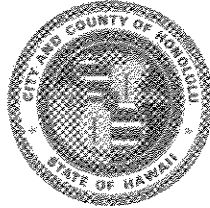


DEPARTMENT OF GENERAL PLANNING  
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET  
HONOLULU, HAWAII 96813

MW: JH / WJY  
H. / CO  
Z

FRANK F. FASI  
MAYOR



RECEIVED  
BENJAMIN B. LEE  
CHIEF PLANNING OFFICER  
ROLAND D. LIBBY, JR.  
DEPUTY CHIEF PLANNING OFFICER  
'91 APR 10 AM 11:43

OFC. OF ENVIRONMENTAL  
QUALITY CONTROL  
MH 2/91-531

April 5, 1991

Mr. Brian Choy, Acting Director  
Office of Environmental Quality Control  
Central Pacific Plaza  
220 South King Street, 4th Floor  
Honolulu, Hawaii 96813

Dear Mr. Choy:

Acceptance Notice for the Proposed  
Ewa Villages Master Plan  
Final Environmental Impact Statement (Final EIS)

We are notifying you of our acceptance of the Final EIS for the proposed Ewa Villages Master Plan, as satisfactory fulfillment of the requirements of Chapter 343, Hawaii Revised Statutes.

Pursuant to Section 11-200-23 (c), Chapter 200, Title 11 ("Environmental Impact Statement Rules") of the Administrative Rules, this acceptance notice should be published in the April 8, 1991, OEQC Bulletin by your office.

We have attached our Acceptance Report of the Final EIS for the Ewa Villages Master Plan and the "DOCUMENT FOR PUBLICATION IN THE OEQC BULLETIN". Should you have any questions, please contact Matthew Higashida at 527-6056.

Sincerely,

BENJAMIN B. LEE  
Chief Planning Officer

BBL:ft

Attachments

cc: Michael N. Scarfone, Department of Housing and Community  
Development  
Chester Koga, AICP, R. M. Towill Corporation

1991 - Oahu - FEIS - Ewa Villages  
**FILE COPY**

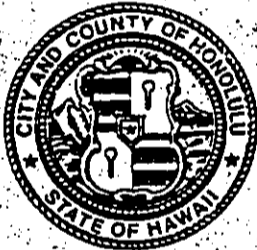
FINAL ENVIRONMENTAL IMPACT STATEMENT for the

**EWA VILLAGES MASTER PLAN**  
Ewa, Oahu, Hawaii

February 1991

PREPARED FOR:

Dept. of Housing & Community Development  
City and County of Honolulu



**RMTC**

R. M. Towill Corporation

420 Waiakamilo Rd., Suite 411  
Honolulu, Hawaii 96817-4941  
(808) 842-1133 • Fax: (808) 842-1937

# FILE COPY

FINAL ENVIRONMENTAL IMPACT STATEMENT  
FOR THE  
EWA VILLAGES MASTER PLAN  
Ewa, Oahu, Hawaii

Responsible Official:

*Paul Kaito*  
for Michael N. Scarfone, Director  
Department of Housing and Community Dev.  
City and County of Honolulu

*2-19-91*  
Date

PREPARED FOR:

City and County of Honolulu  
Department of Housing and Community Development

PREPARED BY:

R. M. Towill Corporation  
420 Waiakamilo Road, Suite 411  
Honolulu, Hawaii 96817

FEBRUARY 1991

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EWA VILLAGES MASTER PLAN EIS

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*PROJECT SUMMARY*

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PROJECT SUMMARY

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**Project:** Ewa Villages Master Plan

**Proposing Agency:** City and County of Honolulu  
Department of Housing and Community Development

**Accepting Authority:** City and County of Honolulu  
Department of General Planning

**Tax Map Keys:** 9-1-16:25 (portion)  
9-1-17:2, 1, 4 (portion), 36, 37, 38, 39, 46, 47, 48, 49  
(portion), and 51

**Project Area:** Approximately 606 acres

**Location:** Ewa Plain on the Island of Oahu. The site lies 2 miles south of Waipahu, 2 miles north of Ewa Beach, and 1 mile northeast of the Villages of Kapolei.

**Owner:** The Estate of James Campbell

**Existing Land Uses:** Cultivated sugarcane, residential, public facilities, commercial

**State Land Use Districts:** Agricultural and Urban Districts

**Development Plan  
Land Use Designations:** Residential, Agriculture, Public Facility, Park, and Commercial

**County Zoning Designations:** AG-1, R-5, A-1 and B-1

---

## PROJECT SUMMARY

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### INTRODUCTION AND BACKGROUND

The City and County of Honolulu, Department of Housing and Community Development (DHCD), is proposing to acquire and redevelop/revitalize the Ewa Villages community. The City's primary objective is to provide opportunities for affordable homeownership for as many of the current residents of the Villages as possible with one of the principal considerations a development-revitalization program to preserve the plantation villages through rehabilitation of the existing buildings. The project is being proposed by DHCD as part of a larger undertaking to provide the Island of Oahu, specifically, the Ewa region, with more affordable housing opportunities. The potential closing of Oahu Sugar Company (OSCo) in 1995 and the unresolved future of the Villages are two of the principal reasons for this proposed action.

The 606-acre project area encompasses Tenney, Renton, and Varona villages, and includes the Ewa Elementary School, Lanakila Baptist School, the former sugar mill site, Sotoshuji Mission, Ewa Immaculate Conception Church, Ewa Community Church, Ewa Post Office, Ewa Hongwanji, Friendship Bible Church, Ewa Mahiko Park and surrounding sugar lands. The Master Plan proposes the rehabilitation of the existing homes and community buildings, and the construction of new residential units and a new commercial mixed-use plaza at the old mill site. The project will also include an 18-hole, municipal golf course which will serve as a flood control measure, the expansion of the Ewa Mahiko Park, open space and recreation amenity.

Approximately 1,230 residential units are programmed for the three villages, of which 1,070 will be single family and 160 will be multifamily. The utility systems will be designed and constructed in accordance with City and County of Honolulu standards. The roadway patterns, however, will remain the same.

The City recognizes the demand for more municipal public golf course facilities to meet the needs of the public and the Master Plan will include one 18-hole municipal course for

public use. The course will not offer private memberships, or be run on percentage-of-play basis, whereby a percentage of playing time is allotted for public versus private players. Rather, it will be operated by the City, and, thus, open to all golf enthusiasts. While the practical function of the golf course will be to mitigate flooding in the Villages, it will also increase the potential value of golf course frontage homes. The excess proceeds from the sale of golf course frontage homes will be used to partially offset the cost of the affordable homes. In this way, the golf course will provide long-term benefits to the community as a whole.

The implementation of the Master Plan is expected to result in a number of short- and long-term impacts on the physical and socio-economic environments, and infrastructure systems. First, impacts on the physical environment will occur during the short-term construction as well as long-term project build-out periods. In general, decreases in air and noise quality are expected during the 5-year development period. Secondly, short-range and long-range impacts on the socio-economic environment are expected. Short-term negative effects will result from the relocation of some of the existing tenants during construction-related activities. The closing of OSCo, should it occur, will have long-term economic and employment impacts. In addition, there is concern that the villages will lose their small-town, rural qualities once the project is built. Finally, impacts on transportation and utility systems, most notably sewer, water and drainage, are a major concern in the short- and long-term. The following is a summary of the probable impacts and appropriate mitigation measures related to the project.

A. Noise Quality

Increased urban activity will adversely impact the existing noise levels within the project vicinity, particularly during construction periods. Long-term impacts, however, are anticipated as a result of a combination of factors, such as continued sugarcane activities, golf course operations, and possible resumption of railroad operations. Government controls regarding noise levels will help mitigate the potential impacts from these activities. In August

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## PROJECT SUMMARY

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1990, Darby and Associates prepared a Noise Impact Assessment for the project area, and the results have been summarized in Section 3. The full report can be found in Appendix B.

B. AIR QUALITY

Increased urban development within the area will inevitably result in short- and long-term impacts to the existing air quality. The contribution of air pollutants from fugitive dust, vehicular exhaust as well as continued sugarcane operations in the area, will decrease the air quality in the project site and vicinity. Project adherence to Federal and State regulations governing air quality and infrastructure improvements will help to mitigate these impacts. An Air Quality Impact Assessment (Appendix C) has been conducted by Barry Neal and Associates, and the findings have been summarized in Section 3. The report explores several mitigative measures to reduce these potentially adverse impacts.

C. HISTORIC CHARACTER

There is concern that the villages will lose their historic small-town, rural qualities once the project is built. The City recognizes this as a valid concern and to the extent possible the City will isolate the existing villages from new development areas. These new villages will be developed with an architectural theme similar to the villages. To ensure the preservation of the district, the City will initiate the process of establishing the Ewa Villages as a special district. This concern is addressed in the Historic and Archaeological Resources discussion in Section 4, and Appendix D.

D. SOCIAL IMPACTS

Construction activities will have short-term impacts on the surrounding land uses and activities. Businesses and residents of adjacent areas will be temporarily inconvenienced by the planned improvements and construction of buildings and infrastructure. Additionally, some of the businesses and



residents within the project site will be affected during the relocation phase of the project. Offsetting these impacts, however, will be the long-term increase in the affordable housing opportunities, as well as growth in the supply of commercial space. The utilities systems will be improved to City standards. These positive aspects will attract potential homeowners and business interests to the area, thus contributing to the overall economic welfare and viability of the area.

E. HOUSING

The project will increase the supply of affordable housing, thus easing the rapidly growing demand for housing for low to moderate income families and gap groups. Comparable single-family developments oriented toward low to moderate and gap group income families have typically experienced rapid absorption rates. Affordable units in the project are also expected to experience similar absorption rates. The market support for market-priced units in the project is also expected to be good, as the market units at other major Ewa residential projects have been absorbed quickly. John Child and Company, Inc. reached these conclusions in a market study conducted in August 1990. Excerpts from the report are included in the Residential Market discussion in Section 4, and the report, in its entirety is included as Appendix E.

F. AGRICULTURAL RESOURCES

The implementation of the proposed Master Plan will result in the withdrawal of approximately 320 acres of agricultural land from sugarcane production. As the project lands border urban areas, their continued use in agriculture conflicts with longer term County and State plans for developing affordable housing in the Ewa area. There are concerns regarding the withdrawal of 320 acres of agricultural land, however, this is not expected to have a major impact on the continued viability of the Oahu Sugar Company (OSCo), who currently farms the land. An Agricultural Impact Assessment prepared by

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## PROJECT SUMMARY

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Pacific Business and Economic Consultants in July 1990 addresses this and other impacts from the project. The report is included as Appendix F and has been summarized in the discussions on Agricultural Resources in Sections 3 and 4 of this document.

G. RELOCATION

Short and long-term impacts will probably result from the relocation of some of the existing tenants. In addition to providing tenants with priority in renting or purchasing units in the project, DHCD will provide relocation assistance to include relocation services, compensation and financial aid in compliance with State regulations.

H. TRAFFIC

The Traffic Impact Assessment (Appendix G) conducted by Pacific Planning and Engineering, Inc. indicates that the proposed action will impact the traffic volumes and flows, particularly along Renton Road and at interior intersections by the assumed project build-out in 1996. Fort Weaver Road will also experience decreased traffic efficiency, although this impact will be a collective function of several developments in the vicinity. A summary of these impacts and recommended mitigation measures are included in the discussion on Traffic in Section 5.

I. UTILITY SYSTEMS

Upgrading of the utility systems in the villages area will have positive impacts as the plan requires all future systems be sized to meet the demands of the project site. The utility systems such as water, wastewater, drainage, power and communication will be upgraded to City and County of Honolulu standards. Historically, flooding has been a serious problem and the plan proposes to reduce, if not eliminate, the flood hazard, through a combination of mitigative measures.

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SECTION 1

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*INTRODUCTION*

---

1.1 PURPOSE AND NEED FOR EIS

Pursuant to Chapter 200 of Title 11, Administrative Rules, Subchapter 5(b), the project is subject to the provisions set forth by Chapter 343, Hawaii Revised Statutes (HRS), because of the proposed use of City and County funds to acquire and develop the property. DHCD has determined that the proposed project could have significant environmental impacts and that a full Environmental Impact Statement (EIS) shall be prepared in accordance with Chapter 343, HRS. This EIS will provide detailed information on the proposed action, existing environmental conditions, and an assessment of probable impacts and mitigation measures.

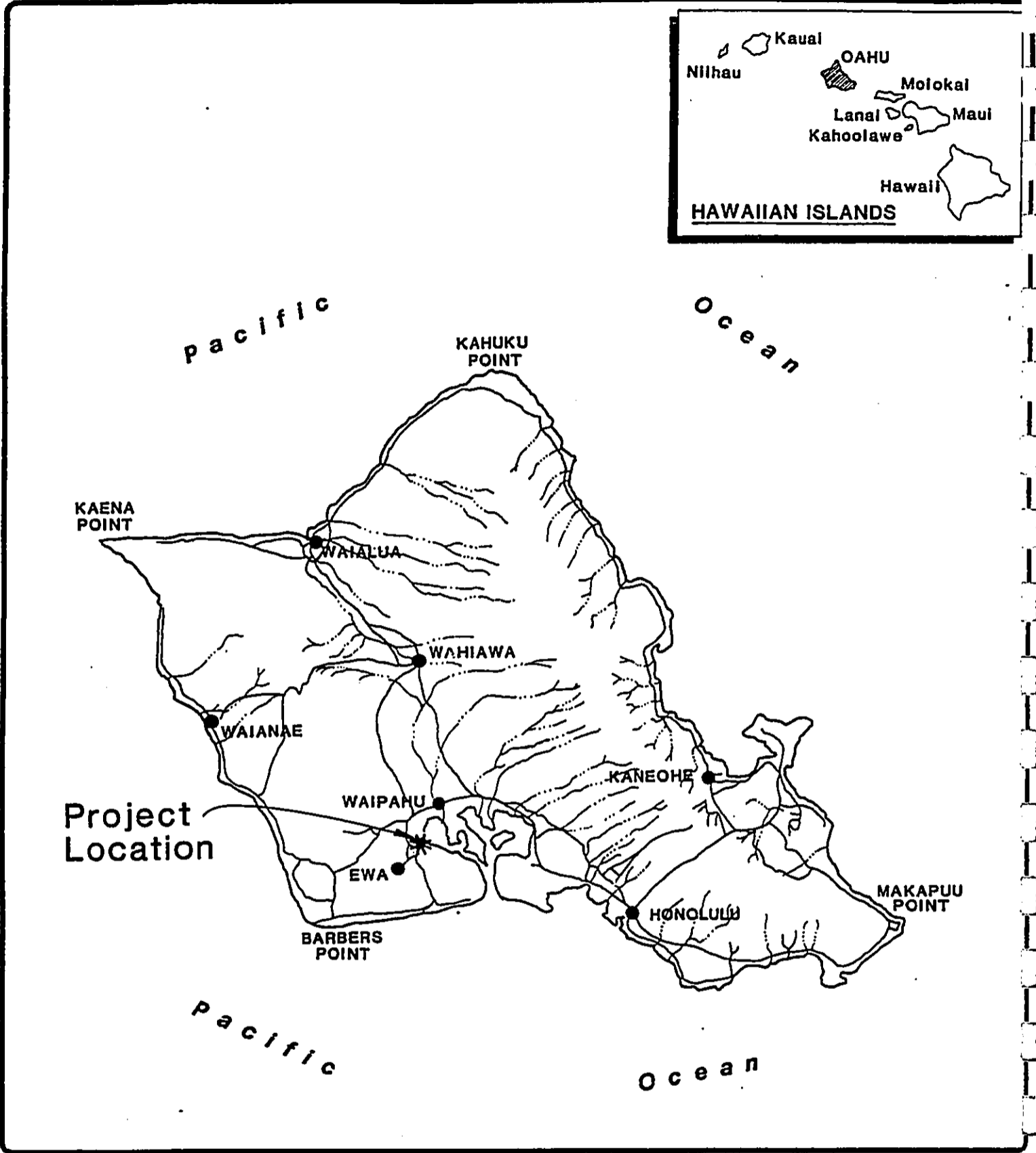
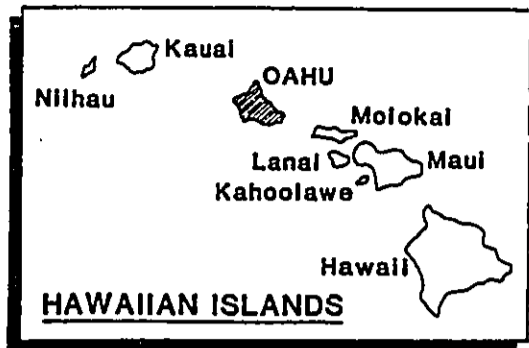
1.2 BACKGROUND

In the spring of 1990, the DHCD, in coordination with the Honolulu City Council, initiated the Ewa Villages project in an effort to provide affordable homeownership opportunities for the residents of the villages.

The City, through DHCD, has begun exploring alternative means to ensure the continued tenancy of the existing residents of the plantation villages, who stand to lose their homes if Oahu Sugar Company's (OSCo) lease is not renewed in 1995. The City's goal is to acquire the land, and in turn, enable the current villages residents an opportunity to purchase their houses and land.

1.3 LOCATION AND OWNERSHIP

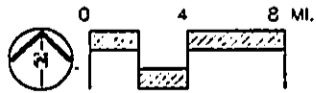
The proposed project is located in the Ewa Plain on the island of Oahu. (See Figure 1-1). The north/northeastern project limit runs approximately 500 feet north of Mango Tree Road, while the south/southeastern limit is the railroad right-of-way. The Ewa By Gentry project, currently under construction, abuts the makai side of the railroad right-of-way. The eastern boundary of the project is Fort Weaver Road. The western boundary is a cane haul road, west of Varona Village (see Figure 1-2).



**EWA VILLAGES  
MASTER PLAN**

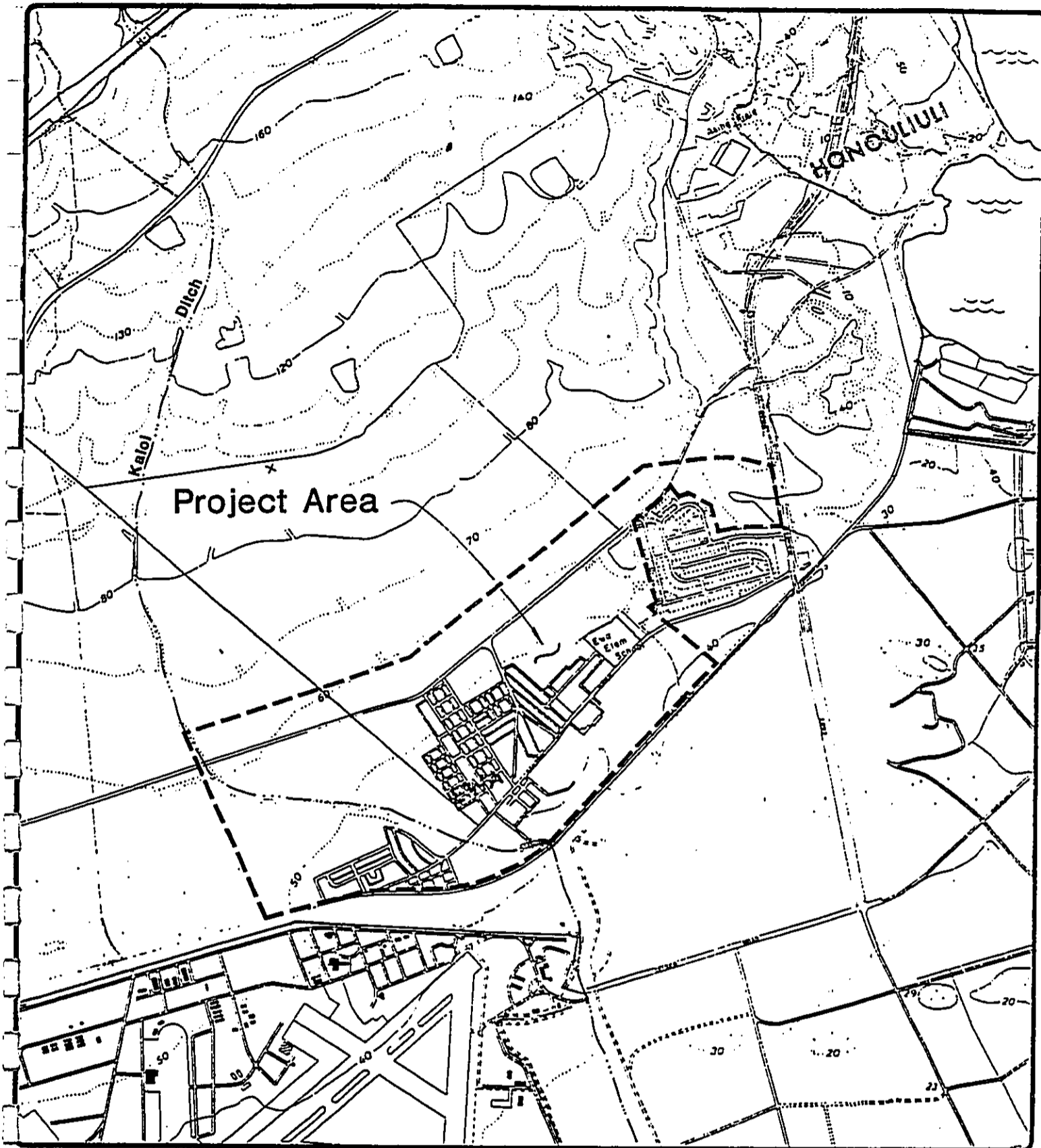
City & County of Honolulu  
Department of Housing  
& Community Development

December 1980



**Figure 1-1  
Location & Vicinity Map**

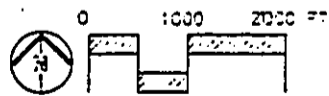
R. M. Towill Corporation



**EWA VILLAGES  
MASTER PLAN**

City & County of Honolulu  
Department of Housing  
& Community Development

December 1990



**Figure 1-2  
Project Area Map**

R. M. Towill Corporation

The proposed project land area will encompass approximately 606 acres. Of this total area, 421 acres will be planned for residential use, commercial, public facilities, recreation areas and open space. One hundred eighty-five (185) acres will be utilized for an 18-hole golf course.

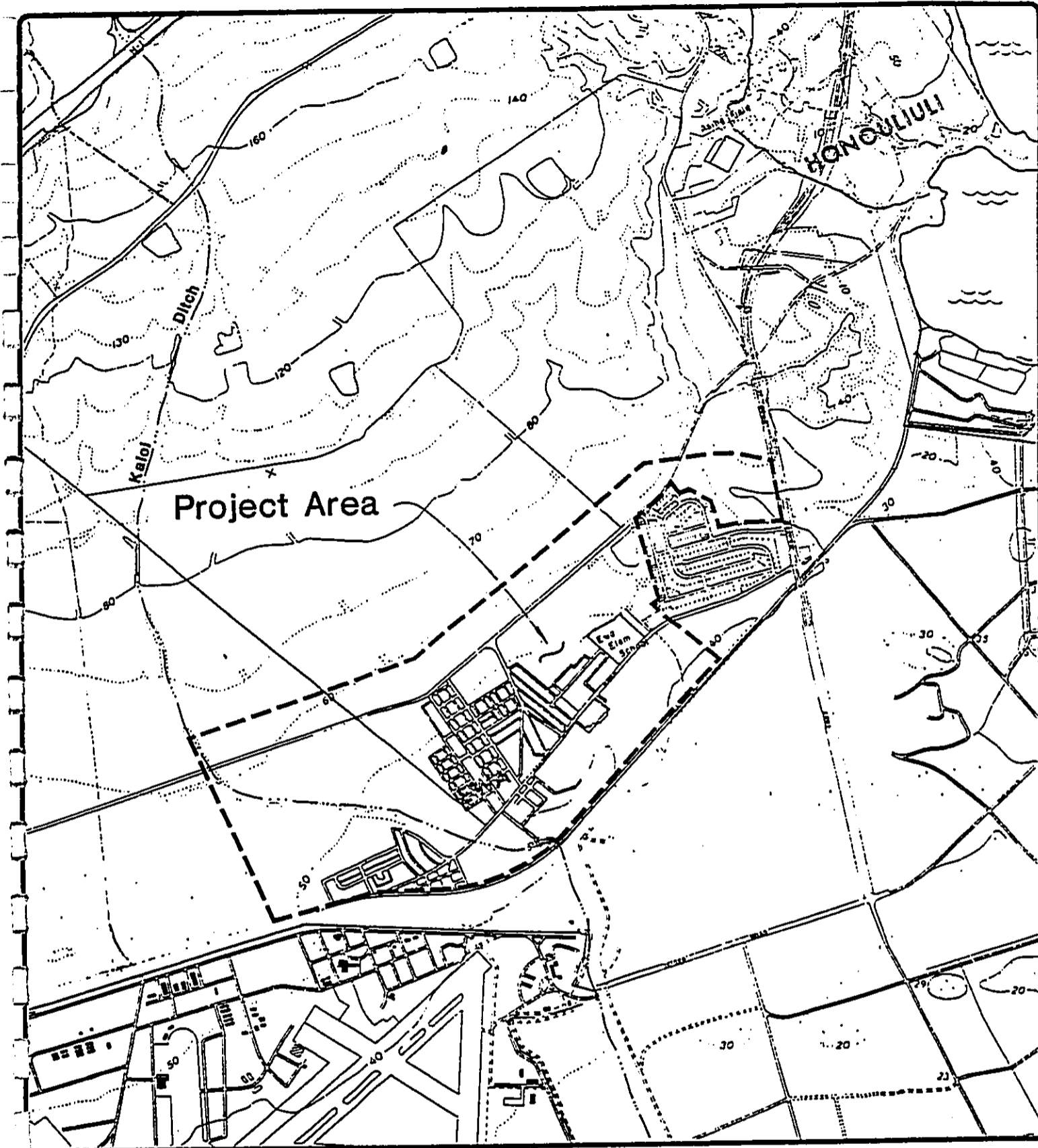
The principal landowner is the Estate of James Campbell who, in turn, has leased all of this land to OSCo for the Ewa Villages community as well as sugarcane cultivation. This lease agreement will expire in 1995. Other Campbell Estate land holdings in this area include most of the Ewa Plain as well as Central Oahu lands north of H-1 Freeway and west of Kunia Road.

The existing residences and other structures within Tenney, Renton, and Varona villages were constructed between 1907 and 1957. Since the late 1950's, there has been no major construction of new residences. Repairs and replacement of the villages' housing units was managed by Ewa Sugar Company as part of an on-going maintenance program for employee housing until the company was sold in 1970. By the end of 1971, Ewa Sugar Company had merged with OSCo, and as the new parent company for the villages, OSCo assumed the maintenance role until today. The houses are owned and maintained by OSCo and rented to the company's employees, pensioners, and surviving spouses in accordance with the agreement between OSCo and the International Longshoremen's and Warehousemen's Union (ILWU). The infrastructure is also owned and maintained by OSCo, and tenants are charged a nominal amount for rent and water usage.

# CORRECTION

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



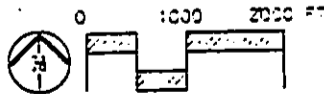


**EWA VILLAGES  
MASTER PLAN**

City & County of Honolulu  
Department of Housing  
& Community Development

December 1990

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R. M. Towill Corporation

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SECTION 2

---



***DESCRIPTION OF PROPOSED ACTION***

---

**2.1 PROJECT OVERVIEW**

The Ewa Villages Master Plan is a revitalization project with the goal of providing homeownership opportunities to the tenants that reside in the plantation villages of Renton, Tenney and Varona. The objectives of the Plan are to:

- \* preserve the historic character of the Villages;
- \* establish a rehabilitation, rental, and homeownership program for Renton Village, Tenney Village and Varona Village;
- \* develop new housing units to meet a portion of the affordable housing demand on Oahu;
- \* develop a drainage program to alleviate flooding within Renton, Tenney and Varona Villages, as well as provide recreation/open space via an integrated golf course design; and
- \* develop economic opportunities for residents in the area.

The Plan promotes preservation of the plantation community through the rehabilitation of the Villages. It also proposes the development of new housing units to accommodate a wide range of family income groups. To mitigate flooding of Renton, Tenney and Varona Villages, the development of a public golf course is proposed. The development of the golf course will also add value to houses that front the golf course as well as to the entire community. The following sections will describe the major land use components of the plan, proposed infrastructure improvements, housing program, and implementation plan and cost estimates.

**2.2 MASTER PLAN COMPONENTS**

The theme of the Ewa Villages Master Plan is the revitalization of the Ewa Villages community. With the intent of revitalizing the community, the Plan includes several land use components that are important to sustaining a viable community. These components include residential, community, recreational and commercial activities. Key features of the Plan include affordable and market single family and multifamily residential units, school, a district park, a golf course, a commercial/retail center, churches, and a business park

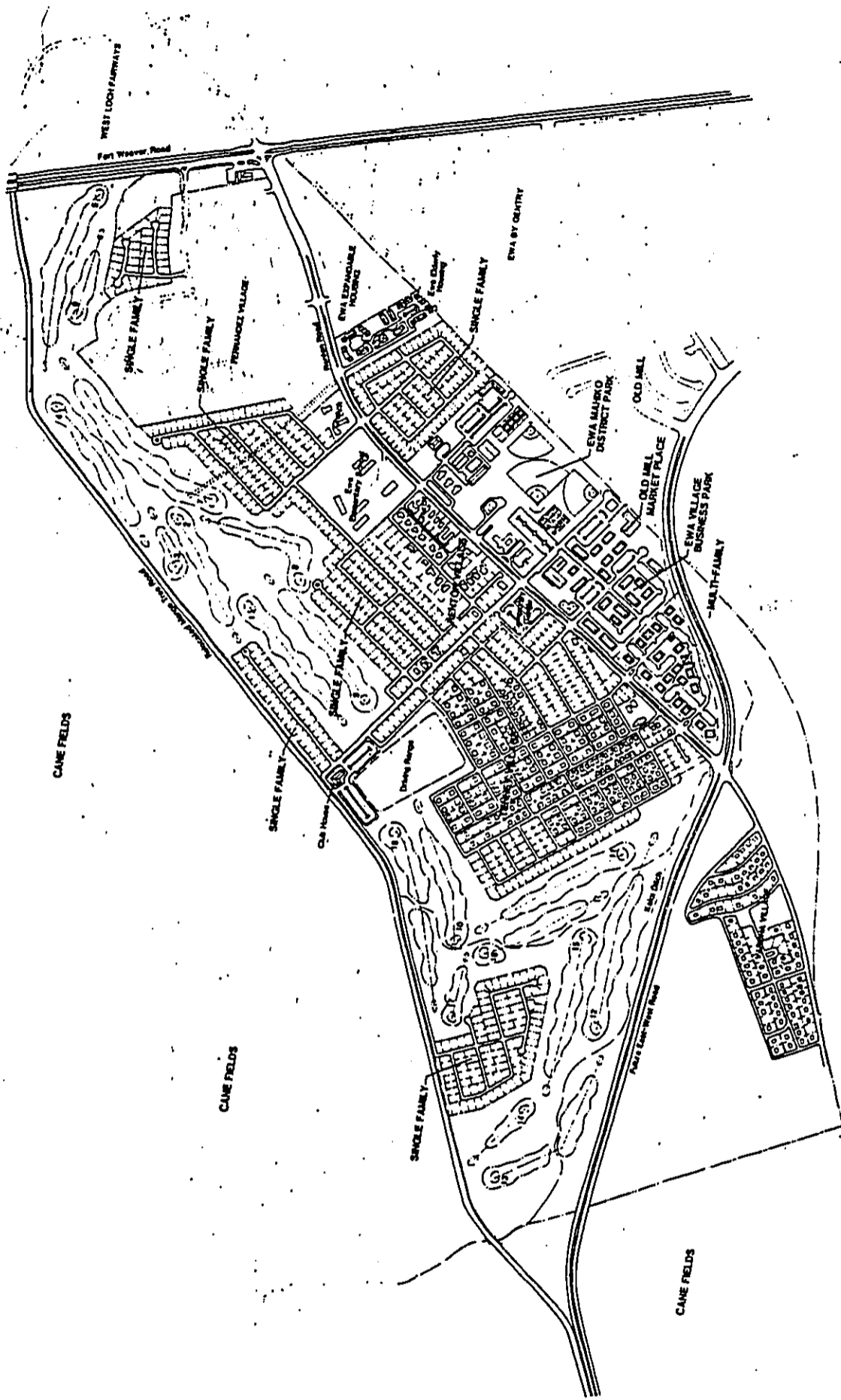
(see Figure 2-1). Table 2-1 reflects the different land uses that comprise the Master Plan, associated land areas and housing unit counts and densities. Each of the various components of the Plan are discussed in detail in the following paragraphs.

TABLE 2-1  
EWA VILLAGES MASTER PLAN  
LAND USE TABULATION

LAND USE	ACREAGE	UNITS	DENSITY
Single Family	168	1,000	5.9 units/acre
Multifamily	11	160	14.5 units/acre
Community Facilities (Schools, Churches and Community Center)	8		
Old Mill Marketplace	12		
District Park	25		
Ewa Villages Business Park	8		
Golf Course	206		
Open Space/Roads	52		
Varona Village	116	70	
<b>TOTALS</b>	<b>606</b>	<b>1,230</b>	

### 2.2.1 Residential Units

A total of 1,230 residential units (160 multifamily and 1,070 single family) are planned for the Ewa Villages. Of the total units, 273 units are existing and are located as follows: Renton = 21; Tenney = 182; and Varona = 70. Nine hundred fifty-seven (957) new units will be constructed.



**EWA VILLAGES  
MASTER PLAN**  
City & County of Honolulu  
Department of Housing  
& Community Development  
December 1980



Not to Scale

**Figure 2-1  
Master Plan**

R. M. Towill Corporation

The preservation of the character of the community and as many existing structures as possible is a major objective of the Master Plan. This will be achieved by providing a mix of rehabilitated and new housing in four categories of the residential component of the Plan. Each of these are discussed below.

#### **2.2.1.1 Renton Village**

There are 36 existing structures in Renton Village proposed for rehabilitation. Twenty-seven of the 36 structures are residential units. The purpose of designating an area for rehabilitation is to define a portion of the village that retains the visual character of the plantation village as it was when it was a vibrant and active community. The key elements of the Renton Village preservation effort are as follows:

- a. All existing structures, to the extent possible, within Renton Village, residences (26), manager's home (1), management building (1), bachelor's unit (1), and store (1) are to be rehabilitated according to preservation guidelines developed for their rehabilitation.
- b. The residences mauka of Renton Road, except the bachelor's quarters, are to be offered for sale to existing tenants with the condition that they agree to maintain the structures and grounds in compliance with specific rehabilitation guidelines. Should the existing tenant decline or is unable to purchase or comply with the maintenance requirements, the tenant will be given an opportunity to relocate to another portion of the Villages.
- c. The former store, company office building, the manager's home, and the three residences on the makai side of Renton Road will be leased to the Lanakila Baptist School, until the school's lease expires in 1995. Thereafter the school will be allowed to stay on a month-to-month basis until such time as the school officials find a new location for the school.

- d. The fourteen lots that are now vacant are to be in-filled with new structures designed to complement existing structures and sold with requirements for compliance with preservation guidelines. The exception to design compliance are the three vacant lots along Renton Road. These lots will require the construction of new houses that are identical to the other residences within the palm-lined quadrangle.
  
- e. The landscaping of Tenney Village shall be preserved, and where trees have been removed, similar replacement trees shall be provided according to an approved landscaping plan. A 60-100 foot landscaped buffer shall be provided on the northern edge of Renton Village to physically separate the new development from Renton Village.
  
- f. The existing road pattern and road width within Renton Village will be maintained.

#### 2.2.1.2 Tenney Village Rehabilitation

As with Renton Village, the Master Plan calls for maintaining the character of Tenney Village. The rehabilitation effort will affect the existing facilities and also encompass in-filling of vacant lots and redevelopment of areas immediately surrounding the village. A total of 209 new homes will be added through in-fill (45) and redevelopment (164). Proposed rehabilitation actions are as follows:

- a. The 213 existing residential structures within the Tenney Village, where feasible, are to be rehabilitated to meet minimum standards for historic rehabilitation.
  
- b. The residences are to be offered for sale to existing tenants with the proviso that the exterior appearance of the structure shall be maintained in compliance with preservation guidelines. The existing tenant will be given the opportunity to purchase the home "as is" and perform the necessary



repairs based on improvement guidelines, or to purchase the home after it has been rehabilitated subject to the availability of government financing.

- c. Residents who cannot or are not interested in acquiring their home may be given the opportunity to rent a home elsewhere in the villages.
- d. The existing 56 vacant lots are to be in-filled with new structures that complement the exterior design of adjoining structures. These new homes will first be offered for sale to qualified existing Village residents. Following this initial offering, the remaining homes will be offered for sale to qualified buyers.
- e. The landscaping of the area shall be preserved, and where trees have been removed, similar replacement trees shall be provided according to an approved landscaping plan.
- f. The current grid road pattern will be maintained in both existing and new areas. Road pavements will remain narrow, 20 feet wide, with no sidewalks and have adjacent six foot wide easements for utilities. The intent of this desired road standard is two-fold: (1) to maintain the visual rural character of the village and (2) to minimize impacts on existing yards and structures.

#### 2.2.1.3 Varona Village

Flooding of Varona Village by storm runoff from adjacent sugarcane fields will be mitigated by the construction of the Mango Tree Road berm. The berm will redirect flood waters to the proposed golf course which will act as a drainage basin. Once the flooding problem has been corrected, the existing 70 residential units in Varona Village will be used as an interim relocation resource for the residents of the three villages. Existing tenants of Varona Village will be given an opportunity to purchase homes in the redeveloped areas of the project. The existing structures which are vacated by this action

or which are currently vacant will become available to tenants of Tenney and Renton Villages who wish to relocate to Varona.

Redevelopment of Varona Village will take place after the redevelopment of Tenney and Renton Villages at which time a separate EIS will be prepared.

**2.2.1.4 New Housing Areas**

New single family and multifamily housing are being planned for areas surrounding the existing villages. These new housing areas will be physically separated from the existing units in Tenney, Renton and Varona. The new housing areas will take on the character of a new village. Some of the key features of the new residential areas are as follows:

- a. The grid road pattern of the existing villages will be carried through to the new single family residential areas as a development theme to provide visual continuity with the existing villages. Roadway rights-of-way will be 36 feet wide with pavement widths of 24 feet and adjacent utilities corridors that are six feet wide. Narrow streets and no sidewalks will be the standard to carry through the rural character of the existing villages.
- b. The design of the structures in the existing villages will form the basis for the architectural theme of the new residences. The majority of lots will be approximately 5,000-6,000 square feet, providing the "large lot" appearance of much of the existing villages.
- c. A significant number of lots will be on or near the golf course.

**2.2.2 Community Facilities**

Existing facilities that will continue to be an important part of the community are the Ewa Elementary School, Ewa Community Church, Ewa Immaculate Conception Church, and Post Office. Ewa Elementary School will require some expansion to accommodate the

larger village community. The Plan provides a slightly larger site than what currently exists for the school's expansion.

The Ewa Hongwanji and Sotoshuji will be given an opportunity to acquire the land and buildings they use. The land acquisition will be negotiated between the two organizations and the Campbell Estate.

The Friendship Bible Church and Bicycle Shop will be relocated from their current locations. The Church is recommended to relocate to the former "J" Club Building. The Bicycle Shop is recommended to be relocated to the Oil Storage Building. The acquisition of these parcels will be negotiated between Campbell Estate and the Church.

The Lanakila Baptist School will be allowed to remain at its present location until its lease with Oahu Sugar runs out in 1995. It is recommended that the Lanakila Baptist School seek other accommodations to meet its long-term goals. Because of the historic significance of the buildings used by the school, it is recommended that these buildings remain under the ownership of the City. Lanakila Baptist School will be allowed to remain on a month-to-month basis following the termination of its lease.

A new community center of approximately 10,000 square feet is being proposed in the central part of the villages adjacent to the Renton Village. It will be a replacement facility for the Ewa Memorial Hall. The facility is envisioned as a focal point for various community activities. Portions of the facility could also be designed to accommodate leased office space for enhanced usage of the building. The building will be designed with an architectural theme similar to that of the old Plantation Administration Building and Shopping Basket that are located nearby.

### 2.2.3 Recreational Facilities

There are two major recreational facilities that are proposed for the Master Plan: the expanded Ewa Mahiko District Park and the proposed Ewa Villages Golf Course. The features of each of these facilities are discussed below.

District Park

Ewa Mahiko Park is being proposed for expansion from its current five acres to approximately 25 acres. Planned facilities include a gymnasium; a recreation center complex with swimming pool; open field areas to accommodate baseball, softball, soccer or football fields; tennis, basketball and volleyball courts; a tot lot; and a park maintenance facility.

Golf Course

An 18-hole public golf course is being proposed as part of the project as a means of providing flood control, public recreation activity and open space amenity that will add to the beauty and value of the adjoining lands. The golf course facility will include a club house, driving range, putting green and maintenance complex. The western portion of the course will contain flood waters that emanate from Kaloι Ditch and channel the flows away from existing and future housing areas. Portions of Kaloι Ditch will be routed through the golf course and be used to create water features. The golf course will also be used to receive storm drainage flows from portions of the adjacent residential areas. In addition, the golf course will buffer the majority of the housing areas from incompatible sugar cane burning and hauling activities that occur adjacent to the project site and to separate new development from the existing villages.

2.2.4 Commercial and Retail Facilities (Old Mill Marketplace)

The Plan proposes that the old sugar mill site be redeveloped partially into a commercial and retail complex which would serve both residents of the community as well as future visitors to the villages. The complex will also provide employment opportunities for the local community. When rehabilitation and revitalization is completed, Ewa Villages will become a point of interest for visitors. Activities within the marketplace could include a neighborhood convenience center, a plantation mill museum, and a marketplace. An important element of the facility will be its layout and design. Buildings within the marketplace will follow a design theme that is compatible with the neighboring historic structures. Each of the major marketplace activities are further elaborated upon below.

Neighborhood Convenience Center

The primary function of the convenience center will be to serve the community. It is envisioned that it will be approximately 10,000 square feet in size and include such services as a convenience store, barber shop and beauty salon. The proposed location of the facility is along Renton Road to provide immediate access to residents of the community.

Plantation Mill Museum

The mill museum will primarily be a visitor attraction. It is envisioned to house old sugar mill equipment and artifacts, as well as other items of historical interest. The building will be approximately 20,000-30,000 square feet in size and will be a major focal feature in the marketplace. A large landscaped pedestrian plaza along Renton Road will front the museum. Other activities such as shops and restaurants will be an integral part of the facility.

Marketplace

The marketplace will have approximately 20,000-30,000 square feet of retail space spread out in several low-profile buildings. It will include a variety of shops and restaurants geared to serve visitors as well as residents of the community. Landscaped pedestrian plazas and walkways will interconnect the various buildings with one another as well as with other activities in the marketplace.

**2.2.5 Ewa Villages Business Park**

A small business park containing 50,000-70,000 square feet of office space is being proposed to be developed next to the "Old Mill Marketplace." The area will contain a variety of service oriented activities such as doctors, dental and realty offices, financial services, repair shops, etc. The business park will provide employment opportunities for residents of the villages and the surrounding communities. As with the marketplace, the structures will be designed so as to be compatible with the architectural styling of the existing village buildings and be limited to structures no greater than two-stories high.

