstances crafts should not normally be attempting to enter or exit the marina.

In Plans III and IV under extreme wave conditions, the wave heights outside the entrance are higher than in Plans I and II. However, the parallel channel allows more room for maneuvering outside the marina entrance.

Inside the entrance the wave conditions are also higher than in Plans I and II, which make maneuvering difficult, although the maneuvering area in the configuration tested is somewhat larger than in Plans I and II.

In Plans V and VI, the most serious conditions will occur in the entrance channel offshore, where waves of 18 ft and higher were observed to break. The model test had no gage installed in that section so no direct measurements are available. The separate entrance test with Igloos (Plan VI) gave a slightly higher wave conditions than the test with a spending beach (Plan V). From a navigational safety point of view, the separate entrance alternative appears to be the least desirable.

4. <u>Solutions With and Without Igloo Wave Absorbers</u>

The differences between the test results for solutions with and without Igloos are small.

In the berthing areas, the wave heights seem to be slightly less for the Igloo solution than for vertical walls.

In the entrance, the spending beach should be more effective in view of the results of the two-dimensional tests.

5. Two-Dimensional Test Results

The two-dimensional tests in the wave flume, scale 1:10, provided adequate results regarding the reflection coefficients of alternative marina boundary conditions.

In comparing the Igloo solution with a vertical wall, the Igloos appeared effective for a wave period of 6 seconds but less effective for the higher wave periods of 12, 15 and 20 seconds. Measured reflection coefficients for a 6 second wave are:

1:10 Spending Beach	:	0.35
Igloo Wall	:	0.65
Vertical Wall	:	0.78

III. Summary of Model Test Results and Observations

The following table gives the qualitative results of the evaluation of the three major alternative West Beach Marina entrance configurations in terms relative to each other with respect to wave conditions and navigation. Wave frequency analysis and photos of model test wave refraction would be used to assist in selecting a channel alignment, however it should be noted that all of the alternatives produce acceptable wave conditions in the marina deep draft harbor.

Factor	Perpendicular Entrance	Parallel Entrance	Separate Entrance
Harbor Wave Conditions	Best	Good	Worst
Marina Wave Conditions	Best	Good	Acceptable
Navigation	Best	Good	Worst

9.5 Recommendations on Lagoon and Marina Design

1. Recommendations are given regarding sand size, beach slope, and planform of lagoons (Figure 10-13). It is emphasized that at any given time, actual slope and planform may deviate considerably from calculated values. A considerable margin should be provided in set-back guidelines.

2. It is recommended, that the permanent walkway which encircles the lagoons should have an elevation of no less than 13 ft. above M.S.L. Minor overtopping during extreme conditions may still occur.

   It is recommended that the set-back distance between walkway and 6 ft. beach contour should be no less than 100 ft. to allow for dynamic adjustments in beach profile and planform as a result of varying wave conditions.

3. Under extreme conditions existing coast elevations will be overtopped by wave run-up. An increase in coastal elevation and/or an adequate set-back distance from the shoreline must be provided to prevent damage to structures in the coastal zone near the shoreline.

   Based on wave run-up calculations, the following recommendations are made:

   a) Typically, the southern section of the project shoreline can best be protected by a 50 ft. wide coastal berm at elevation +16 ft. (M.S.L.).

   b) Typically, the northern section of the project shoreline is best protected by a berm of varying elevation of a distance of 250 ft. from the shoreline.

   From a wave run-up point of view, this berm elevation may vary between +12 and +16 ft. However, to provide adequate protection against tsunami run-up, a minimum elevation of +15 ft. is recommended (Bretschneider, 1984). The +15 ft. barrier against tsunami run-up may also be located further inland, however, if infrequent inundations of the areas near the shoreline are accepted in the overall planning concept.

4. Because of wave spray accompanying wave run-up during high waves, it is recommended that floor levels of buildings near the coast be no lower than 21 ft.

5. Plans for alternative solutions for the marina entrance are presented (Figures 18 through 20).

   The solution with the joint use of the deep draft harbor channel (Figure 18) is considered the most attractive to the developer, one from both economic and environmental points of view. This solution provides an all-weather type of marina, which is considered a strong advantage.

   The disadvantage of collision risk from joint use of the same channel can be reduced or eliminated by installing a proper buoy or warning system.

6. In view of the degree of accuracy present in current computational techniques for the stability and dynamics of lagoons, a winter field program at the existing lagoons is being conducted in 1984-1985 to measure wave conditions and beach behavior to verify some of the theoretical concepts used in the analysis of sandy beach behavior and the amount of artificial beach replenishment required.

   Results of this study will then be used in the final design of the four lagoons.

7. Recommendations on water quality, flushing, and long wave response of lagoons and marina are provided in K. Bathen (1984).

9.5.1 Construction Methodology

The proposed method of construction for both the lagoons and marina at West Beach is to use the existing rock shoreline as a barrier to prevent loose materials suspended during construction from entering the coastal waters. Excavation of the lagoon and marina basins would be performed in three phases. Phase one would be excavation in the dry to an elevation slightly above Mean High Water. The second phase would be excavation in the wet to the bottom of the proposed lagoon lining materials or bottom of the marina. After the second excavation phase, the lagoons and marina would be lined with their respective bottom and/or perimeter materials. At this point, the lagoons and marina would be essentially complete except for the final excavation stage. This final excavation stage would consist of the removal of the coastal rock to create the flushing channels for the lagoons and the entrance channel for the marina. The last operation in the final excavation stage for the marina would be the placement of armour rock at the new entrance channel location.

With this construction sequence, exposure of the coastal waters to the impact of excavation and dredging will be kept to the minimum in terms of length of time and quantity of disturbance.

Materials for the lining of lagoons and marina (armour/wave absorber stone) are intended to come from the project site. Excavated sand and rock from the lagoon and marina sites will be sorted for reuse as lining and materials. Exceptions to this reuse principal for lagoon and marina lining would be very large basalt armour stone for the entrance channel wave absorber similar to that used for the makai part of the entrance channel for the deep draft harbor. This is material that they also obtained offsite typically from agricultural fields or new subdivision developments on the island.

Sand required for lining of the new lagoon beaches will come from the marina and lagoon sites as well as from sand deposits present along the West Beach project site. A preliminary sand resource survey has been conducted to determine the extent of the resource available. Accurate measurement of the amount of sand resource presently on the site and available is a difficult process. However, the predicted quantities required by the new lagoons appear to approximately match the quantities of materials available from the site. Only during excavation and recovery will the final quantities available for beach lining be determined. At that time, there may be a need for the sand resource to be supplemented from offsite.

The excavation of the lagoons and marina will produce far more material than is required for marina wave absorber stone or lagoon beach lining materials. This excess material will be used within the West Beach project for fill on sites adjacent to the lagoons and marina.

The construction technique and equipment to be used has not been finalized since the project is in the preliminary design stages. Preliminary borings done at the proposed lagoons and marina sites show that most of the site is covered with uncemented to lightly cemented silty sand and clayey silt. These materials can be readily handled by conventional excavation equipment and would be suitable for reuse as compacted fill. Well cemented sands and coral are encountered in some areas at shallow depths. For mass excavations, these materials can likely be ripped. Blasting or pneumatic hammering may be necessary in confined excavations in the cemented materials. The cemented material would be suitable for reuse as compacted fill although some sorting of the material may be needed to cull out oversized cobbles.

Final detailed geological investigations at the marina and lagoon sites are scheduled for early in 1985. The results of these investigations will provide more detail regarding the geological and geohydrological character of the sites.

Based on this information and the requirements to mitigate environmental distrubances as much as possible, the developer proposes to prescribe environmental performance criteria that must be met or exceeded by the contractor during construction. These performance criteria would include ground vibration limits, noise control measures to insure adherence to State and County noise regulations, and turbidity limits for coastal waters.

9.6 Tsunami Inundation Elevations

The tsunami inundation elevations 200 feet inland from the coastline were calculated to be 8.2 feet and 9.0 feet MSL for the 100-year and 140-year return period, respectively. The 100-year recurrence interval corresponds to a one percent chance of occurring in any one year. The 140-year corresponds to 0.7 percent change and also the average of maximum of record of 140 years.

The above values of 8.2 and 9.0 feet corresponds to the then existing terrain roughnesses at the time when tsunami run-up actually occurred and assumed MSL conditions. If extreme high tide also occurred 2 feet above MSL, the above elevations would be 10.2 and 11.0 feet respectively for the 100-year and 140-year return period.

If the terrain roughness is decreased by development, then additional run-up elevation height would result. Therefore, it is conservatively estimated (by calculation) that extreme tsunami run-up elevations would be 13.1 feet and 15.1 feet respectively for the 100-year and 140-year recurrence intervals. The tsunami elevations also vary from location to location and could be lower than the extreme conditions. It is estimated that the variance in the ± 90 percent confidence limits are ± 2.0 feet. Therefore, the mean tsunami elevations will be 11.1 feet and 13.1 feet respectively for the 100-year and the 140-year recurrence intervals.

In view of the above discussion, it is recommended that the tsunami design elevations be used as follows:

$11 \pm 2.0 =$ 9 to 13 feet MSL for the 100-year return period, and
$13 \pm 2.0 =$ 11 to 15 feet MSL for the 140-year return period,

where it is understood that 13 and 15 feet in the above values are intended for those areas where the existing terrain roughness will be smoothed, and 9 to 11 feet can be used where no change has been made nor will be made to existing terrain roughness. The average values of 11 and 13 feet can be used where only small changes in terrain roughness will be made.

9.6.1 Tsunami Hydrographs

The 100-year and 140-year tsunami hydrographs for the entrance to Barbers Point West Beach Marina were determined by amplification and Froude scaling of the reconstruction 1960 Honolulu tsunami hydrograph. The amplification factor was determined from the ratio of the 100-year (and the 140-year tsunami inundation limits between West Beach Marina and Honolulu in accordance with the Manual given previously in Section 1.h. Two types of hydrographs are given for each of the return periods, 100-year and 140-year as follows:

(1) Nonsinusoidal hydrograph in similitude with the reconstructed 1960 Honolulu tsunami hydrograph.
(2) A sinusoidal repeating hydrograph having a fundamental period and amplitude corresponding to the maximum of the non-sinusoidal hydrograph of (1) above.

9.6.2 Conclusion and Recommendations for Design Hurricane

Two extreme storm conditions have changed maximum design wave conditions for the south coast of Oahu, namely the 7-11 Jan 1980 Kona Storm and Hurricane Iwa, 23 Nov. 1982. These two storms have been analyzed in sufficient detail for the West Beach area to arrive at a design hurricane. The maximum value of the deep water significant wave height of 34.7 feet, which by coincidence corresponds to approximately the 100-year maximum significant wave as based on U.S. Army Corps of Engineers detailed hindcasts of non-tropical extreme storms, including kona storms.

Maximum significant wave heights for Hurricane Iwa (1982) were between 41 and 43 feet off Kauai corresponding to the 300-to-350-year return period and off West Beach of about 34 to 35 feet corresponding to approximately the 100-year return period. There was a squall line and a pressure jump in the barograph for Hurricane Iwa (1982). This pressure jump caused a bore type wave which caused water elevations of 17 to 19 feet above 11 to 13 feet MSL land at the Waianae Coast. These elevations were considerably higher than could be calculated by standard wave run-up procedures for concave slope.

Using storm tide of 3.2 feet and 0.8 feet MSL tide (+ 4.0 ft MLLW) for the design hurricane maximum wave run-up calculations for West Beach area were 10.8 ft MSL for straight slope and 12.7 feet concave slope, which for all practical purposes can be assumed to be 11 ft MSL and 13 ft MSL. The above values of wave run-up are compatible to the 11 ft MSL and 13 ft MSL tsunami wave run-up mean values for the 100-year and 140-year recurrence intervals.

In the same method or reasoning as given for the ± 90 percent confidence limits for tsunamis, it is concluded that the design hurricane wave run-up will be 11 ± 2.0 ft MSL and 13 ± 2.0 ft MSL.

Therefore, it is recommended that the design hurricane wave run-up be established at the same elevations as the design tsunami wave run-up recommendations.

9.6.3 Conclusions and Recommendations Based Wave Recorded Data Analysis off West Beach

Sea Engineering, Inc. (1983) recorded 798 34-minute wave data sets. These data represent one of the most comprehensive recorded data sets to date in Hawaii, and first off West Beach area. However, the instrumentation was installed after the 1980 Kona Storm and was retrieved prior to the 1982 Hurricane Iwa. Nevertheless, very much useful information on tyes of waves off West Beach were recorded.

In particular, long periods swells appeared in almost all wave records, swells from the south and swells from the west-northwest-north. There were many wave records for which short period maximum wave heights were superimposed on the long period swells. Perhaps this is one of the reasons why observed wave run-up elevations often exceed wave run-up calculated by standard techniques.

9.7 Biological Conditions and Impacts of the Lagoons and Marina

9.7.1 Description of the Adjacent Marine Environment

Nearshore waters in the West Beach area are classified "A" in Department of Health water quality regulations (State of Hawaii Water Quality Standards, Chapter 54, Title II, November 12, 1982). The water quality conditions of the nearshore area adjacent to the West Beach project have been described (Bienfang and Brock, 1980). The area was found to be a pristine, unperturbed coastal region. Temperature and salinity values were indicative of open, well-flushed coastal areas which are minimally affected by surface runoff. Water clarity was excellent and turbidity levels were low. Other studies have reported variable turbidity levels, depending on surge and tidal conditions (Kimmerer and Durbin, 1975). Dissolved nutrient levels were low and typical of well-flushed coastal areas. Some evidence (elevated nitrate levels and decreased salinity levels) of groundwater intrusions along the coastline was observed.

Recent construction activity immediately to the south of the project site at the Barbers Point Deep Draft harbor has caused changes in the ambient conditions since the 1980 survey. A surface plume of high-turbidity water typically is discharged from the Deep Draft Harbor on a continuous basis. Localized dredging of the entrance channel adds to the levels of turbidity. This plume travels to the north along the coast afronting the project during ebb tide (Bathen, undated data report), and is not completely displaced by non-turbid water during flood tide (Brock, pers. comm.).

The area offshore of the project site between the shoreline and the 18 m depth contour contains seven recognizable benthic biotopes. A shallow low (13-18%) coral coverage area is located along the shoreline to a depth of 5 m (approximately 100 m offshore). This zone receives a considerable amount of scouring due to wave activity. The substrate is primarily solid limestone with small scattered corals. The assemblage of fish in this biotope is not particularly diverse; the most common are surgeonfishes and wrasses.

Offshore of this well-scoured area is located an extensive area of high (58%) coral coverage which extend to a distance of 500 to 1,000 m offshore. The substrate is predominantly limestone with scattered pockets of sand and rubble. Fish diversity in this biotope is high; surgeonfishes, wrasses and damselfishes are most abundant. Macroinvertebrates other than corals and macrothalloid algae are scarce.

Further offshore (to a distance of approximately 1,000 m) is located an area of scattered large Porites lobata colonies which grades into an area of deeper water with low (8-12%) coral coverage. The area of large Porites heads extends over a kilometer to the south of the entrance to the Barbers Point Harbor. The substrate of both these biotopes is predominantly limestone, often overlain by a thin veneer of sand and rubble. Fishes are more abundant in the area of large Porites than in any other area. Most species are found in the other biotopes as well, however. Surgeonfishes, wrasses and damselfishes are most abundant. Macrothalloid algae and other macroinvertebrates are not common.

At the northern boundary of the project site, directly offshore of the Alice Kamokila Campbell residence, is located an area of extensive sand channels. The depressions and channel floors are covered with sand and are from 2 to 5 m deep and 1 to 50 m wide. Fish and macroinvertebrates are relatively low in abundance.

North of the sand channel biotope is an area of diverse high (14-48%) coral coverage which is a continuous feature north of the project site (Kimmerer and Durbin, 1975; B-K Dynamics, 1971; Jokiel and Coles, 1974) extending to Kahe Point. This area offshore of the northern portion of the project site has been characterized as having luxuriant coral growth with an associated diverse and abundant fish assemblage (AECOS, 1979). Coral diversity in this area is highest of any area off West Beach. Fish are relatively abundant, and most common are the surgeonfishes and wrasses.

A small area of ridges of mostly dead Porites compressa is located at the southern boundary of the project site.

9.7.2 Activities Potentially Impacting the Marine Environment

Physical damage and siltation during construction - Dredging of the wave and discharge channels to the lagoons will directly impact the marine communities living on the substrate to be removed. Adjacent populations may be adversely affected by blasting, if used, or siltation from dredging; the magnitude of these impacts, when considered in the context of the shoreline as a whole, are likely to be minimal. The stretch of shoreline between the Barbers Point Harbor entrance and the Campbell estate is relatively barren, and the intertidal zone is not heavily populated with marine animals (generally between 5 and 20% coral cover) however, beyond the 3.5 meter isobath are extensive areas of high coral cover and abundant and diverse fish populations. The amount of shoreline directly affected is a small percentage of the total. The surfaces exposed in construction represent potential new habitat for replacements for the populations destroyed. Since the amount of new surface area will be greater than that existing previously, it is likely that populations will eventually reach levels equal to or higher than before construction.

Siltation during construction should be minimal. Lagoons will be dredged before the entrance channels are formed, and the construction of the channels should result in only very localized elevated suspended solids levels for only a shore period of time. Corals, which are the organisms most susceptible to mortality due to siltation, are present but not highly abundant (5 to 20% cover). The amount of local siltation compared to that of the Barbers Point Harbor channel dredging operation, for example, should be small.

9.7.3 Freshwater (Groundwater) Re-distribution

The lagoons and marina, because they will be deep enough to intercept the natural seaward flow of subsurface groundwater, will act as point-source discharges of low salinity, relatively high nutrient, water to the marine environment. The amount of water reaching the ocean will not increase, since the natural flow presently reaches the ocean as a diffuse outflow through the ocean bottom itself. The potential impact stems from the change from a diffuse discharge in an area of high energy (the near-shore and intertidal zone) which results in very rapid mixing and dilution, to a situation in which the groundwater is collected and discharged as a distinct surface layer at a particular point. Such point discharge flows are expected to be relatively small, however, expecially compared to that of the adjacent Barbers Point harbor, and will probably have only very localized impacts.

The low salinity, high nutrient water has the potential to stimulate the growth of microalgae within the marina and lagoons and macroalgae on surfaces which it contacts, such as the discharge channel and the nearby ocean bottom. Microalgal growth would only become visible during periods of low flushing; projections of flushing rates for the lagoons and marina suggest no microalgal blooms would occur under any except infrequent low wind, low surf, conditions. Macroalgal growth would be limited to areas of hard substrate (consolidated limestone or coral rubble) which is continuously exposed to this high nutrient water.

9.7.4 Runoff and Siltation

During periods of heavy rainfall, the capacity of the drainage basin to absorb excess water may be exceeded, and surface flow will result. This flow is presently planned to be discharged into the ocean at two points: the majority of the flow will be channeled into the marina, from whence it will reach the ocean via the marina or the Barbers Point Harbor entrance channel, depending upon which channel alignment is eventually selected and approved; and the balance will be discharged at the shoreline north of the Hawaiian Cultural Center. Until Phase IV is completed, the marina will act as a settling basin and percolation-evaporation pond, collecting runoff during storm events and holding the water while it percolates into the ground or evaporates. Calculations of maximum volume flow during storm events and the retention volume of the marina indicate that the volume of the marina is sufficient to receive all surface flow channeled to it without overflow under most likely rainfall conditions.

After the marina is completed, both the marina and the northern discharge will discharge storm water to the ocean as a surface layer. Depending on the surf conditions, flow volume and sediment load, this flow may persist as a visible surface plume. This intermittent flow is similar to that which occurs in several natural streams along the Waianae coast, which discharge sediment-laden water into the ocean during heavy rainfall. The relative impact of the West Beach discharges will probably be less than those of the natural streams, since much of the West Beach flow will be over either solid, non-eroding surfaces (concrete, asphalt) or well-grassed landscaping areas, and will be channeled in grassed swales or box culverts. The marina will act as a settling basin for the majority of the discharge from the West Beach project area.

9.7.5 Increased Shoreline Access

The West Beach development will open up an area which is now relatively inaccessible to a potentially much greater use by recreational and subsistance fishermen. At present, most fishing in the area is by pole-and-line, and the target species are mostly reef fish. Increased fishing pressure could potentially adversely affect the local stocks of these fish, although projections of impacts for a nearby project suggest the impact of increased fishing will be small. The presence of the marina with its launching and berthing facilities will probably result in an increase in boat-based fishing activity along this stretch of coastline, with potential negative impacts to fisheries such as the offshore bottom-fishes, which appear to be at or near maximum sustainable yield. Increased sport fishing could also be expected.

9.8 Air Quality Considerations and Impact

The report contains a discussion of relevant Federal and State of Hawaii Air Quality Standards, a description of present air quality in the project area, a modeling study of potential worst case carbon monoxide concentrations likely to result from different projected traffic scenarios, and a discussion of potential short and long term measures that might be employed to mitigate any adverse air quality impacts that could result from construction of the project as proposed.

9.8.1 Summary

The proposed West Beach Project involves construction of a residential/ resort community on a 642 acre parcel of land located between Barbers Point and Kahe Point in southwestern Oahu (Figure 21).

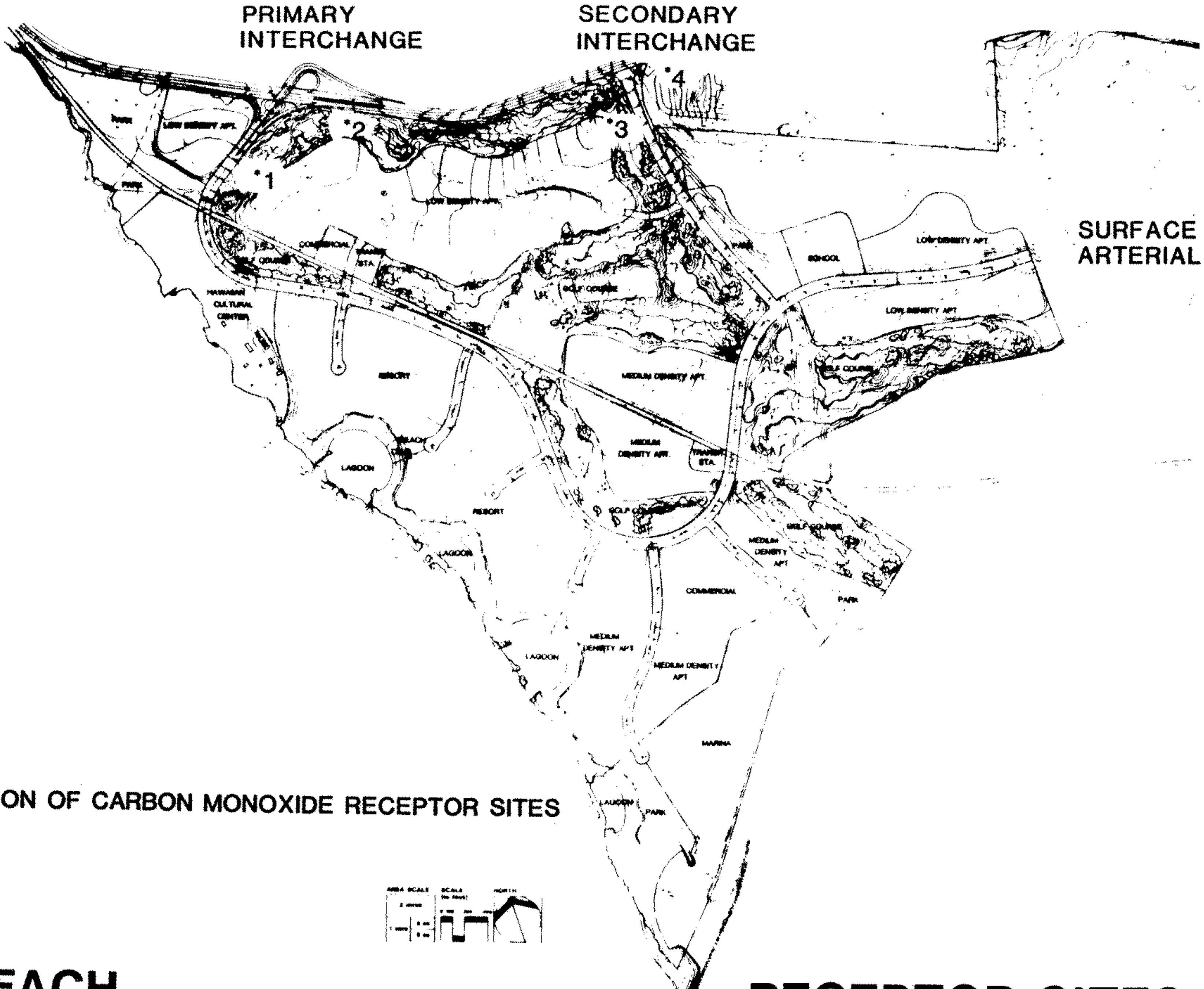
Federal and State of Hawaii Ambient Air Quality Standards (AQS) have been set for six classes of pollutants: particulates, sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone and lead. For most pollutants the State of Hawaii AQS are considerably more stringent than Federal levels. Public hearings have been held on a proposal by the State Department of Health to revise State of Hawaii AQS for particulates and sulfur dioxide to match Federal levels, but a decision on the matter has not yet been announced.

Having previously been used for sugarcane growing, the project site is currently unused and emissions of air pollutants are therefore minimal. Significant outside air pollution sources that could affect air quality in the project area include periodic cane fires, traffic on Farrington Highway, stack emissions from the Kahe Power Plant, and fugitive and stack emissions from oil refineries and other industrial activities located in the Campbell Industrial Park (Table 8).

Sugarcane fires represent the only emission source likely to cause the current State of Hawaii AQS for particulates to be violated, but Federal AQS are not likely to be exceeded by this source.

Although measured levels of sulfur dioxide at the Barbers Point long term monitoring station are very low, recent modeling studies indicate that sulfur dioxide concentrations in the vicinity of West Beach from both the Kahe Power Plant and sources within the Campbell Industrial Park could be in excess of allowable State of Hawaii AQS under unfavorable meteorological dispersion conditions. However, same studies show that Federal limits are likely to be met. It is important to note that the geometry of the West Beach/Kahe/Campbell Industrial Park is such that it would be nearly impossible for air pollutant emissions from Kahe and Campbell Industrial Park to affect West Beach at the same time. Further, surface winds from Kahe blow towards West Beach only about 3% of the time and those from Campbell Industrial Park blow toward West Beach only about 2% of the time.

Motor vehicles are the major source of carbon monoxide in the area (Table 9) A monitoring program of traffic generated carbon monoxide conducted in 1979 indicated that levels of this pollutant along Farrington Highway were



* LOCATION OF CARBON MONOXIDE RECEPTOR SITES

WEST BEACH

RECEPTOR SITES

FIGURE 21

TABLE 8

PARTICULATE AND SULFUR DIOXIDE EMISSION RATES FOR SIGNIFICANT INDUSTRIAL SOURCES IN THE WEST BEACH AREA

SOURCE	EMISSION RATE (g/sec)	
	PARTICULATES	SULFUR DIOXIDE
Hawaiian Electric Kahe Units 1 - 6	Not Available	411.3
Chevron Refinery	11.08	187.49
Hawaiian Indipendent Refinery (HIRI)	2.68	51.66
Hawaiian Western Steel	8.0	0.5
Lonestar Hawaiian Cement	2.0	0.02
ENERCO	0.15	0.12
Barbers Point NAS (boilers)	0	0.18

Source: Reference 3, 1983

TABLE 9

RESULTS OF PEAK HOUR CARBON MONOXIDE ANALYSIS
(milligrams per cubic meter)

	1982	1992	2002
SITE 1			
Case 1	0.9	0.8	1.7
Case 2		5.3	5.6
Case 3		5.3	5.6
Case 4		7.8	7.8
SITE 2			
Case 1	2.7	2.3	5.1
Case 2		3.5	6.5
Case 3		4.8	8.8
Case 4		5.1	9.6
SITE 3			
Case 1	1.5	1.2	2.8
Case 2		5.4	6.3
Case 3		5.5	7.7
Case 4		8.2	9.7
SITE 4			
Case 1	2.8	2.3	5.1
Case 2		3.7	7.5
Case 3		6.6	10.0
Case 4		6.7	10.9

STATE OF HAWAII AQS: 10
FEDERAL AQS: 40

NOTES: See Figure for location of receptor sites.
Case 1 = no build
Case 2 = build, with surface arterial over route other than Farrington Highway
Case 3 = build, with additional traffic lane on Farrington Highway
Case 4 = build, no change to Farrington Highway

running about 1 to 3 milligrams per cubic meter. Federal laws have mandated substantial annual reductions in vehicular carbon monoxide emissions through 1995. A carbon monoxide modeling study carried out in conjunction with this report produced current worst case predictions of 1 to 3 milligrams per cubic meter in the same area as the previous monitoring study. These levels are well within the State of Hawaii AQS of 10 milligrams per cubic meter for a one hour period. At present, sugar cane fires represent the only emission source capable of causing the AQS for carbon monoxide to be violated in the West Beach area.

Nitrogen dioxide levels in the project area appear to be much lower than allowable AQS. Lead levels in the project area are estimated to be low and Federal regulations gradually curtailling the use of leaded gasoline seem to be having an effect in lowering measured lead levels throughout Oahu.

The major direct air quality impact of project development will be in the form for fugitive dust generated during the estimated 10 year construction period that will be required for project completion. Once the project is completed, however, it will no longer be a direct source of air pollutant emissions.

By serving as an attraction for increased vehicular traffic, the project will constitute a potentially significant indirect source of increased carbon monoxide levels in the area. A detailed carbon monoxide modeling study of four locations near the primary and secondary project intersections with Farrington Highway evaluates the quantitative impact of each of four possible traffic scenarios: (1) no build; (2) build, with an additional surface arterial connecting the project to the H-1 Freeway via a route other than Farrington Highway; (3) build, with an extra surface lane added to Farrington Highway in the Honolulu-bound direction from the project to H-1; and (4) build, with no changes to Farrington Highway through 2002.

Carbon monoxide levels computed in the modeling study were all well below allowable Federal AQS, but model results did indicate that the build scenario with no changes to Farrington Highway could lead to a potential exceedence of State of Hawaii AQS at some point shortly before 2002. The other build alternatives appear to be acceptable strictly from a carbon monoxide standpoint, but the build alternative with an additional surface arterial to relieve potential Farrington Higway traffic congestion clearly presented the smallest carbon monoxide impact of any of the build alternatives.

The project could also have an indirect impact on air quality in the form of increased energy demand. A project of this size will require a substantial increase in fuel oil consumption at electric power plants if the demand is met solely by burning more fuel oil. Ironically, one probable impact of increased energy demands at West Beach will be increased levels of sulfur dioxide in the air over West Beach will be increased levels of sulfur dioxide likely be met by the nearby Kahe Power Plant. Hawaiian Electric Company has several alternatives, such as offshore Ocean Thermal Energy Conversion, that could preclude this impact, however. The overall use of the project could also be decreased by planning for extensive use of solar and other 'clean' local energy sources within the project.

Another mitigative measure that might be employed to protect future inhabitants of West Beach from intrusions of pollutants from outside sources is heavy planting of landscaping plants along the borders and Farrington Highway, that will grow to be both tall and dense.

9.9 Noise Conditions and Impacts

The new 1984 NAS, BP AICUZ has incorporated the following significant changes (relative to the old 1976 AICUZ, NAS, BP) which tend to modify the aircraft noise exposure since 1979 over the proposed West Beach Resort:

a. All aircraft departing from RWY 29 in the left hand turn pattern are now assumed to fly over the Deep Draft Harbor, whereas the old AICUZ assumed a sharper left hand turn commencing approximately 10,000 Ft southeast of the harbor.

b. The number of rotary wing aircraft overflights of West Beach has decreased from 6.1 to an average of 1.0 per day.

c. The number of fixed wing aircraft overflights of West Beach has increased from zero to an average of 7 per day.

d. The number of nighttime (between 10:00 PM to 7:00 AM) aircraft overflights has increased from zero to approximately 0.4 per day.

1. The increase in NAS, BP aircraft noise toward West Beach relative to the 1976 AICUZ contours is evident by the enlargement of the current 65 L_{dn} contour (AICUZ Noise Exposure Zone 2 Contours) approximately 4,000 Ft northwest of Kalaeloa Boulevard.

2. Based upon the results of the HIA Master Plan noise study, 1979 noise levels from aircraft arrivals to HIA RWY 08L should have been less than 55 L_{dn}.

3. Under worst case conditions with all HIA RWY 08L arrivals overflying the proposed West Beach Resort (i.e., no curved approaches to HIA RWY 08L), Year 2000 noise exposure from HIA arrivals are predicted to be less than 57 L_{dn}.

4. The prior operational assumptions used in developing the 1982 NAS, BP frequency of tradewind vs. Kona operations on RWYS 11/29 have been

corrected in the new AICUZ. This correction reduces noise from Kona departures over West Beach. However, the addition of nightime overflights over West Beach has nullified the noise benefits of the change, and the 1984 AICUZ produces noise contours equal to the 1982 noise study in the West Beach area.

6. There is near zero risk that the 65 L_{dn} aircraft noise contour will enter the proposed West Beach area by the Year 2000, if the operational assumptions of the 1984 AICUZ are maintained.

7. There is a slight risk that the 60 L_{dn} contour may exist over the proposed marina and adjacent park areas of the resort. Reduction of nighttime overflights of West Beach would reduce this risk to near zero.

8. A major concern expressed in the August, 1979 assessment regarding helicopter overflights has been alleviated by the reduction of these helicopter flybys over the proposed resort.

9.9.1 HIA Aircraft Noise Predictions

1. Figure 22 presents calculated 55 L_{dn} contours resulting from noise attributable to aircraft arrivals on HIA RWY 08L for the Years 1979 and 2000. The operational assumptions used for 1979 operations are shown in Table 10, with the corresponding Year 2000 operational assumptions also shown in Table 10. Since all RWY 08L arrivals are assumed to overfly the proposed West Beach Resort in the Year 2000, a worst case noise increase of approximately 2 L_{dn} units is anticipated from HIA operations. By the Year 2000, HIA aircraft noise over the proposed West Beach is predicted to increase by 2 L_{dn} units over Year 1979 values.

2. Also shown in Table 10 are the HIA overflights assumed in the 1984 AICUZ. The 1984 AICUZ used fewer HIA overflights than the Year 2000 assumptions used in this study.

9.9.2 NAS, Barbers Point Aircraft Overflights

Table 11 shows the chronology of changes in the number and type of NAS, BP aircraft overflights over West Beach. The 1976 values were used in our 1979 noise assessment. The July 1982 values were used in our 1983 noise assessment, and the 1984 AICUZ values were used in our current assessment.

Table 12 shows the total overflights by NAS, BP aircraft over the West Beach area on a typical tradewind day. These values were obtained from Reference 2, and were assumed to apply during the 1979 time period. Table 12 values for NAS, BP were used to construct the composite (HIA plus NAS, BP aircraft) 1979 noise contours over the West Beach area.

9.9.3 Estimated Year 1979 and Year 2000 Total Aircraft Noise Contours

1. Using the operational information contained in References 2, 4, and the HIA Year 1979 and Year 2000 noise contours, total aircraft noise contours were developed over the West Beach area. Three contour sets were developed:

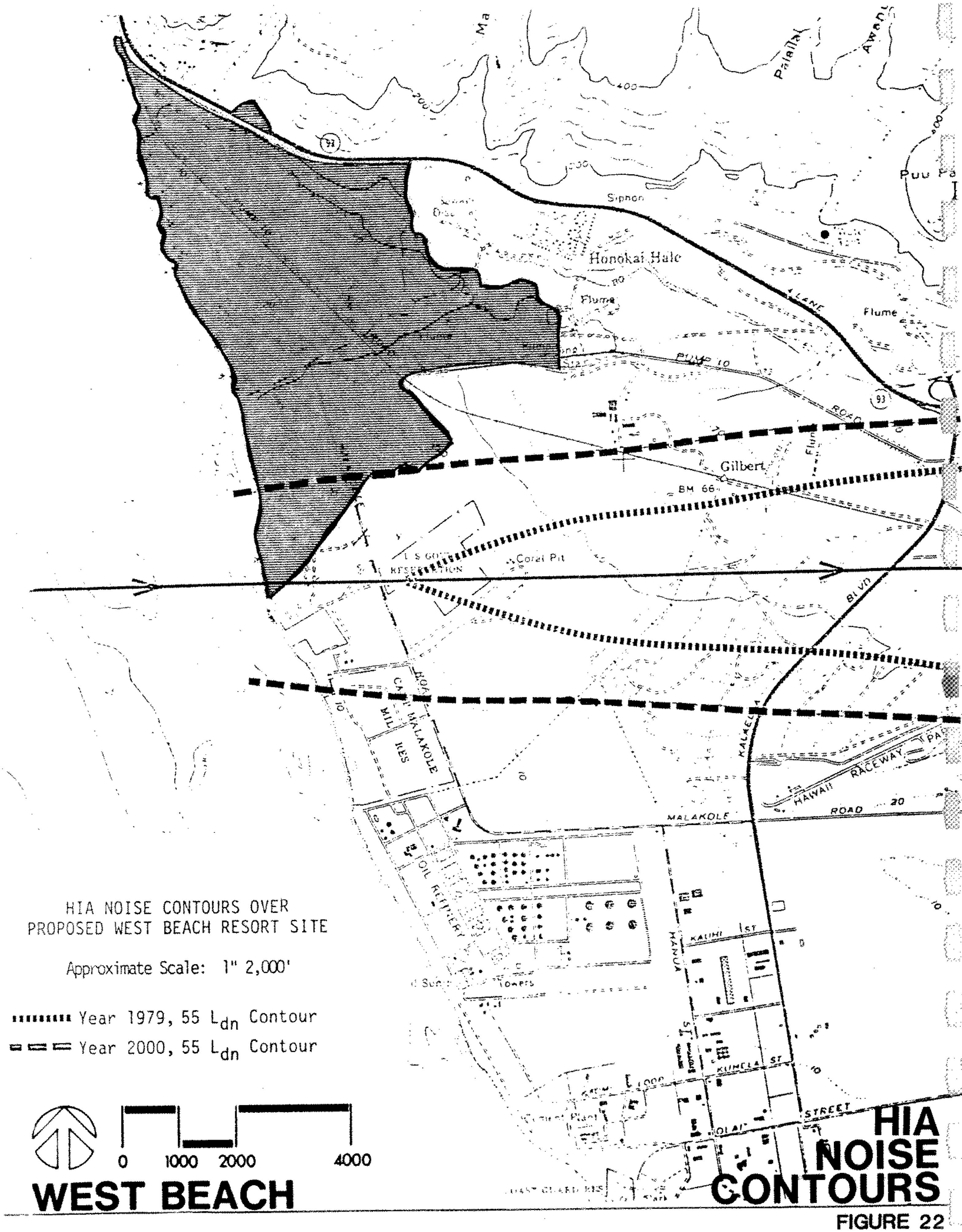

HIA NOISE CONTOURS OVER
PROPOSED WEST BEACH RESORT SITE
Approximate Scale: 1" 2,000'
Year 1979, 55 L_{dn} Contour
Year 2000, 55 L_{dn} Contour
0
1000
2000
4000
WEST BEACH
HIA
NOISE
CONTOURS
Honokai Hale
Flume
Siphon
Gilbert
Coral Pit
PUUPIO
ROAD
KALAELOA
BLVD
HAWAII RACEWAY
MALAKOLE
CAMP MALAKOLE
MIL RES
OIL REFINERY
HANUA
KAUHI
KUHELA ST
STREET
Palailai
Puu Pa

FIGURE 22

TABLE 10

HIA ARRIVAL OPERATIONS ON RWY 08L
WHICH OVERFLY WEST BEACH RESORT

Aircraft Type	Year 1979 Average Daily Arrivals Day/Night[1]	Year 2000 Average Daily Arrivals Day/Night[1]	1984 AICUZ (Track #39)
B-747	8.5/1.9	58.7/0	34.40/1.4
DC-10	6.2/0	29.9/0	3.07/0.13
B-707/DC-8	2.8/0	None	None
B-757	None	148.2/0	None
B-737	15.0/0	None	None
DC-9	15.0/0	None	None
F-4	5.4/0	10.8/0	10.0/0
C-141	6.2/0.9	12.3/0	12.3/0
KC-135	0/0	0.9/0	0.9/0
C-130	5.4/0	10.3/0	10.3/0
TOTALS	64.5/2.8	271.1/0	70.97/1.53

(1) Source: HIA Master Plan and Environs Study.

TABLE 11

SUMMARY OF NAS, BARBERS POINT AIRCRAFT OVERFLIGHTS
ASSUMED OVER WEST BEACH RESORT

Aircraft Type	1976 AICUZ (Day/Night)	July 1982 Noise Study (Ref.2) (Day/Night)	1984 AICUZ (Day/Night)
P-3	---	1.064/0	1.769/0.197
C-130	---	0.644/0	1.049/0.117
C-135	---	0.120/0	0.080/0
C-118	---	0.150/0	0.027/0.003
C-141	---	---	0.018/0.002
C-9	---	---	0.022/0.002
A-4	---	0.126/0	0.895/0
F-4	---	---	0.202/0
T-33	---	---	0.089/0
S-3	---	---	0.063/0
H-52/53	3.6/0	0.227/0	0.311/0
H-2/3	0.1/0	5.030/0	0.185/0.021
CH-46/47	0.3/0	3.708/0	0.417/0
H-1/58	2.1/0	---	0.139/0
CIVIL	---	1.141/0	1.370/0
U-11	---	---	0.062/0
O-2	---	---	0.042/0
C-12	---	---	0.014/0
C-7	---	---	0.076/0
Misc.	---	---	0.240/0
TOTALS:	6.1/0	11.57/0	7.070/0.402*

*Since nighttime overflights are multiplied by 10 in the L_{dn} descriptor system, total equivalent overflights are equal to: 7.07 + 10 x 0.402 = 11.09.

TABLE 12

1979 TRADEWIND DAY OPERATIONAL ASSUMPTIONS
FOR TRACKS #19 AND #14
(NAS, BARBERS POINT)

Aircraft Type	Maximum Operations/Day* Track #19	Track #14
P-3	1.064	4.8345
C-135	0.120	0.1275
C-130	0.644	1.6735
C-118	0.150	---
Civil	1.141	0.9130
A-4	0.126	---
F-4	---	0.5115
H52/H53	0.227	0.454
H2/H3	5.030	0.9270
CH46/CH47	3.708	---

*No nighttime operations on these tracks.

Year 1979 tradewind day contours; Worst Case Year 2000 composite tradewind/Kona wind contours; and Year 2000 contours with 365-day annual averages. Since rotary wing aircraft are generally noisier on approach than takeoff, since the tradewind/Kona runway use allocation for NAS, BP was not available for the 1979 period, it was decided to calculate the total aircraft noise levels in the 1979 period for a typical tradewind day (which should occur approximately 80 percent of the daytime hours, and over 90% of the nighttime hours). From Reference 2, NAS, BP Tracks #19 and #14 were used in conjunction with the HIA ILS approach track as shown in Figure 23. RWY 11 operational assumptions used for these tracks are shown in Table 10. Military aircraft noise levels were obtained from References 5 and 6. Figure 23 depicts the estimated Year 1979 noise contours over the West Beach area. Portions of the south end of the development are within the 1979, 55 L_{dn} contour, and the 60 L_{dn} contour did not exist within the West Beach area in 1979.

2. A second contour set was developed using the 1984 AICUZ operational assumptions as shown in Table IV-4 of Reference 4, and without modification to the Table IV-4 values. This contour set is shown as Figure 24, and the contours are similar to those depicted in the 1984 AICUZ, with portions of the West Beach Resort within the 60 L_{dn} contour.

3. A third contour set was developed using the 1984 AICUZ operational assumptions corrected for the 365 vs. 260-day annual averaging period, and with southbound itinerant departures from RWY 29 following the 1976 AICUZ tracks. This set is shown as Figure 25, and results in a 1.5 L_{dn} reduction in the noise level over West Beach, with the 60 L_{dn} contour shown outside the West Beach area.

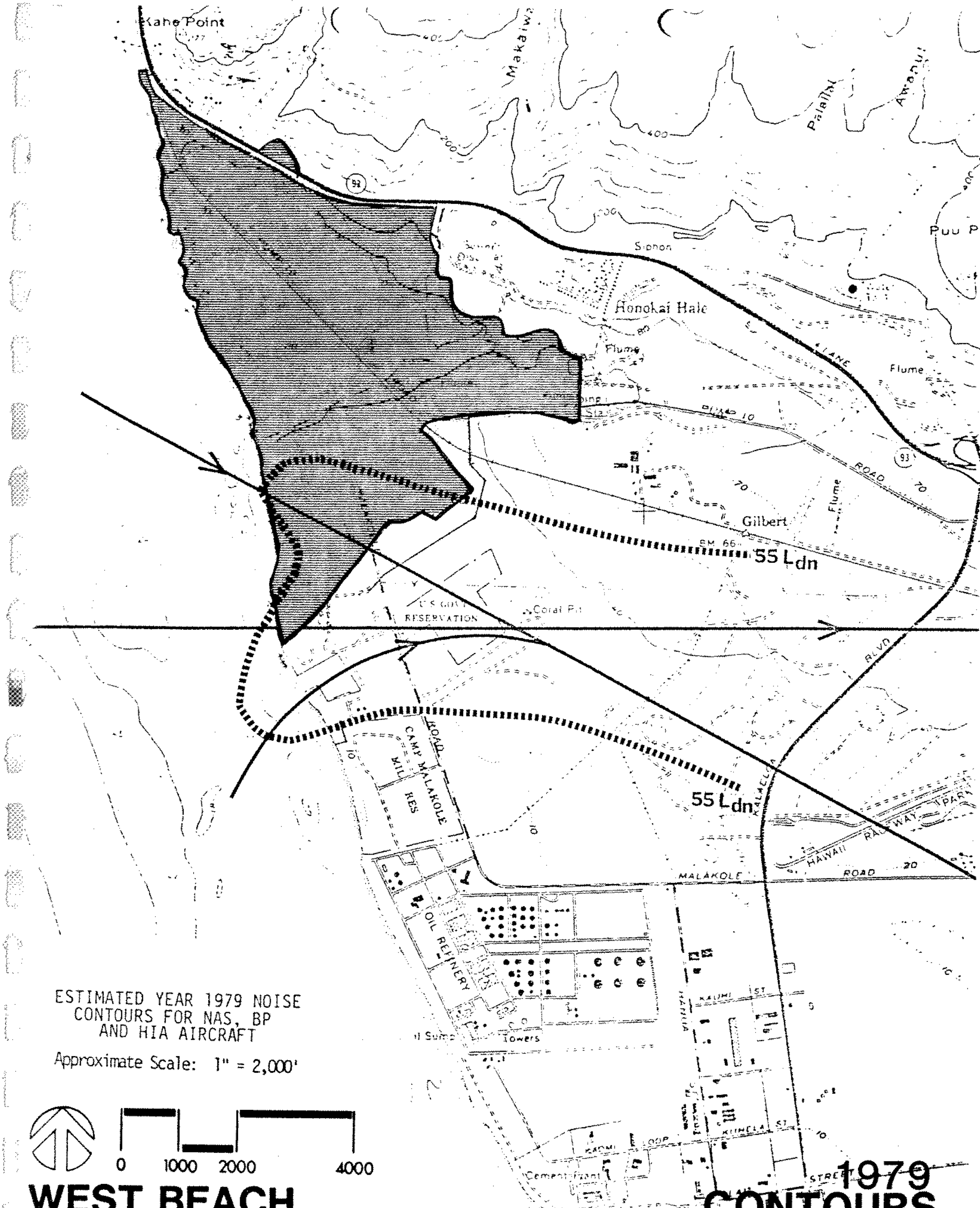
9.9.4 Aircraft Noise Conclusions

1. Based on the preceding evaluations, we believe our prior conclusion of August, 1979 regarding the impact of aircraft noise on future West Beach residents are still valid. By the Year 2000, a margin of 5 to 8 L_{dn} units should exist before federal criteria of 65 L_{dn} is exceeded at residential locations of the proposed development.

2. A major change in RWY 11/29 operations at NAS, BP has occurred since 1979, and has resulted in an increase of our previous projections of Year 2000 noise levels by 1 L_{dn} unit. However, because the 60 L_{dn} contour does not encroach on residential areas of the proposed development, and because the number of helicopter overflights have been reduced, noise mitigation measures are not considered necessary for the proposed development.

9.9.5 Probable Impact of Highway Noise on Future West Beach Residents

Existing highway noise levels at 50 Ft distance from near curb edge of Farrington Highway are currently between 70 to 72 dB (L_{eq}) during the daytime, and also exceed existing and proposed HUD criteria for residential development. Noise measurements obtained at Honokai Hale on March 29, 1979 indicated that existing residential lots fronting the highway are currently exposed to approximately 70 to 72 dB (L_{eq}). Follow-up measurements at 50 Ft distance from the near curb edge performed on 6/6/79 at Site 4 confirmed



ESTIMATED YEAR 1979 NOISE CONTOURS FOR NAS, BP AND HIA AIRCRAFT

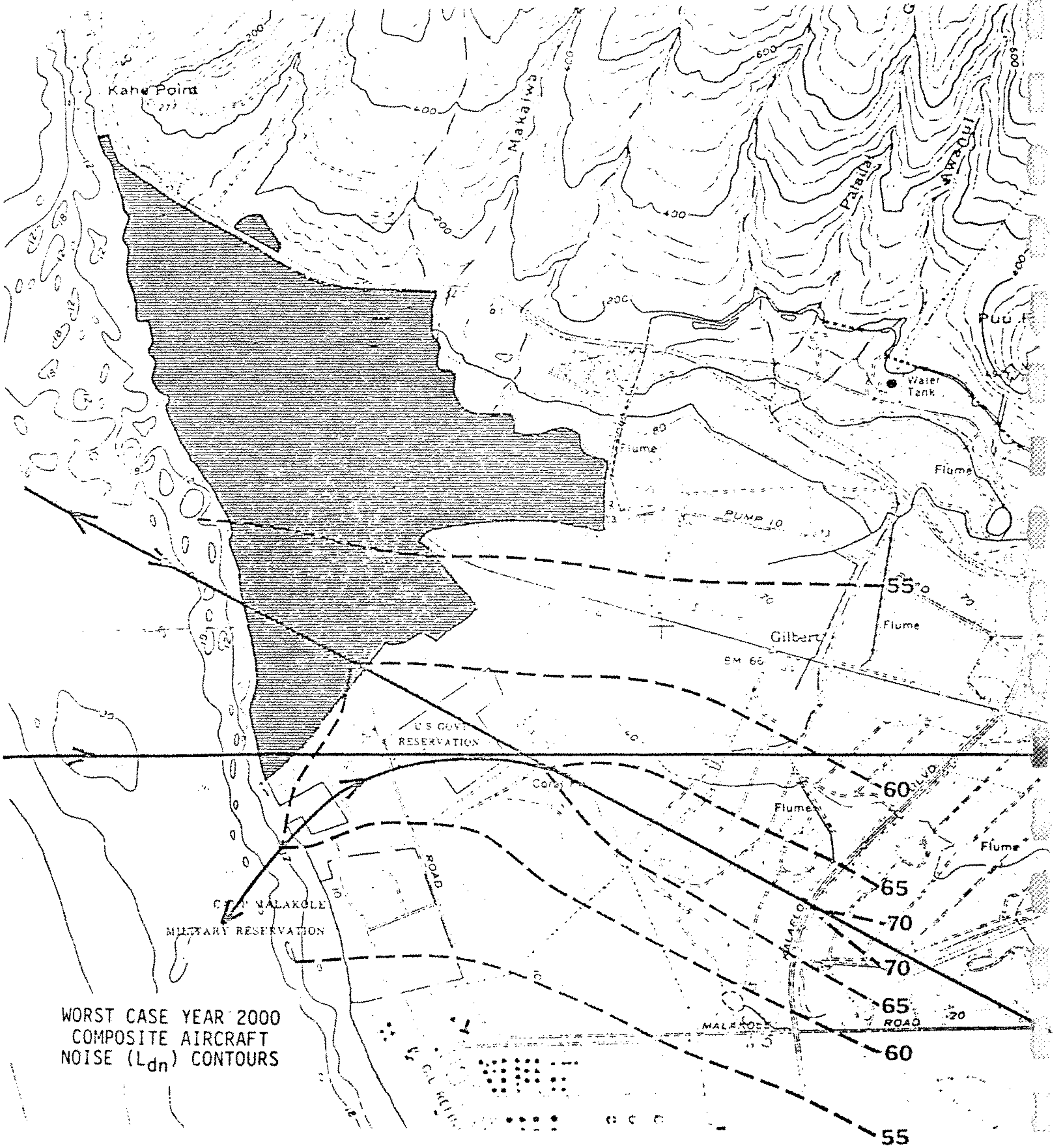
Approximate Scale: 1" = 2,000'

0 1000 2000 4000

WEST BEACH

1979 CONTOURS

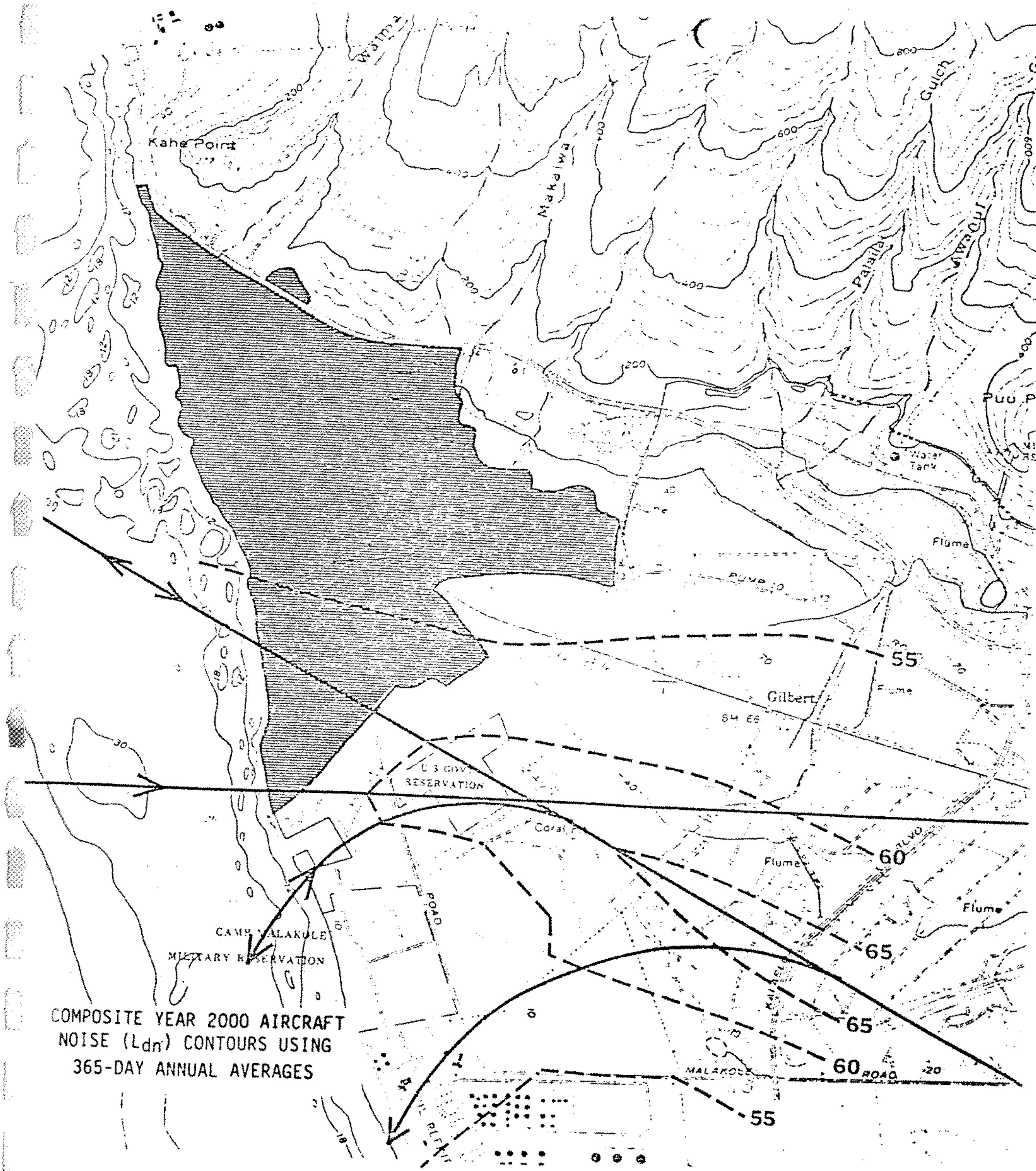
FIGURE 23



WEST BEACH

YEAR 2000 WORST CASE CONTOURS

FIGURE 2



WEST BEACH

YEAR 2000 COMPOSITE CONTOURS

FIGURE 25

the March measurements with L_{eq}'s ranging from 71 to 72 dB, and L_{33} values of 70 to 71 dB. At interior lots within 100 to 400 Ft of the highway curb, equivalent sound levels of approximately 65 to 56 dB were measured.

An excess attenuation of 5 to 8 dB was attributable to the partial noise shielding effects caused by existing homes between the measurement point and the highway traffic. For lots fronting the highway, exterior noise levels of L_{dn} 73 to L_{dn} 74 currently exist (at approximately 21,500 vehicles per day), and are 8 to 9 dB above proposed HUD criteria for residential development.

By 1990, if average daily traffic along Farrington Highway approaches 60,000 vehicles per day, a 4 to 5 dB increase in highway noise levels above the existing situation can be anticipated. Daily exterior L_{dn} values of 77 to 79 are anticipated for lots within 50 feet of the highway. Exterior noise levels in excess of L_{dn} 75 are considered unacceptable for residential housing by proposed HUD and existing federal criteria. Noise levels at existing residences fronting the highway (Honokai Hale, for example) will likewise be increased.

Proposed West Beach residential units fronting the highway will require sound attenuation measures such as air conditioning, forced ventilation or noise barrier construction to reduce highway noise to acceptable exterior and interior levels. If multi-story construction is used for residential units fronting the highway, noise barrier construction will not be a practical abatement measure, and the use of air conditioning or forced mechanical ventilation of the units will be required to meet existing and proposed HUD criteria. Without noise abatement measures, interior noise levels of 67 to 69 (L_{dn}) can be expected. Construction of minimum 10 foot height noise barriers and/or earth berms will be required to meet HUD criteria for residential lots fronting the highway if natural ventilation is planned for these homes. In order to minimize the extent of noise barrier construction and to take advantage of excess attenuation afforded by site construction features, it is recommended that acoustical consultants be retained during the project design phase.

Since existing highway noise levels are already above existing HUD and federal criteria for residential housing, and since the proposed project's traffic will increase current noise levels by 3.5 dB (with an additional 1.5 dB increase attributable to non-project traffic increases projected by year 1990), costs associated with noise abatement for existing homes along the highway should not be borne solely by the West Beach developer. Noise barrier construction along existing Honokai Hale homes fronting the highway is recommended, with federal aid suggested as a funding source for a major portion of costs associated with the noise abatement treatment.

9.9.6 Probable Impact of Internal Street System Noise On Future West Beach Residents

Internal street system noise generated by residential and commercial vehicular movement (26,586 trips) and by buses anticiapted to service the hotel/condominium units (1,650 trips) may exceed L_{dn} 65 at 50 foot setback from the curb edge. Bus noise, in particular, is anticipated to be a dominant noise source along the two streets between Farrington Highway and the hotel/condominium units although bus noise is not anticipated to occur between the nighttime hours of 10:00 PM to 7:00 AM. Suggested mitigation measures include use of 50 to 100 foot setback of residential units from the main thoroughfares, control of vehicle speed below 35 miles per hour, minimization of heavy vehicle and bus traffic between the hours of 10:00 PM to 7:00 AM, and lot specific treatments such as noise barriers and building treatment. Internal street system noise is unlikely to exceed L_{dn} 75, and hence, the interior residential lots can be developed to HUD and other federal noise criteria.

9.9.7 Potential Impact of Possible Blast Noise/Vibration During Marina Construction

Because existing residential or industrial structures are located beyond 1000 foot distance from the site of the proposed marina, the risks of structural damage resulting from possible blasting operations can be minimized by the blasting contractor in accordance with the procedures delineated in the Appendix. These procedures are summarized as follows:

1. Maximum charge weight (in equivalent pounds of TNT) per delay should not exceed (D 50) pounds, where D is the distance in feet between the charge and the existing structure.

2. If the maximum charge weight or distance restrictions are not conducive to efficient blasting operations, utilize vibration measurement instruments during blasting operations, and do not exceed a safe blasting limit of 2.0 inches/second peak particle velocity in the ground adjacent to the structure of interest.

3. Additional mitigation measures such as limiting peak particle velocity at inhabited structures to 0.4 inches/second, advising the surrounding residents about the blasting operations and precautionary steps taken, and use of milli-second delay charges are recommended.

It is assumed that construction of the proposed Barbers Point Deep Draft Harbor will occur prior to construction of the West Beach Marina and Hotel/Condominium units, and that construction of the West Beach Hotel/Condominium units will occur following the construction of the marina. Therefore, West Beach building occupants should not be a dominantly restrictive factor during the construction and blasting phases of the harbor or marina.

9.10 Botanical Survey Results and Evaluation of Impact on Flora

9.10.1 Botanical Survey

A botanical survey of the entire project site was undertaken by Winona P. Char, botanical consultant. Figure 26, shows the location of the vegetation types in the West Beach project site.

9.10.2 Vegetation Types

There are three (3) broad vegetation zones that occur in the Hawaiian Islands, and each of these zones is in an area of uniform macroclimate (Mueller-Dombois and Gagne, in press). The three (3) major vegetation zones are xerotropical (coastal flats and lowlands to submontane), pluviotropical (windward lowland to upper montane), and cool tropical (upper montane to alpine; these occur only on the islands of Maui and Hawaii).

The study site lies within the xerotropical vegetation zone which is characterized by low rainfall (20 inches/annum). Because of low rainfall, this zone supports only a sparse vegetation. Within this zone a number of different plant communities or vegetation types can be delimited. These mosaics of plant communities are controlled largely by edaphic factors such as substrate, run-off, salinity, et cetera, and partly by past and present human activities- these include agriculture, ranching, military activities, et cetera.

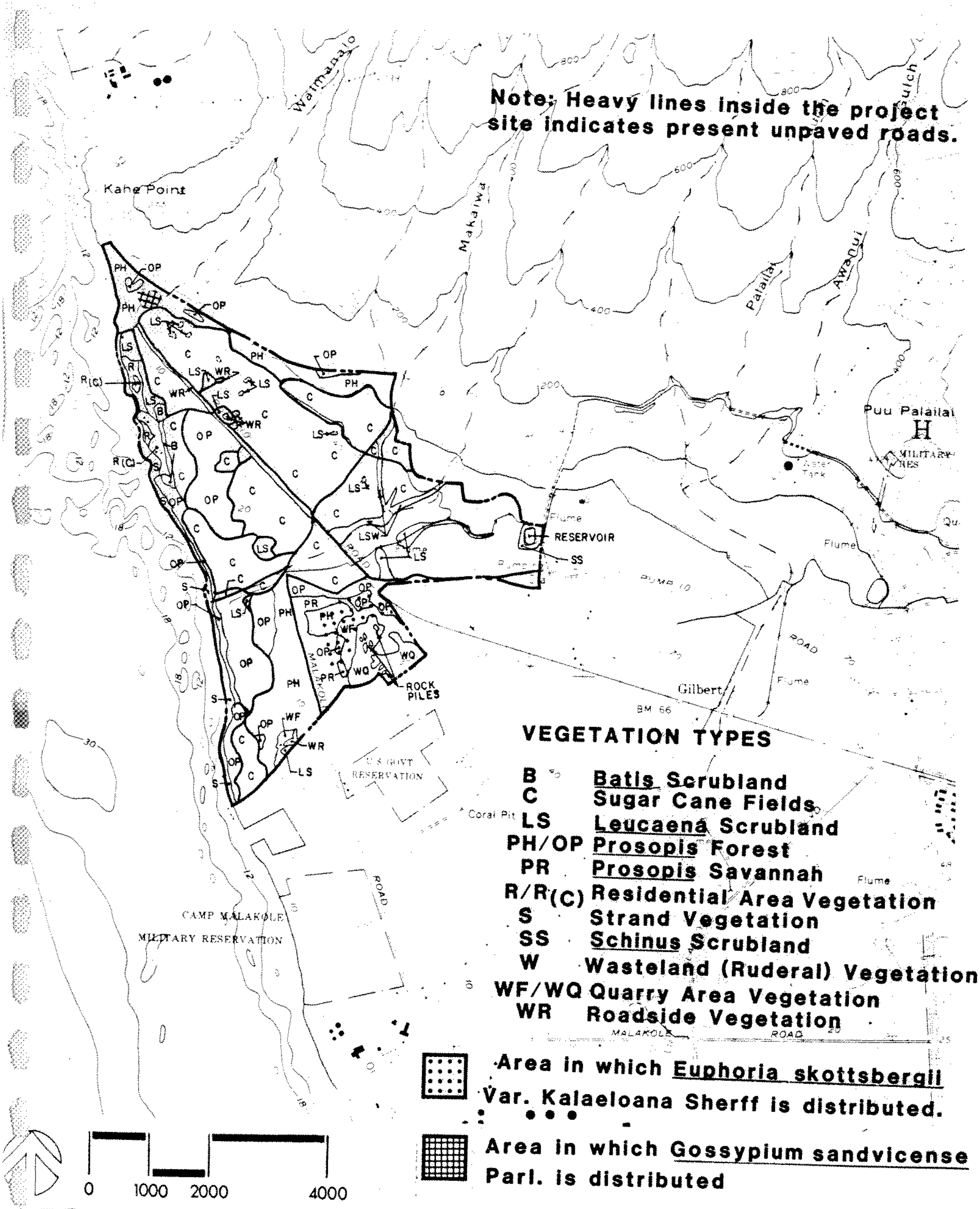
The dominant species in these vegetation types are predominantly introduced species (exotics) such as Prosopis (kiawe), Leucaena (koa haole), and Chloris (swollen fingergrass). Remnants of the original native flora can be found scattered throughout the area, usually in small numbers. The activities of man and the grazing animals he introduced have been the primary causes for the degradation of the native flora in the xerotropical zone (St. John, 1957).

9.10.3 Rare and Endangered Plants

Seven plant species which were listed as proposed Endangered and Threatened plant species (1976) have been collected or are recorded from the Ewa plains area. While the list of plants which include the seven species was withdrawn in December, 1979, only Euphorbia skottsbergii, was listed on the Federal list of Endangered and threatened species. No critical habitat was designated for the endangered plant.

As of 1980 (Federal Register, Vol. 45, No. 242), the status of the plant species are:

Eragrostis paupera - Candidate endangered, an annual grass
Marsilea villoso - Candidate endangered, a fern
Euphorbia Skottsbergii var. skottsbergii, candidate endangered, a small shrub
Scaevola coriacea - Candidate endangered, a decumbent shrub, restricted to the strand vegetation
Gossypium sandvicense - No longer under review, a native Hawaiian cotton shrub



WEST BEACH VEGETATION

FIGURE 26

As of 1982 (Federal Register, Vol. 47), E. skottsbergii var. kalaeloana, a small shrub recently rediscovered was listed as an endangered species.

As of 1985 (Federal Register; Vol. 50), Achyranthes splendens var. rotundata, a shrub endemic to the island of Oahu, was proposed for endangered species status.

During the course of the survey, two of these plant species, Euphorbia skottsbergii var. kalaeloana Sherff and Gossypium sandvicense Parl., were found within the study site. Euphorbia skottsbergii var. kalaeloana, 'akoko is endemic to the island of O'ahu, and was thought to have been extinct until recently (Herbst, 1976). A biological survey conducted in 1979 for the proposed Deep Draft Harbor for Barber's Point found two (2) large colonies of the Euphorbia and a number of smaller scattered colonies. The large colony on the western boundary of the quarry which lies immediately adjacent to the deep draft harbor has been cleared of its vegetation and is presently being used to store basalt and coral boulders which will be used in the construction of the planned breakwater. A coral stockpile lies on part of the resort's northeast boundary.

The West Beach Resort Project area in which plants of Euphorbia skottsbergii var. kalaeloana were found (i.e., quarry fringe and open Prosopis) has been so greatly disturbed by the deep draft harbor construction that plants no longer occur there. It should be noted that few plants (less than 50) remained in the West Beach area when construction of the deep draft harbor began; the majority of the plants had been removed prior to construction of the harbor during a number of transplant and recovery projects undertaken by Campbell Estate (September 1980), AECOS (ecological and horticultural studies; May 1980-August 1981), and the Army Corps of Engineers (September 1981). A number of plants were also destroyed when the proposed West Beach area was being actively quarried by a cement company.

Approximately 5,200 'akoko plants have been found on the Barbers Point Naval Air Station. There are also a number of transplanted 'akoko plants near the Hawaii Raceway Park and some at the Waimea Aboretum. There are currently no 'akoko plants found on the West Beach site however, if any are found, they will be replanted by the developer elsewhere.

Gossypium sandvicense (syn. Gossypium tomentosum Nutt.), ma'o or the native Hawaiian cotton, is endemic to the Hawaiian Islands. About half a dozen plants were found in the study site near the highway and subdivision (Figure 26). Fosberg and Herbst (1975) considered the species to be rare (total population low), depleted (much less common over all or most of its former range), and endangered (in considerable danger of disappearance). It is in cultivation by a few botanic gardens and some private individuals. Other populations of Gosspyium are known from O'ahu and the other islands where they are found along the coasts and lowlands. Gossypium has not been listed on the Federal List of Endangered or Threatened Species.

9.11 Birds of the West Beach Area

Two general group of birds are found in the West Beach area: migratory shorebirds and introduced or exotic species (See Table 13). The scant native vegetation in the dry leeward areas of Oahu was destroyed so long ago that there are no records of any other endemic landbirds that may have occupied such habitat, that is, prior to 1786. There are no suitable ponds or marshes in the West Beach area to accommodate the endemic Hawaiian water birds. It is possible that the Hawaiian Owl or Pueo (*Asio flammeus sandwichensis*) occurs in the dry leeward regions but none was seen during Berger's studies. Under Regulation 6, State Department of Land and Natural Resources, the Hawaiian Owl is identified as an endangered species on the island of Oahu.

Berger studied (12 field days) all habitats in the West Beach area during the fall of 1973, several times in 1979 and again in May of 1984. The nesting season had ended for most species and they were quiet and unconspicuous. Under such conditions it is not possible to estimate accurately the numbers of birds per square mile or other unit measurement; numbers given would be sheer guesses. All but two of these observed species (Golden Plover and Wandering Tattler) are exotic birds that have been introduced to the Hawaiian Islands. The West Beach area contains several diverse habitats (e.g., shoreline, kiawe thickets, sugarcane fields) so that an estimate of abundance (other than rare, uncommon, common, and abundant) of most species would be misleading because few of the species occupy all of these habitats. Moreover, none of the introduced bird species are of any concern in relationship to the Endangered Species Act of 1973 (16 U.S.C. Subsection 1531 *et seq*, 1974) and some of these species have, in the past, caused considerable damage to agricultural crops in Hawaii, and, therefore, often are serious nuisance birds.

The portion of the West Beach area that is proposed for development can be classified as an extensively disturbed habitat with no remaining endemic ecosystems. The vast majority of the dominant and subdominant plants (trees, shrubs, vines) consist of more than two dozen introduced species. The major plant associations include sugarcane fields, kiawe thickets, and vegetation (both aquatic and terrestrial) of the shoreline. Numerous species of introduced shrubs and vines grow along cane roads and the edges of the sugarcane fields and the kiawe thickets. These introduced plant species do not provide suitable habitat for the endemic Hawaiian birds (with the possible exception of the Hawaiian Owl.