**2.3 INFRASTRUCTURE IMPROVEMENTS**

**2.3.1 Roadways**

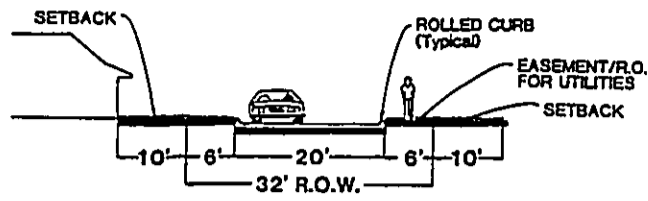
Figure 2-2 illustrates typical roadway sections being proposed for the Ewa Villages project. The roadways within the project can be categorized into two groups: neighborhood residential streets and main collector roads. In addition to these planned road improvements, there are other off-site roadway improvements that will be implemented as part of the overall project. These include: relocation of Mango Tree Road, construction of a segment of the East-West arterial between Kapolei and Ewa by Gentry, and the upgrade of the intersection at Renton Road and Fort Weaver Road. Proposed roadway improvements are discussed below:

**Neighborhood Residential Streets**

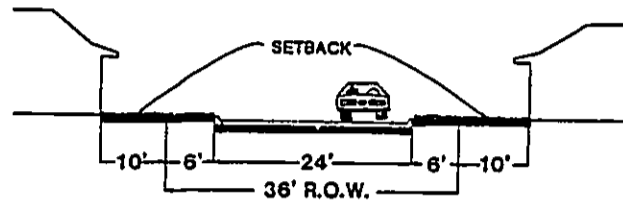
To maintain the historic character of the existing Ewa Villages community, it is being proposed that residential streets be kept narrow with no sidewalks. However, rolled curbs will be included as part of the improvements to facilitate on-site drainage on streets. For existing and redeveloped residential roads in Tenney Village and dead end roads less than 300 feet in length, a 32-foot right-of-way standard has been established. This is to minimize the impact on existing development, keeping down the amount of relocation of landscaping and structures presently located close to the roadways. This standard includes 20-foot wide roadway pavement and 6-foot wide utilities easements on each side. New areas will have a slightly wider road pavement (24 ft.) to create a 36-foot wide right-of-way. Because these roadway specifications do not meet City subdivision standards, an exemption from these standards will be sought pursuant to the provisions of Chapter 201E of the Hawaii Revised Statutes.

**Main Collector Roads**

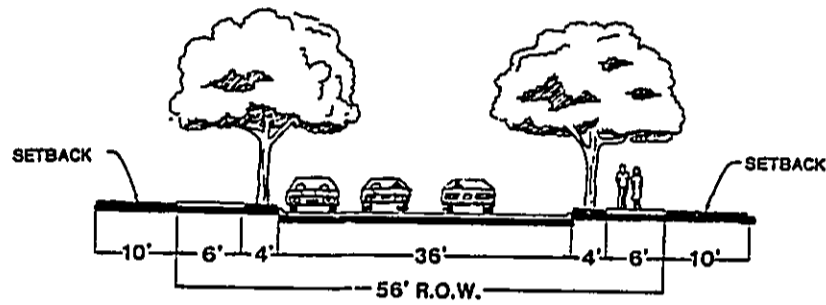
The two main collector roads that will serve the community are Renton Road and an north-south collector running from the golf course to the railroad right-of-way. In addition to providing vehicular access to the residential areas and major activity centers in the community, these corridors will be important for pedestrian traffic.



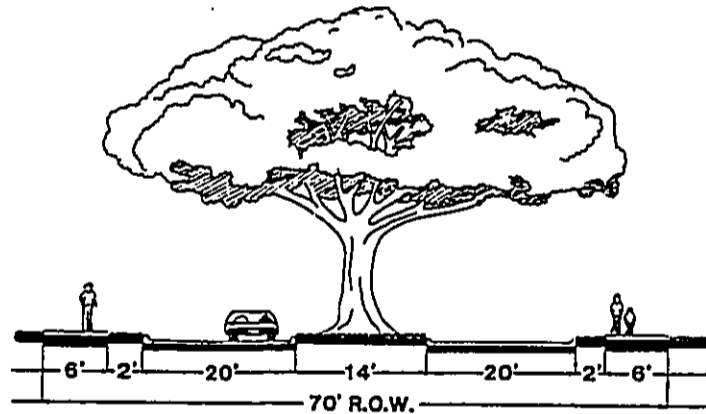
EXISTING UPGRADED  
RESIDENTIAL STREET



NEW RESIDENTIAL STREET



GOLF COURSE ACCESS ROAD



RENTON ROAD

**EWA VILLAGES  
MASTER PLAN**

City & County of Honolulu  
Department of Housing  
& Community Development

December 1980

Source: Ewa Villages  
Draft Master  
Plan  
August, 1990

**Figure 2-2  
Roadway Sections**

R. M. Towill Corporation

- a. Renton Road will be a two-lane divided roadway with a 70-foot right-of-way. Roadway pavement in each direction will be 20 feet wide to accommodate a single travel lane, on-street parking and a bike lane. Walkways will be 6 feet wide to better handle pedestrian traffic. The 14-foot wide median will be used for landscaping that will enhance the streetscape. Renton Road will not require the taking of additional land.
  
- b. The north-south road extending from the railroad right-of-way to the golf course will be a two-lane road with a 56-foot right-of-way. The 36-foot wide pavement will accommodate two travel lanes, on-street parking and bike lanes. Wide six-foot walkways will be provided to accommodate the pedestrian traffic along this corridor.

#### Mango Tree Road

A critical element to the implementation of the Master Plan is the relocation of Mango Tree Road outside (north) of the existing State Urban District boundary. The new alignment will entail the construction of a berm on which the road will sit. The berm will act as a barrier to flood waters that currently flow onto the site from adjacent cane fields during heavy rainstorms. It will channel these waters to the planned golf course corridors around existing and future developed areas.

#### Future East-West Arterial

The proposed East-West Arterial that emanates from Kapolei Town Center will traverse the west side of the project site and enter the Ewa by Gentry project at the railroad right-of-way. The proposed right-of-way for the East-West Road is 108 feet. The portion of the East-West Arterial between the future Ewa Marina and the project site, within the Ewa by Gentry development, will be developed by the Gentry Companies. It is proposed that a portion of this arterial from the railroad right-of-way to Renton Road be developed as part of this project. The portion to be developed is proposed as an interim two-lane collector road. The right-of-way will be reserved until such time as there is a need for the connection between Kapolei Town and this project.



Fort Weaver Road Intersection

The intersection of Renton Road and Fort Weaver Road will be improved to provide additional vehicle storage on Renton Road. In addition to providing additional left turn storage, a right turn storage lane shall also be provided.

**2.3.2 Utilities**

The water, drainage, and wastewater utilities systems in their present state do not meet the minimum requirements set by the City. The plan proposes upgrading the existing systems and/or installing new pipelines in accordance with utility standards. Section 5 contains detailed discussions on the existing and proposed water, drainage and wastewater utilities.

**2.4 HOUSING PROGRAM****2.4.1 Homeownership and Rental Opportunities**

The provision of continued housing to existing tenants of the Ewa Villages is a goal of the proposed Master Plan. Presently, a number of options are available to the tenants regarding what their future living arrangements will be. These include offering the tenants the option of:

- \* buying their existing home,
- \* buying a new home being built as part of the project,
- \* renting an existing home,
- \* renting a new or rehabilitated home being built as part of the project, or
- \* relocating to a different area.

A 1990 survey of Ewa Villages residents indicates that the majority of people would opt for homeownership if given the choice. However, many may not have the financial resources that would allow them to purchase a house. Various means of financing homeownership will therefore be made available. Rental options will also be made available to those who cannot or choose not to buy. A relocation plan will be prepared

in accordance with State guidelines for all qualified residents.

#### 2.4.2 Rehabilitation Program

As part of the initial effort in establishing the rehabilitation program, costs for rehabilitating existing housing structures will be determined by a team of rehabilitation specialists. Once this is completed, decisions will be made as to the number of homes that can be feasibly renovated. Every effort will be made to provide for the rehabilitation of the existing housing stock. Should the rehabilitation cost equal or exceed its replacement cost, the house will be evaluated on a case-by-case basis to determine if rehabilitation should proceed. This evaluation will be made by a design review committee to be established.

Low interest rehabilitation loans will be made available to qualified homeowners from the Department of Housing and Community Development's rehabilitation loan program.

#### 2.4.3 Affordable Homeownership Program

Homes in Renton and Tenney Villages are expected to be offered mostly in the affordable range (80-120% of median household income); however, some that will benefit from newly created amenities could be offered at a slightly higher mid-market range. Those unable or unwilling to purchase their homes will be offered the opportunity to relocate to established rental units in Renton, Tenney or Varona Village. For those existing tenants who are retirees or pensioners, the option of moving to new housing in the proposed Ewa Elderly project or West Loch Elderly project is also available.

#### 2.4.4 Varona Village

Existing tenants of Varona Village will be given the opportunity to purchase in Renton or Tenney or continue to rent a home in Varona or other areas of the project. The Village is being planned as an interim relocation resource until it is redeveloped for current tenants of the villages who do not wish to buy or rent in either Renton or Tenney Villages or the proposed new housing areas.

**2.4.5 New Housing Development**

The new housing areas will have a mix of affordable and market units which will be made available for purchase to both existing tenants of the villages and the general public. The need for market priced units in these areas is essential to making the overall Ewa Villages project feasible. These market units will have amenities which justify the higher pricing, such as golf course frontage, large lot sizes, and larger homes. The revenues from the market units will be used to offset a portion of the costs for the affordable units in the project. This will enable homeownership to be a viable option for some of the current tenants of the villages, who could not afford to purchase a home at an unsubsidized price.

**2.4.6 Community Association**

An association of homeowners will be created to manage and direct the affairs of the homeowners. A set of Covenants, Conditions and Restrictions (CC&R's) shall be established to direct the specific actions of the association and individual homeowners. These CC&R's shall specify the limits of homeowners actions regarding such items as: erections of fences, color schemes, replacement of worn or damaged architectural elements, landscaping requirements, general maintenance, additions and alterations.

When a homeowner desires to make an addition or alteration to his home, he shall be required to seek the approval of the association and any such change shall be in accordance with guidelines adopted for that action.

**2.4.7 Purchase and Sale Agreement**

The existing tenant of the Ewa Villages will be given the first opportunity to acquire the home he currently occupies. If there is more than one family in a house, the primary tenant will be given first option to buy. All other family members will be given an option to purchase once all primary tenants needs have been satisfied. Once all Village residents needs have been met, non-village families will be afforded an opportunity to purchase the remaining homes. All purchasers must meet City eligibility requirements which include the provision that they do not own another property suitable for residential use.

In order to prevent speculation, a homeowner must first offer the property for sale to the City if the sale is within 10 years of acquisition.

After the 10-year period, the owner can then sell his property on the open market with the proviso that net proceeds shall be shared with the City according to a shared appreciation formula.

2.4.8 Rental Program

Existing tenants who cannot qualify for home purchase will be given the opportunity to continue renting in a designated rental unit in the Villages or moving to a unit outside of the Villages.

2.5 COST ESTIMATE AND RELOCATION PROGRAM

2.5.1 Development Cost Estimate

The estimated project cost for this project is \$72.0 million. The allocation of costs are presented in Table 2-2 as follows:

TABLE 2-2  
Project Development Costs

Land Acquisition	\$ 15.0 million
On-Site Improvements	38.5
Off-Site Improvements	5.0
Indirect Costs	9.5
Planning and Engineering	<u>4.0</u>
TOTAL	<u>\$ 72.0 million</u>

Based on a total of 1,160 dwelling units to be sold, the development cost for an improved lot is estimated at \$62,069 per unit for the land and infrastructure upgrades. Development cost for the golf course is estimated at \$21.2 million and will be funded separately.

**2.5.2 Relocation Program**

The 273 existing households in Tenney and Renton Villages may be temporarily relocated at various stages of the project as a result of new construction or rehabilitation of homes, and/or in-filling. Based on an average of 3.87 persons per household for the Ewa District (Source: State of Hawaii Data Book, 1989), an estimated total of about 1,056 people will be temporarily displaced by this action. A relocation program prepared in compliance with State regulations will minimize the potential for inconvenience or other adverse impacts by providing close management and facilitating efficient relocation procedures. The program will be prepared by DHCD prior to the start of construction and will include, but not be limited to, the following points:

1. Development Phasing -- to minimize the extent of disruption to existing residents and utility services;
2. Priority on in-filling vacant lots -- to minimize relocation and to provide rentals;
3. Provisions for relocation services, compensation, and financial aid to qualified households to minimize the degree of financial and emotional impact.

**2.6 IMPLEMENTATION PROGRAM****2.6.1 Development Schedule**

Approximately five years will be needed to complete the infrastructure work within the existing villages and prepare new housing areas. The work will be phased to minimize the disruption to residents. The major phases of work are as follows:

- Phase 1. Renton Road Improvements including utilities  
Golf Course and Mango Tree Road relocation  
District Park  
Construction of new single-family homes (approximately 115 units)  
along Renton Road next to Ewa Elderly

- Phase 2. Multifamily housing (approximately 160 units) and commercial area
- Phase 3. Renton Village (rehab and new home lots)  
New housing villages (finished lots)
- Phase 4. Tenney Village (rehab and new home lots)  
East-West Road extension
- Phase 5. Varona Village

Assuming that the land acquisition can be resolved in the first quarter of 1991, and the design can be completed by the end of 1991, construction on the first phase can commence in the first quarter of 1992. It is estimated that this first phase will take approximately 12 months. Other phases of the project will be scheduled accordingly. It is estimated that each construction phase will take up to a year to complete.

The new housing areas will be sold to a qualified developer to build the housing units. The developer will be responsible for the sales of the market units.

#### 2.6.2 Non-Profit Housing Corporation

It is proposed that a non-profit housing corporation may be established to coordinate the rehabilitation work on the existing homes. Specific rehabilitation guidelines will be established for the homes as indicated earlier. The housing corporation will be responsible for the review of all work on all the existing housing units.

This organization may also be responsible for the in-filling of vacant lots in the villages.

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SECTION 3

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*PHYSICAL ENVIRONMENT*

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**3.1 PHYSICAL ENVIRONMENT**

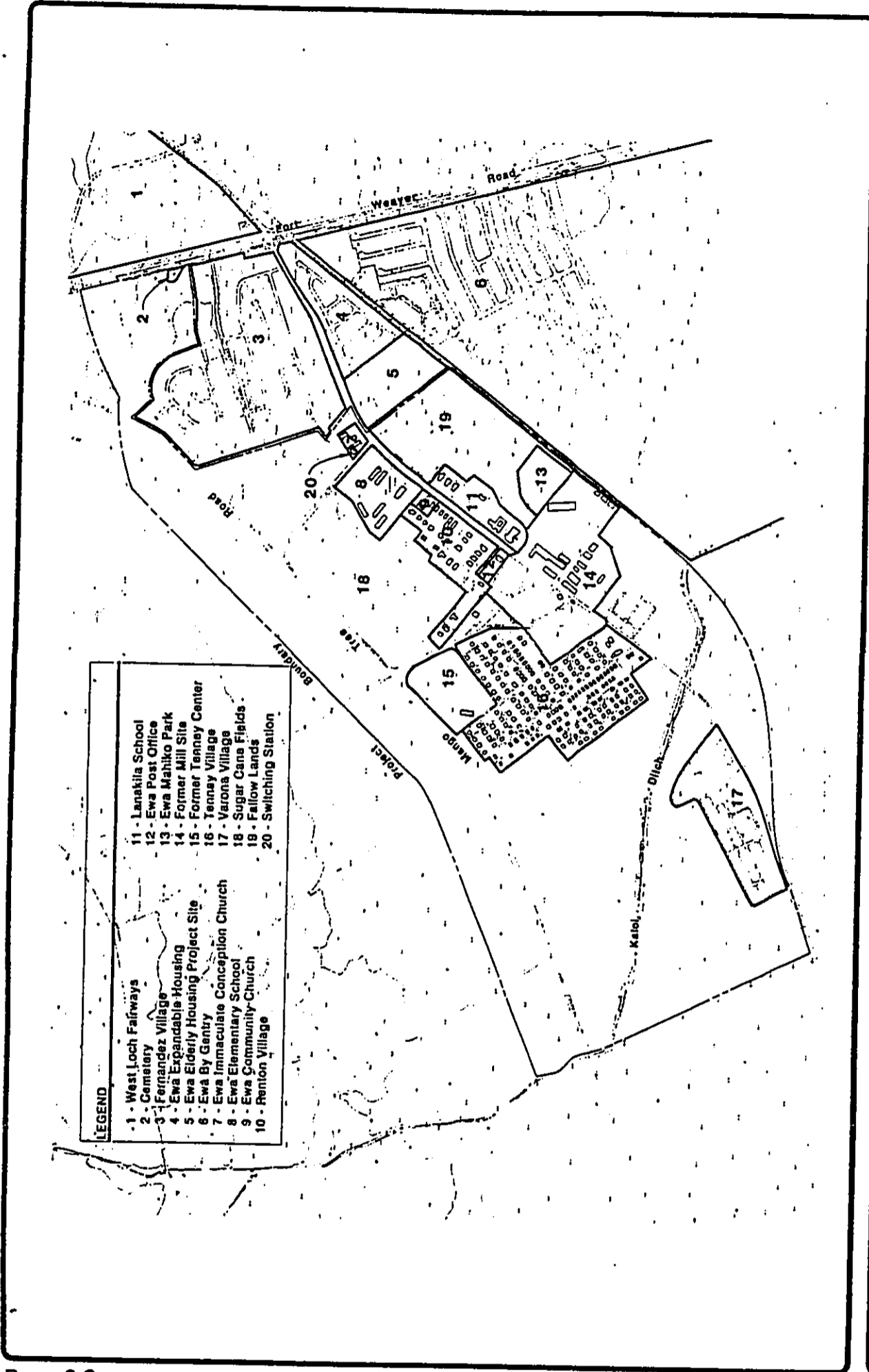
Existing land uses within the project vicinity are comprised mostly of sugarcane fields and residential dwellings, as shown by Figure 3-1. Public facilities within the villages include: Ewa Elementary School, Ewa Post Office, Ewa Hongwanji, Ewa Mahiko Park, Sotoshuji Mission, Lanakila Baptist Church and School, Ewa Community Church, Ewa Immaculate Conception Church, and a GTE Hawaiian Telephone Company switching station. Neighboring developments include: Fernandez Village, Ho'akea (Ewa Expandable Housing), Ewa by Gentry (currently under construction), and the Ewa Elderly housing project under construction along Renton Road.

**3.1.1 Climate**

The most representative long-term wind data available for the project are collected at the Naval Air Station Barbers Point (NASBP), located about 3 miles southwest of the project. Data from the Honolulu International Airport (HIA), located about 8 miles to the east of the project, is also considered representative of conditions at the project site. Wind frequency data for NASBP show the annual prevailing wind direction for this area of Oahu is east northeast (similarly with HIA). The climate of the project area is constant and relatively dry, with prevailing winds blowing from the northeast about 40 percent of the time, at approximately 10 knots (12 miles per hour). Winds from the south are infrequent occurring only a few days during the year and mostly in winter in association with Kona storms. The Ewa Plain experiences light rainfall of about 23 inches per year, most of which occurs between the months of November and April.

The Ewa Villages, located near the leeward coast, experiences a relatively hot temperature profile compared to other locations around Oahu and the state. Based on more than 50 years of data collected at Ewa Plantation, average annual daily minimum and maximum temperatures in the project area are 65°F and 84°F, respectively. The extreme minimum temperature on record is 47°F, and the extreme maximum is 93°F.





**EWA VILLAGES  
MASTER PLAN**

City & County of Honolulu  
Department of Housing  
& Community Development

December 1980

Source: Ewa Villages Draft Master Plan  
August, 1980



Not to Scale

**Figure 3-1  
Existing Land Uses Map**

R. M. Towill Corporation

Impacts and Mitigation Measures

No significant negative impacts to the climate are expected as a result of the project. However, the planned landscaping of streets and parks, in combination with the landscaping of yards by the residents, will tend to have a cooling effect on temperatures in the project locale.

3.1.2 Topography and Soils3.1.2.1 Topography

The major topographic feature within the project vicinity is the Waianae Range, which forms the major visual backdrop in the area. Existing topographic maps indicate site surface elevations ranging from about 35 feet to 65 feet above mean sea level. The average cross slope is less than 2 percent from the lowest to the highest limits of the project.

3.1.2.2 Soils

The project site contains four soil types including the Honouliuli (HxA, HxB), Waialua (WkA), Waipahu (WzB) and Mamala (Mcn) series. The predominant soil classification found within the area, is the Honouliuli (HxA, HxB) series. This series consists of well-drained soils with moderately slow permeability and slow run-off. Erosion does not pose any significant hazard.

According to an Agricultural Resources Impact Report (Appendix F) prepared by Pacific Business Economic Consultants in July 1990, several soil quality rating methods have been developed for evaluating the agricultural potential of soils in Hawaii. Ratings from three commonly used methods are discussed below.

\* Soil Conservation Service (SCS) Land Capability Classification

This SCS rating method groups soils according to:

- a) the limitations of the soils when used for crop production;
- b) the risk of damage when they are used; and
- c) the way they respond to treatment.

The SCS rating system includes 8 soil groups, designated by Roman numerals I through VIII, which indicate progressively greater limitations and narrower choices for practical use. Capability subclasses indicate the main limitation for the soils when used for crop production. Nearly all of the project lands are rated as Class I soils, which suggests that there are few limitations which would restrict their agricultural use.

\* Land Studies Bureau (LSB) Overall Productivity Ratings

The LSB prepared the Detailed Land Classification for all lands in the State (except those in the urban district) into homogeneous land types, based on soil properties, topography and climate. A five-class productivity rating system has been developed, with "A" representing the class of highest productivity, and "E" the lowest. The entire project area is composed of class "B" soils. Although not given the highest rating, this soil type is considered of high quality for agricultural use.

This method also appraises each soil type for its performance for selected crops. Selected crop productivity ratings range from "a" to "e", for the highest and lowest yield potential, respectively. With irrigation, the soils in the project area are rated "a" for production of sugarcane and grazing, whereas, without irrigation, the soils are rated "e".

\* Agricultural Lands of Importance to the State of Hawaii (ALISH)

The ALISH study classifies agriculturally important lands into three categories, which are, "prime", "unique", and "other" farm lands of state-wide and local importance. About 280 acres in the project area have been classified as "prime". The land, therefore, has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops. This can be done economically when treated and managed according to modern farming methods.

Impacts and Mitigation Measures

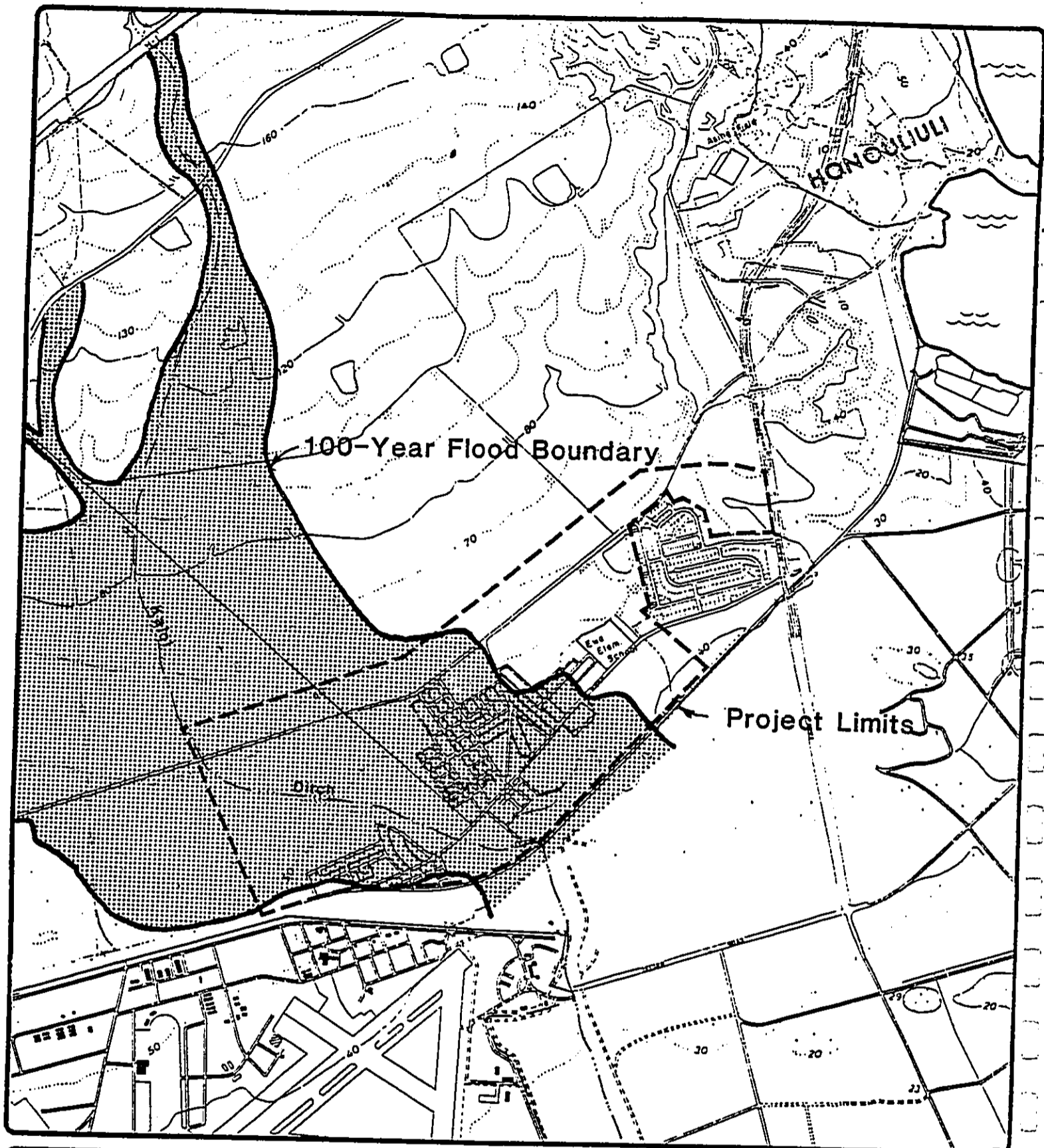
Impacts occurring on the physical terrain from the development of the project site are expected to be minimal. Because the existing site is relatively flat, little grading will be required. Prior to site preparation, it will be necessary to remove and/or relocate the existing vegetation in such areas as overgrown lots and fallow fields. To minimize soil erosion during construction, erosion control measures will be designed and implemented in accordance with City and County standards. Generally, most of the soil is considered moderately expansive, and may require special procedures in the design of any site-work and building foundations, such as deep footings, sub-grade saturation, or capping with non-expansive soils. Excavation and site grading procedures are anticipated for earth work in these areas.

Other impacts associated with agricultural activities are expected to occur. These impacts are addressed in the Agricultural Resources discussion in Section 4.

**3.2 DRAINAGE AND HYDROLOGY**

The principal drainage feature within the project area is Kaloι Ditch, which is a modified drainage channel that begins in the Wahiawa saddle and extends to the ocean. The Kaloι Ditch runs from the H-1 Freeway to Waimanalo Road through the western portion of the project area. The ditch is an unlined channel between Waimanalo Road and the railroad right-of-way. The limits of the 100-year flood plain include all of Varona Village and portions of Tenney and Renton Villages. The existing Ewa Villages, particularly Tenney and Varona, have endured years of flooding problems due to a lack of adequate drainage facilities.

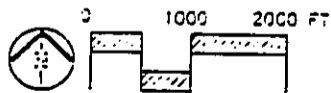
As shown by Figure 3-2, the villages are within two zones as indicated by the Federal Insurance Rate Maps (FIRM) prepared by the Federal Emergency Management Agency (FEMA). The two zones include: Zone AH, flood hazard areas inundated by 100-year



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**Figure 3-2  
Flood Hazard Map**

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flood with base flood hazard elevations ranging from 40 to 59 feet mean sea level; Zone X, areas of 500-year flood; and Zone D, areas which flood hazards are undetermined (Department of the Army, October 1990). Additionally, the Villages are subject to local flooding during periods of heavy rains. The existing drainage facilities in the Villages are not sufficient to prevent occasional area flooding. Drainage facilities include Kaloi Ditch, intake pipes located across Renton Road, lined and earthen irrigation ditches, and an earth ditch behind the former Sugar Mill. A substantial portion of the Villages is presently subject to flooding because of several contributing factors. First, the area is in a low area with very little topographic relief. Secondly, there are no drainage systems that can adequately transport the flood waters away from the Villages. Finally, flood waters enter the Villages unrestrained from the mauka sugarcane fields. Flooding is further aggravated since many of the lots are lower than the existing roadways -- a condition which restricts rain water runoff from the lots.

#### Impacts and Mitigation Measures

The drainage area contributing runoff to the project site is approximately 4,310 acres. Although Kaloi Ditch is the major drainage way through the watershed and project site, a significant amount of runoff sheet flows across the cane fields, over Mango Tree Road and through the project site. The approximate rate of runoff based on Plate 6 of the City and County of Honolulu's Storm Drainage Standards is 8,000 cubic feet per second (cfs).

The design value of 8,000 cfs of runoff for the project has been accounted for in the total design runoff for the Ewa by Gentry project located makai of the Villages. No negative effects to Naval Air Station, Barbers Point (NASBP), as an adjacent landowner, are anticipated.

An 18-hole public golf course is being proposed as a means of providing flood control for the Villages. The western portion of the course will contain flood waters that emanate from Kaloi Ditch, and channel the flows away from existing and future housing areas. In addition, the course will serve to receive storm drainage flows

from portions of the adjacent residential areas. Because of the ground elevation of existing homes and limitations on raising the ground elevation of these homes, it will be necessary to excavate and grade the golf course in order to permit the 8,000 cfs of runoff generated from the drainage area to flow into the golf course.

Flood waters will be directed through the golf course to an improved Kalo'i Ditch which in turn will convey the waters to the railroad right-of-way crossing and golf course being developed by the Ewa by Gentry project.

Mango Tree Road will be relocated and raised to create a berm to intercept the sheet flow runoff along the northwest boundary of the project. The berm will act as a barrier redirecting the runoff along its base to two openings leading to the proposed 18-hole golf course, which in turn will contain and convey the runoff through the site. This will be a beneficial impact in that groundwater resources will be recharged through golf course infiltration.

Impacts to the groundwater in the area could be a major consideration if conditions are not monitored carefully. According to the State Department of Health (DOH) the project is located above the Underground Injection Control (UIC) line. A UIC permit will be obtained if drywells are installed in future houselots for the disposal of rainfall runoff.

The DOH has also established conditions for the development of new golf courses. The planned golf course will be designed and constructed in accordance with the conditions contained in DOH's Eight (8) Conditions Applicable to this New Golf Course Development, Development, April 1990. These conditions are summarized below:

1. The owner/developer and all subsequent owners shall establish a groundwater monitoring plan and system which shall be presented to DOH for its approval.

2. Once the monitoring system and list of compounds to be monitored for have been determined and approved by DOH, the owner/developer shall contract with an independent third party professional (approved by DOH) to establish the baseline groundwater/vadose zone water quality and report the findings to the. Testing of the analyses of the groundwater shall be done by a certified laboratory.
3. If the data from the monitoring system indicate the presence of the measured compound and/or the increased level of such compound, the State DOH can require the owner/developer or subsequent owner to take immediate mitigating action to stop the cause of the contamination. Subsequently, the developer/owner or subsequent owner shall mitigate any adverse effects caused by the contamination.
4. Owner/developer shall provide sewage disposal by means of connection to the public sewer system; or by means of a wastewater treatment works providing treatment to a secondary level with chlorination.
5. If a wastewater treatment works with effluent reuse becomes the choice for wastewater disposal, then the owner/developer and all subsequent owners shall develop and adhere to a Wastewater Reuse Plan.
6. Releases from Underground Storage Tanks (UST) used to store petroleum products for fueling golf carts, maintenance vehicles, and emergency power generators pose potential risks to groundwater.

Should the owner/developer/operator plan to install USTs that contain petroleum or other regulated substances, the owner/developer/operator must comply with the federal UST technical and financial responsibility requirements set forth in title 40 of the Code of Federal Regulations Part 280.



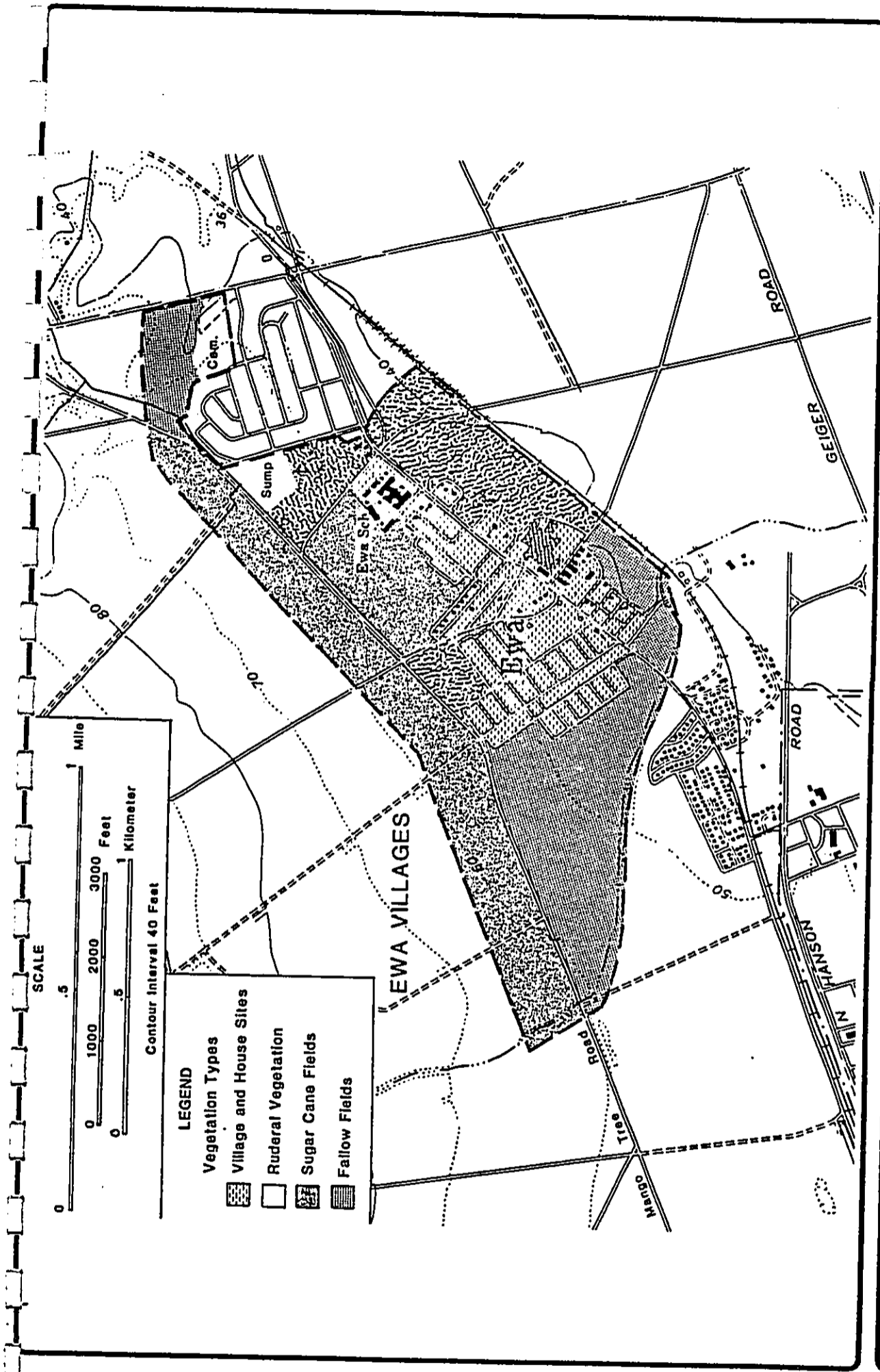
7. Buildings designated to house the fertilizer and biocides shall be bermed to heights sufficient to contain a catastrophic leak of all fluid containers. It is also recommended that the floor of this room be made waterproof so that all leaks can be contained within the structure for cleanup.
8. A golf course maintenance plan and program will be established based on "Best Management practices (BMP)" in regards to utilization of fertilizers and biocides as well as the irrigation schedule. BMP's will be revised as an ongoing measure. The golf course maintenance plan will be reviewed by the State DOH prior to implementation.

### 3.3 FLORA AND FAUNA RESOURCES

The area has been used by OSCo for sugarcane cultivation and residential use for many years. A study of the biological resources was conducted in April 1990, by Dr. Evangeline Funk, to: a) prepare a species list; b) describe the vegetation of the area; and c) ascertain if any proposed or listed, threatened or endangered plants exist on the property. The report in its entirety is included as Appendix A, and excerpts incorporated as follows. (It should be noted that the Biological Resources study was conducted prior to the addition of Varona Village and surrounding area. However, it has been confirmed that no rare plant species exist in the amended area.)

#### 3.3.1 Existing Botanical Species

As shown by Figure 3-3, vegetation types predominantly found in the study area were grouped into three categories: Village and House Sites, Ruderal (weed) Fields, and Sugarcane Fields. In addition, some fallow fields may be found in parts of the site. None of these vegetation types contain endemic (native only to Hawaii), or indigenous (native to Hawaii and other places) plant species in significant numbers. Those indigenous species which were found include: a) Pa'uohi'i'aka (*Jacquemontia sandwicensis* Gray); b) Alena (*Boerhavia diffusa* L.); and c) one occurrence of a Polynesian introduction, Kukui (*Aleurites moluccana* Willd.) (See list of all botanical species referenced in Appendix A.) All three species are common in the ruderal vegetation located makai of Renton Road.



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Source: Evangeline D., Funk, Ph.D., Botanical Consultants,  
June 1980

**Figure 3-3  
Locations of Flora Resources**

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3.3.1.1 Village and House Sites

There are many vacant lots in the villages where the houses have been destroyed either by fire, termites, or attrition. Dense plant communities, composed of landscape plants which have gone wild and weed species, have developed in these areas. With the exception of one occurrence of a sapling sandalwood tree (*Santalum album L.*) growing in a vacant lot near Renton Road, the vegetation of the Village and House Sites is similar to that found in the Ruderal Fields.

3.3.1.2 Ruderal Fields

There are two types of ruderal fields, or weed fields, in the project site. The largest is found along Mango Tree Road, between the producing sugarcane field and the old water storage pond, makai across Renton Road to the old railroad tracks and westward to just past the sugar mill. The second and much smaller ruderal field is found between the villages and the producing sugarcane fields in what was previously a baseball field. Both fields support large communities of alien plant species, or weeds. The field near Ewa Elementary School contains emergent plants such as a knoll of sugarcane. The emergent plants in the old baseball field are large pasture grass species. Other, less prevalent, vegetation of these areas are recorded in the species list attached to the report.

3.3.1.3 Sugarcane Fields

The sugarcane fields are monocultures of a single species, *Saccharum officinarum L.* Other occurrences include weed communities and Mango trees (*Mangifera indica L.*) which have grown up along the cane haul roads and Mango Tree Road.

3.3.1.4 Fallow Fields

Several fallow farm fields can be found on the project site. Botanically, these fields are of little interest, but they provide food for many species of introduced birds. A rapidly spreading vine, *Coccinia grandis*, is located along Kaloi Ditch. This vine is considered a menace.

3.3.2 Existing Animal Species

The project site is a habitat for various domestic and wild animals, such as birds, cats, chickens, dogs, mongoose, and rats.

No rare or endangered species of animals were observed on site.

Impacts and Mitigation Measures

Since no proposed or listed threatened, rare or endangered species of plants were found on the site, no botanical impacts are expected as a result of the project. Native plant species found within the project area are common in many other places on all islands in the state, therefore, no impacts are anticipated. The remaining vegetation is comprised of introduced plants, most of which can be considered to be weeds or ruderal vegetation. In addition, no impacts to animal species are anticipated.

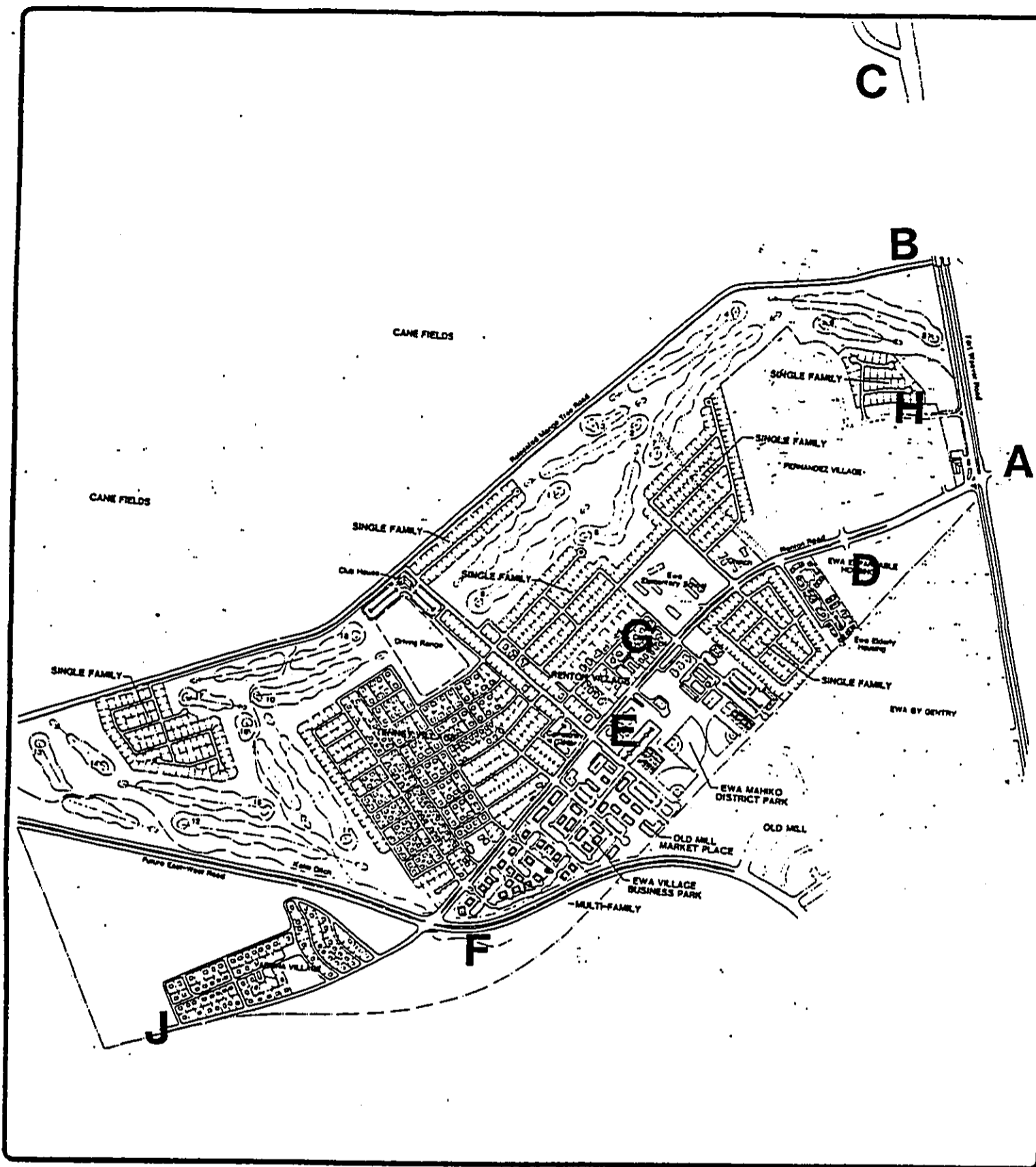
3.4 NOISE QUALITY

Existing noise levels within the project site and vicinity have been studied by the U.S. Navy as part of the Air Installation Compatible Use Zone (AICUZ) program for NASBP (U.S. Navy, July 1989).

An acoustical study was conducted for the study area in July 1990, by Darby and Associates (December 1990). The study, included as Appendix B, provides ambient noise data obtained at and near the site, and a discussion of probable noise impacts and possible mitigation measures. Excerpts from the study are presented below.

3.4.1 Existing Conditions

Short-term noise measurements were performed at Locations A through J. (See Figure 3-4). The measurement locations are described below:



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Source: Darby and Associates,  
August 1980  
NASBP AICUZ Noise Contours  
and Supporting Data Report, 1989



Not to Scale

**Figure 3-4  
Site Plan Showing Noise  
Measurement Locations**

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- A. In agricultural land, about 100 feet from Fort Weaver Road (Diamond Head side) and about 400 feet from the Arizona Road/Fort Weaver Road intersection.
- B. At the entrance driveway to Hale 'O Ulu Child and Family Services facility, about 100 feet from Fort Weaver Road.
- C. About 100 feet from Fort Weaver Road, on the Waianae/makai side of its intersection with the Old Fort Weaver Road.
- D. Adjacent to the existing Hoakea Subdivision, about 1,000 feet from Fort Weaver Road and 35 feet from Renton Road.
- E. In the parking lot adjacent to the Lanakila Baptist Junior/Senior High School, about 65 feet from Renton Road.
- F. In agricultural land near the existing Kaloi Ditch, about 500 feet makai from Renton Road.
- G. On Ala Nui Mauka, adjacent to Ewa Elementary School, about 400 feet from Renton Road.
- H. About 350 feet from Fort Weaver Road, behind the cemetery.
- J. At the intersection of Renton Road and Kihi Street.

The ambient noise measurement results, in terms of the Equivalent Continuous Noise Level (Leq), the minimum noise level (Lmin), the levels exceeded 90%, 50%, 10% and 1%

of the time (L90, L50, L10, L1, respectively), and the maximum noise level (Lmax), are presented in Table 3-1. These statistical noise levels are commonly used descriptors of environmental noise. For example, L1 (the level exceeded 1% of the time) describes the near-maximum noise, while L90 (the level exceeded 90% of the time) is a good measure of the background noise. Leq is an "energy-weighted" average noise level.

TABLE 3-1

NOISE DATA RECORDED AT NINE LOCATIONS AT AND NEAR THE SITE OF THE PROPOSED EWA VILLAGES DEVELOPMENT ON JULY 25 AND 26, 1990

*Location	Measured Noise Levels - dBA							Dominant Noise Sources
	Leq	Lmin	L90	L50	L10	L1	Lmax	
A	56	47	51	55	59	64	69	Traffic on Ft. Weaver Road, wind, distant aircraft
B	65	52	58	63	68	71	73	Traffic on Ft. Weaver Road
C	63	54	58	61	66	73	78	Traffic on Ft. Weaver Road
D	68	48	53	60	68	82	89	Traffic on Renton Road, distant aircraft, wind
E	59	46	49	56	63	69	70	Traffic on Renton Road, distant aircraft, birds, wind
F	59	42	46	50	61	71	74	Aircraft, wind, distant construction activities, birds
G	54	45	48	52	56	63	66	Wind, distant traffic, distant construction activities, children playing
H	57	48	53	57	59	63	64	Traffic on Ft. Weaver Road, wind
J	60	44	46	50	65	73	74	Aircraft, birds, roosters, wind, occasional local

\*See Figure 3-4

Existing daytime, background noise levels at and near the project site varied from about 45 decibels (dBA), in areas located some distance from Fort Weaver and Renton Roads, to upwards of 55 dBA near Fort Weaver Road. Apart from traffic, the main noise sources were aircraft operations, particularly on the Waianae side of the site, and, more typically, the wind.

The most common aircraft movements were wide-body jets approaching Honolulu International Airport (HIA), and P-3 military aircraft performing touch-and-go operations at Naval Air Station Barbers Point (NASBP). At locations F and J, which are representative of those parts of the site exposed to higher levels of aircraft noise, the Lmax from wide-body jets ranged from 57 to 69 dBA; P-3's produced slightly lower maximum noise levels ranging from 54 to 68 dBA. The highest Lmax recorded was 74 dBA from two F-18 military jets on their approach into HIA.

Although aircraft movements associated with NASBP and HIA produced maximum noise levels of, typically, 55 to 70 dBA, most of the site is exposed to a Day-Night Average Sound Level (Ldn) from aircraft noise of less than 55 dBA, which is in compliance with the State Department of Transportation's (DOT) 60 dBA limit. (Note: For planning purposes, noise exposure levels at a site are often assessed in terms of the Day-Night Average Sound Level, which is essentially the Leq measured over a 24-hour period after adding 10 dBA to the noise levels recorded between 10 p.m. and 7 a.m. to account for people's higher sensitivity to noise at night.) Most aircraft movements normally occur in the daytime period from 7 a.m. to 7 p.m.

It is estimated that, apart from locations near Fort Weaver and Renton Roads (and those areas that are occasionally exposed to noise from sugarcane operations), most of the site is currently exposed to an overall Ldn of 55 dBA or less. This noise level is an acceptable noise environment for residential, recreational and commercial purposes.



The aircraft noise contours in Figure 3-5 show the majority of the site to be exposed to an Ldn from aircraft noise of less than 55 dBA, which is in compliance with DOT's Ldn 60 aircraft noise limit.

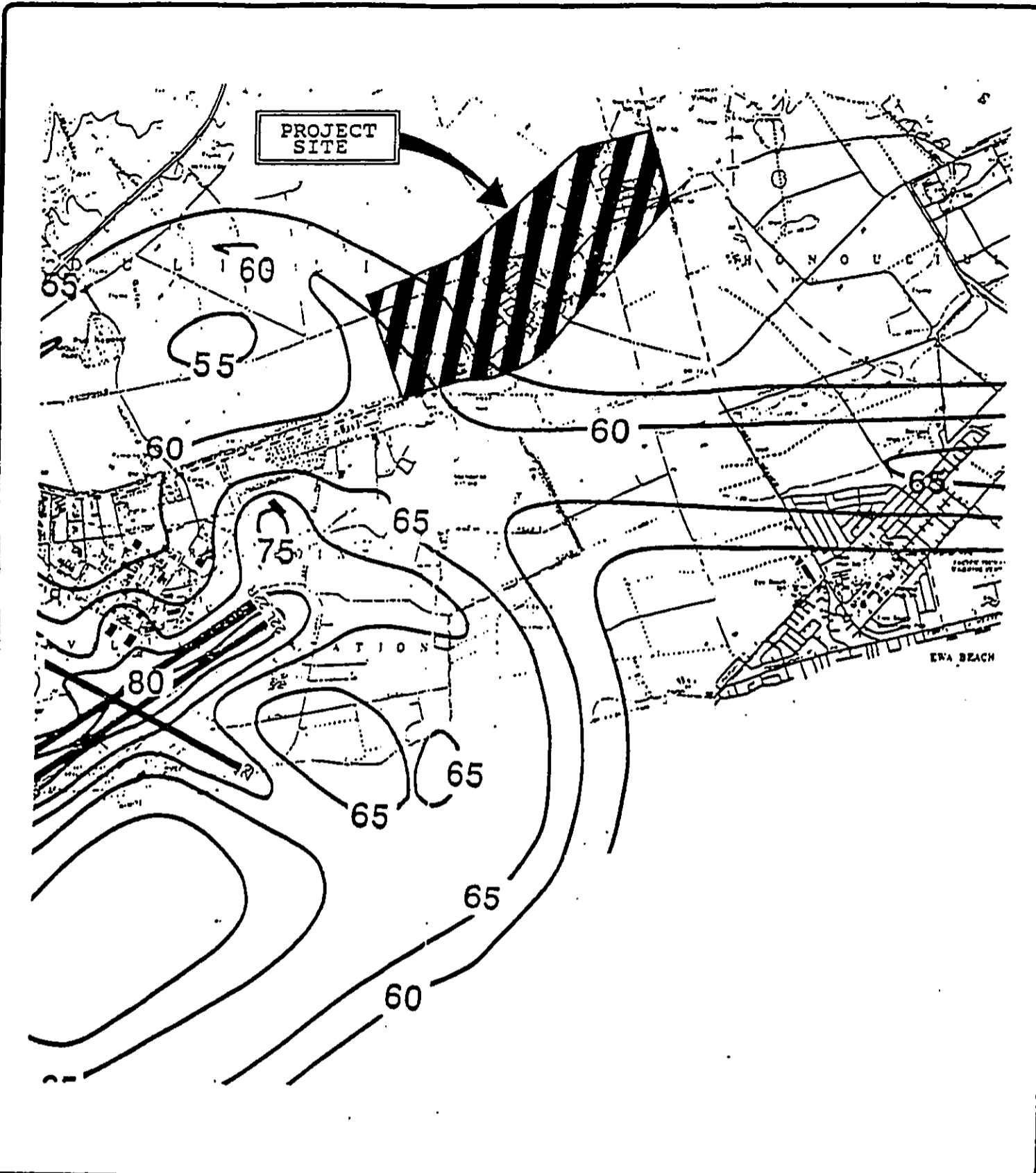
It should be noted that, for noise abatement purposes, aircraft do not normally land on Runway 8L at HIA between 7 p.m. and 7 a.m. During these evening and nighttime hours, aircraft normally land on Runway 4R, unless special circumstances dictate otherwise. Thus, aircraft operations near the project site would, typically, occur far less often at night than the relatively frequent daytime operations.

#### Impacts and Mitigation Measures

##### 1. Additional Traffic Generated by the Project

The most significant noise impact associated with the project will probably be that from project-generated traffic. Increased noise levels along Fort Weaver Road, due to project-generated traffic, are not, however, expected to cause any significant impact. Traffic counts were performed at Locations A through J for the calibration of the FHWA Traffic Noise Prediction Model. The model was used to estimate increases in noise levels due to project-generated traffic.

The results, presented in Table 3-2 show that the project-generated traffic will cause noise level increases along Fort Weaver Road of 0.5 dBA or less. This is an insignificant increase in terms of auditory. It is estimated that the closest proposed housing to Fort Weaver Road, located adjacent to the cemetery, will be exposed to a future Ldn of less than 60 dBA, which is in compliance with the U.S. Department of Housing and Urban Development (HUD) limit of 65 Ldn.



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Source: NASBP AICUZ Noise Contours  
and Supporting Data Report, 1989

**Figure 3-5  
NAS Barbers Point and  
Honolulu International  
Airport**

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TABLE 3-2

PREDICTED FUTURE (1996) TRAFFIC NOISE LEVELS  
AT SELECTED LOCATIONS

Condition	L O C A T I O N				
	Ft. Weaver Rd. (North of Renton)	Renton Rd. (West of Ft. Weaver)	Renton Rd. (East of Ala Nui)	Renton Rd. (Between Ala Nui & Pepper)	Renton Rd. (West of Pepper)
a.m. peak with project	72.6	64.0	60.7	59.8	58.3
a.m. peak without project	72.1	59.7	54.8	54.7	52.6
Increase in a.m. peak due to project- generated traffic	+0.5	+4.3	+5.9	+5.1	+5.7
p.m. peak with project	73.7	64.2	60.4	59.8	56.6
p.m. peak without project	73.3	59.0	55.9	55.8	55.1
Increase in p.m. peak due to project- generated traffic	+0.4	+5.2	+4.5	+4.0	+1.5

NOTES: Noise levels are Equivalent Continuous Noise Levels in dBA, at arbitrary 100 ft reference distance.

Renton Road, Pepper Row, and Ala Nui will, however, be subject to significantly higher increases in noise from project-generated traffic than Fort Weaver Road. The estimated increases in noise levels along Renton Road range from 4 to 6 dBA, corresponding to an increase in loudness of about 50%.

Thus, the most significant noise impact from project-generated traffic will be along Renton Road. Possible measures that could mitigate noise at the new residential areas include sound barrier walls, minimum setback distances with landscaping and appropriate building orientation and design. Noise mitigation measures that can be applied at existing homes along Renton Road are probably limited to providing increased acoustical insulation, landscaping, and/or air conditioning, which would allow windows to be kept closed for noise reduction purposes.

Noise from the "Future East-West Road", between the railroad right-of-way and Renton Road, could significantly impact the adjacent multifamily residential area. Noise mitigation measures include building sound barrier walls and appropriate building orientation and design.

2. Sugarcane Activities

Residential areas near the site boundaries may, at times, be adversely affected by noise from sugarcane activities. Operations such as land preparation and harvesting, although relatively infrequent, are characterized by periods of intense activity. For example, during harvesting, the noise from cane haul trucks on Mango Tree Road could cause a potentially significant impact at the closest proposed homes. DOH noise regulations also allow sugarcane operations to generate 70 dBA at the property line, for 10% of the time in any 20-minute period. However, the regulations also allow conditional permits for agricultural field preparation and harvesting, provided that 95 dBA is not exceeded at the property line. Typically, cane

haul trucks may produce a maximum pass by noise levels of up to 85 dBA at a distance of 50 feet. Thus, the new, single-family residential areas near the northern site boundary will, in spite of the proposed 40-foot buffer zone between the closest homes and the relocated Mango Tree Road, occasionally be subjected to high noise exposure levels from cane haul trucks and from harvesting and land preparation activities.

Possible noise mitigation measures could include earth berms and/or sound barrier walls in the proposed 40-foot buffer zone. Because of the effective height of the noise sources involved, particularly the trucks, the berms and/or sound barrier walls will need to be at least 10-12 feet high to provide any significant noise attenuation. Two-story residential structures in this area should be avoided, and the buildings should be oriented so that bedroom windows do not directly face Mango Tree Road. Minimum setback distances and increased building insulation will be considered. In addition, prospective residents should be advised that they will occasionally experience periods of high noise exposure from sugarcane activities near the northern site boundary.

3. Golf Course Operations

Apart from additional road traffic generated by the proposed 18-hole golf course, potential noise sources include the clubhouse, the public address system and ground maintenance activities.

Noise from sources at and near the clubhouse, such as the kitchen, refrigeration and air conditioning equipment, exhaust fans, golf cart chargers, pumps and other stationary equipment, should be inaudible at the closest proposed homes, which will be more than 500 feet away. If live music and entertainment are planned inside the club house, noise from these activities will also be inaudible at the closest homes, provided the building structure incorporates an adequate degree of acoustical sound

proofing. A public address system near the club house using state-of-the-art low-level, directional loudspeakers, should have minimal impact on nearby residential areas.

Noise from ground maintenance activities should not significantly impact residents living near the golf course, provided the equipment, such as grass cutters, lawn mowers and leaf blowers, used for these operations, is adequately silenced.

4. Possible Resumption of Railroad Operations

A 1984 study, entitled "The Potential Railroad Noise Impact on Ewa Village Expandable Housing Project," prepared by Darby-Ebisu & Associates for Mark Development, Inc., examined the potential noise impact on the Ewa Village Expandable Housing Project from a possible resumption in railroad operations on the existing right-of-way. The study concluded that the noise from ten, slow-moving (10 to 15 mph) steam- or diesel-powered train pass-bys per day would be in compliance with the appropriate noise exposure criteria. This conclusion was based on the assumption that the locomotive's horn or whistle would not be routinely activated near the housing area. This conclusion was based on estimated noise levels of 60 to 76 dBA at 100 feet from the locomotive (or about 66 to 82 dBA at 50 feet, the approximate setback distance of the closest residential structures). Thus, the possible future introduction of a tourist train, operating in a similar fashion to that described above, making up to ten daily round trips between Ko'Olina and Waipahu, should not have a significant noise impact on existing and proposed residential areas adjacent to the railroad right-of-way.

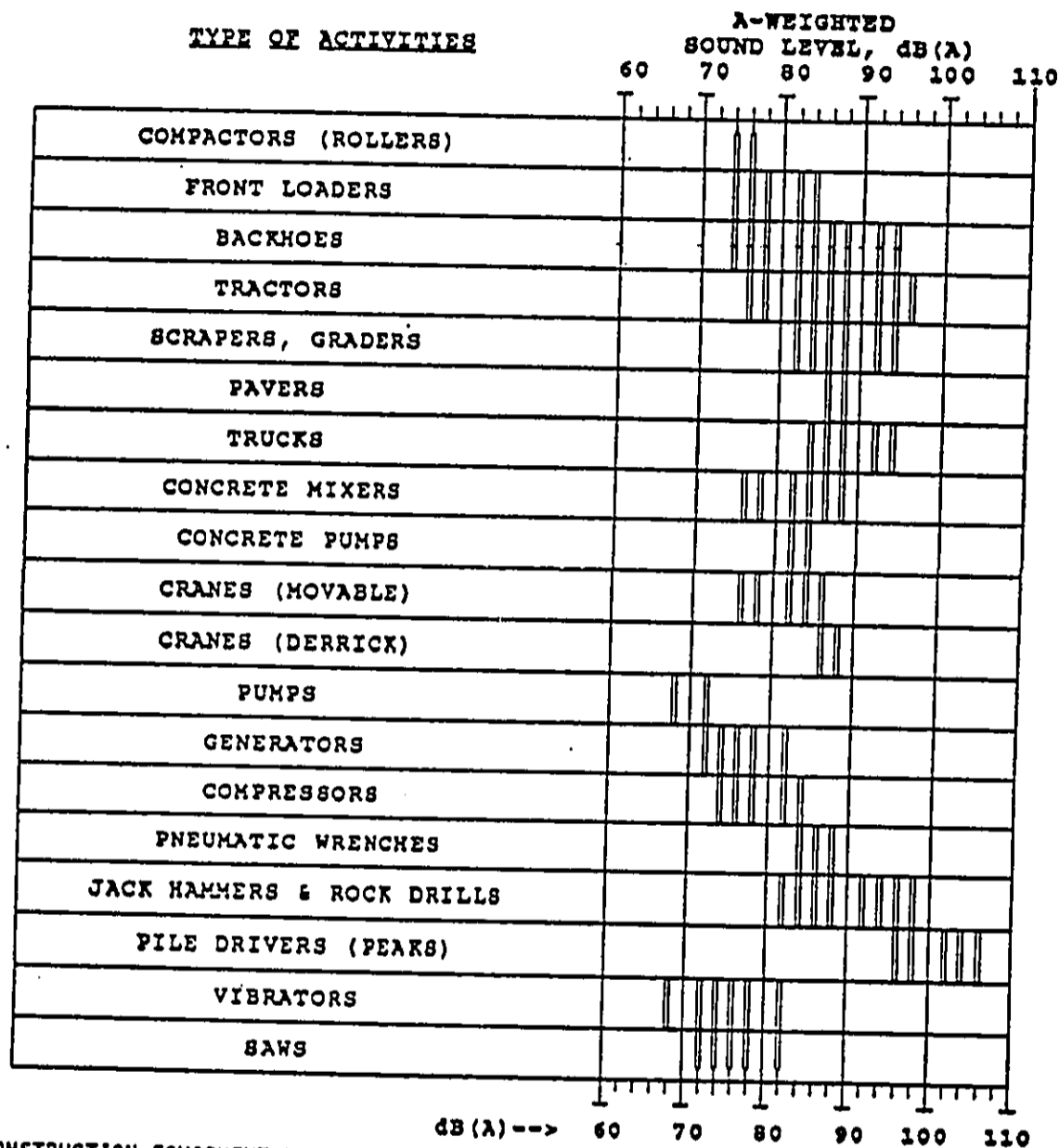
5. Construction Noise

Development of the site will involve demolition, excavation, grading and the construction of infrastructure and buildings. The various construction phases of a development project may generate significant amounts of noise, although the actual amounts are dependent on the methods employed during each stage of the process. Typical construction equipment noise ranges in dBA are shown in Figure 3-6. Earthmoving equipment, such as bulldozers and diesel-powered trucks, will probably be the loudest equipment used during construction. Any noise impact from these operations on existing residential areas should, however, be relatively short-term.

In cases where construction noise exceeds, or is expected to exceed, DOH "allowable" property line limits, a permit must be obtained from DOH pursuant to Chapter 43, Community Noise Control for Oahu, to allow the operation of vehicles, construction equipment, power tools, etc. which emit noise levels in excess of the limits. In addition, construction equipment and on-site vehicles or devices requiring an exhaust of gas or air must be equipped with mufflers. Also, construction vehicles using traffic-ways must satisfy DOH vehicular noise requirements pursuant to Title 11, Administration Rules, Chapter 42.

3.5 AIR QUALITY

The two DOH air quality monitoring stations located nearest to the project site are at the Campbell Industrial Park and at Pearl City. An air quality analysis has been conducted for the project to evaluate probable impacts and recommend mitigation measures. The study, included as Appendix C, was prepared by Barry D. Neal and Associates in August 1990.



CONSTRUCTION EQUIPMENT NOISE RANGES @ 50 FEET  
NOTE: BASED ON LIMITED AVAILABLE DATA SAMPLES

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Source: Darby and Associates,  
August 1990

**Figure 3-6  
Typical Construction  
Noise Levels at  
50' Distance**

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**3.5.1 Existing Conditions**

Present air quality in the project area is mostly affected by air pollutants from vehicular, industrial, natural, and/or agricultural sources. Fort Weaver Road, adjacent to the project site on the northeast, is a major arterial roadway that presently carries moderate levels of vehicular traffic during peak traffic hours. Emissions from motor vehicles using this roadway, primarily nitrogen oxides and carbon monoxide, will tend to be carried over the project site by the prevailing winds. Emissions emanating from traffic on the H-1 Freeway, situated about two miles to the north, probably do not significantly impact the site.

Several sources of industrial air pollution are located at Campbell Industrial Park, which is located about 4 miles to the southwest at Barbers Point. Companies currently operating there include the Chevron and PRI refineries, H-Power and others. Prevailing winds from the northeast will carry these emissions away from the site most of the time, although southwesterly winds, occurring less than 5 percent of the time, will carry emissions toward the site.

Air pollution originating from agricultural sources can mainly be attributed to sugarcane operations which nearly surround the site on three sides. To the northeast (directly upwind of the prevailing wind direction), sugarcane cultivation has been discontinued, which should improve the air quality at the site. This land has been set aside to accommodate Phase II (West Loch Fairways) of the West Loch project. Smoke and dust from the remaining cane fields may occasionally impact the site during periods when the trade winds are absent.

The DOH operates a network of air quality monitoring stations at various locations on Oahu. Each station, however, typically does not monitor the full complement of air quality parameters. The annual air quality measurements that were made nearest to the project site for each of the regulated air pollutants for the period 1985 to 1989, generally indicates no exceedances of the State or National Ambient Air Quality Standards (AAQS) as defined by the DOH and Environmental Protection Agency, respectively. It appears likely that the State AAQS for sulfur dioxide, nitrogen dioxide and lead are currently being met at the

project site. The ozone AAQS has not been exceeded during the past four years at the Sand Island monitoring station. Carbon monoxide readings from urban Honolulu, at the DOH Building station, indicate the State AAQS may be exceeded at a rate of one to three times per year in traffic-congested areas. Sugarcane operations in the project vicinity likely cause occasional elevated levels of both carbon monoxide and particulates.

#### Impacts and Mitigation Measures

##### 1. Impacts

###### Short Term Impact

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

###### Long-Term Impact

###### \* Impact Associated With Traffic

One of the primary long-term air pollution impacts from the project will arise from the increased motor vehicle traffic associated with the project. Potential increased levels of carbon monoxide concentrations along roadways leading to and from the proposed development will be the primary concern. Based on mathematical modeling of projected vehicular traffic and on atmospheric dispersion estimates of vehicular emissions, it is predicted that carbon monoxide concentrations along roadways in the project vicinity will unavoidably be higher with the project as compared to the without project scenario. The highest concentrations will occur in the vicinity

of Renton Road at Fort Weaver. With or without the project, traffic projections for 1996 indicate that this intersection will be over capacity even if it is widened from four to six lanes. Even so, worst-case concentrations should remain within the national 1-hour AAQS set by the U.S. Environmental Protection Agency. The U.S. EPA 8-hour standard for carbon monoxide, however, may be exceeded occasionally given low wind conditions with or without the project near this intersection in the year 1996. Concentrations at other intersections within the project area will remain well within the 1-hour and 8-hour national standards with or without the project.

The more stringent State of Hawaii AAQS for carbon monoxide may be exceeded at times during the current year and either with or without the project in the year 1996 at the Renton/Fort Weaver Road intersection due to vehicular emissions. Concentrations along Renton Road at Ala Nui Mauka and at Pepper Row should continue to meet the State standards either with or without the project in 1996. It should be mentioned here that the state standards are set so low that they are probably exceeded at many intersections in the state that have even moderate traffic volumes. It is also worth noting that, although the national AAQS allow higher levels of carbon monoxide, the national standards were developed after extensive research with the objective of defining levels of air quality that would protect the public health with an adequate margin of safety.

\* Impacts Associated With Sugar Operations  
In addition to assessing the impact of the project on the surrounding areas, the reverse problem of impacts of air pollution sources located in the surrounding area on the residents of the project is also of concern. For the Ewa Villages Project, the issue of primary concern is the ongoing sugarcane operations in the fields adjacent to the

project. Insofar as air quality is concerned, sugarcane burning and cane haul road usage present the two greatest potential problems.

Assessments of the potential worse-case impacts on the proposed project from sugarcane burning indicate that State and/or national AAQS for both particulate matter and carbon monoxide could be exceeded for a distance of about one mile or more downwind of the fire. Cane fields located to the east, while more distant, present the greatest potential for impact due to the prevailing winds.

Even though the cane haul road to the north of the project will be paved, fugitive dust concentrations may exceed State and national AAQS at times for a distance of about 1,000 feet (300 meters) downwind. Except for occasional brief periods, prevailing winds in the area will carry the dust away from the nearest residents of the proposed project.

\* Sugarcane Burning

Sugarcane fields are generally harvested every two years. Prior to harvesting, sugarcane is burned in the field to remove unwanted foliage as well as to control rodents and insects. The major air pollution emissions associated with sugarcane burning include particulate, carbon monoxide and volatile organic compounds.

Within about two miles of the proposed project there currently are about 25 cane fields varying in size from roughly 50 to 200 acres each which total about 2,800 acres. These fields will have the greatest potential impact on the development.

Construction of the proposed project will remove approximately 320 acres of land from sugarcane cultivation and thus provide a benefit

to current nearby residents in that this will eliminate some sugarcane burning emissions that will otherwise occur in the area.

The nearest remaining cane fields will be located to the north and to the west of the project site where the usual prevailing northeast trade winds will move the smoke away from the development. Although located somewhat farther away, smoke from the closest cane fields directly to the east across Fort Weaver Road will likely have the greatest potential for impacting the project site. These fields are located about one-half to one mile from the project. If these cane fields are burned during periods when winds are from the east or east-northeast, exceedances of the State and/or the national AAQS for particulate matter and for carbon monoxide are possible within the area which will be occupied by the project.

\* Cane Haul Road Usage

Several cane haul roads exist in the vicinity of the project. The closest and most frequently used is Mango Tree Road which provides a major east-west route for cane haul trucks in the area. Presently, this haul road is paved and passes through the project site on the north. One of the major elements of the proposed project will be the relocation of this road outside the project boundary. The new alignment will entail the construction of a 5-foot berm along the north project boundary on which the road will sit. The relocated haul road will have a 40-foot paved cross section with 10-foot shoulders.

Fugitive dust emissions emanating from paved haul roads are primarily a function of the amount of dirt on the road, vehicle speed, weight and number of wheels, and local climate. Much of the dust generated will be in the form of larger particles that will settle to the surface within a short distance of the roadway. Larger dust particles

do not generally constitute a health hazard but mainly are a nuisance. However, dust particles smaller than 10 microns in diameter can remain suspended indefinitely and inhaled rather readily. Thus, it is the smaller particles that are of most concern. The recently revised national AAQS pertain to particulate matter less than 10 microns in diameter, while the State standards pertain to total suspended particulate generally taken to be particles less than 30 microns in diameter. Dispersion calculations indicate that both the national and the State 24-hour air quality standards for particulate matter could be exceeded for a distance of about 1,000 feet (300 meters) downwind under these conditions.

2. Mitigation Measures

Government Regulations

Strict compliance with State of Hawaii Air Pollution Control Regulations regarding establishment of a regular dust-watering program and covering of dirt-hauling trucks will be required to effectively mitigate fugitive dust emissions from construction activities. Twice daily watering is estimated to reduce dust emissions by up to 50 percent. Use of chemical wetting agents or soil stabilizers may increase control efficiency. Paving of parking areas and establishment of landscaping early in the construction schedule will also help to control dust. Further mitigation can be achieved by limiting the total area that can be disturbed at any given time and/or by using wind screens. Increased vehicular emissions due to disruption of traffic by construction equipment and/or commuting construction workers can be alleviated by moving equipment and personnel to the site during off-peak traffic hours.

Traffic and Roadway Improvements

Options available to mitigate traffic related air pollution are to improve roadways, reduce traffic or reduce individual vehicular emissions. Long term projections of carbon monoxide emissions from vehicular traffic

associated with the completed development are based on the traffic impact study findings.

Sugar Operation

Harvesting sugarcane without burning would be the most effective means to mitigate impacts on the project from this source of air pollution, but studies conducted during the past few years have indicated that this is not an economically viable solution in Hawaii. Given that burning is a necessity, adherence to State regulations pertaining to agricultural burning will help to minimize impacts on the proposed project. In accordance with these regulations, field operators must apply for burning permits for all fields to be harvested. Applications must include maps of areas to be burned showing fields by number and acreage, direction of prevailing winds, locations of residences, schools, commercial establishments, public buildings, airports and public utilities, the designation of fields to be burned under specified wind conditions and other information. Burning is prohibited during periods of stagnation. Burning of the fields adjacent to the project should not be permitted when wind conditions will carry the plume over the proposed development. New residents of the project should be forewarned of this potential problem.

Relocation and paving of Mango Tree Road as planned should effectively mitigate potential fugitive dust impacts on the project from cane haul trucks. Impacts can be further lessened by keeping the road clean and free of debris. Maintaining a separation distance of about 1,000 feet (300 meters) between the project residential areas and the haul road is recommended, although prevailing winds in the area should allow a smaller buffer.

Alternative Mitigating Measures

Aside from improving roadways, air pollution impacts from vehicular emissions can be mitigated by reducing traffic through the use of mass

transit and car pooling and/or by adjusting local school and business hours to begin and end during off peak times. Emissions from individual vehicles can be reduced in the vicinity of intersections by lowering speed limits (and thus reducing accelerating emissions). It is estimated that lowering the speed limit on Fort Weaver Road from 45 mph to 35 mph will reduce emissions (and hence carbon monoxide concentrations) at the Renton Road intersection by about 20 to 25 percent. Although it is conceivable that the efficiency of motor vehicle engines and/or emission control equipment will be improved or that vehicles will be developed which burn cleaner fuels at some point in the future, it is unlikely that these developments will occur before project completion in 1996. With regard to cleaner burning fuels, vehicles burning methanol or compressed natural gas or powered by electrical motors are some of the possibilities for technological development that are currently being contemplated. Lastly, even without technological breakthroughs, it is also possible that at some point in the future the State may decide to adopt a motor vehicle inspection and maintenance program, which would ensure that emission control devices are properly maintained and thereby reduce emissions, or the State may adopt more restrictive emission control standards.



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SECTION 4

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**SOCIO-ECONOMIC ENVIRONMENT**

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4.1 ARCHAEOLOGICAL RESOURCES

An archaeological reconnaissance survey of the project site was conducted by Cultural Surveys Hawaii in August and September 1990, to ascertain the presence of any sites or features of possible archaeological significance within the project area limits. The survey report is included as Appendix D.

4.1.1 Archaeological Background and Overview

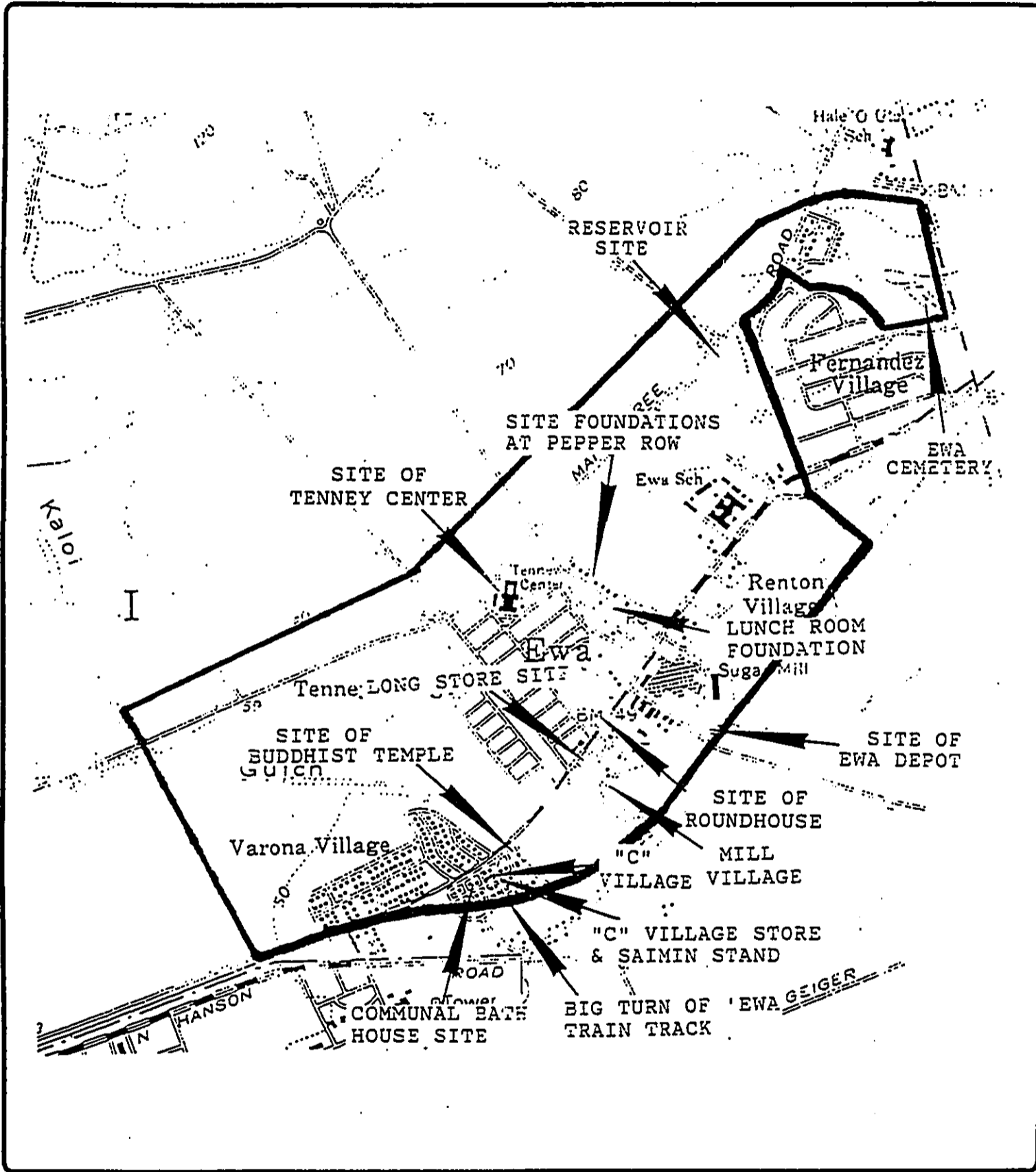
4.1.1.1 Existing Conditions

No evidence of prehistoric occupation was found within the present project area. Three archaeological studies on two adjacent parcels likewise found no clear evidence of any prehistoric occupation. The majority of these adjacent lands has similarly been impacted by decades of intensive sugarcane cultivation and urban uses. Traditional sources, such as early maps of the area, and early archaeological studies have not documented any archaeological sites in this portion of the Honouliuli ahupua'a.

The earliest detailed map of the area (Alexander, 1873) shows no habitation closer than the western edge of West Loch in the vicinity of Papapahu Point located approximately 2.5 kilometers (km) from the project. The Monsarrat survey map of 1878 indicated a substantial settlement at the "Honouliuli Taro Land" in the Papapahu Point area which, it seems, was the focus of the population at Honouliuli in early historic times (Dicks et. al., 1987).

A search for Hawaiian Land Commission Awards (LCA) in the project area similarly showed no evidence of small private land holdings in the vicinity. The only LCA is Royal Patent 6071, LCA 11216, Apana 8, awarded to Miriam Ke'ahi-Kuni Kekau'onohi, by Kamehameha III in 1848 (Native Register).

The findings of the archaeological reconnaissance focused on the post 1890 sites which include: Ewa Plantation Cemetery, Reservoir No. 1, former Middle Village (Korean Village); former Mill Village, former "C" Village, and Ewa Depot (see Figure 4-1). In addition, the potential for archaeological findings was studied for Renton, Tenney, and Varona Villages.



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**Figure 4-1**  
**Locations of Possible Post-1890 Archaeological Sites**  
 Source: Cultural Surveys Hawaii, September 1990  
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\* Ewa Plantation Cemetery

As one of the largest in southwest Oahu, this cemetery served a diverse population of the Ewa Plantation, from 1900 to 1970. The cemetery is bounded by Fort Weaver Road, Karayan Street, and narrow dirt roads. Interment ceased about 1970, and many of the remains were relocated to Mililani Cemetery at that time. Unmarked graves are believed to exist within the cemetery, and evidence of other graves, with unclear or temporary markers, may soon be obliterated.

\* Reservoir No. 1

The reservoir, presently dry, is located south of Mango Tree Road, and west of Fernandez Village. Its cultural importance is primarily that it is probably the oldest reservoir of the plantation, as it is dated 1926. It is also significant as the most concrete symbol of the skillful application of water management that made Ewa Plantation possible.

\* Middle Village (Korean Village)

This village was located on the "bluffs", a few meters north of Fernandez Village, abutting Mango Tree Road. It has been referred to as the oldest village, and dates back to 1924. It is unlikely that there will be any trace of archaeological sites within the area that was since converted to cane cultivation.

\* Mill Village

Mill Village was located southwest of the sugar mill on the southeast side of Renton Road. Future archaeological survey could be of value in gathering more information about the village. Of particular interest is the foundation of the Long Store, formerly located along Renton Road (See Figure 4-2, top photo). This 2-story store was one of the first examples of private enterprise in the villages, and a survey of the slab foundation could supplement other research efforts.

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Source: Cultural Surveys Hawaii,  
September 1990

Figure 4-2  
Foundations of  
Former Long Store <sup>(1)</sup>  
and Japanese Furo <sup>(2)</sup>

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\* "C" Village

"C" Village was bounded by Renton Road, and the railroad right-of-way. Photos from the Bishop Museum suggest that the origin of the village may go back to the turn of the century. Today, only the Ewa Hongwanji mission and associated structures remain. Reconnaissance indicates there is a slab of a Japanese *furo* or bathhouse (see Figure 4-2, bottom photo). Also of interest are the slabs of two "single men's lunch rooms", and the site of a World War II bomb shelter.

\* Ewa Depot

The Ewa Depot was the origin for transportation in and out of the plantation as high school students would ride to A'ala Park in downtown Honolulu, transfer to a streetcar to McKinley School, and reverse the process at the end of the day. The site has been visually impacted by recent construction of a 2-story house, but the actual site is undeveloped and merits further examination.

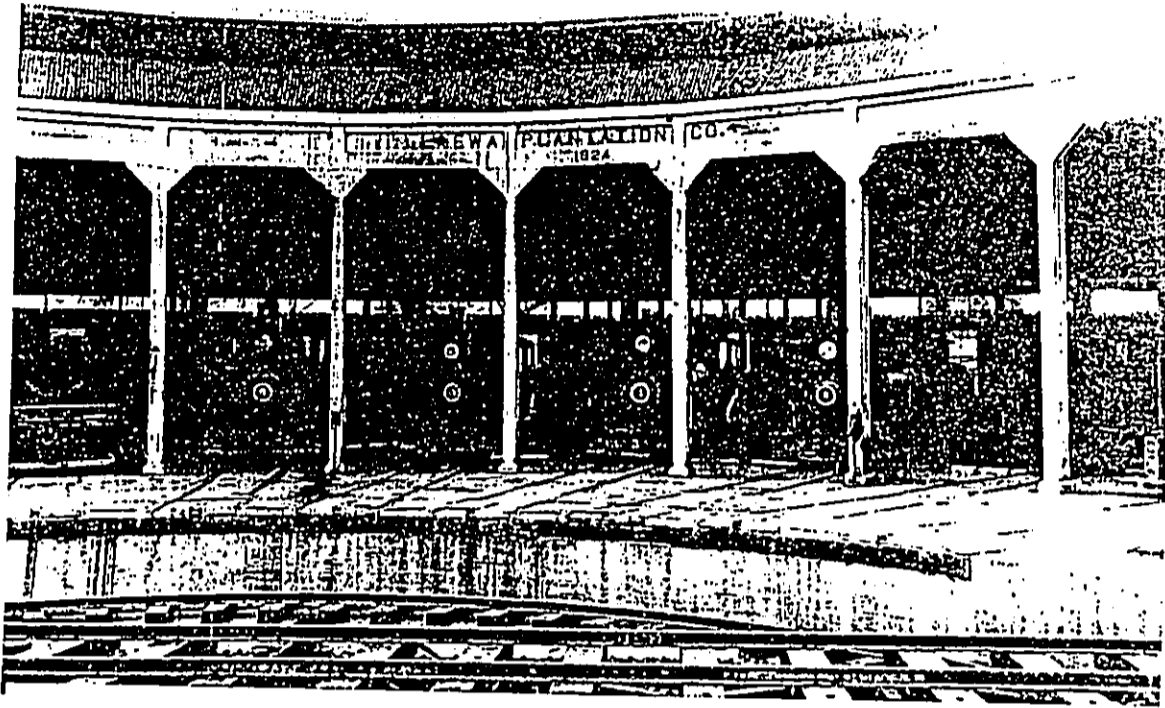
\* Renton Village

A Bishop Museum photo, dated 1908, shows "first residences built in Pepper Row", and a survey of these and other house slabs in Renton Village may provide information on the history and nature of construction in the Village. Southwest of Pepper Row are a number of foundations, such as the lunchroom foundation for the Tournahauler Shop and Cane Haul Drivers.

\* Tenney Village

Reconnaissance at the village suggests that further survey of house lots would be unlikely to yield significant data on domestic structures. However, slabs and walls believed to be associated with the gas station, and Tenney Center, as well as the slab and tracks of the roundhouse are still present (see Figure 4-3, top and bottom photo).

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**Figure 4-3  
Former Roundhouse<sup>(1)</sup>  
and Foundation<sup>(2)</sup>**

Source: Cultural Surveys Hawaii,  
September 1990

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\* Varona Village

Reconnaissance suggests that survey of vacant house lots would be unlikely to yield significant data on domestic structures. The demolition of the former recreation building was so complete that there is little chance of significant data recovery from survey or subsurface testing.