The introduced birds consist of 14 species belonging to six bird families. When compared with the mainland United States, this represents a depauperate (i.e. falling short of natural size) bird fauna. As pointed out earlier, some of these species have caused serious damage to agricultural crops in the past and several other seed eaters have the potential of doing so in the future. At the same time, some species (e.g., doves, myna, white-eye, cardinals) give pleasure to many people who enjoy seeing birds around their homes; if the introduced birds were not here, the lowland areas would be virtually

TABLE 13

BIRDS OF THE WEST BEACH AREA

The sequence of bird families follows Van Tyne and Berger (1976).

Migratory Shorebirds

Family Charadriidae, Plovers, Turnstones, Surfbirds

1.	Pacific Golden Plover	(*Pluvialis dominica fulva*)
2.	Wandering Tattler	(*Heteroscelus incanum*)

Introduced Birds

Family Ardeidae, Herons and Egrets

1.	Cattle Egret	(*Bubulcus ibis*)

Family Columbidae, Pigeons and Doves

2.	Spotted or Chinese Dove	(*Streptopelia chinensis*)
3.	Barred Dove	(*Geopelia striata*)

Family Sturnidae, Starlings and Mynas

4.	Common Myna	(*Acridotheres t. tristis*)

Family Zosteropidas

5.	Japanese White-eye	(*Zosterops j. japonicus*)

Family Ploceidae, Weaverbirds and Their Allies

6.	Orange-cheeked Waxbill	(*Estrilda melpoda*)
7.	Red-eared Waxbill	(*Estrilda troglodytes*)
8.	Strawberry Finch	(*Amandava amandava*)
9.	Ricebird or Spotted Munia	(*Lonchura punctulata*)
10.	Black-headed Mannikin	(*Lonchura malacca atricapilla*)
11.	House Sparrow	(*Passer domesticus*)

Family Fringillidae, Sparrows, Cardinals, and Buntings

12.	Red-crested Cardinal	(*Paroaria coronata*)
13.	Cardinal	(*Cardinalis cardinalis*)
14.	House Finch	(*Carpodacus mexicanus frontalis*)

devoid of birds most of the year. In addition, mynas, white-eyes, and cardinals eat insects and their larvae, and, therefore, are beneficial during at least part of their annual cycle.

There have been no published studies for Hawaii that report on habitat modification and the resultant change in species' abundance.

Therefore, one must use his own knowledge and experience in Hawaii to predict the possible changes that would occur in the West Beach area because of the proposed development there. Most of the introduced bird species are found in residential, urban, and rural regions; none are deep forest birds, they are adapted to live in close association with man. A mature sugarcane field does not provide much suitable habitat for any of the introduced species. Consequently, if the cane fields are converted to residential and recreational (e.g., a golf course) use, there will be more available habitat for the introduced bird species and it can be anticipated that there would be an increase in the populations for nearly all of them. Because all of the birds are introduced species (and some have been pests), however, it would not be of significance whether changes in the habitat resulted in an increase, a decrease, or no change in bird populations.

Migratory shorebirds in the area may increase with the removal as the sugarcane and kiawe thickets and construction of lagoon, marinas, and open spaces. The Golden Plover is a common winter resident than finds golf courses and lawns (even at the State Capitol Building) to be excellent habitat during the winter months; the Tattler prefers the shoreline and will probably be found along rocky and sandy shores.

9.11.1 Fauna

Table 14 contains a list of fauna on the project site and a list of fauna based on a survey of the adjacent areas (Barbers Point deep draft harbor). A review of both lists indicates that the fauna is limited to exotic species and are not considered endangered. Additionally, a review of the habitats on the project site indicates that there are no suitable feeding or breeding habitats for those species considered endangered.

The fauna on the project site consist of mammals common in other areas of Oahu. During the land modification phase of West Beach the land fauna such as mice, rats, feral cats, et cetera, will likely be displaced or destroyed due to the development. This is not viewed as an adverse or significant impact since these animals are considered pests.

TABLE 14

BARBERS POINT CHECK LIST OF FAUNA MAMMALS

Common Name	Scientific Name	Status	ES	EF	Wildlife Habitat Relative Abundance C	S	O	K	P
Feral dog, ilio	*(Canidae) Canis familiaris*	X			O		O	R	O
Feral cat, popoki	*(Felidae) Felis catus*	X			R	U			R
House mouse, iole li'ili'i	*(Muridae) Mus musculus domesticus*	X				C	R	C	
Hawaiian rat, iole	*Rattus exulans*	E				O			
Brown rat, po'o-wai	*R. norvegicus*	X				R			
Black rat, iole nui	*R. rattus*	X					R	O	O
Mongoose, iole-manakuke	*(Viverridae) Herpestes auropunctatus*	X			R	O	O	C	U

Source: Revised Environmental Impact Statement for the Barbers Point Deep Draft Harbor, prepared by M & E Pacific, Inc., June, 1978.

9.12 Agricultural Considerations and Impacts

9.12.1 Land Productivity

West Beach contains fallowed agricultural lands for which Oahu Sugar has stated tht the West Beach site has been abandoned from agricultural use for economic reasons. The Land Study Bureau's detailed land classification for Oahu (Land Study Bureau, University of Hawaii, Detailed Land Classification-Island of Oahu, L.S.B. Bulletin No. 11, December, 1972) identified the master productivity rating of the project site as "A" (104 acres) in urban use (the Alice Kamokila Campbell property). "A" meaning that the land is of the highest productivity, "B" second highest, and so on. The 104 acres of Class A and 418 acres of Class B lands represent 0.5 percent and 1.3 percent of the total Class A and B land of the island of Oahu, respectively. The ALISH (Agricultural Lands of Importance in the State of Hawaii) maps show about 266 acres of prime agricultural lands and 133 acres of other important agricultural lands. However, once converted to urban uses the land will no longer be available. Approximately 2/3 of 642 acres is prime or other important agricultural land based on the "important agricultural land maps," prepared by the State Department of Agriculture.

9.13 Impact on Aesthetics

9.13.1 Existing Condition

The present 1.9 miles of shoreline is the primary amenity which West Beach offers. The rock and coral outcroppings and sand dunes are predominant features along the coastline. The sugarcane located inland of the rocky coast lies camouflaged between the rock and coral outcroppings. Some shoreline vegetation (morning glory, kiawe trees) are also noticeable.

9.13.2 Probable Impact

The undeveloped coastline will be modified by the project to provide access to beaches via landscaped walkways. The view of the coastline will include a partial view of the lagoons, the marina, and the proposed resort hotels along the lagoons. Additionally, lands north of Farrington Highway and the H-1 Freeway (especially the elevated Makakilo residential subdivision) will be able to clearly see the West Beach development.

9.13.3 Mitigation Measures to Protect or Enhance Aesthetics

The planning and siting of the hotels, use of landscaping and location of the lagoon openings will consider the scenic quality and aesthetic value of the shoreline.

9.14 Recreational Resources

9.14.1 Overview of Existing Recreational Resources and Sites

The existing site is presently not a significant or major recreational area. Except for the Alice Kamokila Campbell property, the shoreline area appears to be rarely used (see discussion below on existing recreational uses). The apparent limited usage of the property is probably due to the lack of land access to the shoreline and restricted access to the private property which must be crossed. Presently, the Alice Kamokila Campbell property is used for private luaus and events and is not accessible to the public. The shoreline outside of the Campbell property is rocky and swimming conditions are far from ideal. Surfing sites along the shore probably exist, although no surfing was observed on several site visits. Fishing and picnicking occur on a limited basis.

9.14.2 Impact on Recreational Beach Use

The beach areas of the project site borders abandoned sugar canefields and consists mainly of lava rock and relatively few sandy patches of beach. Three entrances are commonly used by beachgoers. From the north, people reach the beach either through Kahe Beach park, following the coastline, or by permission, through the Alice Kamokila Campbell Estate. Another means of entry is through the canefield roads, which can be entered through locked gates, but for which certain employees of Oahu Sugar Company may obtain keys. The third and most commonly used entrance is from the south, via the same road that leads to Campbell Harbor.

The beach is not readily accessible, and apparently relatively unknown. Consequently, it is not heavily used and remains somewhat free from litter. Fresh water is not available and there is hardly any sandy beach. The shoreline is scenic and serves as a type of refuge to those who go there to fish, dive, camp, or just to get away from it all.

A survey of beach users was conducted in 1979 to determine the number, characteristics, and reported activities of those who visit the area. Previous levels of beach use were estimated to be about 6,100 visitor-days annually, or an average of less than 17 people per day visiting the beach frontage. People visiting the beach for recreation are typically male, Hawaiian or part-Hawaiian, and residents of the area including Ewa, Ewa Beach, and Waipahu. Fishing of some type was overwhelmingly the most common activity.

9.14.3 Impact on Existing Shoreline Users

As the beach frontage becomes less isolated by enhanced access, the number of people using the beach frontage will obviously increase. The amount cannot be estimated with any useful accuracy. The major change that will occur is related to the loss of the isolation that is central to current uses. The advent of two major physical alterations to the existing shoreline will affect both of the offshore marine biota as well as provide increased public access to a heretofore isolated area. The two major physical alterations are the deep draft harbor currently under construction, and the proposed West Beach project. Both projects will be required to provide public access to the shoreline under existing State law and this increased accessability will increase pressures on the shoreline and offshore marine biota previously not experienced.

9.14.4 Impact on Recreational Areas and Facilities

The West Beach project will allow for easier access to the natural shoreline and lagoons. Both visitors and residents will have access to the natural shoreline, the proposed bathing lagoons and the Alice Kamokila Campbell property. This will mean that the recreational value of this site will increase dramatically. Additionally, such facilities as comfort stations, showers and parking will also be provided. These facilities and beach right-of-way will be coordinated with the Department of Parks and Recreation, City and County of Honolulu. Public access will be provided along the entire 1.9-mile shoreline at selected and designated public access points. These public access points will be developed by West Beach Estates in conjunction with both the State and City agencies whose responsibility it is to administer public access to the shoreline areas of the State. Public access, the proposed lagoons to be developed, and the project's need to comply with the City's Park Dedication Ordinance 4621 will require coordination and discussions with the City's Department of Parks and Recreation. All shoreline activities will likely be intensified and more taxing to the shoreline resources of the area. Other recreational facilities will be provided such as golf, tennis, passive activities (walking, picnicking), bicycling, et cetera. The West Beach project will have a beneficial impact on recreation, in that it will provide an increased recreational usage of this area.

9.15 Governmental Services Facilities, and Utilities.

9.15.1 Sewage Treatment and Disposal

The applicant proposes to convey wastewater generated by the project to Honouliuli Wastewater Treatment Plant. The total project sewage will be conveyed via gravity flow to two pump stations. The sewage is then pumped up to and along the old railroad right-of-way to Honouliuli Wastewater Treatment Plant. Average daily flow of sewage anticipated at maximum development is 2.5 mgd.

The applicant will have to construct (at his expense) a separate sewer line from the project site to the Honouliuli Wastewater Treatment Plant. The proposed Honouliuli plant will have sufficient capacity to serve a resident population of 98,200 people within the Ewa DP area.

9.15.2 Potable Water

At the present time, the availability of a sustained yield source of potable water is undetermined. The State Department of Land and Natural Resources, Division of Water and Land Development, and the City's Board of Water Supply are exploring various source development alternatives which will enable present and future users of water from the Pearl Harbor Basin to plan effectively for their water needs. One other alternative currently being discussed is the transfer of water source from Oahu Sugar Company to the Board of Water Supply as cane lands are converted to urban use. The Department of Land and Natural Resources has currently reserved 22.5 million gallons on Oahu Sugar Company water for realocation. West Beach Resort has requested a portion of the surplus for project use.

For West Beach, the average daily demand at maximum development is estimated to be 4.5 mgd based on Board of Water Supply factors. Of this total, 2.5 mgd is estimated for potable water consumption with the balance to be used for irrigation. The irrigation water source will be obtained from wells near or on the site, using brackish water previously pumped from an existing on-site plantation well. The demand for potable consumption will be reviewed and evaluated by both the State and City to determine source availability as well as the volume permitted to be pumped from the Pearl Harbor Basin.

9.16 Access, Traffic and Mass Transportation

9.16.1 Data and Assumptions

One of the most important considerations in a project of the magnitude of West Beach is traffic. West Beach is fortunate in that it adjoins Farrington Highway, a four-lane divided highway, along its north boundary between Kahe Point and Palailai Interchange. Less than a mile toward Honolulu, Farrington Highway becomes Interstate Highway H-1, a four-lane limited access freeway, and expands to eight lanes east of Kunia Interchange at Waipahu.

Internally, West Beach will have a major loop road system which will connect with Farrington Highway at two intersection points as shown on Figure 27. Secondary streets will be served from the major loop road to accommodate traffic within the project. An extension of the major loop road will ultimately be developed toward Ewa, with connections to Interstate Highway H-1 at the Palailai Interchange.

The analysis of the traffic implications of the West Beach project was based upon the following data and assumptions:

1. The primary traffic impact from West Beach will occur on Farrington Highway and Interstate Highway H-1 between Kahe Point and Kunia Interchange in Waipahu. Beyond Kunia, the amount of traffic generated from West Beach is minimal in comparison to H-1 volume and Honolulu-bound traffic entering H-1 at Kunia Interchange.

2. Existing traffic counts on Farrington Highway and Interstate Highway H-1 are based on 1982 data from the Department of Transportation.

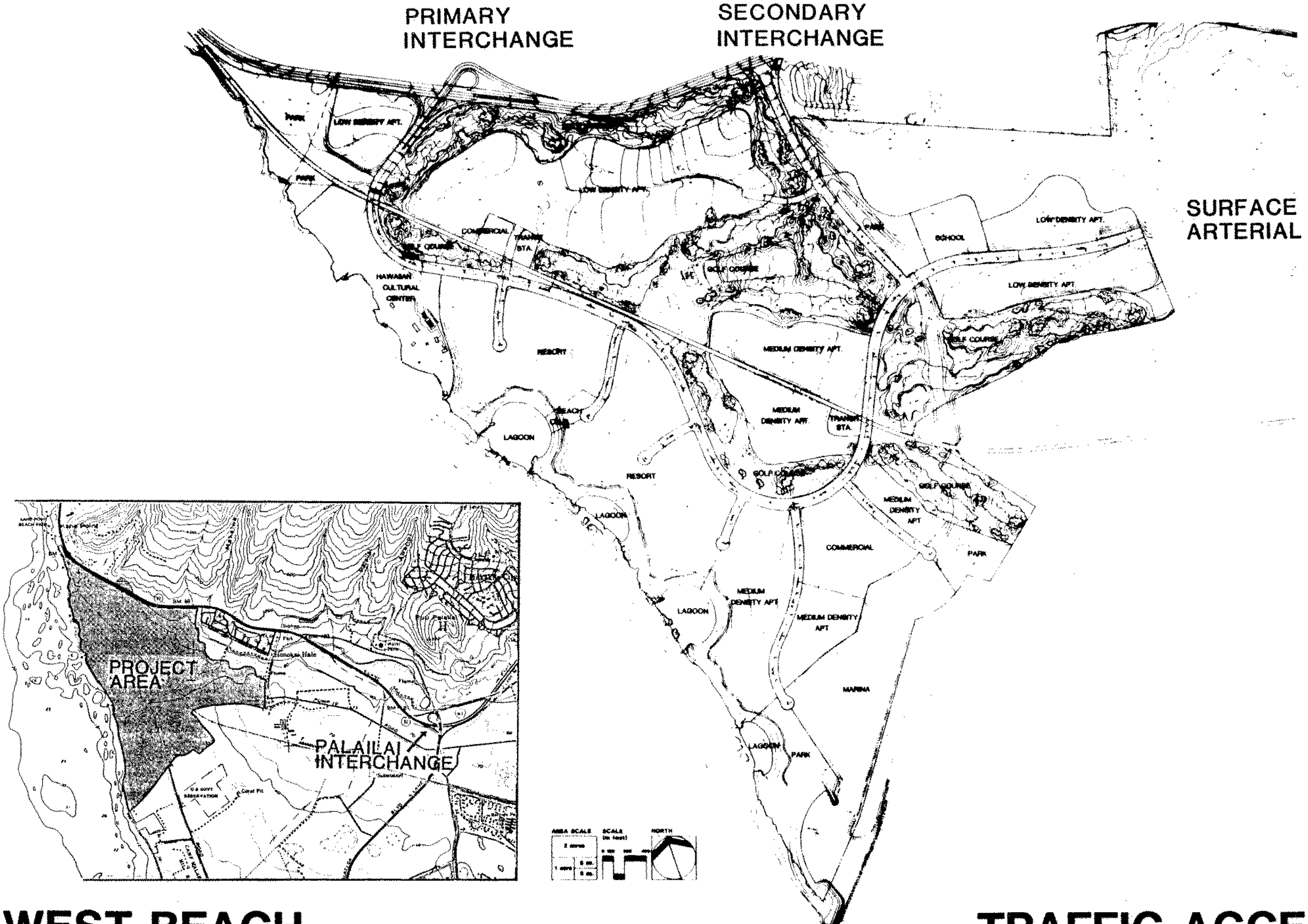
3. The projection period used for analysis is ten years and assumes full development of the 642.2 acre West Beach project.

4. West Beach will become a significant employment center in the Ewa District. It is expected that a high percentage of the jobs will provide employment for residents of Waianae and Ewa communities.

5. The West Beach project will be a somewhat self-contained center with a full range of urban activities. This will tend to reduce the amount of external trips made by West Beach residents for employment, shopping and recreation.

6. The Department of Transportation plans to improve Interstate Highway H-1 from Palailai to Kunia Interchange by adding one lane in each direction to the existing four-lane facility. This significantly improve the carrying capacity to serve future traffic as Ewa grows to become the secondary urban center.

7. The City and County is planning to improve express transit service to Ewa and Waianae in the near future. In addition, the West Beach master plan provides for a transit right-of-way and two stations within the project area to accommodate City plans for future mass transit improvements.



WEST BEACH

TRAFFIC ACCESS

FIGURE 27

9.16.2 Traffic Generation

A preliminary trip generation study has been made of the planned West Beach development. It includes projections of the traffic to be generated by the major uses, residential and resort.

(a) Residential Development

The proposed 5,200 residential units and supporting facilities are expected to generate 7.5 auto trips per unit for a total of 39,000 trips. The comprehensive plan of development, complete with schools, shopping, community and recreation facilities, and job opportunities will reduce the amount of external traffic. It is estimated that two-thirds of the total trips, 25,740, will be external to the project area. This traffic will use Farrington Highway, with 90 percent or 23,166 trips assumed to be Honolulu-bound and 10 percent or 2,574 trips Waianae-bound. In the future, access to West Beach will also be available by a new surface arterial parallel to the existing highway. This route will connect West Beach to other areas of Ewa and provide an alternate means of ingress and egress. It can be anticipated that traffic to and from West Beach will be split between the existing highway and the new arterial.

(b) Resort Development

Self-sufficiency best describes the resort development proposed for West Beach. The proposed 4,000 hotel rooms will be complemented by commercial, entertainment and dining facilities, marina and recreational amenities. Traffic generation for resort complexes is typically composed of high occupancy vehicle types such as buses, vans and limousines. In addition, most of the traffic generated by the resort will occur during off-peak hours. Based on these factors, the resort complex will generate 2.5 vehicle trips a day per unit or 10,000 total daily trips. It is estimated that 90 percent, or 9,000 trips, will be external. This traffic will also use Farrington Highway, with 90 percent or 8,100 trips Honolulu-bound and 10 percent or 900 trips Waianae-bound. In the future, this traffic will also be split between the existing highway and the future surface arterial.

(c) Total Trip Generation and Traffic Assignments

The West Beach project, when fully developed, will generate approximately 34,740 external auto trips per day (25,740 residential and 9,000 resort). Much of this traffic will be destined to and from Honolulu. Further, portions of the traffic on Farrington Highway from Waianae will be destined for West Beach because of the jobs to be created there and the various amenities and recreational facilities.

The following distributions of the West Beach daily external traffic and traffic originating from Waianae is assumed:

1. Farrington Highway to Waianae: 10 percent or 3,474 vehicles per day (VPD)

2. Farrington Highway to Honolulu

   a. Palailai (Makakilo, Barber's Point, Campbell Industrial Park)

      5 percent or 1,737 VPD

   b. Ewa Beach, Waipahu 15 percent or 5,211 VPD

   c. Pearl City, Honolulu: 70 percent or 24,318 VPD

3. Waianae traffic to West Beach: 5 percent of the projected highway volume plus 40 percent of the employment trips generated by West Beach.

Therefore, two-way traffic generated on the highway system toward Honolulu from West Beach is summarized below:

1. Farrington Highway: West Beach entrance to Palailai Interchange is 34,740 VPD - 3,474 VPD = 31,266 VPD

2. Interstate Highway H-1: Palailai to Makakilo Interchange is 31,266 VPD - 1,737 VPD = 29,529 VPD

3. Interstate Highway H-1: Makakilo to Kunia Interchange is 29,529 VPD

4. Interstate Highway H-1: East of Kunia Interchange is 29,529 VPD - 5,211 VPD = 24,318 VPD

(d) <u>Peak Hours</u>

Since the demand for highway use will be greatest during the morning hours, the a.m. peak will be used as the basis for analyzing the peak flow. A peak-hour factor of 10 percent for the residential portion of the West Beach traffic is assumed, and the resort traffic is discounted since it occurs during off-peak periods. The directional distribution of peak-hour traffic assigns 10 percent toward Waianae and 90 percent toward Honolulu.

Therefore, residential traffic destined to Honolulu from West Beach during the a.m. peak are computed as follows, based on 90 percent of the residential external traffic, or 23,166 VPD travelling toward Honolulu:

Farrington Highway from West Beach to Palailai Interchange:
(25,740 x 0.90) x 0.10 = 2,317 vehicles

Palailai to Makakilo Interchange:
(25,740 x 0.85) x 0.10 = 2,188 vehicles

Makakilo to Kunia Interchange:
2,188 vehicles

Kunia to Waiawa Interchange:
(25,740 x 0.70) x 0.10 = 1,802 vehicles

9.16.3 Traffic Projections

The following analysis evaluates each section of the affected highway system based upon the projected increase in traffic over the next ten years and the additional traffic generated by the West Beach project.

Factors used for traffic growth assume a 7 percent annual increase of the 1982 Department of Transportation traffic counts along Farrington and H-1 Highways. This situation will be consistent except for traffic generated to West Beach from the Waianae Coast where growth is assumed to increase at an annual rate of 4 percent due to the population growth guidelines included in the City and County General Plan and Development Plan policies and objectives. Further, it is assumed that 5 percent of the traffic from Waianae is destined for West Beach.

West Beach will become an important employment center in the Ewa area. It is anticipated that a high percentage of the jobs created at West Beach will be filled by residents of Waianae and Ewa communities. Since employee work trips will be a significant factor in the morning peak-hour traffic, estimates have been made of the origin of employee trips and the percentage occurring during the peak hour. These estimates are provided in Table 15 and incorporated into the analysis of each highway segment discussed below.

Table 16 summarizes the traffic projections.

9.16.4 Alternatives to Increase Capacity

The preceding analysis of future traffic volumes during the morning peak hour, based on full development of the West Beach project, indicates that improvements to capacity will be required in the future, particularly on the highway segment between West Beach and Palailai Interchange. This section discusses two alternatives to increasing capacity: Widen Farrington Highway to three Honolulu-bound lanes from West Beach to palailai Interchange or develop a surface arterial extension of the West Beach major internal roadway which would parallel Farrington Highway and connect from the project to the Palailai Interchange and to other areas of the Ewa Plain.

Assuming the surface arterial is built, traffic from West Beach can be split between it and Farrington Highway, thus reducing the traffic impact on the existing highway system.

Table 17 outlines the resulting traffic volumes under the following assumptions:

1. Traffic generated by the West Beach project is distributed to three access points as follows:

Primary Interchange Farrington Highway	30 percent
Secondary Interchange at Farrington Highway	35 percent
Surface arterial parallel to Farrington Highway	35 percent

TABLES 15 - TRIP GENERATION FROM WEST BEACH EMPLOYMENT

USE	UNIT	BASIS	EMPLOYMENT	% PEAK HOUR	AM PEAK HOUR TRIPS
Deluxe Hotel	400 rooms	1.5/rm.	600	.55	330
First Class Hotel	1,600 rooms	.7/rm.	1,120	.55	616
Resort Condo	2,000 units	.5/rm.	1,000	.80	800
Residential Condo	5,200 units	.05/rm.	260	.80	208
Commercial Retail	185,000 sq. ft.	.005/sq. ft.	925	.70	648
Restaurants	35,000 sq. ft.	40/rest.	280	0	0
Golf Course	18 hole		125	.60	75
Beach Club			150	0	0
Maintenance/Security			30	.80	24
Management			20	1.00	20
Yacht Club			50	0	0
Marina			200	.50	100
Hawaiian Cultural Center			125	.70	88
Luau			175	0	0
			5,060		2,909
				Say	3,000[1]

		Peak Hour	Daily
Origin of trips:	From Honolulu	.60 x 2,850 = 1,710	.60 x 4,807 = 2,884
	From Waianae	.40 x 2,850 = 1,140	.40 x 4,807 = 1,923
	On-Site	.05 x 3,000 = 150	.05 x 5,060 = 253

Origin of trips with surface arterial:

From Honolulu via Farrington-H-1	.50 x 1,710 = 855
From Honolulu via Surface Arterial	.50 x 1,710 = 855
From Waianae	.40 x 2,850 = 1,140
On-Site	.05 x 3,000 = 150

[1]Based on investigation and estimates of Pannell Kerr Forster, resort consultants for the West Beach project.

TABLE 16 - SUMMARY OF TRAFFIC VOLUME PROJECTIONS

HIGHWAY SEGMENT	EXISTING AND PLANNED LANES	1982 DOT TRAFFIC COUNT	NORMAL INCREASE[1] (70%±)	TOTAL VOLUME IN 10 YEARS	WAIANAE TRIPS[2] TO WEST BEACH	EXTERNAL TRIPS[3] FROM WEST BEACH	TOTAL TRAFFIC VOLUME	DESIGN[4] CAPACITY	LEVEL OF SERVICE
Farrington Highway: Kahe Point to West Beach									
24-Hour Volume	4	20,910	+ 8,364	= 29,274	--	+ 3,474	= 32,748	57,600	"C"
AM Peak-Hour Volume	2	1,310	+ 524	= 1,834	--	--	= 1,834	2,400	"C"
Farrington Highway: West Beach to Palailai Interchange									
24-Hour Volume	4	22,280	+ 15,596	= 37,876	- 3,387	+ 31,266	= 65,755	72,000	"D"
AM Peak-Hour Volume	2	1,410	+ 987	= 2,397	- 1,232	+ 2,317	= 3,482	4,000	"E"
Interstate Highway H-1: Palailai Interchange to Makakilo Interchange									
24-Hour Volume	6	19,230	+ 13,461	= 32,691	- 3,387	+ 29,529	= 58,833	86,400	"C"
AM Peak-Hour Volume	3	990	+ 693	= 1,683	- 1,232	+ 2,188	= 2,639	3,600	"C"
Interstate Highway H-1: Makakilo Interchange to Kunia Interchange									
24-Hour Volume	6	30,660	+ 21,462	= 52,122	- 3,387	+ 29,529	= 78,264	86,400	"C"
AM Peak-Hour Volume	3	1,670	+ 1,169	= 2,839	- 1,232	+ 2,188	= 3,795	4,500	"D"
Interstate Highway H-1: Kunia Interchange to Waiawa Interchange									
24-Hour Volume	8	43,260	+ 30,282	= 73,542	- 3,387	+ 24,318	= 94,473	115,200	"C"
AM Peak-Hour Volume	4	2,560	+ 1,792	= 4,352	- 1,232	+ 1,802	= 4,922	6,000	"D"

[1]Based on 7 percent per year increase for 10 years.
[2]Waianae trips destined to West Beach based on 5 percent of projected volume plus 40 percent of employment trips originating in Waianae:
24-hour volume (29,274 x .05) + (4,807 x .40) = 1,464 + 1,923 = 3,387
AM peak-hour volume (1,834 x .05) + (2,850 x .40) = 92 + 1,140 = 1,232
[3]Based on full project development. See page 5 for 24-hour volumes and AM peak-hour volume.
[4]Based on following definitions of Level of Service:

"C"	1200 VPH/L x 4L x 12 H/D = 57,600 VPD 1200 VPH/L x 2L = 2,400 VPH	"C"	1200 VPH/L x 6L x 12 H/D = 86,400 VPD 1200 VPH/L x 3L = 3,600 VPH	"C"	1200 VPH/L x 8L x 12 H/D = 115,200 VPD 1200 VPH/L x 4L = 4,800 VPH
"D"	1500 VPH/L x 4L x 12 H/D = 72,000 VPD 1500 VPH/L x 2L = 3,000 VPH	"D"	1500 VPH/L x 6L x 12 H/D = 108,000 VPD 1500 VPH/L x 3L = 4,500 VPH	"D"	1500 VPH/L x 8L x 12 H/D = 144,000 VPD 1500 VPH/L x 4L = 6,000 VPH
"E"	2000 VPH/L x 2L = 4,000 VPH				

TABLE 17 - TRAFFIC VOLUME PROJECTIONS AT WEST BEACH WITH SURFACE ARTERIAL

HIGHWAY SEGMENT	EXISTING AND PLANNED LANES	TOTAL VOLUME[1] IN 10 YEARS		WAIANAE TRIPS[2] TO WEST BEACH		EXTERNAL TRIPS[3] FROM WEST BEACH		TOTAL TRAFFIC VOLUME	DESIGN CAPACITY	LEVEL OF SERVICE
Farrington Highway: Kahe Point to West Beach										
AM Peak-Hour Volume	2	1,834	-	--		--		1,834	2,400	"C"
Farrington Highway: West Beach to Palailai Interchange										
AM Peak-Hour Volume:										
On Farrington	2	2,397	-	1,232	+	1,511	=	2,676	3,000	"D"
On Surface Arterial	2	--		--		806	=	806	1,600	"C"
Interstate Highway H-1: Palailai Interchange to Makakilo Interchange										
AM Peak-Hour Volume:										
On H-1	3	1,683	-	1,232	+	2,188	=	2,639	3,600	"C"

[1] Based on 7 percent per year increase for 10 years.
[2] Waianae trips destined to West Beach based on 5 percent of projected volume plus 40 percent of employment trips originating in Waianae:
24-hour volume (29,274 x .05) + (4,807 x .40) = 1,464 + 1,923 = 3,387
AM peak-hour volume (1,834 x .05) + (2,850 x .40) = 92 + 1,140 = 1,232
[3] Assumes that 35 percent of the West Beach external traffic will use the surface arterial, or 2,317 x .35 = 806 trips.

2. Distributions are based on the projected number of units by parcel and the most likely access route based on the internal circulation plan for the project.

Based on the assumed distribution outlined above, it can be concluded that the existing highway system has sufficient capacity to accommodate the projected traffic volumes. The surface arterial effectively increases carrying capacity and acts to relieve the existing highway of a significant volume of future traffic.

Planning for the surface arterial beyond the project boundary will be coordinated with the City and County of Honolulu, since this route will be part of the City's road wystem. This route will also be a key part of the City's plans for the secondary urban center. Therefore, its route should be established to support City policies for expanded growth adjacent to West Beach.

Without the surface arterial, it can be concluded that Farrington Highway should be widened to three lanes in the Honolulu direction from the West Beach secondary interchange to Palailai Interchange, a distance of about 1.8 miles.

The scheduling of these alternative mitigating measures is dependent on the pace at which various uses at West Beach are developed. Table 18, Traffic Projection by Phase, indicates that additional capacity will be required after about 3,000 residential units are developed and occupied, which will take place during Phase III of project development.

9.16.5 Interchange Turning Movement Analysis

The West Beach project master plan proposes two interchanges of Farrington Highway, the primary at the Waianae end of the project area and the secondary at the Honolulu end. Land areas for both interchanges are part of the project area and will not require additional acquisition.

The primary interchange provides free-flow movement in all directions, while the secondary interchange provides for right-turn in and out movements only. This design will minimize interruption to traffic flow on Farrington Highway.

Turning movement volumes during the morning peak hour were used to determined the required number of lanes. Traffic volumes are based on full development, distribution of trips between the two interchanges with and without the surface arterial, and peak-hour employment trips defined in Table 15.

For the primary interchange, the off-ramp overpass serving traffic from Honolulu should accommodate a volume of 1,710 vehicles, thus requiring two lanes. This assumes a design capacity of 1,000 VPH/L. All other on- and off-ramps can adequately serve projected peak-hour traffic volumes with one lane. The secondary interchange will provide on- and off-ramps for right-turn only movements, with deceleration and acceleration lanes designed to

TABLE 18 - TRAFFIC PROJECTION BY PHASE, A. M. PEAK HOUR

PHASE	RESIDENTIAL UNITS	EXTERNAL TRIPS FROM WEST BEACH, HONOLULU-BOUND	TOTAL TRAFFIC VOLUME: FARRINGTON AT WEST BEACH	TOTAL TRAFFIC VOLUME: SURFACE ARTERIAL	DESIGN CAPACITY	RESULTING LEVEL OF SERVICE ON FARRINGTON
I	595	265	1,736	--	2,400	"C"
II	1,740	775	2,161	--	2,400	"C"
III	2,700	1,203	2,564	--	3,000	"D"
IV	4,230	1,885	2,427	660	3,000	"D"
V	5,200	2,317	2,676	806	3,000	"D"

meet Department of Transportation standards for highway interchange construction.

With the surface arterial, the turning movement volumes are reduced so that all ramp sections cen be one lane.

The primary interchange will be constructed initially and the secondary interchange constructed later.

9.16.6 Mass Transit

The traffic analysis has not included the effects of mass transportation on future traffic volumes. The inrease in private automobile costs due to higher fuel prices, increased insurance rates, and vehicle sales prices have tended to modify travel patterns as people shift more of their trips to public transit and carpools. The City and County plans to improve express transit service to Ewa and Waianae communities in the near future and longer range plans for an improved mass transit system will also be pursued. These factors all tend to reduce the amount of travel by private vehicles. This should result in a decrease of the West Beach and future highway volumes by about 10 percent and subsequently improve the carrying capacity of the highway system.

9.16.7 Future Design Considerations

During the West Beach development, Farrington Highway and Interstate Highway H-1 within the influence of the project area appear to have adequate capacity to accommodate projected increases in traffic volume.

Alternative measures to expand capacity include:

1. Add an additional Honolulu-bound lane to Farrington Highway from the West Beach secondary interchange to the Palailai Interchange. This would provide a design capacity of 3,600 vehicles at Level of Service "C" compared to the projected peak-hour volume of 3,482 vehicles.

2. Implementation of a new surface arterial from the eastern boundary of the West Beach project through the Ewa Plain, with a connection to Interstate Highway H-1 at the Palailai Interchange. This new roadway would be part of the City and County road system serving the Secondary Urban Center and would carry about 35 percent, or 806 vehicles, of the peak-hour trips generated by West Beach. Consequently, a reduction in the peak-hour volume of Farrington Highway would occur, resulting in 2,676 vehicles during the peak hour. This volume is below a design capacity of 3,000 vehicles at Level of Service "D," and the existing two Honolulu-bound lanes would be adequate.

The appropriate action would be selected and implemented by the project developer, in consultation with the State Department of Transportation and City and County Department of Transportation Services, when warranted by West Beach traffic volumes.

Primary and secondary interchanges at Farrington Highway will provide ingress and egress to West Beach from the highway system. Peak-hour turning movement projections indicate that a grade separated design is warranted for the primary interchange, while the secondary interchange should provide only right turn in and out movements, with deceleration and acceleration lanes. The primary interchange will be constructed by the West Beach developer. The secondary interchange will be constructed subsequently when warranted by traffic volumes. Land areas for both interchanges are part of the project area and will not require additional land acquisition. Both interchanges will be designed according to Department of Transportation standards. The design and construction process will also be coordinated with the Department of Transportation for review and approval.

Should the surface arterial alternative be selected, it will be coordinated with the City and County of Honolulu as part of circulation plans for the Secondary Urban Center. This roadway will be a major arterial connecting West Beach with adjacent development envisioned in City plans for the Secondary Urban Center.

Future improvements in mass transit service to the Ewa and Waianae districts will lessen the impact of future traffic volumes on highway capacity. Various transit alternatives are being considered by the State and City and County of Honolulu. The West Beach master plan has provided a transit right-of-way and set aside land for two transit stations to serve the West Beach project.

9.17 Archaeological, Historical, and Paleontological Sites

9.17.1 Historical Sites

Sites and/or structures of historical importance include the old abandoned railroad tracks going through the northern half of the West Beach site. These tracks were owned and utilized by the sugar companies to haul sugarcane and passengers to and from the Pearl Harbor area to the Waianae Coast. There is a current governmental proposal to restore these tracks and railroad cars so that the route can be retraced. This would allow residents and visitors alike to experience the train ride which was in operation in the early 1900's. The restoration of the railroad is desirable from the resort's standpoint because it would be another visitor attraction which can be readily available and within the project site. Planning efforts will likely include the restored ralroad as a part of the project. Coordination by the applicant with individuals and/or organizations sponsoring the railroad restoration is expected.

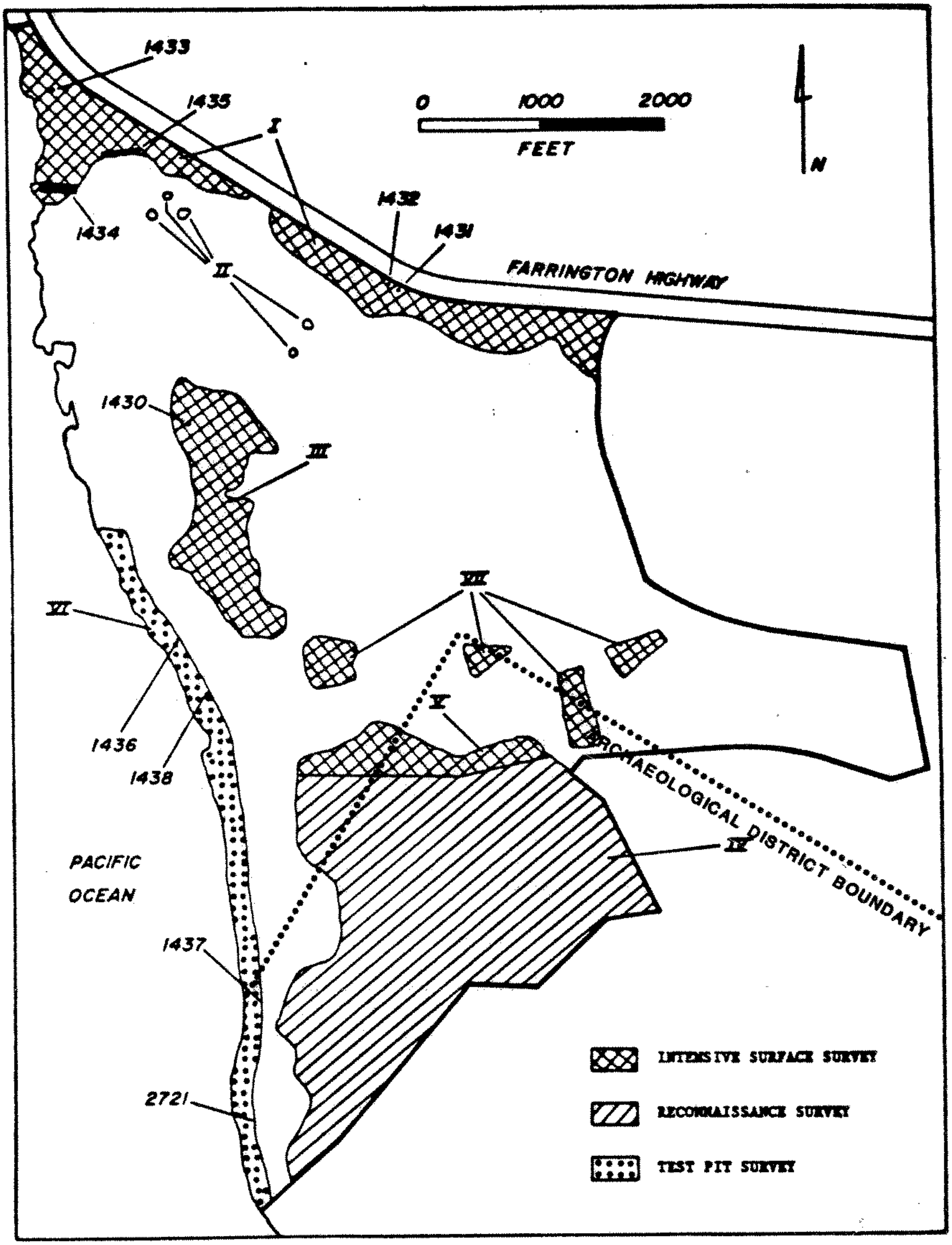
9.17.2 Archaeological Sites

Additional archaeological work in the West Beach area was conducted by Barrera (1984) for the applicant. His 1979 survey found 10 archaeological sites (Figure 28) which included four walls of recent origin and a fishing shrine in the vicinity of Farrington Highway, an L-shaped wall and World War II structures in the northwest portion of the property, and three midden sites and a circular lime kiln along the southeastern shoreline. The findings suggest that the sites are a continuation of the archaeological site pattern and distribution of the Barber's Point Archaeological District surveyed by the Bishop Museum and the Archaeological Research Center Hawaii. A portion of the West Beach project area lies within the archaeological district. Twenty-six archaeological sites were identified in portion of the district lying on West Beach property. The Bishop Museum test excavated and dated some of the sites and indicated that a more intensive survey may yield many more sites within the archaeological district. The 1979 survey also suggested that portions of the project area may also be eligible for inclusion on the State and National Register of Historic Places.

The second phase of the archaeological survey, completed in July of 1984, was designed to gather additional information about certain particular sites (Figure 29). This work involved six specific tasks, as follows:

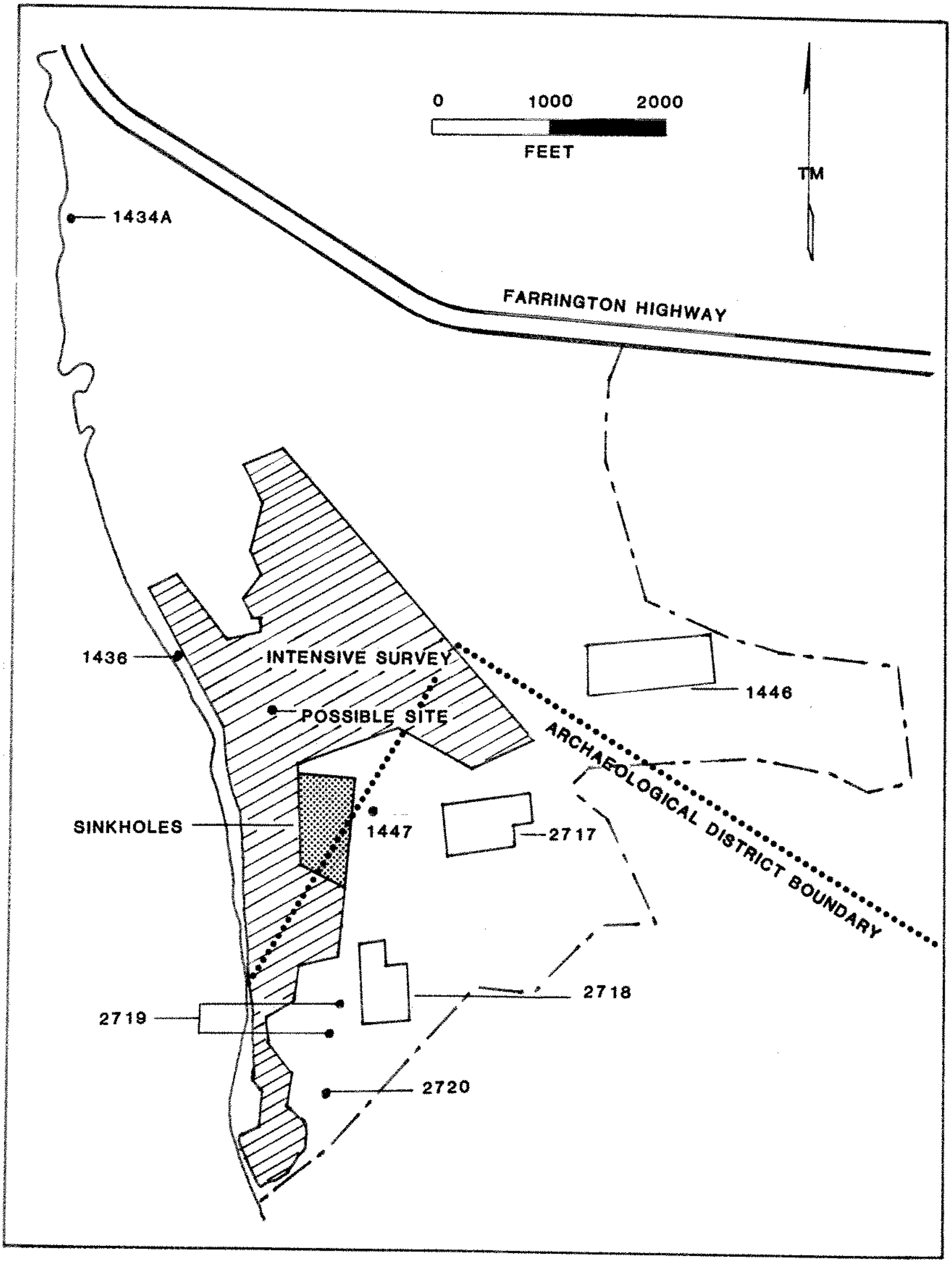
1. Reconnaissance surveys of Sites 2717 through 2720, which had been previously recorded by Bishop Museum and Archaeological Research Center Hawaii, to provide a basis for recommendations for future work (Figure 30).

2. Survey of an area on the south side of the property which had never been investigated during any of the previous archaeological projects. The purpose was to locate and map limestone sinkholes and to excavate a selected sample to determine the level of effort required for future investigations.



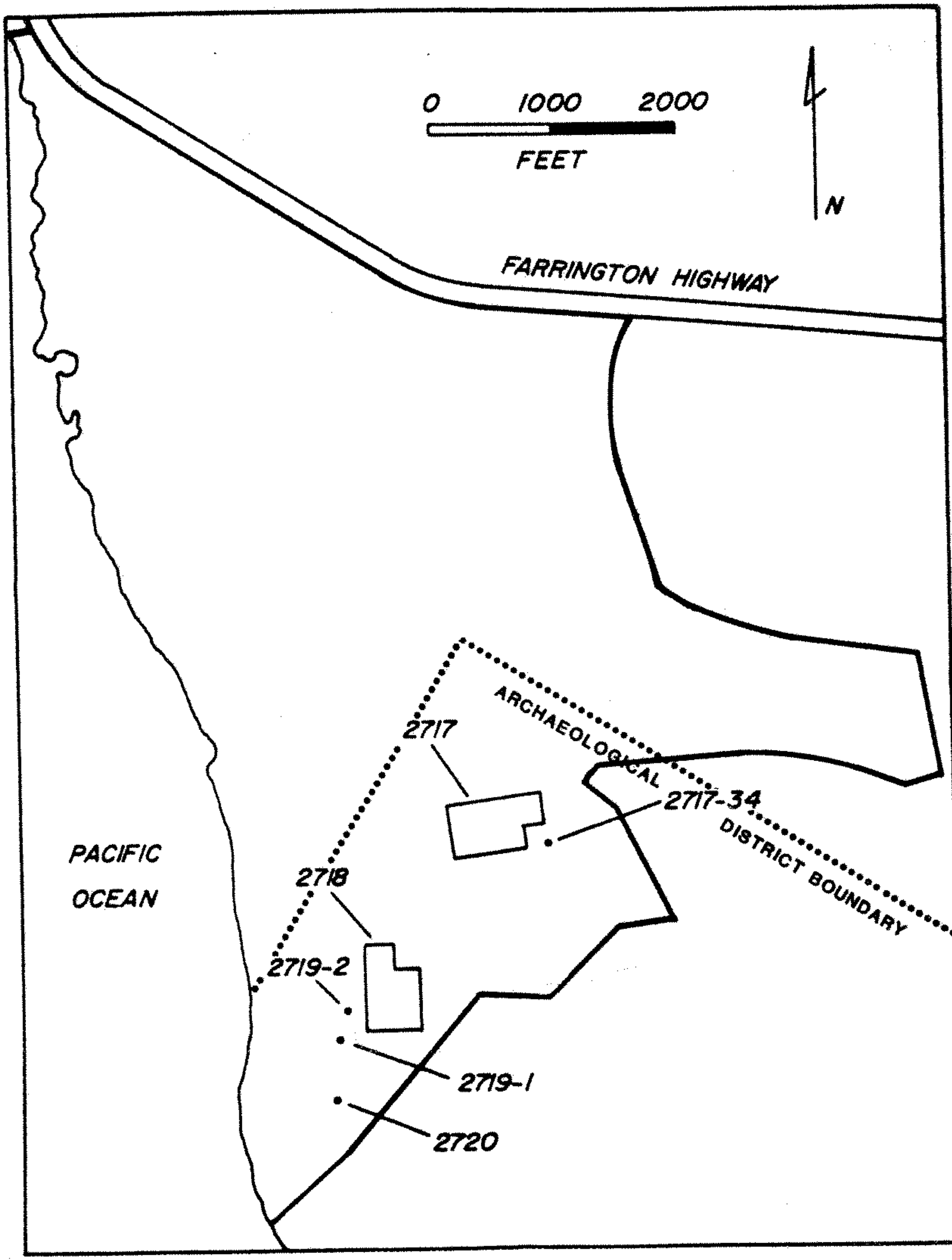
WEST BEACH 1979 SURVEY AREA

FIGURE 28



WEST BEACH 1984 SURVEY AREA

FIGURE 29

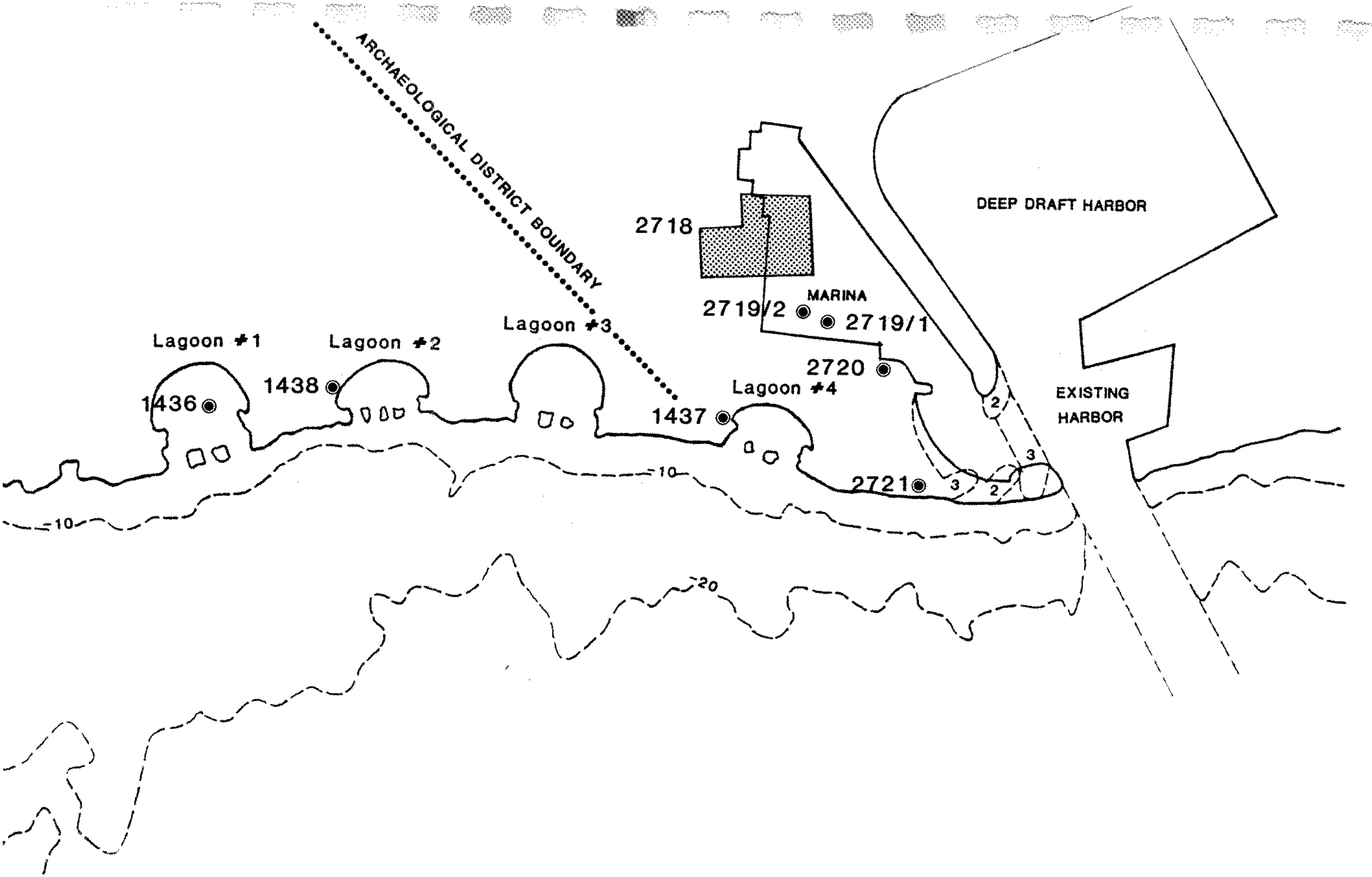


Source: Surveys by Bishop Museum (Sinoto 1976) and Archaeological Research Center Hawaii (Davis and Griffin 1978).

WEST BEACH

PREVIOUSLY RECORDED SITES

FIGURE 30



WEST BEACH — SHORELINE AND MARINA SITES

FIGURE 31

3. Consultation with Dr. Alan Ziegler, Zoologist, regarding the nature of the fossil bird remains, their importance and significance, and proper strategies for recovery and study of bird remains.

4. Test excavation at Site 1434A (stone wall) to make a determination of the nature and significance of the subsurface deposits, done in response to a review comment of the 1980 Environmental Impact Statement.

5. Historical research on Site 1436 (lime kiln) undertaken by Glen Mason of Spencer Mason Partnership to determine the age, history, and significance of the site.

6. Intensive survey of approximately 200 acres of former sugar land to determine the presence or absence of archaeological sites. This area could not be done at the time of the 1979 survey because access was prevented by the presence of sugarcane under cultivation.

The third phase of the project will involve the mitigation of any adverse effects posed by the development (Table 19).

9.17.3 Survey Area IV

The 1979 reconnaisance survey of this area was conducted in order to insure accuracy and completeness of previous survey efforts. Originally surveyed by Bishop Museum [Sinoto 1976], a portion of this area was again investigated by Archaeological Research Center Hawaii [Davis and Griffin 1978] in order to record sites not located by the Museum's efforts and to more accurately map site locations. 1984 fieldwork demonstrated that only a few small archaeological features were missed by both of these projects, and it is reasonable to assume that virtually 100 per cent of the sites in those project areas have been found and recorded.

A small section at the north end of Area IV, west of Malakole Road, was not re-surveyed by Archaeological Research Center Hawaii. Of primary interest in this area are numerous limestone sinkholes, some of which contain the remains of fossil birdbones.

The 1984 project involved two distinct tasks in this area. The first was an inspection of Sites 2717 through 2720 to ascertain the level of effort required for the mitigation of any adverse impacts posed by the resort development, and the second involved the mapping, recording, and selective excavation of sinkholes that might contain the bones of fossil birds in the particular area that had been previously unsurveyed.

As for the first task, it was discovered that approximately one-third of the features at Site 2717 [wall and limestone sinkholes] have been destroyed since the 1979 survey, either by limestone quarrying or construction for the Deep Draft Harbor. Sites 2718 [enclosure and limestone sinkholes], 2719 [enclosure and mound] and 2720 [structure remnant and enclosure remnant]

TABLE 19

SUMMARY OF VIABLE APPROACHES

SITE	TYPE	RECOMMENDATION
1430	Shelter & limestone sink	Salvage - no preservation value
1431	Two walls	No further action
1432	Wall	No further action
1433	Fishing Shrine	Salvage
1434	Two walls	No further action
1435	Wall	No further action
1436	Kiln	Record in detail, possible relocation
1437	Midden Deposit	Salvage - no preservation value
1438	Midden Deposit	Salvage - no preservation value
2717	Various	Salvage - no preservation value
2718	Various	Salvage - no preservation value
2719	Enclosure and mound	Salvage - no preservation value
2720	Enclosure and shelter	Salvage - no preservation value
2721	Midden Deposit	Salvage - no preservation value

have not been disturbed since the original surveys. It has been recommended that extensive salvage excavations should be carried out in all of these archaeological sites.

As for the second task, based on a five-acre investigation, there are estimated 750-800 sinkholes in the West Beach area. Sixty-nine sinkholes, representing those most likely on the basis of size and configuration to contain bird bones, were recorded and mapped. Test pits were excavated in six in an effort designed solely to assess the level of effort which would be required in any future excavations that might be associated with a mitigation phase of the project. Three were found to contain fragments of bird bones, one of which also contained archaeological midden materials.

9.17.4 Paleontological Resources

Paleonotology is a science which deals with the life of past geological periods as known from fossil remains. The fossils of birds have been found in limestone sink holes in the Barber's Point area. Some of these remains represent species which are extinct and previously unknown to science. The remains represent significant paleontological finds from Hawaii. The project has been surveyed to locate any limestone sink holes. Mitigation measures could include the salvage of fossil remains from the sink holes prior to development, if any are found on the project site.

The applicant, based on the recommendations of the archaeologist, has retained qualified personnel to systematically test 50% of all limestone sinks and fully excavate and remove fossil bones from the tested sinks which will be subject to the review of the State Historic Preservation Officer. The fossil bones will be deposited with the Bishop Museum for further examination and study.

9.17.5 Railroad Renovation

There have been indications that the old OR & L Railroad will be renovated and a "train-ride" type experience along the Pearl City to Waianae area will be available. This will recreate the route taken by the trains hauling sugar cane and passengers between these points. At this time, it is not known if private or public funds will be financing the renovation. Work on the railroad, whether through public or private funds will be coordinated with the State's Historic Preservation Office.

9.18 Population Impact

The Department of General Planning, City and County of Honolulu, identified population impacts of various off-Waikiki resorts ("An Assessment of Potential Off-Waikiki Resorts on Oahu," dated August, 1978). This study provides the following information on the population impact of West Beach:

> "The impact area for the West Beach resort center is depicted as: the Waianae Coast, Central Oahu (Mililani town, Wahiawa), and Waipahu to Moanalua). It is evident that a large number of population concentrations are within the thirty minute travel time of the resort area, which is the criterion for drawing the boundary for the area."
>
> "The impact area includes a major portion of the city. Population within the area amounted to about 334,000 in 1975. With this large population, the resort development at West Beach has a very large labor pool from which employees may be drawn and any population impact generated by the development can easily be absorbed into the urban area."
>
> "Since there is a fairly large labor market within the 30-minute commuting distance of the resort, it is probable that most of the employees will be living within the impact area and the total additional population (33,000-35,000) will present a reasonable estimate of the resort's impact. This possibility will be enhanced if the City & County permits a new residential development within the impact area to complement the resort development. This does not account for unemployed living within the impact area who may seek jobs generated by the resort, or residents in the impact area who are drawn into the labor force as a result of the new job opportunities."

When fully developed, the resort is expected to generate a total additional population, including visitors, of approximately 21,100. This projected total population is based upon a 1.95 double occupancy rate for the 4000 resort units and variable resort residential occupancy rates for the 5200 low and medium density units. This represents about 15% of the projected population for the year 2000 in the affected area. The projected population is based on the current, post 1980 Ewa district census 5.3 percent annual growth rate.

Population densities for the residential sectors of the West Beach project have been established using comparable resort residential development figures. The Housing consultant has stated that occupants per unit type would be relatively low in comparison to typical residential projects such as Mililani, Gentry-Waipio, Makakilo and Village Park.

9.19 Land Use Controls and Impact

9.19.1 Present Land Use

The present project site is within the agricultural district, as designated by the State's Land Use Commission (Figure 31). The City & County of Honolulu adopted Development Plans for the West Beach project site on June 8, 1983 in Ordinance No. 83-26. In Figure 32, Development Plan Special Provisions for Ewa, West Beach is identified as part of the new secondary urban center in the West Beach-Makakilo area. The West Beach Master Plan is in compliance with the Development Plan.

Section 15, "Urban Design Principles and Controls for Ewa" 2. "Principles and Controls for Special Areas" a. West Beach Special Area describes the project site in terms of intended uses. County land use amendments and rezoning will be required and portions of the project site lie within the SMA and will also affect the State's Conservation District in terms of shoreline alteration due to Lagoon/Marina development. Figure 33 depicts the SMA Boundary area. Improvement within this area will increase accessibility and recreational use of the shoreline. Improvements within the CDUA area will include the proposed marina and lagoons.

9.19.2 Adjacent Land Uses

The southern boundaries of the site abut the existing Malakole barge basin. This basin is presently being enlarged for the Barbers Point deep draft harbor. Around and south of the basin, Campbell Industrial Park lies approximately .7 mile to the south of West Beach. The Hawaiian Electric Company's Kahe Power Plant is located .5 mile north of the project site, across Farrington Highway. The eastern boundaries of the site abut agricultural lands or lands in open space use. North of the project lie two existing residential subdivisions (Honokai Hale and Nanakai Gardens). The Barbers Point Naval Air Station lies approximately one mile southeast of the project. (See Figure 34 for location of these surrounding uses.)

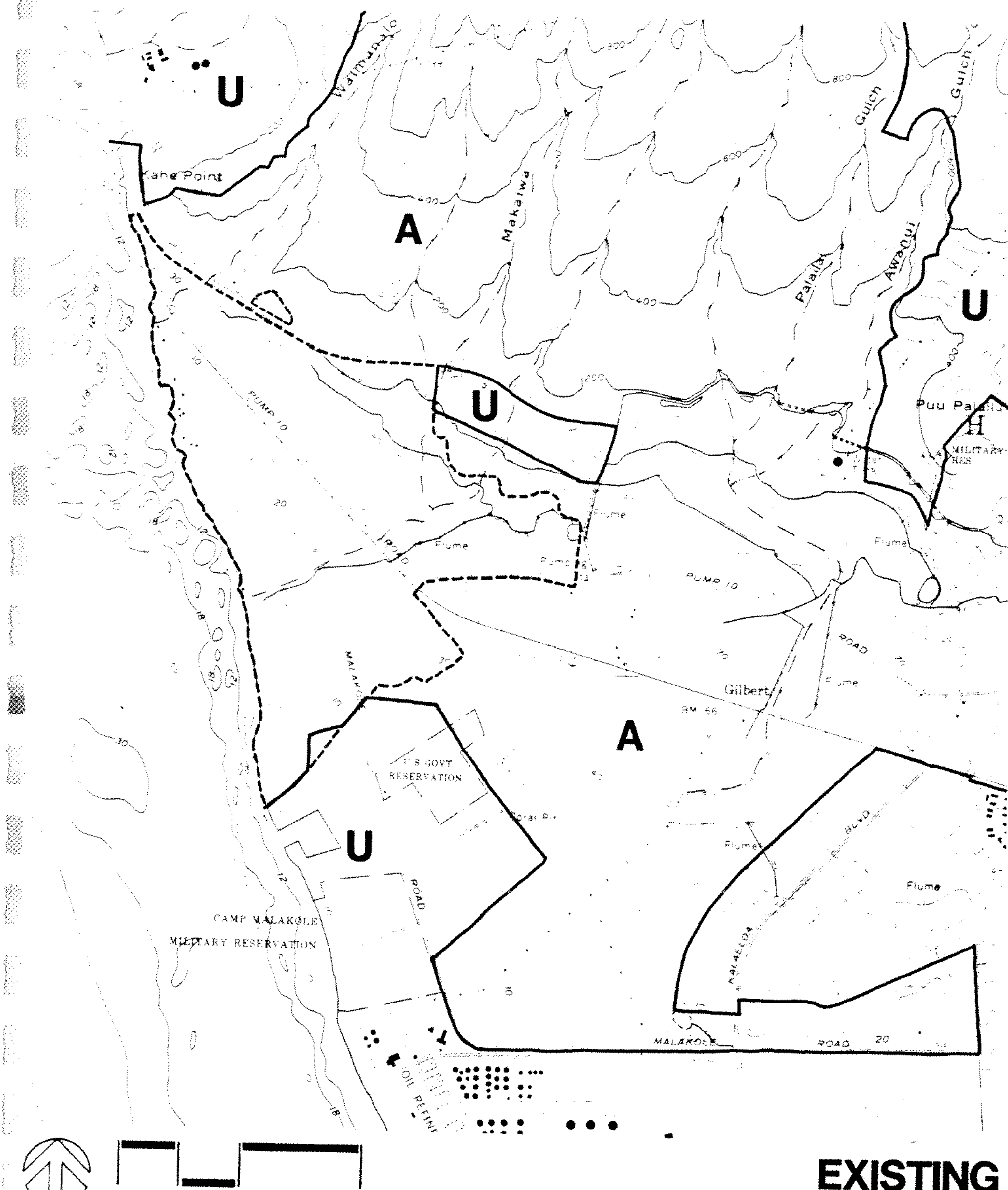
9.19.3 Future Projects in the Surrounding Area

There are several projects which will occur in the surrounding area, these are:

a. Construction of the Barbers Point deep draft harbor. This harbor, presently under construction, will serve as the second major harbor (next to Honolulu Harbor) for Oahu. Its development is next to the largest industrial park (Campbell) in the State, and the goods and transportation advantages will serve to reduce overland transportation costs for the central Oahu area.

b. Continued growth of Campbell Industrial Park. The industrial park will continue to grow, especially in view of the proposed harbor. Heavy and light industries are housed in the industrial park.

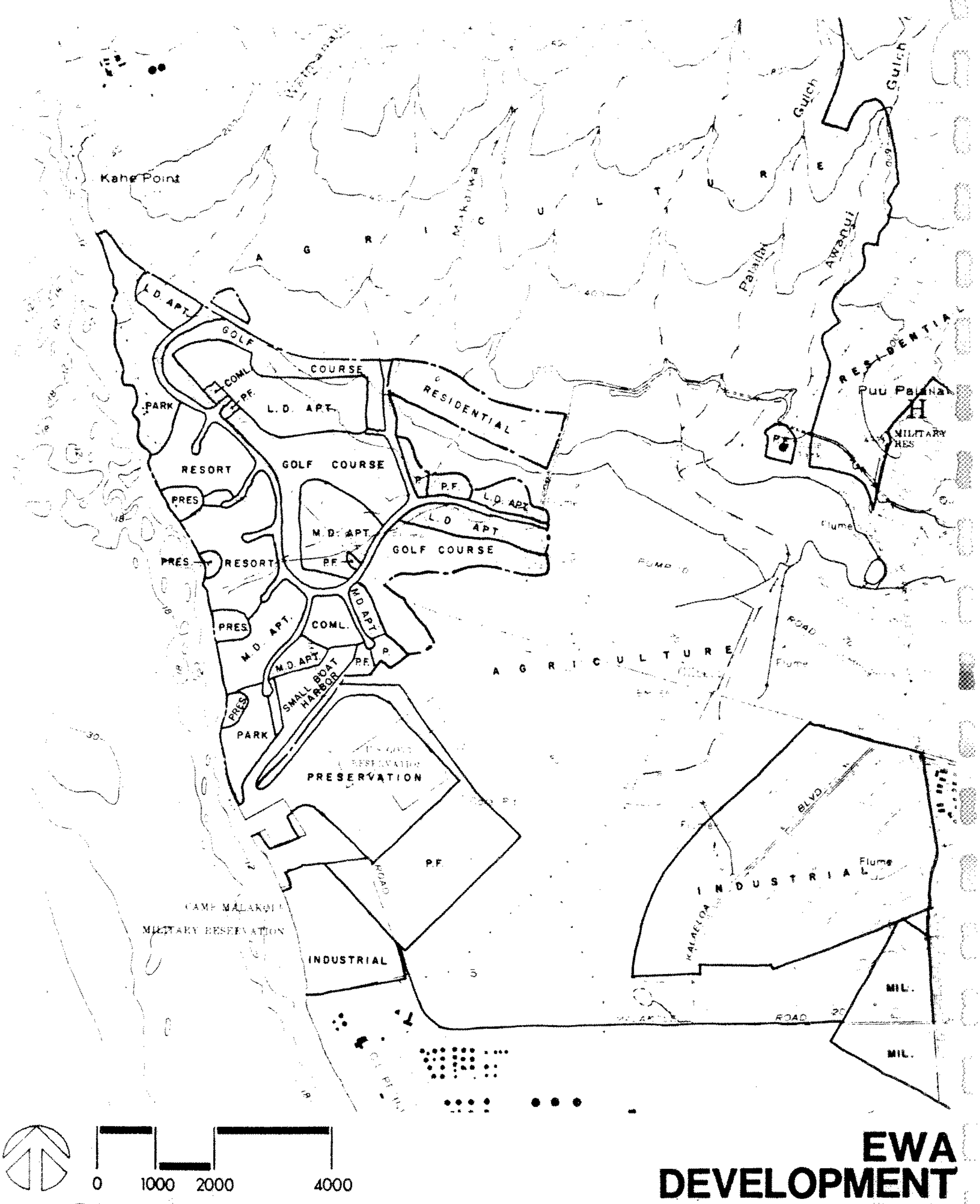
c. Continued development of Makakilo Town. This predominantly single-family subdivision will continue to expand (several units are proposed over the next 5 years).



WEST BEACH

EXISTING STATE LAND USE DISTRICTS

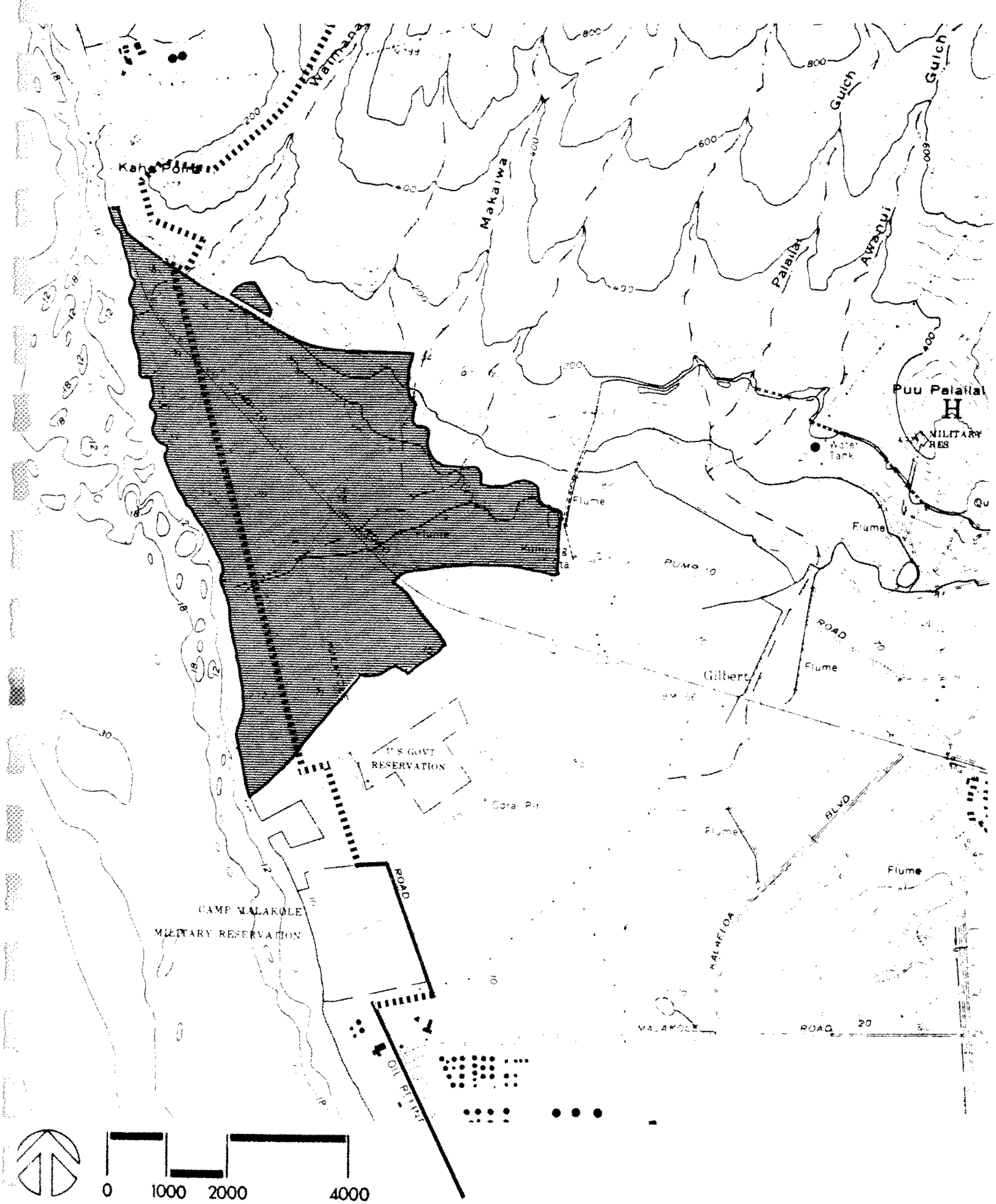
FIGURE 32



WEST BEACH

EWA DEVELOPMENT PLAN

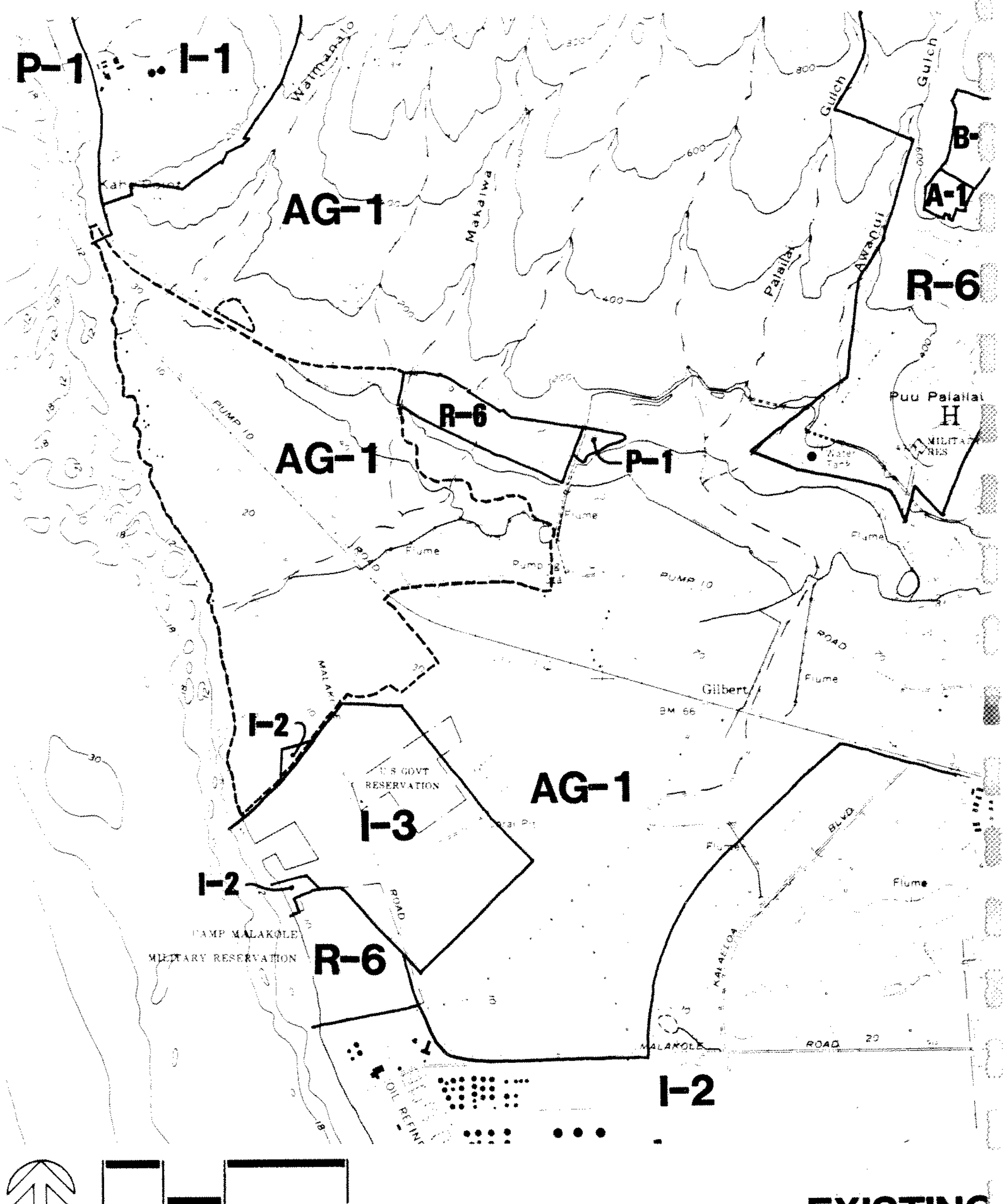
FIGURE 33



WEST BEACH

SMA BOUNDARY

FIGURE 34



WEST BEACH

EXISTING ZONING

FIGURE 35

d. A sanitary landfill site is proposed by the City & County of Honolulu at Waimanalo Gulch, next to Kahe Valley. This landfill is under review by the Department of Public Works as accessory to the proposed Resource Recovery Plant to be located at the Campbell Industrial Park.

e. Expansion of Hawaiian Electric Company's Kahe Generating Plant. Two additional units are envisioned to provide increased electrical power to Honolulu.

f. Improvements and operation changes at Barber's Point Naval Air Station, change air traffic patterns in the area altering air safety hazards and noise impacts.

g. The Hawaiian Electric Company (HECO) has constructed an 8-inch fuel oil pipeline in the old railroad right-of-way that bisects the proposed West Beach development.

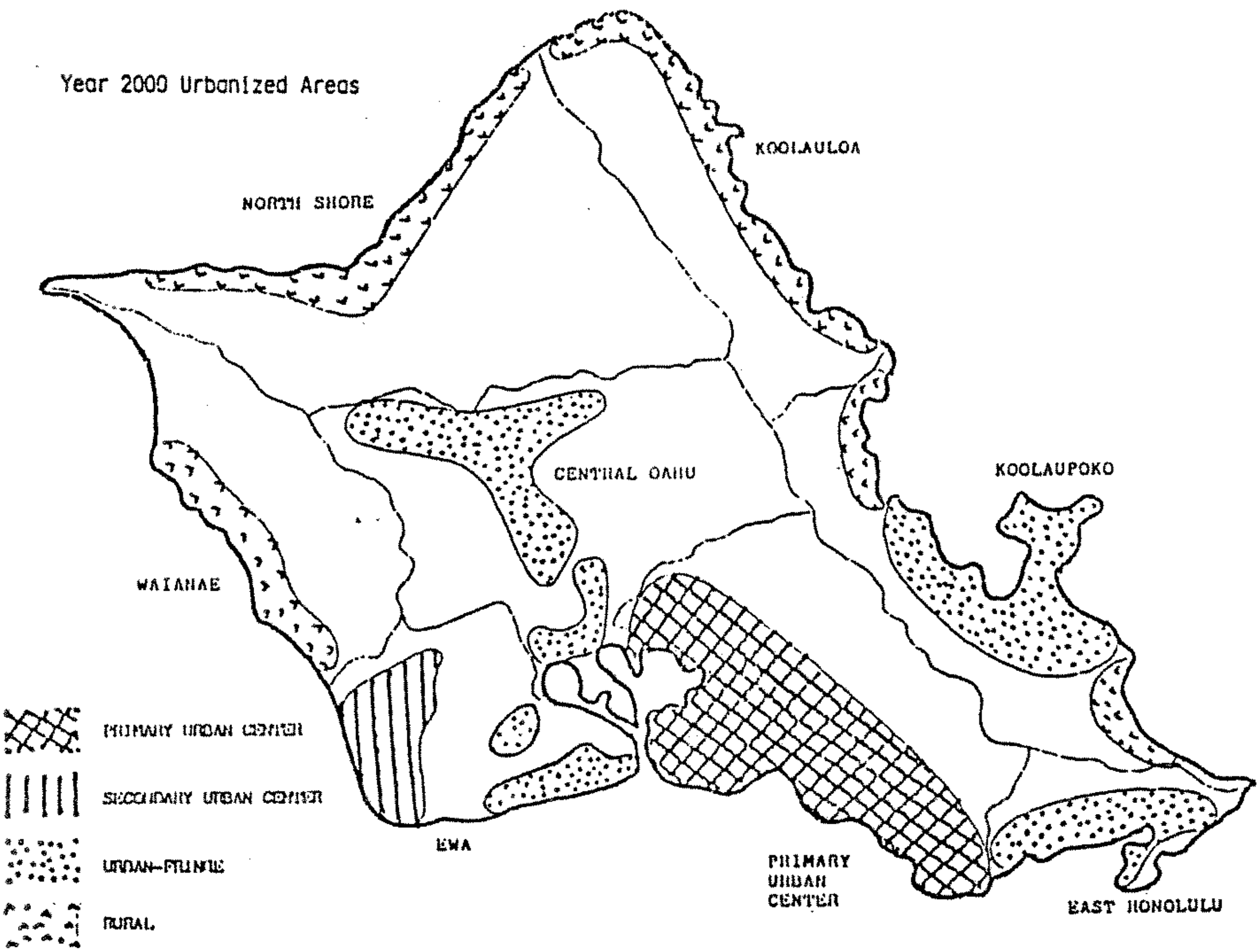
h. Ewa Village is located two miles east of the West Beach site, in the Ewa town area. The landowner is the Campbell Estate, the developer, Aloha State Corporation. The information available, to date, is that the project consists of the building of approximately 4,500 to 6,000 residential units (and community facilities including retail facilities) on 675± acres of land. Access for this project is through Fort Weaver Road; the de facto population will be equivalent to West Beach (about 19,000); the sewage will be transmitted to and treated at Honouliuli Wastewater Treatment Plant. This will be residential units and the site is <u>not</u> located adjacent to or near the shoreline. The timing is not known; however, it is likely that the time period in which the units will be constructed will be similar to West Beach, that is, over the next ten to fifteen years.

i. Ewa Marina is completing the various land use policy review stages of its' overall planning process. At this time, the project is being reviewed by the Federal, State, and County authorities for approvals to the major dredging which will be done to provide the principal amenity.

j. Ocean Thermal Corporation has completed the design phase of a 50 MWe OTEC power plant to be constructed in approximately 30 feet of water directly offshore from the existing Kahe Power Plant at Kahe Point. The proposal calls for construction to begin sometime in the late 1980's.

9.19.4 Impact on Land Uses

The proposed project will significantly alter the present land use of the project site. From its present open space and fallow and vacant agricultural uses, the site will be transformed to a resort/residential complex with its related facilities and infrastructures. This change in land use will have impact on the immediately adjacent lands. The entire Ewa region is undergoing significant land use changes and population increases. The West Beach project is one of several major projects in the area; other minor projects are also planned. Factors such as availability of public services, potable water, transportation systems, environmental quality standards, population policies, and economic factors play primary roles in limiting the size or success of the projects and even forcing a "no action" alternative for some. West Beach contributes to ongoing growth and other project impacts in the region. Such impacts include: population increases, population density increases, urban development of agricultural lands, parklike modifications to conservation lands, increased expenditures of public monies for public works and services, traffic potential environmental pollution, and increased water demand. Additionally, the project will generate increased revenues in the form of property sales, and income taxes from the employment opportunities created. The project will also provide access to new open ocean fronts and commercial and recreational facilities. The patterns of growth are established in the State and City Land Use plans (Figure 35).



WEST BEACH GENERAL PLAN

FIGURE 36

9.19.5 Preliminary Evaluation of the Proposed West Beach Resort With the Objectives and Policies of the Coastal Zone Management (CZM) Program

The Draft Supplemental EIS includes an evaluation of how the proposed West Beach resort would affect the objectives of the coastal zone management. The CZM must be applied for and approved at some point along the approval and permit process. The objectives of the CZM are found in the Shoreline Protection Act of 1975 (Chapter 205A, Hawaii Revised Statutes). The project, which will also require a U.S. Corps of Engineers Section 404 permit, must receive a Coastal Zone Management Federal Consistency Determination from the Department of Planning and Economic Development for a determination of compatibility between 404 and CZM objectives.

Sub-paragraph 205A-26, Guidelines.

(1) All development in the special management area shall be subject to reasonable terms and conditions set by the authority in order to ensure:

(A) Adequate access, by dedication or other means to publicly owned or used beaches, recreation areas, and natural reserves is provided to the extent consistent with sound conservation principles.

Public access will be provided.

(B) Adequate and properly located public recreation areas and wildlife preserves are reserved.

The development will dedicate to the County approximately 50+ acres for park use. As indicated above, public access to the remaining shoreline area will be provided. There are no wildlife preserves in the area.

(C) Provisions are made for solid and liquid waste treatment, disposition, and management which will minimize adverse effects upon special management area resources.

The sewage generated by the project will be transmitted and treated at the Honouliuli Wastewater Treatment Plant.

(D) Alterations to existing land forms and vegetation except crops, and construction of structures shall cause minimum adverse effect to water resources and scenic and recreational amenities and minimum danger of floods, landslides, erosions, siltation, or failure in the event of earthquake.

As discussed in the EIS, the proposed project will attempt to minimize or eliminate impact on water resources, floods, sedimentation, and water quality. Guidelines and restrictions are presently being developed which will help mitigate visual impacts on scenic resources. The preliminary guidelines will be further supplemented by additional design criteria during site planning and building design.

(2) No development shall be approved unless the authority has first found:

(A) That the development will not have any substantial adverse environmental or ecological effect except as such adverse effect is clearly outweighed by public health and safety. Such adverse effects shall include, but not be limited to, the potential cumulative impact of individual developments, each one of which taken in itself might not have a substantial adverse effect and the elimination of planning options;

(This is addressed to the regulating governmental agency for evaluating the project.)

(B) That the development is consistent with the findings and policies set forth in this part.

These were reviewed above.

The remaining subsection (3) was addressed to the regulating authority for minimizing environmental impacts.

(3) The authority shall seek to minimize, where reasonable:

(A) Dredging, filing or otherwise altering any bay, estuary, salt marsh, river mouth, slough, or lagoon.

(B) Any development which would reduce or impose restrictions upon public access to tidal and submerged lands, beaches, portions of rivers and streams within the special management area and the mean high tide line where there is no beach.

(C) Any development which would substantially interfere with or detract from the line of sight toward the sea from the state highway nearest the coast.

(D) Any development which would adversely affect water quality, existing areas of open water free of visible structures, existing and potential fisheries and fishing grounds, wildlife habitats, or potential or existing agriculture uses of land.

9.19.6 State Functional Plans

The State of Hawaii has prepared, twelve functional plans. These functional plans are extensions of the State's General Plan. Specific implementation actions are outlined and information relating to current concerns are addressed. These plans were reviewed to determine if they relate to the West Beach project; and if so, the type of recommendation/guidance the plans' provide. Each plan was reviewed and evaluated below.

DRAFT STATE EDUCATION PLAN & STATE HIGHER EDUCATION PLAN

Both do not address resort/residential developments. They relate to their respective school systems, their growth and goals. Office procedures (records in a computer system), target groups, personnel developments, and school sites are discussed; none directly involves the project site (West Beach) or the development.

STATE HOUSING PLAN

Relating to the Ewa District, the Plan states:

The development plans expect that Ewa will develop into a second urban center. Therefore, the area will absorb an increasing amount of residential and community activity. The present industrial area is expected to expand mauka and a major resort area is planned for West Beach. The existing communities of Makakilo and Ewa Beach will be protected and enhanced.

West Beach will provide low/moderate income housing (10 percent of the total residential units.) Additionally, it will provide employment at various skill levels for the increasing population of the Ewa district.

STATE HEALTH PLAN

This Plan identifies the need to provide adequate health and medical care facilities for the visitors (i.e. resort areas). Additionally, the need to provide adequate health services for workers (especially immigrants) who may have or be more susceptible to diseases. The project site is located in an area where health and medical care (emergency and routine) is available within a twenty (20) minute driving time. Also, the Department of Helath requires health clearances for food-handling workers.

Although not identified as a project to be included in the service area for the Honouliuli Wastewater Treatment Plant, the Honouliuli WTP does include the additional population increase expected in the Ewa district (which includes the West Beach projections).

STATE CONSERVATION LANDS PLAN

The Conservation Lands Plan attempts to establish a rational basis for managing the Conservation Lands and resources of Hawaii. As population increases and urbanization pressures grow, the need for wise use of land and resources will become greater.

West Beach resort will be subject to the Conservation Lands Plan for the shoreline areas of the project site. Two areas of concern which relate directly to the Plan are the shoreline and the ocean habitat. These issues have been extensively researched and all findings are disclosed in this EIS. Management of the newly created shoreline areas are currently unresolved.

STATE AGRICULTURAL PLAN

The Plan acknowledges the loss of prime agricultural lands to resort uses. It notes that resort uses compete for water, labor and capital and places restrictions on vital agricultural activities and uses. Because portions of this site are considered prime agricultural land, the project cannot be considered in conformance with the objectives of this Plan. However, Oahu Sugar's desire to abandon the site was based on poor agronomic feasibility in maintaning a productive and economically viable operation.

STATE HISTORIC PRESERVATION PLAN

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

STATE TRANSPORTATION PLAN

Identifies the Ewa/Makakilo area as an area which will require new roadways and improvements to existing roadways as population increases. The plan discusses the need for efficient movement of goods and people. It is felt that the project is consistent with this plan policy because of the new roads and interchange and intersection plans with Farrington Highway. An internal bus system and transport of visitors via buses, being a self-contained resort, will result in less use of the private automobile.

STATE RECREATIONAL PLAN

The State Recreational Plan reviews the demands and actions that need to be taken to fulfill the existing and future recreational demands. Specifically, in the Ewa District, the Plan acknowledges the rapid growth of the District and finds that: "Development to receive new populations should be accompanied by the provision of adequate recreation facilities and programs." Because the project is providing for park dedication as well as turning over the portions of the shoreline area to the Department of Parks and Recreation for beach park use, it is felt that the project is consistent with the objectives of the Recreational Plan. The maintenance and construction of comfort stations and playground apparatus must still be addressed by the responsible agency; however, the developer is providing the land, public rights-of-way to the lagoons and existing shoreline, and other private recreational activities which will be available to the public.

THE STATE ENERGY PLAN

The State Energy Plan identifies the need to conserve fuels (though physical design planning) for resort areas. Specific information on projects do not relate to or address the West Beach project site. Other policies and objectives are broad and relate to energy conservation and use of energy sources other than the fossil fuels. Subsequently, the project is not directly addressed in the Plan. During the review of the Plan, it was noted that the location of the project is in an existing service area for electrical energy and is located near the Kahe Power Plant. Also, the project site is in an area which receives one of the highest amount of solar radiation on the island. The retained planner/ architect will consider energy saving devices and installations. Because of the increasing cost of energy, the energy savings incorporated into the plan will be a considerable cost reduction as well as a conservation action. The movement of visitors from the airport to the site and back, and from the site to other locations will be largely through buses; this will reduce the amount of private automobiles on the site and along the transportation system.

THE STATE TOURISM PLAN

The State Tourism Plan identifies and analyzes four (4) issues related to the visitor industry in Hawaii. These are (1) economic projections, (2) physical resources, (3) manpower, and (4) public revenues and costs. Various issues facing the visitor industry are addressed along with specific reviews and evaluations of existing and planned resorts. The Plan identifies the planned resorts and the general "problems" or impacts which the resort may generate. These planned resorts were considered because the County in which it is located designated these resorts or resort areas. The Plan further comments on the objectives and policies of resort development and how each resort should consider conformance with and provide for adequate public facilities, infrastructure, environmental conditions, and acceptable social impacts. The Plan does not support or indicate unacceptability of resort areas. It does provide discussions on conflicts and benefits which will possibly occur as a result of the County's designation of resort areas.

West Beach is in compliance with the objectives of the Tourism Plan as follows:

(1) Economic Projections: West Beach will provide 5000 jobs during the construction and operation of the destination resort. Economic impacts are described and detailed in this document.

(2) Physical Resources: Upon completion, West Beach will afford resort facilities to both visitor and resident, for recreational, social, and commercial purposes.

(3) Manpower: The scale and size of West Beach will duplicate and certain instances, exceed the labor requirements of Kaanapali, Maui. The skill levels will range from unskilled labor to highly skilled management personnel, at the resort hotels, marina, golf course, and retail commercial centers.

(4) Public Revenues and Costs: There will be extensive physical improvements needed to provide the utilities and protective services of Fire, Police, Health, and also the roadway improvements as well.

10. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENTAL AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The proposed project will result in the establishment of a new resort on the island of Oahu. The resort complex will provide 4,000 resort units and 5,200 housing units for permanent residents. Alteration of the shoreline will result in some nearshore impacts of the water quality; however benefits will include the construction of a recreational marina, and beach lagoons which will increase the recreational usage of the shoreline. If the land were to remain in its present use, the comparable impacts are as follows:

(1) the land would remain agriculturally inactive versus a productive use of the fallow agriculture land as proposed by project plans;

(2) the land would not produce economic revenue versus the resort proposal. An increase in economic revenue would be reflected in the larger number of employees by the resort, the additional tax and property revenue from resort uses, and the greater expenditure and profit from resort uses;

(3) environmental quality will be affected, this is the case in any situation where urbanization occurs. Mitigation measures will be incorporated into the design plans and under permit conditions. The actual impact of West Beach will be dependent on the implementation of these mitigation measures and the management of the resort complex.

11. AN IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

Resources in various forms will be committed permanently to this proposed project if implemented. Human resources such as monies, time, and effort will be expended. Once time is expended (for planning, construction) it is irretrievable. However, work is compensated with monetary payment for these services. Construction material will be used. These materials can be recycled; however, the project will utilize these resources on a a long-term basis. Shoreline and view planes will be permanently altered. The change from fallow agricultural fields to an urbanized landscape, is judged by some to be an adverse impact, however, this effect is unavoidable and will be mitigated by strict design criteria. Urbanization, once implemented, normally commits the land use to an equal or more intensive future use. Once completed, it is very likely that the land will be committed to this or a higher future use.

12. LIST OF PREPARERS

12.1 The following individuals at the U.S. Army Corps of Engineers are responsible for the Corps EIS requirements and concerns expressed in the Joint Draft Supplementary EIS.

Name	Expertise	Experience	Professional Discipline
Mr. Michael T. Lee	Biology	B.A. Biology; 1 year Biologist U.S. Navy. 11 years EIS studies, 2 years Water Resource Planner U.S. Army Corps of Engineers, Honolulu District.	Biologist
Ms. Ruby Mizue	Biology	B.A. Biology, 8 years EIS studies, 6 years Water Resources Planner	General Biologist

12.2 The persons primarily responsible for preparing the DSEIS for submittal to the government agencies (Alphabetical Order)

Name	Expertise	Experience	Professional Discipline
Karl H. Bathen	B.S. Engineering, M.S. & Ph.D., Oceanography	Researcher, 15 years; private consultant.	Oceanography and Environmental Studies
William Barrera, Jr.	M.A. Anthropology	5 years Assistant and later Associate Anthropologist, Bishop Museum, Honolulu; 11 years private archaeological consultant.	Archaeologist

Name	Expertise	Experience	Professional Discipline
Andrew J. Berger	Ph.D. Zoology	15 years study (research and publications) of avifauna in Hawaii; Professor (retired), Department of Zoology, University of Hawaii, Manoa Campus.	Zoologist
Paul K. Bienfang	Ph.D. Oceanography	4 years research assistant, University of Hawaii, Manoa Campus; 3 years phytoplankton ecologist, microbiologist, nutrient chemist (private consultant); 12 years biological oceanographer, Oceanic Institute, Hawaii.	Biological Oceanographer
Winona P. Char	B.A., M.S. Botanical Sciences	4 years, botanical aide, 2 years horticulturist, Honolulu Botanic Gardens; 9 years botanic consultant.	Botanical Consultant
Ronald A. Darby	M.S. Engineering, (P.E.)	5 years engineering; 7 years research mechanical engineer at Marine Engineering Laboratory, Annapolis, Maryland; 15 years private acoustical consultant.	Noise Consultant
Gordon L. Dugan	M.S. Sanitary Engineering, Ph.D., Environmental Health Sciences	9 years Associate Professor/ Professor at University of Hawaii, Manoa Campus, 13 years consultant in surface water runoff in Hawaii	Water Quality Consultant

Name	Expertise	Experience	Professional Discipline
Yoichi Ebisu	M.S. Electrical Engineering	8 years research scientist; 9 years acoustical consultant.	Noise Consultant
Peter V. Garrod	Ph.D. Agricultural Economics	Associate Professor, Department of Agriculture and Resource Economics, University of Hawaii; Private Consultant.	Agricultural Economics
F. Gerritsen	Ph.D. Ocean Engineering	Several Years experience in ocean studies and research in Hawaii.	Noise Consultant
Taeyong M. Kim	B.A. Sociology, M.A. candidate Urban and Regional Planning	1st year with Environmental Communications, Inc.	EIS Preparer
F.J. Rodriguez	B.A. Sociology and Business Administration	15 years work relating to environmental concerns and impact statements in Hawaii.	President, Environmental Communications, Inc.
Barry D. Root	M.A. Geography and Public Health	4 years duty with U.S. Air Force, air service; 5 years university geography assistant/instructor; 9 years air pollution consultant.	Air Quality Consultant

12.3 The following consulting firms provided project description, engineering and/or technical data, or marketing data for use in this DSEIS.

a. Alfred A. Yee & Associates, Inc. - Engineering (Marina & Lagoons)
Honolulu, Hawaii

b. Chaney, Brooks & Company - Housing and Population
Honolulu, Hawaii

c. John L. Chapman - Land Planning
Newport Beach, California

d. Community Planning, Inc. - Civil Engineering
Honolulu, Hawaii

e. Pannell, Kerr, Forster & Company - Certified Public Accountants
(Marketing Analysis) Honolulu, Hawaii Office

f. West Beach Resorts - Applicant/Developer of West Beach
Honolulu, Hawaii

13.4 The individuals and companies identified in this section provided major input and data necessary for te compilation and preparation of this document. Involvement of other individuals were under the direction and/or employment of these individuals and/or companies.

13. PUBLIC INVOLVEMENT

13.1 Public Involvement Program

(a) Federal Action.

A Final Environmental Impact Statement (FEIS) for the Proposed West Beach Resort was completed in November 1980, distributed for public review, and published in the Federal Register on 12 December 1980. The FEIS was prepared and processed as part of a tiering process where the broad general project concepts were evaluated and specific site development plans would be addressed in supplements to the FEIS. The FEIS was also prepared as a joint Federal-State FEIS because of overlapping areas of State, County and Federal regulatory jurisdiction, and because of the similarity in environmental impact statement requirements under State and Federal law. The joint Federal-State EIS was also prepared to reduce duplication of EIS requirements and to assist the public in reviewing the total action, rather than parts and pieces of the action as a result of individual regulatory actions and separate EIS.

Comments received in response to the circulation of the FEIS were used to scope the Draft Supplemental EIS, and were included in the Public Involvement section. A Notice of Intent to prepare a Supplemental EIS for the proposed action was published in the Federal Register on June 14, 1984. Those individuals who had responded to the FEIS and expressed interest in the project were included on the following mailing list to receive the Draft Supplemental EIS.

As a matter of background, a Notice of Intent to prepare an EIS for the proposed action was initially published in the Federal Register on 26 June 1979. On 23 June 1980, a public notice was issued announcing the availability of the Draft EIS, and the availability was published in the Federal Register on 7 July 1980. A public hearing was held on 13 August 1980, prior to finalizing the Draft EIS.

(b) State Action.

(1) An EIS Preparation Notice for the proposed project prior to the preparation of the document DEIS) was published in the EQC Bulletin on May 23, 1984. In this case, the EIS Preparation Notice was circulated to various agencies (governmental and private) who were known to have interest in the project. The circulation and review of the Preparation Notice, also called the "Consultation Period" was initiated in May 23, 1984 and ended June 22, 1984. Comments received in response to the Preparation Notice are contained in the following section.

13.2 LIST OF FEDERAL AGENCIES RECEIVING DRAFT SUPPLEMENTAL EIS

Hawaii Congressional Delegation - Hawaii and Washington DC Offices

Senator Daniel K. Inouye
Senator Sparky M. Matsunaga
Representative Cec Heftel
Representative Daniel K. Akaka

Federal Agencies

US Army Corps of Engineers, Washington DC

US Environmental Protection Agency
- Office of Environmental Review, Washington DC
- Region IX, San Francisco, CA

US Department of Commerce
- Asst. Sec. of Environmental Affairs, Washington DC
- Region IX, San Francisco, CA
- National Marine Fisheries Service
  - Southwest Region Office, Terminal Island
  - Western Pacific Program, Hawaii

US Department of the Interior
- Office of Environmental Project Review, Washington DC
- US Fish and Wildlife Service, Hawaii
- US Geological Service, Hawaii
- National Parks Service
  - Hawaii Office
  - Interagency Archaeological Services, SF, CA

US Department of Health, Education and Welfare

US Department of Housing and Urban Development
- Region IX, San Francisco, CA
- Honolulu Office

US Department of Agriculture
- Environmental Quality Activities, Washington DC
- Ag. Stabilization and Conservation Service, Hawaii
- Soil Conservation Service, Hawaii

US Department of Transportation
- Federal Highway Administration, San Francisco, CA
- Federal Highway Administration, Hawaii
- US Coast Guard, 14th District, Hawaii
- US Navy, 14th Naval District, Pearl Harbor
- Barber's Point Naval Air Station

13.3 DISTRIBUTION LIST

STATE AGENCIES

OEQC
Department of Agriculture
Department of Accounting and General Services
Department of Defense
Department of Health
Department of Land and Natural Resources
DLNR State Historic Preservation Officer
Department of Planning and Economic Development
DPED Library
Department of Social Services and Housing
Department of Transportation
State Archives
State Energy

UNIVERSITY OF HAWAII

Environmental Center
Water Resources Research Center

FEDERAL

Environmental Protection Agency (a) Region IX
Navy
Soil Conservation Service
U.S. Army Corps of Engineers
U.S. Coast Guard
U.S. Fish and Wildlife Service

NEWS MEDIA

Honolulu Star-Bulletin
Honolulu Advertiser
Sun Press

CITY AND COUNTY OF HONOLULU

Board of Water Supply
Building Department
Department of Housing and Community Development
Department of General Planning
Department of Land Utilization
Department of Parks and Recreation
Department of Public Works
Department of Transportation Services
Fire Department
Municipal Reference and Records Center (Oahu only)
Oahu Civil Defense Agency
Police Department

ORGANIZATIONS

American Lung Association
Bishop Museum
Hawaii's Thousand Friends
Hawaiian Electric Company
Leeward Ocean Advisory Council, Sea Grant Ext. Service
Native Hawaiian Legal Corp
Office of Hawaiian Affairs
Waianae Neighborhood Board

LIBRARIES

U.H. Hamilton Library, Hawaiian Collection
Legislative Reference Bureau

Regionals

Kaimuki Regional Library
Kaneohe Regional Library
Pearl City Regional Library
Hilo Regional Library
Wailuku Regional Library
Lihue Regional Library

Oahu

Ewa Beach Community-School Library
Waianae Library

13.4 ORGANIZATIONS AND AGENCIES CONSULTED DURING THE EIS PREPARATION NOTICE

ORGANIZATIONS/AGENCIES	Date Notice Mailed	Date of Comments	Date of Response
City and County			
Board of Water Supply	5/16/84	6/6/84	8/29/84
Building Department	5/16/84	------	
Department of General Planning	5/16/84	6/20/84	8/29/84
Department of Housing & Community Development	5/16/84	6/13/84	8/29/84
Department of Land Utilization	5/16/84	7/03/84	8/29/84
Department of Parks & Recreation	5/16/84	--------	
Department of Public Works	5/16/84	6/4/84	8/29/84
Department of Transportation Services	5/16/84	6/15/84	8/29/84
Fire Department	5/16/84	6/21/84	8/29/84
Police Department	5/16/84	5/30/84	8/29/84
Oahu Civil Defense Agency	5/16/84	6/19/84	8/29/84
Office of Human Resources	5/16/84	-------	
State			
Department of Accounting and General Services	5/16/84	-------	
Department of Agriculture	5/16/84	5/29/84	8/29/84
Department of Defense	5/16/84	-------	
Department of Education	5/16/84	5/24/84	8/29/84
Department of Health	5/16/84	6/21/84	8/29/84
Department of Hawaiian Home Lands	5/16/84	-------	
Department of Land & Natural Resources	5/16/84	5/24/84	8/29/84
Department of Planning and Economic Resources	5/16/84	-------	
Department of Social Services and Housing	5/16/84	6/19/84	8/30/84
Department of Transportation	5/16/84	7/26/84	8/29/84
Environmental Council	5/16/84	-------	
Office of Environmental Quality Control	5/16/84	-------	
U.H.-Environmental Center	5/16/84	6/20/84	
U.H.-Water Resource Research Center	5/16/84	6/22/84	

ORGANIZATIONS AND AGENCIES
(continued)

ORGANIZATIONS/AGENCIES	Date Notice Mailed	Date of Comments	Date of Response
Federal Agencies			
Soil Conservation Services	5/16/84	6/20/84	8/29/84
U.S. Army Corps of Engineers	5/16/84	6/30/84	8/29/84
National Oceanic & Atmospheric Administration	5/16/84	-------	
Department of the Navy	5/16/84	5/30/84	8/29/84
United States Environmental Protection Agency	5/16/84	-------	
Department of Housing and Urban Development	5/16/84	5/31/84	8/29/84
Fish & Wildlife Service	5/16/84	6/20/84	8/29/84
Coast Guard, Department of Transportation	5/16/84	-------	
Federal Highway Administration Department of Transportation	5/16/84	-------	
Advisory Council on Historic Preservation	5/16/84	-------	
National Oceanic & Atmospheric Administration-National Marine Fisheries Service	5/16/84	-------	
United State Department of the Interior-National Park Service	5/16/84	-------	
U.S. Department of the Interior Endangered Species Coordinator	5/16/84	-------	
Department of Transportation Federal Aviation Administration Western-Pacific Administration	5/16/84	-------	
Private Agencies			
Waikiki Neighborhood Board #9	5/16/84	-------	
Kalihi-Palama Neighborhood Board #15	5/16/84	-------	
Ewa Neighborhood Board #23	5/16/84	-------	
Waianae Land Use Concerns Neighborhood Board #20	5/16/84	-------	
Aiea Neighborhood Board #20	5/16/84	-------	
Pearl City Neighborhood Board #21	5/16/84	-------	
Waipahu Businessmen's Association	5/16/84	-------	
American Lung Association of Hi	5/16/84	-------	
Hawaiian Electric Company	5/16/84	6/21/84	8/29/84
Hawaiian Telephone Company	5/16/84	6/26/84	8/29/84
Oahu Sugar Company, Ltd.	5/16/84	-------	
Life of the Land	5/16/84	-------	

ORGANIZATIONS AND AGENCIES
(continued)

ORGANIZATIONS/AGENCIES	Date Notice Mailed	Date of Comments	Date of Response
Building Industry Association of Hawaii	5/16/84	-------	
The Estate of James Campbell	5/16/84	-------	
Bernice P. Bishop Museum	5/16/84	6/22/84	8/29/84
Environmental Law Center of the Pacific	5/16/84	-------	
Alulike, Inc.	5/16/84	-------	
Conservation Council	5/16/84	-------	
Hawaii Thousand Friends	5/16/84	5/30/84	8/29/84
Honokai Hale Community Association	5/16/84	-------	
Hawaii Council of Diving Clubs	5/16/84	-------	
Leeward Ocean Advisory Council	5/16/84	6/13/84	8/29/84
Waianae Land Use Concerns Committee	5/16/84	6/21/84	8/29/84
Sierra Club	5/16/84	-------	
Waianae Businessmen's Association	5/16/84	-------	
ILWU, Local 142	5/16/84	-------	
Native Hawaiian Legal Corporation		-------	8/29/84

13.5 LETTERS RECEIVED IN RESPONSE TO THE STATE EIS PREPARATION NOTICE

GEORGE R. ARIYOSHI
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF SOCIAL SERVICES AND HOUSING
HAWAII HOUSING AUTHORITY
P. O. BOX 17907
HONOLULU, HAWAII 96817

PAUL A. TOM
EXECUTIVE DIRECTOR

IN REPLY REFER
TO: 84:DEV/3403

June 19, 1984

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

Gentlemen:

Subject: Environmental Assessment/Preparation Notice for the Proposed West Beach Resort at Honouliuli, Ewa, Oahu

The Authority has reviewed the subject Environmental Assessment/Preparation Notice and since the developer has stated that ten percent (10%) of the total proposed housing units or 520 units will be built as affordable housing for low and moderate income families, we offer the following comments:

1. The definition of low-moderate income housing be defined. We suggest that "low-income" be defined as 50 - 80% of a county's median income (for a family of four). Also, that "moderate-income" be defined as 80 - 120% of a county's median.

2. The specific types of housing to be provided to the targeted income families and the proposed sales prices be included.

Thank you for the opportunity to comment on this matter.

Sincerely,

for PAUL A. TOM
Executive Director

JUN 25 1984

F. J. RODRIGUEZ,
PRESIDENT

ENVIRONMENTAL
COMMUNICATIONS
INC.

August 30, 1984

Russell Fukumoto, Esq.
Acting Executive Director
Hawaii Housing Authority
Department of Social Services and Housing
State of Hawaii
P.O. Box 17907
Honolulu, Hawaii 96817

Re: West Beach Resort Supplemental Environmental Impact Statement Preparation Notice

Dear Mr. Fukumoto:

We understand that Mr. Paul Tom recently left the Hawaii Housing Authority ("HHA") and that you are HHA's Acting Executive Director. For that reason, we submit for your review our response to Mr. Tom's comments regarding the above-stated matter.

With respect to HHA's the definition of low- and moderate-income housing, we have informed the developer, West Beach Estates ("WBE"), of HHA's suggestion. We are recommending to WBE that a meeting be held among HHA, the City's Department of Housing and Community Development, WBE and our office to discuss HHA's suggestion along with any other suggestion that the other parties may have.

With respect to the types of housing and the proposed sales prices, WBE has not yet finalized its housing plans. Although WBE's housing plans are flexible and greatly dependent upon market forces, we understand that WBE is willing to meet with you to discuss its tentative housing plans for the West Beach Project.

We believe that our suggested meeting is a reasonable manner in which to proceed forward with HHA's concerns and suggestions regarding the Project's housing development.

We appreciate HHA's continued interest in this Project and we look forward to our future meetings. Please call our office if you have any further concerns or questions.

Very truly yours,

F. J. Rodriguez

FJR:ls

1146 FORT STREET MALL SUITE 200 • P. O. BOX 536 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-8391

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
ADAM D. VINCENT

IN REPLY REFER TO
STP 8.10078

July 26, 1984

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

Dear Mr. Rodriguez:

Environmental Assessment/Preparation
Notice for the Proposed West Beach
Resort, Honouliuli, Ewa, Oahu

We have reviewed the subject environmental assessment and preparation notice and offer the following comments:

Public Use of Facilities

Several general references (Page III-7 paragraphs 4.a., 4.b., and page III-8, paragraph 4.d.) are made to the provision of public access to the shoreline, newly created beaches, new ocean lagoons and marina. The Environmental Impact Statement (EIS) should provide more detailed information on the nature and type of public access, their locations, and sizes. In addition, the EIS should provide a more detailed discussion on the availability of both the ramp and mooring facilities by the general public.

Marina Design and Drainage System

The EIS should fully describe the nature and design of the marine access channel and its resulting impact on the Barbers Point Harbor entrance channel. The effects of discharging storm runoff into the marina should be described, especially in terms of water quality and siltation of the marina and entrance channels.

JUL 31 1984

Existing Recreational Opportunities

The extent, location and nature of present recreational use of the shoreline and of nearshore waters at the project site should be assessed and described in the EIS. The anticipated effects on existing recreational uses and users of the proposed project area and of the new uses and new users accompanying the development of this project should be fully identified.

Traffic

We are currently reviewing the traffic impact analysis prepared by Community Planning, Inc. and will submit those comments under separate cover. Please accept our apologies for this late response.

Very truly yours,

Wayne J. Yamasaki
Director of Transportation

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

August 29, 1984

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

Dear Mr. Yamasaki:

Subject: West Beach Resort Supplemental Environmental Impact Statement Preparation Notice

Thank you for your comments on the proposed West Beach Resort project contained in your letter of July 26, 1984. We respond in the following:

1. Public Use of Facilities - Adequate discussion on the availability of public access locations within the project metes and bounds will be provided both in narrative and graphic form. The specific details on the marina and the availability of public uses are being formulated at this time and will also be provided for review by government agencies and private sector groups.

2. Marina Design and Drainage System - Technical studies coordinating the various aspects of the Marina access channel and its' impacts on the Deep Draft Harbor are being completed during the latter part of 1984. These studies will be provided to your department for review. The impacts of drainage runoff in terms of volume and quality is also being reviewed from a design consideration and also from compliance with applicable State Department of Health receiving water quality standards. This data will also be documented and provided for agency review.

3. Existing Recreational Opportunities - As described in the previous 1980 EIS document, the availability of the shoreline under existing conditions (without the project) and after completion of the West Beach Resort, will be identified in terms of compliance with the public access requirements as mandated by law. These design features of public access and anticipated impacts due to proposed changes to the shoreline will be identified in the DEIS.

Thank you for your comments and we look forward to receiving the comments on the Traffic impact analysis currently under review by your office.

Yours very truly,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

GEORGE R. ARIYOSHI
GOVERNOR

Mr. Francis M. Hatanaka
Acting Superintendent
~~XXXXXXXXXXXXXXXX~~
~~XXXXXXXXX~~

STATE OF HAWAII
DEPARTMENT OF EDUCATION
P. O. BOX 2360
HONOLULU, HAWAII 96804

OFFICE OF BUSINESS SERVICES

May 24, 1984

Environmental Communications, Inc.
P.O. Box 536
Honolulu, HI 96809

Dear Sir:

SUBJECT: Environmental Assessment/Preparation Notice
Proposed West Beach Resort

This confirms receipt of the EIS Notice and notification that the Department of Education wishes to be consulted during the preparation of the Environmental Impact Statement for the subject development.

Thank you for the opportunity to review the subject matter.

Sincerely,

Vernon Honda
Assistant Superintendent

VH:HL:jl

cc: Supt's Office
Leeward District

AN EQUAL OPPORTUNITY EMPLOYER

MAY 29 1984

ENVIRONMENTAL COMMUNICATIONS INC.

F. J. RODRIGUEZ,
PRESIDENT

August 29, 1984

Mr. Vernon Honda
Assistant Superintendent
Department of Education
State of Hawaii
P.O. Box 2360
Honolulu, Hawaii 96804

Dear Mr. Honda:

Subject: West Beach Resort Supplemental Environmental Impact Statement Preparation Notice

Thank you for your letter of May 24, 1984 on the subject document. A copy of the Draft Supplemental Environmental Impact Statement will be sent to you upon its completion.

Your continued interest in this project is appreciated.

Very truly yours,

F. J. Rodriguez

FJR:ls

1146 FORT STREET MALL, SUITE 200 • P. O. BOX 536 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-8391

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
HONOLULU, HAWAII 96809

SUSUMU ONO, CHAIRMAN
BOARD OF LAND & NATURAL RESOURCES

EDGAR A. HAMASU
DEPUTY TO THE CHAIRMAN

DIVISIONS:
AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

REF. NO.: CPO-1205-84

MAY 24 1984

Environmental Communication, Inc.
P. O. Box 536
Honolulu, Hawaii 96809

Gentlemen:

SUBJECT: Environmental Impact Statement for the Proposed West Beach Resort, Honouliuli, Ewa, Oahu.

The Department of Land and Natural Resources wishes to be consulted during the preparation of the Environmental Impact Statement for the above-noted project. Thank you for providing a copy of the Preparation Notice for the project EIS.

Very truly yours,

SUSUMU ONO, Chairperson
Board of Land and Natural Resources

MAY 29 1984

F. J. RODRIGUEZ
PRESIDENT

ENVIRONMENTAL
COMMUNICATIONS
INC.

August 29, 1984

Mr. Susumu Ono, Chairperson
Board of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Ono:

Subject: West Beach Resort Supplemental Environmental Impact Statement Preparation Notice

Thank you for your letter of May 24, 1984 on the subject document. A copy of the Draft Environmental Impact Statement will be sent to you upon its completion.

Your continued interest in this project is appreciated.

Very truly yours,

F. J. Rodriguez

FJR:ls

1146 FORT STREET MALL SUITE 200 • P. O. BOX 536 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-8391

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

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

CHARLES G. CLARK
DIRECTOR OF HEALTH

In reply, please refer to:
EPHSD-SS

June 21, 1984

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

Dear Mr. Rodriguez:

Subject: Request for Comments on Environmental Assessment/Preparation Notice for the Proposed West Beach Resort at Honouliuli, Ewa, Oahu

Thank you for allowing us to review and comment on the subject environmental assessment. Please be informed that we have the following comments and concerns which we will be happy to discuss with you during the preparation of the Environmental Impact Statement.

Drinking Water

The Drinking Water staff has reviewed the subject document and would like to offer comments concerning Section C, paragraph 3, Water System, and Section F, paragraph 3, Water System.

We understand that a dual water system is being considered to meet the water supply needs of the proposed development. Will the dual system have safeguards to prevent cross connection? Who will be responsible for monitoring the installation of irrigation and domestic water lines to prevent cross connection?

Please be advised that if the project intends to develop a new source of potable water, this source must be approved by the Director of Health prior to its use as a potable water source. The new source must comply with all the applicable terms and conditions of Chapter 20, Title 11, Administrative Rules.

Noise

You have indicated that noise impacts from Barbers Point Naval Air Station, roadway noise, noise buffers and barriers are expected to be addressed in the Supplemental Environmental Impact Statement. We will make comments, if any, at that point.

Concerns toward noise impacts resulting from the mixture of land uses within the project location have been discussed in previous comments made to this proposed development. Noise associated with commercial, recreational and marine activities may

JUN 25 1984

have adverse impacts if these facilities or areas are situated adjacent to residents. Activities related to resort complexes, including delivery and services, refuse collection and bus traffic, may result in some problems in terms of annoyances on residential areas. These concerns should be addressed with inclusion of any mitigative measures.

Environmental (Wastewater) Permit

Sewage wastewater disposal of the 2.5 MGD flow will eventually be conveyed to the Honouliuli Wastewater Treatment Plant for treatment and disposal located six (6) miles from this proposed development. Of primary concern at this time is the issue of how the wastewater will be treated and disposed during the phases of construction.

We realize that the statements are general in nature due to preliminary plans being the sole source of discussion. We, therefore, reserve the right to impose environmental restrictions on the project at the time final plans are submitted to this office for review.

Sincerely,

For MELVIN K. KOIZUMI
Deputy Director for
Environmental Health

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

August 29, 1984

Mr. Melvin K. Koizumi
Deputy Director for
Environmental Health
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801

Dear Mr. Koizumi:

Subject: West Beach Resort Supplemental Environmental Impact Statement Preparation Notice

Thank you for your comments received in your letter dated June 21, 1984. We respond as follows:

1. Drinking Water - The dual water system presently under consideration is being developed in conjunction with both the Board of Water Supply and the Campbell Estate to determine certain aspects of feasability. These plans will then be reviewed by your department and also other agencies with regulatory authority. Please be assured that all regulatory compliance with your department's requirements.

2. Noise - All sources of noise as they pertain to applicable codes, regulations and ordinances, will be reviewed for their impacts as well as mitigative measures deemed necessary. The Noise consultant will expand on the compliance with the BPNAS/AICUZ study in its' references to West Beach.

3. Wastewater Treatment - This subject is under discussion and review with the Department of Public Works at the present time and the disposition of wastewater treatment and disposal will be included in the EIS documents.

Thank you for your continuing concern and interest.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

University of Hawaii at Manoa

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

22 June 1984

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

Gentlemen:

SUBJECT: Environmental Assessment/Preparation Notice for the Proposed West Beach Resort, Honouliuli, Ewa, Oahu, May 1984

We have reviewed the subject notice and offer the following comment. A comprehensive and detailed presentation of the hydrologic and environmental aspects and impacts including salt water intrusion into the caprock aquifer, surface water runoff and drainage, and the design, construction, and maintenance of the new lagoons.

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

JUN 25 1984

ENVIRONMENTAL COMMUNICATIONS INC.

F. J. RODRIGUEZ,
PRESIDENT

August 29, 1984

Mr. Edwin T. Murabayashi
EIS Coordinator
Water Resources Research Center
University of Hawaii at Manoa
Honolulu, Hawaii 96822

Dear Mr. Murabayashi:

Subject: <u>West Beach Resort Supplemental Environmental Impact Statement Preparation Notice</u>

Thank you for your review and comments of June 22, 1984 on the subject document. Studies are currently being undertaken which will address your concerns. When the Draft and FInal EIS are completed, copies will be sent to you for review during the formal review process period.

We appreciate your continued interest in this project.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

GEORGE R. ARIYOSHI
GOVERNOR

JACK K. SUWA
CHAIRMAN, BOARD OF AGRICULTURE

SUZANNE D. PETERSON
DEPUTY TO THE CHAIRMAN

State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 So. King Street
Honolulu, Hawaii 96814

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

May 29, 1984

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

Dear Mr. Rodriguez:

Re: Notice of Preparation of an Environmental Impact Statement for the Proposed West Beach Resort at Honouliuli, Ewa, Oahu - TMK: 9-1-14: por. 2; 9-1-15: 3, por. 4, 6, 7, 10; 9-2-03: 3, 7, and por. 2.

This is to inform you that the Department of Agriculture desires to be a consulted party in the preparation of the above document.

We understand from page II-1 of the Notice that the Supplemental EIS will be prepared to address a number of environmental issues as well as revisions to the proposed project's land uses and densities.

Some of our major concerns about the proposed project are found in our comments to the Department of Planning and Economic Development on the petition for an amendment to the State Land Use District Boundary for the same area, dated January 19, 1984 (copy attached). In addition, there are other issues which should be addressed. In pertinent part, our concerns are as follows:

- The proposed project will require approximately 4.5 million gallons of water per day. The EIS should indicate the impact on agriculture in the region resulting from the withdrawal of water from sugarcane irrigation and its reallocation to non-agricultural uses; and whether this reallocation would result in abandonment of agricultural activity due to insufficient water. Priority Direction 226-103(h)(3) of the Hawaii State Plan, encourages "...restriction of new urban development in areas where water supply is insufficient for both agricultural and domestic uses."

- Approximately one-third of the petition area is classified as "Prime" according to the Agricultural Lands of Importance to the State of Hawaii (ALISH) system, and also has Class "A" and "B"-rated land according to the Land Study Bureau system. Thus the property does meet the generally understood definitions of

"Support Hawaiian Agricultural Products"

MAY 31 1984

"important agricultural lands". However, the Legislature to date has not established standards and criteria for the re-classification of important agricultural lands, as mandated by the Hawaii State Constitution (Article XI, Section 3).

- We continue to believe that the West Beach Resort project should be considered together with other projects in the area for their cumulative impact upon agricultural activity and availability of productive lands and water for agriculture, as well as their relationship to State and County plans for the Ewa Plain.

Sincerely,

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

Attachment

cc: DPED

January 19, 1984

MEMORANDUM

To: Mr. Kent M. Keith, Director
Department of Planning and Economic Development

Subject: Petition for an Amendment to the State Land
Use District Boundaries
A83-562 (West Beach Estates)
Agricultural to Urban
Resort/Residential Community
TMK: 9-1-14: por. 2
9-1-15: 3, por. 4, 6, 7, 10
9-2-03: por. 2, 3, 7
Honouliuli, Ewa, Oahu - 642 acres

We have reviewed the subject petition and offer the following comments.

According to the petition, the applicant seeks the reclassification of approximately 642.2 acres of land from the Agricultural District to the Urban District for the development of a resort/residential community and related facilities. The petition indicates that the subject property was reclassified to the Urban District in 1977, but that the Decision and Order was subsequently reversed by the Hawaii Supreme Court.

The petition states that Oahu Sugar Company has discontinued sugarcane cultivation on approximately 162 acres within the project area since August, 1983 (Petition, page 5). Appendix "O" (Letter from Oahu Sugar Company to Land Use Commission dated August 30, 1983) states that "The phasing out of sugar cane cultivation in these specific fields in the West Beach area is one part of the Company's overall reduction in high cost acreage in order to maintain and continue the economic viability of Oahu Sugar Company."

The proposed project will require approximately 4.5 million gallons of water per day (MGD). A dual water system to supply potable and non-potable water is being considered as a means to reduce the potable water requirement (Appendix G: Letter from Board of Water Supply to West Beach Estates, dated November 29, 1983). The petition does not indicate the impact on agriculture in the region resulting from the withdrawal of

water from sugarcane irrigation and its re-allocation to other uses, specifically, whether the allocation of 4.5 MGD to this project would require abandonment of agricultural activity due to insufficient water.

The references to the U.S. Soil Conservation Service Soil Survey, Land Study Bureau Detailed Land Classification, and Agricultural Lands of Importance to the State of Hawaii (ALISH) are correct (Petition, pages 63, 76). It should be noted that lands that have not been classified according to the ALISH system have less than favorable slope, soil, and moisture conditions which limit the agricultural use potential in the area, but do not necessarily indicate that the area has no value for agriculture as stated in the petition (Petition, page 76).

We have expressed our current position on the future of the Ewa Plain and on the proposed project in general during the City and County of Honolulu's General Plan Five-Year Review conducted in 1982. In our memorandum to the Department of General Planning dated November 27, 1982 (see attached copy), we stated that the Ewa West (West Beach-Makakilo) secondary urban center alternative was preferred over the other alternatives because it appeared to "... conserve and protect the relatively greatest amount of important agricultural land (as mandated by the Constitution), as well as preserve sufficient agricultural land to ensure the continuation of a viable sugar industry in the area (Hawaii State Plan and County General Plan policy). We recognize that adoption of the Ewa West alternative would constitute a major shift of policy, involving eventual reclassification of the vacant Urban District lands around Ewa Village back to the Agricultural District." (emphasis added)

The Department of Agriculture is of the opinion that the West Beach project should be considered together with other projects in the area for their cumulative impact upon agricultural activity and availability of productive lands and water for agriculture, as well as their relationship to State and County plans for the Ewa Plain. In particular, the impact of groundwater allocated to the subject project in relation to agricultural irrigation requirements elsewhere in the area should be addressed at the time of hearing.

Thank you for the opportunity to comment.

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

Attachment

cc: Dept. of General Planning

bcc: Paul Schwind

November 27, 1981

Dr. Willard T. Chow
Chief Planning Officer
Department of General Planning
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Dr. Chow:

We have reviewed the Summary Report of the General Plan Five-Year Review, as well as the background report on economic activity which was provided to us, and offer the following comments for your consideration.

We have not had an opportunity to review the Ewa and Primary Urban Center Development Plans recently passed by the City Council over Mayor Anderson's veto. It seems probable that these Development Plans will have a bearing on the kinds of amendments which will be needed to the General Plan. In view of the time constraints of the amendment review process, our comments do not reflect analysis of the Development Plans in any form.

The decision regarding the size, nature, and location of the Secondary Urban Center is perhaps the most crucial to be made in the General Plan amendment process. We concur that focus on a smaller area for secondary urban center expansion is preferable to the existing policy which broadly directs growth to the entire Ewa area.

After considering the three alternatives discussed in the Summary Report, we recommend the Ewa West alternative which directs future growth to the West Beach-Makakilo area rather than the Ewa Villages area. To the extent that future population and employment growth must be accommodated in Ewa, the Ewa West alternative appears to conserve and protect the relatively greatest amount of important agricultural land (as mandated by the Constitution), as well as preserve sufficient agricultural land to ensure the continuation of a viable sugar industry in the area (Hawaii State Plan and County General Plan policy). We recognize that adoption of the Ewa West alternative would constitute a major shift of policy, involving eventual reclassification of the vacant Urban District lands around Ewa Village back to the Agricultural District.

We recommend against the Two Centers (Ewa/Waipahu-Waipio) alternative not only because it would encroach on some of the core area of prime agricultural land for the Oahu Sugar Company, but also because it would add impetus to pressures for continued urbanization of Central Oahu mauka of the H-1 freeway. By failing to make an unambiguous choice regarding the direction for future growth, the Two Centers alternative would in effect encourage a "divide and conquer" strategy on the part of land developers. The State and City and County could be expected to face repeated requests for boundary amendments, plan amendments and rezonings on two "fronts" rather than one.

At present, the policies under Objective C of the General Plan section on Economic Activity contain no reference to the conservation and protection of important agricultural lands, nor do the proposed amendments treat this omission. It is recognized that the State has not yet acted formally, pursuant to the Constitutional mandate, to identify important agricultural lands and provide standards and criteria for their preservation. However, the proposed State Agriculture Plan (September 1981) and its Technical Reference Document do address this issue. It is recommended that the General Plan include a policy, anticipating action by the State Legislature, to read:

> Rezone lands identified by the State as important agricultural lands only in conformance to such standards and criteria as may be established by the Legislature, and then only by a two-thirds vote of the City Council.

The emphasis in the General Plan, which is reflected also in the discussion of proposed amendments, is on "continuation" and "maintenance" of agricultural activities on Oahu. We feel that emphasis is also needed on the encouragement of growth by selected agricultural commodity industries which, particularly due to marketing and/or transportation considerations, need an Oahu location (where land costs are notably most prohibitive) in order to achieve the greatest degree of economic viability. Interpreting data from the State Agriculture Plan, the agricultural industries which are both concentrated on Oahu and have indicated land problems as top priority "bottlenecks" impeding their future growth are dairy, poultry and eggs, swine, bananas, and ornamental potted plants. Combined, these five industries contributed $47,673,000 to the Oahu economy in 1980, in comparison to $103,390,000 from the sugar and pineapple industries. There is substantial potential for import replacement by the poultry, swine, and banana industries, and for export growth by the nursery (potted plant) industry. It is recommended that the General Plan include a policy, in consonance with the Hawaii State Plan, to read:

> Promote the development of agricultural activities which require an Oahu location for maximum encouragement of their economic growth potential.

Dr. Willard T. Chow
Page -3-
November 27, 1981

It appears that the proposed General Plan amendments do not specifically address the present City and County Administration's policy to prevent the breaking up of prime agricultural lands into luxury estates. We recommend that agricultural policy 5 be amended to read as follows, in consonance with the Hawaii State Plan:

(5) Encourage the more intensive use of productive agricultural land, by requiring and closely monitoring agricultural uses in agricultural subdivisions.

We greatly appreciate the opportunity to comment on the General Plan Five-Year Review, and trust that the above recommendations will receive favorable consideration. If my staff can be of any further assistance, please do not hesitate to contact our Planning and Development Office at 548-7133.

Sincerely yours,

JACK K. SUWA
Chairman, Board of Agriculture

cc: Department of Planning & Economic Development

bcc: Gary Caulfield, Governor's Office
Bob Nagao, City Managing Director's Office
Fred Trotter, Campbell Estate
Paul Schwind, DOA

DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT

KAMAMALU BUILDING, 250 SOUTH KING ST, HONOLULU, HAWAII
MAILING ADDRESS: P.O. BOX 2359 HONOLULU, HAWAII 96804

GEORGE R. ARIYOSHI, GOVERNOR
KENT M. KEITH, DIRECTOR
JOHN R. PINGREE, DEPUTY DIRECTOR

DIVISIONS
ECONOMIC DEVELOPMENT DIVISION
ENERGY DIVISION
FOREIGN-TRADE ZONE DIVISION
HAWAII INTERNATIONAL SERVICES AGENCY
LAND USE DIVISION
PLANNING DIVISION
RESEARCH AND ECONOMIC ANALYSIS DIVISION

OFFICES
ADMINISTRATIVE SERVICES OFFICE
HAWAII FILM OFFICE
INFORMATION OFFICE
TOURISM OFFICE

January 3, 1984

84 JAN 5 AM 11:08

JAN 6 1984

Mr. Jack Suwa
Chairman
Department of Agriculture
1428 S. King Street
Honolulu, Hawaii 96814

Gentlemen:

Subject: Petition for an Amendment to the State Land Use District Boundaries

We have received the following petition requesting a District Boundary change:

Petition:	A83-562 (West Beach Estates)
Requested Change:	Agricultural to Urban
Proposed Use:	Resort
Location:	Honouliuli, Ewa, Oahu TMK: various
Area:	642 acres

We are transmitting the subject petition for your review. We would appreciate comments regarding your Department's existing and proposed programs for the subject area and the anticipated effects of the petition on these programs. In developing your comments we request that the applicable interim planning documents be addressed. We also request that your comments address the applicable goals, objectives, policies, and priority directions embodied in the Hawaii State Plan. Any available maps, statistics or other information which you feel are applicable would also be appreciated.

May we have your comments by no later than January 24, 1984. If there are any questions on the petition, or if you are not able to meet the above deadline for comments, please contact the Land Use Division at 548-2061.

Very truly yours,

Kent M. Keith

Attachment: A83-562
Exh. D, F-0

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

August 29, 1984

Mr. Jack Suwa, Chairman
Department of Agriculture
1428 S. King Street
Honolulu, Hawaii 96814

Dear Mr. Suwa:

Subject: West Beach Resort Supplemental Environmental Impact Statement Preparation Notice

Thank you for your review and comments of May 29, 1984 on the subject document.

In response to your comments on the subject document, we offer the following:

We agree that water supply in the area is a major concern of project development in this area. Presently, the exact amounts of potable and non-potable water to be utilized in this development are being examined by the project engineers. New sources of water are also being explored by the Board of Water Supply and will be addressed in the EIS.

Impacts upon surrounding agricultural sites will be taken into consideration by the developer and it is understood that cumulative impacts in the area can affect the project as well as the surrounding agricultural lands. These considerations are currently before the State Land Use Commission and will serve as guidelines in overall development.

We appreciate your continued interest in this project.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

1146 FORT STREET MALL SUITE 200 • P. O. BOX 538 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-8391

University of Hawaii at Manoa

Environmental Center
Crawford 317 • 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 948-7361

June 20, 1984

PN:0032

Mr. Taeyong Kim
Environmental Communications, Inc.
P.O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Kim:

Preparation Notice
Draft Supplemental Environmental Impact Statement
West Beach Resort
Honouliuli, Ewa, Oahu

The proposed "West Beach Resort" project involves 642 acres that the applicant proposes to develop as a Resort (4,000 units/86.5 acres) and Residential (5,200 units/186.9 acres) community. The proposed West Beach Resort project would also include: four artificial embayments with artificially established sandy beaches, a 18-hole golf course and clubhouse, a Hawaiian Cultural Center, four public parks, a 500-slip marina, beach and yacht clubs, tennis facilities, a historical railroad, a shopping center modelled after Fisherman's Wharf, and another commericial area.

The Preparation Notice for the Draft Supplemental EIS (DSEIS) has been prepared to comply with the Department of Land Utilization's letter of September 19, 1980, which states that due to the general nature of the original Final EIS a Supplemental EIS would be required prior to implementation of particular aspects of the project. The letter further stipulates that the Supplemental EIS thoroughly address, in particular, 15 areas of environmental concerns and issues.

In response to your memo (5/16/84), the Center has conducted an in-house review of the Preparation Notice with the assistance of Doak Cox and Pamela Bahnsen, Environmental Center. We have attached the Center's comments of August 7, 1980, submitted on the original Draft EIS, for your reference. We note that some of these comments remain pertinent to the Preparation Notice.

We offer the following concerns and suggestions for the preparation of the Draft Supplemental EIS:

JUN 21 1984

Flood and Tsunami Hazards

It is stated, on page IV-2 of the Preparation Notice, that "no flooding problems are anticipated for the subject property." This statement does not appear to be reasonable or consistent with the following statement: "Areas within .5 miles of the shoreline are subject to tsunami inundation." We note that a major part of the project area is within a 1/2 mile of the shoreline.

The discussion of flood and tsunami hazards in the DSEIS might be based in part on the Center's comments in our previous review beginning "The historic tsunamis and the runup heights..." (pp. 2-3). The discussion should also include reference to the Civil Defense Tsunami Evacuation Zone.

Environmental Conditions and Impacts

The Center's original review (pp. 3-4) called attention to the "possibility of a ciguatera outbreak as a result of construction activities for the lagoons and marina." Subsequently, discussion was included in the Final EIS (p. 80) which, we suggest, be included in the DSEIS because of the possible initiation of a ciguatera problem by the construction in the phase covered by the DSEIS.

Noise

We note that a study will be included in the DSEIS that will "evaluate potential aircraft noise impacts" (p. VII-3). We suggest that the discussion of the probable impacts of "Highway Noise and Internal Street System Noise on Future West Beach Residents" (Final EIS, pp. 103-105) also be included in the DSEIS.

The Preparation Notice states, "the West Beach project is not expected to be a source of loud or annoying noise" (p. V-2). The Final EIS included a section entitled "Potential Impact of Blast Noise/Vibration During Marina Construction" (pp. 105-106). If blasting is to be employed in any phase of the construction of the marina or project area, the noise impacts should be discussed in the DSEIS. We note that as a result of the blasting for the Barber's Point Deep Draft Harbor, residents not only complained of the noise impacts but also of structural vibrations and damage.

Flora

We note that measures are being considered to protect the proposed endangered plant Euphorbia skottsbergii var. kalaeloana (pp. V-2-3). In the Center's earlier review (pp. 4-5) we called attention to two plant species that were proposed for endangered species status Euphorbia skottsbergii and Gossypium sandwicense. We note that in an updated listing, Endangered and Threatened Animals and Plants of Hawaii (DLNR, 1983), Euphorbia skottsbergii var. kalaeloana has now been added to the endangered species list. This plant is considered to be endangered by both the federal and state governments. All flora sections of the DSEIS should reflect this plant's present status. According to the Final EIS, Euphorbia skottsbergii var. skottsbergii although found in the Ewa district is not found in the project area. However, the distribution of Gossypium sandwicense in the area covered by the project now proposed, and the present status of that species, should be discussed in the DSEIS.

RECREATIONAL RESOURCES:

Beaches

We suggest that the public access to the four sandy lagoon beaches be fully discussed. Figure 3, page III-5, indicates only one "public access easement" to the proposed West Beach Resort's substantial shoreline boundary. Ownership of these "newly" created beaches should be addressed together with the acquisition, importation, and possible losses of sand. We note that a "continuous walkway along the shoreline" will be constructed. The maintenance and ownership of the walkway should be addressed.

Marina

With the exception of the Center's first statement regarding the Marina (p. 5), our original comments remain pertinent. The DSEIS should also include a discussion of the design plan for both the marina and the lagoons. For example, the discussion should include the intended method of excavation, stockpile areas (if any), flushing characteristics, etc.

Hawaiian Cultural Center (Cultural Park)

The Center's original comments (p. 6) regarding page III-9 of the Preparation Notice remain relevant.

Lagoon Maintenance

The Center's original comments (p. 6) pertain.

Public Parks

We note that the four proposed parks will be public (p. III-9). The DSEIS should discuss whether the State, the City and County, or the developer will be responsible for developing and maintaining these parks. The provision of more information on the proposed parks would be appropriate, including a description of the park facilities, and the proposed timetables for park development.

We appreciate the opportunity to comment on this EIS Preparation Notice and hope you will find our comments useful in the preparation of the Draft Supplemental EIS.

Yours truly,

Doak C. Cox

Doak C. Cox
Director

Attachment

cc: OEQC
Jacquelin Miller
Pamela Bahnsen

Subj.

University of Hawaii at Manoa

Environmental Center
Crawford 317 • 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 948-7361

Office of the Director

August 13, 1980

RE:0312A
Supplement to RE:0312

Mr. Donald Bremner
Environmental Quality Commission
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Mr. Bremner:

West Beach Resort
Honouliuli, Ewa District, Oahu

The Environmental Center's letter of August 7, 1980, regarding the above cited DEIS inadvertently omitted the names of those responsible for the Center's review.

In order to acknowledge the valuable contribution of these reviewers, we are enclosing their names at this point.

They are: Donald Bell, Finance; Bryce Decker, Geography; Harold Loomis, JIMAR; Penelope Canan, Sociology; Edwin Fujii, Economics; Samir Ahmed, Civil Engineering; Larry Olson and Bertell Davis, Anthropology; Reginald Young, Engineering; and Hank Banner, HIMB. Persons assisting from the Environmental Center include Doak Cox, John Sorensen, Barbara Vogt, Elizabeth Winternitz, and Colleen Brady.

We are sorry for this omission and hope this addition can be appended to our letter.

Yours very truly,

Doak C. Cox
Director

DCC/cu

cc: OEQC
Colonel Alfred Thiede, Corps of Engineers
Environmental Communications
Contributors

University of Hawaii at Manoa

Environmental Center
Crawford 317 • 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 948-7361

Office of the Director

August 7, 1980

RE:0312

Mr. Donald Bremner
Environmental Quality Commission
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Mr. Bremner:

West Beach Resort
Honouliuli, Ewa District, Oahu

Although the DEIS appears to be comprehensive in covering most of the environmental impacts that could be expected to occur because of the proposed project, our reviewers note that inconsistencies and lack of cohesion within the document that we believe should be remedied before the final plans for the project are completed. For example, some information presented in the DEIS seems insufficient to make adequate judgments or appears contradictory to current literature. Although we recognize that the lead time necessitated by large development projects like West Beach require that many decisions are based on conceptual plans, recent revisions in the EIS system provide for later appendems which may be of some help in the preparation of an EIS for a project like West Beach.

As the DEIS states on page 16:

> "Since specific details (i.e. architectural design, exact location of uses, engineering plans) have not been prepared, the discussion of alternatives and environmental impacts are based on project conceptual designs."

Although it is commendable that environmental impacts are being considered early in the design stage, the conceptual nature of the design makes it difficult to assess the overall adequacy of the discussion of environmental impacts. EQC regulations require that an EIS contain; a "summary (of) technical data; diagrams; and other information necessary to permit an evaluation of potential environmental impact(s)..." (1:42 "Content Requirements") This DEIS is significantly lacking in this sense. For example, heights, locations, number, and design of condominium, hotel and commercial buildings are not provided. This makes it difficult to realistically discuss the environmental impacts resulting from these buildings in terms of impacts on archaeological and paleontological resources, on aesthetics, on traffic, and on botanical resources, etc. This holds true as well for failure to identify the layout and features of the parks, the golf course, the residential development, the lagoons and marina.

AN EQUAL OPPORTUNITY EMPLOYER

One example of inconsistencies found in the DEIS regards the impact area generated by the development. Under Socioeconomic Impacts (page 120) reference is made to the DPED publication "An Assessment of Potential Off-Waikiki Resorts" concerning the impact area for West Beach. However, this area of impact is not consistent with the area of primary regional impact mentioned on page 122 under Regional Impacts, although both estimates are based on commuting time from the source of impact. The discrepancy is again evident when the DEIS's map of the impacted area (page 123, Figure 13) is compared to DPED's map in the quoted "Assessment of Potential Off-Waikiki Resorts." What method of analysis was used for computing the "likely commuting range" in the West Beach DEIS? If a source is used as a reference, such as the "Assessment of Potential Off-Waikiki Resorts", then corresponding and consistent data should be used throughout the DEIS or an explanation given for the apparent conflict.