Impacts and Mitigation Measures

Subsurface archaeological remains are not anticipated to be unearthed. However, if it is deemed necessary, DHCD will prepare a data recovery and monitoring plan for review by the State Historic Preservation Office prior to the development of any land where pre-World War II plantation structures are known to have existed. This includes the vicinity of Renton, Tenney, Varona, "C", Mill, and Middle Villages; Ewa Station; and the Ewa Japanese School Site. It is anticipated that in many areas, no subsurface archaeological reconnaissance would be necessary and short-term archaeological monitoring would suffice.

The historic railroad right-of-way will be left undisturbed except for a short segment that will be employed for drainage improvements. In addition, a 40-foot building setback from the right-of-way will be observed.

The Ewa Plantation cemetery located in the northeast portion of the project area, west of Fort Weaver Road, will not be disturbed. Interments in the cemetery are thought to have begun about 1900 and continued as late as 1970. Based on discussions between Cultural Surveys Hawaii and residents, unmarked graves may be present; therefore, archaeological monitoring is recommended for any grading, grubbing or subsurface trenching within 20 feet of the cemetery.



**4.2 HISTORICAL RESOURCES****4.2.1 HISTORIC BACKGROUND AND OVERVIEW**

The Ewa Villages have been referred to as perhaps one of the foremost examples of an intact, historic plantation village on the island by preservationists, and its history and significance have been well-documented. The following discussion is a combined summation of past studies conducted by an American Studies class from the University of Hawaii in 1987 and a report prepared by P. Pagliaro in 1987, and attempts to highlight the key events, people, and places that formed the character of the Villages then and now.

**4.2.2 History in a Capsule**

The Ewa area has been maintained in sugar production and operation for over 110 years, and during those years, numerous events and key characters contributed to the shape and color of the plantation. In 1877, James Campbell, a Scots immigrant, bought 41,000 acres of what was then considered dry ranch land in Ewa from then landowner, John Coney, for the sum of \$95,000. A veteran of the sugar business, Campbell recognized the need for a readily available source of water for sugar to reach full economic potential. Two years later, in 1879, Campbell hired James Ashley to drill for water at Ewa. Ashley's attempts were successful and the first technical problem of the sugar industry was solved, as Ewa's first artesian well flowed for the next 60 years.

The year 1889 was a landmark year in that: 1) Ben Dillingham began leasing lands at Honouliuli from Campbell for \$50,000 per year, for the purposes of large-scale cultivation; 2) Dillingham secured a charter from the Government of Hawaii for the Oahu Railway and Land Company (OR&L), to build Oahu's first railroad; and 3) Dillingham subsequently approached W.R. Castle, for his expertise in sugar cultivation. In 1890, with the financial backing from Castle's father, S. N. Castle, and the senior Castle's partner, C. M. Cooke, the Ewa Plantation Company was chartered. Over the next 8 decades, from 1890 to 1971, the plantation underwent many economic and physical transformations, and its overall growth was relatively steady, as revealed by annual construction reports.

4.2.3 The "Company" Town

The focus of the Ewa Villages community has been to tend the fields, harvest the crops, refine the cane, staff the offices and man the production lines that keep the sugar mill in operation. This has always been a reciprocal relationship, as the sugar company in turn has provided jobs, furnished and maintained company housing, provided medical services, maintained road and utility systems, and charged a minimum fee for water usage. The Villages formed the core of a company town envisioned, planned, constructed, and maintained by the sugar company to house and sustain its employees.

The Villages were largely isolated and self-contained. The focal points of the community were the mill recreation center and community buildings such as the post office, general stores, butcher shop, soda water and ice manufacturing plant, ranch, dairy, and bank, where the residents would congregate to discuss daily news, or hold community events. It was a town where everyone knew everyone, and help was always near when a person or family was in need. Conflicts did arise out of ethnic strife or other disagreements, but generally, these incidents were the exception more than the rule.

Census data for the population of the Ewa Villages available for the years, 1928, 1929, and 1932, show population figures of 4,967, 4,477, and 4,100 respectively. It is estimated that Ewa's population was the largest in 1928. A multi-cultural population comprised of Japanese, Chinese, Okinawan, Korean, Portuguese, Spanish, Hawaiian, Filipino, and European people had characterized most of the history of the plantation. Residents of Japanese ancestry once comprised the largest group, but their numbers have since declined rapidly (from 34 percent in 1970 to 16 percent in 1979), while the number of residents of Filipino ancestry have grown in number.

4.2.4 The Construction of Ewa Villages

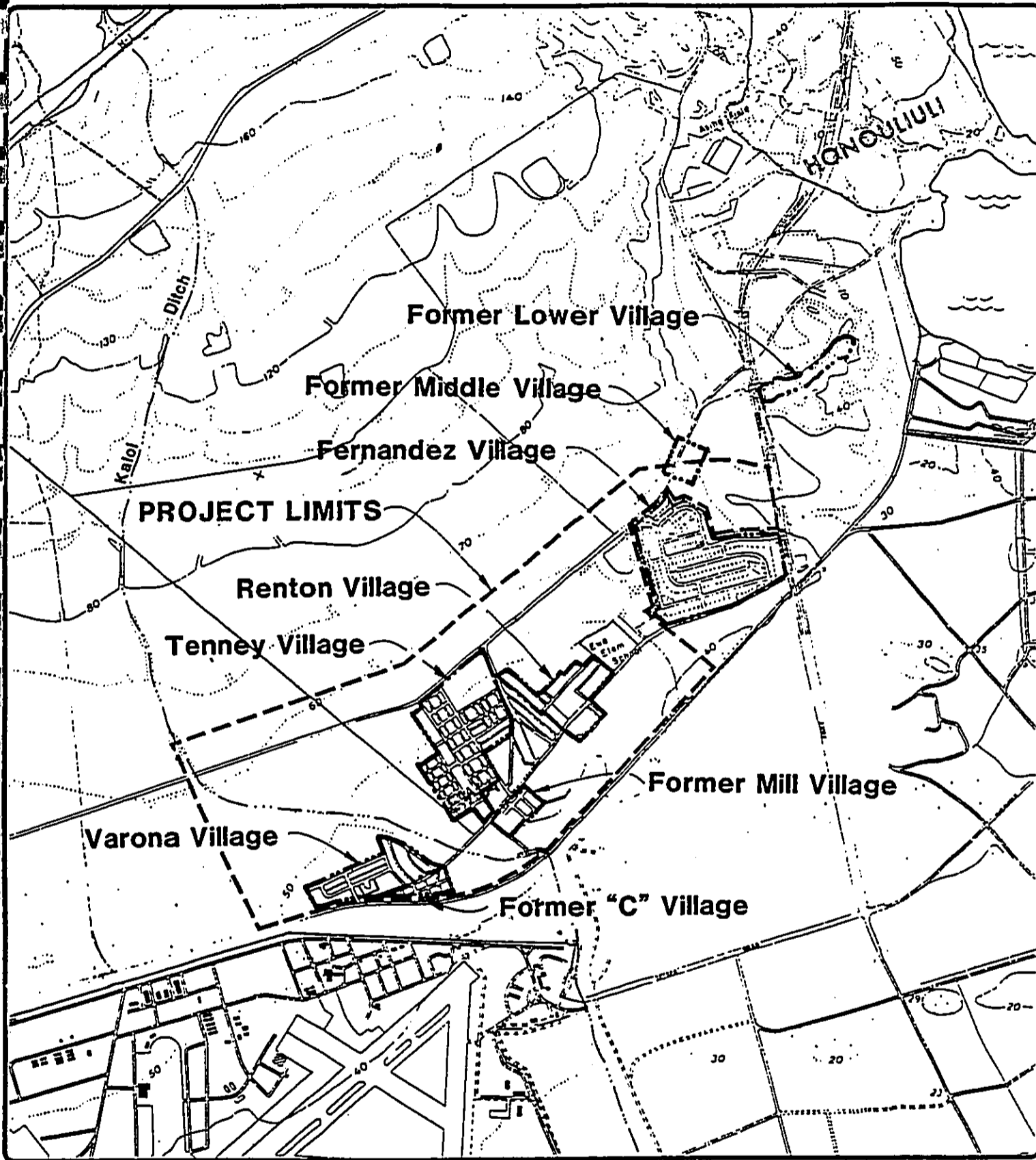
Over a period of about 60 years, the plantation built more than 1200 residential units for

its workers. Construction peaked in the first 10 years of the 1900's, as follows: 72 dwellings were constructed in the 1890's; 536 in the first decade of this century; 132 from 1911 to 1919; 285 in the 1920's; 168 in the 1930's; and 35 in the 1940's.

The Ewa Plantation Villages were built largely by the Ewa Sugar Company to house its employees from about the turn of this century through the late 1950's. At one time, the Ewa Plantation Villages consisted of eight separate villages located in close proximity to the sugar mill and each other. As shown by Figure 4-4, these villages were: Tenney, Renton, Varona, Fernandez, "C", Mill, Middle, and Lower. The latter four villages have since been razed, primarily through demolition, while the four larger, newer villages of Tenney, Renton, Varona, and Fernandez (redeveloped from the late 1970's through early 1980's) still remain relatively intact. Each village was built separately, and each had its own unique sense of history, culture, and social composition.

Renton Village was built during the period 1916 through 1938, while a portion of Tenney Village was constructed from 1923 through 1926. Tenney Village underwent an expansion in the late 1930's, and at the same time, Tenney Center was added. Tenney Center was once a thriving community center with a large field house, playing fields, recreation building and swimming pool. Today, what remains is the Ewa Memorial Hall (formerly the recreation building) of which a small portion houses a barber shop and beauty salon. Varona Village was initially erected in 1933, and underwent expansion in 1957. Fernandez Village was added in 1956, in response to more housing demand.

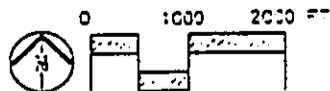
Since the late 1950's, there has been no major construction of new villages, with the exception of Fernandez Village, which underwent redevelopment in the 1970's. Repairs and replacement of the villages were handled by Ewa Sugar Company as part of an on-going maintenance program for employee housing, until the company was sold in 1970.



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**Figure 4-4  
Locations of Eight  
Plantation Villages**

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**4.2.5 Existing Village Conditions**

Between Tenney, Renton and Varona Villages, there are presently a total of 273 residential structures, of which 265 are currently occupied. The overall exterior condition of the homes appears to warrant a significant amount of improvement and a sizeable number are in a bad state of repair. Likewise, the current road and utility systems within the Villages do not meet the minimum requirements set by the City.

Nearly all of the homes are of post and pier construction. The dwellings are wood-framed, single-walled, and have either sliding, hung or casement windows. Within the Villages, there are several roof styles, constructed from either wood shake, rolled asphalt, or corrugated metal, depending on whether the structure is older, middle-aged, or newer, respectively. Most of the homes contain two- or three-bedrooms, with the average size ranging from 800 to 1,350 square feet. The largest homes, which average about 1,700 square foot are found in Renton Village, whereas the more modest-sized homes averaging about 800 to 1,000 square feet are found in Tenney and Varona Villages.

**4.2.5.1 Architectural Style within the Villages**

A report prepared for Hawai'i Heritage and Department of Land and Natural Resources (DLNR) entitled, "An Inventory of Plantation Houses on Oahu" (F. Zialcita, 1985), provided detailed discussions on the architectural design and character of the Ewa, Waipahu, Waialua, Kawailoa, and Kunia plantations. Excerpts from the Ewa Plantation discussion have been included in the following paragraphs.

**\* Renton Village**

The approach into Renton Village is unlike other existing plantations on Oahu, as rows of banyans and royal palms stand along the flanks and median of Renton Road. Unique from its other Village counterparts, Renton Village includes four residential dwellings which were constructed for managerial positions. In addition, several significant non-residential structures were built within the village for community or club activities and services. These structures are discussed separately in Sections 4.2.6 and 4.2.7.

There are a few styles of homes in Renton Village. Figure 4-5 shows the facades of homes found along a corridor lined with royal palm trees, perpendicular to Renton Road, and of a few homes located on Ala Nui Mauka Street. The following characteristics are observed:

Top Photo:

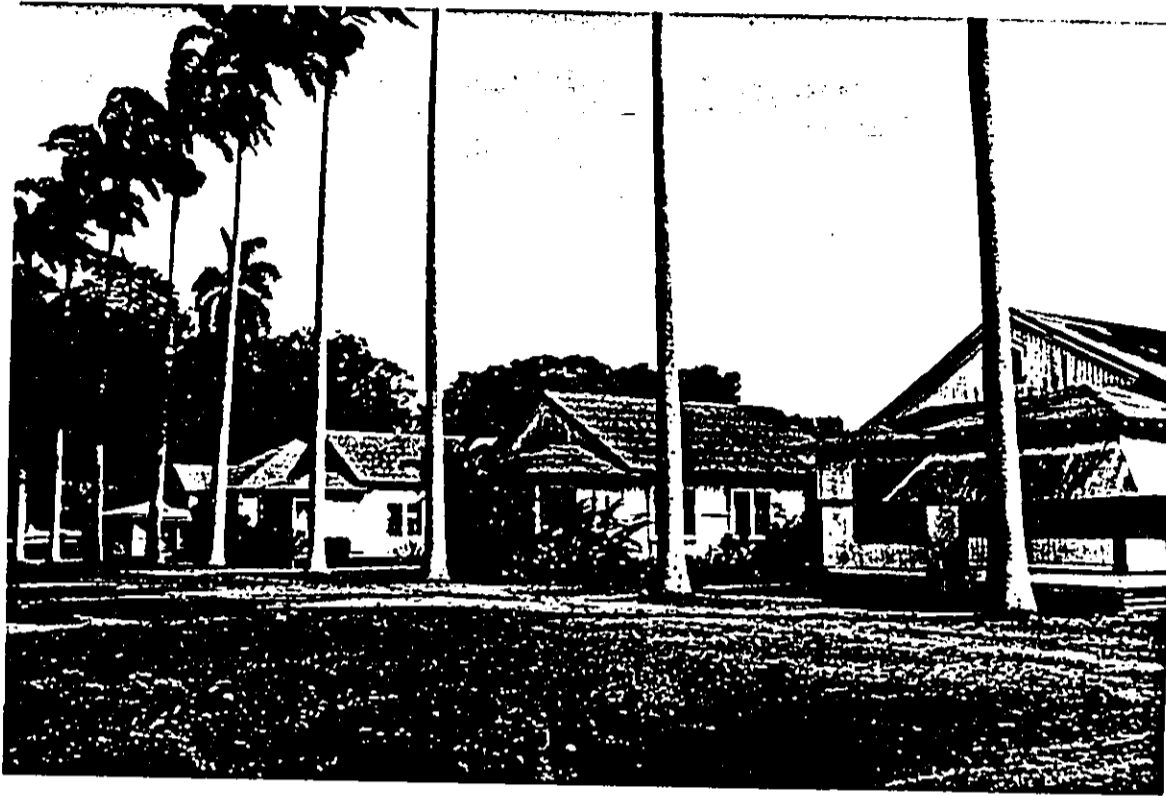
1. Typical dimensions of about 30 feet wide by 50-58 feet deep;
2. A dominant gable roof with narrow eaves;
3. A jalousied gable window with a rounded or triangular arch;
4. A hip roof below the main roof.

Bottom Photo:

1. Typical dimensions of about 32 feet wide by 62 feet deep;
2. A family room projecting past the main part of the house;
3. A hip roof fronting the family room;
4. An L-shaped front porch;
5. Wide roof eaves.

\* Tenney Village

Larger than Renton and Varona Villages, Tenney Village was originally intended for the employees. At one time, the village accommodated a substantial Japanese population, as evidenced by the large Japanese community center fronting Renton Road. The village development was based on a large-scale grid plan, and here, footpaths flanked with gardens file between houses to connect one main road to another. The majority of homes in Tenney Village generally embody the following characteristics (see Figure 4-6, top photo):



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**Figure 4-5  
Typical  
Renton Village Houses**

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**Figure 4-6  
Typical  
Tenney Village Houses**

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1. Dimensions of about 28-30 feet wide by 28-58 feet deep;
2. An occasional use of window shutters, made of plain boards;
3. A rectangular window framed around the main door;
4. The absence of verandas.

Another commonly observed house style in the village, shown at the bottom of Figure 4-6, consists of:

1. Dimensions of about 22 feet wide by 35 feet deep;
2. A mildly pitched roof;
3. A front veranda extending from side to side, or midway only, with railings of either bars or crosses;
4. Wide roof eaves.

\* Varona Village

Varona Village is isolated from the other villages by cane fields and Kaloι Ditch. The pre-war house types found in the village are similar to those found in Tenney and Renton Villages. The heart of the village was formerly a spacious green with a large board-and-batten community hall, constructed in 1934, for the Filipino community association. The community hall has since been razed and the open space has been left untended. Homes found in Varona Village are characterized by:

1. Dimensions of about 20 feet wide by 38 feet deep;

2. A gable roof with projecting eaves;

3. Pine floors and canec ceilings.

#### 4.2.6 Other Significant Residential Buildings

Positions of authority in the sugar company were clearly defined by the houses' arrangement along Renton Road. Although the area behind the manager's house is somewhat overgrown and unkept, the manager's house and lot is quite noticeable, as it is a two-story dwelling (the only one in the Villages) and sits atop a broad lawn. In terms of design, the house is quite distinct from other village residences, in its New England character (Figure 4-7, top photo). The former houses of the Office Manager (Figure 4-7, bottom photo), the Irrigation Superintendent, and the Assistant Manager, all built in 1923, are situated alongside the Manager's home. Similar to other plantation houses, these three bungalows are elevated above the ground by posts positioned on concrete supports. Some of the parish and school staff of Lanakila Baptist School presently rent and occupy these four prominent buildings.

#### 4.2.7 Non-Residential Buildings

The following discussion of non-residential buildings in the Villages, are excerpts from accounts presented by several student papers prepared for a 1987 American Studies graduate course at the University of Hawaii.

\* Ewa Community Church

Built in 1937, Ewa Community Church was formed by the merging of the Ewa Union Church and the Ewa Japanese Christian Church. The Ewa Filipino Evangelical Church later joined in 1950. In 1977, the building was leased from OSCo to provide added space for youth activities and Sunday School, and in 1984, the church purchased the property from the Estate of James Campbell (Figure 4-8, top photo).

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Figure 4-7

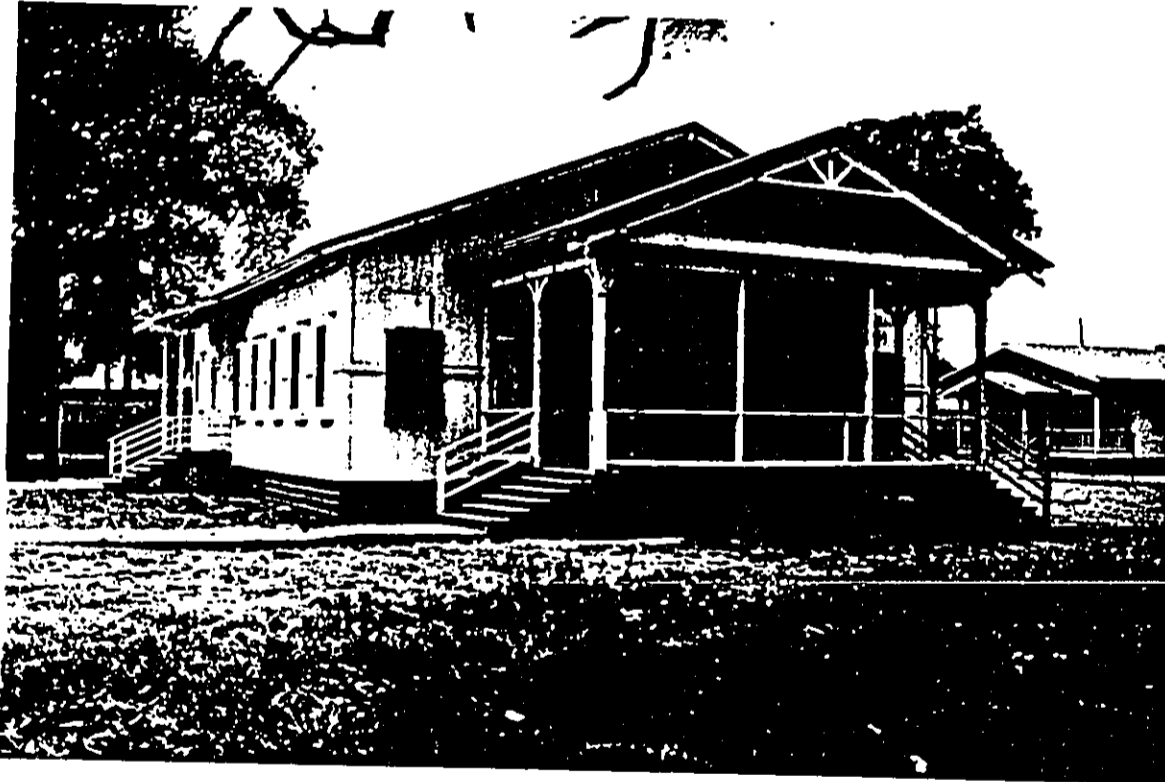
**Plantation Manager<sup>(1)</sup> and  
Office Manager<sup>(2)</sup> Houses**

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Figure 4-8

**Ewa Community Church<sup>(1)</sup>  
and "J" Club<sup>(2)</sup>**

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\* Ewa Immaculate Conception Catholic Church

There are no early records available on the church, except for baptismal records from the initial periods of the Catholic church. Father Raymond Delaland, who ministered for about 28 years until 1885, was one of the first pioneers in the district. In 1891, with the incorporation of the sugar company, and subsequent labor importation, a dramatic increase in church membership occurred. Prior to 1957, the Ewa district (which includes Nanakuli, Waianae, and Wahiawa) was run by the Fathers of the Congregation of Sacred Hearts, whereas in post-1957 years the parish was run by the Diocese of Honolulu. The church is estimated to have been constructed in 1926.

\* Ewa Hongwanji Mission

Located near Varona Village along Renton Road, the original church structure was erected in 1902. In 1943, after 41 years of service, the building and a residence located nearby were destroyed by fire. From 1943 to 1962, a quonset hut built on site was used for church services, then later replaced in June 1962 by the present building. In 1989, the Hongwanji Mission celebrated its Centennial in Hawaii.

\* The Ewa "J" Club

The Ewa J Club, located at the corner of Bond Street and Renton Road in Tenney Village, is estimated to have been built in 1935 (Figure 4-8, bottom photo). The building functioned as the Japanese Club House, although it was available for use by anyone in the plantation community. Basically a hall, with kitchen and bathroom facilities at the rear, the club was the setting for plays, dances, parties, weddings, and special activities. One regular activity was the weekly showing of Japanese language films. A large screen was permanently affixed to the front porch of the hall, and a small projection booth stood directly in front of the hall. Two earlier buildings, known as the Kinindo (memorial building) and the Japanese Social Club, were situated on the same lot, and served similar functions. The lot also held a kindergarten and day care facility. This common location was a center of activity for the residents of Tenney Village as well as the former Mill and C Villages.

\* Ewa Sotoshuji and Ewa Sotoshuji Social Hall

Built next to the Ewa J Club, the Ewa Sotoshuji traces its history to the Soto Mission of Hawaii which is one of the main sects of Buddhism. Its early history began about 1910, with the Reverend Daiho Okada providing sermons in the community. Between 1925 and 1930, there was an increase in membership under the leadership of Mr. and Mrs. Hisaji Ikeda. In April 1946, the church included 48 members. The present structure was built in 1949 by a group known as the Senen Kai consisting of 5 board members.

\* Ewa Memorial Hall

Estimated to have been built in 1949, the structure was used as a social hall. A memorial plaque dedicated to the Japanese Americans killed in World War II, was placed next to the front entrance of the building. The building, formerly used as a bowling alley and known as the Ewa Recreation Center was privately owned by members of the Ewa community. Today, a portion of the building is occupied by a barber shop and beauty salon, where photographs and other nostalgic articles are displayed.

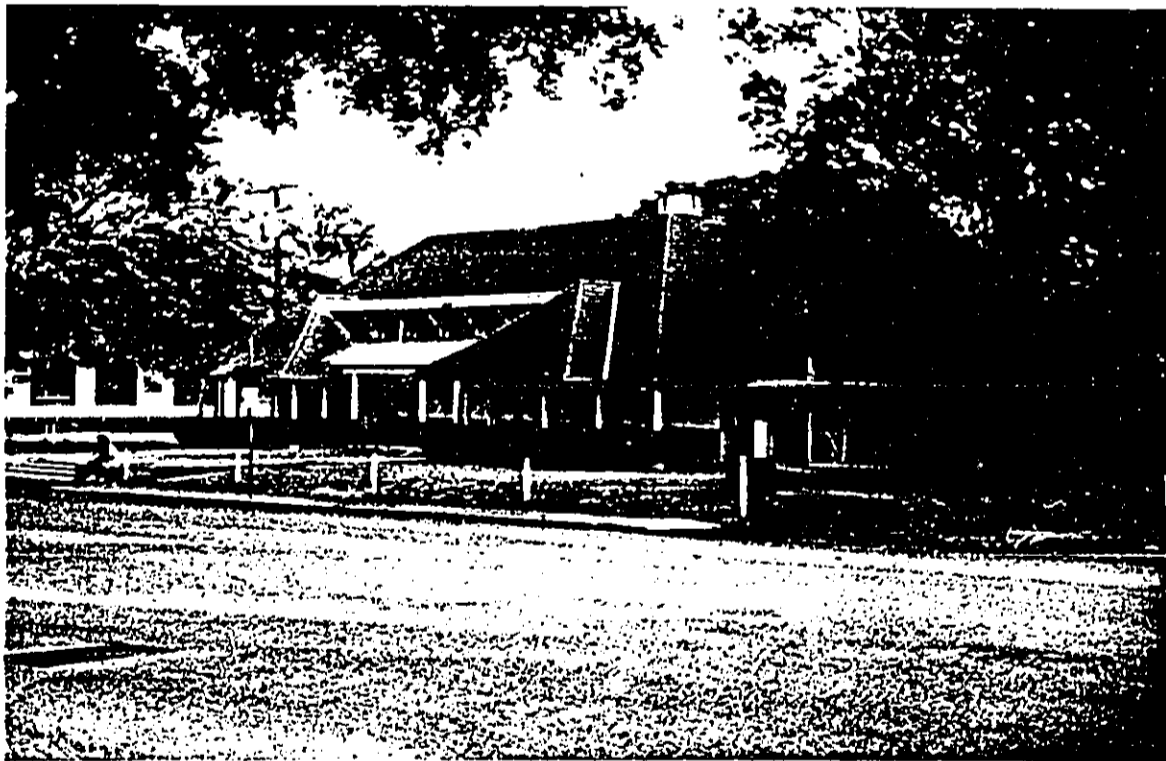
\* Lanakila Baptist School

Located along Renton Road, the school presently occupies the former Plantation Management Office building and the Ewa Shopping Basket (See Figure 4-9, top and bottom photo). The Plantation Office once contained public services such as: a plantation office, bank, and grain storage, and the Ewa Shopping Basket was formerly the plantation store. Both buildings were constructed in 1935.

RECEIVED AS FOLLOWS



FORMER PLANTATION MANAGEMENT OFFICE



FORMER EWA SHOPPING BASKET

**EWA VILLAGES  
MASTER PLAN**

City & County of Honolulu  
Department of Housing  
& Community Development

December 1990

Figure 4-9

**Lanakila School Buildings**

R. M. Towill Corporation

\* Oil House

The oil house is located along Renton Road between Tenney and Renton Villages. The oil house is one of the only remnants of the railyard and round house. For most of the initial 50 years of the plantation, the railroad was essential to sugar operations, as it was used to transport people, goods, cane, supplies, and equipment. The oil house was constructed in 1924, of poured, reinforced concrete as protection against fire for the oil stored inside. The gas station, which stood next to the oil house, has been demolished. At present, the oil house stands neglected and in desrepair.

Impacts and Mitigation Measures

In 1971, after 80 years of operation, Ewa Plantation Company was merged with OSCo. This transition was disturbing for the community, as it suggested many changes and uncertainties regarding the physical and social organization, with which the residents were familiar. Today, almost twenty years later, these concerns remain valid as OSCo faces possible closure in 1995 with the expiration of its lease agreement with the Estate of James Campbell.

\* Historic Character

The physical attributes of the Villages, mainly its buildings, are quickly fading with each passing year, and it is anticipated that this trend will continue without timely and responsible attention. Of the eight original plantation villages previously discussed, only four remain, and are fast diminishing as a result of neglect and out-migration, and many of the non-residential buildings stand abandoned and are deteriorating from lack of maintenance.

With the implementation of the Master Plan, needed repairs on both residential and non-residential buildings will be initiated. Vacant lots would be in-filled with complementary or identical buildings, in order to restore the villages to a vibrant community, reflective of its plantation heritage. The plan



objectives call for the rehabilitation of as many existing homes within the Villages, as feasibility and prudence will allow.

In keeping with traditional construction practices in the plantation, new housing clusters will be separated from existing units via buffers and/or open areas to the extent possible. This will mitigate the potential for impacts to, and preserve the integrity of, the historic character of the Villages. In addition, existing units will not be moved between Villages, to infill empty lots. Rather, empty lots will be infilled with houses of like design and scale to maintain the historic density of the existing Villages.

In order to maintain the historic integrity of the Villages, a series of regulations will be implemented. These regulations will be implemented as follows:

\* Deed Restrictions

Special provisions to control the use and disposition of property within the Villages will be imposed as conditions of purchase. At a minimum, these regulations will require the rehabilitation of existing buildings according to guidelines established for the entire area. Further, provisions to prevent speculation will be imposed.

\* Conditions, Covenants and Restrictions (CC&R's)

Special Conditions, Covenants, and Restrictions will be developed to regulate the appearance, scale and design of structures in the Villages. These CC&R's will be administered by an association of owners and will cover standards for rehabilitation and design guidelines for new construction. The rehabilitation standards will govern minimum requirements for rehabilitation work, such as the replacement of worn, missing or deteriorated architectural elements. The standards for new construction will provide a guide to insure compatibility with existing structures.

\* Special District

The creation of a special district may be recommended to the City Council for adoption by Ordinance. If enacted, the special district ordinance will identify the boundary for the district, land use, open space, setbacks and circulation pattern. In addition, important historic and/or cultural features and views of the villages will be preserved through design guidelines. The provisions of this ordinance will be monitored by a design review committee.

The U.S. Secretary of the Interior's Standards for Rehabilitation and the 1986 Uniform Code for Building Conservation will be used as references. The applicable guidelines will be established prior to initiating any work on the existing dwelling units.

A qualified rehabilitation specialist from the City and an architectural consultant will determine the overall structural condition, salvageability and rehabilitation costs of existing homes in the Villages. A more detailed assessment of specific rehabilitation requirements and cost for each dwelling unit will be conducted after the acquisition of the land.

As part of the subdivision process, a series of exemptions to current City and County subdivision development standards will be sought from the City Council. Examples of the types of exemptions to be sought include the following:

- \* The retention of the existing roads that are narrower than subdivision standards, and without sidewalks, planting areas and concrete curbs.
- \* To allow the placement of utilities overhead.

Exemptions will not be sought if they compromise the health or safety of residents.

**4.3 POPULATION****4.3.1 Existing Conditions**

According to the decennial census conducted in 1980, the Ewa Development Plan area's (Census Tracts 83-86.02) population of 36,234 constituted 4.7 percent of the island's total population. Department of General Planning statistics for the area show an increase in the total population in 1985 to 37,300.

Existing population centers in the Ewa area include: Barbers Point Naval Air Station (NASBP), located south of the project site (1985 population: 2,924); Ewa Beach, located between Pearl Harbor and NASBP (1985 population: 14,500); Honokai Hale/Nanakai Gardens, located west of the project site (1985 population: 1,989); Makakilo, located on the lower slopes off the Waianae Range, north of the project site (1985 population: 8,992); and the Ewa Villages, located east of the project site (1985 population: 3,000).

Demographic characteristics of the Ewa Development Plan area, as compared with Oahu as a whole, generally reveal a younger population, less college level graduates and slightly different ethnic composition with more Caucasians, Filipinos, and Hawaiians, and less Japanese and Chinese.

Table 4-1 identifies selected demographic characteristics of the Ewa Development Plan area and the City and County of Honolulu taken from 1980.

**4.3.2 Resident Survey**

A two-part resident survey was conducted by the City during the Fall of 1990 to obtain current information about the people and housing units in the Ewa Villages. Part I consisted of questions relating to general household demographics and housing conditions. Part II contained questions regarding residents' future housing preferences such as their desire to purchase or rent their existing home, to build or rent a new home, and their financial capabilities to do so. A total of 235 households in the Ewa Villages were provided with a self-administered questionnaire. A total of 187 or 80 percent of the

questionnaires were returned. The following summarizes the major findings from the survey.

Part I: Household Demographics and Housing Conditions

The survey indicated household sizes ranging from 1 to 9 persons per household with the average household comprised of 4 persons. Based on this average, a total population of about 940 is assumed ( $235 \times 4 = 940$ ). The average size of the households in the Ewa Villages were higher than the 3.87 average household size for the Ewa district. The ages of the Ewa Villages residents ranged from under 1 to 89 years old, and averaged about 31 years old. The age range for heads of households was from 36 to 89 years and averaged about 65 years. Sex distribution within families was about equal, although most heads of households were males. The number of years a family resided in their home ranged from 1 to 63 years, and averaged 16 years.

One hundred forty-six or 78 percent of all homes contain 3 bedrooms, while 16 percent (29 units) contain 2 bedrooms, and the remaining 6 percent were 1-(4 units), 4- (4 units) and 5-bedroom (1 unit) dwellings. Because the village homes were built without garages or carports, villagers were asked if they had one or not. Approximately 66 percent of the homes are currently accompanied by garages or carports, and of those families without garages or carports, 98 percent expressed a desire for one. The majority, 82 percent, did not wish to share their proposed garage/carport with their neighbor, while only 6 percent would consider this share option.

Overall condition of the homes was evaluated as "fair" by about 50 percent of the respondents and "good" by 10.7 percent, whereas 37 percent of the residents felt their homes were in "poor" condition. Forty-one percent of the Villagers stated that major repairs were required on their homes. Based on the survey responses, 88 percent indicated that their home had termite damage and 77 percent indicated that their home needed repainting. These were the two top items out of nine respondents felt that needed attention. Additionally, 69 percent of the respondents indicated that repairs on windows and plumbing was needed. Other renovations or repairs perceived necessary

needed repainting. These were the two top items out of nine respondents felt that needed attention. Additionally, 69 percent of the respondents indicated that repairs on windows and plumbing was needed. Other renovations or repairs perceived necessary included re-roofing (60 percent), electrical work (52 percent), new appliances (23 percent), replacement of rotting posts (55 percent), sagging floors (45 percent), and stuck doors (52 percent). The last two items, sagging floors and stuck doors may signal possible structural problems that will need further study. When asked if the residents could make the household repairs, in all cases less than half of the residents indicated that they could make the repairs.

Part II: Housing Preferences and Financial Considerations

Eighty-four (84) percent of the respondents expressed the desire to purchase their existing home. When asked if their preference was to buy a new unit, about 41 percent said they would be interested in purchasing a new unit if given an opportunity. If renting was the only option available to the existing residents, then approximately 54 percent replied that they would want to continue renting their existing home, while only 11 percent wished to rent a new unit. If given a choice, 64 percent of the respondents indicated that they would be willing to rehabilitate their homes as contrasted to the 26 percent who indicated a desire to build a new home.

When asked if they would like to buy or rent outside the Ewa Villages, 78 percent expressed a preference to remain. Thirty individuals indicated the desire to move into a new outside elderly housing development, if given the opportunity.

The total monthly income among the Ewa Village households was as follows: Less than \$500 per month = 7 %; \$500 - \$1,000 = 20 %; \$1,000 - \$1,500 = 23 %; \$1,500 - \$2,000 = 14 %; \$2,000 - \$2,500 = 12 %; \$2,500 - \$3,000 = 8 %; More than \$3,000 = 8 %. Fourteen persons (8 percent) did not respond to this question.

Total household assets amounted to less than \$5,000 for 30 percent of the families, between \$5,000 and \$10,000 for 17 percent of the families, \$10,000 and \$25,000 for 18 percent of the households, and \$25,000 and \$50,000 for 11 percent of the households. In addition, 5 percent had assets between \$50,000 and \$100,000 and slightly over 2 percent had assets in excess of \$100,000.

Forty-seven percent of the residents disclosed that less than \$200 was available for monthly payments toward home rental, about 12 percent indicated between \$200 and \$400 available, and 1 percent said more than \$500. Seventy-four persons (40 percent) did not answer this question.

When asked the amount available per month for the purchase of a home, 25 percent stated less than \$200 was available, 42 percent said between \$200 and \$500 was available, 14 percent said between \$500 and \$750 was available, and 5 percent could afford \$750 to \$1,000. Less than one percent of the respondents indicated that more than \$1,000 was available for mortgage payments. Twenty-three persons did not respond to this question.

A cross-tabulation was performed relating the 157 respondents who were interested in purchasing their home with the amount that could be allocated towards home mortgages. Of these 157 respondents, 26 percent could afford less than \$200 for monthly payments, 45 percent could afford between \$200 and \$500 per month, 15 percent could afford between \$500 and \$750 per month, and 6 percent could afford between \$750 and \$1,000 per month. Only 1 percent could afford more than \$1,000 per month. Thirteen respondents did not answer this question.

Over 83 percent were willing to help maintain their homes as a plantation style house, whereas only 9 percent were not willing to do so. Also, 71 percent would voluntarily live in a historic preservation district with controls on the maintenance of the house. On the other hand, 18 percent responded that they would not volunteer to live in such a district.

TABLE 4-1

SELECTED DEMOGRAPHIC CHARACTERISTICS

	City & County of Honolulu	Ewa D.P. Area (C.T. 83-86.02)
TOTAL POPULATION	762,545	36,234
ETHNICITY	(percent)	(percent)
Caucasian	41.2	44.5
Japanese	24.9	8.8
Chinese	6.9	2.0
Filipino	12.6	24.8
Hawaiian	10.5	12.4
Other	5.5	7.5
AGE		
Less Than 5 Years	7.9	10.7
5-17 Years	20.2	27.8
18-64 Years	64.6	58.6
65 or More Year	7.3	3.0
Median Age (Year)	28.1	N/A
PLACE OF BIRTH		
Hawaii	55.1	49.6
Other U.S.**	30.1	36.1
Foreign County	14.8	14.5
RESIDENT 5 YEARS PREVIOUS*		
(People Aged 5+ Years)		
Same House	48.2	44.0
Same Island	25.5	23.6
Different Island	1.3	0.8
Different State	18.4	26.1
Different County	6.6	6.1
EDUCATION		
(People Aged 25+ Years)		
0-8 Years Only	14.4	14.3
High School Only	35.5	43.0
College, 4+ Years	21.7	12.4

NOTES: \* Except for Total Population and Age, all figures based on 15 percent sample.  
 \*\*Including persons born in U.S. territories, and abroad or at sea to American parents.  
 SOURCE: Community Resources, Inc., 1986.

4.3.3 Future Projections

Population projections made by the Department of General Planning for the Ewa Development Plan area show a great amount of population growth for that area. It is

projected that population will more than double from approximately 36,000 in 1980 to 83,000 by the year 2005.

#### Impacts and Mitigation Measures

Historically, the Villages have maintained a rural lifestyle. According to a 1979 study prepared by Phillips Brandt Reddick (PBR), the general consensus among residents was a satisfaction toward living in the villages due to: a) acceptance by the community of various, easy-going, friendly lifestyles; b) familiarity with the norms of the community; and c) well-developed set of social contacts that would take time and effort to replace if they were to move elsewhere. These conditions would be threatened by the closure of the plantation, the displacement of people, or a large influx of people not oriented to the ways of the existing community.

Residents of the Villages will experience a transition in lifestyle from rural to suburban, with the implementation of the Master Plan. Offsetting this change, however, will be improved housing, roadways, and utilities, as the present substandard conditions will be upgraded to meet City standards. More importantly, residents will have an opportunity to own their homes, while remaining in the area. These residents might otherwise continue to rent their home in the Villages (contingent on whether OSCo renews its lease) or elsewhere. In addition, the chronic flooding problem will be removed with the construction of the planned golf course and relocation of Mango Tree Road. In the event these improvements are not achieved, the Villages will continue to decline. This will subsequently lead to the eventual demise of the Ewa Villages community as we presently know it.

#### 4.4 ECONOMY/EMPLOYMENT

##### 4.4.1 Existing Conditions

Employment statistics (1980) within the Ewa Development Plan area reveal a relatively high proportion of the labor force employed by the armed forces. Pearl Harbor and NASBP employ 18 percent of the area's labor force compared with only 10 percent island wide. Table 4-2 provides labor force comparisons between the Ewa Development Plan area and Oahu as a whole.



TABLE 4-2

LABOR FORCE SIZE AND CHARACTERISTICS (1980)

	City & County of Honolulu	Ewa D.P. Area (C.T. 83-86.02)
<b>POTENTIAL LABOR FORCE</b>		
(Aged 16+/-)	574,903	23,862
not in labor force	30.8%	31.9%
armed forces	10.1	18.5
civil. labor force	59.1	49.5
<b>CIVILIAN LABOR FORCE</b>	339,863	11,821
unemployed	4.6%	8.0%
<b>TOTAL EMPLOYED CIVIL LABOR FORCE</b>	324,113	10,873
<b>OCCUPATION</b>		
service	17.6%	19.5%
manager/professional	24.7	14.2
technical, sales & admin.	33.8	31.0
farm/fish/forest	1.8	3.9
precision, craft, repair	11.3	15.5
operators, fabricators, laborers	10.9	16.3
<b>INDUSTRIAL (selected)</b>		
agric., forest, fish, mining	1.7%	6.1%
construction	6.6	7.5
manufacturing	7.7	12.0
retail trade	20.5	20.1
financial, insurance, real estate	8.1	5.2
personal, entertain. & rec. svcs.	8.1	5.9
health, educ., and professional	18.5	12.7
public adminis.	10.9	13.4
<b>COMMUTE TO WORK</b>		
45 minutes or more	12.0	22.6
mean travel (min.)	22.6	25.8

NOTES: All figures based on 15 percent sample; hence, numbers represent estimates.  
 SOURCE: Community Resources, Inc., 1986.

Unemployment levels of the Ewa area in 1980 were nearly double the general population levels (8 percent versus 4.6 percent). Occupational profiles of the Ewa labor force reveal a large number of blue collar occupations (service, farm, precision, craft, repair, laborers, etc.) with few white collar occupations. The occupation profile is largely reflected by agricultural jobs within the Ewa area being three times as high as the general population.

#### 4.4.2 Future Projections

Employment projections for the Ewa Development Plan area indicate that the Ewa area will become a major employment center upon completion of the Secondary Urban Center. Areas of concentrated employment opportunities include the James Campbell Industrial Park, the Ko'Oolina Resort and the proposed Kapolei Town Center located immediately west of the proposed Villages of Kapolei.

#### 4.5 EXISTING AND PROPOSED RESIDENTIAL CONDITIONS

In 1985, the Department of General Planning estimated that the Ewa Development Plan area contained a total of 9,300 housing units, comprising approximately 3.5 percent of the total housing stock on Oahu.

Existing residential communities in the Ewa area consist of: NASBP located south of the project site (1985 housing units: 850); Ewa Beach, located between Pearl Harbor and NASBP (1985 housing units: 3,465); Honokai Hale/Nanakai Gardens, located west of the project site (1985 housing units: 500); Makakilo, located on the lower slopes of the Waianae Range, northwest of the project site (1985 housing units: 2,700); and the Ewa Village, (1985 housing units: 900).

The projected housing demand for Oahu is expected to increase significantly as population, employment and household incomes continue to grow. The Department of Business and Economic Development (DBED) projects the population of Oahu to increase to approximately 954,000 persons by the year 2005. This increase represents the need for an additional 48,000 housing units, assuming a factor of 2.9 persons per household. The greatest demand for additional housing is expected to occur in the Ewa and Central Oahu areas, due to increased employment opportunities in those areas.

#### 4.6 RESIDENTIAL MARKET TRENDS FOR EWA VILLAGES

A study was conducted by John Child and Company, Inc., in August 1990, to assess the current market demand for housing on Oahu as well as in the Ewa district (See

Appendix E). More specifically, the objectives of the study were to estimate the current and projected market support for the proposed residential units in Ewa Villages in terms of:

- \* Property characteristics and amenities
- \* Typical market sales prices
- \* Projected annual absorption

The study approach used to complete the assessment is summarized as follows:

- \* Review of current and projected demand for housing units on Oahu and especially in Ewa and Central Oahu.
- \* Review of sales absorption rates, sales prices, buyer profiles, and unit characteristics of comparable projects.
- \* Inventory of competitive under-construction, planned and proposed housing units in major residential developments in Ewa and Central Oahu.
- \* Estimate of average annual absorption of the Ewa Villages market-priced single-family units.

The report concluded that the proposed Villages project is expected to satisfy some of the growing demand for housing units, particularly those within the affordable categories. Comparable single-family developments oriented toward low-moderate families have typically experienced rapid absorption rates. Affordable units in the project are also expected to experience similar absorption rates as other affordable housing developments in the Ewa area. It is likely that the affordable units will be sold within a one month period. The market support for market-priced units at other major Ewa residential projects has been strong. Long-term absorption rates for these projects have ranged from 250 to 400 units per year, although recent projects have experienced sales rates of 200 to 300 units per month.

**4.6.1 Market Assessments for Ewa Villages Market Units**

The market outlook for Ewa Villages supports development of the 424 units in the project. The expected housing demand for detached single-family units is expected to remain strong. The most competitive inventory would be from market-priced units located in the project vicinity as follows:

- \* Ewa by Gentry
- \* Kapolei Village
- \* Mililani Mauka
- \* Waikele
- \* Royal Kunia

**4.6.1.1 Market Unit Type and Selling Price**

The market-priced single-family units in Ewa Villages would typically be 3 to 4 bedroom units similar in size to units in West Loch Fairways. The Villages dwelling units could be priced between \$350,000 and \$400,000. A 20% premium for golf course frontage would be appropriate. The average market-priced multi-family units would be a 2 bedroom/2 bath unit with approximately 700 square feet (s.f.), and could be priced between \$140,000 and \$175,000.

**4.6.1.2 Market Absorption**

Market-priced units in the Ewa Villages would have a unique competitive advantage over other developments in the area, since the Master Plan includes:

- \* Plantation heritage and unique design features
- \* Large 5,000 s.f. and 6,000 s.f. lots
- \* Ewa's only district park
- \* Mature, tree-lined access road and neighborhood
- \* Commercial/Retail Center
- \* Mill Museum
- \* Golf course

The market support for market-priced units at other major development in the Ewa area has been strong. The long-term absorption rates for these major projects in Ewa and Central Oahu have ranged from 250 to 400 units per year, although recent projects have experienced sales rates of 200 to 300 units per month. Ewa Villages would market 424 market-priced units within the next 2 to 3 years. Based on recent trends, it is probable that the project would be sold within a year.

#### **4.6.2 Market Assessment for Ewa Villages Affordable Units**

Similar to market-priced homes, the projected demand for the 806 affordable housing units in Ewa Villages is projected to be strong. The island-wide market demand for affordable housing is expected to remain very strong over the foreseeable future. Most residential developments in the Central Oahu and Ewa areas will have small portions of their inventory oriented toward low- and moderate-income families, although sufficient demand would exist to accommodate all anticipated supply.

##### **4.6.2.1 Affordable Unit Type and Selling Price**

- \* **New Units** - The proposed plan would provide about 60% of the estimated 1,230 housing units as affordable units. As stated earlier, of these units, 203 would be rehabilitated existing structures, 160 would be new multi-family units, and the remaining would be new single-family units. The new multi- and single-family units would be built according to current building standards and would be comparable to the sizes and prices of affordable units in competing projects in the Ewa area. The price range for these units will range between \$80,000 to \$130,000 depending on unit type and amenities.
  
- \* **Existing Units** - The vast majority of the existing houses are of post and pier construction and were built in the 1920's and 1930's. The dwellings are typically constructed out of lumber, are single-walled, and have either sliding, hung, or casement windows. There are several styles of roof, which may be constructed from wood, shingles, rolled asphalt, or corrugated metal depending on whether the structure is older, middle-aged, or newer, respectively. Most of the homes have

two- or three-bedroom with the unit size ranging from 800 square feet to 1,350 square feet. The largest homes, which average about 1,700 square feet, are found in Renton Village. The more modest-sized homes ranging from 800 square feet to 1,000 square feet are found in Tenney Village. Lot sizes range from 5,000 square feet to 6,000 square feet.

Overall, the exteriors of the homes require rehabilitation. All existing homes would be rehabilitated to meet standards for habitable structures. Two options are considered regarding the required renovations of these structures: 1) the existing tenant could purchase the unit "as is" and perform the necessary repairs; or 2) the unit could be rehabilitated and offered for sale to qualified buyers.

Preliminary pricing of the existing single-family units (excluding land) in a rehabilitated condition is summarized in Table 4-3 as follows:

Table 4-3  
Average Prices of Existing Single Family Units  
Cost of

<u>Unit Type</u>	<u>Rehabilitated</u>	<u>Replacement*</u>
2-bedroom	\$20,000 - \$35,000	\$39,000 - \$65,000
3-bedroom	\$25,000 - \$65,000	\$65,000 - \$87,750

\*Assumes \$65 per sq. ft.

#### 4.6.2.2 Market Absorption

Comparable single-family developments oriented to low- to moderate-income families have experienced rapid absorption rates, due largely to the demand out-pacing the supply of affordable homes. The affordable units in the Ewa Villages are likewise expected to experience high absorption rates, and it is probable that the affordable units would be sold within a month. About 8,670 units have been planned on Oahu for the next 20 years, within an affordable price range for those households earning between 80-120 percent of the median household income. The analysis conducted by John Child and Company, Inc. indicates Ewa's leeward location "is not expected to be a significant factor for the affordable market."

**Impacts and Mitigation Measures**

The project will contribute positively to the overall island-wide affordable housing inventories, thus easing the rapidly growing demand for such housing. Because of the imbalance between demand and the ability of the government and private sectors to provide housing at an affordable price, the shortage will continue through the foreseeable future. Compounding this demand inequity is the fact that the sales prices of homes have risen faster than the increases in household income.

Current residents wishing to purchase their homes will be given priority for an affordably-priced home which will be directly subsidized by the market-priced units in the project. The project will be designed in order that residents may qualify for insured mortgages provided by the Federal Housing Administration (FHA) and low interest mortgages from the State Hula Mae program. Additionally, the project area is located in a rural area and village residents may qualify for Farmers Home Administration (FMHA) assistance if the area and the applicants are deemed eligible.

**4.6.3 Office and Commercial Space**

The proposed project will have positive long-term impacts on the commercial and retail inventory within the project vicinity as well as the Ewa area. Findings suggest these impacts will, for the most part, be positive, as the redevelopment of the site will help meet the demand for office and retail space on Oahu.

**4.7 GOLF COURSE TRENDS**

A golf course is planned in response to the need for more public courses on Oahu. A golf course study, "Analyzing the Market and Environmental Impacts of the Golf Course Industry in Hawaii", was prepared in early 1990 by the Hawaii Real Estate Research and Education Center and the University of Hawaii and Decision Analysts Hawaii Inc. The purpose of the study was to present and analyze key considerations regarding market supply and demand, economic and environmental aspects of golf courses in Hawaii. The

study concluded that 27 additional golf courses are needed to satisfy Oahu's current demand. Distribution of the 27 courses is a combination of the following: 1) five to seven municipal courses; 2) one private club; 3) sixteen to eighteen daily fee courses; 4) three to four resort courses; and 5) one or two international membership courses. In addition, there is also a demand for 11 additional golf courses on Maui, four more on the Big Island and four more on Kauai. By the year 2000, there will be a need for approximately 14 courses statewide, in addition to existing courses, plus the 46 courses currently in demand statewide.

In order to enhance the marketability of the residential units, the golf course will be integrated with the housing project. In addition, the course will be developed in a flood plain where housing units cannot be built without extensive and costly filling, grading, and stream channelization.

#### Impacts and Mitigation Measures

The Ewa Villages Golf Course will help to satisfy the public demand for municipal courses. The course will also have a positive impact on the existing villages, in that it will provide flood control, and function as an open space amenity. The western portion of the course will contain flood waters that emanate from Kaloι Ditch and channel the flows away from existing and future housing areas. The course will also be used to receive storm drainage flows from portions of the adjacent residential areas. As an open space amenity, the course will buffer the majority of housing units from incompatible sugarcane burning and hauling activities, which are expected to continue adjacent to the project site. Portions of Kaloι Ditch will fulfill an aesthetic function, as the water will be routed through the golf course and be used to create water features.

#### 4.8 AGRICULTURAL RESOURCES

In an agricultural resources study conducted by Pacific Business and Economic Consultants, it was noted that about 280 acres of the 320 acres of agricultural land in the project area are classified as Prime according to the Department of Agriculture (DOA)



Agricultural Lands of Importance to the State of Hawaii (ALISH) Maps, and are rated as Class I according to the LSB rating system as discussed in Section 3 (see Appendix F). Of the 280 acres of prime lands, 80 acres, located from the western border of the project to Kaloι Ditch, will remain in agricultural use when the Master Plan is implemented.

The soils in the project site are suitable for agriculture and the lands are located near to markets and support services, and is fully improved for crop production. However, the project lands border urban areas and their continued use in agriculture conflicts in the longer term with County and State plans for developing affordable housing in the Ewa area.

Given the rapid urbanization of the Ewa area, sugarcane production is the most viable agricultural alternative in the short term. There is concern that withdrawals of sugarcane lands will impede OSCo's ability to survive. The withdrawal of about 320 acres, however, will not have a major impact on the continued viability of OSCo, who farms the land under lease from the Estate of James Campbell. According to the consultants, it is questionable that the lands should be included in the inventory of "core lands" OSCo maintains are necessary for continued financial viability since the area was reclassified into the State Urban District. In December of 1974, the Land Use Commission approved the reclassification of more than 600 acres in the project vicinity. The application was submitted by the Estate of James Campbell and Hirano Brothers Limited, for the residential development.

At this time, it appears likely that OSCo will continue in sugar until its leases expire in 1995 and 1996. Thereafter, uncertainties such as federal sugar price support policy and lease renewal terms cast a shadow over the ability of OSCo to continue operating.

In the event of the closure of OSCo, the potential for diversified agriculture is limited in Ewa. Government policies directing much of Honolulu's future housing development to Ewa will discourage landowners from committing their land to long-term leases necessary for significant diversified agricultural production to occur. Farmers will be reluctant to

establish operations in Ewa under short-term and uncertain land tenure arrangements.

Land currently zoned for agricultural use will require rezoning to accommodate residential development. These lands are ideally suited for affordable housing development and are located in the vicinity of the "Second City" where most of Honolulu's urban expansion is planned to occur.

#### Impacts and Mitigation Measures

\* Impact of Cane Land Withdrawal on OSCo

OSCo, a subsidiary of Amfac/JMB Hawaii (Amfac), first milled sugar in 1899. Today the plantation farms about 12,500 acres, all under leases which expire in 1995 and 1996. In the face of low sugar prices and expected withdrawals of sizeable acreage from cane production, OSCo initiated a "survival plan" in the early 1980's. A large number of active housing, industrial and golf course projects are in various stages of planning, approval, and development. If these projects were to develop on schedule, OSCo expects to be farming around 8,200 acres of "core" agricultural lands by the end of the decade. However, given inevitable delays, full development will take considerably longer. Maintaining sufficient land to capture economies of scale is one of several conditions OSCo considers essential to the plantation's survival.

\* The OSCo Survival Plan

After losing \$9 million in 1981 and anticipating continued low sugar prices, OSCo developed and implemented a "Survival Plan". The plan, which has been fully implemented, has been successful in reducing costs and increasing yields. Sugar price supports were also raised beginning in 1982 and compared to prices in the late 1970's, have remained comparatively high. OSCo has stated that a number of conditions need to hold for the plantation to continue to survive:

- Continued federal price supports sufficiently high enough to allow profits;
- Continued union support in reducing costs;
- An adequate allocation of water to permit full irrigation of plantation lands;
- Retention of sufficient land to permit reasonable mill economies-of-scale.

Because many decision-makers are involved in determining the outcome of these conditions, it is difficult to predict the ability of OSCo to survive. Large failures in any one of these conditions could cause the plantation's demise.

To date, the ILWU has supported the plan and has been moderate in its wage demands. The State has also given OSCo sufficient water allocation for full irrigation of currently cultivated lands. The other two conditions entail considerable uncertainty and require more discussion.

\* U.S. Sugar Policy and the Outlook for Sugar Prices

Earlier in 1990, Congress approved a system of sugar price supports. However, the past price support of approximately 18 cents per pound of raw sugar was lowered. The lower support price is expected to have a negative impact upon OSCo's profitability.

\* Planned withdrawals and "Core" Plantation Lands

In light of major cane land withdrawals and concerns for maintaining economies of scale in production and mill processing, OSCo has identified "core" lands which it believes are vital to the plantation's survival. The Ewa Villages agricultural lands are included as part of OSCo's core plantation lands. However, because the parcels lie on the periphery of the plantation and abut several villages and an elementary school, withdrawal of these lands from sugarcane production would not be as detrimental as with other

core lands. Additionally, since AMFAC supported the reclassification of these lands into the State Urban District some years ago, it is questionable that OSCo should now consider them to be "core".

\* Economic Impact of Project on OSCo and Hawaii's Economy

The Ewa Villages project can be anticipated to have a negative but minor impact on the profitability of OSCo. Although included in the "core" lands that OSCo claims is needed for the plantation's survival, the small amount of acreage, its location on the periphery of farmed lands, and its closeness to urban areas suggest that this land is less important than other core lands.

Cane land withdrawals due to this project represent 2.9 percent of OSCo's 1988 cultivated acreage and 3.8 percent of core acreage. The downsizing of the mill is already planned and will occur regardless of the project. A small increase in the cost of producing and milling sugar can be expected to be an impact of the project but such an impact will not be as significant as the reduction in sugar price supports or costs in future labor and land negotiations.

It is conceivable that OSCo will close when leases expire in the mid 1990's because of urbanization pressures, higher costs, and low sugar prices. In the event of plantation closure, it is doubtful that OSCo will pursue agricultural diversification. The time frame for developing new crops in this area is too short and the company's investigation into alternative crops failed to identify profitable alternatives to sugar.

While OSCo is a major employer, the economic impact on the County and the State of Hawaii would be relatively small. OSCo employed 410 people in 1990. In addition to 410 direct jobs, an estimated 463 indirect jobs would be lost (using the State employment multiplier of 1.13). Over the past 10

years, Oahu's job count has increased an average of nearly 7,000 jobs per year, indicating that the County's economy is large and strong enough to absorb a plantation closure. Additionally, the entire state is currently in the midst of a labor shortage. With appropriate skills and/or training, workers directly and indirectly impacted by an OSCo closure could be absorbed elsewhere in the economy, and mitigate the labor shortage.

#### **4.9 GOVERNMENT FACILITIES**

A Satellite City Hall will be incorporated in the new Waipahu Civic Center in the near future. Initial planning for the City-State Civic Center in Kapolei is underway.

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**SECTION 5**

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**TRANSPORTATION AND  
UTILITIES SYSTEMS**

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### 5.1 TRANSPORTATION SYSTEM

In August 1990, Pacific Planning and Engineering, Inc. conducted a traffic impact analysis for the project. The findings, impacts and mitigation measures from the report are summarized below, and the report, in its entirety, can be found in Appendix G.

The project site is well-served by local and regional roadway networks. Major public roadways adjacent to the site include Farrington Highway, Fort Weaver Road and Kunia Road. The main roadway servicing the east Ewa area, however, is Fort Weaver Road. It stretches from the H-1 Freeway to Ewa Beach and serves the communities of Waipahu, West Loch Estates, Ewa Beach, Iroquois Point Military Housing, NASBP, as well as the Villages.

Fort Weaver Road is a State-maintained, four-lane, divided highway from the Kunia Interchange to the vicinity of Hanakahi Street. The roadway is comprised of 12-foot lanes and 10-foot paved shoulders, with a posted speed limit of 45 mph. From Hanakahi Street to the Fort Weaver Gate, the roadway is a two-lane undivided road. Here, the lanes are 11 feet wide, and the shoulders are 15-foot coral and grass, and the posted speed limit varies from 25 to 35 mph.

The area is served by the public mass transit system, The BUS. Route 50 (Ewa Beach) provides service on Fort Weaver Road, Renton Road and Fleming Road to the terminus at Gate 2 at NASBP. Route 50 (Ewa Beach) services Fort Weaver Road adjacent to the project area. Route 91 (Ewa Beach Express) provides express service on Fort Weaver Road with six morning trips to Honolulu and six afternoon trips from Honolulu (DTS, November 1990).

#### 5.1.1 Existing Major and Minor Road Networks

The primary road servicing the Ewa Villages is Renton Road, which extends from Fort Weaver Road through Varona Village. The initial 4,500 feet of this roadway, which extends from Fort Weaver Road to the Ewa Post Office, is owned by the City. The remaining 2,800 feet, which stretches from the Post Office to Varona Village, is privately

owned, and will be acquired by the City. The first 900 feet is a two-lane road, with an 80-foot right-of-way, whereas, the remainder is comprised of a two-lane road, with a tree-lined median, and a 55-foot right-of-way. Sections within Renton Village have asphalt sidewalks. The system of interior asphalt roads is generally 20-25 feet wide, without curbs, gutters, or sidewalks, with the exception of Orrick Road in Tenney Village, which has a 4-foot wide sidewalk along one side.

Mango Tree Road, which runs parallel to Renton Road on the mauka side of the villages, is a paved, two-lane road, with a 60-foot right-of-way. The road is used exclusively as a cane haul road. Another cane haul road, located between Tenney and Renton Villages, runs from Renton Road to Mango Tree Road.

#### 5.1.2 Railroad Right-of-Way

The State of Hawaii maintains a 40-foot railroad right-of-way along the makai portions of the project site. The right-of-way is part of the former OR&L rail network.

#### 5.1.3 Existing Traffic Conditions

Traffic counts along Fort Weaver Road, taken over a 24-hour period, were obtained from the State Department of Transportation (DOT), Highways Division. The State counts indicated that the weekday morning and afternoon peak hours generally occur from 5:30 a.m. to 7:30 a.m., and 2:45 p.m. to 4:45 p.m., respectively.

Manual traffic counts were conducted during the weekday afternoon and morning peak periods on three occasions in 1990. First, afternoon and morning peak periods traffic counts were taken at the intersection of Fort Weaver Road and Renton/Arizona Road on February 28 and March 1, respectively. A second manual count was conducted at the Honolulu-bound on-ramp and the Ewa Beach-bound off-ramp from Honolulu at the Kunia Interchange during the weekday afternoon peak period on August 8, and during the morning peak period on August 9. Finally, the weekday afternoon peak period on August 15, and during the morning peak period on August 16, at the intersections of Ala Nui with Renton Road and Pepper Row with Renton Road. The resultant morning and afternoon



peak volumes (adjusted for when school is in session) are presented in Tables 5-1 and 5-2, respectively. Three scenarios, Existing, 1996 Without Project, and 1996 With Project, have been integrated for comparative purposes. Graphic representations of the traffic volumes can be found in Appendix G.

TABLE 5-1

## TRAFFIC VOLUMES FOR MORNING PEAK HOUR

<u>Approach</u>	<u>Existing Traffic 1990</u>	<u>Without Project 1996</u>	<u>With Project 1996</u>
<b>* FORT WEAVER/RENTON ROAD INTERSECTION</b>			
Northbound	1,403	4,070	4,115
Southbound	1,016	2,529	2,973
Eastbound	404	452	1,125
Westbound	1	154	166
<b>* RENTON ROAD/ALA NUI INTERSECTION</b>			
Northbound	0	0	12
Southbound	9	9	396
Eastbound	96	138	465
Westbound	87	115	494
<b>* RENTON ROAD/PEPPER ROW INTERSECTION</b>			
Northbound	0	0	38
Southbound	4	4	156
Eastbound	94	136	327
Westbound	89	117	350
<b>* H-1 ON/OFF RAMP</b>	364	1,696	2,045
<b>* H-1 HONOLULU BOUND</b>	2,566	5,198	5,546

TABLE 5-2

## TRAFFIC VOLUMES FOR AFTERNOON PEAK HOUR

<u>Approach</u>	<u>Existing Traffic 1990</u>	<u>Without Project 1990</u>	<u>With Project 1990</u>
<b>* FORT WEAVER/RENTON ROAD INTERSECTION</b>			
Northbound	1,208	3,605	3,704
Southbound	1,684	5,098	5,626
Eastbound	257	288	1,052
Westbound	4	303	313
<b>* RENTON ROAD/ALA NUI INTERSECTION</b>			
Northbound	2	2	19
Southbound	3	3	57
Eastbound	157	158	417
Westbound	171	173	477
<b>* RENTON ROAD/PEPPER ROW INTERSECTION</b>			
Northbound	1	1	194
Southbound	18	18	198
Eastbound	142	143	191
Westbound	137	139	363
<b>* H-1 ON/OFF RAMP</b>	1,661	4,570	4,996
<b>* H-1 HONOLULU BOUND</b>	1,194	3,377	3,755

5.1.4 Projected 1996 Traffic Conditions5.1.4.1 1996 Ambient Traffic

Ambient traffic growth is the increase in traffic which would occur in 1996 if the proposed project were not built. Ambient traffic was forecasted by increasing the existing through-traffic volumes along Fort Weaver Road by adding traffic generated by proposed developments within the immediate area. A growth trend analysis was used to determine the ambient traffic that would occur along H-1 Freeway using 24-hour counts obtained from the DOT.

Table 5-3 shows trips generated by proposed developments, which include: Ewa by Gentry, West Loch Estates, Honouliuli, Ewa Marina, Myers/Seibu Golf Course and Ewa Shopping Center.

TABLE 5-3

## TRIP GENERATION FOR FUTURE DEVELOPMENTS

<u>Future Development</u>	<u>AM Peak</u>		<u>PM Peak</u>	
	<u>Enter</u>	<u>Exit</u>	<u>Enter</u>	<u>Exit</u>
West Loch Estates Phase I	201	224	293	304
West Loch Estates Phase II	682	588	935	882
Honouliuli	50	136	162	95
Ewa by Gentry	1185	2363	2966	2000
Ewa Marina*	130	420	480	270
Myers/Seibu Golf Course	57	14	8	96
Ewa Shopping Center	<u>107</u>	<u>46</u>	<u>272</u>	<u>283</u>
TOTAL	2412	3791	5116	3930

\* Numbers based on estimate of 70% completion of Ewa Marina Phase I development by 1996.

The trip distribution step assigns trips to their expected origins and destinations. Trips to and from the proposed developments were distributed based on the distribution of population and employment on Oahu and the existing traffic patterns. The distribution for the West Loch Estates Phase I and II,<sup>1</sup> Ewa by Gentry<sup>2</sup>, and the Myers/Seibu Golf Course<sup>3</sup> developments were based on previous studies for these projects.

The distribution of jobs on Oahu was used to distribute the trips generated from the residential units during the morning and afternoon peak hours. It was estimated that approximately 40% of the trips would be towards Honolulu, 15% towards Waianae, 5% towards Kunia, 20% towards Waipahu, and 20% within the east Ewa area.

The traffic generated by other proposed developments as well as volumes derived from increasing through-traffic by the historical growth trend along H-1 Freeway were added to the existing traffic volumes to arrive at the forecasted traffic volumes for the morning and afternoon peak hours in 1996 without the project.

#### 5.1.4.2 1996 Project-Generated Traffic

The number of trips from the proposed Ewa Villages development was based on the amount of land uses and data from the Trip Generation Report by the Institute of Transportation Engineers, Fourth Edition, 1987. Table 5-4 shows the number of trips generated by the proposed project.

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<sup>1</sup>"West Loch Estates Traffic Impact Assessment Report," by Pacific Planning & Engineering, Inc., September 1987.

"West Loch Estates Phase II Traffic Impact Assessment Report," by Pacific Planning & Engineering, Inc., June 1990.

<sup>2</sup>"Ewa Gentry Traffic Impact Study," by Parsons Brinckerhoff, August 1988.

<sup>3</sup>"Myers/Seibu Golf Course Traffic Impact Study," by Austin, Tsutsumi & Associates, Inc.

TABLE 5-4

## TRIP GENERATION FOR EWA VILLAGES PROJECT

<u>Land Use</u>	<u>Quantity</u>	<u>Unit</u>	<u>Enter</u>	<u>Exit</u>
<b>MORNING PEAK HOUR:</b>				
Single family housing	786	DU	142	385
Multi-family housing	110	DU	9	48
Ewa Elementary expansion	200	students	198	132
Lanakila School expansion	600	students	154	83
Ewa Mahiko Park expansion	20	acres	24	24
Retail marketplace	26	1000 sf	54	23
Convenience store	10	1000 sf	31	15
Mill and Museum	39	1000 sf	22	22
Business Park	80	1000 sf	85	15
Elderly housing <sup>3</sup>	84	DU	17	17
Golf course	186	acres	40	10
<b>TOTAL</b>			<b>776</b>	<b>772</b>
<b>AFTERNOON PEAK HOUR:</b>				
Single family housing	786	DU	476	279
Multi-family housing	110	DU	46	22
Ewa Elementary expansion	200	students	1	2
Lanakila School expansion	600	students	9	15
Ewa Mahiko Park expansion	20	acres	34	34
Retail marketplace	26	1000 sf	152	158
Convenience store	10	1000 sf	92	96
Mill and Museum	39	1000 sf	102	90
Business Park	80	1000 sf	31	115
Elderly housing <sup>3</sup>	84	DU	17	17
Golf course	186	acres	6	66
<b>TOTAL</b>			<b>964</b>	<b>805</b>

<sup>3</sup>Not actually a part of Ewa Villages project.

#### 5.1.4.3 1996 Total Traffic

The ambient traffic volumes were added to the project generated volumes to obtain the total forecasted volumes for morning and afternoon peak periods.

Impacts and Mitigation Measures

Impacts from the proposed project were measured by the change in level-of-service (LOS) for specific turning movements with and without the project. The existing traffic volumes, ambient traffic volumes, and total forecasted traffic volumes were analyzed.

The methodology for Unsignalized and Signalized Intersection, On- and Off-Ramp, and Multi-lane Highway scenarios, is directed by six categories of LOS ranging from A (best condition) to F (worst condition). However, the LOS for the traffic movements for each scenario varies as follows according to Table 5-5:

**TABLE 5-5  
LEVEL-OF-SERVICE CATEGORIES**

<u>Scenario</u>	<u>LOS A</u>	<u>LOS F</u>
Unsignalized Intersection	Little or no delay	Extreme Delay
Signalized Intersection	Average of < 5 seconds delay	Average of > 60 seconds delay
On-Ramp	Merge flow rate of < 600 pcph*	Merge flow rate of > 2000 pcph
Off-Ramp	Merge flow rate of < 650 pcph	Merge flow rate of > 2000 pcph
Multi-lane Highway	Density of > 12 pcpmpl**	Density of > 67 pcpmpl

\* = passenger cars per hour

\*\* = passenger cars per mile per lane

The results of the analysis for 1990 Existing, 1996 Without Project, and 1996 With Project for the morning and peak hours are summarized in Tables 5-6 and 5-7, respectively.

TABLE 5-6

## LEVEL-OF-SERVICE FOR MORNING PEAK HOUR

<u>Turning Movement</u>		<u>Existing Traffic 1990</u>	<u>Without Project 1996</u>	<u>With Project 1996</u>
<b>* FORT WEAVER ROAD AT RENTON/ARIZONA ROAD (SIGNALIZED)</b>				
<b>Fort Weaver Road</b>				
Northbound	LT	D	F	F
	TH	C	F	F
	RT	C	F	F
Southbound	LT	D	F	F
	TH	C	D	F
	RT	B	B	E
<b>Renton/Arizona Road</b>				
Eastbound	LT	C	F	F
	TH	D	F	F
	RT	D	F	F
Westbound	LT	C	E	F
	TH	C	E	F
	RT	C	E	F
<b>Capacity Analysis</b>		<b>Under</b>	<b>Over</b>	<b>Over</b>
<b>* RENTON ROAD AT ALA NUI (UNSIGNALIZED)</b>				
<b>Renton Road</b>				
Westbound	LT	A	A	A
Eastbound	LT	A	A	A
<b>Ala Nui Road</b>				
Mauka Bound	LT/TH/RT	A	A	B
Makai Bound	LT/TH/RT	A	A	F

TABLE 5-6 (CONTINUED)

LEVEL-OF-SERVICE FOR MORNING PEAK HOUR

\* RENTON ROAD AT PEPPER ROW (UNSIGNALIZED)

Renton Road				
Westbound	LT	A	A	A
Eastbound	LT	A	A	A
Pepper Row				
Mauka Bound	LT/TH/RT	A	A	A
Makai Bound	LT/TH/RT	A	A	C

\* H-1 ON/OFF RAMP

H-1 on-ramp (from Ewa Beach to Honolulu)

ramp lane 1 merge	E	F	F
ramp lane 2 merge	F	F	F

H-1 off-ramp (from Honolulu to Ewa Beach)

ramp lane diverge	B	D	E
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\* FORT WEAVER ROAD (MULTI-LANE HIGHWAY)

Existing 4-Lane Divided Fort Weaver Road

Northbound	B	F	F
Southbound	A	E	E

6-Lane Divided Fort Weaver Road

Northbound	A	E	E
Southbound	A	C	C



TABLE 5-7

## LEVEL-OF-SERVICE FOR AFTERNOON PEAK HOUR

<u>Turning Movement</u>		<u>Existing</u>	<u>Without</u>	<u>With</u>
		<u>Traffic</u>	<u>Project</u>	<u>Project</u>
		<u>1990</u>	<u>1996</u>	<u>1996</u>
<b>* FORT WEAVER ROAD AT RENTON/ARIZONA ROAD (SIGNALIZED)</b>				
Fort Weaver Road				
Northbound	LT	D	F	F
	TH	C	F	F
	RT	C	F	F
Southbound	LT	D	F	F
	TH	C	D	F
	RT	B	C	F
Renton/Arizona Road				
Eastbound	LT	D	F	F
	TH	D	F	F
	RT	D	F	F
Westbound	LT	C	F	F
	TH	C	F	F
	RT	C	F	F
Capacity Analysis		Under	Over	Over
<b>* RENTON ROAD AT ALA NUI (UNSIGNALIZED)</b>				
Renton Road				
Westbound	LT	A	A	A
Eastbound	LT	A	A	A
Ala Nui Road				
Mauka Bound	LT/TH/RT	A	A	A
Makai Bound	LT/TH/RT	A	A	C

TABLE 5-7 (CONTINUED)

LEVEL-OF-SERVICE FOR AFTERNOON PEAK HOUR

\* RENTON ROAD AT PEPPER ROW (UNSIGNALIZED)

Renton Road					
Westbound	LT	A	A	A	
Eastbound	LT	A	A	A	
Pepper Row					
Mauka Bound	LT/TH/RT	A	A	A	
Makai Bound	LT/TH/RT	A	A	D	

\* H-1 ON/OFF RAMP

H-1 on-ramp (from Ewa Beach to Honolulu)					
ramp lane 1 merge		C	E	F	
ramp lane 2 merge		D	F	F	
H-1 off-ramp (from Honolulu to Ewa Beach)					
ramp lane diverge		E	F	F	

\* FORT WEAVER ROAD (MULTI-LANE HIGHWAY)

Existing 4-Lane Divided Fort Weaver Road					
Northbound		B	F	F	
Southbound		B	F	F	
6-Lane Divided Fort Weaver Road					
Northbound		A	D	E	
Southbound		A	F	F	

The findings indicate that when completed in 1996, the project will contribute to the reduced efficiency of traffic operations along Fort Weaver Road. However, the impact of the project will be relatively small compared to the combined impact from other planned developments along Fort Weaver Road, and some improvements will be necessary regardless of this project. For example, even without the project, Fort Weaver Road and certain ramps on the Kunia Interchange will not have the capacity to handle traffic generated by planned developments along Fort Weaver Road. Major infrastructure improvements are needed to handle the traffic from the following developments in the project locale: West Loch Estates Phases I and II; Ewa by Gentry; Ewa Marina; Laulani and Fairway Estates; Myers/Seibu Golf Course; and Ewa Shopping Center. In order to accommodate the projected regional traffic volumes, the following mitigation measures are recommended:

- \* Provide additional ramps to the Kunia Interchange;
- \* Widen Fort Weaver Road from four to six lanes;
- \* Widen and improve Farrington Highway to a four-lane arterial between Fort Weaver Road and Barbers Point Naval Air Station access road;
- \* Construct a North-South Road, from the Ewa Marina development to connect to the H-1 Freeway, to alleviate the overcapacity condition along the Fort Weaver Corridor;
- \* Construct an interchange at the intersection of the H-1 Freeway and the North-South Road.

It should be noted that the above recommended improvements may be necessary to accommodate forecasted traffic for the year 1996 even without the proposed project. Traffic studies for other developments along Fort Weaver Road have also indicated the need for similar improvements. With the project, improvements may be required at the intersection of Fort Weaver and Renton Roads, as well as intersections within the project area. The details of road improvements will be resolved during future design phases of the project. These localized improvements are contingent on the type of improvements implemented to accommodate the regional traffic in the Fort Weaver Corridor, and at the H-1 Freeway.

The percentage of total traffic along Fort Weaver Road generated by the various developments scheduled for completion by 1996 is shown on Table 5-8 below. Based on the percentages, the project is estimated to generate 12% to 14% of the total traffic entering onto Fort Weaver Road.

TABLE 5-8

PERCENT OF TOTAL TRAFFIC ENTERING ONTO FORT WEAVER ROAD IN 1996

<u>Development</u>	<u>Morning Peak Hour</u>	<u>Afternoon Peak Hour</u>
West Loch Estates	14%	16%
Ewa by Gentry	34%	38%
Ewa Marina	6%	6%
Myers Golf Course	<1%	<1%
Ewa Beach Shopping Center	<1%	<1%
Ewa Villages	14%	13%
Existing	31%	27%
	TOTAL: 100%	TOTAL: 100%

The specific improvements should be identified in a broader system context with analysis of alternatives because of the regional growth in the area. The State Department of Transportation (DOT), in response to the major developments planned for the Ewa region, has formed a Working Group, which includes the City Department of Transportation Services (DTS), major developers of the Ewa region, and other State and City Planning agencies. The developers are funding the Ewa Region Highway Transportation Master Plan, scheduled for completion in the Fall of 1991. The purpose of the Plan is to forecast future traffic in the region, identify roadway improvements to accommodate forecasted traffic, and distribute fair share costs to implement the required improvements for the Ewa region. The Plan will determine roadway needs along the Fort Weaver Road and the H-1 Freeway corridors. The proposed North-South Road is also being considered as a possible improvement to accommodate traffic from developments along Fort Weaver Road.

The City recognizes the severity of existing and future congestion problems in the Ewa region, as evidenced by its interest and participation in the Ewa Highway Master Plan. The proposed transportation system planned for the Ewa area will be designed to accommodate existing vehicular traffic as well as future project traffic. Roadway improvements will conform to State and City requirements.

## 5.2 WATER SYSTEM

The potable water source for the Villages consists of 6 wells, located approximately one mile away in Honouliuli. The wells supply four million gallons per day (mgd) for domestic consumption, and 10 mgd for irrigation purposes. The State Department of Health (DOH) samplings and analyses of water from OSCo's Honouliuli wells indicate that chloride content is far above the Honolulu metropolitan area average of 70 milligrams per liter (mg/L). In 1973, 1975, and 1978, these readings were 216, 262, and 300 mg/L respectively. In contrast, the Board of Water Supply uses a chloride level of 160 parts per million for its drinking water. A 14-inch cast iron transmission main conveys water from the wells to the Villages, where cast iron and galvanized iron pipes distribute water to the

residential units, and to fire hydrants within the Villages. The existing water system does not meet the Board of Water Supply (BWS) standards. OSCo currently maintains the wells, distribution mains, and fire hydrants used by the Villages. The BWS maintains a 16-inch water main along Fort Weaver Road, and a booster pump station near Renton Road. Fire hydrants are dispersed throughout the Villages.

Impacts and Mitigation Measures

The water system in the area is being evaluated as part of the master planning process to determine the system's current capacity and future water demand. The average potable water demand requirements for the project is anticipated at 800,000 gpd, and will be provided by the BWS. The storage capacity for the future water reservoir will be determined depending on whether the project requirement can be shared with other proposed developments. All off-site transmission lines necessary to bring water to the project will be designed and constructed in accordance with BWS standards. As the project is located in a water-poor region, the development of a non-potable water source to fulfill the irrigation requirements of the golf course and open space areas is proposed.

The proposed water system improvements for the project site include 4- and 8-inch waterlines for interior single-family residential roadways, and a 12-inch waterline along Renton Road from Puuloa Road to the intersection with the proposed East-West Road along Kaloi Ditch. Waterline connection points will also be provided for the multifamily units, Ewa Village Business Park, Old Mill Marketplace, and Ewa Mahiko District Park. The on-site water system will be designed and constructed in accordance with the BWS Standards, and a water master plan will be prepared for the project and submitted to the BWS for review and approval prior to design. The exception to the standard will be the use of 4-inch pipes through a large number of the shorter streets. Standards allow the use of 4-inch pipes only at dead-end streets with limited water demands, however, due to the

numerous water line loops and short blocks (approximately 4 to 5 lots), such use of 4-inch lines are hydraulically acceptable. A water master plan will be submitted to the BWS for review and approval, and, the size of pipes will be verified during the design phase of the project.

### 5.3 WASTEWATER SYSTEM

The existing wastewater system does not meet City and County of Honolulu standards. Until recently, sewage from the Villages was collected, then conveyed to a pump station located behind Lanakila Baptist School (formerly the Ewa Shopping Basket). The wastewater was then pumped into an adjacent irrigation ditch for dilution with irrigation water, then used to irrigate the cane fields located makai of the Villages. Since the construction of the Honouliuli Wastewater Treatment Plant (WWTP) in the late 1970's, the Villages no longer use this method of sewage disposal. Sewage is now conveyed via gravity sewer lines to the Ewa by Gentry development, located makai of the project area. The lines from the Villages are linked into the Gentry system which runs to Geiger Road, and up to the Honouliuli WWTP. After undergoing primary treatment at the plant, the wastewater is disposed of via the Barbers Point Ocean Outfall, which has a capacity of 112 MGD. The present capacity of the WWTP is 25 MGD, however, the facility is scheduled to increase its capacity by 13 MGD. This expansion is tentatively set for completion in March 1993, and will be sufficient to accommodate the proposed residential units.

The wastewater master plan for the project also addresses the impacts on the wastewater system and recommends appropriate system improvements.

#### Impacts and Mitigation Measures

The anticipated average sewage flow of approximately one million gpd from the project will be accommodated by the City's Honouliuli WWTP. This flow represents approximately 2.6 percent of the treatment plant's total capacity of 38 mgd (once the 13 mgd expansion is completed). The proposed on-site sewerlines include 8-inch sewers throughout the single-family residential

roadways, and 12-inch lines around the circumference of the planned multifamily units, Ewa Village Business Park, Old Mill Marketplace, and Ewa Mahiko District Park. In addition, 10- and 15-inch sewers will be constructed to connect the villages to the Ewa by Gentry development along the railroad right-of-way.

The proposed wastewater system improvements will be designed and constructed to meet City and County of Honolulu standards. A wastewater master plan will be prepared and submitted to the City and County of Honolulu, Department of Public Works (DPW) for review and approval. As part of the system, a sewage lift station will be built to serve the new housing area located along the northwest boundary of the project site. The lift station will be a 200 gallon per minute (gpm) package pump station with a 6-inch force main crossing the golf course to the gravity system in Tenney Village. Because of the small size of the lift station, construction to City Standards will not be feasible from an economic as well as design perspective. An emergency generator will be provided for backup power for the lift station.

The inclusion of the Ewa Elementary School as part of the Villages wastewater system will be considered as part of the wastewater master plan.

#### **5.4 DRAINAGE SYSTEM**

As discussed earlier, the Villages are within an area prone to flooding during a 100-year storm based on the FIRM prepared by FEMA. The drainage area contributing runoff to the project site is approximately 4,310 acres. Although Kaloι Ditch is the major drainageway through the watershed and project site, a significant amount of runoff sheet flows across the cane fields over Mango Tree Road and through the project site. The approximate rate of runoff based on Plate 6 of the City and County of Honolulu's Storm Drainage Standards is 8,000 cubic feet per second (cfs).



Impacts and Mitigation Measures

One of the primary objectives of the project is to remove the existing Ewa Villages from the flood plain. This will be accomplished by relocating and raising Mango Tree Road to create a berm to intercept the sheet flow runoff along the northeast boundary, as discussed in Section 3 above.

The berm will be roughly 5 feet high and 60 feet wide (40-foot roadway, 10-foot shoulders), and will act as a barrier redirecting the runoff along its base to two openings, leading to the proposed 18-hole golf course, which in turn will contain and convey the runoff through the site. The berm will function as the newly relocated Mango Tree Road, 500 feet mauka from its present location. Because of the ground elevation of existing homes and limitations on raising the ground elevation for newly developed areas, the golf course will have to be excavated and graded to handle the 8,000 cfs generated from the drainage area. Flood waters will be directed through the golf course to an improved Kaloι Ditch which in turn will convey the waters to the railroad right-of-way crossing and golf course being developed by the Ewa by Gentry project. This action has been coordinated with the developers of the Ewa by Gentry project.

The project will include the construction of a street drainage system consisting of underground drainlines, drain manholes, culverts and intake boxes designed in accordance with City drainage standards. The proposed drainlines will vary in diameter, ranging from 18- to 66-inches. However, single-family area drainlines will, for the most part, be 18- 24- or 30-inch lines. The larger (36-, 42-, 48-, 54-, and 66-inch) lines will be installed along, or connected to Renton Road. Because many of the existing homes are not graded to permit runoff from the lots to the roadways, the drainage system will only drain the roadways fronting the existing homes. The proposed lots will be graded to drain toward the roadways, and the runoff will be conveyed either to the golf course or to a drainage channel leading

to the golf course.

A drainage master plan will be prepared as part of the project and will be submitted to DPW for approval.

### **5.5 SOLID WASTE DISPOSAL FACILITIES**

The City's DPW, Division of Refuse Collection and Disposal provides solid waste collection and disposal for single family residential areas. Non-residential and multifamily residential areas are serviced by private refuse collection companies. Solid waste is currently disposed of either at the Palailai Landfill or the Waipahu Incinerator. The Palailai Landfill is scheduled to close within the next few years and is not expected to provide refuse disposal capacity for the project. The City has, however, explored new means and locations for disposal of solid wastes. Solid waste will be transported to the H-Power plant at Campbell Industrial Park, which began operations in 1990.