Areas which appear to require further discussion are as follows:

THE MARINA AND LAGOON SYSTEM

Tsunamis

The tsunami hazard is discussed in the draft EIS on page 51 and pages 61-62, and in the following supplementary documents:

Summary of Technical Input...Lagoon Concept (pages 42-45)
Summary of Technical Input...Marina Concept (pages 36-39)
Environmental Conditions...Two Lagoons and a Marina (pages 47-53)
Evaluation of Marina Concepts (pages 23-40).

The discussions in the several documents, although differing in length and detail, are consistent with each other. Among them, they include results of a historical-frequency analysis, resonance-analysis, possible runup heights and extents of inundation, comments as to how the effects of tsunamis might or should be minimized, and in the EIS (page 62) a statement that the design of marina structures "will consider" the increased current velocities resulting from tsunamis.

The historic tsunamis and their runup heights on which the historical-frequency analysis is based are indicated, but otherwise the nature of the analysis is not indicated except that it depends in some manner on the tsunami history at Hilo.

No reference is made to:

a) the runup height-frequency analysis made by the Corps of Engineers Waterways Experiment Station (Houston et al., Technical Report H-77-16, 1977) for Hawaiian coastal places, including places in the immediate vicinity of the proposed development;

b) the 100-year runup height for the vicinity based on the WES work;

c) the 100-year inundation limits in the vicinity that has been estimated for the Corps of Engineers and incorporated in a map prepared for adoption by the National Flood Insurance Program of the Federal Emergency Administration; or even

d) the National Flood Insurance Program and the effects of its adoption on land-use and design in the project area.

We call attention to the 26 June 1980 comments on the tsunami hazard by H.G. Loomis, Joint Institute for Marine and Atmospheric Research. Some of his negative criticisms would be met if the results of the Corps of Engineers work were substituted for or added to the results now reflected in the Draft EIS. However, estimates should be made, and presented in the EIS or supplements, of the expectable effects of the tsunami on the proposed development including, specifically, the expected extent of 100-year inundation (and inundation with other average reaction interval of concern), the effects of their flooding on proposed structures, expectable current velocities in the marina and its channel, and the effects of these velocities on boats as well as structures in the marina.

As indicated:

> It is expectable that different results will follow from the use of different methods of frequency analysis and runup events. However, because the methods used by the Corps of Engineers will have official status unless they can be shown to be less reliable than some alternative, the results of the Corps of Engineers work should be compared with the results in the draft EIS, and reasons should be shown for referring to the latter if they are to be used for prediction and design in the project area.

The EIS, or a supplement to it, should discuss the extent to which the development will comply with the National Flood Insurance Program, means to assure compliance where special means will be required, and any variances that will have to be sought.

Environmental Conditions and Impacts

Another important consideration not addressed in the West Beach DEIS is the possibility of a ciguatera outbreak as a result of construction activities for the lagoons and marina. We would like to reiterate the comments made by Hank Banner (Zoology/Hawaii Institute for Marine Biology) in his recent review for the Environmental Center on the proposed Ewa Marina Community development concerning the possibility of this occurrence.

> "The occurrence of ciguatoxin, a paralytic neurotoxin, in the flesh of fish has been linked to the production of toxin in an apparently widespread tropical dinoflagellate, Gambeirediscus toxicus, that lives as benthic epiphyte on attached algae. It has been postulated that when certain yet-unknown ecological parameters exist, the dinoflagellate, normally in spare occurrence, will produce such a massive bloom that it will inject enough citiguatoxin into the food web of the coral reef habitat as to render most fishes, both the herbivores that feed upon the limu and incidentally on the dinoflagellates, and the carnivores that feed upon the herbivores, strongly toxic to the humans eating them."

Recent literature as well as studies conducted at the Hawaii Institute of Marine Biology have cited the incidence of ciguatera outbreaks in the Pacific. Epidemics in the atolls of Hao in the Tuamotos and in the Gambier Islands, as well as on Oahu at the Waianae, in the small boat harbor in 1978 occurred, following construction and improvement activity.

Dr. Banner goes on to state, "While no predictions can be made, it is possible that through the dredging of channel to the shoreline from deeper water, the construction of the breakwaters, and more likely, the discharges from dredging the marine waterways at the (Ewa Marina Community) site could cause a marked increase in toxicity of edible reef fishes. This is not a prediction but the consideration of a possibility." As in the case of the Ewa Marina Community proposal, we feel this consideration should be included in the final decision regarding the marina development.

NOISE

We call attention to the following comments supplied by Duke Perriera, Mechanical Engineering, University of Hawaii:

> The high traffic noise levels will almost assuredly cause an abundance of complaints, and in fact may have an affect on the retail cost of the residential units. This problem may be minimized if a sound barrier were constructed along Farrington Highway. One way of constructing such a barrier would be to locate a three to four hundred foot green belt in this area or similarly locate the proposed golf course in this vicinity. Using acoustic considerations the golf course could then be designed to absorb or be a barrier for most of the traffic noise. Similar considerations should be made in the earlier planning stages concerning interior traffic noise, especially noise generated in the high traffic flow corridors and along the bus routes that will be developed.
>
> A consideration not mentioned in the report is the affect of the vehicular noise on the current residents in the area immediately surrounding the proposed site. I have no idea of the number or location of these residents and am assuming that they exist. Since these residents do not have the option of moving into this area and many of these people may be accustomed to a less noisy environment than that to which they will be forced to endure they should be considered throughout the planning and development stages of this project.

BOTANICAL SURVEY

The concern shown by the West Beach developers regarding preservation of the two proposed endangered plant species found in the project area (Euphorbia skottsbergii var. kalaeloana and Gossypium sandwicense) is commendable. As the DEIS states, the only known remaining populations of the Euphorbia species are restricted to the project site. To help insure its survival, we recommend the employment of maintenance personnel experienced in the cultivation of these plants.

The DEIS states on page 98 that: "In order to preserve the Euphorbia species, the applicant proposes to...leave the area where the plants are located as it is and employ them as a buffer zone between the deep draft harbor and the industrial complex that will be built around it." The applicant then states this buffer could be used to block the view of the industrial area. However, the use of these plants as a visual buffer seems impractical in view of the fact that the Euphorbia are only ½ to 1 meter tall.

The DEIS goes on to state that: "If it is impossible to change the configuration of the project plan, then as many of the plants as can be moved should be used for the landscaping or perhaps moved to the woods that are planned for the golf course." Although the intent to preserve the Euphorbia species is admirable, this proposal may not be practical for several reasons: 1. Euphorbia is not a particularly attractive plant in an ornamental sense, as it loses most of its leaves during the summer; 2. Euphorbia prefers the more open areas where it is exposed to full or partial sun thus a wooded area would not be an appropriate habitat; and 3. It is not yet known whether Euphorbia can be successfully transplanted.

AGRICULTURAL CONSIDERATIONS AND IMPACT

Agricultural Productivity

Quoting the Land Use Commission's Decision and Order (page 103) as an authority over the Land Study Bureau in discussing the impacts of the West Beach development on agriculture seems inappropriate, particularly as the source of information for the LUC findings are not given. The LSB's classification stands as the greater authority on the subject. That sugar may now prove less economical than elsewhere on this acreage does not address the possibility of agricultural production here for other types of agriculture, now or in the future. Further, Waianae residents have expressed the preference for jobs in agriculture rather than in the visitor industry. Effects of taking 522 acres of prime agricultural land out of agriculture should not be understated.

RECREATIONAL RESOURCES

Beach Park

The DEIS does not provide any descriptive text regarding the 67.7 acre beach park represented on figure 3 of the DEIS (page 19). Will this park be public or private? Will it be developed and maintained by the developer, the State, the City and County, or some combination thereof? More information on this proposed park including a description of the park facilities, and the proposed timetable for park development would be appropriate.

Marina

The DEIS states on page 21 that the marina will be available for public use. Approximately what percentage of the slips will be available for such use? Will the marina be open to boats not berthed there? Will the developer or public agencies, i.e. Department of Transportation, be responsible for the long term maintenance of the marina?

Cultural Park

Greater detail about the cultural park than provided on page 16 would be very useful. Will admission be charged? What sort of ammenities will the park offer? Will it be tourist oriented?

Recreational Beach Use

As the Environmental Center mentioned earlier in our review of the Socioeconomic appendix, it is not accurate to measure recreational value solely in accordance with the number of those benefited. As stated previously, in the sense that the relatively isolated characteristic of the beach contributes to its high recreational utility, the benefit per person decreases with the number of persons. The value to residents of lost recreational resources over time can be very high. Furthermore, current literature indicates that the loss can be several times cited. (see John Krutilla, Anthony Fisher, Economics of Natural Environments) The final EIS should make this distinction clear.

Lagoon Maintenance

In the event that lagoon waters do not flush adequately, thereby resulting in the need for a pumping system, who will be responsible for maintenance of the system?

GOVERNMENTAL SERVICES,AND FACILITIES, AND UTILITIES

Sewerage

The DEIS states on page 20 that sewerage will be conveyed to the proposed Makakilo Interceptor Sewer, and from there to the proposed Honouliuli Waste Water Treatment Plant. The DEIS further states on page 101: "It is emphasized that the final approvals, sizing, connections, et cetera lies within the jurisdiction of public agencies." Yet the letter from the City and County, Department of Public Works on page 141 of the DEIS indicates the Makakilo Interceptor Sewer, as designed, cannot accommodate flows from West Beach. Has the developer achieved coordination with the City and County on this issue?

TRAFFIC

Models of Predictions for Trip Projections

The development at West Beach will generate and attract some unknown number of trips per day which need to be estimated. These trips will require different traffic generators within the development (hotels, schools, dwelling units, commercial units, etc.). The DEIS report provides an approximate estimate of 27,400(?) auto trips per day without any explanation of the method or accuracy of estimation. A trip generation model based on the socioeconomic, locational and land-use characteristics of the development should be included in the final EIS as an appendix. The predicted distributions of zonal population, employment, activities, and land-uses for the design year should be used as input. The output number of trips must be converted to number of vehicles by splitting these trips among the available modes (automobiles and mass transit) based in part upon the characteristics of these modes, and in part upon the characteristics of travellers.

The DEIS study indicates that the increased number of vehicle trips generated by the development of West Beach can be accommodated by Farrington Highway but at "Level of Service E" (page 114). Since that level of service yields unstable traffic operations, i.e. stop-and-go conditions, as well as excessive delays leading to increased air pollution and energy consumption, it appears thatthe DPED's study (An Assessment of Potential Off-Waikiki Resorts) should be used as the authority. That study estimated that two additional lanes of highway would be needed if West Beach was fully developed. The failure to mention the possible need for additional lanes of roadway appears to be a significant omission in the transportation analysis.

Modes of Transportation

The traffic impact report states that "less than 5 percent of the person trips by the tourists will be made by automobile. Approximately 95 percent of all person trips will be as bus passengers". (page T-19) The rationale for this projection appears to be based on the statement on page T-18 that the expected majority of the tourists will arrive from Japan. Since automobiles are driven on the left side of the road in Japan in contrast to the right side in the United States, the assumption is made in the DEIS that the majority of the tourists will depend on some form of chartered bus system. The basis for this claim is not substantiated by any data in the DEIS or by the State Tourism Study or the DPED study, "An Assessment of Potential Off-Waikiki Resorts". What source of information was used for this assumption? The indicated price of West Beach accommodations indicates that a high income group is being targeted for the resort. On what basis has it been verified that this income group will prefer buses to other forms of transportation, i.e. private vans or limousine service? The assumption of four person trips per person day (page T-19) appears inconsistent with the notion of a self-contained resort complex and 95% travel by bus.

ARCHAEOLOGICAL IMPACTS

Table 15 on page 118 of the DEIS lists potential impacts on archaeological resources and potential mitigative measures. However, there is no indication which measures are actually being considered. Will the final EIS indicate which sites will be impacted and which measures will be implemented?

We note the existence of the Barber's Point Archaeological District in the West Beach project area. As this archaeological district is eligible for inclusion in the National Register, the DEIS states on page 116 that: "work in the district involving a federal permit will require coordination with the USA Advisory Council on Historic Preservation and the State Historic Preservation Officer". Does the developer also plan to coordinate work which does not require a Federal permit in the archaeological district, through these offices?

Our reviewers found the Archaeological field report adequate. However, as we indicated in our previous review, there are two site descriptions which appear insufficient. Those are sites number 1434A and 1430. Please refer to Appendix I for further discussion. We are enclosing it again for your reference.

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

August 29, 1984

Mr. Malcolm A. Sussel
Administrator
Oahu Civil Defense Agency
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Sussel:

Subject: <u>West Beach Resort Supplemental Environmental Impact Statement Preparation Notice</u>

Thank you for your letter dated June 19, 1984 discussing the comments on the West Beach Resort EISPN. We respond in the following:

There does not seem to be a serious concern over meeting your agency's concerns of providing the means to install the necessary Civil Defense equipment as described in your letter. The comments have been provided to the land planner and engineering consultant and at the appropriate time, they will contact your agency for details and design requirements.

Thank you for your continuing interest and concerns.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

1146 FORT STREET MALL, SUITE 200 • P. O. BOX 536 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-8391

FIRE DEPARTMENT

CITY AND COUNTY OF HONOLULU

1455 S. BERETANIA STREET, ROOM 305
HONOLULU, HAWAII 96814

EILEEN R. ANDERSON
MAYOR

MELVIN M. NONAKA
FIRE CHIEF

THOMAS C. BLONDIN
FIRE DEPUTY CHIEF

June 21, 1984

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

Dear Mr. Rodriguez:

Subject: Environmental Assessment/Preparation Notice for the Proposed West Beach Resort

We concur with the statements referred to under B.5 and E.4 on pages III-9 and V-4, respectively.

Very truly yours,

MELVIN M. NONAKA,
Fire Chief

MMN:ct/NSKW

JUN 22 1984

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

August 29, 1984

Mr. Melvin M. Nonaka
Fire Chief
Fire Department
City and County of Honolulu
1455 S. Beretania Street
Room 305
Honolulu, Hawaii 96814

Dear Mr. Nonaka:

Subject: West Beach Resort Supplemental Environmental Impact Statement Preparation Notice

Thank you for your review and comments of June 21, 1984 on the subject document. Your concurrence on the statements in the Preparation Notice Statements will be utilized in the following EIS.

We appreciate your continued interest in this project.

Very truly yours,

F. J. Rodriguez

FJR:ls

1146 FORT STREET MALL, SUITE 200 • P. O. BOX 536 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-8391

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813 • (808) 523-4432

EILEEN R. ANDERSON
MAYOR

MICHAEL M. McELROY
DIRECTOR

ROBERT B. JONES
DEPUTY DIRECTOR

LU6/84-2757(JDN)

July 3, 1984

Mr. Taeyong M. Kim
Environmental Communications Inc.
P.O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Kim:

Supplemental Environmental Impact Statement Preparation Notice (EISPN) for the Proposed West Beach Resort Development - Honouliuli, Ewa, Oahu, Hawaii
Tax Map Keys 9-1-4: Portion 2, 9-1-15: 3, Portion 4, 6, 7, 10 and 9-2-3: Portion 2, 3, 7

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

1. Reference: DLU Acceptance Report (9/19/80), Page 3, Section C. Content

   Comment: The Supplemental EIS must thoroughly address the 15 items identified in Section C of DLU's Acceptance Report of 9/19/80.

2. Reference: Pages III-1 through III-10, Section III, B. Description of Proposed Project

   Comment: The proposed developments, i.e., resort units, residential types, commercial structures, recreational amenities, etc., should be graphically depicted in the EIS along with preliminary plans and elevations.

3. Reference: Page III-5, Figure 3 - Master Plan

   Comment: This map should be graphically coded in the EIS for better readability.

4. Reference: Page III-8, Part d. Marina

   Comment: The EISPN only provides a narrative description. A more detailed description and conceptual plans must be provided in the EIS.

JUL 5 1984

5. Reference: Page III-10, Part 1. Access and Circulation

   Comment: Access, circulation and traffic volumes should be shown on a map.

6. Reference: Page III-11, Part 2. Sanitary Sewage System

   Comment: The EIS should verify whether the Honouliuli Wastewater Treatment Plant has the capacity to process the projected amount of sewage to be generated by the entire development. Also, the sewage pipe system from West Beach to Honouliuli should be shown on a map. The exact alignment of the pipe is critical and must be kept outside of the 40-foot Shoreline Setback Area, unless a variance is approved.

7. Reference: Page III-11, Part 4. Drainage System

   Comment: The EISPN states the proposed drainage system, "will further enhance shoreline and lagoon water quality." Will it actually enhance water quality or merely minimize degradation of water quality? Data and references supporting this statement should be included in the EIS.

8. Reference: Page III-11, Part D. Need for the Proposed Project.

   Comment: This discussion should address the development's potential effect, i.e., reduced occupancy and employment, on other resort areas such as Makaha and Turtle Bay.

9. Reference: Page III-12, Part E. Phasing

   Comment: The estimated time for completing the project should be reported. Also, approximate times for implementing the five phases need to be included. If the five phases are only meant to be developmental increments and not separate project phases, this intention must be clarified.

10. Reference: Page IV-4, Part H. Land Use Characteristics

   Comment: The State Land Use District designation needs to be updated. Also, the EIS should discuss the project's relationship to the Hawaii State Plan.

11. Reference: Page V-1, Section V. Probable Impacts and Mitigative Measures

Comment: (a) Statements regarding probable impacts must be supported by data and applicable references; (b) EIS should discuss the possibility of saltwater intrusion into the Ghyben-Herzberg lens under hydrological characteristics; and (c) the aesthetic and visual characteristics need to be illustrated. The narrative description alone is insufficient in presenting the projects' impact.

If there are any questions, please contact John Nakagawa of our staff at 523-4648.

Very truly yours,

MICHAEL M. McELROY
Director of Land Utilization

MMM:sl

ENVIRONMENTAL COMMUNICATIONS INC.

F. J. RODRIGUEZ, PRESIDENT

August 29, 1984

Mr. Michael M. McElroy, Director
Department of Land Utilization
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. McElroy:

Subject: West Beach Resort Supplemental Environmental Impact Statement Preparation Notice

Thank you for your comments dated July 3, 1984 on the EISPN for the proposed West Beach project. We respond in the following:

1. We have included the acceptance report dated September 19, 1980 in the format of the supplemental DEIS which is currently being developed. It will serve as a preface to reviewers of this Supplemental EIS and qualify this document as a Supplemental EIS and not as a totally new project document.

2. Graphic illustrations for the proposed structural improvements (hotel, commercial, residential, and recreational) are not available at this time. The required data and technical information as required in the 1980 DLU acceptance letter are being developed by the specific engineering design consultants and will be available in the EIS.

3. The comment will be complied with as provided by the project site plan developed by the applicant and the land planner.

4. Marina design and technical support studies will be included in the EIS by reference and also to specific review agencies, individuals, and groups in the actual studies attached as exhibits.

5. Traffic will also be provided in the form of references from the Traffic Study and the actual study itself.

6. Utilities such as sewage, water, drainage, will be addressed by the engineering consultant. References will be made in the EIS.

7. The offshore marine biota report and the technical design documents on the marina and the lagoon system are to respond as to the actual enhancement or mitigative aspects of the designs.

8. The State Tourism Industry analysis as prepared by Pannell, Kerr, Forster will be cited as the basic document for Need for the Project.

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Impacts on other Oahu off-Waikiki resorts are covered on the analysis provided by PKF and their position indicates the need based on demand is strong enough to accomodate West Beach.

9. Phasing plans (developmental increments) will be provided to the best of our ability. The phasing plans are subject to external factors such as government control and limitations.

10. All land use policy designations and compliance with Hawaii State Plan guidelines will be noted wherever applicable.

11. Impacts attributable to the water demand, the excavation and dredging for the lagoon system and marina will be provided in a suitable manner.

We look forward to working closely with DLU staff on the preparation and processing of this major project document; thank you for your continuing interest and cooperation.

Very truly yours,

F. J. Rodriguez

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

JUN 20 1984

Mr. F. J. Rodriguez
Environmental Communications, Inc.
P.O. Box 536
Honolulu, HI 96809

Dear Mr. Rodriguez:

The Fish and Wildlife Service (FWS) appreciates this opportunity to comment on the preparation of the Supplemental Environmental Impact Statement (SEIS) for the Proposed West Beach Resort at Honouliuli, Oahu.

The Service would appreciate receiving a copy of the following technical reports to assist us in evaluating the proposed impacts of this project.

1) "Birds of West Beach, Ewa, Oahu Region, Statement on possible fossil bird sites," October 1979. Prepared by Andrew Berger, Ph.D.

2) "Botanical Survey of the Proposed West Beach Resort Project, Honouliuli, Ewa, Island of O'ahu," June 1979. Prepared by Winona P. Char.

3) "A Review of Pertinent Literature of the Nearshore Communities of Macrobiota in the Barbers Point to Kahe Point Region of Oahu, Hawaii," May 1979. Paul K. Bienfang, Ph.D. and Richard E. Brock, Ph.D.

4) "Summary of Technical Input for the West Beach Lagoon Concept Development," April 1979. Prepared by Karl H. Bathen, Ph.D.

5) "Summary of Technical Input for the West Beach Marina Concept Development," October 1979. Prepared by Karl H. Bathen, Ph.D.

6) "Predictive Analysis of Chemical and Biological Conditions in the Proposed West Beach Marina, A Basin Influenced by Groundwater Intrusion, A Contribution to the West Beach Marina Concept Effort," October 1979. Prepared by Paul K. Bienfang, Ph.D.

7) "The Environmental Conditions Anticipated in Two Lagoons and a Marina for the Proposed West Beach Development, and the Potential Impact of These Facilities on the Project Coastal and Nearshore Ocean Environments," November 1979. Prepared by Karl H. Bathen, Ph.D.

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JUN 21 1984

8) "Predevelopment Reconnaissance of the Water Quality and Macrobiota Conditions Afronting the West Beach Coastline, Oahu, Hawaii," January 1980. Prepared by Paul K. Bienfang, Ph.D. and Richard E. Brock, Ph.D.

The Service's specific areas of interest and concern regarding this project are the following:

The impacts of the marina and lagoons on coastal water quality, sedimentation of inshore reefs, biostimulation by increased nutrient loads, and degradation of coastal fisheries and habitats need to be addressed by the SEIS. In addition to the pre-development studies listed on VII-2, the Service recommends that studies on water quality, nearshore currents and transport, sedimentation, and fishery resources be conducted during and after the construction of the lagoons and marina. The SEIS should also discuss additional alternative mitigation measures that the developer will pursue should the post-construction studies reveal adverse environmental impacts caused by the project. The oceanographic studies proposed in support of the SEIS should be coordinated with the FWS, National Marine Fisheries Service, and the State's Division of Aquatic Resources.

The SEIS should include quantitative descriptions of the subtidal and intertidal habitats and macrobiota located within the immediate area of the lagoons and marina. The Service may recommend that appropriate mitigation for the degradation of the subtidal and intertidal habitats caused by the construction of the lagoons and marina include the development of marine life conservation districts on Oahu.

The Service is concerned about possible saltwater intrusion into the aquifer caused by construction of the lagoons and marina. Page 80 of the 1980 Generic EIS states that a groundwater hydrologist will make an evaluation of the saltwater intrusion into the basal groundwater when the marina design is finalized. However, the list of studies (VII-2) to be prepared in support of SEIS appears to leave out this study. This study should be included as part of the SEIS.

We appreciate this opportunity to comment.

Sincerely yours,

Ernest Kosaka

Ernest Kosaka
Project Leader
Office of Environmental Services

cc: NMFS - WPPO
HDF&W

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

August 29, 1984

Mr. Ernest Kosaka
Project Leader
Office of Environmental Services
United States Department of the
Interior
Fish and Wildlife Service
P.O. Box 50167
Honolulu, Hawaii 96850

Dear Mr. Kosaka:

Subject: West Beach Resort Supplemental Environmental Impact Statement Preparation Notice

Thank you for your letter dated June 20, 1984 and the comments made on the West Beach Resort EISPN. We respond as follows:

The specific technical studies you have requested are being updated in view of the design work currently under way for the Lagoon and Marina systems. We will make the updated studies available to your agency since the concerns expressed in your letter are to be covered by these updated studies.

The request for the 1979 studies was withdrawn in a telephone discussion with your office.

You will be pleased to know that in our process of updating the technical studies, the preliminary findings as to the difference in the offshore marine biota from 1979 to the present time, clearly identify certain changes in marine benthic and macrobiota communities. It is fortunate from our standpoint that the 1979 studies were completed so that there is evident proof of the differences in the five years that have passed.

Discussion on groundwater hydrology will be provided in the DEIS.

Finally, the team of technical consultants involved in the 1979 studies remains intact and will be completing their updating of the previous work during this calendar year. At that time, the updated studies will be provided to your office with the initial DEIS.

Thank you for your continuing interest and concern.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

1146 FORT STREET MALL, SUITE 200 • P. O. BOX 536 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-8391

HEADQUARTERS
NAVAL BASE PEARL HARBOR
BOX 110
PEARL HARBOR, HAWAII 96860

IN REPLY REFER TO:
002:09P2(T):jam
Ser 919
30 MAY 1984

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

Gentlemen:

In response to your letter of May 16, 1984, this office wishes to be consulted during the preparation of the Environmental Assessment for the Proposed West Beach Resort at Honouliuli, Ewa, Oahu. Our interest and concern are in areas which affect encroachment on Navy property and activities.

Sincerely,

M M Dallam

M. M. DALLAM
CAPTAIN, CEC, U. S. NAVY
FACILITIES ENGINEER
BY DIRECTION OF THE COMMANDER

JUN 1 1984

ENVIRONMENTAL COMMUNICATIONS INC.

F. J. RODRIGUEZ,
PRESIDENT

August 29, 1984

M. M. Dallam
Captain. CEC, U. S. Navy
Facilities Engineer
Headquarters
Naval Base Pearl Harbor
Box 110
Pearl Harbor, Hawaii 96860

Dear Captain Dallam:

Subjct: West Beach Resort Supplemental Environmental Impact Statement Preparation Notice

Thank you for your review and comments of May 30, 1984 on the subject document. Your concerns are noted and will be appropriately addressed in the EIS. Your office will be consulted during preparation of this EIS.

Your continued interest in this project is appreciated.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
HONOLULU AREA OFFICE
300 ALA MOANA BLVD., RM. 3318, P.O. BOX 50007
HONOLULU, HAWAII 96850

REGION IX

IN REPLY REFER TO:
84-210

May 31, 1984

Mr. F. J. Rodriquez
Environmental Communications, Inc.
P. O. Box 536
Honolulu, HI 96809

Dear Mr. Rodriquez:

SUBJECT: Environmental Assessment/Preparation Notice for the Proposed West Beach Resort at Honolulu, Ewa, Oahu, Hawaii

It is our understanding that the developer for the subject project will not be seeking HUD assistance for the subject project. Correspondence reproduced on page A-4 of the Final Environmental Impact Statement, September 1980, confirms this.

Should the developer reconsider the use of HUD assistance on any housing projects within the 640 acre development, our office should be consulted on supplementary EIS's where appropriate.

If you have any questions you may contact Frank Johnson at 546-5570.

Sincerely,

Robert K. Fukuda
Robert K. Fukuda
Manager, 9.2S

JUN 4 1984

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

August 29, 1984

Mr. Robert K. Fukuda, Manager
Department of Housing and Urban
Development
Honolulu Area Office
P.O. Box 50007
Honolulu, Hawaii 96850

Dear Mr. Fukuda:

Subject: <u>West Beach Resort Supplemental Environmental Impact Statement Preparation Notice</u>

Thank you for your review and comments of May 31, 1984 on the subject document.

The developer is not seeking HUD assistance for the subject property at this time. Should the developer reconsider the use of HUD assistance, your office will be consulted.

We appreciate your continued interest in the project.

Very truly yours,

F. J. Rodriguez
F. J. Rodriguez

FJR:ls

1146 FORT STREET MALL SUITE 200 • P. O. BOX 536 • HONOLULU HAWAII 96809 • TELEPHONE (808) 521-8391

DEPARTMENT OF THE ARMY
PACIFIC OCEAN DIVISION, CORPS OF ENGINEERS
FT. SHAFTER, HAWAII 96858

May 30, 1984

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

Dear Mr. Rodriguez:

Thank you for the opportunity to comment on the EIS Preparation Notice for a Supplemental EIS for West Beach Resort. The following comments are offered:

a. The EIS preparation notice states on page III-8, "Presently, the marina is planned to be entered from the existing Barber's (sic) Point Deep Draft Harbor entrance channel, thus eliminating the need for a second entrance channel..." As we clearly pointed out in our 30 Jan 84 letter, the Corps has no plans of altering the Barbers Point Deep Draft Harbor entrance channel to accommodate the West Beach marina. Therefore, the discussion should be revised to highlight alternative marina alignments and locations. Furthermore, the marina (including the entrance channel) should also be included in the discussion of "unresolved issues".

b. Another issue that must be resolved is navigation and public safety concerns associated with the merging public small craft and commercial traffic at the proposed connection to the Barbers Point Deep Draft Harbor.

c. According to the Flood Insurance Study for Oahu prepared by the Federal Insurance Administration (FIA), the 100-year tsunami inundation areas for West Beach project are designated Zone A4 and are shown on the attached flood hazard map prepared as part of the FIA flood study (Enclosure 1). The 100-year event has a one percent chance of being equalled or exceeded in any given year. Whenever there is a practicable alternative, we usually recommend that proposed structures be located outside the tsunami-prone areas.

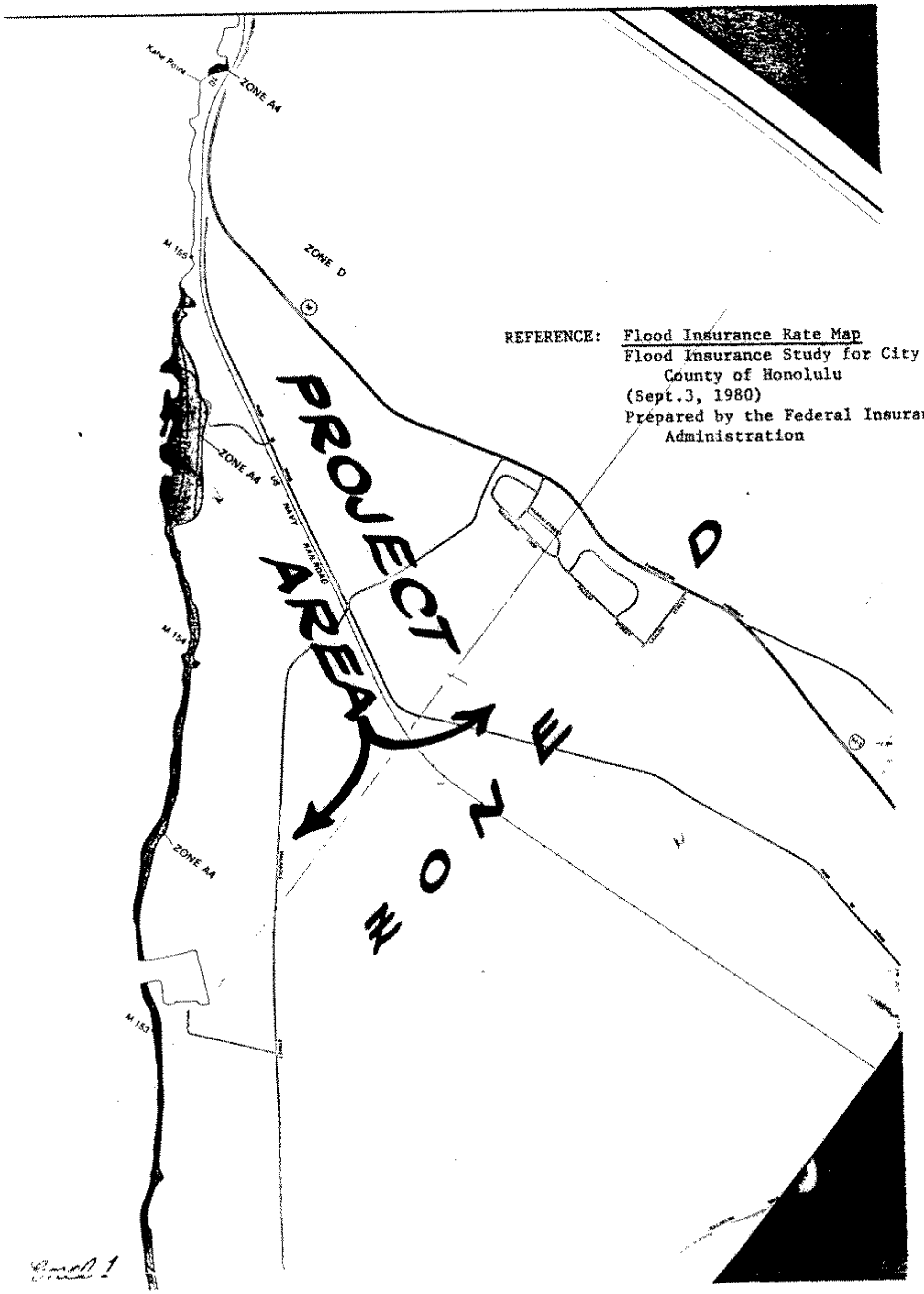
JUN 6 1984

Most of the West Beach project site is designated Zone D or area of undetermined but possible flood hazards. Since areas under this designation have not been studied, it is incorrect to say that "no flooding problems are anticipated" for this area, as stated in Section IV.C.3 Flood and Tsunami Hazards.

Sincerely,

Kisuk Cheung
Chief, Engineering Division

Enclosure



REFERENCE: Flood Insurance Rate Map
Flood Insurance Study for City & County of Honolulu
(Sept.3, 1980)
Prepared by the Federal Insurance Administration

Encl 1

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

August 29, 1984

Mr. Kisuk Cheung
Chief, Engineering Division
Department of the Army
Pacific Ocean Division, Corps of
Engineers
Ft. Shafter, Hawaii 96858

Dear Mr. Cheung:

Subject: West Beach Resort Supplemental Environmental Impact Statement Preparation Notice

Thank you for your letter dated May 30, 1984 and comments on the proposed West Beach Resort EISPN. We respond to the comments as follows:

We are pleased to advise your office that there have been meetings on the West Beach Marina Channel alternative on May 17, 1984 and also on June 7, 1984. Mr. Henry Nakashima of your office was present at both meetings and these meetings discussed the concerns of the Corps of Engineers. We are working to resolve the concerns of not only the Corps of Engineers, but also of the State Department of Transportation, Harbors Division so that an equitable solution to the Marina entry exit point will not create adverse problems in design or operations for the Corps or State.

We will continue to meet with both governmental agencies and keep you apprised of these meetings. We are attaching copies of the meeting minutes for your information.

We will respond to the statement made regarding "No flooding problems are anticipated" in the EIS document. Thank you for your continuing interest and concern.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

United States Department of Agriculture

Soil Conservation Service

P.O. Box 50004
Honolulu, Hawaii
96850

June 20, 1984

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

Gentlemen:

Subject: Environmental Assessment/Preparation Notice for the Proposed West Beach Resort at Honouliuli, Ewa, Oahu, Hawaii

We have reviewed the above-mentioned document as requested.

The general soils descriptions on page IV-1 are accurate.

While none of the land in the proposed development area is presently in agricultural use, it should also be noted that the areas made up of Ewa, Keaau and Lualualei soils are classified as prime and unique agricultural land. The proposal, therefore, will result in the loss of prime agricultural land.

Thank you for the opportunity to review this document.

Sincerely,

Francis C.H. Lum

FRANCIS C.H. LUM
State Conservationist

The Soil Conservation Service is an agency of the Department of Agriculture

JUN 22 1984

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

August 29, 1984

Mr. Francis C.H. Lum
State Conservationist
Soil Conservation Service
Unites States Department of Agriculture
P.O. Box 50004
Honolulu, Hawaii 96850

Dear Mr. Lum:

Subject: West Beach Resort Supplemental Evironmental Impact Statement Preparation Notice

Thank you for your review and comments of June 20, 1984 on the subject document. We concur with your soils determination and will continue to use this information in the following EIS. The EIS will also note the agricultural classification of the land and impacts associated with the proposed alternate use.

We appreciate your continued interest in this project.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

1146 FORT STREET MALL, SUITE 200 • P. O. BOX 536 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-8391

HAWAIIAN TELEPHONE
GTE

Russ K. Saito
Network Engineering Director

June 26, 1984

Mr. Taeyoung Kim
Project Coordinator
Environmental Communications Inc.
P. O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Kim:

Environmental Assessment/Preparation Notice for the
Proposed West Beach Resort at Honouliuli, Oahu, Hawaii

Thank you for your May 16 letter on the Environmental Impact Statement for West Beach. Hawaiian Telephone Company would like to be consulted during its preparation. Our concern is with project impacts on communications facilities. Please contact George Kaneko, Oahu Engineering and Construction Manager. You may reach him at 546-3464.

Sincerely,

RK Saito

JUN 27 1984

P.O BOX 2200 • HONOLULU, HAWAII 96841 • TELEPHONE (808)546-3098 • CABLE: TELHAWAII

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

August 29, 1984

Mr. Russ K. Saito
Network Engineering Director
Hawaiian Telephone Company
P.O. Box 2200
Honolulu, Hawaii 96841

Dear Mr. Saito:

Subject: West Beach Resort Supplemental Environmental Impact Statement Preparation Notice

Thank you for your review and comments of June 26, 1984 on the subject document. Your concerns will be addressed in the following documents and you will be kept informed as a consulting party. We will contact Mr. Kaneko at the appropriate time and will keep Hawaiian Telephone Company apprised on this document.

We appreciate your continued interest in this project.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

1146 FORT STREET MALL, SUITE 200 • P. O. BOX 536 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-8391

HAWAIIAN ELECTRIC COMPANY, INC.
Box 2750 / Honolulu, Hawaii / 96840

June 21, 1984

ENV 2-1
NV/G

Environmental Communicators, Inc.
P. O. Box 536
Honolulu, Hawaii 96809

Dear Sir:

Subject: Environmental Assessment/Preparation Notice for the Proposed West Beach Resort, Honouliuli, Ewa

We have reviewed the above Environmental Assessment/Preparation Notice and offer the following comments:

1. No mention is made of the existing fuel-oil pipeline, owned by HECO, which runs along side or withinin the railroad right-of-way. The pipeline is shown in red on the attached sketch. It appears that there will be some difficulties of access to the pipeline to perform any type of maintenance.

2. What effect will there be on the development if there is a break in the pipeline?

3. What effect will there be on the development if an emergency repair were to be performed on the pipeline at night?

4. The Transit Station located on the mauka side of the railroad right-of-way will make it almost impossible to maintain the pipeline, which is also located on the mauka side of the right-of-way. The Transit Station should be located on the makai side of the railroad right-of-way.

5. We suggest some type of buffer zone separating the railroad right-of-way from the development.

6. Attached comments from 1979 and 1980 are still valid.

7. Document superficially treats the impact of the electric utilities, the close proximity of the Kahe Generating Facility and the all important fuel oil pipeline in the old railroad right-of-way that bisects the proposed resort.

JUN 26 1984

Thank you for the opportunity to comment on this Environmental Assessment/Preparation Notice.

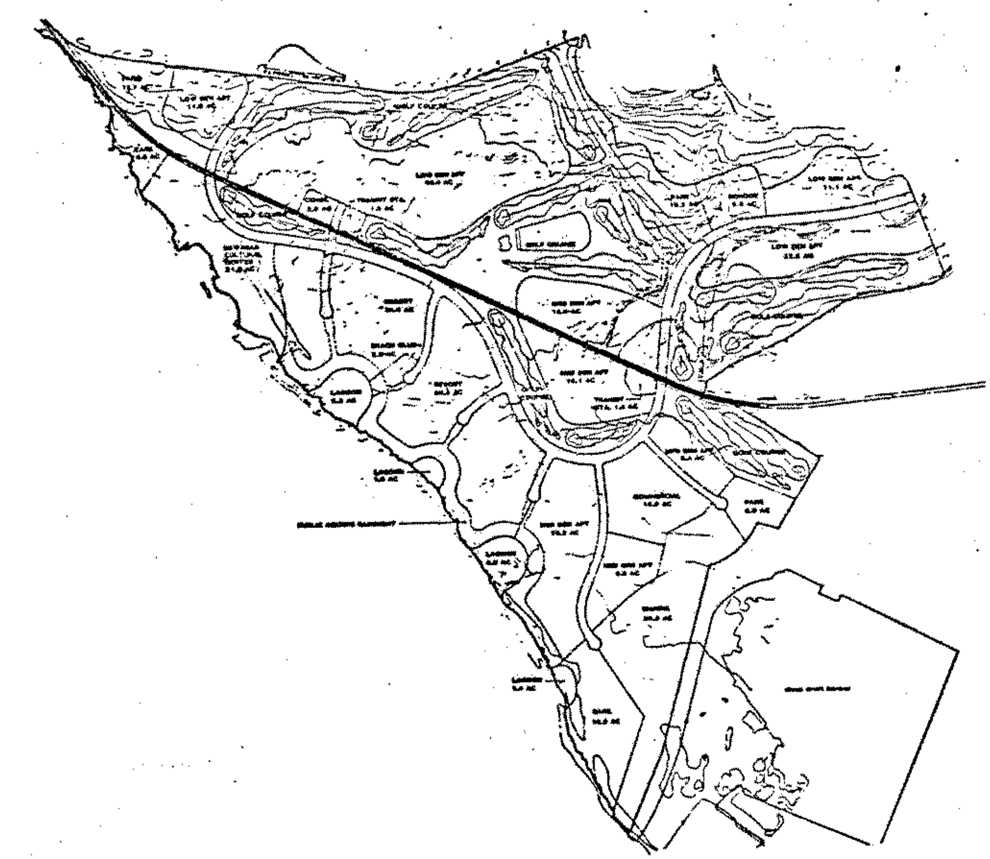
Sincerely,

Ralph H. Moltzau, Jr.

Ralph H. Moltzau,Jr.
Acting Manager
Environmental Department

JMP,Jr.:

Enclosures



0 400 800 1600

WEST BEACH RESORT MASTER PLAN

HEL
MPW

June 30, 1980

ENV 2-1
NV/G

Environmental Quality Commission
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Gentlemen:

Subject: Comments on Draft Environmental Impact Statement for the Proposed West Beach Resort, Honouliuli, Ewa District, Oahu

Thank you for the opportunity to review the draft EIS for the proposed West Beach Resort. Several members of the staff of the Hawaiian Electric Company reviewed this EIS, and we offer the following comments:

1. Page 20, Para. (6) Utilities - It is not planned to place HECO's transmission lines underground in the development area unless the developer will pay for the cost. This should be explained.

2. Page 25, Table 2, Comparison of Alternate Impacts - For the Significant Resources "Power" under the heading "Total Development", the entry should read "Require two 46,000 volt lines and a probable Substation."

3. Pages 125 and 129, Para. 9.15.3 Future Projects in the Surrounding Area - A subpara. "g" should be added that states in essence that contingent on construction of the Barbers Point deep draft harbor, HECO will be constructing an 8" fuel oil pipeline in the old railroad right of way that bisects the proposed West Beach development. Additionally, should future energy economics dictate, it might be necessary to transport coal by conveyor or rail from the new deep draft harbor to Kahe via an energy corridor along the old railroad right of way or around but near to the proposed development area.

4. Page 77, Para. 9.3.13 - A statement is made that air pollution model predicted 3- and 24-hour average concentrations of sulfur dioxide which exceed State Ambient Air Quality Standard (SAAQS). It should be noted in the final EIS that HECO has

Environmental Quality Commission
June 30, 1980
Page 2

applied for variance to the State Ambient Air Quality Standards and that these standards are not health and welfare standards as are the Federal Standards. The State has recognized the need for a revision of SAAQS and is in the process of proposing such review which would bring the State's standards more into line with the Federal Standards.

If you have any questions, please call me at 548-6880.

Yours truly,

JCMc:cm

bcc: V. E. Cronkhite

HAWAIIAN ELECTRIC COMPANY, INC.

Inter-office Correspondence

ENV 2-1
CONSTPR 143680
YY/G

Route in turn to:

May 3, 1979

J. A. Rolfing, Jr.
J. F. Richardson, Jr.
J. C. McCain

SUBJECT: EIS Preparation Notice for West Beach Resort Project

The attached EIS Preparation Notice for the West Beach Resort development has been reviewed. It is believed that the Comments of the Hawaiian Electric Company (HECO) should state in substance the following:

"HECO takes no position for or against the proposed development of approximately 830 acres of Campbell Estate property into an urban district for Hotel, Marina, Golf Course, Residential and Commercial uses. As the owner and developer of the generating facilities in Kahe Valley however, which is close to the proposed development, the following points should be made and evaluated in the EIS.

"HECO acquired Kahe Valley from the Campbell Estate in 1960 for immediate development as a fossil fuel power plant site and future development as a nuclear power site. Its selection was primarily based on its location remote from any residential development. It was felt it would make it environmentally more acceptable due to the fact that the configuration of the valley provided a degree of exclusion and protection and the fact that it was on a lee coast. Further, the egress of our major transmission lines from Kahe to the urban areas of Honolulu would be relatively less obtrusive since they would cross agricultural lands and largely undeveloped mountainous terrain.

"The first unit, Kahe 1, went into service in April 1963 receiving fuel oil from the refinery via a pipeline constructed by Standard Oil Company of California. Since that time four additional units have been constructed resulting in a total capacity of 497 MW and making Kahe the largest steam power plant on the HECO system. A sixth unit is scheduled to go on line in 1980. Under current planning HECO will continue to add generation at Kahe and major transmission lines out of Kahe well past the turn of the century as Kahe is the only generating site on Oahu currently available to HECO on which additional steam generation can be developed. The point to be made here is that the Kahe Power Plant is an ongoing industrial operation and will remain so for many years to come.

"In view of the foregoing HECO cannot overemphasize the fact that in no way should this West Beach development be allowed to endanger the existing and future electrical generation capability in Kahe Valley to the detriment of the Company's ability to meet the future service demands for electrical energy to sustain an orderly and controlled growth on all of Oahu.

"The proposed West Beach development is interposed directly between Kahe and its source of fuel. With the uncertain fuel situation facing us, it is not known what type of fuel will be available for use at Kahe. It is imperative, therefore, that provision be made for an energy corridor between the Kahe Power Plant and the harbor and refinery development in the Industrial Park. The minimum requirement would be to accommodate the existing fuel oil pipeline and perhaps one or two more along its present alignment.along Malakole Road, cross country to the old railroad right of way, thence on into Kahe Valley on an existing easement. At such time as construction on the new Barbers Point deep draft harbor begins, an alternate alignment completely within the old railroad right of way will be required. Since the type of fuel we may be required to use in the future is unknown, however, provision should be made now for the worst case along the energy corridor which would probably be the surface transport of coal -- more than likely by conveyor or rail. HECO requires that a minimum of 25-30 feet right of way be retained with access for maintenance at all times which, with suitable setbacks to install landscaping for screening, would allow the construction of an energy transport system through the area with hoped for minimum impact on the development.

"HECO's requirements for an energy corridor to continue to serve Kahe Valley in the Barbers Point area have been reviewed in depth with the Campbell Estate, and with representatives of the State and City governments.

"There is also the question of providing electrical transmission and distribution facilities to serve electrical load growth in the West Beach development area. Existing and planned facilities are only adequate for limited growth. Changing land uses such as is proposed will change the load and load growth patterns for the entire area and undoubtedly will require additional transmission and distribution facilities to include in all probability a substation(s). Provisions and allowance for these should be incorporated into the development plans. Possibly, with proper planning, some of these requirements could be combined in the energy corridor outlined above."

In conclusion, it may be desirable for HECO's comments to also point out the above information was previously provided to the State Planning Commission at the public hearing held on April 12, 1977 on the rezoning for the West Beach development.

VECronkhite
V. E. Cronkhite
Manager
Engineering Design Department

MDW:mac

cc: F. Karimoto
E. Goo
W. Johnston
S. Tanno
S. Takamine
M. Wildrick

ENV 2-1
YA/R/WV

INTEROFFICE CORRESPONDENCE

June 19, 1980

Route In Turn To: J. A. Rolfing
J. F. Richardson
J. C. McCain

Subject: Draft Environmental Impact Statement
For the Proposed West Beach Resort
Honouliuli, Ewa District

Generally speaking from a Generation, Substation, Transmission and Distribution viewpoint, the major concerns expressed in HECO's letter of May 16, 1979 to be found on Pages 152 and 153 of the EIS appear now to be adequately addressed. We do believe, however, there are several errors and/or omissions that should be corrected. These are listed below:

a. Page 20, Para. (6) Utilities: It is not planned to place HECO's transmission lines underground in the development area unless the developer will pay for the cost. This should be explained.

b. Page 25, Table 2, Comparison of Alternate Impacts: For the Significant Resources "Power" under the heading "Total Development", the entry should read "Require two 46000 volt lines and a probable Substation".

c. Pages 125 and 129, Para. 9.15.3 Future Projects in the Surrounding Area: A subpara. "g" should be added that states in essence that contingent on construction of the Barbers Point deep draft harbor, HECO will be constructing an 8" fuel oil pipeline in the old railroad right of way that bisects the proposed West Beach development. Additionally, should future energy economics dictate, it might be necessary to transport coal by conveyor or rail from the new deep draft harbor to Kahe via an energy corridor along the old railroad right of way or around but near to the proposed development area.

We also recommend that HECO's Environmental Dept. review and address the Air Quality Considerations and Impact, visa a vie Kahe to be found in Para. 9.3 starting on Page 73 of the EIS.

V. E. Cronkhite
V. E. Cronkhite
Manager, Engineering Department

mw

Attach.
cc: F. Karimoto
E. K. C. Goo
S. J. Tanno
C. J. Gouvein

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

August 29, 1984

Mr. Ralph H. Moltzau, Jr.
Acting Manager
Environmental Department
Hawaiian Electric Company, Inc.
Box 2750
Honolulu, Hawaii 96840

Dear Mr. Moltzau:

Subject: West Beach Resort Supplemental Environmental Impact Statement Preparation Notice

Thank you for your letter dated June 21, 1984 with comments on the West Beach Resort EISPN. We respond to your comments as follows:

1-6. These comments have been provided to the retained engineering consultant for his review and appropriate disposition. There will be extensive discussions with HECO on the germane subject items discussed in 1-6. It is apparent that many of the concerns are of an operational nature and can be resolved during design stage discussions.

7. Please bear in mind that the document reviewed by your firm was only a Preparation Notice and as such did not pretend to provide the degree of specificity you would normally find in a fully developed EIS. We are aware of the Kahe Power Plant and its' potential impacts on West Beach; particularly in view of the current efforts to redesignate the State's Air Quality Standards to be consistent with the Federal Air Quality Standards in Sulfur Dioxide levels. Review of these impacts as well as other point sources in the Campbell Industrial Park will be included in the EIS documents currently under preparation.

Thank you for your concerns and continuing interest.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

1146 FORT STREET MALL, SUITE 200 • P. O. BOX 536 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-8391

BISHOP MUSEUM
1525 BERNICE STREET • P.O. BOX 19000-A • HONOLULU, HAWAII 96819 • (808) 847-3511

June 22, 1984

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

Subject: Environmental Assessment/Preparation Notice for the proposed West Beach Resort

Gentlemen:

As noted in the Department of Land Utilization's 19 September 1980 Acceptance Report for the programmatic EIS for the West Beach Resort project, a supplemental EIS is to be prepared addressing those matters that could not be treated in detail prior to the availability of detailed plans for the project. We suggest that the Draft EIS as eventually submitted for review should include the full texts of technical support studies discussing historical/archaeological/paleontological concerns as well as those addressing possible adverse impacts on the plant Euphorbia skottsbergii var. kalaeloana and on nearshore marine communities. Bishop Museum has previously reviewed the reconnaissance-level archaeological report "West Beach, Oahu: An Archaeological Survey" prepared in 1979 by Chiniago, Inc.; a copy of that review is enclosed for your reference.

Very truly yours,

E. Creutz
Director

Encl.

cc: Department of Land Utilization, City and County of Honolulu

JUN 25 1984

BERNICE P. BISHOP MUSEUM
P.O. Box 19000-A, Honolulu, Hawaii 96819 • Telephone 847-3511

November 2, 1979

Mr. Richard L. O'Connell
Office of Environmental Quality Control
550 Halekauwila Street
Room 301
Honolulu, Hawaii 96813

Dear Mr. O'Connell:

The subject report was reviewed by Dr. Tom Riley , our contract archaeology supervisor and myself. The following are the resultant comments.

WEST BEACH, OAHU: AN ARCHAEOLOGICAL SURVEY by William Barrera

comment number	page	paragraph/line number	comments
1	1	1/11	What is meant by *cultural values*? Significant archaeological sites, cultural resources? The terminology needs clarification.
2	2	1+2/---	References are needed for the physical data. Perhaps more specific locational information for the presence of basalt and other igenous geologic features should be included. Infact, for most of the subject study area, aside from artificially imported basaltic material, the substrate should be karstic.
3	2	3/---	What is the possibility of the presence of any endangered species like those that occur in the adjoining Deep Draft Harbor areas? Especially, *Achyranthes splendens* and *Euphorbia skottsbergii*? Also were there any native species?
4	3	1/11	Ernest Lewis was a graduate student at the time he wrote his report and it was done for a seminar class requirement for the University of Hawaii, Dept. of Anthropology under the supervision of Bishop Museum.
5	3	1/12	*Berrera* in the reference should read *Barrera*.
6	3	1/--	In 1979, another cultural resources survey was completed by Bishop Museum in the New Dredged Material Disposal Site, for the U.S. Army Corps of Engineers. However, the final report is still pending.

comment number	page	paragraph/line number	comments
7	4	1/2	*Intensive* should be changed to read *extensive*.
8	4	1/11-15	How many test pits were excavated?
9	4	3/--	Sugar cane production does not necessarily preclude the presence of subsurface features. Although it would obviously be unfeasible to systematically test all the areas presently or formerly under sugarcane production, archaeological monitoring during construction activities should be included as a recommendation in Section VI of the report.
10	11	1/--	How many auger holes were placed and at what interval? Specific locational information is lacking. Also, sand dunes are high potential areas for paleontological materials. Was this considered?
11	14	1+2/--	The remains at West Beach are probably part of the whole Barbers Point complex. A more detailed comparison of site and feature types with the adjoining areas seems desirable.
12	14	3/4-5	This statement seems to contradict what was stated in the preceding paragraph. Also, even sites of recent or historic vintage have more than just research significance. Interpretive potential for incorporation with planned development is certainly one alternative to destroying sites "with no regard."
13	15	--/7	In our view site 1436 is an excellent candidate for preservation and incorporation into the development plans for public interpretation.
14	16	3/17	Again the term *cultural values* should be clarified.
15	27	2/3	Site B6-139 was a water filled sinkhole. Underwater surface recovery was conducted, not excavations.

BIRDS OF WEST BEACH, EWA, OAHU, REGION - Statement on possible fossil bird sites- by Andrew J. Berger, Oct. 5, 1979

comment number	page	paragraph/line number	comments
1	1	3/5-6	Does "no soil deposit" mean sinkholes with bare substratum exposed? Or are they rubble filled? This is an important point since some previously tested sinkholes revealed soil fill below the rubble.
2	2	1/7	We have found in the past that having a paleontologist in the field during the excavation is highly advantageous since certain identifications can be made on the spot.
3	3	2/2	Dr. Aki Sinoto should be changed to Mr. Aki Sinoto
4	3	2/4-6	This sounds like a personal opinion and should be deleted.
5	3	2/7-14	Dr. Berger appears to have missed the gist of Dr. Olson's "over-exuberance." What was stated by Dr. Olson in his letter, inpart was that, more than any other locale found so far in the Hawaiian Islands, the Barbers Point area affords an excellent opportunity, in view of the material already found, to recover nearly complete and sometimes even articulated skeletal remains.
6	4	4/5-7	"Fossil banks" are definitely necessary in the Barbers Point Region along with some possibility for public interpretation. However, the two objectives are not compatible. The banks should be restricted from public access to ensure no disturbance and integrity of the data for future scientific applications.
7	4	4/8	Dr. Sinoto should be changed to Mr. Sinoto.

comment number	page	paragraph/line number	comment
8	4	4/8-11	This closing statement seems totally irrelevent to all of the preceding statements in the paper. Without close security of the sinkholes and without subsurface data, statements like this should not be made. As an illustration, the results of recent Bishop Museum investigations have shown that from 24 sinkholes tested in another portion of Barbers Point 82% yielded avifaunal remains and of these 19% were immediately identifiable as probable extinct species. The last statement should be deleted, because it poses an inherent danger of being misinterpreted as a conclusive one.

Other than these specific comments presented above a few general comments regarding the archaeological report is presented below.

1) The descriptive portion of the report appears to be adequate although a little more detailed map locations would have been helpful, especially for those areas that overlap with previous surveys including the Deep Draft Harbor Areas. More information is definitely needed for the auger tested pits and test excavations. Also if the midden and artifacts recovered could be summarized on a table it would aid the reader.

2) The discussion or interpretive portion can be expanded with more detailed comparison with the adjoining areas.

3) A discussion of the archaeological areas and how they relate to the development plan is lacking. For instance, are some of the sites in an area where preservation or incoporation would be compatible with the development plans, etc. What is being planned in the specific sited areas?

4) Also, for the recommendation section, six sites are slated for either salvage excavation or preservation. It should be further clarified which sites realistically should be preserved since not all six probably would be. If a choice is left open for either salvage or preservation, there is the danger that all of the sites will be salvaged and none will be preserved. With coordination and cooperation with the developer, the archaeologist should formulate a program of preservation along with some provisions for public interpretation.

5) The point should also be made that, according to previous site excavations, the perimeter of surface structural remains do not necessarily define the limits of the site. Very often in the course excavation the cultural deposit was shown to extend beyond the surface limits. This should be considered during the formulation of the recommendations.

We feel that the Barbers Point and West Beach area is an important cultural and scientific resource for Hawaii.

We appreciate this opportunity to review Mr. Barrera's report and hope that our comments will be helpful. If you have any questions or comments, please feel free to call me at 847-3511 x. 191.

Sincerely,

Aki Sinoto
Dept. of Anthropology
B. P. Bishop Museum

AS:pb

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

August 29, 1984

Mr. E. Creutz, Director
Bishop Museum
P.O. Box 19000-A
Honolulu, Hawaii 96819

Dear Mr. Creutz:

Subject: West Beach Resort Supplemental Environmental Impact Statement Preparation Notice

Thank you for your comments of June 22, 1984 on the subject document. The full texts of technical support studies you have suggested will be included in the Draft EIS Appendices. A botanical and marine biology study will also be included in the Draft EIS.

Thank you for your continued interest in this project.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

1146 FORT STREET MALL, SUITE 200 • P. O. BOX 536 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-8391

June 21, 1984

Tae Yong Kim
Environmental Communications
P. O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Kim:

We are gravely concerned about preliminary assessment of Environmental Impact Statement issues regarding West Beach. The assessment appears to have failed to recognize the extent of the impact of this development in several crucial areas - water availability, socio-economic impacts other than employment, and the overall effect on the Waianae Coast.

We ask that we be a consulted party regarding the West Beach Environmental Impact Statement.

Sincerely,

Billie J. Hauge

Billie J. Hauge
Waianae Land Use Concerns Committee
85-555 Farrington Highway
Waianae, Hawaii 96792
Phone: 696-4261

JUN 22 1984

ENVIRONMENTAL COMMUNICATIONS INC.

F J RODRIGUEZ,
PRESIDENT

August 29, 1984

Ms. Billie J. Hauge
Waianae Land Use Concerns Committee
85-555 Farrington Highway
Waianae, Hawaii 96792

Dear Ms. Hauge:

Subject: West Beach Resort Supplemental Environmental Impact Statement Preparation Notice

Thank you for your review and comments of June 21, 1984 on the subject document. We would like to respond to your comments by noting that this Preparation Notice is an announcement that a full scale EIS will be prepared. It is not the intent of a Preparation Notice to disclose in detail, all aspects of the proposed project, however, your comments are noted and will be addressed to the fullest extent possible in the following EIS.

We appreciate your continued interest in this project.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

University of Hawaii at Manoa

A Sea Grant College
1000 Pope Road, Room 213 • Honolulu, Hawaii 96822
Telephone (808) 948-8191 • Cable Address: UNIHAW

Sea Grant Extension Service

June 13, 1984

R.J. Rodriguez
Environmental Communications, Inc.
P.O. Box 536
Honolulu, Hawaii 96809

Dear Mr. Rodriguez:

Thank you for sending us a copy of the environmental assessment for West Beach. We do want to be consulted as you prepare the Environmental Impact Statement, but there are some changes you should be aware of. We are now called the Leeward Ocean Advisory Council and can be contacted care of the Sea Grant Extension Service at 85-067 Farrington Hwy. WAIANAE HI 96792 The telephone number is 696-3090.

The members of the council were given copies of the assessment, but have not yet discussed it. However, as active members of the marine community the members' comments should be of value. When we discuss the assessment our comments will be forwarded to you.

I look forward to discussing this project with you as I am sure some of the members are.

Sincerely,

Mark Suiso
Oahu Agent

AN EQUAL OPPORTUNITY EMPLOYER

JUN 20 1984

ENVIRONMENTAL COMMUNICATIONS INC.

F. J. RODRIGUEZ, PRESIDENT

August 29, 1984

Mr. Mark Suiso
Oahu Agent
Leeward Ocean Advisory Council
Sea Grant Extension Service
85-067 Farrington Highway
Waianae, Hawaii 96792

Dear Mr. Suiso:

Subject: West Beach Resort Supplemental Environmental Impact Statement Preparation Notice

Thank you for your contacting us on the changes in your organization. You will be sent copies of the EIS to your new address as they are completed.

We appreciated your continued interest in this project.

Very truly yours,

F. J. Rodriguez

FJR:ls

HAWAII'S THOUSAND FRIENDS
Blaisdell on the Mall, Suite 402 • 1154 Fort Street • Honolulu, Hawaii 96813 • (808) 538-1296

May 30, 1984

Mr. Taeyong Kim
Environmental Communications, Inc.
P.O. Box 536
Honolulu, Hawaii 96809

Re: Environmental Assessment/Preparation Notice for the Proposed West Beach Resort

Dear Mr. Kim:

We wish to be consulted parties in the preparation of the EIS for the West Beach Resort project.

The following areas of our concern should be more fully explored in the EIS:

1. The affects of dredging and blasting on the fresh water basal lens (the Pearl Harbor aquifer in particular) and the marine environment.

   A complete and extensive discussion is mandatory.

2. Secondary impacts of water commitments.

   Because water demands in relation to supplies are reaching critical proportions islandwide, especially for the Pearl Harbor aquifer, we think a discussion of the secondary impacts of water commitments made for this project would be helpful. For example, will water commitments for this project result in shortages or deprivations elsewhere in the City and County?

3. The effects of increased traffic on H-1 both Ewa and Diamond Head bound.

   It is probably not realistic to assume <u>all</u> (or even a vast majority) of West beach residents will both live and work in the area because: 1) there is no mention of a commitment to hire locally; and 2) tourist industry jobs are primarily service-related and there is no indication of the ability of these workers to afford to live in West Beach. Commuting workers will have some affect on H-1 and Farrington Highway during peak hours.

MAY 31 1984

4. The intended market for the low and medium density apartments.

   We are pleased to see that more units are being provided for residential use. However, experience in resort areas indicates that these kind of condominium units are often rented to transient visitors (rather than permanent residents) and become a de facto resort use, changing the nature of the residential community. Will such uses result?

5. The Socio-Economic Impacts on the Ewa and nearby Nanakuli/Waianae communities.

   The assesment only discusses social benefits of the project, but the influx of development is likely to cause some adverse affects on these communities as well. Indeed, we find it curious that no mention was made of already existing opposition to the project by Waianae residents. The EIS should also discuss the secondary growth impacts or demands on neighboring rural communities such as Waianae/Nanakuli and perhaps in the broader Ewa and Central Oahu areas.

We thank you for this opportunity to participate in the preparation of the EIS for this project. We hope you will find these comments helpful.

Sincerely yours,

Kathryn Momi Albu

Kathryn Momi Albu

KMA:rm

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

August 29, 1984

Ms. Kathryn Momi Albu
Hawaii's Thousand Friends
Blaisdell on the Mall, Suite 402
1154 Fort Street
Honolulu, Hawaii 96813

Dear Ms. Albu:

Subject: West Beach Resort Supplemental Environmental Impact Statement Preparation Notice

Thank you for your review and comments of May 30, 1984 on the subject document. In response to your comments, we offer the following:

1. A complete discussion will be included in the EIS on the potential impacts to be anticipated during the construction of the Lagoon Marine System, and the mitigative measures and impacts associated with these actions. Impacts on the fresh water lens and aquifer will be covered.

2. The proposed water plan has been developed around a dual system which utilizes brackish water for all irrigation and potable water coming from pure sources. This should minimize the amount of potable water extracted for the project and conserve the islands fresh water sources. Water impacts will be fully discussed in the EIS.

3. A traffic study has been conducted and will be included in the EIS. The design engineers will be working closely with the Department of Transportation.

4. The residential portion of the West Beach Resort is intended to be a stable, comprehensive community. The development will contain ten percent affordable housing allocation in addition to providing a new housing alternative to Oahu's population.

5. We recognize that a project the size of West Beach Resort will have some socio-economic impacts on nearby communities. Due to the subjective nature of social and economic values, it is very difficult to completely address all impacts; however, all attempts will be made to address these concerns in the EIS in accordance with the Rules and Regulations promulgated under the provisions of Chapter 343, HRS.

We appreciate your continued interest in this project.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

1146 FORT STREET MALL SUITE 200 • P. O. BOX 536 • HONOLULU HAWAII 96809 • TELEPHONE (808) 521-8391

Native Hawaiian Legal Corporation

1164 BISHOP STREET, SUITE 1102, HONOLULU, HAWAII 96813 TELEPHONE (808) 521-2302

June 5, 1984

Tae Yong Kim
Environmental Communications, Inc.
P.O. Box 536
Honolulu, Hawaii 96809

Re: <u>Supplemental EIS for West Beach Project</u>

Dear Mr. Kim:

On behalf of my clients, Eric Enos, Angel Pilago, Lewi Kaawa, David Cullen, the Waianae Land Use Concerns Committee and Na Opio Aloha Aina, I request that you send me your notice of preparation for the Supplemental Environmental Impact Statement related to the West Beach Development.

Please place me on your mailing list for comments and any subsequent mailings related to this process.

Sincerely,

ALAN T. MURAKAMI
Staff Attorney

ATM/co
cc: Eric Enos
Angel Pilago
Lewi Kaawa
David Cullen

JUN 12 1984

ENVIRONMENTAL COMMUNICATIONS INC.

F. J. RODRIGUEZ, PRESIDENT

August 29, 1984

Mr. Alan T. Murakami
Staff Attorney
Native Hawaiian Legal Corporation
1164 Bishop Street, Suite 1102
Honolulu, Hawaii 96813

Dear Mr. Murakami:

Subject: <u>West Beach Resort Supplemental Environmental Impact Statement Preparation Notice</u>

Thank you for your request of June 5, 1984.

A copy of the subject document has been sent to you as requested. Your name has been placed on our list of consulted parties and you will receive the draft and final copies of the subject EIS.

Thank you for your continued interest in this project.

Very truly yours,

F. J. Rodriguez

FJR:ls

1146 FORT STREET MALL, SUITE 200 • P. O. BOX 536 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-8391

13.6 COMMENTS RECEIVED AFTER DISTRIBUTION OF 1980 FEIS

The following letters were received after distribution of the generic 1980 West Beach Resort FEIS.

ORGANIZATIONS/AGENCIES	Date of Comments
Federal Agencies	
U.S. Environmental Protection Agency	01/09/81
U.S. Department of the Interior	02/03/81 & 08/19/80
Federal Highway Administration	01/02/81
U.S. Coast Guard	12/31/80
Naval Base Pearl Harbor	12/31/80
Advisory Council on Historic Preservation	01/08/81
National Marine Fisheries Services	01/09/81
Fish and Wildlife Service	01/12/81
State of Hawaii	
Department of Accounting & General Services, Division of Public Works	12/26/80
Department of Education	12/19/80
UOH Water Resources Research Center	12/30/80
Department of Planning and Economic Development	01/02/81
Department of Transportation	01/09/81
Department of Defense	01/22/81
West Oahy Soil & Water Conservation District	01/08/81
City & County of Honolulu	
Oahu Civil Defense	12/11/80
Department of General Planning	12/23/80
Department of Housing & Community Development	12/23/80
Department of Transportation Services	12/31/80
Police Department	01/16/81 & 12/16/80
Board of Water Supply	01/14/81
Fire Department	01/22/81 & 12/16/80
Organizations	
Hawaiian Telephone Company	12/17/80 & 02/20/81
Hawaiian Electric Company	01/06/81
Waipahu Community Association	02/13/81

5) Possible water quality problems which may result from overdraft of groundwater and the secondary impacts of development of additional water supplies;

6) The need for additional wastewater treatment facilities, the impacts of construction of new facilities, and if necessary, implementation of mitigation measures;

7) The potential impacts on existing stream ecosystems and the surrounding environment which may result from rerouting streams and drainage way construction;

8) The impacts on marine life and habitat from increased levels of nitrogen and phosphorous resulting from stormwater runoff and development of any necessary mitigation measures.

404 Permit Issues

Supplements to the FEIS should adequately address those impacts which may result from activities which would require a 404 permit. At present, adequate information is not available to assess whether the project is in conformance with the requirements of Section 404(b) of the Clean Water Act, 1977.

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

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ER-80/653

Colonel Alfred J. Thiede, District Engineer
U. S. Army Corps of Engineers
Honolulu District
Operations Branch
Building 230
Fort Shafter, Hawaii 96858

Dear Colonel Thiede:

The Department of the Interior has reviewed the final environmental statement for Recreational Marina and Beach Lagoon, West Beach Resort Project, Island of Oahu, Hawaii. We offer the following comments to supplement our letter of August 19, 1980, which was not included in the final environmental statement.

A supplement to the final environmental statement should address the following cultural resources concerns.

Protection of cultural resources determined eligible for the National Register of Historic Places is required by Executive Order 11593 and the National Historic Preservation Act of 1966, as amended. In addition, the National Environmental Policy Act of 1969 extends protection to cultural resources of local, State and national significance which do not meet the National Register of Historic Places criteria. Results of surveys, studies, and coordination with appropriate officials, as well as any Memorandum of Agreement with the Advisory Council on Historic Preservation should be included in the supplemental statement to provide evidence of compliance with historic preservation statutes. Discussion of a reduction in the size of the resort complex, to lessen archeological data loss, could also be included in the supplement.

We note that findings of the 1979 survey conducted by Barrera "suggest that the sites are a continuation of the archeological site pattern and distribution of the Barber's Point Archeological District surveyed by the Bishop Museum and the Archeological Research Center-Hawaii" (page 130, final environmental statement). If this is the case, appropriate action should be taken in coordination with the State Historic Preservation Officer to determine the eligibility of the sites as an extension of the Barber's Point Archeological District (District). Further, we take this opportunity to remind the Applicant that impacts to that portion of the District located within the project boundary will have an adverse impact on the District as a whole.

1512-SD FEIS

Thank you for the opportunity to comment.

Sincerely yours,

Cecil S. Hoffmann

CECIL S. HOFFMANN

Assistant Secretary of the Interior

cc: Mr. Susumu Ono
Division of State Parks
Department of Land and Natural Resources
Post Office Box 621
Honolulu, Hawaii 96809

UNITED STATES DEPARTMENT OF THE INTERIOR

OFFICE OF THE SECRETARY

PACIFIC SOUTHWEST REGION
BOX 36098 • 450 GOLDEN GATE AVENUE
SAN FRANCISCO, CALIFORNIA 94102
(415) 556-8200

AUG 1980
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ER 80/653 August 19, 1980

Send to ... open ...