#### **Impacts and Mitigation Measures**

The project is expected to create about 16,500 pounds per day, or 3,025 tons per year of solid waste, based on a factor of 4 pounds per person per day.

### **5.6 ELECTRICAL AND COMMUNICATION SYSTEMS**

The Ewa plain area is serviced by the Hawaiian Electric Company for power generation and transmission facilities. Existing power facilities that supply the project area and vicinity include the Kahe and Waiau Power Plants. The GTE Hawaiian Telephone Company (HTCo) maintains communications facilities for the site and vicinity.

#### **5.6.1 Existing Systems**

According to a survey conducted by Ron Ho and Associates, in August 1990, existing utility corridors border the project site on three sides. These electric and communication lines and structures are within public right-of-ways or easements granted to HECO, HTCo, Oceanic Cable and OSCo. To the north, OSCo's 12kV lines are routed overhead from the

Waipahu Mill, along Mango Tree Road to the Ewa Mill and then onto the railroad right-of-way to serve loads beyond this project. To the east, HECO, HCo, and Oceanic Cable overhead lines that run to Ewa Beach along Fort Weaver Road, enter the project at Renton Road. Finally, to the south, HCo trunking cables and OSCo 12kV pole lines leaving the project site parallel Oceanic Cable and HECO 12kV and 46kV overhead lines along the railroad right-of-way. In addition, underground joint trucking system (JTS) cables cross the Fort Weaver Road frontage of the development.

Overhead electric, telephone, CATV and OSCo lines and structures traverse the site. The existing pole lines are routed within public right-of-ways. Substandard HECO facilities, comprised mostly of former OSCo pole lines, extend existing distribution feeders from Fort Weaver Road and the railroad right-of-way to serve the existing villages. HCo trunking facilities enter the project from the telephone pole line along the railroad right-of-way, and are routed overhead to the on-site Ewa Central Office (C.O.). From the Ewa C.O., overhead distribution lines serve the existing villages and on-going sugar activities. Overhead distribution lines also extend beyond this project to support surrounding service requirements. Oceanic Cable lines enter the project from Fort Weaver Road and are extended overhead to the existing villages. OSCo facilities currently traverse the project site to support on-going activities at existing mill structures and to serve loads beyond the project.

#### 5.6.2 Proposed Systems

The existing HECO overhead lines which traverse the project site will be relocated underground through the development. Existing overhead 46kV and 12kV lines paralleling the railroad right-of-way and along Fort Weaver Road will remain. The existing OSCo 12kV pole line will be relocated overhead along Fort Weaver Road or along a corridor paralleling Fort Weaver Road from Mango Tree Road to the railroad right-of-way. The new segment will then be connected to the existing OSCo line at a pole adjacent to the right-of-way.

The existing on-site overhead telephone and CATV lines will be relocated underground. Existing overhead facilities paralleling the railroad right-of-way, and overhead and underground facilities along Fort Weaver Road will remain. Telephone lines will be extended from the existing HCo Ewa Central Office. In addition, telephone cross-connect pedestals will be provided by the HCo at various locations throughout the site to permit access and for telephone service to the project facilities. Oceanic Cable facilities will be extended from existing trunking facilities to the project facilities.

Impacts and Mitigation Measures

As stated above, electrical and communication improvements will be necessary to support the requirements of this project. However, these requirements can be served by using existing systems, in addition to some off-site improvements. Generally, the off-site improvements required for the development are considered an ongoing activity for the utility companies involved, and therefore, should not create an undue hardship for the respective utilities. Furthermore, a positive impact is that the project will require electrical and communication utility systems to be constructed and maintained in accordance with current utility standards. The existing systems do not meet these standards.

On-site facilities for the utility systems will have minimal impact on the environment. Noise, aesthetic considerations, safety hazards, and loading impact will be within normally applied guidelines.

A site will be provided for a new HCo substation. According to HCo, the project site will be served by the Fort Weaver substation, which is tentatively planned for operation in 1993. The Fort Weaver substation will in turn be served by the Ewa Nui substation, preliminarily scheduled for operation within the 1993-1994 time frame (HECO, December 1990). HCO will be consulted to determine the adequacy of existing facilities with the villages and their recommendations on any necessary improvements.

5.7 POLICE, FIRE, AND AMBULANCE SERVICES

The Ewa district, which includes the Waianae Coast, Waipahu/Ewa Beach, and Aiea/Pearl City Districts, is under the jurisdiction of the Pearl City Police Station.

Fire protection services for the area are provided by the Waipahu Station, which houses one engine company and one ladder company. Additional services are available from the Ewa Beach and Pearl City stations. A new engine company is planned for the Ewa District, however, a special site has not been determined.

Impacts and Mitigation Measures

The Honolulu Police Department has expressed minor concerns for impacts on police operations within the project area during the short-term construction phase of the project, such as minor traffic interruptions and safety hazards. The provision for sufficient public notification procedures and road signage will mitigate the potential for these impacts. The department has, however, expressed a greater concern regarding impacts associated with long-term project build-out periods. Once construction is completed, and the area's resident and transient populations increase, there will be increased traffic problems and calls for police service. As a result, there will be a need for more officers in the area, and supporting equipment and services. This condition may also be expected to hold true for fire and ambulance services.

5.8 MEDICAL FACILITIES

The Kaiser Permanente Leeward Clinic, currently serving the project area and vicinity, offers a variety of services for physical, occupational and speech therapy, public health nursing, children's health, mental health, and Hansen's disease. The newly constructed St. Francis Hospital-West provides the nearest hospital/emergency services and is located within minutes of the project site.

Impacts and Mitigation Measures

These facilities will probably experience an increase in the number of people needing medical assistance once the project is completed. This increase, however, will be attributable to the combined developments in the area, either completed or under construction.

5.9 EDUCATIONAL FACILITIES

According to the State Department of Education (DOE), students residing in the project area and vicinity are currently served by one of the following public schools: Ewa Elementary, Ilima Intermediate, and Campbell High.

Impacts and Mitigation Measures

The DOE has advised that the project will have the following enrollment impact on the above schools in the area:

<u>School</u>	<u>Grades</u>	<u>Projected Students</u>
Ewa Elementary	K-6	230-240
Ilima Intermediate	7-8	50-60
Campbell High	9-12	90-100

(DOE, October 1990)

Ewa Elementary would be severely impacted in spite of DOE plans to build an additional 16 classrooms by September 1994. An additional 8 to 10 classrooms would be required to accommodate the projected enrollment increase. However, the design enrollment is 900 for the year 2010 not including the Ewa Village project. The DOE is reluctant to consider increasing elementary school sizes beyond 900 and would need to study alternative plans to accommodate all of the enrollment growth in the Ewa Elementary service areas. Potential relief may be obtained with the development of an elementary school at the Ewa by Gentry project. The

school will be sited on a 6-acre site. A 12-acre park will be built adjacent to the school.

Ilima Intermediate currently has a surplus of classrooms. However, the DOE expects a shortage to develop rapidly as numerous housing developments in the Ewa plains are constructed.

Campbell High should have adequate capacity to accommodate the enrollment increase projected from the project.

#### 5.10 RECREATIONAL RESOURCES

At present, the only public recreation facility within the project area is the 5-acre Ewa Mahiko Neighborhood Park. The site of the former Tenney Center has not been kept up and the playing field has deteriorated to weeds.

Other recreational facilities are limited to small neighborhood parks located in nearby communities, as well as larger community parks located in Ewa Beach and Waipahu. Other facilities include beach parks located in Ewa Beach and NASBP, golf courses in NASBP and Waipahu, and West Loch, and the West Loch Shoreline Park.

##### Impacts and Mitigation Measures

There are two major recreational facilities that are proposed for the Master Plan: the expanded Ewa Mahiko District Park and the proposed Ewa Villages Golf Course.

Ewa Mahiko Park is being proposed for expansion from five acres to approximately 25 acres. Planned facilities include a gymnasium; a recreation center complex with swimming pools; open field areas to accommodate baseball, softball, soccer or football fields; tennis, basketball and volleyball courts; a tot lot; a day care center; and a park maintenance facility.

An 18-hole public golf course is being proposed as part of the project as a means of providing flood control and an open space amenity that will add to the beauty and value of the adjoining lands. The golf course facility will include a club house, driving range, putting green and maintenance complex. The western portion of the course will contain flood waters that emanate from Kaloi Ditch and channel the flows around existing and future housing areas. Portions of Kaloi Ditch will be routed through the golf course and be used to create water features. The golf course will also be used to receive storm drainage flows from portions of the adjacent residential areas. In addition, the golf course will buffer the majority of the housing areas from incompatible sugarcane burning and hauling activities that occur adjacent to the project site.

#### 5.11 ENERGY CONSERVATION

The Ewa Villages will present a unique opportunity to save energy through design as well as through the inclusion of energy saving devices. During the rehabilitation of the existing homes, the retro-fitting of appliances and the installation of energy saving devices such as heat pumps, ceiling fans, low water consumption waterclosets and flow restrictors will be considered.

In new areas of the villages, the installation of solar waterheaters and installation of low energy consuming appliances will be considered. The use of landscaping to reduce heat gain will be incorporated into the site plan.



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SECTION 6

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*RELATIONSHIP TO LAND USE  
PLANS AND POLICIES*

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**6.1 OVERVIEW**

This section will describe the proposed action in relation to the applicable policies and controls of the Federal, State, and City and County agencies.

**6.2 FEDERAL PLANS, POLICIES, AND CONTROLS**

The Ewa Villages are being considered for nomination as a National Historic Landmark pursuant to the Code of Federal Regulations (CFR), (36 CFR 65.2). In May 1990, a representative of the U.S. National Park Service (NPS) visited the project site and interviewed interested parties and agencies to gather information on the appropriateness of this nomination. The NPS will be acting on the nomination in 1991. As mentioned earlier, the City is also proposing the preservation of the Ewa Villages by incorporating provisions for and implementing design guidelines for the rehabilitation of structures in the Villages.

The project area's eligibility for nomination to the National Register of Historic Places triggers the applicability of Section 106 of the National Historic Preservation Act (NHPA). The review process must be completed prior to the irrevocable commitment of any resources. To proceed with compliance under Section 106, the State Historic Preservation Office (SHPO) has been contacted for assistance.

**6.3 STATE PLANS, POLICIES, AND CONTROLS**

A number of State plans, policies and controls provide guidelines for development within the State of Hawaii. These guidelines include the Hawaii State Plan, State Functional Plans, and the State Land Use Law.

**6.3.1 The Hawaii State Plan, Chapter 226 Hawaii Revised Statutes**

The Hawaii State Plan is a guide for the future long-range development of the State which identifies goals, objectives, policies and priorities that are to be pursued. The overall theme of the Hawaii State Plan is:

- \* Individual and family self-sufficiency
- \* Social and economic mobility
- \* Community or social well-being

Specifically, the Hawaii State Plan details objectives and policies in various areas such as population, the economy, physical environment, facility systems, socio-cultural advancement, agricultural lands, and fiscal management. The Ewa Villages project is consistent with many of the goals and policies of the Hawaii State Plan and substantially fulfills its objectives.

**6.3.1.1 Population, H.R.S. Section 226-5**

The Ewa Villages project, as a planned community, fulfills this policy of directing population growth toward Ewa, and providing increased housing opportunities for Hawaii's people.

**6.3.1.2 Economy H.R.S. Section 226-6**

As a major development, the Ewa Villages project will involve a substantial amount of construction and construction-related activity thus creating additional employment opportunities in the Ewa district. In addition, the project will include commercial component, and expanded recreational and education facilities, thereby creating secondary employment opportunities over the long-term.

**6.3.1.3 Agriculture H.R.S. Section 226-7**

Portions of the project are located in the State Agricultural District. The site consists of soils having a rating of Class B, according to the Detailed Land Classification, Island of Oahu study conducted by the University of Hawaii Land Study Bureau in 1972. A substantial portion of the site has been withdrawn from cultivation. The project will not significantly affect the economic viability of OSCo nor limit the growth of diversified agriculture. As such, the project is consistent with the major thrust of the agricultural

portion of the Hawaii State Plan and the State Agricultural Functional Plan, which are intended to preserve the economic viability of sugar and pineapple and to promote the growth of diversified agriculture.

6.3.1.4 Scenic, Natural Beauty and Historic Resources H.R.S. Section 226-13

The project fulfills the objectives articulated by this part of the Plan by providing and/or enhancing scenic views through the use of open space and landscaping and limiting building heights. The project concept respects the rural and historic character of the surrounding area and is consistent with development plans for the Ewa Plain.

6.3.1.5 Water H.R.S. Section 226-16

The development of water sources for the development area is contingent upon approval by the DLNR as the development area is within the Pearl Harbor Groundwater Control Area. Non-potable water will be utilized to irrigate the golf course, park, open space and landscaped areas of the project site. Facilities for the development, transmission, storage, and distribution of potable and non-potable water requirements of the project will be installed by the City.

The potable water requirements for the project will be developed by the BWS.

6.3.1.6 Transportation H.R.S. Section 226-17

The project will incorporate measures that encourage the use of mass transit and multiple ridership of private vehicles. These measures are intended to minimize traffic impacts and address the State Plan objective of integrated multi-modal transportation systems. In addition, the proposed Ewa Region Highway Transportation Master Plan, scheduled for completion in Fall 1991, will identify roadway improvements to accommodate forecasted traffic for planned growth in the Ewa region.

6.3.1.7 Housing H.R.S. Section 226-19

The Ewa Villages Project is intended to address the need for affordable housing, and the majority of the housing units will be targeted for the affordable income group.

**6.3.1.8 Education H.R.S. Section 226-21**

The Ewa Villages project is located in close proximity to existing public school facilities, however, the existing Ewa Elementary School site has been planned for expansion to help accommodate the expected increase in the number of school-age children. In addition, a new facility is planned in the Ewa by Gentry project off of Fort Weaver Road.

**6.3.2 Hawaii State Functional Plans**

As a means of furthering the Hawaii State Plan, H.R.S., Chapter 226, the 1984 State Legislature, by concurrent resolution, adopted ten Functional Plans to serve as guidelines for the State of Hawaii. The project conforms with the applicable objectives and policies of these Functional Plans.

**6.3.2.1 State Housing Plan**

The project will address the need for affordable housing by providing home ownership opportunities to those whose incomes will not permit them to participate in the conventional home buying market. In addition, the planned market units assure the project will provide a diversity of housing types and will serve a wide socio-economic range of households.

**6.3.2.2 State Water Resources Development Plan**

The Ewa Villages project will not impair the capacity of the Pearl Harbor Ground Water Control Area as the potable water demand will be within the stated limits due to the decreased requirements of agriculture - primarily sugar cultivation.

**6.3.2.3 State Energy Plan**

The project is located in an easily serviceable and concentrated area that is adjacent to existing urban development. Energy conservation and the utilization of energy-saving devices will be encouraged through homeowner information and orientation programs provided by the City.

**6.3.2.4 State Health Plan**

Residents of the Ewa Villages will have access to health care facilities available at the Kaiser Permanente Leeward Clinic and the St. Francis Medical Center-West. The Leeward Clinic is designed to serve the basic health needs of those residing in the area from Waipahu to Waianae, and offers a variety of services such as physical and occupational speech therapy, public health nursing, children's health, Hansens disease, and complete mental health. Recently completed, the St. Francis Hospital-West facility offers a comprehensive emergency and ambulatory care center, a full service hospital, a major medical office building, a medical education center, day care facilities, and a "well-ness" center.

**6.3.2.5 State Agricultural Plan**

While the project will result in a decrease of the availability of agricultural land, the area to be withdrawn will not adversely affect the agricultural industry. The anticipated impact on overall agricultural activity on Oahu and the State will be insignificant.

**6.3.2.6 State Transportation Plan**

Traffic management and ride-share plans are being proposed as part of the Ewa Villages project. The plans are expected to contribute significantly towards meeting the State Transportation Plan objective of developing a balanced, multi-modal transportation system. A small commercial area and other employment centers in the project are also expected to divert town-bound traffic and thereby minimize the potential for greater interchange congestion.

**6.3.2.7 Recreation Plan**

The DLNR is responsible for the State Recreational Plan. This functional plan reviews demands and actions needed to fulfill existing and future recreational demands. Other objectives of the plan include "guiding State and County agencies in acquiring and preserving lands of recreational value, and ensuring public access to recreational areas."

Ewa Villages will be consistent with the functional plan by providing a district park and an 18-hole golf course within the development.

#### **6.4 STATE LAND USE LAW**

The State Land Use Commission has classified all land in the state into one of four classifications: Urban, Rural, Agricultural, and Conservation. The project site lies within the agricultural and urban district boundaries, as shown in Figure 6-1.

#### **6.5 GENERAL PLAN OF THE CITY AND COUNTY OF HONOLULU**

The General Plan of the City and County of Honolulu provides a statement of long-range social, economic, environmental, and design objectives for the Island of Oahu. The Plan also provides a statement of policies necessary to meet these objectives. Sections of the Plan which are relevant to the proposed project include the following:

##### **6.5.1 Population**

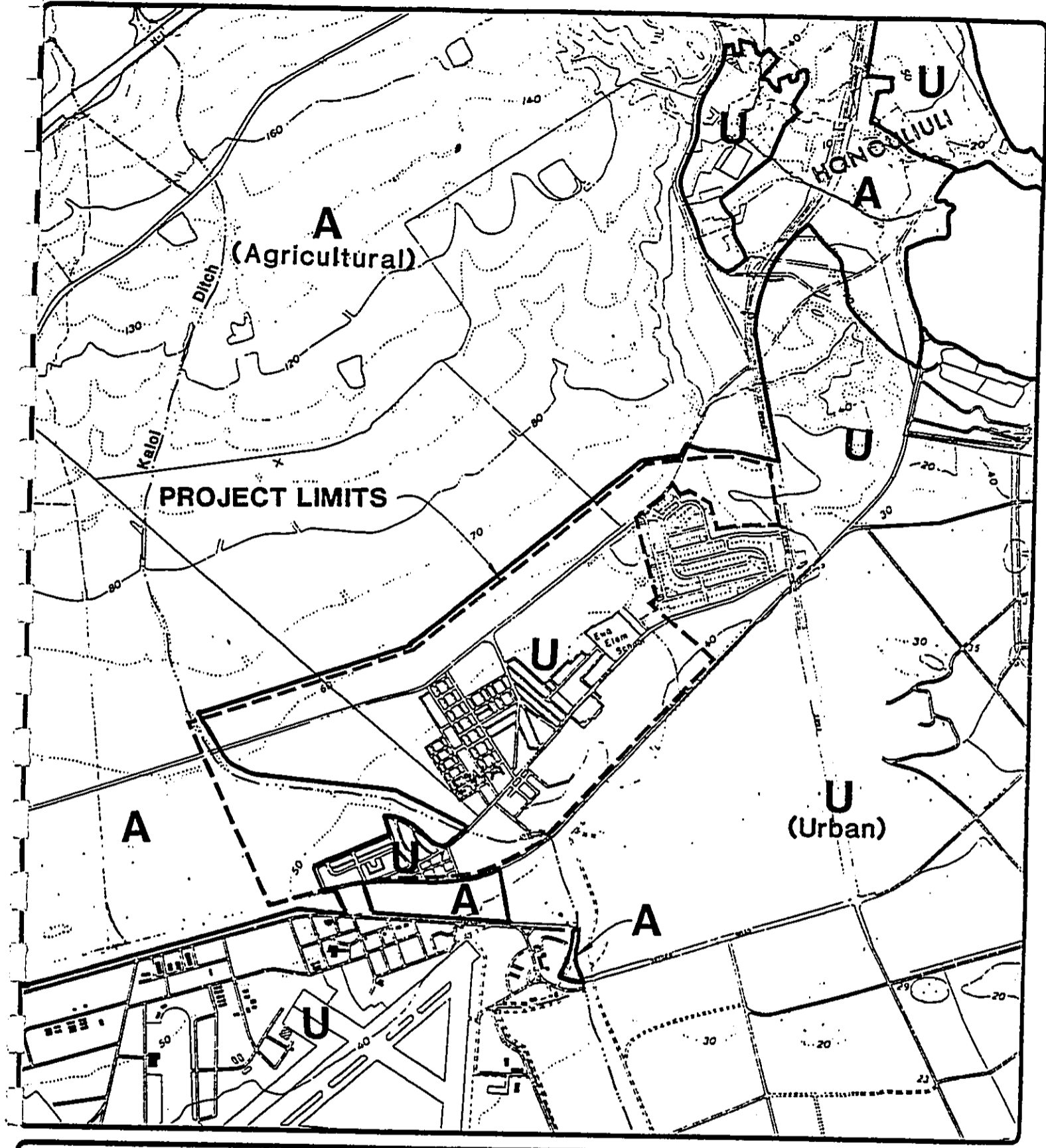
This section is concerned with growth management of the island's population, and promoting a balance between society, the economy and the environment. Also indicated by this section, is a policy concerning growth of a "secondary urban center located in the West Beach to Makakilo area, which will relieve developmental pressures in the urban fringe areas". The Ewa Villages project is consistent with the population goals in the area.

##### **6.5.2 Natural Environment**

This section is directed at preserving and enhancing the natural environment of Oahu. The design of Ewa Villages will include an efficient surface drainage and flood control system to preserve the natural setting.

##### **6.5.3 Housing**

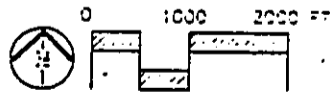
Affordable housing with support facilities, as well as housing proximity to employment, recreation, commercial centers are the concerns stated within this section. The Ewa



**EWA VILLAGES  
MASTER PLAN**

City & County of Honolulu  
Department of Housing  
& Community Development

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**Figure 6-1  
State Land Use District  
Boundary Map**

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Villages Master Plan provides for a mix of housing types including affordable and market units combined with appropriate support facilities.

#### 6.5.4 Transportation and Utilities

The consideration for efficient and cost-effective transportation means are emphasized in this section, as well as the provision for a variety of modes of transportation. Utility objectives include adequate amounts of water, efficient waste disposal systems, and high levels of service for all utilities. The proposed subdivision is designed with efficient roadway and utility systems to adequately serve the community. In addition, ride-sharing and provisions for bus service will be encouraged.

#### 6.5.6 Physical Development and Urban Design

This section focuses on the coordination and sequencing of "all new developments" and the preservation of the physical character of older developments. This section also encourages development of the secondary urban center in the West Beach-Makakilo area while maintaining cooperation with government agencies and those affected in the sugar industry. Ewa Villages is planned to be developed incrementally, with a phased withdrawal of sugarcane fields. In addition, the Villages will be rehabilitated to preserve the plantation look of the Villages.

#### 6.5.7 Culture and Recreation

The concern of this section, as applied to the proposed project, is the provision of a wide range of recreational opportunities "readily available" to the people of Oahu. Included in this section are policies of developing a variety of park and beach facilities. As noted earlier, the Ewa Villages project provides for a variety of recreational opportunities.

### 6.6 EWA DEVELOPMENT PLAN

The Ewa Development Plan of the City and County of Honolulu, acts as a detailed structure of General Plan objectives for that area. The Plan area includes the area of coral plain from the Waipahu and Pearl Harbor boundaries to Nanakuli. Regarding development of the Ewa area, the Plan states:

"Relevant General Plan policies for Ewa encourage the gradual development of a secondary urban center in order to relieve development pressures in the urban-fringe and rural areas."

Ewa Villages will be consistent with the Plan objectives and design elements. At present, the project site is designated mainly as Agricultural and Residential. Other designations within the project site boundaries include Commercial, Park, Public Facility, and Low Density Apartment as shown by Figure 6-2.

#### 6.7 COUNTY ZONING

Approximately half of the project site is zoned within the County Restricted Agricultural (AG-1) boundary, as indicated by Figure 6-3. Other designations within the site are Residential (R-5), Neighborhood Business (B-1), and Apartment (A-1). A change in the zoning designation for planned urban use will be required at the appropriate time by the DLU.

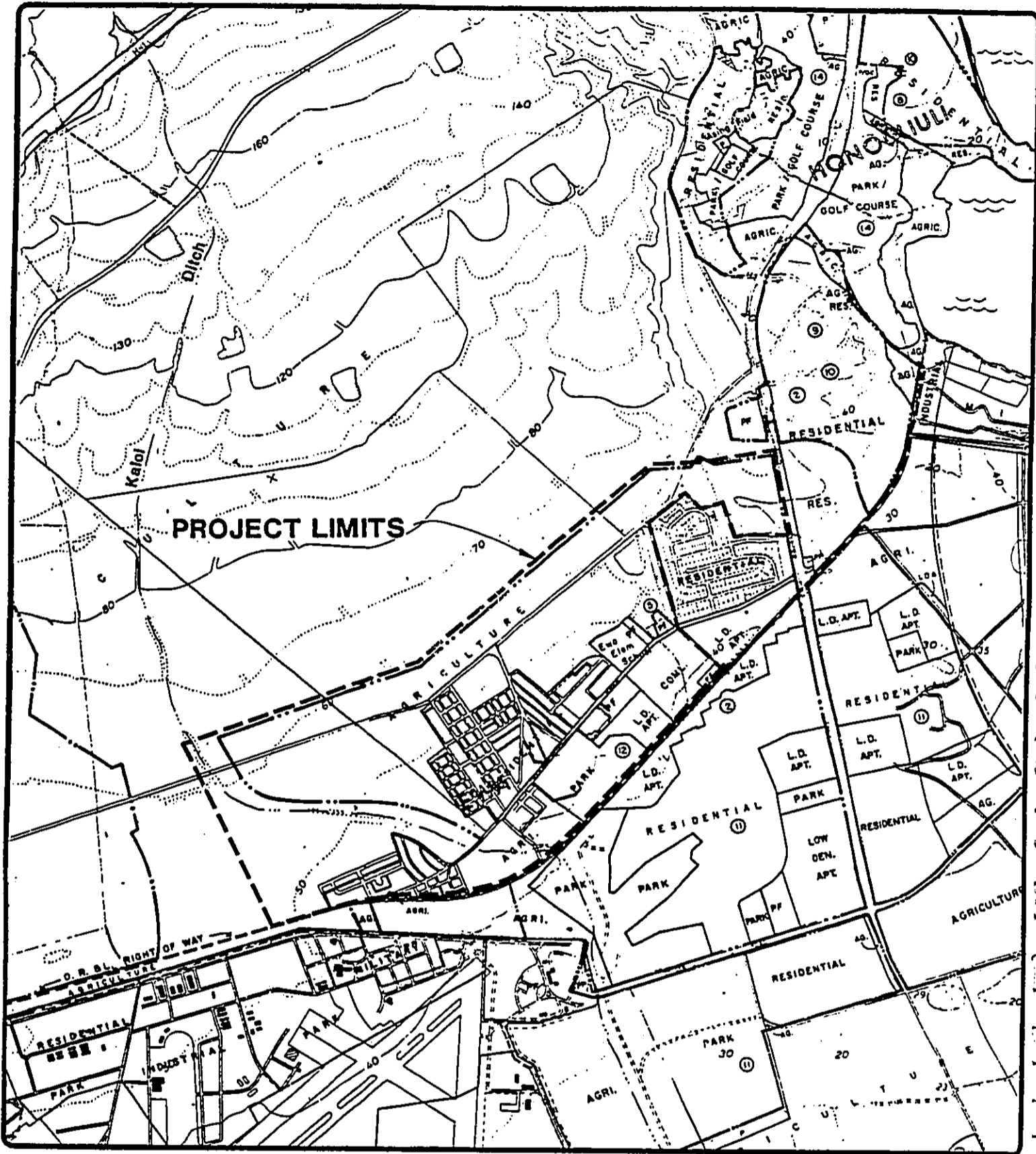
#### 6.8 SPECIAL DISTRICT ORDINANCE

"The purpose of a Special District (SD) is to provide a means by which certain areas in the community in need of restoration, preservation, redevelopment or rejuvenation may be designated as Special Districts to guide development to protect and/or enhance the physical and visual aspects of an area for the benefit of the community as a whole." (LUO, Section 21A-7.20)

At present, there are seven SD's on Oahu, and the City may create an Ewa Villages SD as the eighth. The guidelines set forth in the proposed SD may be similar to the Haleiwa SD, with regard to maintaining rural style and quality.

#### 6.9 ENVIRONMENTAL IMPACT STATEMENT (Chapter 343, HRS)

Prior to DHCD's implementation of the Ewa Villages project, acceptance of a Final EIS by the Mayor, through the City and County of Honolulu, Department of General Planning



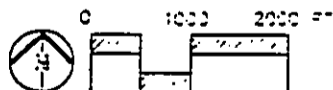
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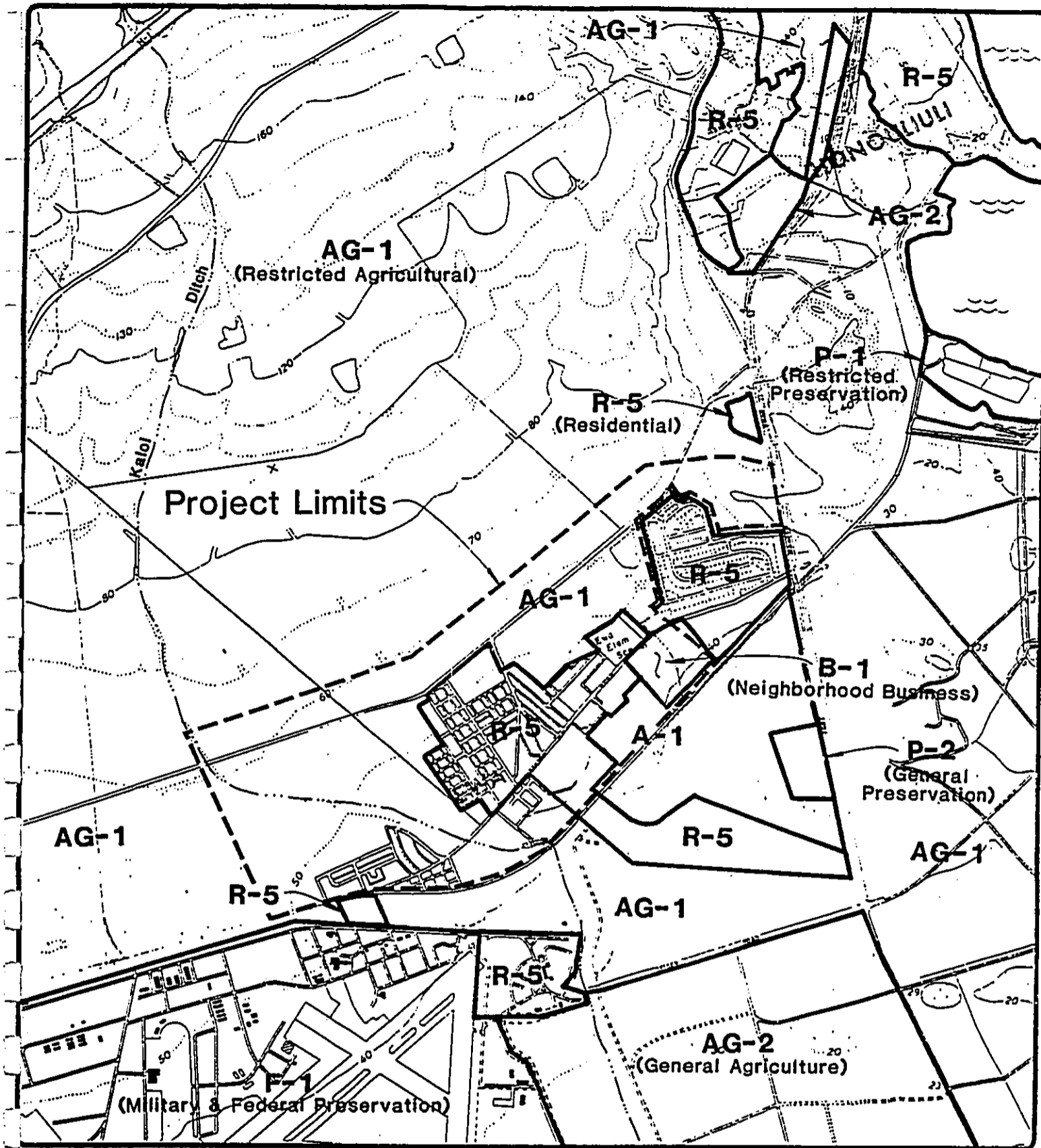
**LEGEND:**

- AG Agricultural
- PF Public Facility
- LD APT Low Density Apartment
- COML Commercial



**Figure 6-2  
Development Plan  
Land Use Map**

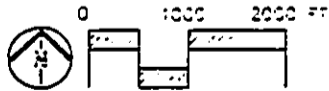
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MASTER PLAN**

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**Figure 6-3  
City & County Zoning Map**

R. M. Towill Corporation

(DGP) is required. This document has been prepared in accordance with Chapter 343 of the HRS, which outlines the necessary procedures and contents of EIS's. The chapter states, "environmental review at the state and county levels shall ensure that environmental concerns are given appropriate consideration in decision making along with economic and technical considerations." The requirement of an EIS was determined pursuant to Chapter 200 of Title 11, Administrative Rules, Subchapter 5b.

**6.10 CAMPBELL ESTATE MASTER PLAN**

The Estate of James Campbell is the major landowner in the Ewa area, with over 30,000 acres of land. The Estate maintains a planning program to coordinate the long-range development of their Ewa lands. Ewa Villages is consistent with the Campbell Estate Master Plan in that the Plan provides for the development of a planned residential community on the proposed project site.

**6.11 STATE LAND BANK**

The Department of Land and Natural Resources has designated all agriculturally designated lands west and north of the Ewa Village part of the East Kapolei project (State Land Bank). A portion of the project area is within the East Kapolei project area. This matter will need to be resolved between the State and City.

*ALTERNATIVES TO THE  
PROPOSED ACTION (7)*

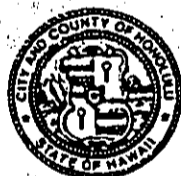
*IRREVERSIBLE AND  
IRRETRIEVABLE COMMITMENTS (8)*

*SUMMARY OF UNRESOLVED ISSUES (9)*

*PARTIES CONSULTED FOR THE  
PREPARATION OF THE EIS (10)*

*LIST OF PREPARERS (11)*

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7.1 BACKGROUND

In the Spring of 1989, a preliminary concept was prepared for the project site. The City specified that certain criteria be met by all development proposals. These criteria include:

- \* The development of residential units with a 60 percent/40 percent affordable/market mix.
- \* The development of an 18-hole public golf course as an integral part of the residential component. The golf course in combination with other flood control means, would remove the existing and proposed residential units from the flood plain.
- \* The rehabilitation of a percentage of existing homes in the villages area.

7.2 EVOLUTION OF DEVELOPMENT PROPOSALS

This section discusses the evolution of the proposed action for the purposes of this assessment. In early 1989, DHCD initiated preliminary conceptual development studies for portions of the Ewa Plain in anticipation of the potential closure of sugar operations in Ewa. From this endeavor, conceptual plans were produced for the Ewa Villages.

A. Community Revitalization

The first Ewa Villages plan was envisioned as a community revitalization project, focused on providing affordable and below low market housing in conjunction with the West Loch Bluffs project. This concept proposed the development of nearly all of the urban zoned lands around the Ewa Villages into residential use. Approximately 2,900 units were proposed under this scenario. The financial success of this project, however, was dependent upon its direct link to the proposed West Loch Bluffs project. This concept was further refined to concentrate on the restoration and revitalization of Tenney and Renton Villages through the development of a centralized

village restoration area. Primarily, this entailed relocation of existing structures in Tenney Village to a centralized area around Renton Village with the intent of visually portraying the character of the earlier plantation villages.

**B. Ewa Villages**

It was determined in early 1990 that the Ewa Villages project would be pursued as a totally separate project on its own. With this approach, the need for a more diversified plan was evident as there would be a need for creating ways for generating income within the project to support planned homeownership opportunities. Subsequently, the current proposal includes affordable and market housing, in addition to associated recreational and service support amenities. The Plan continues to focus attention on the *restoration and revitalization* of the existing Tenney and Renton Villages and identifies Varona Village as a relocation resource. A golf course has been introduced as a major drainage facility to help control flooding of the villages.

**7.3 EWA VILLAGE SUBDIVISION**

Redevelopment of the Ewa Villages using City and County subdivision standards was considered. The City used its subdivision standards to redevelop Fernandez Villages. This option was rejected because in the process of bringing the roadways up to City standards, the rural nature of the Villages would be changed to a more urban setting. Further, the increased road widths would necessitate the removal or relocation of many of the existing street trees.

In considering various subdivision alternatives, the lowering of the housing density was also considered. However, this option was rejected because with a lower density the cost of the improved lot to the potential home buyer was increased. The resultant increased cost further decreased the housing affordability.



#### 7.4 GOLF COURSE ALTERNATIVES

Alternatives to the development of a golf course included the development of a passive park and the continued use of the area for agriculture. In all alternative scenarios considered, the necessity to provide a flood control area was imperative. These two alternatives were rejected because they added an additional financial burden on the potential homebuyer thereby reducing the affordability. The development of the flood plain into a passive park also added maintenance costs that could not be covered by other revenue producing sources.

#### 7.5 NO ACTION ALTERNATIVE

A "no action" alternative would result in continuation of existing conditions for the project site. The site would most likely continue to be used for sugarcane cultivation for the near future, until 1995, whereupon uncertainties about lease agreement and renewal remain in question. However, as surrounding development occurs as part of the Secondary Urban Center, agriculture activities would probably be eliminated.

Advantages of the "no action" alternative are few. These advantages include: no further expenditures of resources required by public and private agencies; continued sugarcane cultivation of the site; and no adverse impacts on the project site generated by development.

The primary disadvantage of this non-project alternative would be the absence of a planned residential community with a unique mix of housing opportunities to suit lower income families, as well as middle income families. Additionally, losses resulting from this alternative would include lost housing and employment opportunities, as well as lost tax revenues for City and State government. The future tenancy of the existing residents is also uncertain.

8.1 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Development of Ewa Villages will involve the irretrievable loss of certain environmental, historic, and fiscal resources. However, the costs associated with the use of these resources should be evaluated in light of recurring benefits to the residents of the region, City and County of Honolulu, and State of Hawaii.

It is anticipated that the construction of the proposed project will commit the necessary construction materials and human resources for project completion. Human resources will be committed to planning, design, engineering, construction, landscaping, as well as sales, management, service offices, and maintenance. Reuse for much of these materials and resources is not practical. Although labor is compensated during the various stages of development, labor expended for project development is non-retrievable.

The project will result in a commitment for a long-term period, and it is unlikely that the land would revert to another use. Commitment for the project will foreclose certain use options for the land for agricultural uses.

The general appearance of the project site will not be altered from its present rural, agricultural character.

The proposed project will result in increased traffic volumes traveling to and from the project site, thus decreasing the efficiency of the vicinity roadways, and subsequently, creating vehicular pollution emissions. Noise quality will be adversely affected by the development, but similar to air quality, will remain in compliance with State standards through the recommended mitigation measures.

8.2 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S  
ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-  
TERM PRODUCTIVITY

No short-term exploitation of resources resulting from development of the project site will have long-term adverse consequences. The appearance of the project site will be altered from its present open sugarcane and rural residential environment to that of a completed, planned residential community. Although Ewa Villages will probably lose some of its rural and historic character, the intent of the plan is to retain and/or restore as much of the original quality as possible. This will be accomplished by sensitivity to design and respect for residents of the existing villages, and visual integration with the surrounding area.

Long-term community gains resulting from development of the project include residential and commercial uses which will likely benefit future homeowners, the landowners, private businesses, and the City and State governments. As the project develops, its productivity in terms of generating tax revenues will increase. Income from property, personal, and excise taxes are expected to more than offset expenses associated with expanded public facilities and services to meet the requirements of the development and population growth.

9.1 TERMS OF LEASE

To date, there has been no commitment that the lease between the Estate of James Campbell and OSCo will or will not be renewed in 1995.

9.2 LAND ACQUISITION

As aforementioned, the project site is owned by the Estate of James Campbell. In June 1990, the Honolulu City Council appropriated funds for acquisition of the property from the Estate. Terms of the proposed land acquisition between the City and land owner, however, have not been finalized. Negotiations are currently underway, and will be resolved between both entities in 1991.

9.3 HISTORIC PRESERVATION

The issues relating to historic preservation are perhaps the most complex in the context of the proposed action. Yet unresolved, are the possibilities that the project will or will not be governed by: a.) the National Historic Register; b.) State Historic Register; and c.) City and County of Honolulu Special District. In addition, the implications behind each possibility (or combination thereof) have not fully been determined in this EIS, and thus, will require further, more detailed evaluation.

9.4 TRANSPORTATION SYSTEM

Scheduling and financing of the proposed roadway improvements, as described in the Traffic Impact Assessment (Appendix G) will be resolved through the on-going planning process with DOT and major developers of the Ewa region.

9.5 HOUSE PRICES

The purchase price for the existing homes have not been set and will not be determined until the land acquisition is consummated.

10.1 FEDERAL

U. S. Department of Interior  
U. S. Department of Agriculture, Soil Conservation Service  
U. S. Department of Housing and Urban Development  
U. S. Army Corps of Engineers  
U. S. Naval Air Station Barbers Point

10.2 STATE

Housing Finance and Development Corporation  
Land Use Commission  
Office of State Planning  
Department of Business and Economic Development  
Department of Land and Natural Resources  
Department of Agriculture  
Department of Health  
Department of Transportation  
Department of Education  
Office of Environmental Quality Control  
U. H. Environmental Center

10.3 CITY AND COUNTY OF HONOLULU

Department of General Planning  
Department of Land Utilization  
Department of Transportation Services  
Department of Public Works  
Building Department  
Board of Water Supply  
Fire Department  
Police Department  
Office of Human Resources

Department of Parks and Recreation  
Department of Finance

10.4 INDIVIDUALS AND ORGANIZATIONS

Waipahu Neighborhood Board No. 22

Ewa Neighborhood Board No. 23

Friends for Ewa

Waipahu Community Association

Waipahu Business Association

Ewa Beach Community Association

Oahu Sugar Company

Estate of James Campbell

Historic Hawai'i Foundation

Gasco Inc.

Hawaiian Electric Company Inc.

GTE Hawaiian Telephone Company

Oahu Railway Society

Councilmember John DeSoto

Councilmember David Kahanu

PRINCIPAL CONSULTANT:  
R. M. Towill Corporation

Chester Koga, Project Planner  
Peter Yuh, Staff Planner  
Laura Fujioka, Staff Planner  
Roy Tsutsui, Project Engineer

SUBCONSULTANTS:  
Dr. Evangeline J. Funk

Barry D. Neal and Associates

Barry Neal

Darby and Associates

Ron Darby  
John Shearer

Pacific Business and Economic Consultants

Richard L. Bowen, Ph.D.  
Walter Miklius, Ph.D.

Cultural Surveys Hawaii

Hal Hammatt, Ph.D.  
William Folk  
David Shideler

John Child and Company, Inc.

Uson Ewart  
Elizabeth Kimura

Pacific Planning and Engineering, Inc.

Sterling Chow, P.E.  
Keith Okamoto

Ronald Ho and Associates

Ronald Ho  
Gary Funasaki

Scott Miller Design, Inc.