CF; POD D-PV
Mike ...

Colonel D. R. Schlapak
U. S. Army Engineer District, Honolulu
Building 230
Ft. Shafter, Hawaii 96858

Dear Colonel Schlapak:

The Department of the Interior has reviewed the draft environmental statement for West Beach Resort, Island of Oahu, Hawaii and offers the following comments.

General Comments

We believe that for a development of the magnitude and scope of the proposed West Beach Resort the impact analysis should include a more thorough evaluation of local project-related effects on ground-water resources. Ground-water considerations in the immediate vicinity of the project area should be levels (referred to mean sea level), quality of the water in the principal aquifer (preferably at various depths), well capacities (yields, and drawdowns or sustained specific capacities), and transmissivity and storage co-efficients for the principal aquifer in the area. Such data should then be incorporated in the evaluation of effects of the planned withdrawal. The district office of the U. S. Geological Survey may be able to advise on these matters. The address is U.S. Geological Survey, Water Resources Division, 300 Ala Moana Boulevard, Room 6110, P.O. Box 50166, Honolulu, Hawaii 96850.

The project area is underlain partially by a calcareous reef, which is used, in nearby areas, as raw material for the manufacture of cement. Completion of the project will eliminate an unknown quantity of calcareous materials from economic use, but sufficient resources for cement production are available nearby. The existence of this calcareous reef should be acknowledged in the DEIS, probably under 8.5, Geology, page 33.

To the south, Cypress Hawaiian Cement Corporation mines coral for use as raw material in the manufacture of cement. This resource is sufficient to last over 20 years. Construction and maintenance of the project should benefit the island's mineral economy.

(517-5D
DEIS

Potential adverse effects identified for the Barber's Point Archeological District may require the preparation of a Memorandum of Agreement (MOA) between the project sponsor, the Army Corps of Engineers, and the Advisory Council on Historic Preservation. The MOA establishing mitigation measures to preserve or protect this property found to be eligible for the National Register of Historic Places should be included in the final environmental statement.

Specific measures to minimize harm to the paleontological resources at the project site should also be addressed in the final statement.

Provision of recreational resources in the proposed project will significantly improve recreational opportunities in the region. Consideration should be given to possible inclusion of hike-bikeways in the proposed project, in addition to the other proposed recreational facilities.

The DEIS adequately addresses most of the expected general impacts on fish and wildlife resources resulting from the maximum density proposed project, however, the impact on the off-shore fishing area known as the "Barbers Point Banks" was not addressed. The only impact on fish indicated in the DEIS was due to increased shoreline accessibility. No mention was made of the role of the nearshore area as a nursery for species important in the offshore fishery or the project's impact thereon. This concern was previously pointed out in Fish & Wildlife Service comments on the reports entitled Proposed West Beach Project, Lagoon and Marina Studies, and Environmental Conditions Anticipated in Two Lagoons and A Marina for Proposed West Beach Development.

Specific Comments

Page 33, Geology, and page 34, Soils. The discussion of geology relates primarily to water resources and that of soils to erosion. The statement should also evaluate the adequacy of the soils and rocks as foundation for the proposed structure. Sink holes, reported in the project area, could present a hazard for construction.

Summary

In view of a lack of a thorough evaluation of impacts on ground-water resources, and of site specific impacts related to the precise placement, orientation and size of various project components on fishery resources, the draft EIS does not appear to provide a sound basis for decisionmakers responsible for project approval. We recommend that these inadequacies be remedied before a final EIS is released.

Thank you for the opportunity to review this document.

Sincerely yours,

Patricia S. Port

Patricia Sanderson Port
Regional Environmental Officer

cc: Director, OEPR (w/copy incoming)
Director, Fish and Wildlife Service
Director, Heritage Conservation & Recreation Service
Director, National Park Service
Director, Geological Survey
Director, Bureau of Mines
Reg. Dir., FWS
Reg. Dir., HCRS
Reg. Dir., NPS
Reg. Dir., GS
Reg. Dir., BM

DL15

Rec'd 9 Jan '81

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
REGION NINE
Two Embarcadero Center, Suite 530
San Francisco, California 94111

ARIZONA
CALIFORNIA
NEVADA
HAWAII
GUAM
AMERICAN SAMOA

January 2, 1981

IN REPLY REFER TO
HEP-09

DE
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ADES
EA
SA

Colonel Alfred J. Thiede
Honolulu District Engineer
U. S. Army Corps of Engineers
Building 230
Fort Shafter, Hawaii 96858

Dear Colonel Thiede:

We have reviewed the final environmental impact statement for the proposed West Beach Resort Project, Ewa District, Island of Oahu, Hawaii, and find that the responses to our draft EIS comments regarding highway geometrics, capacity, and traffic generation are inadequate. Our specific concerns are outlined below.

1. Comments from the Hawaii Department of Transportation concerning the feasibility and acceptability of the H-1 interchange and the Farrington Highway at-grade intersection concepts are appropriate since outright rejection of these facilities could result in significant adverse impacts on the existing highway facilities.

2. The 1990 traffic volumes will reach level of service E, as indicated in the EIS, and no mitigating measures are provided. The EIS needs to provide the measures that will facilitate traffic flow in 1990.

3. The lane capacity of 1600 VPH of mixed traffic is valid for freeway operation. However, for expressway operation, the service volume will be reduced by the number of turning movements and the stopping condition. If the intersection is signalized, the maximum lane capacity is 1600 during "green time."

4. The DHV/ADT ratio at Farrington Highway and H-1 is approximately 10 to 11%, which is much higher than the 8.4% indicated in the EIS as the ratio for residential areas. In a residential neighborhood operation, the DHV/ADT ratio should be around 12%.

5. The project-generated peak-hour traffic provided in the EIS includes only the residential traffic (866 VPH during the PM peak). Traffic generated by the hotel/condominium and

marina operations is not included. There is no guarantee that the hotel/condominium, and marina traffic will use the off-peak hours for traveling.

6. The City master plan for the development of the entire West Beach area needs to be discussed relative to the highway capacity and safety of existing and future highway facilities. Full development of the West Beach area will generate additional traffic and decrease highway safety beyond the adverse future condition identified for the proposed West Beach Resort project.

7. The EIS discusses possible mass transit service (page 128); however, transit is not included on page 39 as mitigation to be considered to reduce highway congestion. In fact, it is proposed on page 39 to reduce population density. Population densities should be increased or clustered to promote transit usage.

The Federal Highway Administration Hawaii Division staff is available to discuss the above concerns and the technical aspects of the traffic analysis with your staff and/or the traffic consultant. Please contact Mr. Losh Kusumoto, Federal Highway Administration, Box 50206, Honolulu, Hawaii 96850 at (803) 546-5150.

We would also appreciate receiving a copy of the "Traffic Impact Statement for West Beach Resort Project," August 1979, by Mr. Henry T. Au. Please send it to Mr. Losh Kusumoto at the address listed in the previous paragraph.

Thank you for this opportunity to review the subject final environmental impact statement.

Sincerely yours,

Richard A. Torbik
Associate Regional Administrator
for Planning and Program Development

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

COMMANDER (dpl)
Fourteenth Coast Guard District
Prince Kalanianaole Federal Bldg.
300 Ala Moana Blvd
Honolulu, Hawaii 96850

11000

31 DEC 1980

Department of the Army
U. S. Army Engineer District, Honolulu
Building 230
Ft. Shafter, Hawaii 96858

Gentlemen:

The Fourteenth Coast Guard District is concerned about the proposed West Beach Resort's impact on both safe navigation and the marine environment. Consequently, we submit the following comments and suggestions for the project's Environmental Impact Statement (EIS).

The proposed marina is located near Barbers Point Harbor. If Barbers Point Deep Draft Harbor is developed as planned, a separate channel should be dredged for the marina.

The Coast Guard may require that the entrance channel to the marina be marked with private aids to navigation.

In reference to the statement on boat discharges into the marina on page 81, "(i.e. holding tanks)" should read "(e.g. holding tanks)." Federal laws regulate and require marine sanitation devices (MSD's) for all vessels with installed toilets. However, not all MSD's are holding tanks. Type III MSD's are "no discharge" devices. This type of device could be a holding tank. Type I and Type II devices discharge treated sewage. Some vessels have portable toilets which are not regulated and might be dumped over the side.

We strongly concur with your proposal that a disposal facility for Type III MSDs and portable toilets be installed at the marina. These devices are probably emptied at sea at the present time. We also recommend that the EIS consider the possible problem of sewage from live aboards.

In addition to the problem of sewage pollution, the Coast Guard is also interested in preventing oil pollution. We recommend that the marina have a waste oil facility for boaters who wish to empty their oil themselves. We also recommend that the housing project have a waste oil facility. As a final suggestion, the marina should have a small oil spill clean-up capability in case a spill does occur.

Any fueling facilities which might be constructed at the proposed marina may be regulated by 33 CFR 154 and 33 CFR 156. However, these regulations are only for facilities involved in the bulk transfer of oil to or from a vessel that has a capabity of 250 or more barrels of oil

Thank you for the opportunity to comment on your proposed project's EIS. If you have any questions concerning our comments or suggestions, please contact LTJG DEBORAH COOK at 546-2862.

Sincerely,

J. E. Schwartz

J. E. SCHWARTZ
Commander, U. S. Coast Guard
District Planning Officer
Fourteenth Coast Guard District
By Direction

Rec'd 4 Jan 81

HEADQUARTERS
NAVAL BASE PEARL HARBOR
BOX 110
PEARL HARBOR, HAWAII 96860

IN REPLY REFER TO:
002:RDE:amn
Ser 2678
31 DEC 1980

District Engineer
U.S. Army Engineer District, Honolulu
Fort Shafter, Hawaii 96858

Dear Sir:

Final Environmental Impact Statement (EIS)
for the Proposed West Beach Resort, Honouliuli
Ewa District, Island of Oahu, Hawaii

Thank you for the opportunity to comment on the subject Final EIS which was forwarded by your letter of 2 December 1980. Our comments are as follows:

a. Conceptual Design. This document does not provide specific designs for structures to be included within the development. Figure 3 is only a proposed concept which is subject to change. It is difficult to address specific projects that remain so nebulous at this stage of approval. The height of the buildings, the exact location and the configuration of the design may well affect any noise considerations. Paragraph 9.4.7 at the top of Page 103 states: "Existing information indicates that special sound attenuation measures are not presently required. The applicant has indicated that special acoustical design features could be implemented if necessary to minimize the potential future conflict." This should be required.

b. Future Resolution. The developer argues that any future problems must be resolved between the developer and the U.S. Navy. It is stated, again in paragraph 9.4.7 on page 103, that:

"The compatibility of the proposed development with the operation of the NAS will have to be resolved between the applicant and NAS representatives."

and further:

"The applicant understands and acknowledges the military mission of the air base and the potential for accidents and indicates he will work closely with the Navy to work out a suitable solution to any conflict."

No liaison has been established to date with the Navy in order to discuss any conflicts. The purpose of the EIS process is to work out environmental problems in advance, clearly defining any mitigation measures and alternatives. As such, resolution of conflicts should not be postponed to some future date, nor should they be resolved at the expense of the Navy, which has posed, as yet unresolved, serious questions concerning this project. Experience has well

demonstrated that developers later feel little pressure to resolve questions amicably once necessary permits have been obtained.

Therefore, it is requested that specific design information be included in a supplement, and that the question of potential future air accidents be discussed directly in the Final EIS at this time.

In addition to this development, the Navy has provided comments on the EIS for the proposed Ewa Marina Community Projects. These two projects cannot be treated in isolation of each other. Their combined impact has greater consequences then an isolated review of the two projects would indicate. Should the Ewa Marina Project, which is heavily exposed to aircraft noise go forward, the Navy would expect heavy pressure to alter flight paths which would be a detriment to flight safety and create substantial additional noises over the West Beach Resort Project.

Should the various regulatory agencies review and approve these two Environmental Impact Statements independently, they may fail to understand the true aircraft noise problem. The Navy is very concerned with the approach taken by both developers to place the burden of eliminating aircraft noise on the Navy when it is absolutely impossible to accommodate both developments without substantial mission degradation.

Again, thank you for the opportunity to comment on this EIS.

Sincerely,

R. D. Eber

R. D. EBER
Captain, CEC, USN
Facilities Engineer
By direction of the Commander

Copy to:
State OEQC
Environmental Communications, Inc.
State DLNR
City DLU
COMPACNAVFACENGCOM
CO NAS BARBERS POINT

Advisory Council On Historic Preservation

1522 K Street, NW
Washington, DC 20005

Reply to:
Lake Plaza South, Suite 616
44 Union Boulevard
Lakewood, CO 80228

JAN 12 1981

January 8, 1981

Colonel Alfred J. Thiede
District Engineer
U.S. Army Engineer District
Building 230
Ft. Shafter, Hawaii 96858

Dear Colonel Thiede:

The Council has reviewed your final environmental impact statement for the proposed West Beach Resort, Oahu, Hawaii, circulated for comment pursuant to Section 102(2)(c) of the National Environmental Policy Act. We note that the undertaking will affect Barber's Point Archeological District, a property included in the National Register of Historic Places. Circulation of an environmental impact statement, however, does not fulfill your agency's responsibilities under Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. Sec. 470f, as amended, 90 Stat. 1320).

Prior to the approval of the expenditure of any Federal funds or prior to the granting of any license, permit, or other approval for an under-taking, Federal agencies must afford that Council an opportunity to comment on the effect of the undertaking on properties included in or eligible for inclusion in the National Register of Historic Places in accordance with the Council's regulation, "Protection of Historic and Cultural Properties" (36 CFR Part 800). Until these requirements are met, the Council considers the environmental statement incomplete in its treatment of historical, archeological, architectural, and cultural resources. You should obtain the Council's comments through the process outlined in 36 CFR Section 800.9. These comments should then be incor-porated into any subsequent documents prepared to meet requirements under the National Environmental Policy Act. Charles M. Niquette may be contacted at (303) 234-4946 for further assistance.

Sincerely,

Louis S. Wall
Chief, Western Division
of Project Review

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
Western Pacific Program Office
P. O. Box 3830
Honolulu, Hawaii 96812

JAN 12 1981

January 9, 1981

F/SWR1:JJN

Colonel Alfred J. Thiede
District Engineer
U. S. Army Engineer District,
Honolulu
Building 230
Ft. Shafter, Hawaii 96858

Dear Colonel Thiede:

Subject: PODCO-O 1512-SD. Preparation of Final Environmental Impact Statement for West Beach Resort, Ewa, Oahu, Hawaii.

The National Marine Fisheries Service (NMFS) has reviewed the final Environmental Impact Statement (EIS) for the proposed West Beach Resort which we received on December 8, 1980.

Our comment letter on the draft EIS (dated August 7, 1980) was included in Appendix B of the final document. We were pleased to note that each comment made by this agency was responded to in the final EIS, therefore we have no further comments to make at this time.

It is our understanding that the document is a programmatic EIS and supplements will follow dealing with specific aspects of the proposed West Beach Resort development. No decisions on Section 10 and Section 404 permit applications will be made until the EIS supplements are filed.

Sincerely yours,

Doyle E. Gates
Administrator

cc: F/SWR3
F/HP
FWS, Honolulu
Hawaii State Div. of
Fish and Game

#1512

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:
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Room 6307 JAN 1981

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January 12, 1981

Colonel Alfred J. Thiede
U.S. Army Engineer District Honolulu
Building 230
Fort Shafter, Hawaii 96858

Re: PODCO-O 1512-SD
Final EIS for West Beach
Resort, Ewa District,
Oahu, Hawaii

Dear Colonel Thiede:

We have reviewed the referenced public notice dated January 5, 1981 concerning the Final Environmental Impact Statement (EIS) for the proposed West Beach Resort, Ewa, Oahu, Hawaii.

This report has been prepared under the authority of and in accordance with the provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and other authorities mandating Department of the Interior concern for environmental values. It is also consistent with the intent of the National Environmental Policy Act.

We understand that this EIS is a programmatic EIS and that it will be followed by EIS supplements which will concentrate on specific issues. This is a logical approach, and we will comment on appropriate supplements as they are developed.

Our particular concerns for this project are contained in Service comments of May 21, 1980 on the EIS Preparation Notice and comments on August 19, 1980 by the Interior Regional Environmental Officer on the Draft EIS.

We appreciate this opportunity to comment.

Sincerely yours,

Nevin D. Holmberg
Deputy Project Leader for
Environmental Services

cc: NMFS,
HDF&G
EPA, San Francisco

CONSERVE AMERICA'S ENERGY

Save Energy and You Serve America!

GEORGE R. ARIYOSHI
GOVERNOR

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

HIDEO MURAKAMI
COMPTROLLER

MIKE N. TOKUNAGA
DEPUTY COMPTROLLER

LETTER NO. (P)3207.0

DEC 26 1980

Colonel Alfred J. Thiede
District Engineer
U.S. Army Engineer District,
Honolulu
Building 230
Fort Shafter, Hawaii 96858

Dear Colonel Thiede:

Subject: Final Environmental Impact Statement,
West Beach Project

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

The project will not have any adverse environmental effect on any existing or planned facilities serviced by our department.

Very truly yours,

RIKIO NISHIOKA
State Public Works Engineer

MI:ck

#1617

FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU
1455 S. BERETANIA STREET, ROOM 305
HONOLULU, HAWAII 96814

EILEEN R. ANDERSON
MAYOR

JAN 1981
M. M. NONAKA
CHIEF

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DDE
ADE

January 22, 1981

Colonel Alfred J. Thiede
Corps of Engineers
District Engineer
U. S. Army Engineer District
Department of the Army
Fort Shafter, Hawaii 96858

Dear Col. Thiede:

RE: Environmental Impact Statement (EIS) for Proposed West Beach Resort, Ewa District, Oahu

At present there is one engine company at each of the fire stations at Nanakuli and Makakilo. With the increase in population and vehicle traffic in the projected site, we are requesting that the developer set aside a site on which a new fire station can be constructed. The new fire station will house an engine company and a ladder company. This would require a total of 33 additional staff, appropriate equipment and buildings. The construction, staffing and maintenance of this fire station will require public funding.

Should you have any questions, please contact Assistant Chief Lawrence Suganuma at 955-8304.

MELVIN M. NONAKA,
Fire Chief

MMN:LS:clt

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December 17, 1980

Colonel Alfred J. Thiede
District Engineer
Department of Army, Corps of Engineers
U.S. Army Engineer District, Honolulu
Bldg. 230, Ft. Shafter, Hawaii 96858

Dear Sir:

Final Environmental Impact Statement (FEIS) for Proposed West Beach Resort Project, Ewa District

We have reviewed the FEIS for the above project and have no further comments to offer.

Thank you for the opportunity to review the project.

Very truly yours,

G. Kaneko
Oahu Engineering & Construction
Manager

HAWAIIAN ELECTRIC COMPANY, INC.
Box 2750 / Honolulu, Hawaii / 96840
January 6, 1981

RICHARD L. O'CONNELL P.E.
MANAGER, ENVIRONMENTAL DEPARTMENT

ENV 2-1
NV/G JAN 1981

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cf: Env R Sect.

Colonel Alfred J. Thiede
Corps of Engineers
District Engineer
Department of the Army
U. S. Army Engineer District
Building 230
Ft. Shafter, Hawaii 96758

Dear Colonel Thiede:

Thank you for the opportunity to review and comment on the Final Environmental Impact Statement (FEIS) for the Proposed West Beach Resort Project, File No. PODCO-01512-SD. We have the following comments to submit for consideration in the supplements to the FEIS:

Table 7, page 84. The State Standards shown for nitrogen dioxide are actually for nitrogen oxides and the table should be corrected accordingly.

Par. 9.3.12, page 85 is no longer correct since HECO has already switched to low sulfur fuel and tall stacks at Kahe.

Par. 9.3.13, page 85. Add to last sentence: "as a result of HECO operations at Kahe."

Par. 9.3.21. We are aware of no modeling studies which indicate that "future nitrogen dioxide levels at West Beach from the Kahe Plant could be higher than the allowable AQS." This applies both to the NAAQS for NO_2 and the SAAQS for NO_x. Our own modeling studies show that sulfur dioxide is the limiting standard and since that standard is now met at Kahe, it may be concluded that the NO_2 and NO_x standards are also being met.

Par. 9.3.40, page 96. Add "under no circumstances, however, would Federal health standards for sulfur dioxide be exceeded at West Beach due to operations at the Kahe Power Plant."

Sincerely,

Richard L. O'Connell
Manager, Environmental Department

JFB:cm
9B

#15/2

GEORGE R. ARIYOSHI
GOVERNOR

OFFICE OF THE SUPERINTENDENT

STATE OF HAWAII
DEPARTMENT OF EDUCATION
P. O. BOX 2360
HONOLULU, HAWAII 96804

CHARLES G. CLARK
SUPERINTENDENT

December 19, 1980

Colonel Alfred J. Thiede
Corps of Engineers
U.S. Army Engineer District, Honolulu
Building 230
Fort Shafter, Hawaii 96858

Dear Colonel Thiede:

SUBJECT: Final Environmental Impact Statement
West Beach Resort Project

The section on Education Services on page 121 of the subject FEIS which was prepared in June, 1980 is still valid and represents a current assessment of the proposed project.

Thank you for the opportunity to review and comment on the final report.

Sincerely,

CHARLES G. CLARK
Superintendent

CGC:HL:jl

cc: Leeward District

AN EQUAL OPPORTUNITY EMPLOYER

#15/3

University of Hawaii at Manoa

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

30 December 1980

Col. Alfred J. Thiede
District Engineer
U.S. Army Engineer District, Honolulu
Building 230
Ft. Shafter, Hawaii 96858

Dear Col. Thiede:

Subject: FEIS for the Proposed West Beach Resort, Honouliuli, Ewa District, Oahu, Hawaii, September 1980

We have reviewed the subject FEIS and offer the following comments:

1. The potable water demand projected at 7.3 to 7.9 mgd appears to be high. The EIS of Ewa Marina estimates their potable water requirement at 4.2 mgd for about 21,000 residents on 570 gross acres. West Beach projects 17,500 residents on 640 gross acres.

2. The water supply source should be confirmed prior to EIS approval, otherwise the project's environmental impact will not be fully addressed. Possibly some alternative supply sources could be investigated.

3. P. 80, para. (5) Salt water intrusion. Dredging of the marina could have serious consequences in that (a) it essentially brings the ocean inland thereby increasing the salt water intrusion into the brackish above-caprock aquifer which is used for irrigation further inland. (b) The marina would also serve to drain the brackish water out of the coral aquifer.

The quantity and quality of these brackish waters to be potentially lost, need to be addressed comprehensively because its degradation would make the water irreplaceably lost to possible future uses such as reverse osmosis reclamation.

Thank you for this opportunity to comment. This EIS was reviewed by WRRC and affiliate personnel.

Sincerely,

Edwin T. Murabayashi

Edwin T. Murabayashi
EIS Coordinator

ETM:jm

cc: Y.S. Fok
H. Gee

DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT
Kamamalu Building 250 South King St. Honolulu, Hawaii • Mailing Address P.O. Box 2359 Honolulu, Hawaii 96804

GEORGE R. ARIYOSHI
Governor

HIDETO KONO
Director

FRANK SKRIVANEK
Deputy Director

January 2, 1981

Ref. No. 2547

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Colonel Alfred J. Thiede
District Engineer
Corps of Engineers
Department of the Army
Building 230
Fort Shafter, Hawaii 96858

Dear Colonel Thiede:

Subject: Final Environmental Impact Statement for the Proposed West Beach Resort

We have reviewed the subject document and offer the following comments for your consideration.

1. West Beach Resorts has responded to some expressed areas of concern of the Hawaii Coastal Zone Management Program (HCZMP) in the project DEIS and has prepared a preliminary evaluation of the project regarding the contents of Chapter 205A-26, Hawaii Revised Statutes (HRS) as requested by this Department in a previous letter dated October 7, 1980. The requested review of the project relative to the contents of Chapter 205A-2, HRS, however, has not yet been submitted. In their letter dated September 2, 1980, Environmental Communications Inc. stated that "the objectives and policies of the Coastal Zone Management Act will be addressed at a future point in the governmental approval and permit process (since Federal permit action is required)." Since a determination of consistency with the State's CZM Program will be required as part of the Federal permit process (15 code of Federal regulations, Part 930), West Beach Resorts should address the contents of Chapter 205A-2, HRS, at the earliest possible time. We maintain that early disclosure of impacts with respect to the HCZMP objectives and policies is justified to assist government decision makers in better assessing the environmental impacts associated with a proposed development.

2. The lack of detailed plans for the configuration and siting of the structures and facilities that are proposed for the project does not allow a comprehensive review of the project relative to the objectives and policies of the HCZMP. None of the supplements to the FEIS have yet been transmitted to our Department. The inclusion of relatively detailed plans which discuss the magnitude and permanence of the environmental and scenic impacts which are expected to occur is suggested. The failure to include this material in the FEIS could potentially disallow any comment we might have on specific aspects of the project and the assessment of the adequacy of mitigation measures which are proposed for various impacts.

3. The FEIS fails to provide complete information on the phasing of the proposed development. Table 1 of the FEIS (Page 29) should include an estimate of the amount of land involved and a time frame for the site preparation and construction components of each phase in addition to the expected type and number of units provided. This additional information would better identify the temporal and cumulative aspects of the anticipated environmental impacts and the adequacy of the proposed mitigation measures.

4. On Page 106, paragraph 5 of the FEIS, West Beach Resorts assumes that the construction of the Barbers Point deep draft harbor will precede the construction of the proposed marina and bathing lagoons, which in turn will occur before the construction of beachfront hotel/condominium units. If this proposed schedule is followed, a prolonged adverse impact on the water quality and coastal ecosystems in the West Beach–Barbers Point area can be expected. It is our feeling that the mitigation measures proposed by West Beach Resorts should better reflect the potential long term nature of these adverse environmental impacts. It was also noted that the sequence of construction outlined in this paragraph would subject the existing residents of the area rather than the new West Beach residents to the anticipated adverse impacts during the construction and blasting phases for the proposed marina.

5. The flow chart presented on Page 3 of the FEIS which details the preparation of EIS supplements for the project relative to the identified and unresolved issues indicates that they will be prepared following agency review of plans and completed environmental studies. We feel that it would be more appropriate for the review of plans to take place after all environmental issues have been assessed.

6. We would appreciate the opportunity to review and comment on any supplemental environmental studies which are produced regarding the many unresolved issues that are listed. These issues are of particular concern to the HCZMP.

Specific Resource Considerations

1. It is a policy of the HCZMP to "insure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline" (Scenic and Open Space Resources, Policy 2). The mitigation measures proposed by West Beach Resorts do not explicitly relate to the preservation of views along the shoreline of the project site. The impact of the project on this element of the area's scenic resources should be discussed and included in the proposed mitigation measures.

2. While West Beach Resorts addresses tsunami flood hazards and proposes preliminary mitigation measures for structures situated in hazardous areas, the potential impacts of tsunamis and storm waves on vessels moored in the proposed marina and their corresponding mitigating measures are not specifically discussed. It is an objective of the HCZMP to "Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion and subsidence" (Coastal Hazards). This topic should be discussed in the FEIS or its supplements.

Alfred J. Thiede
Page 3
January 2, 1981

3. West Beach Resorts states that the excavation of the marina and bathing lagoons could result in considerable damage to abundant coral beds established in the waters fronting the project site. It is an objective of the HCZMP to "protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems" (Coastal Ecosystems). In addition, it is a policy of the HCZMP to "insure that coastal dependent developments such as harbors and ports, visitor industry facilities, and energy generating facilities are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area" (Economic Uses, Policy 2). Since the potential impacts of the development on the coral resources of the area will be significant, the size of the affected area and the proposed mitigation measures should be discussed in detail. This information will allow a more specific assessment of impacts and the adequacy of the proposed mitigation measures.

4. It was noted that a significant number of the dwelling units planned for the West Beach resort are for residential use. The policies of the HCZMP specify "coastal dependent developments" to be harbors and ports, visitor industry facilities, and energy generating facilities (Economic Uses, Policy 2). Furthermore, it is a policy of the HCZMP to "encourage those developments which are not coastal dependent to locate in inland areas" (Scenic and Open Space Resources, Policy 4). Since only a segment of the project site is situated within the Special Management Area (SMA), and that the location of the proposed residential units cannot be precisely determined relative to the boundary of the SMA, a map or document which better details the locational relationships of these factors should be provided. Additionally, a detailed discussion of the mitigating actions should be included in the FEIS or its supplements.

We appreciate this opportunity to comment. If you have any further questions on this matter, please feel free to call our office.

Sincerely,

Hideto Kono

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION

DEPUTY DIRECTORS
JACK K. SUWA
JAMES R. CARRAS
JAMES B. McCORMICK
JONATHAN K. SHIMADA, Ph.D.

IN REPLY REFER TO:
STP 8.6952

January 9, 1981

JAN 13 1981
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Colonel Alfred J. Thiede
District Engineer
Corps of Engineers
U. S. Army Engineer District
Building 230
Ft. Shafter, Hawaii 96858

Dear Col. Thiede:

Final Environmental Impact Statement
for the Proposed West Beach Resort
September 1980

Thank you for the opportunity to review the subject document.

We note the proposed marina and lagoon configuration has yet to be determined and therefore the issues pertaining to the impacts these facilities would have on the social and physical environments remain unresolved. We suggest that a supplement to the EIS be prepared once the size and location of the marina and lagoons have been determined.

We are specifically concerned about any contemplated joint use of the proposed Barbers Point Harbor entrance channel and policies regarding the amount of slips available to the general public, maintenance responsibilities, and use of the boat launching ramp. In addition, we are also interested in the total capacity of the marina and possible contamination to the planned deep-draft Barbers Point Harbor. The above issues should be fully discussed in the suggested supplemental EIS.

The traffic impact anticipated by the proposed resort development appears to be understated. The EIS reflects only the residential land use trips during the peak hour. In our judgment, the other trip generators will also contribute some traffic during the peak hours.

STP 8.6952

Our most conservative estimate of the 1990 peak hour traffic for Interstate Route H-1 with full development of West Beach is 3,650 vehicles per hour. This means that Interstate Route H-1 would be operating between levels of service "E" and "F".

Regarding Figure 11, page 125, FAP 95 does not extend beyond Malakole Road.

Close coordination between the developers and our department must be maintained should the proposal directly or indirectly impact upon our plans, operations, and/or facilities.

Very truly yours,

Ryokichi Higashionna

Ryokichi Higashionna
Director of Transportation

101

GEORGE R. ARIYOSHI
GOVERNOR

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

VALENTINE A. SIEFERMANN
MAJOR GENERAL
ADJUTANT GENERAL

~~THOMAS S. ITO~~
~~BRIGADIER GENERAL~~
~~DEPUTY ADJUTANT GENERAL~~
DANIEL K. C. AU
COLONEL
DEPUTY ADJUTANT GENERAL

HIENG

22 JAN 1981

Department of the Army
U. S. Army Engineer District, Honolulu
ATTN: PODCO-O
Building 230
Ft. Shafter, Hawaii 96858

Gentlemen:

We have received a copy of the Final Environmental Impact Statement (FEIS) for the Proposed West Beach Resort Project, Ewa District, Oahu, Hawaii and have no comments to offer at this time. The FEIS is enclosed.

Sincerely,

Jerry M. Matsuda

JERRY M. MATSUDA
Captain, HANG
Contr & Engr Officer

1 Encl

1512-50

OAHU CIVIL DEFENSE AGENCY
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 523-4121

Cmt - Ops
rcd 19 Dec

FRANK F. FASI
MAYOR

JOHN BOHN
ADMINISTRATOR

December 11, 1980

District Engineer
U.S. Army Engineer District, Honolulu
Building 230
Ft. Shafter, Hawaii 96858

Dear Sir:

In reference to your letter of December 2, 1980 requesting comments on the proposed West Beach Resort development, there are no apparent adverse effects from the standpoint of Civil Defense planning caused by this proposed development.

Sincerely,

JOHN BOHN
Administrator

JB:mc

#1517

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

Planning

FRANK F. FASI
MAYOR

GEORGE S. MORIGUCHI
CHIEF PLANNING OFFICER

DGP12/80-3424(LP)

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December 23, 1980

Colonel Alfred J. Thiede, District Engineer
Corps of Engineers
U. S. Army Engineer District, Honolulu
Building 230
Fort Shafter, Hawaii 96858

Dear Colonel Thiede:

Final Environmental Impact Statement for the Proposed West Beach Resort Project, Ewa, Oahu--Comments Requested by January 2, 1981

We offer the following comments.

Shoreline Access

On page 15 (5.2) and elsewhere, the project is said to improve access to the shoreline. While we concur that the project will increase recreational opportunities, it is doubtful that shoreline access will be improved, on balance, due to restrictions to access at lagoon openings, wave traps and ducts, and due to increased long-shore currents (see our comments on the Draft EIS).

Drainage

We feel that a specific drainage plan is a matter yet to be resolved and that it should be included under Section 5.5, owing to the possibility of significant stress on nearshore coral communities due to urban run-off.

Sincerely,

NED WIEDERHOLT
Acting Chief Planning Officer

NW:fmt

#1512

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 523-4161

FRANK F. FASI
MAYOR

EDWARD Y. HIRATA
MANAGING DIRECTOR

BARRY CHUNG
DIRECTOR

MYRA M. TAKASAKI
DEPUTY DIRECTOR

December 23, 1980

Department of the Army
U.S. Army Engineering
District, Honolulu
Building 230
Ft. Shafter, Hawaii 96858

Gentlemen:

Subject: Proposed West Beach Resort
Environmental Impact Statement

We have no further comment on the subject environmental impact statement.

Thank you for forwarding the FEIS for our review and comment.

Very truly yours,

Barry Chung

#1512

DEPARTMENT OF TRANSPORTATION SERVICES

CITY AND COUNTY OF HONOLULU

HONOLULU MUNICIPAL BUILDING
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR

AKIRA FUJITA
DIRECTOR

TE12/80-3396

December 31, 1980

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Alfred J. Thiede, Colonel
Corps of Engineers
Department of the Army
U. S. Army Engineer District
Building 230
Ft. Shafter, Hawaii 96858

Dear Colonel Thiede:

Subject: Your Letter dated December 2, 1980 Regarding Final Environmental Impact Statement for the Proposed West Beach Resort

We have the following comments on the EIS:

1. In preparing a Development Plan for the area, we recommend that a one-way street system be considered to service the Hotel/Condominium areas instead of dead-end streets.

2. Routes for tour buses and heavy trucks should be considered to minimize or eliminate their undesirable impact on residential areas. Roadways should be designed to accommodate these vehicles. Any traffic impact to West Beach created by the deep draft harbor should be noted.

3. An intra-community bikeway system is recommended for the project.

4. The report should include traffic impact related to weekend and recreational traffic. Also, provisions should be made in the park Master Plan to provide parking incrementally as future recreational activities in these parks increase.

5. Special consideration should be given to freight and tour bus loading activities in hotel areas.

Thank you for providing us this opportunity to review and comment on the EIS.

Very truly yours,

AKIRA FUJITA
Director

POLICE DEPARTMENT

CITY AND COUNTY OF HONOLULU

1455 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96814 - AREA CODE (808) 955-8111

EILEEN R. ANDERSON
MAYOR

FRANCIS KEALA
CHIEF

OUR REFERENCE MS-MJP

January 16, 1981

Colonel Alfred J. Thiede
Corps of Engineers
District Engineer
U. S. Army Engineer District, Honolulu
Building 230
Fort Shafter, Hawaii 96858

Dear Colonel Thiede:

We recently received Public Notice No. PODCO-O 1512-SD concerning the preparation of the final impact statement for a Department of the Army permit application for West Beach Resorts. Although we already submitted our comments on December 16th concerning the Final Environmental Impact Statement for the proposed West Beach Resort project, we noted a discrepancy between the population increase estimates in the Public Notice and the EIS. In the final EIS a population increase in the region of about 17,500 people was estimated (p. 4), yet in the Public Notice it was estimated that "the population in the region would be increased by about 35,000" (p. 2). Our comments concerning increased police personnel needed were based on the former, not the latter, figure.

If we can be of further assistance, please contact the Research and Development Division at 955-8121.

Sincerely,

FRANCIS KEALA
Chief of Police

By EARL THOMPSON
Assistant Chief
Administrative Bureau

#1512

POLICE DEPARTMENT

CITY AND COUNTY OF HONOLULU

1455 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96814 - AREA CODE (808) 955-8111

FRANK F. FASI
MAYOR

FRANCIS KEALA
CHIEF

OUR REFERENCE EFS-ES

December 16, 1980

Colonel Alfred J. Thiede
Corps of Engineers
District Engineer
U.S. Army Engineer District, Honolulu
Building 230
Fort Shafter, Hawaii 96858

Dear Colonel Thiede:

We have completed our review of the Final Environmental Impact Statement for the proposed West Beach Resort project and have no further comments on the provision of police and security services.

Good point,

As a footnote to this response, however, we must confess to some lingering doubts about the adequacy of the roadways in the area to bear the volume of traffic that will be created by this project and others. It is the cumulative congestive effect of the West Beach Resort, plus the Ewa Marina, plus the deep draft harbor, plus the expansion of Makakilo and Mililani, plus others, with which we are concerned. It does not seem clear from this statement that there has been much explicit consideration of other proposed developments in the area and the potential for traffic problems that they all represent. We mention this solely in an effort to ensure that adequate consideration is given to this issue in planning for all projects in the ewa district.

Sincerely,

FRANCIS KEALA
Chief of Police

By EARL THOMPSON
Assistant Chief
Administrative Bureau

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

January 14, 1981

Colonel Alfred J. Thiede
District Engineer
Corps of Engineers
Department of the Army
Building 230
Ft. Shafter, Hawaii 96858

Dear Colonel Thiede:

Subject: Your Letter of December 2, 1980, on the Final Environmental Impact Statement (FEIS) for the Recreational Marina and Beach Lagoons at the Proposed West Beach Resort Project

We have the following comments on the FEIS:

1. We have not made any water commitment to the project.

2. Page 62, Section 9.2.45: The FEIS does not address the significant impact to the groundwater aquifer from the loss of 3.5 to 4.1 mgd of groundwater nor any mitigative measures to minimize these losses.

3. Page 120, Section 9.11.3: This section is inadequate. The inland extent of saltwater intrusion is directly related to the length of penetration inland from the coast by the marina and therefore can be estimated. Also, the farther the marina penetrates inland from the coast, it will short-circuit the path of discharge of caprock brackish water into the seawater. Only the lateral influence from the edge of the inland penetration cannot be estimated. Therefore, the developer should begin an investigation of the probable extent of penetration of saltwater into the brackish water zone with a sand model and propose any mitigative actions that need to be taken. The results and recommendations should be included in the supplements to the FEIS.

Thank you for allowing us to review the FEIS for the proposed action.

Should you have questions or require additional information, please call Lawrence Whang at 548-5221.

Very truly yours,

Kazu Hayashida

KAZU HAYASHIDA
Manager and Chief Engineer

FIRE DEPARTMENT

CITY AND COUNTY OF HONOLULU

1455 S. BERETANIA STREET, ROOM 305
HONOLULU, HAWAII 96814

EILEEN R. ANDERSON
MAYOR

JAN 1981
M. M. NONAKA
CHIEF

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January 22, 1981

Colonel Alfred J. Thiede
Corps of Engineers
District Engineer
U. S. Army Engineer District
Department of the Army
Fort Shafter, Hawaii 96858

Dear Col. Thiede:

RE: Environmental Impact Statement (EIS) for Proposed West Beach Resort, Ewa District, Oahu

At present there is one engine company at each of the fire stations at Nanakuli and Makakilo. With the increase in population and vehicle traffic in the projected site, we are requesting that the developer set aside a site on which a new fire station can be constructed. The new fire station will house an engine company and a ladder company. This would require a total of 33 additional staff, appropriate equipment and buildings. The construction, staffing and maintenance of this fire station will require public funding.

Should you have any questions, please contact Assistant Chief Lawrence Suganuma at 955-8304.

MELVIN M. NONAKA,
Fire Chief

MMN:LS:clt

1512

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December 17, 1980

Colonel Alfred J. Thiede
District Engineer
Department of Army, Corps of Engineers
U.S. Army Engineer District, Honolulu
Bldg. 230, Ft. Shafter, Hawaii 96858

Dear Sir:

Final Environmental Impact Statement (FEIS)
for Proposed West Beach Resort Project, Ewa District

We have reviewed the FEIS for the above project and have no further comments to offer.

Thank you for the opportunity to review the project.

Very truly yours,

G. Kaneko
Oahu Engineering & Construction
Manager

P.O. BOX ... • HONOLULU ... • CABLE TELHAWAII

HAWAIIAN ELECTRIC COMPANY, INC.
Box 2750 / Honolulu, Hawaii / 96840

January 6, 1981

RICHARD L. O'CONNELL, P.E.
MANAGER, ENVIRONMENTAL DEPARTMENT

ENV 2-1
NV/G JAN 1981

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cf: Env R. Sect.

Colonel Alfred J. Thiede
Corps of Engineers
District Engineer
Department of the Army
U. S. Army Engineer District
Building 230
Ft. Shafter, Hawaii 96758

Dear Colonel Thiede:

Thank you for the opportunity to review and comment on the Final Environmental Impact Statement (FEIS) for the Proposed West Beach Resort Project, File No. POPCO-01512-SD. We have the following comments to submit for consideration in the supplements to the FEIS:

Table 7, page 84. The State Standards shown for nitrogen dioxide are actually for nitrogen oxides and the table should be corrected accordingly.

Par. 9.3.12, page 85 is no longer correct since HECO has already switched to low sulfur fuel and tall stacks at Kahe.

Par. 9.3.13, page 85. Add to last sentence: "as a result of HECO operations at Kahe."

Par. 9.3.21. We are aware of no modeling studies which indicate that "future nitrogen dioxide levels at West Beach from the Kahe Plant could be higher than the allowable AQS." This applies both to the NAAQS for NO_2 and the SAAQS for NO_x. Our own modeling studies show that sulfur dioxide is the limiting standard and since that standard is now met at Kahe, it may be concluded that the NO_2 and NO_x standards are also being met.

Par. 9.3.40, page 96. Add "under no circumstances, however, would Federal health standards for sulfur dioxide be exceeded at West Beach due to operations at the Kahe Power Plant."

Sincerely,

R. L. O'Connell

Richard L. O'Connell
Manager, Environmental Department

JFB:cm
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#1512

13.7 COMMENTS RECEIVED IN RESPONSE TO THE DRAFT SUPPLEMENTAL EIS

ORGANIZATIONS/AGENCIES	Date of Comment Received	Date of Response
City and County		
Board of Water Supply	05/13/85	06/03/85
Building Department	04/25/85	NRN
Department of General Planning	05/09/85	06/03/85
Department of Housing & Community Development	05/16/85	06/03/85
Department of Land Utilization	05/23/85	06/03/85
Department of Parks & Recreation	04/22/85	06/03/85
Department of Public Works	04/23/85	06/03/85
Department of Transportation Services	05/13/85	NRN
Fire Department	05/21/85	NRN
Police Department	04/12/85	06/03/85
Oahu Civil Defense Agency	04/11/85	NRN
State		
Department of Accounting and General Services	04/25/85	NRN
Department of Agriculture	05/22/85	06/03/85
Department of Defense	05/02/85	NRN
Department of Education	04/23/85	NRN
Department of Health	05/23/85	06/03/85
Department of Hawaiian Home Lands	--------	--------
Department of Land & Natural Resources	5/15/85	06/03/85
Department of Planning and Economic Development	05/17/85	06/03/85
Department of Social Services and Housing	04/12/85	06/03/85
Department of Transportation	05/23/85	06/03/85
Office of Environmental Quality Control	05/22/85	06/03/85
U.H.-Environmental Center	05/23/85	06/03/85
U.H.-Water Resource Research Center	04/25/85	06/03/85
U.H.-Botany Department	05/20/85	06/03/85
U.H.-Archaeology Department	05/20/85	06/03/85
Energy Division	05/15/85	NRN

ORGANIZATIONS AND AGENCIES
(continued)

ORGANIZATIONS/AGENCIES	Date of Comments Received	Date of Response
Federal Agencies		
Soil Conservation Services	05/08/85	NRN
U.S. Agriculture, Conservation Service	04/08/85	NRN
U.S. Army Corps of Engineers	--------	--------
Department of the Army	--------	--------
Department of the Navy	05/06/85	06/03/85
Department of the Navy	05/23/85	NRN
United States Environmental Protection Agency	--------	--------
Department of Housing and Urban Development	04/19/85	06/03/85
U.S. Fish & Wildlife Service	--------	--------
Coast Guard, Department of Transportation	--------	--------
Federal Highway Administration Department of Transportation	05/08/85	NRN
National Oceanic & Atmospheric Administration-National Marine Fisheries Services	05/16/85	06/03/85
U.S. Department of the Interior Office of the Secretary	05/22/85	06/03/85
Department of Transportation Federal Aviation Administration Western-Pacific Administration	--------	--------
Private Agencies		
Hawaiian Electric Company	05/15/85	06/03/85
Life of the Land	05/21/85	06/03/85
Bernice P. Bishop Museum	--------	--------
Hawaii Thousand Friends	05/23/85	06/03/85
Leeward Ocean Advisory Council	--------	--------
Waianae Land Use Concerns Committee	05/23/85	06/03/85
Waianae Neighborhood Board #24	--------	--------
Native Hawaiian Legal Corporation	05/22/85	06/03/85
Mr. Bruce A. Carlson	05/23/85	06/03/85

**NRN - No Response Needed

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

COPY

May 13, 1985

TO: JOHN P. WHALEN, DIRECTOR
DEPARTMENT OF LAND UTILIZATION

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

SUBJECT: JOINT FEDERAL-STATE DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR WEST BEACH

We have no objections to the acceptance of the supplemental EIS. We offer the following comments to clarify certain items in the report:

1. Page 2-4, Section 2.5(a): The second sentence should be revised to indicate that Campbell Estate will be coordinating the installation of the necessary water facilities including the source for the West Beach development and not the Board of Water Supply (BWS).

2. Page 2-5, Section 2.5(j): The dual water system will be developed by the developer and not jointly with BWS. However, the system is planned to be turned over to the BWS.

3. Page 7-13, Section 7.2.5(f): The first paragraph on the page should be revised. The total water requirement is not based upon our present water standards which relate only to domestic water systems. Because the proposal of a dual water system is new, our standard requirements had to be modified.

   Also, the third paragraph should indicate that a water master plan for West Beach, James Campbell Industrial Park and Deep Draft Harbor dated February 28, 1985, was submitted to BWS and is pending approval.

MAY 17 1985

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

COPY

4. Page 9-25, Section 9.2.15: It would be helpful if cross-sections of the boring logs and their locations were incorporated into the document to better evaluate the impacts on ground water resources.

   Also, on pages 9-18 and 9-25, the document is not clear whether reference is being made to vertical permeabilities or horizontal permeabilities.

5. Page 9-97, Section 9.15.2: The 12.5 mgd figure should be 22.5 mgd which is the amount available for reallocation.

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

Kazu Hayashida

KAZU HAYASHIDA
Manager and Chief Engineer

cc: Environmental Communications, Inc.

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ
PRESIDENT

June 3, 1985

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

Dear Mr. Hayashida:

We are in receipt of your department's comments dated May 13, 1985 on the proposed West Beach Resort draft Environmental Impact Statement. We respond in the following:

Items 1, 2, & 3 will be revised accordingly in the Final EIS.

Item 4 will be processed in accordance with discussions with Lawrence Whang of your office; we will forward to your office, the boring logs as requested for your files and use.

Item 5 will be corrected in the Final EIS.

Thank you for your continuing interest and support of West Beach Resort and also for your timely comments.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

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FB 85-362

April 25, 1985

Colonel Michael M. Jenks, District Engineer
Corps of Engineer
U.S. Army Engineer District, Honolulu
Department of the Army
Fort Shafter, Hawaii 96858

Dear Colonel Jenks:

Subject: Joint Federal-State Draft
Supplemental EIS for West Beach

We have reviewed the subject Supplemental EIS and have no comments.

Thank you for the opportunity to review the Supplemental EIS.

Very truly yours,

H. K. Muraoka

HERBERT K. MURAOKA
Director and Building Superintendent

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

NO RESPONSE NEEDED

APR 29 1985

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

MT/DGP 4/85-1066

May 9, 1985

MEMORANDUM

TO: Mr. John P. Whalen, Director
Department of Land Utilization

SUBJECT: Draft Supplemental Environmental Impact Statement for the Proposed West Beach Project Honouliuli, Ewa, Oahu

We have reviewed the subject Draft Supplemental Environmental Impact Statement and have the following comments:

- The impact of the marina and lagoon dredging upon the present ecosystem, particularly edible seaweed, should be examined in greater detail.
- The impact of noise and dust upon surrounding communities, specifically including Honakai Hale, should be examined.
- Future major public facilities, such as the additional Farrington Highway inbound lane, the new surface arterial to Kalaeloa Boulevard, and the sewage transmission line to Honouliuli should be placed on the Ewa Development Plan Public Facilities Map.

Thank you for the opportunity to offer our comments.

Donald Clegg
DONALD A. CLEGG
Chief Planning Officer

cc: ✓Mr. Fred J. Rodriguez
Environmental Communications, Inc.

MAY 13 1985

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ
PRESIDENT

June 3, 1985

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 on the proposed West Beach Resort dated May 9, 1985 and we respond in the following:

1. The dredging for the marina and lagoon systems at West Beach will have temporary and minor impacts on the offshore benthic communities, much along similar lines that the Barbers Point Deep Draft Harbor has had to date. When construction of both systems has been completed, it is anticipated that marine organisms including edible seaweeds, will once again propagate and flourish. It should be noted that our dredging program will not be as major in size or scope as the deep draft harbor.

2. The question on the impact of noise and dust on surrounding communities such as Honokai Hale is we suspect, due to anticipated construction on the West Beach site. The client is required to comply with the applicable rules & regulations governing mass grading and for major construction efforts such as marina and lagoon dredging, the activities will be coordinated to prevent interference with normal residential practices; i.e., the time of work will be in accordance with General Contractors Association guidelines for working adjacent to residential sectors.

3. In light of the present Development Plan procedures, we concur that these three major public facility items should be placed on the Ewa Development

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Plan Public Facilties Map. In fact, the sewage transmission line to Honouliuli is already shown on the present Facility Map. The highway facility will be submitted for placement on the Public Facility Map when the apropriate alternate is chosen.

Thank you for your continuing concern.

Very truly yours,

F. J. Rodriguez

FJR:ls

DEPARTMENT OF TRANSPORTATION SERVICES

CITY AND COUNTY OF HONOLULU

TE4/85-1469
PL 3007-85

May 13, 1985

Colonel Michael M. Jenks
District Engineer
Corps of Engineers
U. S. Army Engineer District, Hnl.
Department of the Army
Fort Shafter, Hawaii 96858

Dear Colonel Jenks:

Subject: Joint Federal-State Draft
Draft Supplemental EIS for West Beach
Location: Honouliuli, Oahu
Classification: Applicant Action

This is in reference to a letter sent to us by the Office of Environmental Quality Control, State of Hawaii, dated April 4, 1985.

We have reviewed the Draft Supplemental Environmental Impact Statement and find that the transportation issues connected with the project has been satisfactorily addressed.

Sincerely,

JOHN E. HIRTEN

cc: Mr. Fred J. Rodriguez

NO RESPONSE NEEDED

MAY 16 1985

FIRE DEPARTMENT

CITY AND COUNTY OF HONOLULU

1455 S. BERETANIA STREET ROOM 305
HONOLULU, HAWAII 96814

FRANK F. FASI
MAYOR

FRANK K. KAHOOHANOHANO
FIRE CHIEF

LIONEL E. CAMARA
DEPUTY FIRE CHIEF

May 21, 1985

Colonel Michael M. Jenks
District Engineer
Corps of Engineers
U.S. Army Engineer District, Hnl.
Department of the Army
Fort Shafter, Hawaii 96858

Dear Colonel Jenks:

SUBJECT: JOINT FEDERAL-STATE DRAFT SUPPLEMENTAL EIS FOR WEST BEACH, HONOULIULI, EWA, OAHU

We have reviewed the Environmental Impact Statement for the proposed project and have no comments at this time.

Very truly yours,

FRANK K. KAHOOHANOHANO
Fire Chief

FKK:lm/KAW
cc: Fred J. Rodriguez,
Environmental Communications, Inc.
John P. Whalen, Director
Department of Land Utilization

NO RESPONSE NEEDED

MAY 23 1985

POLICE DEPARTMENT

CITY AND COUNTY OF HONOLULU

FRANK F. FASI
MAYOR

OUR REFERENCE EC-JS

April 12, 1985

Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Subject: Draft Supplemental Environmental Impact Statement (DSUP EIS), PODCO-O 1512-SD, West Beach Development, Oahu, Hawaii

Dear Mr. Whalen:

As stated in our response of May 30, 1984 to the Environmental Assessment/Preparation Notice, we are greatly concerned about the traffic impact on the highway system leading into Honolulu from Ewa and Central Oahu, primarily the impact from increased traffic on the H-1.

The only reference in the draft supplemental EIS to the impact on the H-1 (east of the Kunia interchange) is that, "Beyond Kunia, the amount of traffic generated from West Beach is minimal in comparison to H-1 volume and Honolulu-bound traffic entering H-1 at Kunia interchange." The "minimal" figure is calculated as 24,318 vehicles per day east of Kunia (Para. 9.16.2 c.3.4), with peak hour (residential) traffic from West Beach calculated as 1,802 vehicles, east of Kunia (Para. 9.16.2 d).

Apparently, these figures which appear to create an excessive increase of traffic by themselves, do not take into consideration traffic that will be generated by other planned and proposed developments in the Ewa and Central Oahu areas, such as Ewa Marina, Makakilo, Village Park, Waipio-Gentry, Waikele, Mililani, etc.

APR 17 1985

While the traffic generated by West Beach can probably be safely absorbed west of the Kunia interchange, when added to the traffic generated by other planned and proposed developments, it will probably exceed H-1 capacity and have a detrimental impact on traffic safety.

It would be desirable if a determination could be made of the total traffic impact on the existing and planned arteries serving Honolulu from the Ewa and Central Oahu areas. This determination, based on all planned and proposed developments, would greatly assist in determining the traffic safety impact of the individual developments.

Thank you for allowing us to comment on this draft supplemental Environmental Impact Statement.

Douglas G. Gibb

DOUGLAS G. GIBB
Chief of Police

cc: Mr. Fred J. Rodgriguez
Environmental Communications, Inc.
P. O. Box 536
Honolulu, HI 96809

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ
PRESIDENT

June 3, 1985

Chief Douglas G. Gibb
Honolulu Police Department
City & County of Honolulu
Honolulu, Hawaii 96814

Dear Chief Gibb:

We are in receipt of your comments dated April 12, 1985 on the proposed West Beach Development and we respond in the following:

1. The traffic volume figures you quote from our document were taken from a comprehensive study prepared by Community Planning, Inc. and reviewed with the State Department of Transportation. The basic premise of the traffic document was that West Beach will be a major destination resort and also an employment center in its' own right. As such, it will not be comparable to other typical bedroom communities that contribute the traditional morning and afternoon peak loads. The analysis of the West Beach contribution to the total volume of eastbound H-1 traffic is considered minimal in view of the existing traffic volumes being measured currently.

2. The concern expressed by your office over the desirability of an over-all traffic impact study to analyze traffic volumes to be generated by Ewa and other Central Oahu projects was referred to Community Planning, Inc. They concurred that other development projects in Ewa and Central Oahu will impact H-1 traffic capacity as noted by your office. They also stated that the traffic study done for West Beach included an estimate for anticipated additional traffic from the Waianae Coast and the Ewa Plains; however, beyond Kunia, other Central Oahu projects will contribute additional traffic volumes as noted by your office. Based on this anticipated increase in traffic volumes, it is our understanding that the State is considering further improvements to the H-1 Freeway beyond the Waiawa Interchange; on this basis, we feel that an analysis on the cumulative impacts of future and planned projects is best performed by the appropriate governmental agency.

Thank you for your timely comments on our project and we look forward to continuing our positive interaction during this most critical planning phase.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

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OAHU CIVIL DEFENSE AGENCY

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 523-4121

April 11, 1985

TO: MR. JOHN P. WHALEN, DIRECTOR
DEPARTMENT OF LAND UTILIZATION

FROM: GEORGE L. KEKUNA, DEPUTY DIRECTOR-DESIGNATE

SUBJECT: JOINT FEDERAL-STATE DRAFT SUPPLEMENTAL EIS FOR WEST BEACH

This agency has no further comments on this EIS.

George L. Kekuna

GEORGE L. KEKUNA
Deputy Director-Designate

cc: Mr. Fred J. Rodriguez
Environmental Communications, Inc.
P. O. Box 536
Honolulu, HI 96809
(+ enclosure)

NO RESPONSE NEEDED

APR 15 1985

(P)1204.5

APR 25 1985

Colonel Michael M. Jenks
District Engineer
Corps of Engineers
U. S. Army Engineer District, Hnl.
Dept. of the Army
Fort Shafter, HI 96858

Dear Colonel Jenks:

Subject: Draft Supplemental Environmental Impact Statement for West Beach Resort Complex Honouliuli, Ewa, Oahu

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

Very truly yours,

T. Tominaga

Teuane Tominaga
State Public Works Engineer

SM:jk
cc:/ Mr. Fred J. Rodriquez

NO RESPONSE NEEDED

APR 29 1985

GEORGE R. ARIYOSHI
GOVERNOR

JACK K. SUWA
CHAIRMAN, BOARD OF AGRICULTURE

SUZANNE D. PETERSON
DEPUTY TO THE CHAIRMAN

State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 So. King Street
Honolulu, Hawaii 96814

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

May 22, 1985

MEMORANDUM

TO: Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu

SUBJECT: Joint Federal-State Draft Supplemental Environmental Impact Statement (EIS) for the Proposed West Beach Resort;
Honouliuli, Ewa, Oahu
TMK: 9-1-14: por. 2
9-1-15: 3, por. 4, 6, 7, 10
9-2-03: 2, 3, 7
Acres: 642.2

The Department of Agriculture has reviewed the subject Draft Supplemental EIS and offers the following comments.

In our letter to Environmental Communications, Inc. (see attached copy dated May 29, 1984) we identified three areas of concern with regard to the West Beach Resort project. In pertinent part they are: (1) identification of the impact on agriculture in the region resulting from the withdrawal of water from sugarcane irrigation, and whether this reallocation would result in abandonment of agricultural activity due to insufficient water; (2) the subject property possesses some of the qualities that define "important agricultural lands"; and (3) the proposed project should be considered together with other projects in the area.

Since that letter of May 29, 1984, we have reviewed two other documents that appear to have significant implications for the subject proposal. Our review places new emphasis on the need to carefully assess the cumulative effect on agriculture of other major developments proposed for Ewa and Central Oahu, and the magnitude and direction of urbanization in these areas.

MAY 24 1985

In a letter to the Chief Planning Officer of the Department of General Planning, City and County of Honolulu (see attached copy dated November 16, 1984), we reviewed Oahu General Plan amendment proposals for the Waikele, Waiawa and Mililani Town areas. We concluded that from an agricultural perspective, the "...major development(s) on agricultural land in the higher Central Oahu areas may have generally less adverse impact on the agricultural economy than those located in the Ewa area." This conclusion is based on our understanding that the present needs of the sugarcane and pineapple industries indicate a preference for lands in lower elevations, with plentiful sunshine, low rainfall, and readily available and inexpensive irrigation water. We then suggested that Castle and Cooke/Dole Pineapple could cultivate pineapple for the fresh market in the Waikele area, while Oahu Sugar Company could continue to cultivate sugarcane in some of the Ewa area lands conceptually designated as the "City Center" in the Ewa Master Plan of the Estate of James Campbell. Furthermore, we suggested that perhaps a form of development rights transfer or land exchange would allow the affected landowners to pursue development projects with minimal impact on important agricultural lands.

The possible inclusion of the Waikele, Waiawa and Mililani Town proposals into the State Land Use Urban District, Oahu General Plan and appropriate Development Plan would not only alter the present pattern and magnitude of urban growth in the area, but would also reduce the amount of arable lands available for sugarcane, pineapple and other agricultural uses. Therefore, as suggested by Environmental Communications, Inc. in their letter to us dated August 29, 1984, (Draft Supplemental EIS, Section 13.5) it would be prudent that such cumulative impact be addressed at the time of hearing before the State Land Use Commission.

In our review of the State Land Use District boundary amendment petition for the proposed Waikele residential development (see attached memorandum to Department of Planning and Economic Development dated May 9, 1985), we noted that the major portion of the 577-acre Waikele area possesses some of the qualities that constitute the working definition of "important agricultural lands" as developed by the Land Evaluation and Site Assessment Commission (LESAC) and found in their draft report (February 1985). By definition, the West Beach Resort project, which is included in both the Oahu General Plan and Ewa Development Plan as the Secondary Urban Center, is likely to be excluded from any IAL boundary. By the same definition, the lands within the Waikele, Waiawa, Mililani Town and Ewa Master Plan project areas would probably remain in the State Agricultural District unless designated for non-agricultural uses.

Similarly, the State Agriculture Functional Plan (which was adopted by concurrent resolution during the 1985 Legislature) contains Implementing Action B(5)(c), which provides that those lands defined according to the LESAC working definition of IAL should remain in the State Agricultural District and zoned for agricultural use, except where injustice or inequity will result or overriding public interest exists to provide such lands for other objectives of the Hawaii State Plan. The fact that the West Beach Resort project is included in the Oahu General Plan and Development Plan would probably exclude it from the intent of Implementing Action B(5)(c).

Thank you for the opportunity to comment.

Jack K. Suwa

JACK K. SUWA
Chairman, Board of Agriculture

Attachments

cc: Environmental Communications, Inc.
DPED
DGP

Same letter sent to:

Colonel Michael M. Jenks
District Engineer
Corps of Engineers
U.S. Army Engineer District, Honolulu
Department of the Army
Fort Shafter, Hawaii 96858

May 29, 1984

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

Dear Mr. Rodriguez:

Re: Notice of Preparation of an Environmental Impact Statement for the Proposed West Beach Resort at Honouliuli, Ewa, Oahu - TMK: 9-1-14: por. 2; 9-1-15: 3, por. 4, 6, 7, 10; 9-2-03: 3, 7, and por. 2.

This is to inform you that the Department of Agriculture desires to be a consulted party in the preparation of the above document.

We understand from page II-1 of the Notice that the Supplemental EIS will be prepared to address a number of environmental issues as well as revisions to the proposed project's land uses and densities.

Some of our major concerns about the proposed project are found in our comments to the Department of Planning and Economic Development on the petition for an amendment to the State Land Use District Boundary for the same area, dated January 19, 1984 (copy attached). In addition, there are other issues which should be addressed. In pertinent part, our concerns are as follows:

- The proposed project will require approximately 4.5 million gallons of water per day. The EIS should indicate the impact on agriculture in the region resulting from the withdrawal of water from sugarcane irrigation and its reallocation to non-agricultural uses; and whether this reallocation would result in abandonment of agricultural activity due to insufficient water. Priority Direction 226-103(h)(3) of the Hawaii State Plan, encourages "...restriction of new urban development in areas where water supply is insufficient for both agricultural and domestic uses."

- Approximately one-third of the petition area is classified as "Prime" according to the Agricultural Lands of Importance to the State of Hawaii (ALISH) system, and also has Class "A" and "B"-rated land according to the Land Study Bureau system. Thus the property does meet the generally understood definitions of has recently completed a draft report (February 1985) which presents an initial or "provisional" inventory of "important agricultural lands" of the State of Hawaii, the methods by which these lands could be designated and classified, and an amending procedure which could serve to further refine or adjust the classification to meet changing community needs, goals and objectives. The Commission is to continue its functions through 1986 in order to coordinate the testing and evaluation of the LESA system.

The working definition of "important agricultural lands" (IAL) includes those lands in the State that are capable of producing high agricultural yields, lands which produce commodities for export and local consumption, lands not currently in production but are needed to attain desired projected levels of agricultural activities and income, and lands designated by public policies as important agricultural lands resulting from some unique quality, setting or use. By definition, IAL exclude lands deemed inappropriate or economically infeasible for agricultural use, or which have been designated by state or county policy or plans to be of greater benefit to the general public in some current or potential non-agricultural use.

Approximately two-thirds of the 577-acre Waikele site possess some of the qualities that constitute the working definition of "important agricultural land". By definition, should the City and County of Honolulu's General Plan and applicable Development Plan be amended to include the Waikele development, the project site would more than likely be excluded from any IAL boundary.

The State Agriculture Functional Plan (which was adopted by concurrent resolution during the 1985 Legislature) contains Implementing Action B(5)(c), which provides that "important agricultural lands" (those lands defined according to the LESA Commission working definition of IAL) should remain in the State Agricultural District and zoned for agricultural use, except where injustice or inequity will result or overriding public interest exists to provide such lands for other objectives of the Hawaii State Plan.

The petition states that the project area "... must be urbanized to generate the income and supply new capital in order that Oahu Sugar Company and other Amfac agriculture business activities will be able to continue" (Petition, page 37). The petition identifies four other "conditions" that must be met in order to maintain Oahu Sugar Company's economic viability. These include cost containment, continuation of Federal support and import quotas on foreign sugar, labor union support, and receipt of sufficient allocations of water for irrigation and domestic use. The petitioner should clarify the nature and extent of its commitment to maintain Oahu Sugar Company in operation if this district boundary amendment is granted, but if one or more of the other conditions are not achieved.

Pages 41 and 42 of the petition state that the soils of the project site (among the 4,200 acres withdrawn from sugar cultivation by Oahu Sugar) are excellent but have "... serious drawbacks with regard to cultivation ...".

These problems include nuisance potential from agricultural cultivation, security and vandalism, lack of capital-intensive infrastructure such as drip irrigation, and high cost of pumped irrigation water. However, there are opportunities to lessen these drawbacks. The Hawaii Right-to-Farm Act (Chapter 165 of the Hawaii Revised Statutes) limits the circumstances under which existing farming operations may be deemed a nuisance. Drip irrigation, while relatively expensive to install (approximately $3,000 to $5,000 per acre), has the primary advantage of increasing the effective application of moisture to the plants. Returns from higher value crops could possibly offset the increased cost of installing and operating a drip irrigation system.

The petition attempts to establish a relationship of the project to surrounding development and the proposed West Beach development to the west. The magnitude of development proposed for Waikele would appear to merit a more thorough investigation of the cumulative impacts of the Waikele project, the West Beach project, and other pending or possible developments in Ewa (i.e., Ewa Marina and The Ewa Master Plan of the Estate of James Campbell) and Central Oahu (i.e., expansion of Mililani Town and the Waiawa lands of Bishop Estate).

In a letter to the City and County Department of General Planning concerning a number of proposed amendments to the Oahu General Plan (see attached copy of letter dated November 16, 1984), we generally identified those lands in the Central Oahu/Ewa area (below Waiahole Ditch) that appear to be best suited to conventional agricultural cultivation. Abundant sunshine and the ability to control moisture are among the most important environmental characteristics in determining optimum productivity of agricultural land for most agricultural crops. An alternative to sugarcane production might be to cultivate pineapple for the fresh market. The plans and proposals of the various landowners in the area should be considered in the context of contemplated amendments to the General Plan and Development Plans. Perhaps a form of development rights transfer or land exchange would allow the affected landowners to pursue development projects with minimal impact on important agricultural lands.

Thank you for the opportunity to comment.

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

Attachment

cc: Department of General Planning

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ
PRESIDENT

June 3, 1985

Mr. Jack K. Suwa, Chairman
Department of Agriculture
1428 South King Street
Honolulu, Hawaii 96814

Dear Mr. Suwa:

We are in receipt of your department's comments on the West Beach Draft Supplemental Environmental Impact Statement dated May 22, 1985 and we respond in the following:

Your department's definitive review of the lands which West Beach is proposing for Urban purposes indicate that in view of the advancing stage of urban approvals received from the City & County of Honolulu, West Beach will be deleted from any future consideration of agricultural actions by your department. We respect the stewardship role that Department of Agriculture plays in the State Agricultural Functional Plan and especially the responsive attitude towards West Beach.

Thank you for your comments and continuing interest.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

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Mr. John Whalen

CPO-806-85

Thank you for allowing us the opportunity to comment. Should you have any questions regarding this matter, please feel free to contact our Planning Office staff at 548-7837.

Very truly yours,

SUSUMU ONO, Chairperson
Board of Land and Natural Resources

cc: Environmental Communications, Inc.
U.S. Army Corps of Engineers

ENVIRONMENTAL
COMMUNICATIONS
INC.

F J RODRIGUEZ,
PRESIDENT

June 3, 1985

Mr. Susumu Ono, Chairman
Department of Land & Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Ono:

We are in receipt of your department's comments dated May 16, 1985 on the proposed West Beach Resort Draft Supplementary Environmental Impact Statement. We respond in the following:

1. Ground Water - We concur with the advice requiring DLNR permits for any withdrawals of groundwater from the Pearl Harbor Ground Water Control Area. Please be assured that these permits will be prepared and filed in accordance with your department's requirements.

2. Archaeology - Since this document is a joint Federal and State effort due to the Corps of Engineers' involvement, the Federal agency reviewing this aspect of concern is the U.S. Department of Interior, National Parks Service, and also the Interagency Archeological Services, San Francisco, CA. They will be reviewing the document in terms of both archaeology and paleontology. The Advisory Council on Historic Preservation has been advised and comments requested by the Corp of Engineers, and their input will be included in the Corp of Engineer's Final EIS.

   We have reviewed the request for a comprehensive base map that would include specific locations for the onsite archaeological features discovered during the study work performed by Chiniago, Inc. As you know, the entire portions of work completed by Chiniago, Inc. was provided for review by the Historic Preservation Office and they did not indicate any complaint with the quality or specificity of work provided in the technical studies. The mapping and detailed descriptions of the various finds were considered adequate. Further, it was felt that in view of the recommendations for salvage of all the finds due to their relative value based on expert analysis conducted by Chiniago, Inc. p. 9-116, Table 19, "Summary of Viable Approaches", we feel that the request for a comprehensive map is moot.

   Chiniago, Inc. will be engaged to conduct the specific studies for mitigation to the sites and your office can be assured that all future site work will be coordinated with the State Historic Preservation Office. Further, the applicant/developer presently suggests that the Bishop Museum or other acceptable scientific educational, public institutions will be the physical home of the loaned artifacts and fossil bones discovered onsite. By so doing, the entire scientific and public communities can share in the resources uncovered at West Beach.

1146 FORT STREET MALL, SUITE 200 • P. O. BOX 536 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-8391

3. State Parks - We will make the necessary changes to the designation of parks as "public county parks" in future descriptions of these recreational amenities to be developed onsite. The suggested uses at the Hawaiian Cultural Center have been passed forward to the applicant/developer for his consideration in the future design and use.

4. Building Design - The recommended suggestion of designing the various buildings to reduce the potential for exotic bird infestation is well taken and has been forwarded to the applicant/developer for his consideration.

5. The questions posed regarding Lagoon/Marina maintenance and liability are under review by retained legal counsel. It is felt that when the CDUA process has been completed, these primarily legal considerations will be resolved to a mutual satisfaction. We regret that we cannot provide your office with a more definitive answer at this early stage of the project's development.

   The shoreline boundary is presently established at the existing coastline; it is anticipated that it will remain at that point.