Scott Miller

Lester H. Inouye and Associates

Lester Inouye

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**SECTION 12**

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**COMMENTS AND RESPONSES  
TO THE EIS PREPARATION NOTICE**

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U.S. Department of Housing and Urban Development  
Honolulu Office, Region IX  
200 Ala Moana Blvd., Room 3318, Box 80007  
Honolulu, Hawaii 96850-4891

2

90-238

July 18, 1990

Mr. Michael H. Scarfone  
Director, Department of Housing  
and Community Development  
City and County of Honolulu  
650 South King Street  
Honolulu, HI 96813

Dear Mr. Scarfone:

SUBJECT: Environmental Impact Statement Preparation Notice  
for the Ewa Villages Master Plan

This responds to Mr. C.T. Koga's request dated June 18, 1990, for comments on the subject project. The proposed action will address both affordable (gap group, moderate, low-moderate) and market housing segments; provide 365 single-family units on 60 acres in Tenney Village and 485 single-family units on 80 acres in Renton Village. Other amenities include green belts, pedestrian paths and bikeways, a neighborhood commercial area and a neighborhood park. We also understand that an 18-hole golf course is planned on 185 acres within the 470 project area.

The following comments apply where CDBG assistance is proposed or if FHA mortgage insurance is anticipated.

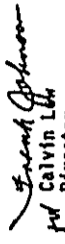
1. HUD would not require the preparation of a Full Environmental Impact Statement in accordance with HUD regulations.
2. If the proposed action is located within a Special Flood Hazard Area identified on a Flood Insurance Rate Map, compliance with Executive Order 11988 would be required.
3. The proposed action may not be impacted by aircraft operations generated by Barbers Point NAS or the Honolulu International Airport, however residential units abutting Fort Weaver Road will be impacted. The Analysis should evaluate current and projected noise levels generated by vehicular traffic. These values should be expressed as L<sub>50</sub> to reflect the 24-hour noise exposure.

4. Compliance with Section 106 of the National Historic Preservation Act of 1966, as amended would be required for properties listed or eligible for listing on the National Register of Historic Places. We understand that the Gahu Railway and Land Company Right-of-Way is on the register and that the town of Ewa where the sugar mill is located may be eligible for listing on the National Register of Historic Places.

5. A soils report would be required in accordance with Data Sheet 796, HUD Handbook 4140.3 CHG.

If you have any questions, please contact Frank Johnson at 541-1327.

Very sincerely yours,

  
Frank Johnson  
Director  
Community Planning and  
Development Division

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

830 SOUTH KING STREET, 8TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 322-4327 • FAX: 327-5418



FRANK P. KAM  
MAYOR

MICHAEL N. SCARFONE  
DIRECTOR

Call M. Kaito  
ADMINISTRATOR

December 27, 1990

Mr. Calvin Lew, Director  
Community Planning and Development Division  
U. S. Department of Housing  
and Urban Development  
Honolulu Office, Region IX  
300 Ala Moana Blvd., Room 3318  
Box 50007  
Honolulu, Hawaii 96850-4991

Dear Mr. Lew:

Subject: Ewa Villages Master Plan  
Environmental Impact Statement Preparation Notice (EISPN)

We have received your letter of July 18, 1990 regarding the EISPN for the subject project. Your comments regarding the applicability of the following items where CDBG assistance and FHA mortgage insurance are anticipated, have been taken under advisement.

1. We acknowledge that an EIS will not be required by HUD.
2. We will comply with Executive Order 11988 as the project area lies within a Special Flood Management Area defined by FIRMA.
3. The analysis provided by the Noise Impact Assessment has evaluated the existing and future traffic conditions in terms of LDN.
4. The project will comply with Section 106 of the National Historic Preservation Act of 1966 as amended.
5. A soils report is being prepared in accordance with Data Sheet 796 of the HUD Handbook.

Thank you for your interest and participation in the planning stages of this project.

Sincerely,

*Michael N. Scarfone*

MICHAEL N. SCARFONE  
Director

*Call M. Kaito*  
cc: Department of General Planning





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

PERMITS REFER TO

11100  
 SER 00FZ/2543  
 20 JUL 1990

Mr. Michael N. Scarfone  
 Director  
 Department of Housing and Community Development  
 650 S. King St.  
 Honolulu, HI 96813

Dear Mr. Scarfone:

**EVA VILLAGES MASTER PLAN**

This is in response to R. M. Towill Corporation letter of June 18, 1990, requesting review of the revised Environmental Impact Statement Preparation Notice (EISP) for the subject development.

Concerning the noise quality, the 1989 Air Installation Compatible Use Zone Noise Contours and Supporting Data Study should be used instead of the 1984 Noise Study indicated in the EISP. A copy of the 1989 Noise Study was submitted to your department on October 17, 1989, and another copy was forwarded recently. Also, Commander Naval Base (COMNAVBASE), Pearl Harbor, is the regional coordinator for naval activities in Hawaii; therefore, we request that COMNAVBASE Pearl Harbor be listed in Section 7 of the EISP instead of Commanding Officer, Naval Air Station, Barbers Point.

The COMNAVBASE point of contact is Mr. Bill Liu, telephone 471-3324.

Sincerely,  
  
 C. R. SPENCE  
 Lieutenant, OEC, U. S. Navy  
 Deputy Base Civil Engineer  
 Naval Base Pearl Harbor  
 By direction of the Commanding Officer

Copy to:  
 R. M. Towill Corp. (Mr. C. Koga)  
 NAS Barbers Point

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
**CITY AND COUNTY OF HONOLULU**

150 SOUTH KING STREET 5TH FLOOR  
 HONOLULU HAWAII 96813  
 PHONE: 533-2427 / FAX: 537-2489



PERMITS REFER TO

September 4, 1990

Mr. C. R. Spence  
 Lieutenant, OEC, U. S. Navy  
 Deputy Base Civil Engineer  
 Naval Base Pearl Harbor  
 Box 110  
 Pearl Harbor, HI 96860-5020

Dear Lieutenant Spence:

Subject: Eva Villages Master Plan  
 Environmental Impact Statement Preparation Notice

We have received your letter of July 2, 1990 in response to the EISP for the subject project. The 1989 Air Installation Compatible Use Zone Noise Contours and Supporting Data Study will be referred to for discussion(s) on noise impacts to our project. In addition, per your request, COMNAVBASE Pearl Harbor will be listed as the consulted agency in place of Commanding Officer, Naval Air Station, Barbers Point. The point of contact at COMNAVBASE, Mr. Bill Liu, has been noted.

Your interest and participation in the planning stages of this project are appreciated.

Very Truly Yours,  
  
 Michael N. Scarfone, Director

cc: OEQC



MICHAEL N. SCARFONE  
 DIRECTOR  
 RONALD B. HUN  
 DEPUTY DIRECTOR



DEPARTMENT OF THE ARMY  
U.S. ARMY ENGINEER DISTRICT, HONOLULU  
BUILDING 250  
FT SHAFTER, HAWAII 96849-5440

REPLY TO  
ATTENTION OF:  
Planning Division

July 23, 1990

Mr. Michael N. Scarfone  
Director  
Department of Housing and  
Community Development  
City and County of Honolulu  
658 South King Street, 5th Floor  
Honolulu, Hawaii 96813

Dear Mr. Scarfone:

Thank you for the opportunity to review the revised Environmental Impact Statement Preparation Notice (EISP) for the Ewa Villages Master Plan, Ewa, Oahu. Our comments in response to the previous EISP (letter dated June 22, 1989) are applicable, except that our use of "Kalai" should be corrected to "Kalo". We have no additional comments.

Sincerely,

*C. J. Chung*  
Kisuk Cheung  
Director of Engineering



DEPARTMENT OF THE ARMY  
U.S. ARMY ENGINEER DISTRICT, HONOLULU  
BUILDING 250  
FT SHAFTER, HAWAII 96849-5440

REPLY TO  
ATTENTION OF:  
Planning Division

June 22, 1990

Mr. Michael N. Scarfone  
Director  
Department of Housing and  
Community Development  
City and County of Honolulu  
650 South King Street, 5th Floor  
Honolulu, Hawaii 96813

Dear Mr. Scarfone:

Thank you for the opportunity to review the Environmental Impact Statement Preparation Notice (EISP) for the West Loch Bluffs and Ewa Villages Master Plan, Ewa, Oahu. The following comments are offered:

a. A Department of the Army (DA) permit will be required for any activities involving placement of fill in Kalai Gulch. For further information about DA permit requirements, please contact Operations Division at 438-9258.

b. According to the latest (September 22, 1989, preliminary) flood insurance rate map, nearly all of the project site is located in Zone AH, a special flood hazard area inundated by the 100-year flood, with base flood elevation of 40 to 48 feet MSL. A small portion of TMK 9-1-16 is located in Zone X (unshaded). "Other Areas" determined to be outside of the 500-year flood as designated by the Federal Emergency Management Agency in September 1989.

Sincerely,

*C. J. Chung*  
Kisuk Cheung  
Director of Engineering

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
**CITY AND COUNTY OF HONOLULU**

430 SOUTH KING STREET, 8TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE 523-4427 • FAX 527-8488



FRANK YEH  
1979

MICHAEL N. SCARFONE  
DIRECTOR  
Gail Kalto  
ADMINISTRATOR

December 21, 1990

Mr. Kisuk Cheung, Director of Engineering  
Department of the Army  
U. S. Army Engineer District Honolulu  
Building 230  
Fort Shafter, Hawaii 96858-5440

Dear Mr. Cheung:

Subject: Ewa Villages Master Plan  
Environmental Impact Statement Preparation Notice (EISP/N)

Thank you for your letter of July 23, 1990 (and attached letter dated June 22, 1990) regarding the DEIS for the subject project. Prior to any work performed on Kaloi Ditch, your Operations Division will be contacted regarding Department of the Army permit requirements. In addition, it has been noted that the project area lies in two flood zones, Zone AH and Zone D, according to the Flood Insurance Rate Maps (Panels 150001-0110-C, 130-C, and 135-C, September 28, 1990).

Your interest and participation in the planning stages of this project are appreciated.

Very Truly Yours,

*Michael N. Scarfone*

for Michael N. Scarfone, Director

cc: DGP

STATE OF HAWAII  
DEPARTMENT OF BUSINESS  
AND ECONOMIC DEVELOPMENT



LAND USE COMMISSION

Room 104, Old Federal Building, 335 Merchant Street  
Honolulu, Hawaii 96813 Telephone: 548-4411

JONI WAIKOE  
Governor  
RONNIE L. A. HIP  
Chairman  
FREDERICK P. WILKINSON  
Vice Chairman

COMMISSION MEMBERS:

Barbara F. Owe  
Susan S. Bishop  
Alice T. Lee  
Alice T. Luffkin  
Ernie Lapanis, Jr.  
June M. Deane  
Etsuo Ueda  
ESTHER UEDA  
Executive Officer

June 22, 1990

Mr. Michael Scarfone  
Director, DHCD  
650 South King Street, 5th Floor  
Honolulu, Hawaii 96813

Attention: Ms. Gail Kaito  
Dear Mr. Scarfone:

Subject: EISPN for the Proposed Ewa Villages Master Plan,  
Ewa, Oahu, Hawaii

We have reviewed the subject EISPN and have no comments to offer at this time except that the project is designated within the State Land Use Agricultural and Urban Districts. The Project Summary and Figure 3 "State Land Use District Boundary Map" on pages 1 and 6, respectively, should be revised accordingly.

Please submit the draft EIS for our review when its available.

If you have any questions, please call me or my staff at 548-3039.

Sincerely,

ESTHER UEDA  
Executive Officer

EU:to

cc: Chester Koga

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 5TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE 533-4227 • FAX 533-9488



FRANK PASK  
Mayor

MICHAEL N. SCARFONE  
DIRECTOR  
RONALD S. HUN  
DEPUTY DIRECTOR

September 4, 1990

Ms. Esther Ueda, Executive Officer  
State Land Use Commission  
Old Federal Building  
335 Merchant Street, Room 104  
Honolulu, HI 96813

Dear Ms. Ueda:

Subject: Ewa Villages Master Plan  
Environmental Impact Statement Preparation Notice

We have received your letter of June 22, 1990 in response to the EISPN for the subject project. The Project Summary and State Land Use District Boundary Map have been revised to include the project in Agricultural and Urban districts. This change will be reflected in the DEIS for the subject project, to be transmitted, when available, for your review.

Your interest and participation in the planning stages of this project are appreciated.

Very Truly Yours,

  
Michael N. Scarfone, Director

cc: OEQC

JOHN WALKER  
DIRECTOR



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
825 PURICHOMI STREET  
HONOLULU, HAWAII 96813-5087  
July 5, 1990

EDWARD Y. HIRATA  
DIRECTOR  
DEPARTMENT OF TRANSPORTATION  
825 PURICHOMI STREET  
HONOLULU, HAWAII 96813-5087  
CALVINIA TELUSA

PER REPLY REFER TO:  
HNY-PS  
2-2526

DIR 8788  
HNY-PS  
2-2135

JUN 12 1990

Mr. Michael N. Scarfone, Director  
Department of Housing and  
Community Development  
650 South King Street, 5th Floor  
Honolulu, Hawaii 96813

Attention: Ms. Gail Kaito  
Dear Mr. Scarfone:

Revised EIS Preparation Notice (EISPN),  
Ewa Villages Master Plan,  
TMK: 9-1-16: por. 25; 9-1-17: 2, 36, 37,  
38, 39, 46, 47, 48, 51: por. 4, 49  
Project area: 470 acres

Thank you for your letter of June 18, 1990, requesting our review  
of the EISPN for Ewa Villages.

Our attached comments (dated 06/12/90) on the EISPN for West Loch  
Bluffs and Ewa Villages projects are still valid and applicable  
for your consideration.

Very truly yours,

Edward Y. Hirata  
Director of Transportation

Enc.

Mr. Michael Scarfone, Director  
Department of Housing and  
Community Development  
City and County of Honolulu  
650 South King Street, 5th Floor  
Honolulu, Hawaii 96813

Attention: Ms. Gail Kaito  
Dear Mr. Scarfone:

EIS Preparation Notice, West Loch Bluffs  
and Ewa Villages Master Plan, Ewa, Oahu  
TMK: 9-1-16: por. 25, 9-1-17  
Approximately 850 acres

At the request of Mr. Chester Koga of R.M. Tovill Corporation, we  
are forwarding to you the following comments regarding the  
subject project:

1. A project of this magnitude will require a TIAR. This report  
should be prepared in conjunction with the Ewa Regional  
Traffic Master Plan.
2. The developer should prepare a drainage study for this  
project. The project drainage and roadway system should  
compatibly connect to adjacent planned developments.
3. This project should be coordinated with other major  
developments in the area.
4. Access to Farrington Highway and Port Heaver Road should be  
limited to major crossroads.

Mr. Michael Scarfone  
Page 2

HNY-PS 2.2135

HIGHWAY POLICY STATEMENT FOR EVA

5. The developer must abide by the attached "Highway Policy Statement for Eva."

Very truly yours,



Edward Y. Hirata  
Director of Transportation

Enc.

Many large developments are being planned in the Eva area from Ko Olina to Waipahu. Each of these developments has its own traffic impact study with little coordination with other developments. No one study is giving us a true picture of the cumulative effects of all of the developments and the overall highway needs of the area.

There is a clear need to coordinate the highway needs of all of the developments and to develop an Overall Highway Master Plan for the Eva area.

Campbell Estate will prepare a Highway Master Plan for the Eva area. This Master Plan will identify:

1. The highway needs of the Eva area.
2. When the necessary highway improvements must be constructed.
3. The approximate costs of these highway improvements.
4. Who should share in the costs of the highway improvements.
5. Who should construct the highway improvements.

After acceptance of the Master Plan by all affected developers and government agencies, the Plan will become policy.

Each developer will then be expected to implement this Highway Master Plan.

All land use approvals for projects in the Eva area will include conditions that require developers to comply with the recommendations of the Eva Highway Master Plan regarding the needed highway improvements, who pays for them, when they should be completed and who should construct them.



DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

630 SOUTH KING STREET, 8TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 832-4427 • FAX: 827-9488



FRANK F. FARI  
MAYOR

MICHAEL N. SCARFONE  
DIRECTOR  
GAIL M. MALTO  
DEPUTY DIRECTOR

December 12, 1990

Mr. Edward Y. Hiraia,  
Director of Transportation  
State Department of Transportation  
869 Punchbowl Street  
Honolulu, HI 96813-5097

Dear Mr. Hiraia:

Subject: Ewa Villages Master Plan  
Environmental Impact Statement Preparation Notice (EISP/N)

We have received your letter of July 5, 1990 regarding the EISP/N for the subject project. The following has been prepared in response to your comments referenced in your letter of June 12, 1990:

1. A TIAR has been prepared by Pacific Planning and Engineering, Inc. and is included in the DEIS for the subject project. The report has been prepared in conjunction with the Ewa Regional Traffic Master Plan.
2. A preliminary drainage study for the project will be conducted and will consider compatible connections to adjacent planned developments. A drainage master plan will be prepared as part of the design process.
3. The project will be coordinated with other major projects in the area.
4. In the short-term, there will be no direct access to Farrington Highway from the project. Access to Fort Weaver Road will be via Renton Road.
5. The project will adhere to the Highway Policy Statement for Ewa.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

*Michael N. Scarfone*

for Michael N. Scarfone, Director

cc: DGP



STATE OF HAWAII  
DEPARTMENT OF EDUCATION  
P. O. BOX 2180  
HONOLULU, HAWAII 96813

OFFICE OF THE SUPERINTENDENT

CHARLES T. TOGUCHI  
SUPERINTENDENT

July 13, 1990

Mr. Michael N. Scarfone  
Director, DHCD  
650 South King Street, 5th Floor  
Honolulu, HI 96813

Attention: Ms. Gail Kaito  
Dear Mr. Scarfone:

Subject: Environmental Impact Statement  
Eva Villages Master Plan

We have reviewed the revised Environmental Impact Statement for the subject plan and have the following comments to make:

- 1) Based on the proposed 850 units in the project we have projected the following enrollment impact:

School	Grades	Projected Students
Eva Elementary	K-6	180-200
Iliwa Intermediate	7-8	40- 50
Campbell High	9-12	70- 80

- 2) Eva Elementary would be severely impacted in spite of DOE plans to build an additional 16 classrooms by September, 1994. An additional 8 to 10 classrooms would be required to accommodate the projected enrollment increase. However, the design enrollment is 900 for the year 2010 not including the Eva Village project. The DOE is reluctant to consider increasing elementary school sizes beyond 900 and would need to study alternative plans to accommodate all of the enrollment growth in the Eva Elementary service area.

AN AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY EMPLOYER

Mr. Michael N. Scarfone -2- July 13, 1990

- 3) Iliwa Intermediate currently has a surplus of classrooms. However, we expect a shortage to develop rapidly as numerous housing developments in the Eva plains are constructed.
- 4) Campbell High should have adequate capacity to accommodate the enrollment increase projected from the project.

Due to the many proposed projects in the area, the DOE will be faced with severe problems in addressing all classroom requirements within the present funding limits. We request the County to place a requirement for the developers to contribute a fair share of the school infrastructure cost.

If there are any questions, please call the Facilities Branch at 737-4743.

Sincerely,  
*Charles T. Toguchi*  
Charles T. Toguchi,  
Superintendent

CTT:jl  
cc: E. Imai  
L. Chung

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

850 SOUTH KING STREET, 5TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 533-4187 / 712-577-5488



FRANK J. JELP  
DIRECTOR

MICHAEL N. SCARFONE  
DIRECTOR  
RONALD B. MUIR  
DEPUTY DIRECTOR

September 4, 1990

Mr. Charles Toguchi, Superintendent  
State Department of Education  
P. O. Box 23360  
Honolulu, HI 96804


Dear Mr. Toguchi:

Subject: Ewa Villages Master Plan  
Environmental Impact Statement Preparation Notice

We have received your letter of July 13, 1990 in response to the EISPN for the subject project. Your comments regarding the projected enrollment and facilities requirements for Ewa Elementary, Ilima Intermediate, and Campbell High Schools have been taken under advisement. In addition, the City will consider setting a requirement for the developer contributions toward school infrastructure costs, as a means to ease the increasing funding demands. Future questions regarding the project will be referred to the Facilities Branch.

Your interest and participation in the planning stages of this project are appreciated.

Very Truly Yours,

  
Michael N. Scarfone, Director

cc: OEQC

JOHN WALKER  
DIRECTOR



STATE OF HAWAII  
DEPARTMENT OF BUDGET AND FINANCE  
HOUSING FINANCE AND DEVELOPMENT CORPORATION  
SEVEN WATERFRONT PLAZA, SUITE 300  
500 ALA MOANA BOULEVARD  
HONOLULU, HAWAII 96813  
FAX: (808) 548-8801

FRANKIE PASH  
UNIT 10

JOSEPH K. CONANT  
EXECUTIVE DIRECTOR

IN WHAT AREA TO:

90:PLING/3461 jt

July 24, 1990

Mr. Michael N. Scarfone  
Director, DHCD  
650 South King Street, 5th Floor  
Honolulu, Hawaii 96813  
Attention: Ms. Gail Kaito

Dear Mr. Scarfone:

Re: Environmental Impact Statement Preparation Notice (EISP) for the Proposed Ewa Villages Master Plan

We have reviewed the subject EISP and would like the following items to be addressed in the draft Environmental Impact Statement.

1. Development timetable.
2. The income and special need groups that will be targeted for assistance. For example, the number of units that will be affordable to families earning (1) up to 80%, (2) between 80% and 120%, and (3) from 120% to 140% of the HUD median income.
3. Proposed sales prices and rental rates.

Thank you for the opportunity to comment.

Sincerely,

JOSEPH K. CONANT  
Executive Director

JT:eks

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

810 SOUTH KING STREET, 5TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 832-4127 • FAX: 837-8498



December 28, 1990

MICHAEL N. SCARFONE  
DIRECTOR  
Gail Kaito  
DEPUTY DIRECTOR

Mr. Joseph K. Conant  
Executive Director  
Housing Finance and Development Corporation  
Seven Waterfront Plaza, Suite 300  
500 Ala Moana Boulevard  
Honolulu, Hawaii 96813

Dear Mr. Conant:

Subject: Ewa Villages Master Plan  
Environmental Impact Statement Preparation Notice (EISP)

We have received your letter of July 24, 1990 regarding the EISP for the subject project. The Draft EIS addresses: 1) the development timetable; 2) income and special needs groups that will be targeted for assistance; and 3) proposed sales prices and rental rates of dwelling units. We are proposing to develop the Ewa Villages in several phases, with the first phase starting in 1992. The number of affordable units available to families in the low, moderate and gap income groups will be about 669 or 60% of the total housing units. The Ewa Villages Project is designed as a "For Sale" project, however, families that do not wish to purchase their home will be given an opportunity to rent.

Thank you for your interest and participation in the planning stages of this project.

Sincerely,

MICHAEL N. SCARFONE  
for Director

cc: Department of General Planning

JOHN WAIHEE  
GOVERNOR



YUKIO KITAGAWA  
CHAIRPERSON, BOARD OF AGRICULTURE  
SUZANNE D. PETERSON  
DEPUTY TO THE CHAIRPERSON

State of Hawaii  
DEPARTMENT OF AGRICULTURE  
1422 So. King Street  
Honolulu, Hawaii 96814-2512

FAX: 548-6100  
MAILING ADDRESS:  
P. O. Box 22159  
Honolulu, Hawaii 96822-0159

July 25, 1990

Mr. Michael N. Scarfone  
July 25, 1990  
Page -2-

cultivated in sugarcane may seem small, but when put into proper perspective, it could have a significant impact on Oahu Sugar.

Thank you for the opportunity to comment.

Sincerely,

*Yukio Kitagawa*  
YUKIO KITAGAWA

Chairperson, Board of Agriculture  
c: Oahu Sugar Company  
Office of State Planning (attention: Land Use Division)  
Department of General Planning

Mr. Michael N. Scarfone, Director  
Department of Housing and Urban Development  
650 South King Street  
Honolulu, Hawaii 96813  
Attention: Ms. Gail Kaito

Dear Ms. Kaito:

Subject: Environmental Impact Statement Preparation Notice  
(EISP/N) for Eva Villages Master Plan  
TMX: 9-1-16: por. 25  
9-1-17: 2, por. 4, 36-39, 46-48, por. 49, 51  
Area: 470 acres

The Department of Agriculture has reviewed the subject document and offers the following comments.

We note that the 185-acre public golf course being considered as part of the Master Plan is to: (1) meet a need for more public courses, and (2) use a flood plain in the project area where housing units cannot be built without extensive and costly filling, grading, and stream channelization. We note that the project site is within the State Urban District.

We recommend that the EIS consider a "no golf course" alternative. To our knowledge, the total acreage that will be available to Oahu Sugar Company for sugarcane cultivation in the near future will be close to the minimum acreage needed to operate economically in a single mill configuration (this assumes full development of all proposed and planned projects affecting Oahu Sugar fields). A reduction of 180 or 50 acres



DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

810 SOUTH KING STREET, 5TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE 832-4437 • FAX 837-3498



FRANK PARI  
DIRECTOR

MICHAEL N. SCARFONE  
DIRECTOR  
GAIL KAITO  
DEPUTY DIRECTOR

December 28, 1990

Mr. Yukio Kitagawa  
Chairperson, Board of Agriculture  
State Department of Agriculture  
1428 South King Street  
Honolulu, HI 96814-2512

Dear Mr. Kitagawa:

Subject: Ewa Villages Master Plan  
Environmental Impact Statement Preparation Notice (EISPN)

We have received your letter of July 25, 1990 regarding the EISPN for the subject project. Your recommendation that the EIS discuss a "No Golf Course" alternative has been taken under advisement. However, according to the Agricultural Impact Assessment prepared by Pacific Business and Economic Consultants, the project is anticipated to have a minor negative effect on the profitability of OSCo. Cane withdrawals due to this project represent 2.1 % of OSCo's 1988 cultivated acreage and 3.5% of core acreage. In addition, the location of the project on the periphery of farmed lands, its small amount of acreage, and its closeness to urban areas, suggest that this land is less important than other core lands.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

*Michael N. Scarfone*

Michael N. Scarfone, Director

cc: DGP

11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100



STATE OF HAWAII  
DEPARTMENT OF HEALTH  
P. O. BOX 337  
HONOLULU, HAWAII 96801

August 22, 1990

JOHN C. LITTLE, M.D.  
DIRECTOR OF HEALTH

IN REPLY, PLEASE REFER TO:  
EPHCD

2-145

MICHAEL N. SCARFONE

-2-

August 22, 1990

3. Noise from stationary equipment such as air conditioning units, exhaust fans must be attenuated to meet the allowable noise levels as specified in Title 11, Administrative Rules, Chapter 43, Community Noise Control for Oahu.
4. Activities associated with the construction phase of the project must also comply with the provisions of Chapter 43, Community Noise Control for Oahu:
  - a. The contractor must obtain a noise permit since the noise level from the construction activities are expected to exceed the allowable levels of the regulations.
  - b. Construction equipment and on-site vehicles requiring an exhaust of gas or air must be equipped with mufflers.
  - c. The contractor must comply with the conditional use of the permits as specified in the regulations and conditions issued with the permit.
5. Since noise from construction work can have effect on classroom activity, plans to minimize the noise impact on Ewa Elementary School should be developed. This could include the use of noise barriers or the scheduling of noisy activities during non-school hours.
6. Heavy vehicles travelling to and from the project site must comply with the provisions of Title 11, Administrative Rules, Chapter 42, Vehicular Noise Control for Oahu.

  
BRUCE S. ANDERSON, Ph.D.

To: Michael N. Scarfone, Director  
Department of Housing & Community Development  
City & County of Honolulu

From: Deputy Director for Environmental Health

Subject: Comments to Environmental Impact Statement  
Preparation Notice for the Ewa Villages Master Plan, Ewa, Oahu, Hawaii  
TMK:9-1-16: 25 portion  
9-1-17: 2, 4 portion, 36, 37, 38, 39, 46, 47, 48, 49  
portion, and 51

We have reviewed the Environmental Impact Statement Preparation Notice (EISP/N) for the subject project and concur that the City's Honolulu Wastewater Treatment Plant (WWTP) be utilized to serve the wastewater needs of the subject project. No other means of sewage disposal should be allowed. The construction of the subject projects must be coordinated closely with the City's plan to expand and upgrade the existing Honolulu WWTP.

In preparation of the Environmental Impact Statement for the subject project, the following noise concerns should be addressed:

1. Noise from the recreational activities associated with public parks within the development, including people shouting, yelling or screaming, and sound production and reproduction devices, may impact surrounding residences in terms of annoyances.
2. Noise from activities associated with the golf course facilities may adversely impact the residential communities. Concerns are directed to ground maintenance and clubhouse related activities.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
**CITY AND COUNTY OF HONOLULU**

810 SOUTH KING STREET, 2ND FLOOR  
HONOLULU, HAWAII 96813  
PHONE 533-4437 • FAX 537-3498



FRANK JAM  
MAYOR

MICHAEL N. SCARFONE  
DIRECTOR  
RONALD B. MUN  
DEPUTY DIRECTOR

f. Heavy vehicles travelling to and from the project site will comply with the provisions set forth by Title 11, Administrative Rules, Chapter 42.

Your interest and participation in the planning stages of this project are appreciated.

September 4, 1990

Mr. Bruce Anderson, Ph.D.  
Deputy Director for Environmental Health  
State Department of Health  
P. O. Box 3378  
Honolulu, HI 96801

Very Truly Yours,

*Michael N. Scarfone*  
Michael N. Scarfone, Director

cc: OEQC

Dear Mr. Anderson:

Subject: Eva Villages Master Plan  
Environmental Impact Statement Preparation Notice

We have received your letter of August 22, 1990 in response to the EISPN for the subject project. The following has been prepared in response to your comments:

1. The construction of the subject project will be coordinated with the City's plan to expand and upgrade the existing Honouliuli Wastewater Treatment Plant.
2. As requested, the following noise concerns will be addressed in the DEIS for subject project:
  - a. Recreational activities associated with public parks within the development;
  - b. Activities associated with the golf course facilities, particularly maintenance and clubhouse activities;
  - c. Stationary equipment such as air conditioning units and exhaust fans will be attenuated to meet the allowable noise levels as specified in Title 11, Administrative Rules, Chapter 43, Community Noise Control for Oahu.
  - d. Activities associated with the construction phase of the project will comply with Chapter 43 provisions;
  - e. Appropriate measures will be developed to mitigate the noise impact on Ewa Elementary School;





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



FRANK J. JEN  
DIRECTOR

SAM CALLEJO  
DIRECTOR AND CHIEF ENGINEER  
C. MICHAEL STUBBS  
DEPARTMENT ENGINEER  
In reply refer to:  
ENV 90-136(449)

June 25, 1990

MEMORANDUM

TO: MICHAEL SCARFONE, DIRECTOR  
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

ATTENTION: GAIL KAITO

FROM: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE  
(EISP) WEST LOCH BLUFFS AND EWA VILLAGE MASTER PLAN  
THK: 9-1-16: POR. OF 25; 9-1-17: 2, POR. OF 4, 36,  
37, 38, 39, 46, 47, 48, POR. OF 49 AND 51

We have reviewed the subject EISP and wish to inform you that our comments for this EISP are the same as the one we made for West Loch Bluffs and Ewa Villages Master Plan (see attached copy of memo dated June 12, 1990, Reference No. ENV 90-127).

*C. Michael Stubbs*  
SAM CALLEJO  
Director and Chief Engineer

Att.

In reply refer to:  
ENV 90-127(448)

June 12, 1990

MEMORANDUM

TO: MICHAEL SCARFONE, DIRECTOR  
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

ATTENTION: GAIL KAITO

FROM: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE (EISP)  
WEST LOCH BLUFFS AND EWA VILLAGES MASTER PLAN  
THK: 9-1-16: PORTION OF 25  
9-1-17: 2, PORTION OF 4, 36, 37, 38, 39, 46, 47, 48,  
PORTION OF 49 AND 51

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

1. The Draft Environmental Impact Statement should include a statement that in case the City is required to provide secondary treatment at the Honolulu Wastewater Treatment Plant, the completion date of the proposed plant expansion will be moved back by approximately two (2) years.
2. A sewer master plan should be submitted to the Planning Branch, Division of Wastewater Management, for review and comment.
3. A drainage report and drainage master plan should be submitted to the Drainage Section, Division of Engineering, for review and approval.

*C. Michael Stubbs*  
for SAM CALLEJO  
Director and Chief Engineer

bcc: Eng  
Unit

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

830 SOUTH KING STREET, 5TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 533-4437 • FAX: 537-5489



FRANK F. PARR  
MAYOR

MICHAEL N. SCARFONE  
DIRECTOR

Gail Kaito  
DEPUTY DIRECTOR

December 12, 1990

Mr. Sam Callejo  
Director and Chief Engineer  
Department of Public Works  
650 South King Street  
Honolulu, HI 96813

Dear Mr. Callejo:

Subject: Ewa Villages Master Plan  
Environmental Impact Statement Preparation Notice (EISP/N)

We have received your letter of June 25, 1990 regarding the EISP/N for the subject project. The following is in response to your comments:

1. The possible requirement for the City to provide secondary treatment at the Honouliuli WWTP has been noted.
2. A sewer master plan will be submitted to the Planning Branch, Division of Wastewater Management, for review and comment.
3. A drainage report and master plan will be submitted to the Drainage Section, Division of Engineering, for review and approval.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

*Gail Kaito*

for Michael N. Scarfone, Director

cc: DGP

BUILDING DEPARTMENT  
CITY AND COUNTY OF HONOLULU  
HONOLULU MUNICIPAL BUILDING  
AND COUNTY COURTHOUSE  
HONOLULU, HAWAII 96813



FRANK P. FASI  
MAYOR

HERBERT K. MURAOKA  
DIRECTOR AND BUILDING SUPERINTENDENT

PB 90-537

July 3, 1990

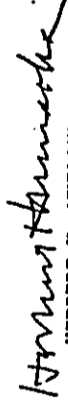
MEMO TO: MICHAEL N. SCARFONE, DIRECTOR  
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

FROM: HERBERT K. MURAOKA  
DIRECTOR AND BUILDING SUPERINTENDENT

SUBJECT: EWA VILLAGES MASTER PLAN (EISPN)

In response to the letter from R.M. Towill Corporation dated June 18, 1990, we would like to make the following comment regarding the subject EISPN:

1. On page 16, we recommend adding: "Section 5.10 Government Facilities - A satellite city hall will be incorporated in the new Waipahu Civic Center in the near future. Initial planning for the City-State Civic Center in Kapolei is underway."

  
HERBERT K. MURAOKA  
Director and Building Superintendent

cc: J. Harada

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU  
850 SOUTH KING STREET, 27th FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 832-4427 • FAX: 827-8488



FRANK P. FASI  
MAYOR

MICHAEL N. SCARFONE  
DIRECTOR  
GAIL KAITO  
DEPUTY DIRECTOR

December 12, 1990

Mr. Herbert K. Muraoka  
Department and Building Superintendent  
Building Department  
650 South King Street  
Honolulu, HI 96813


Dear Mr. Muraoka:

Subject: Ewa Villages Master Plan  
Environmental Impact Statement Preparation Notice (EISPN)

We have received your letter of June 25, 1990 regarding the EISPN for the subject project. The EIS will reflect your recommended addition to the public facilities and services discussion in Section 5.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,



Michael N. Scarfone, Director

cc: DGP

DEPARTMENT OF LAND UTILIZATION  
CITY AND COUNTY OF HONOLULU  
850 SOUTH KING STREET  
HONOLULU, HAWAII 96813 • PHONE 533-4432



FRANK FISH  
MAYOR

DONALD A. CLEGG  
DIRECTOR  
LORETTA E. CHENE  
DEPUTY DIRECTOR

11/2/90-4192(RF)

July 2, 1990

Mr. Chester T. Koga  
Project Manager  
R.H. Towill Corporation  
420 Waikamilo Road  
Suite 411  
Honolulu, Hawaii 96817-4941

Dear Mr. Koga:

Environmental Impact Statement Preparation Notice  
Ewa Villages Master Plan

We understand that the consultants are in the process of developing a master plan for Ewa Villages, which will include an inventory of and plan for preserving significant historic features. We recommend using the Draft Environmental Impact Statement as an avenue for obtaining comments on the draft master plan and any significant alternatives.

Very truly yours,

*Donald A. Clegg*  
DONALD A. CLEGG  
Director of Land Utilization

DAC:s1  
0338M/55

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU  
850 SOUTH KING STREET, 8TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE 533-4237 • FAX 537-8498



FRANK FISH  
MAYOR

MICHAEL N. SCARFONE  
DIRECTOR  
RONALD B. MUN  
DEPUTY DIRECTOR

September 4, 1990

Mr. Donald A. Clegg, Director  
City and County of Honolulu  
Department of Land Utilization  
650 South King Street  
Honolulu, HI 96813

Dear Mr. Clegg:

Subject: Ewa Villages Master Plan  
Environmental Impact Statement Preparation Notice

We have received your letter of July 2, 1990 in response to the EISPN for the subject project. We concur that the Draft Environmental Impact Statement should be used as an avenue for obtaining comments on the Master Plan as well as any significant alternatives.

Your interest and participation in the planning stages of this project are appreciated.

Very Truly Yours,

*Michael N. Scarfone*  
Michael N. Scarfone, Director

cc: OEQC



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



FRANK F. FASEI Mayor  
DOMENIC B. GOYK Chairman  
JOHN K. TSAI Vice Chairman  
SISTER M. DAVID M. AM. CHICK, O.S.F.  
SAM CALLEJO  
EDWARD Y. HIRATA  
WALTERO WATSON, JR.  
MAURICE H. YAMASATO  
KAZU HAYASHIDA  
Manager and Chief Engineer

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU  
190 SOUTH KING STREET, 8TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 833-4437 • FAX: 927-9888



FRANK F. FASEI  
Mayor

MICHAEL N. SCARFONE  
DIRECTOR  
GAIL KAITO  
DEPUTY DIRECTOR

July 3, 1990

TO: MICHAEL N. SCARFONE, DIRECTOR  
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

ATTN: GAIL KAITO

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

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE FOR  
EWA VILLAGES MASTER PLAN, EWA, OAHU, HAWAII

December 12, 1990

Mr. Kazu Hayashida  
Manager and Chief Engineer  
Board of Water Supply  
630 South Beretania Street  
Honolulu, HI 96843

Dear Mr. Hayashida:

We have the following comments on the proposed Ewa Villages Master Plan.

1. The developer should submit a Water Master Plan including hydraulic calculations for Ewa Villages for our review and approval.
2. Water sources for the development should be specified.
3. Non-potable water should be used for the golf course irrigation.

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

Subject: Ewa Villages Master Plan  
Environmental Impact Statement Preparation Notice (EISPN)

We have received your letter of July 3, 1990 regarding the EISPN for the subject project. A water master plan for the project will be submitted to BWS for review and approval. Water sources for the development are currently being investigated. The golf course will be irrigated by non-potable water.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

*Gail Kaito*

*for* Michael N. Scarfone, Director

cc: DGP

**FIRE DEPARTMENT  
CITY AND COUNTY OF HONOLULU**

1488 SOUTH BERETANIA STREET, ROOM 303  
HONOLULU, HAWAII 96814



FRANK F. FARU  
MAYOR

LIONEL E. CAMARA  
FIRE CHIEF  
DONALD S. H. CHANG  
DEPUTY FIRE CHIEF

July 11, 1990

**TO: MICHAEL N. SCARFONE, DIRECTOR  
DEPARTMENT OF HOUSING & COMMUNITY DEVELOPMENT**

**FROM: LIONEL E. CAMARA, FIRE CHIEF**

**SUBJECT: WEST LOCH BLUFFS AND EWA VILLAGES MASTER PLAN**

In reply to R. H. Towill Corporation letter dated June 18, 1990, we have reviewed the subject material provided and foresee no adverse impact in Fire Department facilities or services, planned or now provided, existing fire protection is considered adequate.

Access for fire apparatus, water supply and building construction shall be in conformance to existing codes and standards.

HZ:ny

*Lionel E. Camara*  
LIONEL E. CAMARA  
Fire Chief

**DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU**

830 SOUTH KING STREET, STEINBOCK  
HONOLULU, HAWAII 96813  
PHONE 933-4437



FRANK F. FARU  
MAYOR

MICHAEL SCARFONE  
DIRECTOR  
Cecil H. Kaito  
DEPUTY DIRECTOR

December 31, 1990

**Mr. Lionel E. Camara, Fire Chief  
Fire Department  
1455 South Beretania Street, Room 308  
Honolulu, HI 96814**

Dear Mr. Camara:

**Subject: Ewa Villages Master Plan  
Environmental Impact Statement Preparation Notice (EISP/N)**

We have received your letter of July 11, 1990 indicating that you have received your copy of the EISP/N for this subject project, and that no adverse impact to Fire Department facilities or services is anticipated as a result of the project. Access for fire apparatus, water supply and building construction will conform to existing codes and standards.

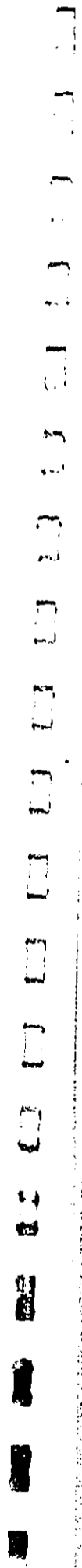
Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

*Michael N. Scarfone*

for Michael N. Scarfone, Director

cc: DGP



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



FRANK FARI  
20100

BENJAMIN B. LEE  
CHIEF PLANNING OFFICER  
ROLAND B. LEST, JR.  
DEPUTY CHIEF PLANNING OFFICER

AC 6/00-1783

JULY 17, 1990

MEMORANDUM  
TO: MICHAEL N. SCARFONY, DIRECTOR  
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
FROM: BENJAMIN B. LEE, CHIEF PLANNING OFFICER  
DEPARTMENT OF GENERAL PLANNING  
SUBJECT: EWA VILLAGES MASTER PLAN REVISED ENVIRONMENTAL IMPACT  
STATEMENT PREPARATION NOTICE

*Mike*

We have reviewed the Ewa Villages Master Plan (revised) Environmental Impact Statement Preparation Notice and have the following comments.

The EIS should discuss the following issues: a) the impact of this project on the historic and architectural character of the existing plantation communities and b) the proposed acquisition of Campbell Estate land within the project area by the State of Hawaii.

These issues are in addition to the concerns and comments of our memorandum dated June 18, 1990 (copy attached). If you have any questions, please call Adrian Chee at 527-6022.

BBL:js

Attachment

*BBL*  
BENJAMIN B. LEE  
Chief Planning Officer

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



FRANK FARI  
20100

BENJAMIN B. LEE  
CHIEF PLANNING OFFICER  
ROLAND B. LEST, JR.  
DEPUTY CHIEF PLANNING OFFICER

JUNE 18, 1990

RH 5/90-1553

MEMORANDUM  
TO: MICHAEL N. SCARFONY, DIRECTOR  
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
FROM: BENJAMIN B. LEE, CHIEF PLANNING OFFICER  
DEPARTMENT OF GENERAL PLANNING  
SUBJECT: WEST LOCH BLUFFS AND EWA VILLAGES MASTER PLAN  
ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE

*Mike*

We have reviewed the West Loch Bluffs and Ewa Villages Master Plan Environmental Impact Statement Preparation Notice and have the following comments.

The EIS should discuss the following issues:

- a. The loss of agricultural land from the development of this project and others in Ewa and Central Oahu and its impact on Oahu Sugar Company.
- b. The impact of golf course development on surface and groundwater quality.
- c. Proposed drainage facilities and other measures to mitigate storm runoff.
- d. A preliminary master plan showing the land uses, major roadways, and phases of development.
- e. Development timetable.
- f. Land use approvals and permits to implement this project.

Please call Randy Hara at 523-4483 if you have any questions.