6. Marine Environment - Impacts on the offshore marine environment have been analyzed to a considerable extent by the technical consultants retained by West Beach. Further, there is serious concern expressed by the applicant/developer that this valuable resource not be impacted negatively as to inhibit or restrict use by the residents and visitors anticipated to be the prime users of the offshore waters.

   a. The impacts anticipated from a marina channel other than the desired channel alignment (sharing the deep draft harbor channel) have not been examined as thoroughly as the desired alignment. This is due to the fact that studies conducted determined that technically, the shared channel alignment was most beneficial to both the proposed marine and the deep draft harbor in terms of use and minimization of coastal environmental disturbance. This is due in great part to the fact that the shared channel alignment would not require any offshore dredging or breakthrough along the existing coastline. The breakthrough would occur inside the Deep Draft Harbor channel, well inland of the shoreline. This position is endorsed by the National Marina Fisheries, Department of the Interior as being least damaging to the offshore marine environment as well as the endangered species (green turtle, humpbacked whale).

      The regulation of boating and other activities in the lagoons will be under the jurisdiction of an operating entity still to be determined

the questions posed regarding maintenance and liability earlier, they are being studied by legal counsel at the present time. At the appropriate time through the permit review process, State authorities will have the opportunity to review these use controls as well as water quality standards and monitoring requirements for this project.

   b. It is recognized that the Leeward coastline are known habitats for the green sea turtle and also a transit area for the humpback whale; consequently, the anticipated blasting will be controlled so as not to negatively impact these endangered species. All permits to blast prior to excavation will be obtained after proper consultation with both the National Marine Fisheries, and the U.S. Fish and Wildlife Service.

   c. Construction of the lagoon/marina systems will be conducted as described in your letter, working mauka to makai, with the final breakthrough to the shore and open waters only after conditions on the upland portions have been stabilized. All clearing and grubbing will be in accordance with the applicable County ordinances governing mass excavation, with appropriate mulching and stabilizing to be in place as soon as practicable.

      The general contractors responsible for the site work and structural improvements will be required to comply with the appropriate ordinances and building code standards that govern the "good housekeeping" aspects of construction work. All drainage systems to be designed are intended to be dedicated to the City & County for their use and maintenance. There will be cooperative efforts to insure that onsite improved areas will be kept to resort standards to reduce or prevent impacts to the coastal zone.

      A permit has been requested from COE for joint use channel and COE is evaluating the environmental and operational aspects of this application. In the decision making process, State DOT/Harbors makes valuable contributions to the final channel selection and this selection process will be discussed in the COE/NEPA EIS.

      In the event that the final decision in terms of channel alignment is determined by the Corps of Engineers and the Harbors Division to be a separate channel, we shall coordinate all additional work with your department.

Finally, it is understood that this concurrent review of our draft EIS is to provide your department opportunity to comment prior to the preparation and filing of the CDUA: we are appreciative of the efforts of your staff in achieving this joint review. We do not anticipate any difficulties in complying with the concerns raised in your initial review of the West Beach project.

Thank you for a most comprehensive and detailed review of our EIS document; we also appreciate the timely response.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT
KAMAMALU BUILDING, 250 SOUTH KING ST, HONOLULU, HAWAII
MAILING ADDRESS: P.O. BOX 2359, HONOLULU, HAWAII 96804 • TELEX: 7430250 HIDPED

GEORGE R. ARIYOSHI
GOVERNOR
KENT M. KEITH
DIRECTOR
MURRAY E. TOWILL
DEPUTY DIRECTOR
LINDA KAPUNIAI ROSEHILL
DEPUTY DIRECTOR

DIVISIONS:
BUSINESS AND INDUSTRY DEVELOPMENT DIVISION
ENERGY DIVISION
FOREIGN TRADE ZONE DIVISION
LAND USE DIVISION
PLANNING DIVISION
RESEARCH AND ECONOMIC ANALYSIS DIVISION

OFFICES:
DIRECTOR'S OFFICE
ADMINISTRATIVE SERVICES OFFICE
INFORMATION OFFICE

Ref. No. P-1681

May 17, 1985

The Honorable John P. Whalen
Director
Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96814

Dear Mr. Whalen:

Subject: Joint Federal-State Draft Supplemental Environmental Impact Statement (DEIS), for West Beach, Honouliuli, Hawaii

We have reviewed the subject supplemental DEIS and have the following comments to offer for your consideration and action.

1) Section 13.4 of the DEIS indicates that the Department of Planning and Economic Development (DPED) did not respond to the applicant's Notification of EIS Preparation. Additionally, the DPED is incorrectly identified as the Department of Planning and Economic "Resources."

Please be informed that the DPED submitted to the applicant on June 25, 1984, departmental comments on the preparation of the Supplemental DEIS. As is our practice, a duplicate copy of DPED comments was sent to and received by the State Office of Environmental Quality Control to confirm our action. A copy of the DPED June 25, 1984, letter is attached for reference purposes. In particular, please note DPED's request to be a consulted party in the West Beach Supplemental DEIS preparation process.

2) Page 2-2 states that the subject proposed project will require a U.S. Corps of Engineers Section 404 permit. Please be aware that the DPED must determine whether the issuance of the COE permit for the West Beach development is consistent with Hawaii's approved Coastal Zone Management (CZM) Program. We feel that this action should be included in the narrative section of the pertinent permitting/approval process or in Section 9.19.5 which evaluates the relationship of the proposed project to the objectives and policies of Hawaii's CZM Program.

MAY 23 1985

3) Section 2.5 in listing "Issues to be Resolved" omits reference to adequate public access. Inasmuch as the proposed project is a coastal development that may limit or foreclose future coastal recreational opportunities, we believe this subject to be a significant issue. In this regard, Figures 10 through 15 of the DEIS make reference to public access and easement boundary lines. The subject DEIS does not specifically define whether these lines delineate both lateral and perpendicular access to proposed swimming lagoons and ocean frontage. Further, free public vehicle parking areas and public area maintenance responsibilities should be specifically identified.

4) Applicable conditions and agreements made between pertinent permitting and regulatory agencies and the applicant should be disclosed and analyzed within the DEIS. These conditions may include those pertaining to the State land use boundary and development plan amendments, zoning, and shoreline management and Corps of Engineers permits.

For informational purposes, we have enclosed thirteen proposed conditions which the DPED submitted to the State Land Use Commission regarding the pending West Beach Estates land use boundary amendment petition.

5) We find the supplemental DEIS narrative description of the project's phasing and development plan (Section 7.2.4, p. 7-10) to be inadequate. Particular attention should be placed on specifically identifying when project components are to be initiated and/or under construction, particularly those within coastal and marine areas. Sufficient detail is required in the phasing section in order to determine and assess impacts and/or mitigating measures.

6) The DEIS omits a narrative discussion and analysis in Section 8.8.3, Anticipated Tourism Growth, p. 8-4, regarding planned and potential resort development at Turtle Bay Resort at Kuilima. Further, Table 5, p. 8-5, should correctly depict Turtle Bay Resort's existing and planned transient accommodations, rather than be restricted to data collected "as of May, 1985," which may be out-of-date and therefore inaccurate.

7) The DEIS should thoroughly address the impacts to the adjacent ocean waters and marine life caused by the construction of the marina and four lagoons and should demonstrate that water quality will be monitored and maintained after construction is completed.

8) Several base maps utilized by the DEIS (i.e. Figures 2, 3, 23, 34, and 35) do not correctly depict existing geographic features within the study area. In particular, boundary and spatial relationships of the developed Barbers Point Deep Draft Harbor are not consistently identified.

Thank you for the opportunity to provide these comments.

Very truly yours,

Kent M. Keith

Kent M. Keith

Enclosures

cc: Office of Environmental Quality Control w/attachments
✓Environmental Communications, Inc. w/attachments

[illegible]

1. [illegible] Petitioner shall provide [illegible] in the subject property [illegible] Authority and the City and County of Honolulu [illegible] property to residents of the State [illegible] Authority and the City and County [illegible] [illegible] or assisted financing [illegible]

2. The Petitioner shall cooperate [illegible] development.

3. [illegible] access points connections [illegible] improvements [illegible] of Transportation.

4. The Petitioner shall [illegible] availability of water for the [illegible]

5. The Petitioner shall [illegible] improvements, including water, sewage [illegible] required by the appropriate State [illegible]

6. The Petitioner shall coordinate its [illegible] development with the State Department [illegible] Army Corps of Engineers to insure that [illegible] deep draft harbor.

7. The [illegible] with the recommendations of the [illegible] Committee.

8. [illegible] public use, and the Petitioner shall provide public access [illegible] parking areas.

9. The Petitioner shall coordinate the proposed development with the State Historic Preservation Office to insure that all necessary mitigative action is taken to remove, protect, and preserve where necessary, the historic, archaeological, and paleontological resources of the area.

10. The Petitioner shall submit annual progress reports to the Land Use Commission, the Department of Planning and Economic Development and the Department of General Planning as to its progress in the development of the subject property, and in satisfying the above conditions.

11. As represented by the Petitioner, there shall be no time-sharing within areas designated residential.

12. As represented by the Petitioner, the majority of resort units will be full-service hotels.

13. The Petitioner shall insure that a condition will be included in the covenants with the developers of residential units which will require a sales program by which the developer will advertise said units only within the State of Hawaii for a period of one month from the date the preliminary public report is issued by the Real Estate Commission. The sales program shall include the publication of advertisements. At least one ad must be a full-page ad at least four times in a newspaper of general circulation.

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

June 3, 1985

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 May 17, 1985 on the West Beach Draft Supplemental Environmental Impact Statement and we respond in the following:

1. We will correct the designation for DPED and apologize for the error. The comments submitted by your department were unfortunately not received during the EIS Preparation Notice consultation period. It is acknowledged that comments were provided and filed with OEQC, who forwarded us a copy.

2. Specific references that will advise the requirements for the Corps of Engineers permit and CZM consistency certificate will be added to pages 2-2 and also 9-127. Thank you for bringing this to our attention.

3. Those references to public access which reflect the planned access points illustrated on Figures 10-13; are still preliminary in design and are being coordinated with the Department of Parks & Recreation and also Department of Land & Natural Resources. They will be finalized during the Zoning and SMA Permit review process.

   Public vehicle parking areas and public area maintenance are provided in cul-de-sac areas immediately above each public access point. These shoreline access points are for both lateral and perpendicular access to the lagoons and the ocean.

4. To the extent possible, these agreements are still in discussion stages, or have not at this time been heard before applicable Boards & Commissions; there are no final determined agreements available since applications for the various permits to land use changes have been filed recently or are in stages of preparation for filing with government. The 13 proposed conditions submitted to the State Land Use Commission by DPED are being reviewed by applicant's legal counsel and the final Decision & Order will reflect agreement on these items. We do not have that information at this time.

5. Turtle Bay presently has hotel and transient units which are included in the Windward Oahu totals; checking with Prudential Insurance Company, their advice is that for anticipated units to be developed, they are planning for 1500 units to be completed by the year 2000. This information will be inserted in Table 5, page 8-9.

7. Impacts to the offshore waters from the construction of the Marina/Lagoon systems are chronicled in the DSEIS and also in the Technical Reports contained in Appendix II.

   Monitoring of nearshore coastal waters is the responsibility of State DOH who conducts actual water quality monitoring in accordance with DOH regulations Chapter 37-A. Much of the data provided in our studies has been taken from ongoing studies being conducted by the Corps of Engineers at the present time.

8. The base maps that are referenced in your comment are copies of U.S.G.S. maps which at this time do not include the deep draft harbor in its' as yet incomplete state. Also, the maps were used to depict other facets of project map identification and were not intended to be totally current in terms of adjacent land features.

We appreciate your timely comments and continuing interest.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:is

GEORGE R. ARIYOSHI
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF SOCIAL SERVICES AND HOUSING
HAWAII HOUSING AUTHORITY
P. O. BOX 17907
HONOLULU, HAWAII 96817

RUSSELL N. FUKUMOTO
EXECUTIVE DIRECTOR

IN REPLY REFER

TO:

April 12, 1985

MEMORANDUM:

TO: The Honorable Franklin Y. K. Sunn, Director
Department of Social Services and Housing

FROM: Russell N. Fukumoto, Executive Director

SUBJECT: Joint Federal-State Draft Supplemental EIS for West Beach, Honouliuli, Ewa, Oahu (DSSH Control No. 05 0397)

The Authority has reviewed subject draft Supplemental EIS and note that the developer will build approximatley 10% or 520 units as affordable housing for low- and moderate-income families. We offer the following comments:

1. The definition of low and moderate income be defined in the final EIS. We suggest that low-income be defined as 50%-80% of City and County of Honolulu's median income for a family of four. Also, moderate income be defined as 80%-120% of the County's median.

2. List the specific types of housing to be provided to the low- and moderate-income families and the proposed sales prices.

3. List the types of long term financing available to the low- and moderate-income families, if known.

We are returning your copy should the department decide to

to add the social services aspect to our comments of subject matter.

Thank you for the opportunity to comment.

Russell N. Fukumoto
Executive Director

Attachment

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

June 3, 1985

Mr. Franklin Y.K. Sunn
Director
Department of Social Services
& Housing
Hawaii Housing Authority
P.O. Box 17907
Honolulu, Hawaii 96817

Dear Mr. Sunn:

We are in receipt of your comments dated April 12, 1985 on the proposed West Beach Resort Draft Supplementary Environmental Impact Statement. We respond in the following:

1. "The definition of low and moderate income be defined in the final EIS. We suggest that low income can be defined as 50% - 80% of the City and County of Honolulu's median income for a family of four. Also, moderate income can be defined as 80% - 120% of the County's median."

   It is the developer's position that it will meet its commitment to build approximately 10% or 520 units as affordable housing for low and moderate income families.

   At the present time, the City and County of Honolulu does not have a clear-cut policy with regard to the definition of low and moderate income housing, nor has there been a consistent application of affordable housing requirements applied from developer to developer.

   Historically, members of the City Council, the City Administration and the private sector have been working at great length with this difficult problem. Hopefully, a solution will be forthcoming shortly.

   In the interim, West Beach Estates reaffirms its previous position that it will meet any reasonable policy adopted by the City and County of Honolulu that is consistently and equitably applied.

2. "List the specific types of housing to be provided to the low and moderate income families, and the proposed sales prices."

   In the light of our response to Comment #1 above, it is not possible to be more precise at this time. The developer may have a number of options that will satisfy future City and County policy, e.g. contribution of cash, contribution of land, the development of housing units.

   At the time that policies and alternate solutions are established, the developer will be able to make an election, and be more specific.

3. "List the types of long-term financing available to the low and moderate income families, if known."

   Since 1979, financial markets have been very unstable. There has been, and continues to be a high degree of uncertainty about the availability and cost of money. State and/or Federal programs now in existence may not be available at the time of sales of low and moderate income housing, conversely, new programs may emerge. At this time it is not possible to be specific about low and moderate income financing.

Thank you for your continuing interest in the West Beach project and also for your timely comments to our document.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

STP 8.10640

May 23, 1985

Colonel Michael M. Jenks
District Engineer
Corps of Engineers
U.S. Army Engineer District
Department of the Army
Fort Shafter, Hawaii 96858

Similar letter to:
John Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Col. Jenks:

Joint Federal-State Draft Supplemental
EIS for West Beach

Thank you for the opportunity to review and comment on the subject document. Our concerns are as follows:

o Harbor Operations

1. Joint use of the commercial harbor entrance channel should be further evaluated in the report. The developer has been in contact with our Harbors Division to resolve concerns on the proposed joint useage of the entrance. To date, no agreement has been reached on this matter.

2. Page 9-51. 9.4.5

   Paragraph 2 - There is no small boat harbor in Pokai Bay. All boating activities have been relocated to the Waianae Boat Harbor. Pokai Bay would be used by distressed boaters only in emergency situations.

   Paragraph 3 - Last two sentences are redundent.

   Paragraph 6 - It is inferred that the maintenance responsibility is the only unresolved issue being addressed by the Department. Joint use of the channel and the associated safety considerations of small boat activities conflicting with commercial maritime navigation are yet to be resolved.

3. Page 9-54. 9.4.6

   Paragraph 1, last sentence - It is assumed that the reduction of wave height in the commercial harbor because of the presence of the marina entrance under the joint channel use concept is at least equal to or more than the reduction of wave height in the harbor, had the outer segment of the wave absorber not been displaced by the marina entrance. In other words, the situation in the commercial harbor will not worsen if the marina is developed according to Plans I and II.

4. Page 9-54. 9.4.7

   Paragraph 1 - Implies that the commercial harbor would pollute the marina should they be connected. A 500-craft capacity marina with ancillary facilities including a boat ramp operations could conceivably generate as much or more pollution than the commercial harbor.

o Traffic Operations

The traffic impact analysis reflects numerous questionable assumptions which prevent us from adequately assessing the impacts and addressing the traffic concerns. The report, for example, assumes that a major portion of the trips generated by the development will remain "contained" in the project vicinity. The estimates appear unreasonably high and if these trips were reflected as external to the project, severe impacts are anticipated.

The assessment also fails to reflect the traffic contributed by the other planned developments in the area. Studies indicate that the highway system will not be able to adequately accommodate all of these projects and that our facilities will be operating at level of service E-F for extended peak periods, especially in the Pearl City area. We, therefore, anticipate that the development will have serious impacts on our highway system.

We would be glad to meet with you to discuss these concerns.

Very truly yours,

Wayne J. Yamasaki
Director of Transportation

JT:ko
cc: HAR, HWY
Environmental Communications

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ
PRESIDENT

June 3, 1985

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

Dear Mr. Yamasaki:

We are in receipt of your department's comments on the proposed West Beach Resort Draft Supplementary Environmental Impact Statement dated May 23, 1985 and we respond in the following:

Harbor Operations

1. We concur that at this date, there has not been any agreement reached as to the proposed joint use of the deep draft harbor channel. This subject is still under discussion.

2. The indicated paragraph referencing Pokai Bay will be revised in the FSEIS to reflect the current status as described in your letter.

   Regarding the redundancy of the third paragraph, last two sentences, we agree that the subject has been stated excessively.

   Regarding the inference that Maintenance is the only unresolved issue being addressed by Harbor Division, this was not intended and felt that the discussion in preceeding sentences so indicated that there were discussions on competing traffic and methods to resolve this potential navigational conflict. We regret any misunderstanding.

3. Our studies indicate that your assumptions are correct.

4. There was no suggestion made that would indicate that a deep draft harbor would be more polluting than a small boat marina; rather, it should be stated here that with the advantages gained by having drainage runoff flow into the marina, there are certain benefits gained in the flushing process that are not readily available to the deep draft harbor.

Traffic Operations

Your department's comments were referred to West Beach's traffic consultants, Community Planning, Inc.'s ("CPI"), planners and engineers who believe that there is additional information, facts and considerations which may not have been raised or provided by us to your department in this EIS process.

Among these factors is the fact that West Beach is designed to be a self-contained urban center which will, in CPI's opinion, decrease the number of external trips outside the West Beach area. Additionally, CPI's traffic projections assumed a 7% annual increase of the 1982 Department of Transportation traffic counts along Farrington and H-1 Highways for the projected traffic from other residential community (existing and future communities that have already received government approvals) in the Ewa plain.

We believe and feel confident that a meeting between our consultants and your staff will be able to adequately and satisfactorily resolve the concerns in your letter.

Thank you for your timely comments on this project and also for your continuing interest and concern.

Very truly yours,

F. J. Rodriguez

FJR:ls

GEORGE R. ARIYOSHI
GOVERNOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
550 HALEKAUWILA STREET
ROOM 301
HONOLULU, HAWAII 96813

LETITIA N. UYEHARA
DIRECTOR

TELEPHONE NO.
548-6915

May 22, 1985

Colonel Michael M. Jenks
District Engineer
Corps of Engineers
U.S. Army Engineer District,
Honolulu
Department of the Army
Fort Shafter, Hawaii 96858

Dear Colonel Jenks:

Subject: Comments to the West Beach Draft EIS

We have reviewed the West Beach draft EIS and offer the following comments for your consideration:

1. Our understanding it that there is a moratorium on the taking of water from the Pearl Harbor Basin due to its low levels. Considering that there are several other large projects being developed in the Leeward area, the availability of water is a crucial question that needs to be resolved before construction begins.

   Upon contacting the Board of Water Supply, we have found that they have not made any commitment to supply water to the West Beach project, and a letter dated January 14, 1981 from the Board to the Army Corps of Engineers, which is included in the comments and responses section, confirms this fact. The Ewa Water Master Plan that the draft EIS refers to is a document prepared by Campbell Estate, the owner of the West Beach lands, and not the Board of Water Supply as the draft EIS suggests. Our understanding is that Campbell Estate will be the one required to develop a water source and appurtenances for West Beach and not the Board of Water Supply. Who then will operate the system? We recommend that questions regarding the availability of water, the water system development and operation be resolved and the system put in place before West Beach is developed.

MAY 24 1985

2. The environmental impact statement states that communities of rare plants proposed for listing on the Federal List of Endangered Species were removed and transplanted by Campbell Estate. The EIS should identify the type of plants removed and a survey should be conducted to determine whether additional plants exist in the area. If there are other plants in the area, they should be protected from the proposed development and not be removed.

3. It is our opinion that the assumption of a peak hour traffic factor of 10 percent for West Beach understates what actual peak hour traffic will be like. Under this assumption only 30 percent of West Beach's population would be travelling during the peak hours of 6:00 to 9:00 a.m. According to Table 18 on page 9-107, for every 100 residential units, only 45 external trips from West Beach to Honolulu will be generated. We believe these figures to be extremely low, with actual figures being significantly higher resulting in a level of service considerably lower than the "C" or "D" level that is being anticipated. The number of trips generated per peak hour period should be between 0.7 to 1 trip per residential unit.

4. The EIS concludes that Ilima and Campbell secondary schools will be able to accommodate 110 to to 310 secondary students and Barbers Point and Makakilo Elementary Schools will be able to accommodate 150 to 350 elementary students. However, the EIS fails to consider that these schools will have to accommodate the children of various other developments in the area.

5. Combining the deep draft harbor entrance with that of the proposed marina may create navigational hazards. We suggest that the Department of Transportation's Harbors Division be contacted to resolve the potential problem. This problem should be resolved before the submission of the final EIS.

6. The entire marina area is within an archaeological district boundary. The Department of Land and Natural Resources' Historic Sites Division should be contacted before construction commences.

We appreciate the opportunity to review this document.

Sincerely,

Letitia N. Uyehara

Letitia N. Uyehara
Director

cc: Department of Land Utilization
Environmental Communications, Inc.

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

June 3, 1985

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

Dear Ms. Uyehara:

We are in receipt of your office's comments on the West Beach DSEIS dated May 22, 1985 and we respond in the following:

1. Proposed water for the project is anticipated to be allocated from the recently declared Pearl Harbor aquifer excess of 22.5 mgd (see attached letter of March 14, 1985 from Department of Land & Natural Resources to Councilman Leigh-Wai Doo). Therefore, no adverse impacts to the aquifer is anticipated since present Oahu Sugar Company's (OSCO) pumpage has been reduced accordingly. The project's water requirement of 4.5 mgd will be withdrawn from the aquifer by construction of new wells in the vicinity of existing OSCO wells whose pumpage has been decreased. For the project's potable requirement of 2.5 mgd, the new wells are planned in the Honouliuli area mauka of the H-1 Defense Highway, where existing OSCO wells withdraw potable quality water. Likewise, the project's irrigation water requirement of 2.0 mgd will be supplied by construction of new wells on-site or mauka of the West Beach site, where OSCO has reduced pumpage from its existing caprock brackish water wells.

2. Endangered plants were discussed in the Technical Study conducted by Winona Char and contained in Appendix I, section 5. Char states, "the portion of the proposed West Beach Project which lies immediately adjacent to the deep draft harbor has been cleared of its vegetation and is being used to store basalt and coral boulders which will be used in the construction of the planned breakwater.

3. We have reviewed your comments and the traffic consultant will be reviewing these concerns with State DOT.

4. We coordinated with DOE and they advised us they can accomodate schools for the children generated by West Beach.

5. Your concern over the combined channel sharing is being discussed between DOT/Harbors and the West Beach technical engineering consultants. In the event a resolution is reached, it will be included in the final EIS.

6. The State Historic Preservation Office has been consulted for the proposed developments that fall within the Barbers Point Archaeological District. Impacts and proposed mitigation measures will be coordinated with State Historic Sites Division.

Thank you for your timely comments on this project and also your continuing concern.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

Attachment

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
HONOLULU, HAWAII 96809

SUSUMU ONO, CHAIRMAN
BOARD OF LAND & NATURAL RESOURCES

EDGAR A. HAMASU
DEPUTY TO THE CHAIRMAN

DIVISIONS:
AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

MAR 14 1985

Honorable Leigh-Wai Doo, Chairman
Planning & Zoning Committee
City Council
City Hall
Honolulu, Hawaii 96813

Dear Councilman Doo:

Pearl Harbor Ground Water Control Area

A few months ago you were in the process of establishing a City Council policy on the processing of zoning and land use amendment requests where those requests related to the question of water availability in the Pearl Harbor Basin.

You would be interested in knowing that at the December 14, 1984 meeting of the State Board of Land and Natural Resources, the Board conditionally recertified the Oahu Sugar Company's ground water withdrawal and use at 92.5 mgd. The previous certified withdrawal for Oahu Sugar Company was 115 mgd. The recent recertification means that approximately 22.5 mgd of water allocation is now considered uncommitted by the Board of Land and Natural Resources in the Pearl Harbor Ground Control area.

We have had tentative inquiries from interested parties as to possible allocation of the uncommitted water for their respective purposes. In this connection, we are presently working on establishing a procedure whereby new or additional ground water withdrawals will be permitted from the Pearl Harbor Ground Water Control Area.

It would seem that with this recent recertification, the water source and allocation problems in the Pearl Harbor aquifer have been relieved somewhat and that pending developments can now rely on new water being available over the next several years, depending on the rate of withdrawals.

Please contact me or my staff if you have any questions on this matter.

Very truly yours,

SUSUMU ONO
Chairperson of the Board

cc: Mr. Kazu Hayashida, Board of Water Supply
Mr. John Whalen, Dept. of Land Utilization
Mr. Donald A. Clegg, Dept. of General Planning

Misc. Com. No. 447

University of Hawaii at Manoa

Environmental Center
Crawford 317 • 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 948-7361

May 23, 1985

RE:0415

Mr. John P. Whalen
Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Colonel Michael M. Jenks
District Engineer
Corps of Engineers
U.S. Army Engineer District, Honolulu
Department of the Army
Fort Shafter, Hawaii 96858

Dear Mr. Whalen and Colonel Jenks:

Joint Federal-State
Draft Supplemental Environmental Impact Statement
West Beach Resort
Honouliuli, Ewa, Oahu

The above cited document has been prepared to address the potential environmental impacts associated with the development of the proposed West Beach Resort. The resort will create approximately 9,200 living units (residential and hotel/condominium) and a 42.2 acre marina.

The Environmental Center has reviewed this document with the assistance of Bryce Decker, Geography; George Curtis; Hawaii Natural Energy Laboratory; Matthew Spriggs and Bertell Davis, Anthropology; Edwin Fujii, Economics; Kem Lowry, Urban and Regional Planning; John Burgess, Mechanical Engineering; Reginald Young, Engineering; Ruth Gay, Botany; Richard York, Hawaii Institute of Marine Biology; Jacquelin Miller, Noreen Tashima, and Juliane Mansur, Environmental Center.

The following comments on the Draft Supplemental Environmental Impact Statement have been provided by our reviewers:

Ciguatera (p. 2-4)

Although fish containing ciguatoxin have not be in linked conclusively to dredging operations, Yasamoto (1984) reported a correlation between population density of the dinoflagellate, Gambierdiscus toxicus and toxicity of fish in the area. Therefore, monthly sampling for the population density of the dinoflagellate, is recommended. We note that warning signs posted on beaches would probably not be observed by people fishing on boats.

MAY 24 1985

It has come to our attention that there is an error in the response letter (dated 8/29/84) addressed to the Center from Environmental Communications, Inc. regarding the Preparation Notice of the Supplemental EIS. Please note under Ciguatera Outbreak that the following statement should be restated: "Furthermore, the Corps of Engineers is monitoring the plankton..." to read "... monitoring the epiphytes.

7.2.4.a Oceanfront Lagoons and Beaches (p. 7-7)

We were pleased to note that public access and use of the lagoons and beaches will be encouraged through appropriate public access walkways. We note also the reference to public use of the marina, which we assume will also be public property. Is this correct? The siting of the public access routes needs to be carefully planned so as to assure safe transit along the shoreline.

7.2.5.e. Solid Waste Disposal (p. 7-12)

Public landfills in Leeward Oahu are either closed, closing or beyond capacity and accepting waste only on a temporary basis. The private landfill at Palailai Quarry is likely to be filled before West Beach Resort is completed. The need for adequate solid waste disposal facilities is one of the key concerns which at present seems to be inadequately considered.

7.2.5.f. Water System (p. 7-12)

The DEIS indicates that dual water-supply systems are planned, "...providing separate storage and distribution facilities for domestic and irrigation water...." However, only a single estimate of the average water demand is provided, 4.5 mgd. The discussion in the section on potable water (p. 9-97) indicates that this is the total of 2.5 mgd average domestic-water demand and 2.0 mgd average irrigation-water demand. Because the domestic water and irrigation water will be drawn from different sources and the two drafts will have different impacts, we suggest that the magnitudes of the two components of the demand be identified in the section on water supplies.

7.2.5.g. Drainage System (p. 7-13)

The present plans call for storm water runoff to be conveyed within natural drainage ways or improved channels and discharged into the marina similar to the present practice at the Ala Wai Small Craft Harbor. This plan may create some extremely serious environmental as well as engineering problems. To direct this runoff into the marina is likely to cause serious and costly shoaling problems not only in the marina but possibly even extending to the entrance of Barber's Point Harbor. We would strongly urge that holding areas be set aside for use as settling ponds prior to discharge into the marina. These settling ponds should serve to trap at least the coarser sediments formed during the construction phase. They will also help to decrease the overall turbidity on the Waianae coast which would be deleterious to the marine biota.

During the construction phase of this project there are bound to be occasional periods of heavy rainfall and erosion of barren land. We note that the marina area will be utilized to provide a depression for desilting. Since the marina will be completed in Phase V of the proposed project, this appears reasonable, although we are concerned if this depression will be connected to the ocean.

9.1 Water Pollution Implications of Project Site Storm Runoff (p. 9-1)

It should also be pointed out that placing fine-textured soil on the surface for lanscaping purposes will reduce the high infiltration rate of the existing coral surface. Although the site is in a low average rainfall locale, some loss of recharge will occur because of runoff from occasional heavy rains prevalent in the area and the provision of a drainage system that is designed to remove water efficiently.

9.2.8 Flushing Criteria (p. 9-15 to 9-17)

Upon examination of the flushing criteria and the nearshore wave climate presented in the DSEIS, our reviewers have concurred that under most wave conditions the lagoons should flush adequately.

9.6 Tsunami Inundation Elevations (p. 9-64)

The basis for the 8.2 and 9.0 foot msl elevations identified for 100-year and 140-year recurrence intervals for the locus 200 feet inland from the shoreline (p. 9-64) is not given. It is presumably the combination of: 1) the form of the frequency distribution of tsunami runup heights used in the National Flood Insurance Program at the recommendation of the Corps of Engineers, and 2) the coefficients of that distribution listed by the Corps for the West Beach area. If that is the basis of the estimates, the addition of two feet to the estimates to allow for tsunami occurrences at periods of high tide represents a safety margin, because the Corps of Engineers frequency analyses pertained to runup heights above mean sea level, not runup heights above the sea levels at the times of the tsunamis.

The allowance for a second additional 2 feet in elevation where development has resulted in reduction of tsunami roughness should not pertain to the near-shore runup heights, but should pertain to estimates of the runup heights at the limits of inundation. Considering the flatness of the terrain at West Beach, runup heights at the inundation limit should be lower than those nearshore.

Although it is appropriate to indicate a range of uncertainty associated with a runup height estimate, as is done in the EIS where the ranges of uncertainty are expressed as ± 2 feet, it would seem that a standard adopted for design purposes should be single valued.

9.6.1 Tsunami Hydrographs (p. 9-64)

It seems quite pointless to refer to tsunami hydrographs in the EIS unless the hydrographs are shown. The citation of a "section" in connection with a "Manual" relied on for hydrograph construction methodology appears to refer to a section in some predecessor to the DSEIS or a reference document, because the numbering does not correspond to that of sections in the DSEIS.

9.9 Noise Conditions and Impacts (p. 9-75 to 9-85)

Residents fronting Farrington Highway currently experience noise levels between 73-74 dB. The additional development proposed for West Beach is expected to increase this level by 2.5 dB and an additional 1.5 dB from non-project traffic by the year 1990. Residents along Farrington Highway will be exposed to noise levels of 77-78 dB, or higher.

Mitigation of these unacceptably high noise levels is very poorly addressed. A suggestion for air conditioning is about the only viable measure proposed. Certainly greater emphasis should be placed on this problem with serious consideration given to extended open space, trees, earthen berms, and extensive plantings to shield the residential section from the highway.

9.15.2 Potable Water (p. 9-97)

The only discussion relating to impacts of the proposed West Beach project on water resources appears to be that in the subsection on "Potable water" in the section on impacts on "governmental services and facilities". We suggest that there are actually three impacts that should be distinguished and discussed:

1) the impact of the draft of potable water to satisfy the domestic-water demand;

2) the impact of the draft of water to satisfy the irrigation demand; and

3) the impact of the proposed marina and lagoons.

Rather than a discussion of the impacts of the draft of potable water on the water resources, the discussion on p. 9-97 relates to the at-present-undetermined "availability of a sustained (sustainable) yield source of potable water". The gist of that discussion seems to be that the responsibility for identifying an adequate potable water supply rests with the Department of Land and Natural Resources and Board of Water Supply. This is understandable because, with the integration of the municipal water supply systems from Punaluu clockwise around the island to Makaha, the distribution of the additional draft necessary to meet the estimated West Beach demand of 2.5 mgd is at the option of the Board; and the impacts on the potable-water resources of this additional draft and any other needed to satisfy other increases in potable-water demand must be addressed by the Board.

The impacts of the draft to meet the 2.0 mgd irrigation demand are nowhere discussed. If, as indicated, (1) this draft will be made from an existing plantation well and in addition (2) the plantation well develops caprock water, and if (3) the 2.0 average draft will be no greater than the average draft made presumably by the plantation, it will suffice to note that it is expectable that the impacts will not differ significantly from that of the plantation development. If all three of these conditions are not satisfied, however, additional discussion of the impact of the draft of the irrigation water seems needed in the EIS.

It is recognized in the section on "Freshwater (Groundwater) Re-distribution" (p. 9-68) that the proposed marina will "intercept the natural seaward flow of subsurface groundwater" (in the caprock). In that section there is discussion of the impacts of the interception on the quality of the coastal water. However, there appears to be no recognition of the impacts of the interception resulting from the marina (not shown in the master plan of the project, Figure 4) and interceptions that will result from the four lagoons (shown in Figure 4) on the caprock groundwater itself. The significance of these impacts depends, presumably, on what use is made of the caprock water by the project itself, but these impacts should be recognized in the EIS. The significance might be considerable if, for example, the distance to the present shoreline from the well that is counted on as an irrigation-water source is significantly the less than the distance from the well to the shoreline of the nearest lagoon or marina.

9.17 Archaeological, Historical, and Paleontological Sites (p. 9-110)

The reviews provided by our archaeological reviewers were so detailed and extensive it seemed advisable to append them to our review rather than risk errors in attempting to synthesize the key issues. Hence, please note the archaeological reviews of the West Beach Resort project in Appendicies A and B.

9.18 Population Impact (p. 9-118)

The proposed project would have a projected population of 21,000 people. Waianae, the nearest urban concentration, had a 1980 population of 31,487. Yet there is virtually nothing in the EIS about possible socioeconomic consequences of the project with the exception of the possibility of employment opportunities at the project which might involve Waianae residents. In the social area, the EIS demonstrates a very limited conception of the "affected environment."

9.19.5 Preliminary Evaluation of the Proposed West Beach Resort...(CZM) (p. 9-127 to 9-128)

State coastal zone management law requires county officials to assess "the potential cumulative impacts of individual developments, each one of which taken in itself might not have substantial adverse effect..." There is almost nothing in the EIS about cumulative impacts except with regard to the impact of the project on the availability of visitor facilities on Oahu and traffic impacts.

There is virtually nothing provided in terms of regional or cumulative impacts and mitigative measures to alleviate or reduce those impacts. The statement that mitigative measures will be incorporated into the design plans is well taken but without any specifics is all but useless in an evaluative sense.

We appreciate the opportunity to comment on this DSEIS and hope you will find our comments useful in the preparation of the final document.

Yours truly,

Jacquelin N. Miller
for Doak C. Cox

Doak C. Cox
Director

cc: OEQC
Fred Rodriguez,
Environmental Communications, Inc.
Bryce Decker
George Curtis
Matthew Spriggs
Bertell Davis
Edwin Fujii
Kem Lowry
John Burgess
Reginald Young
Ruth Gay
Richard York
Jacquelin Miller
Noreen Tashima
Pamela Bahnsen

May 20, 1985

MEMORANDUM

TO: Environmental Center

FROM: Matthew Spriggs, Anthropology

SUBJECT: Evaluation of Draft Supplemental EIS
West Beach Resort
Honouliuli, Oahu

Barrera's Report (Appendix 1, Section 8) of the EIS is inadequate in several areas (1) descriptions of several of the sites are not detailed enough, (2) no serious discussion of the significance of sites is given and no consideration of alternative actions such as preservation of sites is made, (3) the sampling strategy for the test pit survey of area VI is not explained, and (4) no historical background research is included to aid in interpreting function and significance of the sites.

(1) Site Descriptions

(a) Site 1434, p. 16

The description of this site is inadequate. No maps of the site showing location of the test pit are included, no details of stratigraphy such as placement of the artifacts by depth is given. "Definitely recent historic artifacts" are not defined. Bottle glass can often be identified as to age--was this attempted? Is recent 50 years old, 100 years or 150 years old? Without such information evaluation of site significance is impossible. Barrera mentions "information provided by a local resident" as suggesting a "recent" date. What was this information? A search for historic documentation relating to this structure could have helped determine its age and significance. Just because something is historic (i.e. sometime after 1778) does not mean it lacks archaeological significance. Without indication of age this significance is impossible to evaluate. I note it is within the area slated for a park. Preservation within the park is a possibility not addressed.

(b) Site 1437, pp. 27-29

Description of this site is inadequate. No maps of the site showing the location of test pits is included and only a single stratigraphic profile is described from the two test pits yielding cultural materials. Descriptive terms such as "numerous" or "occasional" do nothing to convey information about the midden contents of the site. Was screening of the deposit undertaken during excavation?

(c) Site 2717, p. 36-

Barrera notes that approximately one-third of the features (p. 22) in site 2717 have been destroyed. No information is given, however on what has been destroyed and what remains. In evaluating the significance of this site we need this information.

(d) Figure 29, pp. 9-112

In the EIS, it lists two sites, numbers 1446 and 1447 which are nowhere discussed in the EIS text or Barrera's reports. This is a serious omission as 1446 in particular appears to cover a large area.

(e) B6-139 Sink, p. 46

Is this correctly located on the map on page 37? My recollection is that this sinkhole was within the harbor area and has now been destroyed. If it has not been destroyed and is correctly located on the map, it would appear to be located in a park area. With interpretive signs it would be an informative exhibit about the extinct birds of the area.

(f) No description is given of Survey Area VII, four non-contiguous parcels shown on Figure 2 in Barrera's report. All other survey areas are described.

(g) It appears that large areas, presumably of former sugarcane land but including areas of coastline, have not been surveyed at any time according to Figures 2 and 3 in Barrera's Report, showing the areas of his 1979 and 1984 survey. No indications are given that any survey of these parcels is planned. These should be undertaken before the EIS is accepted, to assess possible cultural resources in the area. Barrera's location (p. 31) of a possible site in former cane land demonstrates that such resources could still exist in former cane land.

(2) Site Significance

Site significance is usually assessed as having three potential components: research significance to archaeologists as providing information about lifeways; interpretive significance as providing an educational exhibit to the general public; and cultural significance which in the case of the sites located at West Beach would be significance to native Hawaiians because of cultural and/or religious values. Preservation as an alternative to salvage excavation should be considered for several reasons. Preservation of sites as a "resource bank" is preferable where possible because archaeological techniques are constantly being improved and so more information can be collected in the future than is possible today as archaeological techniques improve. A second reason for considering site preservation is for public education and interpretation as an exhibit illustrating aspects of the history of an area. A third reason is because of the cultural significance of sites to particular groups. In Hawaii prehistoric religious sites (heiau) are usually considered to have particular cultural significance and efforts are often made to preserve them during development projects. To adequately assess cultural significance, consultations should be made with the local Hawaiian community.

In Barrera's report there is no adequate discussion of site significance nor of how his recommendations were arrived at. The sites in the marina area were considered eligible for the National Register, a mark of their importance. All clearly have research significance. Site 2718, a major archaeological complex clearly also has high interpretive significance and could be developed as a "theme park" illustrating traditional Hawaiian adaptation to the area. The 20 features include 9 substantial architectural components --enclosures, platforms and walls as well as walled sinkholes and cairns. As well as high research and interpretive significance, the site also has possible cultural significance

which needs to be evaluated. As an interpretive exhibit it would be an attraction for tourists and residents alike. With the destruction of many sites within the archaeological district because of harbor construction, etc. this complex takes on added significance. Without knowing how much remains of site 2717 its significance cannot at present be evaluated.

Site 1433 is a fishing shrine (ko'a ku'ula), one of the few remaining on this island. As well as having research and interpretive significance, it clearly has cultural significance to native Hawaiians as a shrine. It is situated in an area set aside as a park, and there would appear to be no reason why it cannot be preserved. I would recommend it be restored under the direction of trained archaeologists as the centerpiece of the park. Barrera's recommendation of salvage only represents a lack of cultural sensitivity.

Where possible, sinkholes, should be preserved because of their potential research significance, as Ziegler notes in his report on the palaeontological remains. Some could be displayed for their interpretive value. Others could be set aside as a resource "bank" and perhaps filled with sand to protect them (and the public). This should be considered especially for any sinks in park areas.

(3) Area VI Survey, p. 25

No map is given of placement of the auger and test pit holes and no discussion of the sampling strategy is given as should be normal procedure in such a report. What was the placement of pits based on? How many pits were excavated? Excavated to what depth? A methodology discussion needs to be added to this report to allow an evaluation of the adequacy of the procedures used.

(4) A section of historical background material should be included. Knowledge of the early historic use of the area gives clues as to prehistoric utilization as well as aiding in the interpretation of historic features and evaluating land use activities which may have impacted the cultural resources.

Recommendations (cf. Barrera, p. 34)

Site	Significance evaluation*	Barrera's recommendation	Spriggs recommendation
1430	R	Salvage	Concur
1431	—	No further action	Concur
1432	—	No further action	Concur
1433	R, I, C	Salvage	Preservation, restoration
1434	R(?), I(?)	No further action	Salvage, possible preservation (Not enough information provided to allow adequate evaluation)
1435	—	No further action	Concur
1436	R, I	Record in detail, possible relocation	Concur
1437	R	Salvage	Concur
1438	R	Salvage	Concur
2717	R, I(?), C(?)	Salvage	Salvage, possible preservation (Not enough information provided to allow adequate evaluation)

2718	R, I, C(?)	Salvage	Preservation, interpretive display
2719	R, I(?)	Salvage	Concur. Preserve if possible
2720	R	Salvage	Concur
2721	R	Salvage	Concur
Site mentioned on page 31	R	Salvage	Concur. It should be assigned a site number.

*R=Research, I-Interpretive, C=Cultural

In addition a sample of sinkholes should be excavated following the strategy suggested by Ziegler. Further, some sinkholes should be preserved for interpretive display and as a resource "bank" for future research. Whether sinkhole B6-139 is on the property and has not been destroyed should be determined. If it is still in existence I would recommend it as part of an interpretive exhibit on the extinct birds of the area. Survey of the remaining areas of the property which have not yet been covered, should also be undertaken.

Summary: The archaeological report by Barrera is inadequate in several respects, and needs substantial revision before it is accepted. Description of the cultural resources present in the area are inadequate. Not enough information is given to evaluate the significance of several sites, two of which (1446 and 1447) are plotted on Figure 29 of the EIS but nowhere mentioned in the text or Barrera's Report! Large areas of the property do not appear to have been surveyed for cultural resources and no recommendations are made for survey and evaluation of these areas. The question of significance of sites is not adequately addressed, nor are alternatives to salvage and then destruction of the sites addressed. Sites 433 and 2718 should be preserved as having high interpretive (and in the case of 433 cultural) significance. Site 2718 is within the Archaeological District deemed eligible for the National Register of Historic Places but it's obvious importance is not adequately discussed. In reading comments on the original 1979 Barrera Report (see EIS section 13, unpaginated, letter from Bishop Museum). I note that virtually no changes have been made by Barrera in response to Museum comments, comments which raised serious concerns about the original report. Specific responses should be made to the concerns expressed by the Museum at that time as this has not yet been addressed in the EIS. I recommend that the EIS not be accepted until the many archaeological concerns which have been raised are adequately addressed.

TO: DR. JACQUELIN MILLER, ENVIRONMENTAL CENTER
UNIVERSITY OF HAWAII AT MANOA
CRAWFORD 317, 2550 CAMPUS ROAD
HONOLULU, HAWAII 96822

FROM: BERTELL D. DAVIS
ARCHAEOLOGIST

RE: JOINT FEDERAL-STATE DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR WEST BEACH, HONOULIULI, EWA DISTRICT, ISLAND OF OAHU, HAWAII

Three times over the past year I have had occassion to express my concern regarding what I now fully believe to be a consistent and absolutely unacceptable lack of due consideration in the current EIS process for significant cultural/historical resources in the proposed West Beach development area. I twice provided detailed written testimony to the Hawaii State Land Use Commission. The first of these (dated 29 May 1984) addressed unsubstantiated assertions, made directly and by implication, and ommissions of data in the revised Environmental Impact Statement of 1981, in the developer's Boundary Amendment Petition submitted to the Land Use Commission in 1983, and in the 1984 preparation notice for the Supplemental Impact Statement. Following the release of the 1984 Archaeological Status Report for West Beach by William Barrera, I again submitted written testimony (date 18 September 1984) expanding on my original commentary and further documenting the growing inadequacies regarding historic preservation. Finally, this past January I had the opportunity to present my opinions in person directly before the Commissioners.

From the beginning I have eschewed merely generalizing complaints and lengthy diatribes against the proposed development. Rather, my focus has been expressly upon the disposition of significant archaeological and historical resources at West Beach. I pinpointed what I viewed as areas of inadequate presentation and/or lack of prudent consideration for alternative actions. These were all substantiated on a larger body of data available from the sites, both within and adjacent to the West Beach area than what has been acknowledged in the various environmental assessments up to that time. On a more constructive note, I further suggested a number of possible directions open for developing a stronger and more responsible cultural resources program that would not necessarily be incompatable with the proposed development. In view of past events all too common regarding archaeological/historical sites on Oahu, however, I also most strongly urged that should the Land Use Commission decide for approval of the West Beach Boundary Amendment, then such approval should only be upon the condition that:

a. The Supplemental Impact Statement present a detailed mitigation plan for preservation and/or data recovery, complete with a research design and methodology, for peer review and revision, if necessary, prior to the implementation of the plan. And,

b. The final mitigation plan be implemented and completed prior to the Commission's final approval of the Boundary Amendment.

That (draft) Supplemental Environmental Impact Statement for West Beach (dated 29 March 1985) is now available for review. And what of that document, do we see a manifest concern for the prudent management of significant archaeological/historical resources at West Beach? NO! Instead, what we have here is a document which can only be politely labeled as being less than candid. In too many respects it is actually worse and more offensive than previous documents, especially in view of the extensive input on the part of professional archaeologists and other conscientious members of the research and educational community. It is obvious from the short shrift given the West Beach sites that all our efforts have so far been for naught.

A few brief examples are more than sufficient to illustrate this air of indifference that has permeated the whole process of cultural/historical assessment at West Beach, beginning right from the consulting archaeological reports through the EIS documents themselves. For instance, it is of interest to note that the developer's own consulting archaeologist has admitted, as a matter of public record, that he considers me to be the most knowledgeable individual regarding the archaeology of the Barbers Point region--including the West Beach project area. From their continuing association over the past five years or more, one can only conclude that the developer must surely be taking the consultant's judgement into consideration. If this is indeed true...

1. Why then, after nearly a year of input on my part, does the draft Supplemental Impact Statement (page 9-110) persist in claiming that only twenty-some sites are located within that portion of the West Beach area identified as being part of the Barbers Point Archaeological District, a property designated eligible for inclusion on the National Register of Historic Places, when in fact I have repeatedly shown that in excess of sixty archaeological sites have already be recorded therein?

2. Why then, is there still no discussion anywhere that these sites in part comprise a major late-prehistoric/early-historic Hawaiian habitation complex (Site Complex 2718) and neaby, a presumably associated gardening complex (Site Complex 2717) adapted to the unique arid coralline environment of the region? And,

3. Why then, is there no mention that the location of these sites represents very nearly the last of this unique environmental circumstance in the region where the critical site-to-site and site-to-landscape associations still survive relatively intact?

This is in essence "old business". But the draft Supplemental Impact Statement also introduces "new business"--new inconsistencies, new contradictions, nwe ommissions.

1. Why, on page 9-110, is it stated that "twenty-six archaeological sites were identified in [the] portion of the [Barbers Point Archaeological] District lying on the West Beach Property" when the revised EIS of 1981 claimed there were only twnty-four such sites? Could this be new data from Barrera's 1984 archaeological status report? If so, then what are these two new sites? Where are they located? What course of action is

recommended for those sites? The draft Supplemental Impact Statement is curiously uninformative. For that matter, so is Barrera's own report.

2. Why, on page 9-112, does the map of the 1984 archaeological survey area show two extra sites (Sites 1446 and 1447) which are otherwise nowhere to be found--either in the text or tables of the draft Supplemental Impact Statement, or in the consultant's status report? Maybe these are the two new sites. But then, according to the map given, only one site is located within the Barbers Point Archaeological District. Perhaps there is a third new site somewhere out there still to be accounted for.

3. Where is the human burial that I found and reported a number of years ago in Site Complex 2717? It is not acknowledged in either the draft Supplemental Impact Statement or Barrera's status report, although it does appear in the Historic Sites map identified as Exhibit K of the developer's petition for a District Boundary Amendment (from agriculture to urban) submitted to the Hawaii State Land Use Commission and dated as received by the LUC on 21 December 1983.

4. Why has the following been deleted from the draft Supplemental Impact Statement?

> The development has the potential for destroying all the sites. [Because the Barbers Point Archaeological District was declared eligible for inclusion on the National Register of Historic Places]...work in the district involving a federal permit will require coordination with the USA Advisory Council on Historic Preservation and the State Historic Preservation Officer for their opinions concerning the project effects and potential mitigative actions. This coordination will be accomplished and any required Memorandum of Agreement developed prior to issuance of the Department of the Army permit. The work not requiring a Fedeal [sic] permit will be coordinated with the State Historic Preservation Office. Table 15 lists the significant archaeological sites and mitigative actions suggested by the archaeologist and those actions necessary to protect archaeological resources within the archaeological district. The developer will implement these recommendations and mitigative actions (revised EIS of 1981, page 116...emphasis mine).

Can it be that such an open admission that the proposed development will destroy significant cultural/historical resources at West Beach, including sites already declared eligible for inclusion on the National Register, has been deemed inappropriate for a public disclosure document of this sort? As for the recommendations that were originally made in the above cited Table 15 which, by the way, was retained intact in the developer's Boundary Amendment petition...

5. Why have all recommendations suggesting the possibility of "preservation or salvage, display enhancement" been downgraded to salvage only in the

draft Supplemental Impact Statement? And,

6. Why, especially, have recommendations to preserve and restore (display enhancement) the only known ancient Hawaiian fishing shrine surviving on the Waianae coast now been deleted from consideration--particularly in view of the fact that the land upon which this religeous site is located has been designated for public park use by the West Beach developers? This seems most callus and ill-conceived.

The foregoing are not the only examples I could cite; there are more. The list is not endless, but at this stage there is little to be gained by trying to raise each and every issue--particularly when so much effort has already been expended only to receive a document that not only fails to forward an integrated cultural/historical preservation plan commensurate with the scale of the proposed development at West Beach, but indeed retreats ever further away from such a plan. I need only note that what was at least a written commitment to implement even the modest recommendations appearing in the 1981 revised EIS and the 1983 Boundary Amendment Petition (Item 4, above) has been deleted from the draft Supplemental Impact Statement.

In closing, for all of the reasons I have stated above, and all those that I and others have detailed again and again in the past, I am forwarding this letter and my previously critiques to the parties indicated below.

Respectfully,

Bertell D. Davis

Bertell D. Daivs
20 May 1985

cc: James Campbell Estate
Bernice P. Bishop Museum
State Historic Preservation Office
U.S. Army Corps of Engineers, Pacific
Native Hawaiian Legal Project
Society for Hawaiian Archaeology
National Park Service
Interagency Archaeological Services
Department of Land Utilization
Environmental Communications, Inc.

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

June 3, 1985

Dr. Doak C. Cox, Director
U.H., Environmental Center
Crawford 317
2550 Campus Road
Honolulu, Hawaii 96822

Dear Dr. Cox:

We are in receipt of the Environmental Center's comments dated May 23, 1985 on the proposed West Beach Resort DSEIS and we respond in the following:

1. Cigutera is caused by toxic ephiphetic algae called Gambierdiscus toxicus which grows as an epiphyte on macroalgal species such as Spiridia sp. and Hypnea sp. These species tend not to be predominant in the West Beach area because the wave energy is too high. The point has been made many times that even the association between the toxicity of G. toxicus and the presence of G. toxicus is not a tight one. To further complicate matters, an island-wide survey of G. toxicus found the largest amounts in association with Spiridia sp. off Waikiki with no reports of poisoning, thus indicating that increased numbers of G. toxicus does not necessarily reflect toxicity. Regarding causes, there's a general indication that new surfaces are related, but this is not conclusively linked. A DOH map of the islands giving the cases and types of the fish poisoning shows a concentration around Pokai Bay (this dealt with data up to 1982), yet there was a major storm damage in 1980 and 1983 which created new surfaces. These were not accompanied by an increased incidence in ciguatera poisoning, suggesting that the increased incidence around Pokai Bay was due to something other than the creation of new surfaces per se. In connection with the Deep Draft Harbor, the Corps has taken a most reasonable approach of monitoring the algae in the area, not the fish. During the period of construction, they have been taking monthly samples and looking for G. toxicus directly. Latest information on this analysis (July, 1984) was that they found no increased concentration of G. toxicus in the area affronting the Deep Draft Harbor. Thus, there is no correlation between the abundance of the target algae and the dredging activity in the area. The rationale in taking this approach is that there is a lag time between the increase of the algal biomass and the toxicity of the fish which might eat the algae and subsequently accumulate the toxin. Looking at the algae directly gives them a chance to identify an increased algal biomass (although not positively indicative of toxicity per se) and notify the public before fish in the area might actually become toxic. It has also been a policy there to post signs during construction notifying fishermen of the potential for toxicity connected with the fish.

1146 FORT STREET MALL, SUITE 200 • P. O. BOX 536 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-8391

2. Public access and use within designated areas within the Marina is proposed at the present time. In similar use plans like the Ala Wai Boat harbor, the Marina will have designated public areas for boat launching, fuel and supplies, commercial berthing facilities, and also private berthing facilities for yacht owners. These specific details are being determined with the aid of the State DOT Harbors Division.

   Safe public access routes along the lagoon system are also in the early planning stages and are being worked with the review assistance of the City Parks & Recreation Department.

3. Solid Waste management is presently in a state of planning by government and the private sector. The proposed garbage to energy plant at Campbell Industrial Park, and proposed landfill sites indicate that at the time of implementation, West Beach will have access to Solid Waste disposal in approved facilities.

4. Proposed water for the project is anticipated to be allocated from the recently declared Pearl Harbor aquifer excess of 22.5 mgd (see attached letter of March 14, 1985 from Department of Land & Natural Resources to Councilman Leigh-Wai Doo). Therefore, no adverse impact to the aquifer is anticipated since present Oahu Sugar Company's (OSCO) pumpage has been reduced accordingly. The project's water requirement of 4.5 mgd will be withdrawn from the aquifer by construction of new wells in the vicinity of existing OSCO wells whose pumpage has been decreased. For the project's potable requirement of 2.5 mgd, the new wells are planned in the Honouliuli area mauka of the H-1 Defense Highway, where existing OSCO wells withdraw potable quality water. Likewise, the project's irrigation water requirement of 2.0 mgd will be supplied by construction of new wells on-site or mauka of the West Beach site, where OSCO has reduced pumpage from its existing caprock brackish water wells.

5. The Drainage Master Plan as envisioned by the retained engineering consultants will utilize the golf course proper as a massive silting basin during 8 and 24 hour storms, 50 and 100 year events. The drainage system for West Beach does make use of settling ponds before storm drainage reaches the Marina. Secondly, the discharge points are located in the mauka portions of the marina so that settling of all but the finest materials will be completed before reaching the entrance to the deep draft harbor channel or the ocean. These remaining very fine material stay in suspension indefinitely. It is recognized that turbidity of the magnitude your office describes can be detrimental not only to the Waianae coasts, but also to the West Beach offshore waters. The construction phase and the planned usage of the Marina site as a temporary silt basin will be planned and reviewed by the City and also the State to insure that degradation to the coastal waters will be minimized to practicable limits during construction. Connection to the ocean will not take place until the marina is ready to be opened for use.

6. In our findings, the existing soils is "Lualualei" series clay, which has low infiltration rate (permeability is slow) and, therefore, as a part of the soild improvement for landscaping, the developer will import better material and/or add granular material to improve the infiltration rate and soil conditions. In addition, the proposed major drainageways are unlined natural channels along the golf course, which would promote "recharging" capability. Moreover, the natural infiltration (recharge) on the site is likely very low because of the low average rainfall and takes place only during the few winter storms.

7. Flushing criteria for the lagoon systems is acknowledged as acceptable.

8. Tsunami runup calculations that were provided by Dr. Charles Bretschneider were considered conservatively safe in the initial review by the Corps of Engineers staff. In view of their initial commentary, we are confident that these calculations will prove to be valid in the Corps' final review for the 404 permit. For design purposes a single elevation value has been selected. Grades along the entire West Beach developed perimeter are raised to a +15 foot level behind the beaches, shoreline, and inland of the marina basin to preclude storm innundation.

   The references to tsunami hydrographs were in reference to those listed in Dr. Bretschneider's study which were contained in Appendix II, If your office did not receive this study, they are available.

9. Noise impact considerations, particularly for those residential units planned along Farrington Highway will take into consideration this potential impact. As to the final decision on whether the attenuation features your office recommends will be implemented, the land planner and architects will need to examine this aspect with the appropriate City & State agencies at the time of final approval.

10. Potable Water is a subject that should be identified as a joint cooperative effort between the landowner, Campbell Estate, Department of Land & Natural Resources, and the Board of Water Supply. The landowner has developed a Water Master Plan that is currently under review by government and final resolution of those items contained in your comments require agreement and concensus prior to final disposition. Board of Water Supply master planning is presently considering source development in the Waianae District for use there and this is planned to relieve future demands on Waianae source water. The comments on subsurface groundwater being intercepted by the development of the lagoon/marina system has been discussed with Steve Bowles. Mr. Bowles cited the Dale report done to examine this problem for the deep draft harbor. According to Bowles testimony, this will not impact the subsurface groundwater movements. We appreciate your calling this to our attention.

Dr. Doak C. Cox
June 3, 1985
Page 4

11. The comments for Archaeology, Paleontology, and Cultural Resources were refered to Chiniago, Inc. for response as Mr. William Barrera was the consultant who prepared the works in conjunction with Dr. Alan Ziegler. His responses are provided as appended and also directly to Bertell Davis and Matthew Spriggs.

12. A new section has been added to the FSEIS and you are directed to this section, 8.8.4.

13. CZM consistency for the West Beach project is still a function of those agencies that review major projects such as West Beach. We have discussed this subject with many agencies and groups to no final resolution; the prime responsibility for cumulative impacts that can be attributed in part or whole to a project like West Beach must continue to rest with agencies such as DPED, DGP, and DLU whose function as land use planning entities take-into consideration through the land use processes (State Land Use Commission, Development Plan, Zoning) those allowable limits of development.

Thank you for your comments and continuing interest.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

Attachment

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
HONOLULU, HAWAII 96809

MAR 14 1985

Honorable Leigh-Wai Doo, Chairman
Planning & Zoning Committee
City Council
City Hall
Honolulu, Hawaii 96813

Dear Councilman Doo:

Pearl Harbor Ground Water Control Area

A few months ago you were in the process of establishing a City Council policy on the processing of zoning and land use amendment requests where those requests related to the question of water availability in the Pearl Harbor Basin.

You would be interested in knowing that at the December 14, 1984 meeting of the State Board of Land and Natural Resources, the Board conditionally recertified the Oahu Sugar Company's ground water withdrawal and use at 92.5 mgd. The previous certified withdrawal for Oahu Sugar Company was 115 mgd. The recent recertification means that approximately 22.5 mgd of water allocation is now considered uncommitted by the Board of Land and Natural Resources in the Pearl Harbor Ground Control area.

We have had tentative inquiries from interested parties as to possible allocation of the uncommitted water for their respective purposes. In this connection, we are presently working on establishing a procedure whereby new or additional ground water withdrawals will be permitted from the Pearl Harbor Ground Water Control Area.

It would seem that with this recent recertification, the water source and allocation problems in the Pearl Harbor aquifer have been relieved somewhat and that pending developments can now rely on new water being available over the next several years, depending on the rate of withdrawals.

Please contact me or my staff if you have any questions on this matter.

Very truly yours,

SUSUMU ONO
Chairperson of the Board

cc: Mr. Kazu Hayashida, Board of Water Supply
Mr. John Whalen, Dept. of Land Utilization
Mr. Donald A. Clegg, Dept. of General Planning

Misc. Com. No. 447

CHINIAGO INC.
Archaeological Consulting

1040-B SMITH STREET • HONOLULU, HAWAII 96817 • TELEPHONE: (808) 521-2785

May 29, 1985

Mr. Fred Rodriguez
Environmental Communcicatons Inc.
P.P BOx 536
Honolulu, hawaii 96809

Dear Mr. Rodriguez:

This letter is written in response to undated comments made by Mr. Bertell D. Davis and a memorandum from Matthew Spriggs, dated May 20, 1985, regarding the Draft Supplemental Environmental Impact Statement for West Beach.

By way of general introduction, it should be pointed out that, in the absence of any explicit rules, regulations or guidance from the State Historic Preservation Office, I have always understood that it is the intention of the developer to coordinate all historic site mitigation with the State Historic Preservation Office. It should also be pointed out that the field surveys at the West Beach area have been a continuing process, and that new information has been added to the existing stock as it was found, and therefore none of the previous studies should be considered complete insofar as the entire West Beach project area as a whole is concerned. And finally, "preservation" as an alternative is always implicit in any discussion of recommendations. It is not necessary to tell the developer that he does not have to destroy a site. All recommendations for salvage assume that the developer is already aware of his right to avoid a site if he so chooses.

My specific comments are as follows:

DAVIS, page 2:

> "For instance, it is of interest to note that the developer's own consulting archaeologist has admitted, as a matter of public record, that he considers me to be the most knowledgeable individual regarding the archaeology of the Barbers Point region--including the West Beach area."

In the first place, I believe the question as put to me was phrased in terms of the Barbers Point AND West Beach area. Stated that way, I replied in the affirmative. I was never asked if Mr. Davis was the most knowledgeable individual regarding the sites in the West Beach area alone. Had I been asked that question, I would have said no.

In the second place, just because I recognize that Mr. Davis probably has more facts stored in his head regarding the sites of the Barber's Point area than anyone else does not necessarily mean that I therefore implicitly trust his judgement regarding those sites. There is no connection between the two. If there were, it would defeat Mr. Davis's own argument, because I myself am the most knowledgeable person regarding the sites of the West Beach area, and using Davis's own argument, my judgement is more valid than his.

DAVIS, page 2:

> "Why then, after nearly a year of input on my part, does the draft Supplemental Impact Statement persist in claiming that only twenty-some sites are located within that portion of the West Beach area identified as being part of the Barbers Point Archaeological District, a property designated eligible for inclusion on the National Register of Historic Places, when in fact I have repeatedly shown that in excess of sixty archaeological sites have already be [sic] recorded therein?"

This assertion is unanswerable, as I am unable to find anyplace where Mr. Davis has repeatedly shown in excess of sixty sites in that portion of West Beach in the Barbers Point Archaeological District.

DAVIS, page 2:

> "Why then, is there still no discussion anywhere that these sites in part comprise a major late-prehistoric/early-historic Hawaiian habitation complex [Site Complex 2718] and neaby [sic], a presumably associated gardening complex [Site 2717] adapted to the unique arid coralline environment of the region?"

Because it is premature to draw conclusions from sites which have not been completely studied, and, in any event, an Environmental Impact Statement is not the proper place to present such conclusions. Such claims as Mr. Davis makes for the sites in this regard are best left until the completion of a research project.

DAVIS, page 2:

> "Why then, is there no mention that the location of these sites represents very nearly the

> last of this unique environmental circumstance in the region where the critical site-to-site and site-to-landscape associations still survive relatively intact?"

Because no evidence to support this contention has been put forward. The entire Barber's Point area has not been surveyed.

DAVIS, page 2:

> "Why...is it stated that 'twenty-six archaeological sites were identified in [the] portion of the [Barbers Point Archaeological] District lying on th West Beach Property" when the revised EIS of 1981 claimed there were only twnty-four [sic] such sites?".

Our work at West Beach has been a continuing effort. New sites have been found within the past year which were not included in any previous reports. These include sites in areas not surveyed for the West Beach project, as well as in an area that had been intensively surveyed by Bishop Museum prior to preparation of the 1981 EIS.

DAVIS, page 3:

> "Why...does the map of the 1984 archaeological survey area show two extra sites [Sites 1446 and 1447] which are otherwise nowhere to be found--either in the text or tables of the draft Supplemental Impact Statement, or in the consultant's status report? Maybe these are the two new sites. But then, according to the map given, only one site is located within the Barbers Point Archaeological District. Perhaps there is a third new site somewhere out there still to be accounted for."

The problem arises because of two maps from the State Historic Preservation Office which accompanied the request for determination of eligibility of the Barbers Point Archaeological District to the National Register of Historic Places. Each of the maps shows the District boundary in a different place, which led to the erroneous inclusion of an extra site in the District.

DAVIS, page 3:

> "Where is the human burial that I found and reported a number of years ago in Site Complex 2717? It is not acknowledged in either the draft Supplemental Impact Statement or Barrera's status report, although it does appear in the Historic Sites map identified as Exhibit K of the developer's petition for a District Boundary Amendment [from agriculture to urban] submitted to the Hawaii State Land Use Commission and dated as received by the LUC on 21 December 1983?"

This burial, which was either not found during the intensive survey of Davis and Griffin, or for some reason not reported at that time, was inappropriately mentioned in the LUC District Boundary Amendment petition to which Mr. Davis refers. None of the other individual features from that or any of the other sites was singled out for such particular attention, and there is no reason to do so at this time.

Because many of Spriggs's concerns have been addressed in my responses to Davis's comments, rather than replying on a one-by-one basis I would just like to make a few overall observations and close with a few specific comments which I feel are warranted.

First, regarding the adequacy of the site descriptions, it should be pointed out the question of adequacy is a purely personal, subjective matter. This is demonstrated by the fact that several of Spriggs' conclusions are at direct odds with those of Davis, who stated in his letter of 10/26/79 to the Environmental Center:

> "In general, the basic field report seems quite adequate and it is unlikely that major remains were overlooked by the survey team. The site descriptions are concise and the map locations clear..."

In addition, Spriggs's complaint that there is inadequate documentation to allow one to draw conclusions is belied by the fact that he himself draws such firm conclusions as the following, referring to the sites in the marina area:

> "All clearly have research significance. Site 2718, a major archaeological complex clearly also has high interpretive significance and could be developed as a 'theme park' illustrating traditional Hawaiian adaptation to the area."

As for the imputed cultural significance of the sites, that

question is outside my field. I do archaeology, not sociology, and Spriggs's comments would be more profitably addressed to the proper experts.

Spriggs makes one particular statement which is clearly false:

> "The sites in the marina area were considered eligible for the National Register, a mark of their importance."

The fact is, the eligibility criteria for the National Register are so broad as to make all sites, even ones that are no longer in existence, eligible. A site is not necessarily important because it happens to be eligible.

Finally, I would point out that Site B6-139, which was destroyed during harbor construction, is located correctly on the map.

Sincerely yours,

William Barrera, Jr.
President

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ
PRESIDENT

June 3, 1985

Mr. Bertell Davis & Matthew Spriggs
Environmental Center
Crawford 317
2550 Campus Road
Honolulu, Hawaii 96822

Dear Messrs. Davis & Spriggs:

We are in receipt of your comments dated May 20, 1985 on the West Beach DSEIS and we respond in the following:

William Barrera who prepared the archaeological studies performed for West Beach responds directly to the concerns expressed in your comments. We further note that at recently completed State Land Use Commission public hearings, Mr. Earl Neller stated that West Beach was not nominated to the National Register due to the fact that the 1980 amendment to the Historic Preservation Act requires landowners consent before any site can be placed on the National Register. He further cited shortage of time and manpower as other reasons. (TR 2/7/85: p. 79 [13]-8[9]). Neller also stated that the quality of Barrera's works is better than most he has in his State Historic Preservation Office. (TR 2/7/85: p. 91 [4-7]). Neller further stated that in a letter from the Advisory Council on Historic Preservation dated October 2, 1985, the staff archaeologist for the Advisory Council had reviewed Mr. Barrera's report and found it well done, especially with respect to recommendations for avoidance and/or protection of sites considered to be significant. (TR 2/7/85: p. 91 [8]-92 [25]).

Neller admits that portions of the West Beach project have similar remains to those in the Barbers Point Deep Draft Harbor area. (TR 2/7/85: p. 57 [5-9]).

There are also other sites in the Barbers Point area, but not on the West Beach property that may be of equal or greater archaeological significance. These areas outside of West Beach include the following:

1. The Quarry site mauka of the deep draft harbor;
2. Areas within Campbell Industrial Park;
3. Areas within the Barbers Point Naval Air Station (a definite possibility); and
4. Ewa Marina Area (TR 2/7/85: p. 95 [7]-97[9], and 98 [13-18]).

Finally, Neller stated that he believes that there is an important and unusual "one of kind" two step rock platform believed to be of religious significance at Ewa Marina, and despite the fact that Neller felt that Ewa Marina sites may be of equal or greater archaeological significance than West Beach, Bertall Davis still did not recommend preservation for any particular site at Ewa Marina. (TR 2/7/85: p. 97 [10]- 98 [18]).

These extracts from the State Land Use Commission public hearing testimony are on record and available using the reference page numbers provided.

Further, the following extracts taken from State Land Use Commission hearings held on January 17, 1985 are provided. These extracts relate to testimony provided under oath by Bertell Davis and his statements made on:

1. Barrera's 1984 Archaeological Report on West Beach
2. West Beach Experts
3. Maps prepared by Barrera
4. Sinkholes
5. Davis Experience
6. Other sites of equal or greater significance
7. Davis' Deep Draft Harbor Report
8. Preservation
9. Significance vs. Money
10. Eligibility for inclusion on the National Register

Barrera's 1984 Archaeological Report on West Beach

Davis admitted that Barrera found archaeological sites that were never found by ARCH, Bishop Museum or himself. (p. 155[5-11])

Davis testified that he believes that Barrera found the Limestone Kiln at West Beach. (p. 141[19-22])

Davis testified that sites 1431, 1432 and 1435 are miscellaneous sets of walls that seemed to be treated quite well in Barrera's report, so he has no real concern regarding those. (p. 100[21-23])

Davis testified that sites 1437, 1438 and 2721 are all beach middens. In general, Davis has found Barrera's basic description and treatment of those "rather amorphous" exposures of the midden on the face of the sand dune to be well-taken. Davis thought Barrera's recommendations regarding those specific sites are also reasonably well-taken (p. 102[13-19])

Although Davis made comments regarding the Lime Kiln, Davis admitted that he never read Glenn Mason's report on the Lime Kiln. (p. 122[4] and p. 155[3-4])

West Beach Experts

Davis admitted that he feels that West Beach consultant Glenn Mason has more expertise and experience in historical restoration and rennovation architecture than himself. (p. 140[3-6])

Davis admitted that West Beach consultant Dr. Alan Ziegler has more expertise and experience in biology and palentology than himself. (p. 144[13-15])

West Beach consultant Dr. Alan Ziegler was a witness for Intervenor's Counsel Alan Murakami in a case regarding the coral stock piling areas at the Deep Draft Harbor before the City Plannng Commission. (p. 143[4] - 144[2])

Map Prepared By Barrera

In 1979, when Bertell Davis visited the site area to look at other sites in the northern portion of the project area which he had not been in previously, Davis found the descriptive level of Barrera's Report sufficient to locate those sites. (p. 79[5-9])

When asked about the sufficiency of Barrera's maps, Davis testified that locationwise, the locator map was quite good, and that was primarily what allowed him to relocate the sites. (p. 80[23] - 81[1])

Davis testified that in Barrera's most recent report, a distribution map of a selected survey area was made showing the distribution of sinkholes which he believes that Barrera defined as being accessible, however, Davis doesn't think that Barrera tried to map the smallest sinkholes that you could get into. (p. 81[16-21]) Davis testified that Barrera's 1984 Supplementary Report gives a much better survey map of the sinkholes, albeit a restricted area. (p. 116[8-9]) Davis also testified that he did not have problems with Barrera not listing each and every sinkhole and that Barrera does not have to list each one and give each one a number. (p. 144[16-23])

Sinkholes

Davis testified that Barrera's estimate of 800 sinkholes in the West Beach area is a fair assessment. (p. 144[24] - 145[4])

Davis admitted that the he did not do a fair assessment of the number of sinkholes in his 1978 Archaeological Survey Report for the Deep Draft Harbor site. (p. 145[15-22])

Davis testified that only between 20 and 30 sinkholes were excavated at the Deep Draft Harbor. (p. 145[8-14]) Davis later admitted that this was less than one percent of the sinkholes at the Deep Draft Harbor. (p. 148[16-17])

Davis admitted that he never testified against doing only one percent of the sinkholes in the Deep Draft Harbor site (p. 159[19-24])

Davis Experience

Davis testified that the last time he did excavation in the West Beach area was during the summer of 1980 up to site complex 2717 because his right of entry and his work ceased at the end of the year and he was driven out by blasting at the quarry. (p. 135[20] - 136[1])

Other Sites of Equal or Greater Significance

Davis admitted that he had done a survey at Ewa Beach and that in some ways its comparable to the West Beach petition area. (p. 117[23-24])

Davis' Deep Draft Harbor Report

Davis' 1978 Report on the Deep Draft Harbor site covered part of the West Beach site, particularly sites 2718, 2719, 2720 and 2721, where West Beach is proposing its Marina. (p. 158[21] - 159[2] and p. 160[4-11])

When discussing the burial site, the small habitation structures and the pit gardens located within the site 2717 complex, Davis testified that portions of site 2717 have already been destroyed, but not be West Beach. According to Davis, before the construction of the Deep Draft Harbor began in 1980, the quarry was actively moving into this area and the quarry has in effect probably removed about that much of the site complex already. (p. 112[7-23])

Davis testified that in his 1978 Report he found that the greatest portion of the zone where site 2717 is located had been severely disturbed by expansion of the quarry with the exception of site 2717-34 which was found in a clearing. (p. 161[15-18] and p. 162[10-16])

Davis also testified that his 1978 Report provided that due to the disturbance that had taken place, the nature of the structures associated with the midden at 2717-34, probably will never be known. (p. 162[17-22])

Davis also admitted that in his 1978 Report, he said that with the possible exception of sites 2717-1 and 2717-32 there is no clear evidence for habitation in the immediate vicinity. (p. 163[4-9])

Davis also admitted that in his 1978 Report he said that the surviving features in this zone can no longer be directly tested due to the destroyed habitation features out at the perimeter of the quarry. (p. 163[24] - 164[11])

Davis also testified that he also recalled making the statement in his 1978 Report essentially to the effect that sites 2719, 2720 (in the area where the West Beach Marina is planned) have been badly disturbed by historic activity; the area was used for stockpiling dredgings for the barge harbor basin; and that any features that may have been there once are now lost. Davis further clarified that the area he was referring to as having a great degree of disturbance would be from 2719 towards the ocean. (p. 166[23] - 167[19])

Preservation

Davis testified that he thinks that the "whole end" ought to be put on "cultural reserve," but he admits that he is on record suggesting that "in fact preservation in the Barbers Point - West Beach area may not be that critical at that time." (p. 118[6-13])

Davis testified that his final recommendations in his 1978 Deep Draft Harbor Report contained a statement to the effect that the proposed impact in the study area assures the complete destruction of archaeological resources except for dune site 2732 and that efforts should be made to preserve these sites from construction impact. (p 167[20] - 168[2])

Davis also admitted that in his 1978 Deep Draft Harbor Archaeology Report he recommended controlled excavations of selected cultural and paleontological features as a viable course of action and that he only recommended preservation of one dune site in the 2700 series. (p. 160[4-19]) Davis also admitted that the reason why he only recommended preservation of one due site 2722, was because there would be no Deep Draft Harbor construction in that area. (p. 168[3-6])

Davis also admitted that he didn't even recommend salvage of all the sites at the Deep Draft Harbor, but only salvage of a "defined sample". (p. 168[18-22]) Davis testified that he recommended excavation of only 25 percent of Class 1, 2 and 3 structures in that area; only 20 percent of the total of 75 rock mounds; and did not even quantify the sinkholes at all. (p. 160[12] - 161[3])

Moreover, Davis' written cmments on Barrera's Reports, dated May 29, 1984 and September 18, 1984, which were submitted as Intervenor's Exhibit Numbers 3A and 3B at the State Land Use Commission Hearings did not recommend "preservation" of the West Beach area at all.

Significance v. Money

Davis testified that in the summer of 180, he did his last excavation at West Beach at site 2717, and that he completed a midden analysis of site 2717 the following summer of 1981 or spring 1981. Davis also testified that he has not had the time to complete the midden analysis lab report since all the work was done on a volunteer basis. However, Davis is sure he would do it if someone paid him money to do that report. (p. 136[18] - 137[17]) Davis testified that although he never finished any report on his 1981 lab work, he did do a report subsequent to 1981 for the Bishop Museum because he was paid money for it. (p. 138[13] - 139[2])

Eligibility for Inclusion on the National Register

Davis testified that he felt that the West Beach area is archaeologically significant and that since 1979, he felt that it should be nominated to the National Register of Historic Places, however, he has never made any efforts to personally nominate West Beach because he understood that he couldn't do it as an individual. Davis testified that although he is a member of several archaeological groups and associations, he doesn't really know if those groups and associations could ask the State to nominate a site to the National Register either. Davis testified that he has no idea why the West Beach area has been eligible for so long, but has never been nominated. (p. 170[24] - 172[7])

We trust that these extracts will place a proper perspective on the content of your letters.

For further commentary, we provide at this point, the response prepared by Mr. Barrera.

Thank you for your comments and continuing interest.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:la

enclosure

CHINIAGO INC.
Archaeological Consulting

1040-B SMITH STREET • HONOLULU, HAWAII 96817 • TELEPHONE: (808) 521-2785

May 29, 1985

Mr. Fred Rodriguez
Environmental Communcicatons Inc.
P.P B0x 536
Honolulu, hawaii 96809

Dear Mr. Rodriguez:

This letter is written in response to undated comments made by Mr. Bertell D. Davis and a memorandum from Matthew Spriggs, dated May 20, 1985, regarding the Draft Supplemental Environmental Impact Statement for West Beach.

By way of general introduction, it should be pointed out that, in the absence of any explicit rules, regulations or guidance from the State Historic Preservation Office, I have always understood that it is the intention of the developer to coordinate all historic site mitigation with the State Historic Preservation Office. It should also be pointed out that the field surveys at the West Beach area have been a continuing process, and that new information has been added to the existing stock as it was found, and therefore none of the previous studies should be considered complete insofar as the entire West Beach project area as a whole is concerned. And finally, "preservation" as an alternative is always implicit in any discussion of recommendations. It is not necessary to tell the developer that he does not have to destroy a site. All recommendations for salvage assume that the developer is already aware of his right to avoid a site if he so chooses.

My specific comments are as follows:

DAVIS, page 2:

> <u>"For instance, it is of interest to note that the developer's own consulting archaeologist has admitted, as a matter of public record, that he considers me to be the most knowledgeable individual regarding the archaeology of the Barbers Point region--including the West Beach area."</u>

In the first place, I believe the question as put to me was phrased in terms of the Barbers Point AND West Beach area. Stated that way, I replied in the affirmative. I was never asked if Mr. Davis was the most knowledgeable individual regarding the sites in the West Beach area alone. Had I been asked that question, I would have said no.

In the second place, just because I recognize that Mr. Davis probably has more facts stored in his head regarding the sites of the Barber's Point area than anyone else does not necessarily mean that I therefore implicitly trust his judgement regarding those sites. There is no connection between the two. If there were, it would defeat Mr. Davis's own argument, because I myself am the most knowledgeable person regarding the sites of the West Beach area, and using Davis's own argument, my judgement is more valid than his.

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> <u>"Why then, after nearly a year of input on my part, does the draft Supplemental Impact Statement persist in claiming that only twenty-some sites are located within that portion of the West Beach area identified as being part of the Barbers Point Archaeological District, a property designated eligible for inclusion on the National Register of Historic Places, when in fact I have repeatedly shown that in excess of sixty archaeological sites have already be [sic] recorded therein?"</u>

This assertion is unanswerable, as I am unable to find anyplace where Mr. Davis has repeatedly shown in excess of sixty sites in that portion of West Beach in the Barbers Point Archaeological District.

DAVIS, page 2:

> <u>"Why then, is there still no discussion anywhere that these sites in part comprise a major late-prehistoric/early-historic Hawaiian habitation complex [Site Complex 2718] and neaby [sic], a presumably associated gardening complex [Site 2717] adapted to the unique arid coralline environment of the region?"</u>

Because it is premature to draw conclusions from sites which have not been completely studied, and, in any event, an Environmental Impact Statement is not the proper place to present such conclusions. Such claims as Mr. Davis makes for the sites in this regard are best left until the completion of a research project.

DAVIS, page 2:

> <u>"Why then, is there no mention that the location of these sites represents very nearly the</u>

last of this unique environmental circumstance in the region where the critical site-to-site and site-to-landscape associations still survive relatively intact?"

Because no evidence to support this contention has been put forward. The entire Barber's Point area has not been surveyed.

DAVIS, page 2:

> "Why...is it stated that 'twenty-six archaeological sites were identified in [the] portion of the [Barbers Point Archaeological] District lying on th West Beach Property" when the revised EIS of 1981 claimed there were only twnty-four [sic] such sites?".

Our work at West Beach has been a continuing effort. New sites have been found within the past year which were not included in any previous reports. These include sites in areas not surveyed for the West Beach project, as well as in an area that had been intensively surveyed by Bishop Museum prior to preparation of the 1981 EIS.

DAVIS, page 3:

> "Why...does the map of the 1984 archaeological survey area show two extra sites [Sites 1446 and 1447] which are otherwise nowhere to be found--either in the text or tables of the draft Supplemental Impact Statement, or in the consultant's status report? Maybe these are the two new sites. But then, according to the map given, only one site is located within the Barbers Point Archaeological District. Perhaps there is a third new site somewhere out there still to be accounted for."

The problem arises because of two maps from the State Historic Preservation Office which accompanied the request for determination of eligibility of the Barbers Point Archaeological District to the National Register of Historic Places. Each of the maps shows the District boundary in a different place, which led to the erroneous inclusion of an extra site in the District.

DAVIS, page 3:

> "Where is the human burial that I found and reported a number of years ago in Site Complex 2717? It is not acknowledged in either the draft Supplemental Impact Statement or Barrera's status report, although it does appear in the Historic Sites map identified as Exhibit K of the developer's petition for a District Boundary Amendment [from agriculture to urban] submitted to the Hawaii State Land Use Commission and dated as received by the LUC on 21 December 1983?"

This burial, which was either not found during the intensive survey of Davis and Griffin, or for some reason not reported at that time, was inappropriately mentioned in the LUC District Boundary Amendment petition to which Mr. Davis refers. None of the other individual features from that or any of the other sites was singled out for such particular attention, and there is no reason to do so at this time.

Because many of Spriggs's concerns have been addressed in my responses to Davis's comments, rather than replying on a one-by-one basis I would just like to make a few overall observations and close with a few specific comments which I feel are warranted.

First, regarding the adequacy of the site descriptions, it should be pointed out the question of adequacy is a purely personal, subjective matter. This is demonstrated by the fact that several of Spriggs' conclusions are at direct odds with those of Davis, who stated in his letter of 10/26/79 to the Environmental Center:

> "In general, the basic field report seems quite adequate and it is unlikely that major remains were overlooked by the survey team. The site descriptions are concise and the map locations clear..."

In addition, Spriggs's complaint that there is inadequate documention to allow one to draw conclusions is belied by the fact that he himself draws such firm conclusions as the following, referring to the sites in the marina area:

> "All clearly have research significance. Site 2718, a major archaeological complex clearly also has high interpretive significance and could be developed as a 'theme park' illustrating traditional Hawaiian adaptation to the area."

As for the imputed cultural significance of the sites, that

question is outside my field. I do archaeology, not sociology, and Spriggs's comments would be more profitably addressed to the proper experts.

Spriggs makes one particular statement which is clearly false:

> "The sites in the marina area were considered eligible for the National Register, a mark of their importance."

The fact is, the eligibility criteria for the National Register are so broad as to make all sites, even ones that are no longer in existence, eligible. A site is not necessarily important because it happens to be eligible.

Finally, I would point out that Site B6-139, which was destroyed during harbor construction, is located correctly on the map.

Sincerely yours,

William Barrera, Jr.
President

University of Hawaii at Manoa

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

25 April 1985

Colonel Michael M. Jenks District Engineer Corps of Engineers U.S. Army Engineer District, HNL Department of the Army Fort Shafter, HI 96858	and	Mr. John P. Whalen, Director Dept. of Land Utilization City and County of Honolulu 650 South King Street Honolulu, Hawaii 96813

Gentlemen:

SUBJECT: Joint Federal-State Draft Supplemental Environmental Impact Statement for West Beach, Honouliuli, Ewa District, Island of Oahu, Hawaii, March 1985

We have reviewed the subject DSEIS and offer the following comments:

The estimated average daily water demand at maximum development is 4.5 mgd of which 2.5 mgd is potable. The remaining 2 mgd needed for irrigation will be obtained from brackish wells near or on-site as stated in 9.15.2. In sec. 9.2.15 and 9.2.16 there is a detailed explanation of how 5 mgd of groundwater will infiltrate into the marina and lagoons. What effect will there be on the 5 mgd infiltration rate if 2 mgd is pumped out for irrigation?

Also, what effect will there be on the aquifer by the accelerated removal of brackish water, and what effects will this have on adjacent brackish water users pumping from the same aquifer? It appears a distinct possibility that detrimental seawater intrusion will take place. The water balance with the development versus the existing groundwater conditions needs to be determined.

It should also be pointed out that placing fine-textured soil on the surface for landscaping purposes will reduce the high infiltration rate of the existing coral surface. Although the site is in a low average rainfall locale, some loss of recharge will occur because of runoff from torrential rains prevalent in the area and an urban drainage system that is designed to remove water efficiently.

Sincerely,

Edwin T. Murabayashi

Edwin T. Murabayashi
EIS Coordinator

WTM:jm
cc: Env. Communications, Inc.

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

June 3, 1985

Mr. Edwin T. Murabayashi
Water Resources Research Center
Holmes Hall 283
2540 Dole Street
Honolulu, Hawaii 96822

Dear Mr. Murabayashi:

We are in receipt of your comments dated April 25, 1985 on the West Beach Draft Supplemental Environmental Impact Statement and respond in the following:

1. The effects are considered negligible in view of the reduced pumpage rate when urban use will pump less than previous agricultural uses.

2. The project site has been used as sugar cane cultivation for more than 80 years with the irrigation system withdrawal from the brackish aquifer. It appears there isn't any possibility that detrimental seawater intrusion will occur when the proposed irrigation pumpage rate for the landscaping will be much less than the past irrigation pumpage rate for the cane production (4,000 gpad vs. 10,000 gpad).

3. In our findings, the existing soils is "Lualualei" series clay, which has low infiltration rate (permeability is slow) and, therefore, as a part of the soil improvement for landscaping, the developer will import better material and/or add granular material to improve the infiltration rate and soil conditions. In addition, the proposed major drainageways are unlined natural channels along the golf course, which would promote "recharging" capability. Moreover, the natural infiltration (recharge) on the site is likely very low because of the low average rainfall and takes place only during the few winter storms.

Thank you for your timely comments and continuing interest.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

University of Hawaii at Manoa

Department of Botany
St. John Plant Science Laboratory
Room 101 • 3190 Maile Way • Honolulu, Hawaii 96822
Telephone (808) 948-8369 • Cable Address: UNIHAW

May 20, 1985

TO: Col. Michael M. Jenks
District Engineer; Corps of Engineers
U. S. Army district, Honolulu
Fort Shafter, Hawaii 96858

and Mr. John P. Whelan, Director
Department of Land Utilization
City & County of Honolulu
650 S. King St.
Honolulu, Hawaii 96813

FROM: Dr. Isabella A. Abbott Isabella A. Abbott
G. P. Wilder Professor of Botany
Department of Botany
University of Hawaii
Honolulu, Hawaii 96822

SUBJECT: Supplemental EIS for West Beach, Oahu

I am alarmed not to find any statements in this EIS that show an understanding that the base of any food web in the marine environment (whether nearshore, offshore or over deepwater) is the marine algae, whether phytoplankton or macroalgae. There is no description of marine algae for inshore areas under section 9.7.1 ("Description of adjacent Marine Environment"), and only the descriptors "scarce" or "not common" for them offshore. Yet many surgeonfishes and wrasses that are mentioned are herbivores, i.e., they eat algae. Moreover, the West Beach area has been traditionally used by leeward coast Hawaiians for edible seaweeds or limu, including limu kohu, limu 'ele'ele, limu lipoa, limu kala, limu palahalaha, limu maneoneo and others.

I also take exception to some of the statements in section 9.7.2: 1) "adjacent populations may be adversely affected by blasting, if used, or siltation from dredging; the magnitude of these impacts...are likely to be minimal". Whoever made this statement cannot be serious: in the case of seaweeds which are plants so therefore cannot swim away from an impacted area, blasting of course will kill the populations; siltation will interrupt the photosynthetic processes of these plants and thus kill them. I submit that this is not minimal damage.

MAY 23 1985

2) "The surfaces exposed in construction represent potential new habitat for replacements for the populations destroyed..." It has been documented both here in Hawaii and elsewhere in the world (repeatedly, so that it is now dogma): when you expose new surfaces in the intertidal, ANOTHER group of organisms replaces the populations destroyed. Of what good is another group of seaweeds if you were depending on finding certain edible species there? Most of the replacement species are "pioneer species" and they do not stabilize the habitat. The EIS does not address basic ecological principles; I find this disquieting as it does not build confidence in the Statement, nor in those who prepared it.

I question the value of any Environmental Impact Statement that is as incomplete as this one is. In the sea where plants and animals are probably more dependent on each other than on land, to omit or denigrate the plants is to see only half a picture--in this case, not only incomplete but false as a consequence.

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

Mr. Michael Davis
Hawaiian Legal Corporation
1164 Bishop St., Suite 900
Honolulu, Hawaii 96813

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

June 3, 1985

Dr. Isabella A. Abbott
Department of Botany
University of Hawaii
Honolulu, Hawaii 96822

Dear Dr. Abbott:

We are in receipt of your comments dated May 20, 1985 on the West Beach Supplemental Environmental Impact Statement and we respond in the following. The comments provided were turned over to the technical consultants who prepared the reports which were the basis of the sections which are listed in your comments. Dr. Paul Bienfang prepared the responses contained herein.

1. Dr. Bienfang states that an Environmental Impact Statement in itself does not need to prove an understanding of the food web; this understanding is clearly manifest in the technical reports which were provided to reviewers such as Environmental Center and Native Hawaiian Legal Corporation together with the Draft Supplemental Environmental Impact Statement. There are lengthy descriptions and semiqualitative indices of macrothalloid algae species in Tables 1, 3, 5, 7, 8, 10, 12, 13, 15, 17, 18, 22, 23, 25, and 26 of the OIC 1984 technical report. Also provided on request after the State Land Use Commission were a list of algae genera and their Hawaiian names.

2. In terms of your comments on blasting and siltation, in quoting a sentence from section 9.7.2, the ellipsis between "magnitude of these impacts" and "are likely to be minimal" replaced the phrase "when considered in the context of the shoreline as a whole". As noted in the Oceanic Institute reports, areas directly affected are a small percentage of the total shoreline. Bienfang agrees that siltation would interrupt photosynthetic activity but he takes exception to your conclusion that it would "thus kill" the plants. Unless siltation is prolonged, it is not necessarily mortal to adjacent populations. We would note here that your testimony at LUC hearings indicated that offshore limu populations are doing fine and well after deep draft harbor construction.

3. Bienfang correctly states in his response that the extant species would not necessarily be replaced. Most likely, pioneer species would begin the colonization.

Finally, Bienfang states and we concur that an Environmental Impact Statement is not intended to be an ecological statement; the basic ecological principles to which you refer are the foundation of the technical work which precedes an EIS and is described in the data reports.

1146 FORT STREET MALL, SUITE 200 • P. O. BOX 536 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-8391

We hope that we have responded adequately to your comments and thank you for your interest.

Yours very truly,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

cc: Dr. Paul K. Bienfang, Ph.D.

Attachment

REEF ALGAL SPECIES LIST
WEST BEACH, OAHU
JUNE 1984

Scientific name	Hawaiian name
CYANOPHYTA	
Hormothamnion entermorphoides	
Hormothamnion sp.	
Lyngbya majuscula	
Lyngbya sp.1	
Lyngbya sp.2	
Nostoc spumigena	
Oscillatoria sp.1	
Oscillatoria sp.2	
CHLOROPHYTA	
Caulerpa racemosa	ararucip (Filipino)
C. racemosa var.	
Cladophora sp.	
Desmidiaceae (unid.)	
Dictyosphaeria versluysii	limu lipuupuu
Pseudochlorodesmis parva	
Struvea anastomosans	
Udotea javensis	
Valonia ventricosa	
PHAEOPHYTA	
Dictyota bartayresii	limu alani
D. divaricata	limu alani
D. friabilis	limu alani
Lobophora variegata	
Ralfsia pangoensis	
RHODOPHYTA	
Amansia glomerata	limu pepe-iao, limu li-pepe-iao
Amphiroa fragilissima	
Amphiroa sp.	
Antithamnion sp.	
Asparagopsis taxiformis	limu kohu
Cladymenia pacifica	
Desmia hornemanii	
Gelidiales (unid.)	
Gelidiella acerosa	
Gelidiella sp.	
Gelidium pusillum	limu loloa, limu ekahalaha, limu ekahakaha
Gelidium sp.	
Gelidiopsis sp.	
Griffithsia sp.	limu moo-puna (?)
Halymenia formosa	limu lepe'ula'ula, limu lepe'ahina

REEF ALGAL SPECIES LIST (CONTINUED)

Scientific name	Hawaiian name
Hydrolithon reinboldii	
Hypnea sp.	limu huna
Exophyllum wentii	
Jania capillacea	limu huluilio
Jania sp.	limu huluilio
Laurencia parvipapillata	limu lipe'epe'e, limu pe'epe'e
Lithothamnion sp.1	
Lithothamnion sp.2	
Lithophyllum kotschyanum	
Lithophyllum sp.1	
Lithophyllum sp.2	
Martensia fragilis	
Mesophyllum mesomorphum	
Neogoniolithon frutescens	
Peyssonellia rubra	
Porolithon sandvicense	
Porolithon sp.	
Pterocladia capillacea	limu loloa
Sporolithon erythraeum	
Tolypiocladia glomerata	

INTERTIDAL ALGAL SPECIES LIST
WEST BEACH, OAHU
JUNE 1984

Scientific name	Hawaiian name
CYANOPHYTA	
Calothrix sp.	
Cyanophyta (unid.)	
Lyngbya sp.1	
Lyngbya sp.3	
Oscillatoria sp.1	
CHLOROPHYTA	
Chaetomorpha antennina	limu nohomahe, limu manu
Cladophoropsis luxurians	
Dictyosphaeria cavernosa	limu lipuupuu
D. versluysii	
Desmidiaceae (unid.)	
Entermorpha sp.	limu 'ele'ele
Ulva fasciata	limu palahalaha
U. reticulata	
Valonia aegagropila	
PHAEOPHYTA	
Dictyota friabilis	limu alani
Giffordia breviarticulata	limu hulu'ilio
Padina japonica	limu pepe-iao
Ralfsia pangoensis	
Sargassum echinocarpum	limu kala-lau-nunui
S. obtusifolium	limu kala
Turbinaria ornata	limu kala
RHODOPHYTA	
Acanthophora spicifera	
Amansia glomerata	limu pepe-iao, limu li-pepe-iao
Amphiroa fragilissima	
Centroceras clavulatum	limu kikala, limu huluwawae-iole
Dasyopsis sp.	
Desmia hornemanii	
Gelidiella acerosa	
Gelidiella sp.	
Gelidiopsis intricata	
Gelidium pusillum	limu loloa, limu ekahalaha, limu ekahakaha
Gracilaria coronopifolia	limu manauea, ogo (Japanese)
Hypnea sp.	limu huna
Jania sp.	limu huluilio

INTERTIDAL ALGAL SPECIES LIST (CONTINUED)

Scientific name	Hawaiian name
Laurencia nidifica	limu mane'one'o
Laurencia sp.	limu palewawae
Lithophyllum sp.1	
Polysiphonia sp.	limu hawane, limu pu'alu
Porolithon onkodes	
Pterocladia capillacea	limu loloa
Spyridia filamentosa	

REFERENCES

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Magruder, William H. and Jeffery W. Hunt. 1979. Seaweeds of Hawaii: A Photographic Identification Guide. The Oriental Publishing Company. 116 pp.

Neal, Marie C. 1930. Hawaiian Marine Algae. Bernice P. Bishop Museum, Bulletin 67. 84 pp.

Smith, Stephen V., Keith E. Chave and Dennis T. O. Kam. 1973. Atlas of Kaneohe Bay: A Reef Ecosystem Under Stress. University of Hawaii Sea Grant Program, UNIHI-Sea Grant-TR-72-01. pp 67-91.

TO: DR. JACQUELIN MILLER, ENVIRONMENTAL CENTER
UNIVERSITY OF HAWAII AT MANOA
CRAWFORD 317, 2550 CAMPUS ROAD
HONOLULU, HAWAII 96822

FROM: BERTELL D. DAVIS
ARCHAEOLOGIST

RE: JOINT FEDERAL-STATE DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR WEST BEACH, HONOULIULI, EWA DISTRICT, ISLAND OF OAHU, HAWAII

Three times over the past year I have had occassion to express my concern regarding what I now fully believe to be a consistent and absolutely unacceptable lack of due consideration in the current EIS process for significant cultural/historical resources in the proposed West Beach development area. I twice provided detailed written testimony to the Hawaii State Land Use Commission. The first of these (dated 29 May 1984) addressed unsubstantiated assertions, made directly and by implication, and ommissions of data in the revised Environmental Impact Statement of 1981, in the developer's Boundary Amendment Petition submitted to the Land Use Commission in 1983, and in the 1984 preparation notice for the Supplemental Impact Statement. Following the release of the 1984 Archaeological Status Report for West Beach by William Barrera, I again submitted written testimony (date 18 September 1984) expanding on my original commentary and further documenting the growing inadequacies regarding historic preservation. Finally, this past January I had the opportunity to present my opinions in person directly before the Commissioners.

From the beginning I have eschewed merely generalizing complaints and lengthy diatribes against the proposed development. Rather, my focus has been expressly upon the disposition of significant archaeological and historical resources at West Beach. I pinpointed what I viewed as areas of inadequate presentation and/or lack of prudent consideration for alternative actions. These were all substantiated on a larger body of data available from the sites, both within and adjacent to the West Beach area than what has been acknowledged in the various environmental assessments up to that time. On a more constructive note, I further suggested a number of possible directions open for developing a stronger and more responsible cultural resources program that would not necessarily be incompatable with the proposed development. In view of past events all too common regarding archaeological/historical sites on Oahu, however, I also most strongly urged that should the Land Use Commission decide for approval of the West Beach Boundary Amendment, then such approval should only be upon the condition that:

a. The Supplemental Impact Statement present a detailed mitigation plan for preservation and/or data recovery, complete with a research design and methodology, for peer review and revision, if necessary, prior to the implementation of the plan. And,

b. The final mitigation plan be implemented and completed prior to the Commission's final approval of the Boundary Amendment.

MAY 23 1985

That (draft) Supplemental Environmental Impact Statement for West Beach (dated 29 March 1985) is now available for review. And what of that document, do we see a manifest concern for the prudent management of significant archaeological/historical resources at West Beach? NO! Instead, what we have here is a document which can only be politely labeled as being less than candid. In too many respects it is actually worse and more offensive than previous documents, especially in view of the extensive input on the part of professional archaeologists and other conscientious members of the research and educational community. It is obvious from the short shrift given the West Beach sites that all our efforts have so far been for naught.

A few brief examples are more than sufficient to illustrate this air of indifference that has permeated the whole process of cultural/historical assessment at West Beach, beginning right from the consulting archaeological reports through the EIS documents themselves. For instance, it is of interest to note that the developer's own consulting archaeologist has admitted, as a matter of public record, that he considers me to be the most knowledgeable individual regarding the archaeology of the Barbers Point region--including the West Beach project area. From their continuing association over the past five years or more, one can only conclude that the developer must surely be taking the consultant's judgement into consideration. If this is indeed true...

1. Why then, after nearly a year of input on my part, does the draft Supplemental Impact Statement (page 9-110) persist in claiming that only twenty-some sites are located within that portion of the West Beach area identified as being part of the Barbers Point Archaeological District, a property designated eligible for inclusion on the National Register of Historic Places, when in fact I have repeatedly shown that in excess of sixty archaeological sites have already be recorded therein?

2. Why then, is there still no discussion anywhere that these sites in part comprise a major late-prehistoric/early-historic Hawaiian habitation complex (Site Complex 2718) and neaby, a presumably associated gardening complex (Site Complex 2717) adapted to the unique arid coralline environment of the region? And,

3. Why then, is there no mention that the location of these sites represents very nearly the last of this unique environmental circumstance in the region where the critical site-to-site and site-to-landscape associations still survive relatively intact?

This is in essence "old business". But the draft Supplemental Impact Statement also introduces "new business"--new inconsistencies, new contradictions, nwe ommissions.

1. Why, on page 9-110, is it stated that "twenty-six archaeological sites were identified in [the] portion of the [Barbers Point Archaeological] District lying on the West Beach Property" when the revised EIS of 1981 claimed there were only twnty-four such sites? Could this be new data from Barrera's 1984 archaeological status report? If so, then what are these two new sites? Where are they located? What course of action is

recommended for these sites? The draft Supplemental Impact Statement is curiously uninformative. For that matter, so is Barrera's own report.

2. Why, on page 9-112, does the map of the 1984 archaeological survey area show two extra sites (Sites 1446 and 1447) which are otherwise nowhere to be found--either in the text or tables of the draft Supplemental Impact Statement, or in the consultant's status report? Maybe these are the two new sites. But then, according to the map given, only one site is located within the Barbers Point Archaeological District. Perhaps there is a third new site somewhere out there still to be accounted for.

3. Where is the human burial that I found and reported a number of years ago in Site Complex 2717? It is not acknowledged in either the draft Supplemental Impact Statement or Barrera's status report, although it does appear in the Historic Sites map identified as Exhibit K of the developer's petition for a District Boundary Amendment (from agriculture to urban) submitted to the Hawaii State Land Use Commission and dated as received by the LUC on 21 December 1983.

4. Why has the following been deleted from the draft Supplemental Impact Statement?

> The development has the potential for destroying all the sites. [Because the Barbers Point Archaeological District was declared eligible for inclusion on the National Register of Historic Places]...work in the district involving a federal permit will require coordination with the USA Advisory Council on Historic Preservation and the State Historic Preservation Officer for their opinions concerning the project effects and potential mitigative actions. This coordination will be accomplished and any required Memorandum of Agreement developed prior to issuance of the Department of the Army permit. The work not requiring a Fedeal [sic] permit will be coordinated with the State Historic Preservation Office. Table 15 lists the significant archaeological sites and mitigative actions suggested by the archaeologist and those actions necessary to protect archaeological resources within the archaeological district. The developer <u>will implement these recommendations and mitigative actions</u> (revised EIS of 1981, page 116...emphasis mine).

Can it be that such an open admission that the proposed development will destroy significant cultural/historical resources at West Beach, including sites already declared eligible for inclusion on the National Register, has been deemed inappropriate for a public disclosure document of this sort? As for the recommendations that were originally made in the above cited Table 15 which, by the way, was retained intact in the developer's Boundary Amendment petition...

5. Why have all recommendations suggesting the possibility of "preservation or salvage, display enhancement" been downgraded to salvage only in the

draft Supplemental Impact Statement? And,

6. Why, especially, have recommendations to preserve and restore (display enhancement) the only known ancient Hawaiian fishing shrine surviving on the Waianae coast now been deleted from consideration--particularly in view of the fact that the land upon which this religeous site is located has been designated for public park use by the West Beach developers? This seems most callus and ill-conceived.

The foregoing are not the only examples I could cite; there are more. The list is not endless, but at this stage there is little to be gained by trying to raise each and every issue--particularly when so much effort has already been expended only to receive a document that not only fails to forward an integrated cultural/historical preservation plan commensurate with the scale of the proposed development at West Beach, but indeed retreats ever further away from such a plan. I need only note that what was at least a written commitment to implement even the modest recommendations appearing in the 1981 revised EIS and the 1983 Boundary Amendment Petition (Item 4, above) has been deleted from the draft Supplemental Impact Statement.

In closing, for all of the reasons I have stated above, and all those that I and others have detailed again and again in the past, I am forwarding this letter and my previously critiques to the parties indicated below.

Respectfully,

Bertell D Davis

Bertell D. Daivs
20 May 1985

cc:James Campbell Estate
Bernice P. Bishop Museum
State Historic Preservation Office
U.S. Army Corps of Engineers, Pacific
Native Hawaiian Legal Project
Society for Hawaiian Archaeology
National Park Service
Interagency Archaeological Services
Department of Land Utilization
Environmental Communications, Inc.

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

June 3, 1985

Mr. Bertell Davis & Matthew Spriggs
Environmental Center
Crawford 317
2550 Campus Road
Honolulu, Hawaii 96822

Dear Messrs. Davis & Spriggs:

We are in receipt of your comments dated May 20, 1985 on the West Beach DSEIS and we respond in the following:

William Barrera who prepared the archaeological studies performed for West Beach responds directly to the concerns expressed in your comments. We further note that at recently completed State Land Use Commission public hearings, Mr. Earl Neller stated that West Beach was not nominated to the National Register due to the fact that the 1980 amendment to the Historic Preservation Act requires landowners consent before any site can be placed on the National Register. He further cited shortage of time and manpower as other reasons. (TR 2/7/85: p. 79 [13]-8[9]). Neller also stated that the quality of Barrera's works is better than most he has in his State Historic Preservation Office. (TR 2/7/85: p. 91 [4-7]). Neller further stated that in a letter from the Advisory Council on Historic Preservation dated October 2, 1985, the staff archaeologist for the Advisory Council had reviewed Mr. Barrera's report and found it well done, especially with respect to recommendations for avoidance and/or protection of sites considered to be significant. (TR 2/7/85: p. 91 [8]-92 [25]).

Neller admits that portions of the West Beach project have similar remains to those in the Barbers Point Deep Draft Harbor area. (TR 2/7/85: p. 57 [5-9]).

There are also other sites in the Barbers Point area, but not on the West Beach property that may be of equal or greater archaeological significance. These areas outside of West Beach include the following:

1. The Quarry site mauka of the deep draft harbor;
2. Areas within Campbell Industrial Park;
3. Areas within the Barbers Point Naval Air Station (a definite possibility); and
4. Ewa Marina Area (TR 2/7/85: p. 95 [7]-97[9], and 98 [13-18]).

Finally, Neller stated that he believes that there is an important and unusual "one of kind" two step rock platform believed to be of religious significance at Ewa Marina, and despite the fact that Neller felt that Ewa Marina sites may be of equal or greater archaeological significance than West Beach, Bertell Davis still did not recommend preservation for any particular site at Ewa Marina (TR 2/7/85: p. 97 [10]- 98 [18]).

These extracts from the State Land Use Commission public hearing testimony are on record and available using the reference page numbers provided.

Further, the following extracts taken from State Land Use Commission hearings held on January 17, 1985 are provided. These extracts relate to testimony provided under oath by Bertell Davis and his statements made on:

1. Barrera's 1984 Archaeological Report on West Beach
2. West Beach Experts
3. Maps prepared by Barrera
4. Sinkholes
5. Davis Experience
6. Other sites of equal or greater significance
7. Davis' Deep Draft Harbor Report
8. Preservation
9. Significance vs. Money
10. Eligibility for inclusion on the National Register

Barrera's 1984 Archaeological Report on West Beach

Davis admitted that Barrera found archaeological sites that were never found by ARCH, Bishop Museum or himself. (p. 155[5-11])

Davis testified that he believes that Barrera found the Limestone Kiln at West Beach. (p. 141[19-22])

Davis testified that sites 1431, 1432 and 1435 are miscellaneous sets of walls that seemed to be treated quite well in Barrera's report, so he has no real concern regarding those. (p. 100[21-23])

Davis testified that sites 1437, 1438 and 2721 are all beach middens. In general, Davis has found Barrera's basic description and treatment of those "rather amorphous" exposures of the midden on the face of the sand dune to be well-taken. Davis thought Barrera's recommendations regarding those specific sites are also reasonably well-taken (p. 102[13-19])

Although Davis made comments regarding the Lime Kiln, Davis admitted that he never read Glenn Mason's report on the Lime Kiln. (p. 122[4] and p. 155[3-4])

West Beach Experts

Davis admitted that he feels that West Beach consultant Glenn Mason has more expertise and experience in historical restoration and rennovation architecture than himself. (p. 140[3-6])

Davis admitted that West Beach consultant Dr. Alan Ziegler has more expertise and experience in biology and palentology than himself. (p. 144[13-15])

West Beach consultant Dr. Alan Ziegler was a witness for Intervenor's Counsel Alan Murakami in a case regarding the coral stock piling areas at the Deep Draft Harbor before the City Plannng Commission. (p. 143[4] - 144[2])

Map Prepared By Barrera

In 1979, when Bertell Davis visited the site area to look at other sites in the northern portion of the project area which he had not been in previously, Davis found the descriptive level of Barrera's Report sufficient to locate those sites. (p. 79[5-9])

When asked about the sufficiency of Barrera's maps, Davis testified that locationwise, the locator map was quite good, and that was primarily what allowed him to relocate the sites. (p. 80[23] - 81[1])

Davis testified that in Barrera's most recent report, a distribution map of a selected survey area was made showing the distribution of sinkholes which he believes that Barrera defined as being accessible, however, Davis doesn't think that Barrera tried to map the smallest sinkholes that you could get into. (p. 81[16-21]) Davis testified that Barrera's 1984 Supplementary Report gives a much better survey map of the sinkholes, albeit a restricted area. (p. 116[8-9]) Davis also testified that he did not have problems with Barrera not listing each and every sinkhole and that Barrera does not have to list each one and give each one a number. (p. 144[16-23])

Sinkholes

Davis testified that Barrera's estimate of 800 sinkholes in the West Beach area is a fair assessment. (p. 144[24] - 145[4])

Davis admitted that the he did not do a fair assessment of the number of sinkholes in his 1978 Archaeological Survey Report for the Deep Draft Harbor site. (p. 145[15-22])

Davis testified that only between 20 and 30 sinkholes were excavated at the Deep Draft Harbor. (p. 145[8-14]) Davis later admitted that this was less than one percent of the sinkholes at the Deep Draft Harbor. (p. 148[16-17])

Davis admitted that he never testified against doing only one percent of the sinkholes in the Deep Draft Harbor site (p. 159[19-24])

Davis Experience

Davis testified that the last time he did excavation in the West Beach area was during the summer of 1980 up to site complex 2717 because his right of entry and his work ceased at the end of the year and he was driven out by blasting at the quarry. (p. 135[20] - 136[1])

Other Sites of Equal or Greater Significance

Davis admitted that he had done a survey at Ewa Beach and that in some ways its comparable to the West Beach petition area. (p. 117[23-24])

Davis' Deep Draft Harbor Report

Davis' 1978 Report on the Deep Draft Harbor site covered part of the West Beach site, particularly sites 2718, 2719, 2720 and 2721, where West Beach is proposing its Marina. (p. 158[21] - 159[2] and p. 160[4-11])

When discussing the burial site, the small habitation structures and the pit gardens located within the site 2717 complex, Davis testified that portions of site 2717 have already been destroyed, but not be West Beach. According to Davis, before the construction of the Deep Draft Harbor began in 1980, the quarry was actively moving into this area and the quarry has in effect probably removed about that much of the site complex already. (p. 112[7-23])

Davis testified that in his 1978 Report he found that the greatest portion of the zone where site 2717 is located had been severely disturbed by expansion of the quarry with the exception of site 2717-34 which was found in a clearing. (p. 161[15-18] and p. 162[10-16])

Davis also testified that his 1978 Report provided that due to the disturbance that had taken place, the nature of the structures associated with the midden at 2717-34, probably will never be known. (p. 162[17-22])

Davis also admitted that in his 1978 Report, he said that with the possible exception of sites 2717-1 and 2717-32 there is no clear evidence for habitation in the immediate vicinity. (p. 163[4-9])

Davis also admitted that in his 1978 Report he said that the surviving features in this zone can no longer be directly tested due to the destroyed habitation features out at the perimeter of the quarry. (p. 163[24] - 164[11])

Davis also testified that he also recalled making the statement in his 1978 Report essentially to the effect that sites 2719, 2720 (in the area where the West Beach Marina is planned) have been badly disturbed by historic activity; the area was used for stockpiling dredgings for the barge harbor basin; and that any features that may have been there once are now lost. Davis further clarified that the area he was referring to as having a great degree of disturbance would be from 2719 towards the ocean. (p. 166[23] - 167[19])

Preservation

Davis testified that he thinks that the "whole end" ought to be put on "cultural reserve," but he admits that he is on record suggesting that "in fact preservation in the Barbers Point - West Beach area may not be that critical at that time." (p. 118[6-13])

Davis testified that his final recommendations in his 1978 Deep Draft Harbor Report contained a statement to the effect that the proposed impact in the study area assures the complete destruction of archaeological resources except for dune site 2732 and that efforts should be made to preserve these sites from construction impact. (p 167[20] - 168[2])

Davis also admitted that in his 1978 Deep Draft Harbor Archaeology Report he recommended controlled excavations of selected cultural and paleontological features as a viable course of action and that he only recommended preservation of one dune site in the 2700 series. (p. 160[4-19]) Davis also admitted that the reason why he only recommended preservation of one due site 2722, was because there would be no Deep Draft Harbor construction in that area. (p. 168[3-6])

Davis also admitted that he didn't even recommend salvage of all the sites at the Deep Draft Harbor, but only salvage of a "defined sample". (p. 168[18-22]) Davis testified that he recommended excavation of only 25 percent of Class 1, 2 and 3 structures in that area; only 20 percent of the total of 75 rock mounds; and did not even quantify the sinkholes at all. (p. 160[12] - 161[3])

Moreover, Davis' written cmments on Barrera's Reports, dated May 29, 1984 and September 18, 1984, which were submitted as Intervenor's Exhibit Numbers 3A and 3B at the State Land Use Commission Hearings did not recommend "preservation" of the West Beach area at all.

Significance v. Money

Davis testified that in the summer of 180, he did his last excavation at West Beach at site 2717, and that he completed a midden analysis of site 2717 the following summer of 1981 or spring 1981. Davis also testified that he has not had the time to complete the midden analysis lab report since all the work was done on a volunteer basis. However, Davis is sure he would do it if someone paid him money to do that report. (p. 136[18] - 137[17]) Davis testified that although he never finished any report on his 1981 lab work, he did do a report subsequent to 1981 for the Bishop Museum because he was paid money for it. (p. 138[13] - 139[2])

Eligibility for Inclusion on the National Register

Davis testified that he felt that the West Beach area is archaeologically significant and that since 1979, he felt that it should be nominated to the National Register of Historic Places, however, he has never made any efforts to personally nominate West Beach because he understood that he couldn't do it as an individual. Davis testified that although he is a member of several archaeological groups and associations, he doesn't really know if those groups and associations could ask the State to nominate a site to the National Register either. Davis testified that he has no idea why the West Beach area has been eligible for so long, but has never been nominated. (p. 170[24] - 172[7])

We trust that these extracts will place a proper perspective on the content of your letters.

For further commentary, we provide at this point, the response prepared by Mr. Barrera.

Thank you for your comments and continuing interest.

Very truly yours,

F. J. Rodrigues

F. J. Rodrigues

FJR:ls

enclosure

CHINIAGO INC.
Archaeological Consulting

1040-B SMITH STREET • HONOLULU, HAWAII 96817 • TELEPHONE: (808) 521-2785

May 29, 1985

Mr. Fred Rodriguez
Environmental Communcicatons Inc.
P.P BOx 536
Honolulu, hawaii 96809

Dear Mr. Rodriguez:

This letter is written in response to undated comments made by Mr. Bertell D. Davis and a memorandum from Matthew Spriggs, dated May 20, 1985, regarding the Draft Supplemental Environmental Impact Statement for West Beach.

By way of general introduction, it should be pointed out that, in the absence of any explicit rules, regulations or guidance from the State Historic Preservation Office, I have always understood that it is the intention of the developer to coordinate all historic site mitigation with the State Historic Preservation Office. It should also be pointed out that the field surveys at the West Beach area have been a continuing process, and that new information has been added to the existing stock as it was found, and therefore none of the previous studies should be considered complete insofar as the entire West Beach project area as a whole is concerned. And finally, "preservation" as an alternative is always implicit in any discussion of recommendations. It is not necessary to tell the developer that he does not have to destroy a site. All recommendations for salvage assume that the developer is already aware of his right to avoid a site if he so chooses.

My specific comments are as follows:

DAVIS, page 2:

> "For instance, it is of interest to note that the developer's own consulting archaeologist has admitted, as a matter of public record, that he considers me to be the most knowledgeable individual regarding the archaeology of the Barbers Point region--including the West Beach area."

In the first place, I believe the question as put to me was phrased in terms of the Barbers Point AND West Beach area. Stated that way, I replied in the affirmative. I was never asked if Mr. Davis was the most knowledgeable individual regarding the sites in the West Beach area alone. Had I been asked that question, I would have said no.

In the second place, just because I recognize that Mr. Davis probably has more facts stored in his head regarding the sites of the Barber's Point area than anyone else does not necessarily mean that I therefore implicitly trust his judgement regarding those sites. There is no connection between the two. If there were, it would defeat Mr. Davis's own argument, because I myself am the most knowledgeable person regarding the sites of the West Beach area, and using Davis's own argument, my judgement is more valid than his.

DAVIS, page 2:

> "Why then, after nearly a year of input on my part, does the draft Supplemental Impact Statement persist in claiming that only twenty-some sites are located within that portion of the West Beach area identified as being part of the Barbers Point Archaeological District, a property designated eligible for inclusion on the National Register of Historic Places, when in fact I have repeatedly shown that in excess of sixty archaeological sites have already be [sic] recorded therein?"

This assertion is unanswerable, as I am unable to find anyplace where Mr. Davis has repeatedly shown in excess of sixty sites in that portion of West Beach in the Barbers Point Archaeological District.

DAVIS, page 2:

> "Why then, is there still no discussion anywhere that these sites in part comprise a major late-prehistoric/early-historic Hawaiian habitation complex [Site Complex 2718] and neaby [sic], a presumably associated gardening complex [Site 2717] adapted to the unique arid corralline environment of the region?"

Because it is premature to draw conclusions from sites which have not been completely studied, and, in any event, an Environmental Impact Statement is not the proper place to present such conclusions. Such claims as Mr. Davis makes for the sites in this regard are best left until the completion of a research project.

DAVIS, page 2:

> "Why then, is there no mention that the location of these sites represents very nearly the

last of this unique environmental circumstance in the region where the critical site-to-site and site-to-landscape associations still survive relatively intact?"

Because no evidence to support this contention has been put forward. The entire Barber's Point area has not been surveyed.

DAVIS, page 2:

> "Why...is it stated that 'twenty-six archaeological sites were identified in [the] portion of the [Barbers Point Archaeological] District lying on th West Beach Property" when the revised EIS of 1981 claimed there were only twnty-four [sic] such sites?".

Our work at West Beach has been a continuing effort. New sites have been found within the past year which were not included in any previous reports. These include sites in areas not surveyed for the West Beach project, as well as in an area that had been intensively surveyed by Bishop Museum prior to preparation of the 1981 EIS.

DAVIS, page 3:

> "Why...does the map of the 1984 archaeological survey area show two extra sites [Sites 1446 and 1447] which are otherwise nowhere to be found--either in the text or tables of the draft Supplemental Impact Statement, or in the consultant's status report? Maybe these are the two new sites. But then, according to the map given, only one site is located within the Barbers Point Archaeological District. Perhaps there is a third new site somewhere out there still to be accounted for."

The problem arises because of two maps from the State Historic Preservation Office which accompanied the request for determination of eligibility of the Barbers Point Archaeological District to the National Register of Historic Places. Each of the maps shows the District boundary in a different place, which led to the erroneous inclusion of an extra site in the District.

DAVIS, page 3:

> "Where is the human burial that I found and reported a number of years ago in Site Complex 2717? It is not acknowledged in either the draft Supplemental Impact Statement or Barrera's status report, although it does appear in the Historic Sites map identified as Exhibit K of the developer's petition for a District Boundary Amendment [from agriculture to urban] submitted to the Hawaii State Land Use Commission and dated as received by the LUC on 21 December 1983?"

This burial, which was either not found during the intensive survey of Davis and Griffin, or for some reason not reported at that time, was inappropriately mentioned in the LUC District Boundary Amendment petition to which Mr. Davis refers. None of the other individual features from that or any of the other sites was singled out for such particular attention, and there is no reason to do so at this time.

Because many of Spriggs's concerns have been addressed in my responses to Davis's comments, rather than replying on a one-by-one basis I would just like to make a few overall observations and close with a few specific comments which I feel are warranted.

First, regarding the adequacy of the site descriptions, it should be pointed out the question of adequacy is a purely personal, subjective matter. This is demonstrated by the fact that several of Spriggs' conclusions are at direct odds with those of Davis, who stated in his letter of 10/26/79 to the Environmental Center:

> "In general, the basic field report seems quite adequate and it is unlikely that major remains were overlooked by the survey team. The site descriptions are concise and the map locations clear..."

In addition, Spriggs's complaint that there is inadequate documentation to allow one to draw conclusions is belied by the fact that he himself draws such firm conclusions as the following, referring to the sites in the marina area:

> "All clearly have research significance. Site 2718, a major archaeological complex clearly also has high interpretive significance and could be developed as a 'theme park' illustrating traditional Hawaiian adaptation to the area."

As for the imputed cultural significance of the sites, that

question is outside my field. I do archaeology, not sociology, and Spriggs's comments would be more profitably addressed to the proper experts.

Spriggs makes one particular statement which is clearly false:

> "The sites in the marina area were considered eligible for the National Register, a mark of their importance."

The fact is, the eligibility criteria for the National Register are so broad as to make all sites, even ones that are no longer in existence, eligible. A site is not necessarily important because it happens to be eligible.

Finally, I would point out that Site B6-139, which was destroyed during harbor construction, is located correctly on the map.

Sincerely yours,

William Barrera, Jr.
President

GEORGE R. ARIYOSHI
GOVERNOR

LETITIA N. UYEHARA
DIRECTOR

TELEPHONE NO.
548-6915

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
550 HALEKAUWILA STREET
ROOM 301
HONOLULU, HAWAII 96813

April 4, 1984

Dear Reviewer:

Attached for your review is an Environmental Impact Statement (EIS) that was prepared pursuant to the National Environmental Policy Act (NEPA) of 1969, Public Law 91-190, Chapter 343, Hawaii Revised Statutes and the Rules and Regulations of the Environmental Quality Commission:

Title: Joint Federal-State Draft Supplemental EIS for West Beach

Location: Honouliuli, Ewa, Oahu

Classification: Applicant Action

Your comments or acknowledgement of no comments on this draft revised final EIS are welcomed. Please submit your reply to the accepting authority or approving agency:

Colonel Michael M. Jenks	AND	Mr. John P. Whalen, Director
District Engineer Corps of Engineers		Dept. of Land Utilization, C&C Hnl.
U.S. Army Engineer District, Hnl. Dept. of the Army		650 South King Street
Fort Shafter, HI 96858		Honolulu, HI 96813

Please send a copy of your reply to the proposing party:

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

Your comments must be received or postmarked by: May 23, 1985.

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.

5/15/85
NO COMMENTS.

MAY 20 1985

Takeshi Yoshihara
Energy Program Administrator

NO RESPONSE NEEDED

United States
Department of
Agriculture

Soil
Conservation
Service

P.O. Box 50004
Honolulu, Hawaii
96850

May 8, 1985

Colonel Michael M. Jenks
District Engineer
U.S. Army Engineer District
Honolulu
Bldg. 230
Fort Shafter, HI 96858

Dear Colonel Jenks:

Subject: Joint Federal-State Draft Supplemental EIS for West Beach
Honouliuli, Ewa, Oahu

We reviewed the subject document and have no further comments to add to those published in the draft EIS dated June 20, 1984.

Thank you for the opportunity to review this document.

Sincerely,

Francis C.H. Lum

FRANCIS C.H. LUM
State Conservationist

cc:
Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, HI 96813

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

NO RESPONSE NEEDED

MAY 10 1985

United States
Department of
Agriculture

Agricultural
Stabilization and
Conservation Service

P. O. Box 50008
Honolulu, Hawaii
96850

April 8, 1985

Colonel Michael M. Jenks
District Engineer
Corps of Engineers
U.S. Army Engineer District, Honolulu
Department of the Army
Fort Shafter, HI 96858

Dear Colonel Jenks:

This is to acknowledge that there are no comments offered from this office at this time on the draft revised final Environmental Impact Statement for West Beach (Honouliuli, Ewa District, Island of Oahu, Hawaii).

We appreciate the opportunity to participate in the EIS process.

Sincerely,

Ralph K. Ajifu

Ralph K. Ajifu
State Executive Director
Hawaii State ASCS Office

cc: F.J. Rodriguez, ECI

NO RESPONSE NEEDED

ASCS

APR 9 1985

11010
Ser 00L-L11/1230
6 MAY 1985

Colonel Michael M. Jenks
District Engineer
Corps of Engineers
U. S. Army Engineer District, Hnl.
Department of the Army
Fort Shafter, HI 96858

Dear Colonel Jenks:

Thank you for the opportunity to review the Joint Federal-State Draft Supplemental EIS for West Beach. The report is returned as enclosure (1) and our comments have been forwarded to the Commander Naval Base for incorporation to a joint response for the Navy.

Sincerely,

G. M. FITZPATRICK
LCDR, CEC, U. S. Navy
Staff Civil Engineer
By direction of the
Commanding Officer

Encl:
(1) Draft Supp. EIS

Copy to: w/o encl.
Dept. of Land Util., C&C Hnl
Env. Comm. Inc.
COMNAVBASE Pearl

NO RESPONSE NEEDED

MAY 8 1985

U.S. Department of Housing and Urban Development
Honolulu Area Office, Region IX
300 Ala Moana Blvd., Room 3318
Honolulu, Hawaii 96850

April 19, 1985

Colonel Michael M. Jenks
District Engineer
Corps of Engineer
U. S. Army Corps of Engineer District, Honolulu
Ft. Shafter, Hawaii 96858

Dear Colonel Jenks:

SUBJECT: Draft Supplemental Environmental Impact Statement (DEIS)
West Beach, Honouliuli, Ewa, Hawaii

The DEIS for the proposed development of 642 acres at West Beach with [illegible] apartments, 4000 hotel units, commercial area, a marina and various recreational uses oriented for tourists was reviewed for HUD concerns.

Since the EIS was prepared in accordance with procedures required by National Environmental Policy Act (NEPA), it would satisfy HUD's EIS requirement should HUD assistance be requested at a later date. Site specific issues would then be reviewed in detail for compliance with HUD standards on HUD assisted projects.

We have no comments or recommendations on the subject supplemental EIS and look forward to receiving a copy of the Final Supplemental EIS.

Very sincerely yours,

ROBERT K. FUKUDA

Robert K. Fukuda
Manager, 9.2S

cc:
John Whalen
Fred Rodriguez

APR 24 1985

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ,
PRESIDENT

June 3, 1985

Mr. Robert K. Fukuda, Manager
U.S. Department of Housing and
Urban Development
Honolulu Area Office, Region IX
300 Ala Moana Boulevard, Room 3318
Honolulu, Hawaii 96850

Dear Mr. Fukuda:

We are in receipt of your comments dated April 19, 1985 on the proposed West Beach Development and we respond in the following:

1. The applicant/developer has not determined at this early planning stage the certainty of HUD assisted financing for residential units. We appreciate your comment on the applicability of this EIS document as being satisfactory to HUD's requirements for future considerations. This aspect of residential development financing will certainly be retained for future review.

Thank you for your timely comments and please advise if there is anything further that your office may require.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

1146 FORT STREET MALL SUITE 200 • P. O. BOX 536 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-8391

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
REGION NINE
Hawaii Division
Box 50206
Honolulu, Hawaii 96850

ARIZONA
CALIFORNIA
NEVADA
HAWAII
GUAM
AMERICAN SAMOA

May 8, 1985
IN REPLY REFER TO
HEC-HI

Colonel Michael M. Jenks
District Engineer
Corps of Engineers
U. S. Army Engineer District, Hnl.
Department of the Army
Fort Shafter, HI 96858

Dear Colonel Jenks:

Subject: West Beach Development, Honouliuli, Ewa, Oahu

Thank you for the opportunity to review the draft supplemental EIS for West Beach. We have no comments to offer at this time. We are also returning our copy of the draft EIS to the Office of Environmental Quality Control.

Sincerely yours,

H. Kusumoto
Division Administrator

By: NLArthur
N. L. Arthur
Assistant Division Administrator

cc: Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu

✓ Mr. Fred J. Rodriguez
Environmental Communications, Inc.

NO RESPONSE NEEDED

MAY 10 1985

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
Western Pacific Program Office
P. O. Box 3830
Honolulu, Hawaii 96812

May 16, 1985 F/SWR1:JJN

Colonel Michael M. Jenks
District Engineer
U.S. Army Corps of Engineers
Fort Shafter, Hawaii 96858

Dear Colonel Jenks:

The National Marine Fisheries Service (NMFS) has reviewed the Draft Supplemental Environmental Impact Statement (DSEIS), West Beach, Honouliuli, Ewa District, Island of Oahu, Hawaii. The following comments are offered for your consideration.

General Comments

NMFS reviewed the original DEIS and submitted comments dated August 7, 1980. We were pleased to note that many of our comments and recommendations were dealt with in the Final Environmental Impact Statement (FEIS) published in September 1980. As was suggested we note the applicant now plans to construct the lagoons and marina "in the dry" behind berms which will completely separate dredging activities from open coastal waters. Final opening through the coastal rock berms will be done only after the lagoons and marina have been dredged to design depth. This construction methodology should significantly reduce impacts to the coastal marine environment.

The applicant's preferred alternative for use of the existing Barbers Point Deep Draft Harbor entrance channel as the proposed marina entrance channel was also recommended in our comments in the original DEIS. This will eliminate the need to dredge a second entrance channel through the nearshore reef and consequently reduce environmental impacts substantially.

NMFS is concerned with the lack of updated information in the DSEIS since the FEIS was published in 1980. Several studies have been initiated during this period to assess impacts from construction of the deep draft harbor or by the applicant himself as baseline for the proposed West Beach development. There is considerably more data presented in the DSEIS on what we feel are potentially minor impacts (i.e. air quality and noise conditions) than on impacts to the coastal marine environment. Specifically the DSEIS should present additional information on the following:

MAY 20 1985

1. Ciguatera. The DSEIS does not mention the potential of a ciguatera fish poisoning outbreak in association with construction of the lagoons and marina. A consultant group is presently monitoring the deep draft harbor project site for blooms of the dinoflagellate, *Gambeirdiscus toxicus*, the organism which produces the toxin. The most recent findings of this study should be presented in the DSEIS.

2. Threatened and Endangered Marine Species. As stated in our original comments, the endangered humpback whale (*Megaptera novaeangliae*) is frequently sighted off the west coast of Oahu between the months of January through April, and the threatened green turtle (*Chelonia mydas*) is commonly sighted immediately off the proposed West Beach site throughout the year. Potential impacts to these species from dredging, blasting and increased vessel traffic should be dealt with in the DSEIS. NMFS will require additional information on these listed species for Section 7 consultation under the Endangered Species Act of 1973, as amended. We wish to point out that the NMFS Honolulu Laboratory is presently conducting a green turtle habitat research project in the West Beach - Barbers Point area.

3. Decline in Marine Species Off West Beach. During a recent study prepared by a consultant for the applicant, West Beach Estates, it was determined that there has been a general decline in the number of fish species, fish species diversity, coral species and coral coverage at specific stations off West Beach from 1979 to 1984 (Inventory Of The Macrobiota In The Area Affronting The Limestone Beach Shoreline at West Beach, Oahu. Dr. R.E. Brock, July, 1984). No definitive reason for the decline could be determined. However, the author feels the dredging activities connected with the development of the Barbers Point Deep Draft Harbor and concurrent increased turbidity probably contributed to the observed decline in nearshore communities at West Beach. Data from this report and other recent studies should be summarized and presented in the DSEIS.

4. Subsistence, Recreational, and Commercial Fishing. Estimates are needed on the amount of recreational, commercial and particularly subsistence fishing which presently occurs in the immediate West Beach area. Types of fishery resources harvested, including shellfish and seaweed (limu), need to be identified since certain project impacts may effect specific resources. For example, an increase in turbidity may eliminate corals and their associated reef fish, or an increase in low salinity/high nutrient water may stimulate growth of specific types of macroalgae.

NMFS recommends potential impacts from the "worse case" scenario should be addressed in the DSEIS, as the applicant may be required to implement all or part of this scenario. From a marine environmental view point we feel the worse case plan would involve a marina with a separate entrance channel through the nearshore reef and the use of explosives in excavating the lagoons, marina and marina entrance channel. Impacts from the above plan should be analogous to, although on a smaller scale, the impacts observed during construction of the adjacent deep draft harbor. Consequently, the marine environmental impacts observed during construction of the deep draft harbor and entrance channel ideally can be mitigated during construction of the West Beach development.

NMFS is concerned with the cumulative impacts of development on the formerly pristine marine environment of the Waianae Coast. Waianae has long been known for its clear coastal waters and luxuriant coral reefs and associated biota. Offshore waters historically have been some of the most productive for both commercial and recreational fishing. Subsistence fishing has been and continues to be an important activity in coastal waters of Waianae. Cumulative impacts from the existing Barbers Point Deep Draft Harbor, Kahe Power Plant (planned for expansion), Campbell Industrial Park and the offshore oil tanker mooring area, and now the proposed Ewa Marina project, the Ocean Thermal Energy Conversion (OTEC) project at Kahe Point, and the West Beach project will combine to seriously threaten the marine resources and environment along the Waianae Coast. The potential cumulative impact problem of which the West Beach project will contribute should be addressed.

Specific Comments

2.5. Issues To Be Resolved.

Page 2-4, Paragraph (c). The endangered species issue described here should be expanded beyond endangered plants found on the site. As mentioned above the endangered humpback whale and threatened green turtle occur in coastal waters off West Beach, Oahu and impacts from the proposed project on these species have yet to be resolved.

9.2.13. Marina Alternative Configuration and Concepts.

Page 9-23, Paragraph 5. This paragraph discusses specific entrance channel configurations. NMFS strongly recommends the marina entrance channel be connected directly with the existing Barbers Point Deep Draft Harbor.

9.4.5. Entrance Inside Deep Draft Harbor.

Page 9-51, Paragraph 3. Although we totally agree with the last sentence in this paragraph, there is no need to state it twice.

9.5.1. Construction Methodology.

Page 9-63, Paragraph 1. Blasting is mentioned in this paragraph as a possible method of excavating the lagoons and marina. NMFS is concerned with potential adverse impacts from use of explosives on marine resources, including threatened and endangered species. We will require a detailed blast plan during our review of the Department of The Army permit application for construction of the proposed West Beach project.

9.7.1. Description of the Adjacent Marine Environment.

Page 9-66. This section should be expanded to include information on threatened and endangered species as well as non-endangered marine mammals found off West Beach.

9.7.2. Activities Potentially Impacting the Marine Environment

Page 9-67. Worse case impacts should be included in this section. Marina construction impacts are not even mentioned here. Impacts from a plan involving blasting and dredging of a separate marina entrance channel will be substantial in comparison to using the existing deep draft harbor entrance channel.

9.7.3. Freshwater (Groundwater) Re-distribution.

Page 9-68, Paragraph 2. Macroalgal growth may be stimulated on hard substrate outside the lagoons and marina as a result of outflow of low salinity, high nutrient water. Recent site surveys at Barbers Point Harbor revealed changes in the benthic algae community on the limestone bench on both sides of the harbor entrance. On the north side of the harbor entrance for approximately 100 meters green algae of the genus Enteromorpha and Ulva have apparently replaced the brown algae, Sargassum, which dominates the shallow nearshore environment along this section of coastline.

9.14.3. Impact on Existing Shoreline Users.

Page 9-95, Paragraph 5. This discussion should be expanded to include the considerations presented under cumulative impacts in the General Comments section above.

9.19.3. Future Projects in the Surrounding Area.

Page 9-119. A tenth project should be added to this list. Ocean Thermal Corporation has completed the design phase of a 50 MWe OTEC power plant to be constructed in approximately 30 feet of water directly offshore from the existing Kahe Power Plant at Kahe Point. The proposal calls for construction to begin sometime in the late 1980's.

Sincerely yours,

Doyle E. Gates

Doyle E. Gates
Administrator

cc: F/SWR, Terminal Is., CA
F/M4, Washington, D.C.
Honolulu District,
Corps of Engineers
Environmental Communications, Inc.

Marine Resources - On this subject, the DSEIS did not as you state, cover the extensive data developed both in 1980 and 1984 by Brock and Bienfang. These extensive data were provided in Technical Appendixs. The limitations of the DSEIS documents from the standpoint of complying with Federal guidelines on the number of pages (150) for the DSEIS led to the decision against including all of the developed data. Therefore, it was provided on an as needed basis to the appropriate agencies whose province it was to evaluate specific disciplines. To the extent possible, we will comply with your agency's recommendations for the Final SEIS.

The correction to the section that describes "the shoreline between the Barbers Point Harbor entrance and the Campbell Estate is relatively barren", will be corrected to reflect your stated description.

The statement that the replacement habitat formed by construction of the lagoons and marina would support populations equal to or greater than preconstruction levels is supported by ecological studies performed for the Corps of Engineers, Honolulu District in September, 1983 entitled "A Decade of ecological studies following construction of Honokohau Small Boat Harbor, Kona, Hawaii". Specific attention is directed to pp. 33-34 concerning corals, page 56, pp. 61-63 concerning molluscs and echinoderms, page 75 concerning fishes, pp. 3-9 of the Executive Summary, and page 9 concerning monitoring. These studies also indicated that colonization was strongly dependent on the nature of the water quality.

Sections on runoff and siltation were provided in technical reports prepared by Bienfang, Brock, and also Gordon Dugan and Karl Bathen. These reports are the basis for the somewhat abbreviated sections in the DSEIS and are available for staff review. At the present time, Corps of Engineers Honolulu District will be determining the extent of material that will be included in the Final SEIS.

Increased fishing pressure due to the increased accessibility of the shoreline when the project is completed is difficult to quantify. There is little data besides the proposed OTEC plant at Kahe Point that can be considered credible. Historical trends of offshore areas that have been declared "off limits" for specific periods of time have shown that decreased fishing has resulted in repopulation, but when restrictions have been lifted, the resulting loss of fish population is dramatic. The great numbers of non-commercial fishing populace that are for the most part, subsistence fishermen, do not report their catches to Fish & Wildlife for census purposes, consequently, there is little hard data to draw from for valid conclusions.

A reduced marina and smaller lagoons were part of a series of planning alternatives that West Beach engaged in as far back as 1977-79; the present marina/lagoon configuration is the proposed alternative considered most economically viable and compatible operationally with the adjacent Barbers Point Deep Draft Harbor. The alternative of a smaller marina/lagoon system has been considered but in the technical studies that were conducted at his request, the comparable impacts attributable to the adjacent deep draft harbor kept the perspective that

even a modest decrease in size to the marina/lagoon systems would not have a pronounced environmental benefit relative to the impacts associated with the deep draft harbor.

Ciguatera is caused by toxic ephiphetic algae called Gambierdiscus toxicus which grows as an epiphyte on macroallagal species such as Spiridia sp. and Hypnea sp. These species tend not to be predominant in the West Beach area because the wave energy is too high. The point has been made many times that even the association between the toxicity of G. toxicus and the presence of G. toxicus is not a tight one. To further complicate matters, an island-wide survey of G. toxicus found the largest amounts in association with Spiridia sp. off Waikiki with no reports of poisoning, thus, indicating that increased numbers of G. toxicus does not necessarily reflect toxicity. Regarding causes, there's a general indication that new surfaces are related, but this is not conclusively linked. A Department of Health map of the islands giving the causes and types of the fish poisoning shows a concentration around Pokai Bay (this dealt with data up to 1982). Major storm damage in 1980 and 1983 which created new surfaces. These were not accompanied by an increased incidence in ciguatera poisoning, suggesting that the increased incidence around Pokai Bay was due to something other than the creation of new surfaces per se. In connection with the Deep Draft Harbor, the Corps has taken a most reasonable approach of monitoring the algae in the area, not the fish. During the period of construction, they have been taking monthly samples and looking for G. toxicus directly. The latest information on this analysis (July, 1984) was that no increased concentration of G. toxicus were found in the area affronting the Deep Draft Harbor. Thus, there is no correlation between the abundance of the target algae and the dredging activity in the area. The rationale in taking this approach is that there is a lag time between the increase of the algal biomass and the toxicity of the fish which might eat the algae and subsequently accumulate the toxin. Looking at the algae directly gives them a chance to identify an increased algal biomass (although not positively indicative of toxicity per se) and notify the public before fish in the area might actually become toxic. It has also been a policy there to post signs during construction notifying fishermen of the potential for toxicity connected with the fish.

The potential impacts that increased boating activity together with increased fishing activity on the endangered species (green turtle, resident spinner dolphin) would parallel the comparable activities offshore Kaanapali/West Maui. In terms of blasting impacts due to construction of the marina and lagoon systems, this phase of construction activity will be coordinated with the Corps of Engineers to minimize the impacts on endangered species through minimum blasting loads, blasting being done in the dry and other mitigative measures.

The cumulative impacts of the total construction activities that are taking place or being planned to take place off West Beach are an issue that cannot be avoided; however, it is not something that the West Beach development should take entire responsibility for. It is felt that West Beach is more a terrestrial project than a marine project; the impacts that are attributable to the marina/ lagoons systems are on a smaller scale compared to the deep draft harbor effluent plume and its' area of coverage. Further, West Beach marine related construction impact areas will for the most part, take place over areas presently impacted and not new areas. The dredging impacts associated with the lagoon/marina system will affect an area already barren and will represent a small percentage of the entire coastline.

Intertidal algal communities will only affect areas already directly affronting the excavated lagoon channels. It is agreed that the newly created habitat on the lagoon or marina channels will be of reduced salinity and will therefore be likely to support species of algae found in the Honokohau Harbor case or the Barbers Point Deep Draft Harbor case, and not necessarily those edible algae harvested.

Department recommendations on the construction methodology for the lagoon system will be reviewed by the developer and the Corps of Engineers. The monitoring program data that is presently available from the Corps of Engineers monitoring of the harbor construction is both valuable and timely to construction design engineers involved in the project. Final decisions on the design and construction of the lagoons will be reviewed and approved by the Corps of Engineers.

Planned design for lagoons and marina will limit human activities within the physical boundaries of the lagoons. This premise is based on the comparable activities taking place on West Maui at the Kaanapali coastline. As the primary permitting authority, the Corps of Engineers will make the final recommendation as to the feasibility of this recommendation.

Establishment of offshore areas from the shoreline to the 20 meter isobath as a State Marine Life Conservation District would involve more study than is presently available. Due to the vast numbers of people and the great variety of users presently involved in this area, restrictions that would accrue as a result of this sanctuary designation, would preclude all activities that are presently in practice. Practical use for many people could prove to be a hardship, both economic and recreational.

Controlled anchorages or permanent mooring buoys would need to be evaluated by the Harbor users since navigational problems could ensue as a result. In terms of protecting the coral communities, it would achieve that goal very well; the resulting debris and trash that would be deposited from the vessels might offset the gains to preserving the coral formations. Interpretive displays stressing conservation of marine life along the public right of way will be considered.

Final disposition as to further discussion and possible mitigation measures will be done in conjunction with the Corps of Engineers and your Honolulu Field Office. We appreciate the comments that have been made and your continuing interest in West Beach.

The alternative of a separate channel is being reviewed together with the joint use channel and the parallel channel. The developer is providing data to the Corps of Engineers for the technical support of the joint use channel and recommends this alternative.

Suggested Mitigation for the Proposed Project - These recommendations as proposed by your department have been forwarded to the developer for their consideration. It is premature at this time to determine the extent that compliance with these recommendations will be forthcoming; discussions with the Corps of Engineers and other regulatory agencies whose function of land use planning plays a significant role in these decisions will make the final determination.

Botanical Resources - All indicated revisions to the Final SEIS that pertain to current status of endangered plant species listed on page 9-87 will be made.

Yours very truly,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

ENV 2-1
NV/G

HEI

Brenner Munger, Ph.D., PE
Manager
Environmental Department
(808) 548 6880

May 15, 1985

Colonel Michael M. Jenks
District Engineer
Corps of Engineers
U.S. Army Engineer District, Hnl.
Department of the Army
Fort Shafter, HI 96858

Dear Colonel Jenks:

Subject: Joint Federal - State Draft Supplemental EIS for West Beach

We have reviewed the Draft Supplemental EIS for West Beach Development and have the following comments:

1. Section 9.19.3.e - The expansion of HECO's Kahe Generating Station will not necessarily be limited to two future additional units and these added units will provide electrical power to meet the needs of the Island of Oahu. The future units may very likely be fueled with alternative energy sources other than foreign imported fuel oil. An offshore Ocean Thermal Energy Conversion plant is one possibility currently being examined for installation.

2. Although HECO's Kahe pipeline is addressed in Section 9.19.3.g and in Environmental Communicators, Inc.'s letter dated August 29, 1984, the EIS failed to address the following questions:

   a. How will an oil spill, from a broken pipeline, affect the development?

   b. How will an emergency repair performed on the pipeline at night affect the community?

3. It should be noted that HECO is contemplating installing a pipeline connecting the Tank Farm to the harbor. In this regard, no mention is made of the following:

   a. How will the night time operations at the deep draft harbor affect the development?

   b. How will a major oil spill, at the deep draft harbor or at Chevron's or HIRI's offshore moorings, affect the development?

MAY 20 1985

4. In earlier correspondence HECO mentioned the possible use of coal as an alternate fuel source at Kahe Generating Station. If HECO is still contemplating the use of coal as an alternate fuel source, the EIS fails to address how a coal storage facility at the deep draft harbor or the surface transportation of coal to Kahe via the railroad right-of-way will affect the development?

Thank you for the opportunity to comment on this document.

Sincerely,

Brenner Munger

Brenner Munger, Ph.D., P.E.
Manager, Environmental Department

SLC:cal

cc: Mr. John P. Whalen, Director
DLU, C&C of Honolulu

Mr. Fred J. Rodriguez ✓
Environmental Communications, Inc.

HEI

ENVIRONMENTAL
COMMUNICATIONS
INC.

F. J. RODRIGUEZ
PRESIDENT

June 3, 1985

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

Dear Mr. Munger:

We are in receipt of your company's comments on the West Beach draft supplementary environmental impact statement dated May 15, 1985 and we respond in the following:

1. We acknowledge the possible expansion of Kahe Plant's electrical generating capabilities beyond the two additional units.

2.a. Oil Spill In the unlikely event that an oil spill from a broken pipeline were to happen, it would be initially the responsibility of the pipeline owner to correct the spill and the cleanup efforts necessary to minimize the effects on the land or within the coastal waters. Further, the frequency of offshore tankers unloading their cargo has not proven to be of such magnitude that this potential hazard is of serious consequence. Finally, the offshore tidal currents are such that unless there is a massive spill in the order of the Torrey Canyon disaster off Santa Barbara, California, the prevailing currents would move the spilled fuel oil in an outbound direction. Depending on the severity of the spill and the time before detection, the spill could prove extremely damaging to land based facilities as well as ocean oriented amenities such as bathing beach lagoons.

2.b. Emergency Repairs - The community would be affected as any other community would be affected by emergency nighttime repairs to a broken pipeline, e.g. they would be concerned that the repairs be conducted as quickly and expeditiously as possible.

3.a. Night Time Operations - Operations at the deep draft harbor, day and night should prove to be no problem to the West Beach community so long as these operations are in compliance with applicable ordinances governing Noise, Air Quality, Water Quality, etc. There is an established buffer zone developed in conjunction with the State and future users of the deep draft harbor to mitigate these potential problems areas. State Harbors Division provides facilities at all major commercial harbors for nighttime operations and these are governed by the operating company in conjunction with stevedoring companies and OSHA compliance.

3.b. Major Oil Spill - Again, in the unlikely event that there was a major oil spill at the deep draft harbor or at any of the offshore moorings, there are established procedures to deal with these disasters. West Beach

1146 FORT STREET MALL, SUITE 200 • P. O. BOX 536 • HONOLULU, HAWAII 96809 • TELEPHONE (808) 521-8391

would look to the U.S. Coast Guard, State Department of Transportation, Harbors Division, and the responsible parties to implement rapid measures of containment of the spill so as not to create severe and permanent damage to the coastal zone and adjacent developments such as West Beach.

4. Coal Storage and Distribution - West Beach at the present time would not consider the election of coal as an alternate energy fuel source by HECO in any different light than fossil fuel oil. Proper methods of handling and transportation should reduce the impacts to West Beach as well as Honokai Hale to permitted limits of noise and dust.

As a future consumer, West Beach shares the desired long range goals of reducing costs of electrical power generation, and also the continuing dependency on foreign low sulphur content fuel oil.

Thank you for your comments and continuing interest in our project.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

and cultural impacts. For these reasons alone I consider the document wholly inadequate as an assessment of the likely impacts of such type to be expected from the West Beach project.

Finally, I should like to call the Commissioners' attention to the following passage from the Department of General Planning report quoted above:

"The impact area for the West Beach resort center is depicted as: the Waianae Coast, Central Oahu (Mililani town, Wahiawa), and Waipahu to Moanalua)." (p. 9-118)

This supports that portion of my testimony before the Commission in which I claimed that the Waianae Coast would be impacted by the West Beach project. Moreover, the basic criterion for this statement, namely, thirty minute travel time from the resort area, was the basis of my argument also.

Sincerely yours,

Stephen T Boggs

Stephen T. Boggs
Emeritus professor

3020 Manoa Road
Honolulu 96822

IRENE SOLZBACHER, M.D.
Kahumana Counseling Center
86-660 Lualualei Hmstd. Rd.
Waianae, HI 96792

Attachment C

May 16, 1985

I just reviewed the "Draft Supplement to the Environmental Impact Statement for the West Beach Development" of March 29, 1985 and was concerned to see that none of the social impact was addressed except on page 1-11 where it was listed last as an issue which cannot be adequately addressed due to the general nature of this document but are expected to be thoroughly addressed at the time that supplemental EIS's are submitted".

While the conservation and protection of natural plants, animals, environment are important are not people also important. There is no discussion whatsoever of the impact of an exclusive resort at the entrance to a poverty area; the effect on the rural lifestyle in the area; the indigenous culture; the impact of ~~the~~ drugs, prostitution and theft that hover around resort areas; on the large number of children on the Waianae Coast and the already desperate housing problem. Are not people part of an environment?

Irene Solzbacher MD

Attachment C

University of Hawaii at Manoa

Department of Botany
St. John Plant Science Laboratory
Room 101 • 3190 Maile Way • Honolulu, Hawaii 96822
Telephone (808) 948-8369 • Cable Address: UNIHAW

May 20, 1985

TO: Col. Michael M. Jenks
District Engineer; Corps of Engineers
U. S. Army district, Honolulu
Fort Shafter, Hawaii 96858

and Mr. John P. Whelan, Director
Department of Land Utilization
City & County of Honolulu
650 S. King St.
Honolulu, Hawaii 96813

FROM: Dr. Isabella A. Abbott Isabella A. Abbott
G. P. Wilder Professor of Botany
Department of Botany
University of Hawaii
Honolulu, Hawaii 96822

SUBJECT: Supplemental EIS for West Beach, Oahu

I am alarmed not to find any statements in this EIS that show an understanding that the base of any food web in the marine environment (whether nearshore, offshore or over deepwater) is the marine algae, whether phytoplankton or macroalgae. There is no description of marine algae for inshore areas under section 9.7.1 ("Description of adjacent Marine Environment"), and only the descriptors "scarce" or "not common" for them offshore. Yet many surgeonfishes and wrasses that are mentioned are herbivores, i.e., they eat algae. Moreover, the West Beach area has been traditionally used by leeward coast Hawaiians for edible seaweeds or limu, including limu kohu, limu 'ele'ele, limu lipoa, limu kala, limu palahalaha, limu maneoneo and others.

I also take exception to some of the statements in section 9.7.2: 1) "adjacent populations may be adversely affected by blasting, if used, or siltation from dredging; the magnitude of these impacts...are likely to be minimal". Whoever made this statement cannot be serious: in the case of seaweeds which are plants so therefore cannot swim away from an impacted area, blasting of course will kill the populations; siltation will interrupt the photosynthetic processes of these plants and thus kill them. I submit that this is not minimal damage.

Attachment D

2) "The surfaces exposed in construction represent potential new habitat for replacements for the populations destroyed..." It has been documented both here in Hawaii and elsewhere in the world (repeatedly, so that it is now dogma): when you expose new surfaces in the intertidal, ANOTHER group of organisms replaces the populations destroyed. Of what good is another group of seaweeds if you were depending on finding certain edible species there? Most of the replacement species are "pioneer species," and they do not stabilize the habitat. The EIS does not address basic ecological principles; I find this disquieting as it does not build confidence in the Statement, nor in those who prepared it.

I question the value of any Environmental Impact Statement that is as incomplete as this one is. In the sea where plants and animals are probably more dependent on each other than on land, to omit or denigrate the plants is to see only half a picture--in this case, not only incomplete but false as a consequence.

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

Mr. Michael Davis
Hawaiian Legal Corporation
1164 Bishop St., Suite 900
Honolulu, Hawaii 96813

Mr. Michael C. Davis
June 3, 1985
Page 5

f. The Department of the Navy in their comments dated May 23, 1985 indicated that West Beach is not within the flight paths of the Barbers Point Naval Air Station, and would experience occasional noise as flight pattern deviations take place occasionally. Further, the AICUZ L_{dn} designations are accurate for the West Beach site.

g. Pressures on urbanization of this site have been resolved with the Department of Agriculture.

h. Impacts on native beaches resulting from increased demands due to West Beach is discussed in the section covering Social Impact Factors. It is felt that the planned amenities at West Beach will accomodate the majority of the residents/visitors at West Beach; there will be those residents/visitors who will feel that movement on the shoreline of this State is permitted under the law and as such, there are no legal restrictions to limit their movements.

i. The adequacy of water meters for farmers on the Waianae Coast is beyond the purview of this document. Adequate water supply is covered and further substantiated by the DLNR letter mentioned previously.

j. The traffic generation data that has been developed by Community Planning, Inc. has been discussed with State Department of Transportation and will be resolved to the mutual satisfaction of the State DOT.

k. Bishop Museum comments that were made in 1980 have been covered in the 1980 EIS which was approved by Department of Land Utilization in 1980. Unless there were more or additional comments made by Bishop Museum, the responses were deemed adequate. Increased pressures associated with urbanization of West Beach on the Waianae District are discussed in the added section on Social Impact Factors. Population is covered in the section on Demographics.

We hope that we have adequately responded to the comments contained in your letter and thank you for your continuing interest.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

Attachment

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
HONOLULU, HAWAII 96809

EDGAR A. HAMASU
DEPUTY TO THE CHAIRMAN

DIVISIONS:
AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

MAR 14 1985

Honorable Leigh-Wai Doo, Chairman
Planning & Zoning Committee
City Council
City Hall
Honolulu, Hawaii 96813

Dear Councilman Doo:

Pearl Harbor Ground Water Control Area

A few months ago you were in the process of establishing a City Council policy on the processing of zoning and land use amendment requests where those requests related to the question of water availability in the Pearl Harbor Basin.

You would be interested in knowing that at the December 14, 1984 meeting of the State Board of Land and Natural Resources, the Board conditionally recertified the Oahu Sugar Company's ground water withdrawal and use at 92.5 mgd. The previous certified withdrawal for Oahu Sugar Company was 115 mgd. The recent recertification means that approximately 22.5 mgd of water allocation is now considered uncommitted by the Board of Land and Natural Resources in the Pearl Harbor Ground Control area.

We have had tentative inquiries from interested parties as to possible allocation of the uncommitted water for their respective purposes. In this connection, we are presently working on establishing a procedure whereby new or additional ground water withdrawals will be permitted from the Pearl Harbor Ground Water Control Area.

It would seem that with this recent recertification, the water source and allocation problems in the Pearl Harbor aquifer have been relieved somewhat and that pending developments can now rely on new water being available over the next several years, depending on the rate of withdrawals.

Please contact me or my staff if you have any questions on this matter.

Very truly yours,

SUSUMU ONO
Chairperson of the Board

cc: Mr. Kazu Hayashida, Board of Water Supply
Mr. John Whalen, Dept. of Land Utilization
Mr. Donald A. Clegg, Dept. of General Planning

Misc. Com. No. 447

Chiniago Inc.
Archaeological Consulting

1040-B SMITH STREET • HONOLULU, HAWAII 96817 • TELEPHONE: (808) 521-2785

May 29, 1985

Mr. Fred Rodriguez
Environmental Communcicatons Inc.
P.P BOx 536
Honolulu, hawaii 96809

Dear Mr. Rodriguez:

This letter is written in response to undated comments made by Mr. Bertell D. Davis and a memorandum from Matthew Spriggs, dated May 20, 1985, regarding the Draft Supplemental Environmental Impact Statement for West Beach.

By way of general introduction, it should be pointed out that, in the absence of any explicit rules, regulations or guidance from the State Historic Preservation Office, I have always understood that it is the intention of the developer to coordinate all historic site mitigation with the State Historic Preservation Office. It should also be pointed out that the field surveys at the West Beach area have been a continuing process, and that new information has been added to the existing stock as it was found, and therefore none of the previous studies should be considered complete insofar as the entire West Beach project area as a whole is concerned. And finally, "preservation" as an alternative is always implicit in any discussion of recommendations. It is not necessary to tell the developer that he does not have to destroy a site. All recommendations for salvage assume that the developer is already aware of his right to avoid a site if he so chooses.

My specific comments are as follows:

DAVIS, page 2:

> "For instance, it is of interest to note that the developer's own consulting archaeologist has admitted, as a matter of public record, that he considers me to be the most knowledgeable individual regarding the archaeology of the Barbers Point region--including the West Beach area."

In the first place, I believe the question as put to me was phrased in terms of the Barbers Point AND West Beach area. Stated that way, I replied in the affirmative. I was never asked if Mr. Davis was the most knowledgeable individual regarding the sites in the West Beach area alone. Had I been asked that question, I would have said no.

In the second place, just because I recognize that Mr. Davis probably has more facts stored in his head regarding the sites of the Barber's Point area than anyone else does not necessarily mean that I therefore implicitly trust his judgement regarding those sites. There is no connection between the two. If there were, it would defeat Mr. Davis's own argument, because I myself am the most knowledgeable person regarding the sites of the West Beach area, and using Davis's own argument, my judgement is more valid than his.

DAVIS, page 2:

> "Why then, after nearly a year of input on my part, does the draft Supplemental Impact Statement persist in claiming that only twenty-some sites are located within that portion of the West Beach area identified as being part of the Barbers Point Archaeological District, a property designated eligible for inclusion on the National Register of Historic Places, when in fact I have repeatedly shown that in excess of sixty archaeological sites have already be [sic] recorded therein?"

This assertion is unanswerable, as I am unable to find anyplace where Mr. Davis has repeatedly shown in excess of sixty sites in that portion of West Beach in the Barbers Point Archaeological District.

DAVIS, page 2:

> "Why then, is there still no discussion anywhere that these sites in part comprise a major late-prehistoric/early-historic Hawaiian habitation complex [Site Complex 2718] and neaby [sic], a presumably associated gardening complex [Site 2717] adapted to the unique arid coralline environment of the region?"

Because it is premature to draw conclusions from sites which have not been completely studied, and, in any event, an Environmental Impact Statement is not the proper place to present such conclusions. Such claims as Mr. Davis makes for the sites in this regard are best left until the completion of a research project.

DAVIS, page 2:

> "Why then, is there no mention that the location of these sites represents very nearly the

> last of this unique environmental circumstance in the region where the critical site-to-site and site-to-landscape associations still survive relatively intact?"

Because no evidence to support this contention has been put forward. The entire Barber's Point area has not been surveyed.

DAVIS, page 2:

> "Why...is it stated that 'twenty-six archaeological sites were identified in [the] portion of the [Barbers Point Archaeological] District lying on th West Beach Property" when the revised EIS of 1981 claimed there were only twnty-four [sic] such sites?".

Our work at West Beach has been a continuing effort. New sites have been found within the past year which were not included in any previous reports. These include sites in areas not surveyed for the West Beach project, as well as in an area that had been intensively surveyed by Bishop Museum prior to preparation of the 1981 EIS.

DAVIS, page 3:

> "Why...does the map of the 1984 archaeological survey area show two extra sites [Sites 1446 and 1447] which are otherwise nowhere to be found--either in the text or tables of the draft Supplemental Impact Statement, or in the consultant's status report? Maybe these are the two new sites. But then, according to the map given, only one site is located within the Barbers Point Archaeological District. Perhaps there is a third new site somewhere out there still to be accounted for."

The problem arises because of two maps from the State Historic Preservation Office which accompanied the request for determination of eligibility of the Barbers Point Archaeological District to the National Register of Historic Places. Each of the maps shows the District boundary in a different place, which led to the erroneous inclusion of an extra site in the District.

DAVIS, page 3:

> "Where is the human burial that I found and reported a number of years ago in Site Complex 2717? It is not acknowledged in either the draft Supplemental Impact Statement or Barrera's status report, although it does appear in the Historic Sites map identified as Exhibit K of the developer's petition for a District Boundary Amendment [from agriculture to urban] submitted to the Hawaii State Land Use Commission and dated as received by the LUC on 21 December 1983?"

This burial, which was either not found during the intensive survey of Davis and Griffin, or for some reason not reported at that time, was inappropriately mentioned in the LUC District Boundary Amendment petition to which Mr. Davis refers. None of the other individual features from that or any of the other sites was singled out for such particular attention, and there is no reason to do so at this time.

Because many of Spriggs's concerns have been addressed in my responses to Davis's comments, rather than replying on a one-by-one basis I would just like to make a few overall observations and close with a few specific comments which I feel are warranted.

First, regarding the adequacy of the site descriptions, it should be pointed out the question of adequacy is a purely personal, subjective matter. This is demonstrated by the fact that several of Spriggs' conclusions are at direct odds with those of Davis, who stated in his letter of 10/26/79 to the Environmental Center:

> "In general, the basic field report seems quite adequate and it is unlikely that major remains were overlooked by the survey team. The site descriptions are concise and the map locations clear..."

In addition, Spriggs's complaint that there is inadequate documention to allow one to draw conclusions is belied by the fact that he himself draws such firm conclusions as the following, referring to the sites in the marina area:

> "All clearly have research significance. Site 2718, a major archaeological complex clearly also has high interpretive significance and could be developed as a 'theme park' illustrating traditional Hawaiian adaptation to the area."

As for the imputed cultural significance of the sites, that

question is outside my field. I do archaeology, not sociology, and Spriggs's comments would be more profitably addressed to the proper experts.

Spriggs makes one particular statement which is clearly false:

> "The sites in the marina area were considered eligible for the National Register, a mark of their importance."

The fact is, the eligibility criteria for the National Register are so broad as to make all sites, even ones that are no longer in existence, eligible. A site is not necessarily important because it happens to be eligible.

Finally, I would point out that Site B6-139, which was destroyed during harbor construction, is located correctly on the map.

Sincerely yours,

William Barrera, Jr.
President

ENVIRONMENTAL COMMUNICATIONS INC.

F J RODRIGUEZ
PRESIDENT

June 3, 1985

Dr. Isabella A. Abbott
Department of Botany
University of Hawaii
Honolulu, Hawaii 96822

Dear Dr. Abbott:

We are in receipt of your comments dated May 20, 1985 on the West Beach Supplemental Environmental Impact Statement and we respond in the following. The comments provided were turned over to the technical consultants who prepared the reports which were the basis of the sections which are listed in your comments. Dr. Paul Bienfang prepared the responses contained herein.

1. Dr. Bienfang states that an Environmental Impact Statement in itself does not need to prove an understanding of the food web; this understanding is clearly manifest in the technical reports which were provided to reviewers such as Environmental Center and Native Hawaiian Legal Corporation together with the Draft Supplemental Environmental Impact Statement. There are lengthy descriptions and semiqualitative indices of macrothalloid algae species in Tables 1, 3, 5, 7, 8, 10, 12, 13, 15, 17, 18, 22, 23, 25, and 26 of the OIC 1984 technical report. Also provided on request after the State Land Use Commission were a list of algae genera and their Hawaiian names.

2. In terms of your comments on blasting and siltation, in quoting a sentence from section 9.7.2, the ellipsis between "magnitude of these impacts" and "are likely to be minimal" replaced the phrase "when considered in the context of the shoreline as a whole". As noted in the Oceanic Institute reports, areas directly affected are a small percentage of the total shoreline. Bienfang agrees that siltation would interrupt photosynthetic activity but he takes exception to your conclusion that it would "thus kill" the plants. Unless siltation is prolonged, it is not necessarily mortal to adjacent populations. We would note here that your testimony at LUC hearings indicated that offshore limu populations are doing fine and well after deep draft harbor construction.

3. Bienfang correctly states in his response that the extant species would not necessarily be replaced. Most likely, pioneer species would begin the colonization.

   Finally, Bienfang states and we concur that an Environmental Impact Statement is not intended to be an ecological statement; the basic ecological principles to which you refer are the foundation of the technical work which precedes an EIS and is described in the data reports.

INTERTIDAL ALGAL SPECIES LIST (CONTINUED)

Scientific name	Hawaiian name
<u>Laurencia</u> <u>nidifica</u>	limu mane'one'o
<u>Laurencia</u> sp.	**limu palewawae**
<u>Lithophyllum</u> sp.1	
<u>Polysiphonia</u> sp.	limu hawane, limu pu'alu
<u>Porolithon</u> <u>onkodes</u>	
<u>Pterocladia</u> <u>capillacea</u>	limu loloa
<u>Spyridia</u> <u>filamentosa</u>	

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ENVIRONMENTAL
COMMUNICATIONS
INC.
June 3, 1985

F. J. RODRIGUEZ,
PRESIDENT

Mr. Bruce A. Carlson
2777 Kalakaua Avenue
Honolulu, Hawaii 96815

Dear Mr. Carlson:

We are in receipt of your comments dated May 23, 1985 on the West Beach DSEIS and we respond in the following:

1. Discussion in the DSEIS did not include the areas of concern that you have described and this was due to the fact that construction of the marina/lagoon systems were determined to have impacts only on the nearshore coastal waters and not the offshore areas described in your comments. Therefore, detailed analyses were built on the data base of the predevelopment reconnaissance that quantified the marine resources expected to be impacted by construction to be only in the nearshore area. This approach was emphatically not taken with the intent of diverting attention from the rich offshore marine resources.

2. The various activities you describe as taking place currently however, run counter into the establishment of the offshore area as a Marine Sanctuary much like Haunauma Bay. If the area were in fact to be established along similar lines to Haunama Bay or Kealakekua Bay, the present activities including subsistence fishing or limu gathering would be prohibited.

3. We do not mean to imply that construction for the marina/lagoon systems would be positive in an environmental sense by replacement of habitat for colonization of marine organisms; the new habitat or increased habitat improving the marine environment is not what was stated. What was stated and is substantiated in studies done in September, 1983 for the Honokohau Harbor in Kona, Hawaii was that populations of reef animals will eventually reach levels equal to or higher than before construction. Specific attention is refered to pp. 33.34 concerning corals, pp. 56, pp.61-63 concerning mollusc and echinoderms, page 75 concerning fishes, and pp. 3-9 of the Executive Summary and page 9 concerning monitoring.

4. The description of the surface runoff drainage patterns is that at the present time, the natural runoff patterns are: 1) at the northern end of the property; 2) at the Kamokila Campbell homesite; and 3) approximately in the middle of the property between proposed lagoons 2 and 3. The planned designed runoff patterns will be: 1) at the northern end of the property and 2) at the marina which will then flush into the deep draft harbor. This proposed drainage pattern will be on a 2-1 ratio with the northern end receiving approximately 34% of the total flow. It should be noted that the northern end of the property receives at the present time, 25% of the total flow during heavy storms (25-50 year events). The drainage system designed for the northern end of the Project uses extensively the golf course and additional silt basins to settle out suspended

solid prior to ocean release. Further, there is percolation taking place at the same time, thus, reducing total volume of runoff discharged to the ocean.

5. Offshore moorings or anchorages are not within the control of West Beach as the offshore waters are administered by DLNR, U.S. Coast Guard, and other government agencies.

6. Every effort has been made by the applicant to be sensitive to the offshore marine biota in view of no fewer than five technical analyses conducted and written, environmental consultants retained to provide their expertise during the planning stages, consultants' advice to minimize impacts through sedimentation basins, runoff to the south of the property, performance of dredging in the dry, ciguatera warning signs to fishermen during construction, and other mitigative measures agreed to by the developer.

7. Analyses conducted by Oceanic Institute for impacts to the offshore biota did not indicate that there would be life threatening impacts to the coral communities and that the creation of the lagoons would affect the nearshore strip only. The design and construction planning for the lagoon system is to as closely parallel the existing natural lagoon fronting the Campbell homesite; the extent of turbidity from this natural lagoon is not considered detrimental to the offshore corals.

8. The most luxuriant growth of corals exist offshore at the northern end of the property; it should also be noted that in a natural state, there is storm runoff that reaches these corals at the present time and that under current design and planning, this runoff volume will be improved by sedimentation basins and redirection of the majority of the runoff anticipated to the south via the marina and deep draft harbor channel. It will be in the order of 2/3-1/3 ratio of distribution.

9. The establishment of Marine Sanctuary would achieve the goals and objectives of total preservation that you describe, but at the expense of current practices of subsistence fishing, limu gathering, and tropical fish farming. As to when and how this proposed Sanctuary would or could be done, the review and hearings on this matter would be under the jurisdiction of government agencies such as DLNR, DOH, COE, and other marine oriented entities. Should such a proposal be brought up for review, West Beach would become involved as the affected party.

10. The joint use of the deep draft harbor channel is being reviewed by Federal and State agencies on operational and environmental impacts with a decision forthcoming very soon. West Beach is supporting the joint use channel alternative for both operational and environmental reasons.

11. Adequate surveys and assessments of the marine environment have been conducted. The decision as to whether or not a program of offshore area predevelopment reconnaissance will be undertaken, rests with the reviewing agencies who are entrusted with the permit authorization.

Thank you for your comments and continuing interest.

Yours very truly,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

ENVIRONMENTAL
COMMUNICATIONS
INC.

J. RODRIGUEZ,
RESIDENT

June 3, 1985

Mr. Bertell Davis & Matthew Spriggs
Environmental Center
Crawford 317
2550 Campus Road
Honolulu, Hawaii 96822

Dear Messrs. Davis & Spriggs:

We are in receipt of your comments dated May 20, 1985 on the West Beach DSEIS and we respond in the following:

William Barrera who prepared the archaeological studies performed for West Beach responds directly to the concerns expressed in your comments. We further note that at recently completed State Land Use Commission public hearings, Mr. Earl Neller stated that West Beach was not nominated to the National Register due to the fact that the 1980 amendment to the Historic Preservation Act requires landowners consent before any site can be placed on the National Register. He further cited shortage of time and manpower as other reasons. (TR 2/7/85: p. 79 [13]-8[9]). Neller also stated that the quality of Barrera's works is better than most he has in his State Historic Preservation Office. (TR 2/7/85: p. 91 [4-7]). Neller further stated that in a letter from the Advisory Council on Historic Preservation dated October 2, 1985, the staff archaeologist for the Advisory Council had reviewed Mr. Barrera's report and found it well done, especially with respect to recommendations for avoidance and/or protection of sites considered to be significant. (TR 2/7/85: p. 91 [8]-92 [25]).

Neller admits that portions of the West Beach project have similar remains to those in the Barbers Point Deep Draft Harbor area. (TR 2/7/85: p. 57 [5-9]).

There are also other sites in the Barbers Point area, but not on the West Beach property that may be of equal or greater archaeological significance. These areas outside of West Beach include the following:

1. The Quarry site mauka of the deep draft harbor;
2. Areas within Campbell Industrial Park;
3. Areas within the Barbers Point Naval Air Station (a definite possibility); and
4. Ewa Marina Area (TR 2/7/85: p. 95 [7]-97[9], and 98 [13-18]).

Finally, Neller stated that he believes that there is an important and unusual "one of kind" two step rock platform believed to be of religious significance at Ewa Marina, and despite the fact that Neller felt that Ewa Marina sites may be of equal or greater archaeological significance than West Beach, Bertall Davis still did not recommend preservation for any particular site at Ewa Marina (TR 2/7/85: p. 97 [10]- 98 [18]).

These extracts from the State Land Use Commission public hearing testimony are on record and available using the reference page numbers provided.

Further, the following extracts taken from State Land Use Commission hearings held on January 17, 1985 are provided. These extracts relate to testimony provided under oath by Bertell Davis and his statements made on:

1. Barrera's 1984 Archaeological Report on West Beach
2. West Beach Experts
3. Maps prepared by Barrera
4. Sinkholes
5. Davis Experience
6. Other sites of equal or greater significance
7. Davis' Deep Draft Harbor Report
8. Preservation
9. Significance vs. Money
10. Eligibility for inclusion on the National Register

Barrera's 1984 Archaeological Report on West Beach

Davis admitted that Barrera found archaeological sites that were never found by ARCH, Bishop Museum or himself. (p. 155[5-11])

Davis testified that he believes that Barrera found the Limestone Kiln at West Beach. (p. 141[19-22])

Davis testified that sites 1431, 1432 and 1435 are miscellaneous sets of walls that seemed to be treated quite well in Barrera's report, so he has no real concern regarding those. (p. 100[21-23])

Davis testified that sites 1437, 1438 and 2721 are all beach middens. In general, Davis has found Barrera's basic description and treatment of those "rather amorphous" exposures of the midden on the face of the sand dune to be well-taken. Davis thought Barrera's recommendations regarding those specific sites are also reasonably well-taken (p. 102[13-19])

Although Davis made comments regarding the Lime Kiln, Davis admitted that he never read Glenn Mason's report on the Lime Kiln. (p. 122[4] and p. 155[3-4])

West Beach Experts

Davis admitted that he feels that West Beach consultant Glenn Mason has more expertise and experience in historical restoration and rennovation architecture than himself. (p. 140[3-6])

Davis admitted that West Beach consultant Dr. Alan Ziegler has more expertise and experience in biology and palentology than himself. (p. 144[13-15])

West Beach consultant Dr. Alan Ziegler was a witness for Intervenor's Counsel Alan Murakami in a case regarding the coral stock piling areas at the Deep Draft Harbor before the City Plannng Commission. (p. 143[4] - 144[2])

Map Prepared By Barrera

In 1979, when Bertell Davis visited the site area to look at other sites in the northern portion of the project area which he had not been in previously, Davis found the descriptive level of Barrera's Report sufficient to locate those sites. (p. 79[5-9])

When asked about the sufficiency of Barrera's maps, Davis testified that locationwise, the locator map was quite good, and that was primarily what allowed him to relocate the sites. (p. 80[23] - 81[1])

Davis testified that in Barrera's most recent report, a distribution map of a selected survey area was made showing the distribution of sinkholes which he believes that Barrera defined as being accessible, however, Davis doesn't think that Barrera tried to map the smallest sinkholes that you could get into. (p. 81[16-21]) Davis testified that Barrera's 1984 Supplementary Report gives a much better survey map of the sinkholes, albeit a restricted area. (p. 116[8-9]) Davis also testified that he did not have problems with Barrera not listing each and every sinkhole and that Barrera does not have to list each one and give each one a number. (p. 144[16-23])

Sinkholes

Davis testified that Barrera's estimate of 800 sinkholes in the West Beach area is a fair assessment. (p. 144[24] - 145[4])

Davis admitted that the he did not do a fair assessment of the number of sinkholes in his 1978 Archaeological Survey Report for the Deep Draft Harbor site. (p. 145[15-22])

Davis testified that only between 20 and 30 sinkholes were excavated at the Deep Draft Harbor. (p. 145[8-14]) Davis later admitted that this was less than one percent of the sinkholes at the Deep Draft Harbor. (p. 148[16-17])

Davis admitted that he never testified against doing only one percent of the sinkholes in the Deep Draft Harbor site (p. 159[19-24])

Davis Experience

Davis testified that the last time he did excavation in the West Beach area was during the summer of 1980 up to site complex 2717 because his right of entry and his work ceased at the end of the year and he was driven out by blasting at the quarry. (p. 135[20] - 136[1])

Other Sites of Equal or Greater Significance

Davis admitted that he had done a survey at Ewa Beach and that in some ways its comparable to the West Beach petition area. (p. 117[23-24])

Davis' Deep Draft Harbor Report

Davis' 1978 Report on the Deep Draft Harbor site covered part of the West Beach site, particularly sites 2718, 2719, 2720 and 2721, where West Beach is proposing its Marina. (p. 158[21] - 159[2] and p. 160[4-11])

When discussing the burial site, the small habitation structures and the pit gardens located within the site 2717 complex, Davis testified that portions of site 2717 have already been destroyed, but not be West Beach. According to Davis, before the construction of the Deep Draft Harbor began in 1980, the quarry was actively moving into this area and the quarry has in effect probably removed about that much of the site complex already. (p. 112[7-23])

Davis testified that in his 1978 Report he found that the greatest portion of the zone where site 2717 is located had been severely disturbed by expansion of the quarry with the exception of site 2717-34 which was found in a clearing. (p. 161[15-18] and p. 162[10-16])

Davis also testified that his 1978 Report provided that due to the disturbance that had taken place, the nature of the structures associated with the midden at 2717-34, probably will never be known. (p. 162[17-22])

Davis also admitted that in his 1978 Report, he said that with the possible exception of sites 2717-1 and 2717-32 there is no clear evidence for habitation in the immediate vicinity. (p. 163[4-9])

Davis also admitted that in his 1978 Report he said that the surviving features in this zone can no longer be directly tested due to the destroyed habitation features out at the perimeter of the quarry. (p. 163[24] - 164[11])

Davis also testified that he also recalled making the statement in his 1978 Report essentially to the effect that sites 2719, 2720 (in the area where the West Beach Marina is planned) have been badly disturbed by historic activity; the area was used for stockpiling dredgings for the barge harbor basin; and that any features that may have been there once are now lost. Davis further clarified that the area he was referring to as having a great degree of disturbance would be from 2719 towards the ocean. (p. 166[23] - 167[19])

Preservation

Davis testified that he thinks that the "whole end" ought to be put on "cultural reserve," but he admits that he is on record suggesting that "in fact preservation in the Barbers Point - West Beach area may not be that critical at that time." (p. 118[6-13])

- Varied restaurants and cocktail lounges.
- Organized and unorganized sporting, recreational and cultural activities such as golf, swimming, tennis, fishing (both surf and deep sea), snorkeling, hiking, nature walks, hunting, surfing, crafts, hobbies, horseback riding, badminton, volleyball, archery and skeet and trap shooting.

The proposed resort development as planned at West Beach embodies these qualities and attributes.

THE ADVANTAGES OF A RESORT COMPLEX AT WEST BEACH

On the basis of our analysis of the visitor market of Oahu and the planned resort development at West Beach, it is our opinion that West Beach is well-suited to the development of a resort complex as envisaged by West Beach Estates for the following reasons:

- West Beach can provide the long-term job formation needs of Oahu which depend largely on the growth of tourism.

  The 1970s have witnessed declines in the job-generating prospects of two major private sector industries other than tourism, sugar and pineapple. A number of other industries have attempted to grow and some of these have been successful while some have not. Those that were successful, however, provide little hope for major new job formation. Clearly, the future for new job formation on Oahu lies with tourism. If Oahu's economy is to continue to provide jobs for its present residents and their children, then tourism must play a major role in providing jobs.

  Between 1970 and 1980 total employment in Hawaii grew by nearly 34 percent. By comparison pineapple and sugar industry employment was reduced by 24 percent and hotel employment rose 74.0 percent. In 1970 one out of every five jobs in the State were attributed to the tourism industry. By 1980 this ratio has grown to one in three jobs attributed to tourism. Presented on the following page is a tabulation showing the relative employment growth by industries:

Industry	Average Annual Employment 1970	1980	Percent Increase
Total (including governemnt)	250,751	335,538	33.8
Total government	64,494	75,516	17.1
Total (excluding government)	186,257	260,022	39.6
Agriculture	3,309	3,797	14.8
Sugar and pineapple	2,266	1,730	(23.7)
Other	1,043	2,067	98.2
Mining and contract construction	22,741	19,517	(14.2)
Manufacturing	18,597	17,521	(5.8)
Transportation	12,614	18,204	44.3
Communications	5,911	5,605	(5.2)
Utilities	1,874	1,862	(0.6)
Wholesale trade	14,287	16,423	15.0
Retail trade	45,101	71,342	58.2
Finance, Real Estate, Insurance	15,880	26,973	69.9
Services	45,906	78,686	71.4
Hotels	9,292	16,136	73.7
Nonclassified	5,867	92	(98.4)

In 1980 leeward Oahu's unemployment was 7.5% compared to 4.5% for the island of Oahu. July 1983 data for the island of Oahu is available and computes to 6.3%. Data is not available for the current period for leeward Oahu. If, however, the same relationship of Oahu to the leeward area in 1980 were applied to the current period, leeward Oahu would have an unemployment rate of 10.5%.

- The location of West Beach is in Oahu's Ewa area where population growth is accelerating.

Government and private studies have recognized the western shift in Oahu's population center and government has planned for this by undertaking highway improvements in the Ewa area, siting major public facilities such as Aloha Stadium Ewa of downtown, planning infrastructure improvements for the area, etc. Yet, employment centers (other than Campbell Industrial Park) continue to be Diamond Head of Pearl Harbor.

The Waianae Coast and Leeward area houses a large population of families that could derive their income from resort employment at West Beach. On the following page is listed the population growth of Leeward area communities:

Urban Area	Resident Population 1970	1980	Percent Increase
Ewa	2,906	2,637	(9.3)
Ewa Beach	7,765	14,369	85.1
Maili	4,397	5,026	14.3
Makaha	4,644	6,582	41.7
Makakilo City	3,499	7,691	119.8
Mililani Town	2,035	21,365	949.9
Nanakuli	6,506	8,185	25.8
Pearl City	27,398	42,575	55.4
Wahiawa	17,598	16,911	(3.9)
Waialua	4,047	4,051	0.1
Waianae	3,302	7,941	140.5
Waipahu	24,150	29,139	20.7
Area Totals	108,247	166,472	53.8
Oahu	630,497	762,534	20.9
State	706,177	872,381	23.5

The planned residential communities of the Campbell Estate lands would also serve to reinforce these employment needs.

- Public access and enjoyment of the shoreline heightened.

At the present time, the coastline of West Beach is a rocky area with little beach area suitable for sun seekers, swimmers or beachcombers. Limited access is via rocky cane field roads. It is our contention that the quality of the shoreline and its access can only be improved by a resort development featuring an increasing number of water related activities. By so doing the local and visitor population can derive far greater benefit from this natural resource.

- Reduction of employee commute time and traffic volume.

In today's mobile society, the automobile has affected the lives of all of us. Traffic on Oahu is an island-wide problem and affects all Oahu residents, more so in the case of residents living in suburban communities who must commute daily to work in Downtown and Waikiki.

A job center in the form of a resort complex at West Beach would serve to reduce traffic congestion by providing employment opportunities close to an available work force. In addition to reducing commute time for employees living in the area, peak traffic to and from Downtown would be reduced in several ways. First, traffic volume inbound (to Downtown) from the leeward communities would be reduced since some of these commuters would be employed by the resort complex and would no longer need to commute into the city. Second, commuters who live east of West Beach in such communities as Waipahu, Pearl City and Aiea may be employed by the resort and would therefore travel in nonpeak directions during rush hours. And third, future residents of West Beach itself who work at the resort will no longer be required to commute daily to Downtown thereby easing peak volume.

It has not been demonstrated that traffic from hotel users would add significantly to congestion. Instead, the likelihood is that such traffic would tend to occur throughout the day in both inbound and outbound directions. In fact, the visitor would be encouraged to avoid travel in peak directions so that the time available for doing other things is maximized. The likely use of some form of mass transit such as charter buses for tour groups, shuttle and group limousine service would also tend to lessen the traffic impact.

- Enhancement of the cost-benefit ratio.

The tourism industry's economic benefits to the State are substantial. However, these benefits are reduced as Hawaii's labor force is absorbed into the visitor industry since labor shortages due to the growing influx of visitors will have to be met by immigrants. These immigrants will require substantial public outlays for housing infrastructure and maintenance, fire and police protection, education of their children and a host of other support requirements. In essence, the cost-benefit ratio for visitors falls sharply as the proportion of immigrants in the labor force needed to serve the additional visitors grows.

Therefore, as additional resort facilities are developed in the less populated areas of Oahu, the cost-benefit ratio accruing from the added visitor expenditures will drop. Public outlays will be required to support the immigrant population required to operate the resorts. If, however, resorts are allowed to be developed in areas where support facilities are already existing or planned, such as at West Beach, the cost-benefit ratio from additional visitor expenditure should not experience any dramatic change inasmuch as public funds would not be required for housing and various other support facilities.

- Excellent Access to and from Honolulu International Airport.

West Beach is within twenty miles driving distance from Honolulu International Airport via a divided four and six lane interstate freeway (H-1). In contrast the resort developments at Makaha and Kahuku are 28 and 34 miles respectively from the airport, partially via single lane highways.

- Existence of an Excellent Climate

A dry, warm climate sought by visitors exists in the West Beach area. The average annual rainfall has been recorded at 20.31 inches and the average coolest and warmest monthly temperatures are 72.1 and 79.7 degrees. West Beach is oriented on Oahu the same as the very successful Kaanapali resort area is on Maui and, therefore, enjoys the same excellent weather without the wind factor.

- A Superior Water Quality.

Environmental studies of the area have shown that not only is the quality and character of the waters off West Beach excellent (calm, clear and clean), but the quantity and variety of sealife is particularly abundant. Additionally, tide pools are found at selected points along the shore, exhibiting the area's indigent sealife.

- Inherent Superior Qualities of a Master Planned Development

The land uses for a planned resort community include hotels, a mixture of housing densities, a community core with commercial activities and recreational amenities. These developments embody the desired characteristic of centralized planning which results in the following:

- Control of land use.
- Restraint in structural placement and design.
- Enhancement of environmental qualities.
- Preservation of scenic and historic sites.
- Avoidance of visual dominance.
- Complimentary circulation of pedestrians and vehicles.
- Coordinated marketing strategy for all segments of the complex.

West Beach as a Planned Resort Community would take advantage of these qualities enhancing the degree of success.

THE PROPOSED WEST BEACH COMMUNITY

The primary objective of the West Beach development is to create a quality community that affords a complimentary environmental and social balance between the tourist visitor and the permanent resident. By amplifying the existing amenities for the site and creating new recreational facilities that serve both resident and tourist, an intermingling occurs that is beneficial to the total community. The quality of that life style is dependent on the environment that is designed for the total project and especially that character and quality that is projected in the development of the first acquisition. Residential and quality hotel facilities and the championship golf course of the first development phase, should set the tone of quality for the entire resort.

The overall development concept is a combination of a resort destination - a defined complex providing a diversity of resort related uses and activities - and a mixed residential community which are the beginnings of a larger mixed use core for the secondary urban center. The project consists of 642.2 acres and 9,200 units. The uses represent the uses shown on the Ewa Development Plan of the City and County of Honolulu.

The general use pattern consists of 1) the resort activities occupying a large portion along the oceanfront, and 2) the residential areas also located along a small portion of the oceanfront areas, as well as on the golf course and in proximity to the marina. The fairways of the golf course help to separate these two major activities as well as provide open space relief throughout the development.

Summarized below are the specific uses, acreages, and units contemplated at West Beach.

Land Use	Acres	Units
Low Density Apartment	108.0	1,500
Medium Density Apartment	78.9	3,700
Resort	86.5	4,000
Commercial	17.8	
Beach Club	2.2	
Hawaiian Cultural Center	21.8	
Marina	36.3	
Lagoons	13.1	
Golf Course	170.5	
Park	51.4	
School	6.9	
Transit Stations	2.7	
Circulation	46.1	
Total	642.2	9,200

In order to plan the development of West Beach, more specific assumptions on facilities have been made. Due to shifts in market preferences, final development may differ from those presented. The Ewa Department Plan allows a total of 4,000 resort units at West Beach that can be used by transient visitors. For purposes of planning and estimating employment we have assumed that 2,000 of these resort units will be hotels and 2,000 will be full service resort condominiums.

THE CREATION OF EMPLOYMENT OPPORTUNITIES

The development of transient accommodations not only satisfies the visitor market requirements, but also creates employment opportunities for the residents of Oahu. As currently planned, the West Beach resort should create approximately 5,100 direct jobs and 1,000 indirect jobs for a total employment impact of approximately 6,100 jobs. Presented on the following page is a tabulation showing the detailed computation of this employment base.

Employment Computation
West Beach Resort

Entity	Basis (Jobs Per Unit)	Employment
*Deluxe Hotel (400 rooms)	1.5/room	600
[1]First Class Hotels (1,600 rooms)	.7 room	1,120
*Resort Condominiums (2,000 units)	.5/unit	1,000
[1]Residential Condominiums (5,200 units)	.05/unit	260
[1]Commercial Retail (185,000 square feet)	.005/sq. ft.	925
[2]Commercial restaurants (35,000 sq. ft./ 7 restaurants)	40/restaurant	280
Elementary school	*	50
Hawaiian Cultural Center	*	125
Luau	*	175
Golf Complex and Club	*	125
Beach Complex and Club	*	150
Yacht Club	*	50
Marina	*	200
Complex Tram System	*	20
West Beach Maintenance/Security	*	30
West Beach Management/Administration	*	20
Total Direct Jobs		5,130
Total Indirect Jobs (.2 x Direct Jobs)[1]		1,026
Total Job Creation		6,156

[1]Based on the Department of General Planning, City and County of Honolulu report "Employment and Population Impacts of Resort Development at Five Oahu Sites", March 1978.

[2]Based on National Restaurant Association annual survey.

*Based on investigations and estimates of Pannell Kerr Forster.

In addition to these jobs relating to the operation of West Beach, a large number of jobs will be created from the construction of the infrastructure, superstructure and amenities.

14. INDEX

May 23, 1985

Col. Michael M. Jenks
District Engineer
Corps of Engineers
U.S. Army Engineer Dist. HNL
Dept. of the Army
Fort Shafter, HI 96858

Dear Col. Jenks:

I have read the EIS for the West Beach project and I am very concerned that it does not adequately address the impact of this project on the marine environment. The nearshore environment, as correctly described in the EIS, contains areas of "high (58%) coral coverage which extend to a distance of 500 to 1,000 m offshore.... Fish diversity in this biotope is high...". However, the impact of the West Beach project on this particular environment is virtually ignored in the EIS. Instead, attention is paid almost exclusively to the shoreline immediately affronting the project which in fact is relatively barren. By then stating that the effects of the project will most likely affect only the area closest to shore they easily conclude that the impact on the marine environment will be negligible. This is highly misleading. In fact, whether the project has immediate effects on the rich coral reef environment due to construction or later, long-term effects due to a huge increase in the numbers of people moving into this region, the effects will be the same and will result in a dramatic degradation of this biotope.

At present the reef affronting the West Beach Project is one of the most aesthetically beautiful underwater environments on the island of Oahu, probably exceeding Hanauma Bay in the extent of coral growth. For research biologists, such as myself, it is an invaluable resource because of its accessibility, its pristine quality, and the fact that so few coral rich environments exist in this area. Local residents make use of this area for subsistence fishing and collection of limu. Dive tour operators find it a popular dive site due to its beauty and the fact that the only other similar area, Hanauma Bay, is now off-limits to commercial diving operations. Finally, this area supports a number of tropical fish collectors who find this reef an important site for collecting colorful aquarium fishes.

For all of the above reasons, this area deserves protection and adequate safeguards that future development will not seriously degrade this habitat. The EIS acknowledges that the dredging and blasting needed to create 13 acres of new lagoons, and a 42 acre marina will cause some

MAY 25 1985

increase in siltation and disruption to the marine environment but goes on to state that this will only affect the area close to shore. Furthermore, they state that their development will have a positive affect since "the surfaces exposed in construction represent potential new habitat for replacements for the populations destroyed....(and) it is likely that populations (of reef animals) will eventually reach levels equal to or higher than before construction"(pg. 9-67). Such a statement belongs almost in the realm of fantasy. I would like to see such a statement substantiated by fact and would especially like to know how closely the "new" populations would resemble the "natural" community.

The developers also intend to divert storm runoff partly to the marina and partly to the north end of the development presumably to keep dirty water away from their new lagoons. Presently, fresh water diffuses into the marine environment along the entire coastline. The new point discharge will concentrate this flow to the area which is the richest in coral growth. Depending on the volume, its residence time, the amounts of nutrients, pesticides and other toxins, and sediment, this runoff could, at any time, have a disastrous affect on the corals. Or, in lesser amounts, it could have a slow killing affect over many years.

What worries me the most, however, is the presence of thousands of new people and boats in this area. The marina will be built to hold up to 500 boats and it can be expected that many of the people owning these vessels will spend their leisure hours over the best coral areas, snorkeling, diving, spearfishing, and collecting shells and corals. The effect of many visitors each taking a souvenir from the reef, be it a coral, shell or fish, is well known and will in time severely alter the environment. A good example is Hanauma Bay before it was made into a marine life conservation district. Furthermore, each boat that enters this area and drops an anchor will smash the coral and a "few" boaters are likely to leave some cans and other trash behind. So much for the "pristine" environment, as this area is referred to now by Brock in the appendix to the EIS.

In Appendix II of the EIS, a report was prepared for the developer by Paul Bienfang and Richard Brock on "Activities potentially impacting the marine environment"(pp.1-16). In Appendix A of that report on pages A53-54, they state "...that future shifts in hinterland use... or extensive coastal change (dredging, walling, infilling, etc.) could have large and far-reaching effects to all these (reef) communities (affronting West Beach). Such changes would be most likely to occur if development of coastal areas is done without consideration for and <u>sensitivity</u> (my emphasis) to the possible impacts to the nearshore marine communities. In this regard, the continuous generation of silt-laden runoff would be <u>an issue of principal concern</u> (my emphasis)..."...."The shallow benthic communities at West Beach are relatively diverse. Recent impacts appear to be altering them; however, they may be among some of the best examples of extant leeward bench/shallow subtidal communities on Oahu today. Given the apparent change and degradation that has occurred, the generation of further impacts (e.g. dredging, and increased turbidity) may result in further degradation to these communities."

I would argue that devoting only three pages of the EIS to the potential impacts of this development on the coral reef, and ignoring the advice of their own consultants, show a definite lack of sensitivity to this issue. It is estimated that many of the coral heads in this area are extremely old (estimated at over 300 years, Coles & McCain, 1973). It is also well known that corals are susceptible to smothering by siltation or to nutritional problems due to a lack of sunlight. Fish abundance is, in turn, directly related to the amount of live coral present in an area. A series of mistakes or miscalculations by the developer at any stage during construction could have serious impacts on the corals which cannot "get up and swim away". Fish, which can swim away, may not return and new ones may no longer settle out in this area. Complete restoration of the environment to its present condition would never occur in our life-time given the ages of the corals in the area. The new replacement community would have about as much appeal as a grove of sapling redwoods does compared to an ancient, undisturbed redwood forest.

The record of development on this island is very poor in regards to the marine environment, e.g. Kaneohe Bay and the Deep Draft Harbor. Despite assurances that the construction of the Deep Draft Harbor would have a minimal effect on the marine environment, many of the precautions which could have been taken to minimize the effects appear to have been ignored. This project already appears to be having a significant negative impact on the marine environment, making it all the more urgent that what remains of this marine community be preserved at all costs.

I suggest the following:

1. Construction of the lagoons be disallowed. There are adequate beach areas to the north of the West Beach area and elsewhere along the Waianae Coast where people can go to lie in the sand. Most of these areas are not heavily used at present. The potential risk to the marine environment at Kahe is too great to allow such a luxury. The developer made no mention of an alternative scheme of attractively landscaping the present shoreline creating parkland which could also be used by people for sunbathing. This could be done without disturbing the natural coastline features and with little or no risk to the coral reef.

2. Dissallow point-discharge of effluent at the north end of the project area. This is the most undisturbed section of the marine environment and should therefore be subjected to the least disturbance from any future development.

3. A proposal should be developed to protect the environment from the throngs of new people. Currently there is nothing to prevent people from picking up coral, shells, fish and other marine life. There are a few laws which could protect some of the marine life but there is no effective enforcement on Oahu. Establishing the area as a Marine Life Conservation District by the State is one possibility. The developer could in fact request this if in fact he is sufficiently "sensitive" to the welfare of this environment.

4. The marina should not have a separate entrance. Construction of a new entrance and the periodic dredging which will be needed to keep it clear could have immediate as well as long-term negative effects on the reef due to increased siltation and turbidity.

5. Finally, a much more detailed survey and assessment of the marine environment, its resources, and their economic, cultural and aesthetic value must be conducted. Only sketchy details are provided in the present report. A team of qualified marine biologists should also be employed to monitor the environment during construction and document and report any significant changes as they occur.

Thank you for the opportunity to express my views on this subject. For the sake of the coral reef at Kahe I hope these opinions will be given careful consideration.

Sincerely,

Bruce A. Carlson
2777 Kalakaua Ave.
Honolulu, HI, 96815

cc: Fred J. Rodriguez

11. Adequate surveys and assessments of the marine environment have been conducted. The decision as to whether or not a program of offshore area predevelopment reconnaissance will be undertaken, rests with the reviewing agencies who are entrusted with the permit authorization.

Thank you for your comments and continuing interest.

Yours very truly,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

ENVIRONMENTAL
COMMUNICATIONS
INC.
June 3, 1985

F. J. RODRIGUEZ,
PRESIDENT

Mr. Bruce A. Carlson
2777 Kalakaua Avenue
Honolulu, Hawaii 96815

Dear Mr. Carlson:

We are in receipt of your comments dated May 23, 1985 on the West Beach DSEIS and we respond in the following:

1. Discussion in the DSEIS did not include the areas of concern that you have described and this was due to the fact that construction of the marina/lagoon systems were determined to have impacts only on the near-shore coastal waters and not the offshore areas described in your comments. Therefore, detailed analyses were built on the data base of the predevelopment reconnaissance that quantified the marine resources expected to be impacted by construction to be only in the nearshore area. This approach was emphatically not taken with the intent of diverting attention from the rich offshore marine resources.

2. The various activities you describe as taking place currently however, run counter into the establishment of the offshore area as a Marine Sanctuary much like Haunauma Bay. If the area were in fact to be established along similar lines to Haunama Bay or Kealakekua Bay, the present activities including subsistence fishing or limu gathering would be prohibited.

3. We do not mean to imply that construction for the marina/lagoon systems would be positive in an environmental sense by replacement of habitat for colonization of marine organisms; the new habitat or increased habitat improving the marine environment is not what was stated. What was stated and is substantiated in studies done in September, 1983 for the Honokohau Harbor in Kona, Hawaii was that populations of reef animals will eventually reach levels equal to or higher than before construction. Specific attention is refered to pp. 33.34 concerning corals, pp. 56, pp.61-63 concerning mollusc and echinoderms, page 75 concerning fishes, and pp. 3-9 of the Executive Summary and page 9 concerning monitoring.

4. The description of the surface runoff drainage patterns is that at the present time, the natural runoff patterns are: 1) at the northern end of the property; 2) at the Kamokila Campbell homesite; and 3) approximately in the middle of the property between proposed lagoons 2 and 3. The planned designed runoff patterns will be: 1) at the northern end of the property and 2) at the marina which will then flush into the deep draft harbor. This proposed drainage pattern will be on a 2-1 ratio with the northern end receiving approximately 34% of the total flow. It should be noted that the northern end of the property receives at the present time, 25% of the total flow during heavy storms (25-50 year events). The drainage system designed for the northern end of the Project uses extensively the golf course and additional silt basins to settle out suspended

solid prior to ocean release. Further, there is percolation taking place at the same time, thus, reducing total volume of runoff discharged to the ocean.

5. Offshore moorings or anchorages are not within the control of West Beach as the offshore waters are administered by DLNR, U.S. Coast Guard, and other government agencies.

6. Every effort has been made by the applicant to be sensitive to the offshore marine biota in view of no fewer than five technical analyses conducted and written, environmental consultants retained to provide their expertise during the planning stages, consultants' advice to minimize impacts through sedimentation basins, runoff to the south of the property, performance of dredging in the dry, ciguatera warning signs to fishermen during construction, and other mitigative measures agreed to by the developer.

7. Analyses conducted by Oceanic Institute for impacts to the offshore biota did not indicate that there would be life threatening impacts to the coral communities and that the creation of the lagoons would affect the near-shore strip only. The design and construction planning for the lagoon system is to as closely parallel the existing natural lagoon fronting the Campbell homesite; the extent of turbidity from this natural lagoon is not considered detrimental to the offshore corals.

8. The most luxuriant growth of corals exist offshore at the northern end of the property; it should also be noted that in a natural state, there is storm runoff that reaches these corals at the present time and that under current design and planning, this runoff volume will be improved by sedimentation basins and redirection of the majority of the runoff anticipated to the south via the marina and deep draft harbor channel. It will be in the order of 2/3-1/3 ratio of distribution.

9. The establishment of Marine Sanctuary would achieve the goals and objectives of total preservation that you describe, but at the expense of current practices of subsistence fishing, limu gathering, and tropical fish farming. As to when and how this proposed Sanctuary would or could be done, the review and hearings on this matter would be under the jurisdiction of government agencies such as DLNR, DOH, COE, and other marine oriented entities. Should such a proposal be brought up for review, West Beach would become involved as the affected party.

10. The joint use of the deep draft harbor channel is being reviewed by Federal and State agencies on operational and environmental impacts with a decision forthcoming very soon. West Beach is supporting the joint use channel alternative for both operational and environmental reasons.

CHINIAGO INC.
Archaeological Consulting

1040-B SMITH STREET • HONOLULU, HAWAII 96817 • TELEPHONE: (808) 521-2785

May 29, 1985

Mr. Fred Rodriguez
Environmental Communcicatons Inc.
P.P BOx 536
Honolulu, hawaii 96809

Dear Mr. Rodriguez:

This letter is written in response to undated comments made by Mr. Bertell D. Davis and a memorandum from Matthew Spriggs, dated May 20, 1985, regarding the Draft Supplemental Environmental Impact Statement for West Beach.

By way of general introduction, it should be pointed out that, in the absence of any explicit rules, regulations or guidance from the State Historic Preservation Office, I have always understood that it is the intention of the developer to coordinate all historic site mitigation with the State Historic Preservation Office. It should also be pointed out that the field surveys at the West Beach area have been a continuing process, and that new information has been added to the existing stock as it was found, and therefore none of the previous studies should be considered complete insofar as the entire West Beach project area as a whole is concerned. And finally, "preservation" as an alternative is always implicit in any discussion of recommendations. It is not necessary to tell the developer that he does not have to destroy a site. All recommendations for salvage assume that the developer is already aware of his right to avoid a site if he so chooses.

My specific comments are as follows:

DAVIS, page 2:

> "For instance, it is of interest to note that the developer's own consulting archaeologist has admitted, as a matter of public record, that he considers me to be the most knowledgeable individual regarding the archaeology of the Barbers Point region--including the West Beach area."

In the first place, I believe the question as put to me was phrased in terms of the Barbers Point AND West Beach area. Stated that way, I replied in the affirmative. I was never asked if Mr. Davis was the most knowledgeable individual regarding the sites in the West Beach area alone. Had I been asked that question, I would have said no.

In the second place, just because I recognize that Mr. Davis probably has more facts stored in his head regarding the sites of the Barber's Point area than anyone else does not necessarily mean that I therefore implicitly trust his judgement regarding those sites. There is no connection between the two. If there were, it would defeat Mr. Davis's own argument, because I myself am the most knowledgeable person regarding the sites of the West Beach area, and using Davis's own argument, my judgement is more valid than his.

DAVIS, page 2:

> "Why then, after nearly a year of input on my part, does the draft Supplemental Impact Statement persist in claiming that only twenty-some sites are located within that portion of the West Beach area identified as being part of the Barbers Point Archaeological District, a property designated eligible for inclusion on the National Register of Historic Places, when in fact I have repeatedly shown that in excess of sixty archaeological sites have already be [sic] recorded therein?"

This assertion is unanswerable, as I am unable to find anyplace where Mr. Davis has repeatedly shown in excess of sixty sites in that portion of West Beach in the Barbers Point Archaeological District.

DAVIS, page 2:

> "Why then, is there still no discussion anywhere that these sites in part comprise a major late-prehistoric/early-historic Hawaiian habitation complex [Site Complex 2718] and neaby [sic], a presumably associated gardening complex [Site 2717] adapted to the unique arid coralline environment of the region?"

Because it is premature to draw conclusions from sites which have not been completely studied, and, in any event, an Environmental Impact Statement is not the proper place to present such conclusions. Such claims as Mr. Davis makes for the sites in this regard are best left until the completion of a research project.

DAVIS, page 2:

> "Why then, is there no mention that the location of these sites represents very nearly the

Davis testified that his final recommendations in his 1978 Deep Draft Harbor Report contained a statement to the effect that the proposed impact in the study area assures the complete destruction of archaeological resources except for dune site 2732 and that efforts should be made to preserve these sites from construction impact. (p 167[20] - 168[2])

Davis also admitted that in his 1978 Deep Draft Harbor Archaeology Report he recommended controlled excavations of selected cultural and paleontological features as a viable course of action and that he only recommended preservation of one dune site in the 2700 series. (p. 160[4-19]) Davis also admitted that the reason why he only recommended preservation of one due site 2722, was because there would be no Deep Draft Harbor construction in that area. (p. 168[3-6])

Davis also admitted that he didn't even recommend salvage of all the sites at the Deep Draft Harbor, but only salvage of a "defined sample". (p. 168[18-22]) Davis testified that he recommended excavation of only 25 percent of Class 1, 2 and 3 structures in that area; only 20 percent of the total of 75 rock mounds; and did not even quantify the sinkholes at all. (p. 160[12] - 161[3])

Moreover, Davis' written cmments on Barrera's Reports, dated May 29, 1984 and September 18, 1984, which were submitted as Intervenor's Exhibit Numbers 3A and 3B at the State Land Use Commission Hearings did not recommend "preservation" of the West Beach area at all.

Significance v. Money

Davis testified that in the summer of 180, he did his last excavation at West Beach at site 2717, and that he completed a midden analysis of site 2717 the following summer of 1981 or spring 1981. Davis also testified that he has not had the time to complete the midden analysis lab report since all the work was done on a volunteer basis. However, Davis is sure he would do it if someone paid him money to do that report. (p. 136[18] - 137[17]) Davis testified that although ne never finished any report on his 1981 lab work, he did do a report subsequent to 1981 for the Bishop Museum because he was paid money for it. (p. 138[13] - 139[2])

Eligibility for Inclusion on the National Register

Davis testified that he felt that the West Beach area is archaeologically significant and that since 1979, he felt that it should be nominated to the National Register of Historic Places, however, he has never made any efforts to personally nominate West Beach because he understood that he couldn't do it as an individual. Davis testified that although he is a member of several archaeological groups and associations, he doesn't really know if those groups and associations could ask the State to nominate a site to the National Register either. Davis testified that he has no idea why the West Beach area has been eligible for so long, but had never been nominated. (p. 170[24] - 172[7])

We trust that these extracts will place a proper perspective on the content of your letters.

For further commentary, we provide at this point, the response prepared by Mr. Barrera.

Thank you for your comments and continuing interest.

Very truly yours,

F. J. Rodriguez

F. J. Rodriguez

FJR:ls

enclosure

> last of this unique environmental circumstance in the region where the critical site-to-site and site-to-landscape associations still survive relatively intact?"

Because no evidence to support this contention has been put forward. The entire Barber's Point area has not been surveyed.

DAVIS, page 2:

> "Why...is it stated that 'twenty-six archaeological sites were identified in [the] portion of the [Barbers Point Archaeological] District lying on th West Beach Property" when the revised EIS of 1981 claimed there were only twnty-four [sic] such sites?".

Our work at West Beach has been a continuing effort. New sites have been found within the past year which were not included in any previous reports. These include sites in areas not surveyed for the West Beach project, as well as in an area that had been intensively surveyed by Bishop Museum prior to preparation of the 1981 EIS.

DAVIS, page 3:

> "Why...does the map of the 1984 archaeological survey area show two extra sites [Sites 1446 and 1447] which are otherwise nowhere to be found--either in the text or tables of the draft Supplemental Impact Statement, or in the consultant's status report? Maybe these are the two new sites. But then, according to the map given, only one site is located within the Barbers Point Archaeological District. Perhaps there is a third new site somewhere out there still to be accounted for."

The problem arises because of two maps from the State Historic Preservation Office which accompanied the request for determination of eligibility of the Barbers Point Archaeological District to the National Register of Historic Places. Each of the maps shows the District boundary in a different place, which led to the erroneous inclusion of an extra site in the District.

DAVIS, page 3:

> "Where is the human burial that I found and reported a number of years ago in Site Complex 2717? It is not acknowledged in either the draft Supplemental Impact Statement or Barrera's status report, although it does appear in the Historic Sites map identified as Exhibit K of the developer's petition for a District Boundary Amendment [from agriculture to urban] submitted to the Hawaii State Land Use Commission and dated as received by the LUC on 21 December 1983?"

This burial, which was either not found during the intensive survey of Davis and Griffin, or for some reason not reported at that time, was inappropriately mentioned in the LUC District Boundary Amendment petition to which Mr. Davis refers. None of the other individual features from that or any of the other sites was singled out for such particular attention, and there is no reason to do so at this time.

Because many of Spriggs's concerns have been addressed in my responses to Davis's comments, rather than replying on a one-by-one basis I would just like to make a few overall observations and close with a few specific comments which I feel are warranted.

First, regarding the adequacy of the site descriptions, it should be pointed out the question of adequacy is a purely personal, subjective matter. This is demonstrated by the fact that several of Spriggs' conclusions are at direct odds with those of Davis, who stated in his letter of 10/26/79 to the Environmental Center:

> "In general, the basic field report seems quite adequate and it is unlikely that major remains were overlooked by the survey team. The site descriptions are concise and the map locations clear..."

In addition, Spriggs's complaint that there is inadequate documention to allow one to draw conclusions is belied by the fact that he himself draws such firm conclusions as the following, referring to the sites in the marina area:

> "All clearly have research significance. Site 2718, a major archaeological complex clearly also has high interpretive significance and could be developed as a 'theme park' illustrating traditional Hawaiian adaptation to the area."

As for the imputed cultural significance of the sites, that

question is outside my field. I do archaeology, not sociology, and Spriggs's comments would be more profitably addressed to the proper experts.

Spriggs makes one particular statement which is clearly false:

> "The sites in the marina area were considered eligible for the National Register, a mark of their importance."

The fact is, the eligibility criteria for the National Register are so broad as to make all sites, even ones that are no longer in existence, eligible. A site is not necessarily important because it happens to be eligible.

Finally, I would point out that Site B6-139, which was destroyed during harbor construction, is located correctly on the map.

Sincerely yours,

William Barrera, Jr.
President

ECONOMIC IMPACT

In addition to the creation of employment opportunities, the development of the West Beach resort will generate substantial revenues for the State of Hawaii. It has been estimated that a total of $24.5 million would be generated annually in current 1983 dollars assuming that the entire complex is complete and operating at a stabilized level. These revenues would accrue from the following sources:

State Unemployment Tax	$ 850,000
Gross Income Tax	8,030,000
State Personal Income Tax	4,779,000
Real Property Tax	10,695,000
	$24,354,000

Methodologies employed to develop these estimates are set forth in the following paragraphs.

State unemployment taxes were estimated based on one percent of the first $13,800 of salaries and wages of each of the 6,156 new employees. The one percent rate was derived from State of Hawaii Tax Department records as the average currently paid by all tax payers (wage earners).

Gross income taxes were based on 4.0 percent of total estimated revenues generated from all sources at West Beach.

Revenue estimates are as follows:

Deluxe Hotel	$ 29,200,000
First Class Hotel	50,967,000
Resort Condominiums	41,714,000
Commercial Retail	55,038,000
Commercial Restaurants	7,088,000
Hawaiian Cultural Center	250,000
Beach Luau	2,340,000
Golf Complex and Club	2,600,000
Beach Complex and Club	2,600,000
Yacht Club	400,000
Marina Complex	8,550,000
	$200,747,000

State personal income taxes were estimated based on taxable income per employee of $11,587 x an average tax rate of 6.7 percent x the 6,157 employees. State tax office records were the source of estimated data.

Real property taxes were based on currently applied tax rates per thousand dollars of assessed valuation as follows:

Land Valuations

	Assessed Value				Tax Rate		Tax
Residential	$ 520,000,000	÷	1,000	x	$7.05	=	$3,666,000
Nonresidential	538,835,000	÷	1,000	x	$9.00	=	4,849,515
	$1,058,835,000						$8,515,515

Building Valuations

	Assessed Value				Tax Rate		Tax
Residential	$143,623,800	÷	1,000	x	$7.05	=	$1,012,547
Nonresidential	129,650,000	÷	1,000	x	$9,00	=	1,166,850
	$273,273,800						$2,179,397