*BBL*  
BENJAMIN B. LEE  
Chief Planning Officer

BBL:js

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

630 SOUTH KING STREET, 21ST FLOOR  
HONOLULU, HAWAII 96813  
PHONE 533-4457 • FAX 533-5488



FRANK E. PARR  
MAYOR

MICHAEL N. SCARFONE  
DIRECTOR  
CARL KAITO  
DEPUTY DIRECTOR

Mr. Benjamin B. Lee -2- December 28, 1990

- d. A preliminary master plan has been included in the Draft EIS, and indicates the land uses and major roadways within the project. Development phasing will be discussed in the Final EIS.
- e. The development timetable will be addressed in the Final EIS.
- f. The required land use approvals and permits for project implementation are discussed in the Draft EIS.

Thank you for your interest and participation in the planning stages of this project.

Mr. Benjamin B. Lee  
Chief Planning Officer  
Department of General Planning  
650 South King Street  
Honolulu, HI 96813

Dear Mr. Lee:

Subject: Eva Villages Master Plan  
Environmental Impact Statement Preparation Notice (EISPN)

We have received your letter of July 17, 1990 regarding the EISPN for the subject project. The following has been prepared in response to your comments:

- a. Historic impacts to the planation community are discussed in the Draft EIS.
- b. The proposed acquisition of Campbell Estate land within the project area will be discussed in the Final EIS.

Responses to your concerns and comments from your memo dated June 18, 1990 are as follows:

- a. The withdrawal of agricultural land due to this and other projects in the area, and the accompanying impact on OSCo are addressed in an Agricultural Impact Assessment prepared by Pacific Business and Economic Consultants.
- b. The impact of golf course development on surface and groundwater quality is discussed in the Draft EIS.
- c. The Draft EIS discusses existing and proposed drainage facilities, as well as other planned mitigative measures for storm runoff.

Very Truly Yours,  
*Carl Kaito*

Michael N. Scarfone, Director

cc: DGP



POLICE DEPARTMENT  
CITY AND COUNTY OF HONOLULU  
1455 SOUTH BERETANIA STREET  
HONOLULU, HAWAII 96814  
PHONE: 833-4437 FAX: 833-5111



FRANK F. ZASI  
MAYOR

OUR REFERENCE ES-LK

July 18, 1990

HAROLD KAWASAKI  
CHIEF

FRANK F. ZASI  
MAYOR

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU  
850 SOUTH BERETANIA STREET, 5TH FLOOR  
HONOLULU, HAWAII 96814  
PHONE: 833-4437 FAX: 833-5198



MICHAEL N. SCARFONE  
DIRECTOR  
RONALD B. MUN  
DEPUTY DIRECTOR

September 4, 1990

TO: MICHAEL SCARFONE, DIRECTOR  
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

FROM: HAROLD KAWASAKI, CHIEF OF POLICE  
HONOLULU POLICE DEPARTMENT

SUBJECT: EWA VILLAGES MASTER PLAN

Mr. Michael Nakamura, Chief of Police  
City and County of Honolulu  
Police Department  
1455 South Beretania Street  
Honolulu, HI 96814

Dear Mr. Nakamura:

This project will have only a minor effect on police operations during the construction phase (minor traffic interruptions, safety hazards, and the like).

Subject: Ewa Villages Master Plan  
Environmental Impact Statement Preparation Notice

When construction is complete and the area's resident and transient populations increase, however, there will be many more traffic problems and calls for police service. As a result, there will be a need for more officers in the area, along with supporting equipment and services. This again underlines the need (which has been pointed out in other correspondence) for additional police facilities in the Ewa plain.

We have received your letter of July 18, 1990 in response to the EISPN for the subject project.

Your comment that only a minor impact on police operations will occur during the construction phase of the project has been noted. Measures such as sufficient public notification and/or road signage will be implemented to mitigate the potential for traffic interruptions, safety hazards, etc., as a result of the project. Your concerns regarding the increased need for police equipment and services once construction is completed are valid and have been taken under advisement.

HAROLD KAWASAKI  
Chief of Police  
By: *[Signature]*  
JOSEPH AVEIRO  
Assistant Chief of Police  
Support Services Bureau

Your interest and participation in the planning stages of this project are appreciated.

Very Truly Yours,

*[Signature]*  
Michael N. Scarfone, Director

cc: OEQC

DEPARTMENT OF TRANSPORTATION SERVICES  
CITY AND COUNTY OF HONOLULU

HONOLULU MUNICIPAL BUILDING  
650 SOUTH KING STREET  
HONOLULU, HAWAII 96813



FRANKIE PAB  
MAYOR

ALFRED J. THIEDE  
DIRECTOR  
JOSEPH M. MAGALDI, JR.  
DEPUTY DIRECTOR

TE-3546  
PL90.1.200

August 8, 1990

MEMORANDUM

TO: MICHAEL N. SCARFONE, DIRECTOR  
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

FROM: ALFRED J. THIEDE, DIRECTOR

SUBJECT: EWA VILLAGES MASTER PLAN  
EIS PREPARATION NOTICE  
TRK: 9-1-16: POR. 25; 9-1-17: 2 & POR. 4

This is in response to a letter from the R. M. Towill Corporation dated June 18, 1990 requesting our comments on the subject project.

Our department should be consulted during the preparation of the Environmental Impact Statement.

A roadway master plan should be included in the Draft EIS which should designate specific street widths and alignments. The need for ancillary traffic improvements to support the planned development, including traffic signals and intersection improvements, should be addressed and provided for, if warranted.

Consideration should be given to widen Renton Road. Presently, the Development Plan specifies an 80-foot roadway width. The need to widen Renton Road beyond this width should be addressed.

  
ALFRED J. THIEDE

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 8TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 833-4427 FAX: 837-1888



FRANKIE PAB  
MAYOR

MICHAEL N. SCARFONE  
DIRECTOR  
GAIL KAITO  
DEPUTY DIRECTOR

December 28, 1990

Mr. Joseph M. Magaldi, Jr., Director  
City and County of Honolulu  
Department of Transportation Services  
650 South King Street  
Honolulu, HI 96813

Dear Mr. Magaldi:

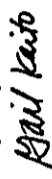
Subject: Ewa Villages Master Plan  
Environmental Impact Statement Preparation Notice (EISPN)

We have received your letter of August 8, 1990 regarding the EISPN for the subject project. The project master plan has designated the width and alignment of all streets in the project, with consideration given to both historic aspects and public safety.

In response to concerns raised by residents of the Ewa area about retaining the character of the Ewa Villages community, our department is not considering widening Renton Road to an 80-foot roadway width. Rather, Renton Road will be maintained at its present right-of-way width of 70 feet, thereby allowing for two vehicular travel lanes in each direction, a 14-foot median, and a 2-foot utility easement and 6-foot pedestrian walkway on both sides.

Your office will be consulted as more specific transportation and roadway plans are developed.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,  
  
for Michael N. Scarfone, Director

cc: DGP

RECEIVED AUG 13 1990

# Friends for Ewa

P. O. Box 1356  
Ewa, Hawaii 96706

July 25, 1990

Mr. Michael Scarfone  
Director, Dept. of Housing and Community Development  
City and County of Honolulu  
650 S. King Street, 5th Floor  
Honolulu, Hawaii 96813

Subject: Response to EIS Preparation Notice,  
Ewa Villages Master Plan,  
Ewa, Oahu, Hawaii

Dear Mr. Scarfone:

We are pleased to provide the attached comments regarding the planned EIS draft for the Ewa Villages Master Plan. Our comments are primarily focused on the proposed scope of the EIS and its coverage of the issues of greatest concern to us. In addition, prepared material on Ewa Plantation has been submitted to you on June 20, 1990.

The goal of Friends for Ewa, as a community organization of present and former residents and friends, is to promote the rehabilitation and preservation of the Ewa Villages as a significant historic and cultural resource by pursuing resident ownership and implementing protective measures to maintain their historic integrity and character. We welcome the City's assistance in the achievement of these goals and hope that through working together, they can be realized in the proposed Ewa Villages Revitalization and Restoration Plan.

Sincerely,



Eugene K. Martin  
President, Friends for Ewa

90 JUL 25 AM 10:00  
RECEIVED  
& COMMUNITY DEVELOPMENT

# Friends for Ewa

P. O. Box 1356  
Ewa, Hawaii 96706

Response to EIS Preparation Notice,  
Ewa Villages Master Plan  
Ewa, Oahu, Hawaii

July 25, 1990

The significance of the Ewa Villages is cultural, as well as historic, and is the result of a unique relationship between the built and natural environment initiated one hundred years ago. This unique relationship is Ewa's "cultural landscape", and includes its houses, community buildings, open spaces, lush vegetation, streetscape, scale, and vistas over the Ewa fields to the mountains. The preservation of this cultural landscape is our primary goal, and to this end, we submit the following comments:

## Historical & Cultural Integrity

The definition of the project in Section 1.1 as a development and revitalization program states that the character and flavor of a plantation village will be created within the existing villages. We submit that the character and flavor of the existing villages does not need to be created, it already exists. Instead, it requires recognition, preservation, and maintenance. Furthermore, the design theme of new housing should be subordinate to, and compatible with, the existing housing.

Only three of the original Ewa Plantation Villages survive - Panton, Tenny, and Verona. These Villages are part of a common history that is one hundred years old. Each village contributes individually, and as a group, to the cultural identity of the plantation and the Master Plan should include provisions for rehabilitating all three. The planned development should be evaluated in terms of its impact on the historic Ewa Plantation district and the Ewa Plantation Cemetery, etc.

As the natural environment is an important component of Ewa's cultural landscape, the planned study of flora and fauna outlined in Section 2.4 should include recommendations for retaining some of the cane fields and the significant views to the mountains. Consultation with the City Parks & Recreation Department is suggested.

90 JUL 25 AM 10:00  
RECEIVED  
& COMMUNITY DEVELOPMENT

RECEIVED AS FOLLOWS

Friends for Ewa

P. O. Box 1356  
Ewa, Hawaii 96706

July 25, 1990

Mr. Michael Scarfone  
Director, Dept. of Housing and Community Development  
City and County of Honolulu  
650 S. King Street, 5th Floor  
Honolulu, Hawaii 96813

Subject: Response to EIS Preparation Notice,  
Ewa Villages Master Plan,  
Ewa, Oahu, Hawaii

Dear Mr. Scarfone:

We are pleased to provide the attached comments regarding the planned EIS draft for the Ewa Villages Master Plan. Our comments are primarily focused on the proposed scope of the EIS and its coverage of the issues of greatest concern to us. In addition, prepared material on Ewa Plantation has been submitted to you on June 20, 1990.

The goal of Friends for Ewa, as a community organization of present and former residents and friends, is to promote the rehabilitation and preservation of the Ewa Villages as a significant historic and cultural resource by pursuing resident ownership and implementing protective measures to maintain their historic integrity and character. We welcome the City's assistance in the achievement of these goals and hope that through working together, they can be realized in the proposed Ewa Villages Revitalization and Restoration Plan.

Sincerely,



Eugene K. Martin  
President, Friends for Ewa

90 JUL 25 AM 10  
RECEIVED  
& COMM. DEVELOPMENT

Friends for Ewa

P. O. Box 1356  
Ewa, Hawaii 96706

Response to EIS Preparation Notice,  
Ewa Villages Master Plan  
Ewa, Oahu, Hawaii

July 25, 1990

The significance of the Ewa Villages is cultural, as well as historic, and is the result of a unique relationship between the built and natural environment initiated one hundred years ago. This unique relationship is Ewa's "cultural landscape" and includes its houses, community buildings, open spaces, lush vegetation, streetscape, scenic, and vistas over the cane fields to the mountains. The preservation of this cultural landscape is our primary goal, and to this end, we submit the following comments:

Historical & Cultural Integrity

The definition of the project in Section 1.1 as a development and revitalization program states that the character and flavor of a plantation village will be created within the existing villages. We submit that the character and flavor of the existing villages does not need to be created, if already exists. Instead, it requires recognition, preservation, and maintenance. Furthermore, the design theme of new housing should be sensitive to, and compatible with, the existing housing.

Only three of the original Ewa Plantation Villages survive - Penton, Tenney, and Verone. These Villages are part of a common history that is one hundred years old. Each village contributes individually, and as a group, to the cultural identity of the plantation and the Master Plan should include provisions for rehabilitating all three. The planned development should be evaluated in terms of its impact on the historic Ewa Plantation Hospital and the Ewa Plantation Cemetery, etc.

As the natural environment is an important component of Ewa's cultural landscape, the planned study of flora and fauna outlined in Section 7.4 should include recommendations for retaining some of the cane fields and the significant views to the mountains. Coordination with the City Park & Recreation Department is suggested.

90 JUL 25 AM 10  
RECEIVED  
& COMM. DEVELOPMENT

'90 JUL 25 AM 10

# Friends For Ewa

P. O. Box 1356  
Ewa, Hawaii 96706

COMMUNICATIONS SECTION  
MAY 15 1990

To Whom It May Concern:

That which follows represents the combined opinions of F. BLAIR REEVES and WILLIAM J. MURTAUGH. Professor Reeves is a former Trustee of the National Trust Historic Preservation, Washington, D.C. and has been a visiting professor at the University Of Hawaii. William Murtaugh is former Keeper of the National Register of Historic Places for the Secretary of Interior, Washington, D.C. and a visiting professor at the University of Hawaii.

We are agreed that the proposed Environmental Impact Statement for Ewa is singularly lacking in its attention to historic preservation. Section 4.1 of the document contains no indication of preservation interest germane to Ewa or a concern for it. The writer of the document has not thought of "preservation" as a design/development criteria in the statement. This is even reflected in the shortness of the section in comparison with other sections of the document.

Archaeology is not the primary preservation focus concerning Ewa. At issue is the question of Ewa as a collection of built resources which comprise an historic district, neighborhood and village. Since complexes of this configuration do not exist on the mainland, the Hawaiian plantation village, personified by Ewa, must be seen and evaluated on the same level as the Iolani Palace which also has no counterparts on the mainland. (The Williamsburg, Virginia palace is only a governor's residence and a 20th Century reconstruction). Ewa and the Iolani Palace, therefore, are representative of the two major historical developments and contribution of the State of Hawaii to the national patrimony. It is, therefore, necessary to address Ewa as an historical village, not an archaeological site, to produce an acceptable EIS evaluation.

Page Two

Section 4.1 makes reference to an archaeological reconnaissance study to be conducted. Archaeological resources are not the primary component of Ewa's historic and cultural significance. A study of Ewa's historic resources should focus on its built environment and its relationship to the rural landscape. It should include a comprehensive survey of resources prior to the classification of any structure. We request that guidelines and review procedures be established prior to the designation of any structure for removal, relocation or demolition. Concurrently, guidelines should be formulated for rehabilitation and preservation.

### New Development within the Villages

Planned development activities for new housing within and around the Ewa Villages should be compatible with the existing character, scale, setbacks, building heights, and streetscape vocabulary. Existing vehicular and pedestrian circulation patterns within the Villages should be retained. While new roadways should be carefully planned and compatible with the volume of existing circulation.

### Home Ownership & Funding

The issue of home ownership should be clarified and the process by which any individual would acquire property defined in detail.

We request that in accordance with Section 3.7 all funding sources for the projects be disclosed.

### Impacts

Our estimation of the impact the project will have on the community is as follows:

- A. Destruction of the existing sense and tranquility in the Villages.
  - B. Potential for destroying the cultural identity, built environment and well-being of a long standing community.
  - C. Loss of nationally significant historic site of the State of Hawaii.
  - D. Concerns and questions on water resources for Ewa Villages.
- Possible water shortage.

RECEIVED AS FOLLOWS

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

640 SOUTH KING STREET, 5TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 832-4427 • FAX: 837-8498



PLANNING & COMMUNITY DEVELOPMENT DIVISION

MICHAEL N. SCARFONE  
DIRECTOR  
Cell: M. Kaito  
DIRECTOR

Ms. Emogene K. Martin  
December 27, 1990  
Page 2

December 27, 1990

Ms. Emogene K. Martin  
President  
Friends for Ewa  
P. O. Box 1356  
Ewa, Hawaii 96706

Dear Ms. Martin:

Subject: Ewa Villages Master Plan  
Environmental Impact Statement Preparation Notice (EISP)

This is in response to your letter of July 25, 1990 regarding the EISP for the subject project. The City acknowledges the Ewa Villages as a historic and cultural resource and appreciates your contribution of comments and resource materials in our efforts to revitalize the community.

The following has been prepared in response to your comments:

1. We concur that the character of the existing Villages deserves special attention, and to the extent feasible, existing houses, roads and landscaping will be preserved. The design theme of new housing units will be compatible with the existing units.
2. The Master Plan is currently under review and Varona Village will be added as part of the planning area.
3. Your recommendation to retain some of the cane fields has been taken under advisement. Significant views to the mountains should not be impaired as height limitations will be implemented via the forthcoming Ewa Special District ordinance.
4. Guidelines and review procedures will be established prior to the designation of any structure for removal, relocation or demolition. Additionally, guidelines will be implemented for rehabilitation and preservation.

5. Planned development densities for new housing within the Villages will be compatible with the existing character, scale, setbacks, building heights, and streetscapes. Existing vehicular and pedestrian circulation patterns will be retained to the extent possible and practical. Planned roadways will be designed and constructed to accommodate the proposed traffic circulation, while in keeping with the existing roadscape.
6. Funding sources to be utilized for the project will be discussed in the Draft and Final EIS.
7. Your concerns regarding the estimated impact on the project have been taken under advisement.
8. Regarding the May 15, 1990 letter attached to the July 25 letter: We concur with your comment that Ewa be addressed as an historical village, rather than an archaeological site, and recommendations made in the Architectural Impact Assessment will be discussed in the Final EIS.

Thank you for your interest and participation in the planning stages of this project.

Sincerely,  
*Michael N. Scarfone*  
MICHAEL N. SCARFONE  
for  
Director

cc: Department of General Planning

University of Hawaii at Manoa



Environmental Center  
Crawford 317 • 2550 Campus Road  
Honolulu, Hawaii 96822  
Telephone (808) 948-7381

July 13, 1990  
RH:0073

Mr. Michael Scarfone, Director  
Department of Housing and Community Development  
650 South King Street, 5th Floor  
Honolulu, Hawaii 96813

Attention: Ms. Gail Kato  
Dear Mr. Scarfone:

Environmental Impact Statement Preparation Notice (RI)  
Dea Villages Master Plan  
Dea, O'ahu

The referenced document provides preliminary discussion of impacts associated with an approximately 470 acre project and lists the following features of the proposed development: "the Villages component," occupying 285 acres and including the existing Tenney and Renton Villages and Dea Elementary School; a neighborhood commercial area, a neighborhood park, "green belts," pedestrian paths and bikeways, a "Village Center," upgrading of Dea Mahiko Park; and an 18 hole "Golf Course Component" (to occupy 185 acres).

This review was prepared with the assistance of James Hollyer, Agriculture and Resource Economics; and Robert Irwin, Environmental Center. Generally the RI was found to be well-presented and indicative of a comprehensive, well-planned Draft EIS. Several comments and questions were put forth by our reviewers, however, and are presented below.

Property Ownership

Page 4 of the RI reports that the current lease from the Estate of James Campbell to O'ahu Sugar Company (OSCO) will expire in 1995. The Draft EIS should discuss the effect of this lease expiration on the proposed developments, as well as the relationship between this near-future event and the timetable of proposed developments.

Market Studies

AN EQUAL OPPORTUNITY EMPLOYER

Mr. Michael Scarfone

- 2 -

July 13, 1990

Our reviewers suggested that, along with housing demand studies for O'ahu and the Dea plain, similar island-wide and regional golf course market demand studies be prepared. More than 40 new golf courses are at different stages of planning and development on O'ahu. The Draft EIS should substantiate the need for this specific golf course development. Other planned and present golf courses in the Dea region and elsewhere, the relative accessibility of each to the public, and figures for present and projected regional and island-wide populations of golfers should be tabulated and discussed. Also, our reviewers ask that the term, "public golf course," be further defined, as past "public golf course" projects in Hawai'i have allowed varying degrees of public use.

Flood Plains

The Draft EIS should articulate the golf course's function as potential flood plains. Records and maps of past floods, demonstrating the history and layout of the regional flooding problem and corresponding golf course related improvements will allow our reviewers to assess this important aspect of the project.

Wastewater Usage

While the RI reports that the Draft EIS will address project impacts on the wastewater system and recommend improvements, it does not mention plans for wastewater usage. Has use of wastewater for irrigation of golf courses and other green areas ("green belts," median strips, parks, and store frontage, for example) been considered as a water impact mitigative measure for this project? It is notable that the project falls in a particularly water-poor region. Our reviewers request that a detailed discussion of wastewater usage considerations and options be included in the project alternatives section of the Draft EIS.

We thank you for the opportunity to be a part of the planning process for the Dea Villages Master Plan.

Yours truly,

John T. Harrison, Ph.D.  
Environmental Coordinator

cc: OEQC  
L. Stephen Lau  
James Hollyer  
Robert Kai Irwin

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

480 SOUTH KING STREET, 21ST FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 923-3227 • FAX: 923-3486



MICHAEL N. SCARFONE  
DIRECTOR  
DONALD B. HUN  
DEPUTY DIRECTOR

FRANK J. JEN  
20100

September 4, 1990

Mr. John T. Harrison, Ph.D.  
Environmental Coordinator  
University of Hawaii  
Environmental Center  
Crawford 317, 2530 Campus Road  
Honolulu, HI 96822

Dear Mr. Harrison:

Subject: Eva Villages Master Plan  
Environmental Impact Statement Preparation Notice

We have received your letter of July 13, 1990 in response to the EISP for the subject project. The following has been prepared in response to your concerns:

Property Ownership

The Draft EIS (DEIS) will discuss the effect of the 1995 expiration of the lease between the Estate of James Campbell and Oahu Sugar Company (OSCo). The 1995 lease expiration has created the uncertainty of tenancy by the existing residents. This project is being planned, in large part, in response to this uncertainty, and the City sees this as an opportunity to provide affordable housing opportunities to the existing village residents.

Market Studies

The DEIS will discuss the need for the proposed project golf course, and will address other golf courses as necessary. The term "public" as used in the context of the project golf course, refers to a City-run course.

Flood Plains

The DEIS will explain the function of the proposed golf course in relation to the designated 100-year flood plain. A Flood Insurance Rate Map (FIRM) and accompanying discussion will also be included in the document.

Wastewater Usage

The use of wastewater for irrigation of golf course and other green areas will not be

considered for the project, as the Honolulu Wastewater Treatment Plant (which currently serves the project area) is not designed for secondary treatment of wastewater. However, we recognize that the project falls in a particularly water-poor region, and as such, water for golf course use will be obtained from a non-potable source to be developed or traded with Oahu Sugar Company irrigation water. Your request that a detailed discussion on wastewater usage considerations and options be provided in the project alternatives section of the DEIS has been taken under advisement.

Your interest and participation in the planning stages of this project are appreciated.

Very Truly Yours,

Michael N. Scarfone, Director

cc: OEQC





23 July 1990

Page Two  
Mr. Chester T. Koga  
R. M. Towill Corporation  
23 July 1990

Please telephone either Ron Uemura or me if you have any questions or if we may provide clarification on these comments.

Mr. Chester T. Koga  
Project Manager  
R. M. Towill Corporation  
420 Waiakamilo Rd., Suite 411  
Honolulu, Hawaii 96817-4541

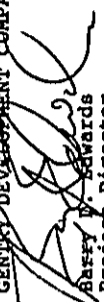
Dear Mr. Koga:

RE: Ewa Villages Master Plan, June 1990; Prepared for:  
Department of Housing and Community Development,  
City and County of Honolulu (EISPN)

Our engineering staff has reviewed and evaluated the referenced EISPN, that was provided to us by your offices on about June 21, 1990.

We have the following comments:

1. The City and County zoning map (figure 4) is partially in error. The Ewa by Gentry development area is incorrectly designated AG-1 where it is zoned A-1. This area is where our Soda Creek, Increment 1; Palm Villas, Increment 1; and Palm Court, Increment 1 have been constructed.
2. Section 3.2 "Topography and Soils". The soils are moderately expansive and extreme care will be required in the design of any site-work and buildings.
3. Figure 2-5 and Section 3.3 "Drainage and Hydrology" erroneously call the Kalo'i Ditch a "Gulch". Kalo'i Ditch is a man made drainage ditch used to transport runoff from Kamehameha Highway to the ocean. It is built above ground, and runoff from surrounding areas cannot enter the ditch through the villages area.
4. Section 5.1 "Transportation System". The report does not identify the persons responsible for extending the NorthSouth road to connect the Ewa by Gentry project to Kapolei Villages. The developer of the Ewa Villages should be responsible for that portion of the NorthSouth road development.

Sincerely,  
GENTRY DEVELOPMENT COMPANY  
  
Barry W. Edwards  
Project Director  
Ewa by Gentry

BDE/cro  
cc: R. Uemura

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
**CITY AND COUNTY OF HONOLULU**

630 SOUTH KING STREET, 31ST FLOOR  
HONOLULU, HAWAII 96813  
PHONE 322-2227 • FAX 327-2488



FRANK F. FISH  
DIRECTOR

MICHAEL N. SCARFONE  
DIRECTOR  
RONALD S. MUN  
DEPUTY DIRECTOR

September 4, 1990

Mr. Barry D. Edwards  
Project Director, Ewa by Gentry  
Gentry-Pacific, Ltd.  
P. O. Box 295  
Honolulu, HI 96809

Dear Mr. Edwards:

Subject: Ewa Villages Master Plan  
Environmental Impact Statement Preparation Notice

We have received your letter of July 23, 1990 in response to the EISPN for the subject project. The following has been prepared in response to your comments:

1. The City and County Zoning Map (Figure 4) in the EISPN has been revised to show the Ewa by Gentry development area designated in A-1, rather than AG-1 as previously indicated. The correction will be reflected in the Draft EIS (DEIS).
2. The moderately expansive character of the soils will be taken under consideration in the design of any buildings and/or site work.
3. Per your request, the term "Gulch", when used in the context of Kaloi drainage ditch, will be replaced by "Ditch" in the DEIS.
4. At this time, discussions are being held between parties involved, regarding the responsibility for the connection of the North-South road between the Ewa by Gentry project to Kapiolani Villages.

Your interest and participation in the planning stages of this project are appreciated.

Very Truly Yours,

A handwritten signature in dark ink, appearing to read "Michael N. Scarfone".  
Michael N. Scarfone, Director

cc: OEQC

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**SECTION 13**

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**COMMENTS AND RESPONSES  
TO THE DEIS**

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DEPARTMENT OF THE ARMY  
U. S. ARMY ENGINEER DISTRICT, HONOLULU  
BUILDING 230  
FT. SHAFTER, HAWAII 96861-5440

REPLY TO  
ATTENTION OF:  
Planning Division

October 18, 1990

Mr. Benjamin B. Lee  
Chief, Planning Officer  
Department of General Planning  
City and County of Honolulu  
650 South King Street  
Honolulu, Hawaii 96813

Dear Mr. Lee:

We have reviewed the Draft Environmental Impact Statement for the Ewa Villages Master Plan, Ewa, Oahu. The following comments are offered:

- a. Any work on Kaloi Ditch may require a Department of the Army permit. The project proponent should contact Operations Division at 438-9258 for permit requirements.
- b. According to the Flood Insurance Rate Map (panels 150001-0110-C, 130-C, and 135-C, all dated September 28, 1990), the project area lies in two zones: Zone AH, flood hazard areas inundated by 100-year flood with base flood elevations ranging from 40 to 59 feet MSL; and Zone D, areas in which flood hazards are undetermined.

Sincerely,

  
Kisu Cheung  
Director of Engineering

Copies Furnished:

City and County of Honolulu  
Department of Housing and Community  
Development  
ATTN: Ms. Eileen Mark  
650 South King Street, 5th Floor  
Honolulu, Hawaii 96813

R.M. Towill Corporation  
ATTN: Mr. Chester T. Koga  
Project Manager  
420 Waiakamilo Road, Suite 411  
Honolulu, Hawaii 96817  
  
Office of Environmental Quality Control  
465 South King Street, Suite 104  
Honolulu, Hawaii 96813

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
**CITY AND COUNTY OF HONOLULU**

850 SOUTH KING STREET, 8TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 832-4237 • FAX: 837-8498



FRANK P. PARR  
MAYOR

MICHAEL N. SCARFONE  
DIRECTOR  
GAIL M. KAJIYO  
DEPUTY DIRECTOR

December 17, 1990

Mr. Kisuk Cheung, Director of Engineering  
Department of the Army  
U.S. Army Engineer District, Honolulu  
Building 230  
Fort Shafter, HI 96858-5440

Dear Mr. Cheung:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

Thank you for your letter of October 18, 1990 regarding the DEIS for the subject project. Prior to any work performed on Kaloj Ditch, your Operations Division will be contacted regarding Department of the Army permit requirements. In addition, it has been noted that the project area lies in two flood zones, Zone AH and Zone D, according to the Flood Insurance Rate Maps (Panels 150001-0110-C, 130-C, and 135-C, September 28, 1990).

Your interest and participation in the planning stages of this project are appreciated.

Very Truly Yours,

*Paul Kaito*

for Michael N. Scarfone, Director

cc: DGP



United States Department of the Interior  
**FISH AND WILDLIFE SERVICE**  
**PACIFIC ISLANDS OFFICE**  
 P.O. BOX 50147  
 HONOLULU, HAWAII 96850

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
**CITY AND COUNTY OF HONOLULU**  
 830 SOUTH KING STREET, 8TH FLOOR  
 HONOLULU, HAWAII 96813  
 PHONE: 832-4427 • FAX: 837-8498



FRANK P. PAUL  
 MAYOR

MICHAEL N. SCARFONE  
 DIRECTOR  
 GAIL H. KAIFO  
 DEPUTY DIRECTOR

OCT 19 1990

City and County of Honolulu  
 Department of General Planning  
 650 South King Street  
 Honolulu, Hawaii 96813

December 17, 1990

Re: Ewa Villages Master Plan

Due to current staff limitations, the Pacific Islands Office, Fish and Wildlife Enhancement cannot devote the time to adequately evaluate potential impacts to important fish and wildlife resources from the proposed project. Please understand that this notification does not represent the Fish and Wildlife Service's approval of the proposed activity. We may review future actions related to this project should workload constraints be alleviated, or if significant adverse impacts to trustee fish and wildlife resources are identified.

Mr. Ernest Kosaka, Field Office Supervisor  
 Fish and Wildlife Enhancement  
 United States Department of the Interior  
 Fish and Wildlife Service  
 Pacific Islands Office  
 P. O. Box 50167  
 Honolulu, HI 96850

Sincerely yours,

*Ernest Kosaka*  
 Ernest Kosaka  
 Field Office Supervisor  
 Fish and Wildlife Enhancement

Dear Mr. Kosaka:

Subject: Ewa Villages Master Plan  
 Draft Environmental Impact Statement (DEIS)

We have received your letter of October 19, 1990 regarding the DEIS for the subject project. If time and staff resources permit, we would appreciate your comments on the proposed project.

cc: /R. M. Towill Corporation  
 Department of Housing and  
 Community Development  
 OECC

Your interest and participation in the planning stages of this project are appreciated.

Very Truly Yours,

*Michael N. Scarfone*

Michael N. Scarfone, Director

cc: DGP



DEPARTMENT OF THE NAVY  
 COMMANDER  
 NAVAL BASE PEARL HARBOR  
 BOX 1110  
 PEARL HARBOR, HAWAII 96840-5020

BY REPLY REFER TO:  
 11000  
 AER 00F(203A)/3535  
 01 NOV 1990

Mr. Benjamin Lee  
 Department of General Planning  
 650 South King Street  
 Honolulu, HI 96813

Dear Mr. Lee:

DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)  
 FOR THE EWA VILLAGES MASTER PLAN

We have reviewed the subject DEIS forwarded by the Office of Environmental Quality Control and have several comments to offer.

a. Section 3.2, DRAINAGE AND HYDROLOGY, page 3-8. The sentence at the top of the page states that the flood waters from the 100-year storm will be eventually conveyed to the golf course being developed by the adjoining Ewa by Gentry project.

Comment: The discussion should be expanded to expressly state that the design value of 8,000 cfs of runoff for the subject development has been accounted for in the total design runoff for the Ewa by Gentry project. This item is a source of concern for the Navy because if the drainage has not been adequately accommodated from one development to another on its way to the ocean, it may result in negative effects to Naval Air Station (NAS) Barbers Point as an adjacent landowner.

b. Section 3.4, NOISE QUALITY, page 3-13. The first paragraph makes reference to the U.S. Navy's Air Installation Compatible Use Zone (AICUZ) Study, NAS Barbers Point, 1984.

Comment: As noted in our July 20, 1990 letter to the City's Department of Housing and Community Development on the EISPN for the subject development (copy reproduced in the DEIS), the Navy's July 1989 NAS Barbers Point AICUZ Noise Contours and Supporting Data Report should be used instead of the 1984 AICUZ Study.

c. Figure 3-5 (Noise Contours for NAS Barbers Point and Honolulu International Airport), page 3-19. The source is noted as the "NASBP AICUZ Report."

Comment: It appears the source of this figure is the Navy's 1989 NAS Barbers Point AICUZ Noise Contours and Supporting Data Report. This should be verified and the proper title and year of the report annotated on Figure 3-5.

d. Section 5.3, WASTEWATER SYSTEM, page 5-17. The last sentence states that the planned expansion of the Honolulu WMP by 13 HGD, "... will be sufficient to accommodate the proposed residential units."

Subj: DEIS for the EWA VILLAGES MASTER PLAN

Comment: The adequacy of the Honolulu WMP should not be determined by the additional volume that is anticipated only for the subject development. Rather, it should be based on the cumulative effect of the various developments proposed in approximately the same timeframe that would also convey their wastewater to the WMP (similar to the analysis that was done for traffic in the DEIS).

e. Appendix B, NOISE QUALITY IMPACT ASSESSMENT by Darby and Associates. No source for Figures 5 and 6 has been noted.

Comment: These figures appear to have been taken from the Navy's 1989 NAS Barbers Point AICUZ Noise Contours and Supporting Data Report. This source be verified and the list of references revised to include the proper source of Figures 5 and 6.

We appreciate the opportunity to review and comment on the DEIS for the subject development. Our Navy's point of contact is Mr. Bill Liu, telephone 471-3324.

Sincerely,

V. K. LIU  
 Assistant Base Civil Engineer  
 By direction of  
 the Commander

Copy to:  
 Department of Housing and Community  
 Development (Attn: Ms. E. Mark)  
 R.H. Towill Corporation (Attn: Mr. C. Koga)  
 Office of Environmental Quality Control

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
**CITY AND COUNTY OF HONOLULU**

890 SOUTH KING STREET, 8TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 522-4627 • FAX: 527-9488



PEARL & FISH  
DIVISION

MICHAEL N. SCARFONE  
DIRECTOR  
GAIL M. KALITO  
SECRETARY

December 17, 1990

Mr. W. K. Liu  
Assistant Base Civil Engineer  
Department of the Navy  
Naval Base Pearl Harbor  
Box 110  
Pearl Harbor, HI 96860-5020

Dear Mr. Liu:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

Thank you for your letter of November 1, 1990 regarding the DEIS for the subject project. The following has been prepared in response to your concerns.

- a. Section 3.2, on Drainage and Hydrology, will be expanded to include a statement that the design value of 8,000 cubic feet per second (cfs) of runoff for the subject project has been accounted for in the total design runoff for the Ewa by Gentry project. As such, we do not anticipate any adverse impacts to NASBP.
- b. Section 3.4, on Noise Quality, will reflect the Navy's July 1989 NASBP AICUZ Noise Contours and Supporting Data Report instead of the 1984 AICUZ Study. The correct source documentation for Figure 3-5 will be verified, and subsequently reflected in the Final EIS.
- d. Section 5.3, on Wastewater System, will discuss the cumulative effect of the various users of the Honolulu WWTP which would be on-line within the same time frame as the subject project.
- e. Figures 5 and 6 in the Noise Quality Impact Assessment (Appendix B) of the DEIS will reflect the appropriate sources.

Your interest and participation in the planning stages of this project are appreciated.

Very Truly Yours,

*Gail Kalito*

for Michael N. Scarfone, Director

cc: DGP



UNITED STATES  
DEPARTMENT OF  
AGRICULTURE

SOIL  
CONSERVATION  
SERVICE

P. O. BOX 50004  
HONOLULU, HAWAII  
96850

November 6, 1990

Mr. Benjamin J. Lee  
Chief General Planner  
Department of General Planning  
City and County of Honolulu  
650 South King Street  
Honolulu, Hawaii 96813

Dear Mr. Lee:

Subject: Draft Environmental Impact Statement (DEIS)  
Ewa Villages Master Plan - Ewa, Oahu, Hawaii

We have no comments to offer at this time; however, we would appreciate the opportunity to review the final EIS.

Sincerely,

*Warren M. Lee*

WARREN M. LEE  
State Conservationist.

cc:

Ms. Eileen Mark, City & County of Honolulu, Dept. of Housing & Community  
Development, 650 S. King Street, Honolulu, Hawaii 96813  
Mr. Chester T. Koga, Project Manager, R.M. Towill Corporation,  
420 Waialeale Road, Suite 411, Honolulu, Hawaii 96817

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

850 SOUTH KING STREET, 27th FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 933-4437 • FAX: 937-5889



FRANK E. FARR  
MAIL ROOM

MICHAEL N. SCARFONE  
DIRECTOR  
GAIL M. KAITO  
DEPUTY DIRECTOR

December 17, 1990

Mr. Warren M. Lee  
State Conservationist  
U. S. Department of Agriculture  
Soil Conservation Service  
P. O. Box 50004  
Honolulu, HI 96850

Dear Mr. Lee:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

Thank you for your letter of November 6, 1990 regarding the subject project. We will provide a copy of the Final EIS for the project for your review.

Your interest and participation in the planning stages of this project are appreciated.

Very Truly Yours,

*Michael N. Scarfone*

for Michael N. Scarfone, Director

cc: DGP



## National Trust for Historic Preservation

November 9, 1990

BY FACSIMILE

Mr. Michael N. Scarfone, Director  
Department of Housing and  
Community Development (DHCD)  
650 South King Street, 5th Floor  
Honolulu, HI 96813  
Attn: Ms. Eileen Mark

Re: Draft Environmental Impact Statement for the Ewa Villages  
Master Plan, Ewa, Oahu, Hawaii

Dear Mr. Scarfone:

Thank you for the opportunity to review and comment on the City and County's draft environmental impact statement (DEIS) for the Ewa Villages Master Plan, Ewa, Oahu, Hawaii. The National Trust for Historic Preservation has been concerned with the preservation and protection of Ewa Plantation--including Renton, Tenny and Varona Villages--since its integrity and cultural significance was first brought to our attention over four years ago. The National Trust is the nation's only private, nonprofit organization, chartered by Congress, with the mission of encouraging the preservation of sites, buildings and objects significant in American history and culture. The Trust's Western Regional Office supports preservation activities in the nine western states, including Hawaii.

The National Trust offers the following comments and recommendations for consideration in both the preparation of a revised EIS and the City and County's final development plans at Ewa.

### GENERAL COMMENTS ON DEIS

The City's planned investment at Ewa has great potential for addressing critical affordable housing needs for community residents as well as preserving Ewa's exceptional historic and cultural value. The Trust is pleased to see that the first stated objective of the project is to "preserve the historic character of Renton and Tenny Villages", with one of the primary components of the DEIS including "restoration and revitalization of the Ewa Villages community" (page 2-1). We believe the overall project objectives cited in the DEIS are commendable and that historic preservation can contribute to the achievement of these goals. We

are concerned, however, that important data and alternatives are not included in the DEIS. As a result, impacts of the proposed project on this site have not been fully or adequately evaluated. In addition, assumptions are made that will significantly restrict the City's stated goals. We direct your attention to the following concerns:

### Unresolved Historic Preservation Impacts

We are extremely concerned that issues relating to historic preservation have not been fully identified or evaluated in this document. Consequently, the full preservation impacts of this project have not been considered. As the DEIS recognizes, historic preservation is one of the most complex issues in the context of the proposed action. There is no question that this project will have a very grave impact on the Ewa villages, and that the area is clearly eligible for listing in the National Register of Historic Places. Indeed, the villages are so significant that the National Park Service is currently investigating the site's eligibility for designation as a National Historic Landmark, a designation accorded to only properties of exceptional historic significance to the nation as a whole.

The DEIS notes that a number of federal agencies, including the Department of Housing and Urban Development, are likely to be involved in the project. Due to the area's clear eligibility for the National Register, this federal involvement triggers the applicability of Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. Section 470f, the National Environmental Policy Act (NEPA), 42 U.S.C. Section 4321 et seq., and potentially other federal environmental laws depending on the extent and nature of the federal involvement. The Section 106 and NEPA processes will require a thorough evaluation of the impact of the project on the Ewa community.

To proceed with compliance under Section 106, we strongly encourage you to contact the State Historic Preservation Office (SHPO). This agency is responsible for coordination of Section 106 compliance in Hawaii, and can advise you on appropriate next steps. Note that this process should not be constrained by the City's lack of title to the property. The appropriate federal agency (in this case probably either HUD or FMAA) must, in consultation with the State Historic Preservation Officer and the Advisory Council on Historic Preservation, consider the effect of the project on the historic resources of the project area, including alternative approaches that could avoid or mitigate some of the anticipated harmful impacts. It is important to note that Section 106 and NEPA review processes must be complete before any resources--including city or state resources--are irrevocably committed to this project.

Western Regional Office  
One Market Street, Suite 707  
San Francisco, Calif 94101  
(415) 956-0600

National Office  
135 Massachusetts Avenue, N.W.  
Washington, D.C. 20036  
(202) 638-1000

Failure to do this could seriously jeopardize the city's access to critical federal funding to support this effort. For this reason, it is particularly important that any revised EIS identify the city's plans for compliance with Section 106 of the NHPA. As part of the Section 106 process, the precise boundaries of National Register eligibility for the project site must be identified. In this regard, we note that the DEIS suggests a boundary for "special district" protection (see page 4-24), although no documentation or justification for this boundary is indicated. In fact, the National Register historic district boundary, which should consider Renton, Tenney and Varona villages, is likely to cover a much larger area than indicated by the boundaries of the proposed "special district." Any disputes between the SHPO and the federal agency as to National Register eligibility or to the boundaries of district must be resolved by the Keeper of the National Register, Department of the Interior, before the project can go forward. See 36 C.F.R. section 800.4(b)(4).

It is critical that these issues be addressed and the required environmental review and consultation processes be initiated as soon as possible so as to avoid unnecessary delays in this project. The failure to do so may potentially jeopardize federal funding for this project. The Section 106 process should be looked on as a constructive one, providing an opportunity for consensus building, the identification of alternatives for mitigating adverse impacts, and the resolution of project issues involving historic preservation concerns.

#### Assessment of Physical Condition of Existing Structures

The DEIS does not include an assessment of the condition of homes in the project area and the costs associated with rehabilitation, although the need to undertake such an assessment is acknowledged as "part of the initial effort in establishing a housing program" (see page 2-15). We strongly believe that this information should have been included and considered in the DEIS and must be incorporated into any subsequent EIS.

A detailed report on the existing conditions of the buildings within the project area should be conducted by professionals with previous documented experience in rehabilitation of historic structures. This assessment is critical to any evaluation of potential impacts and your overall project planning. This assessment should be used to determine:

- \* if any buildings are truly irreparable,
- \* general figures on overall rehabilitation costs,
- \* needs and opportunities for providing rehab incentives to current residents and financial support for any city or non-profit rehabilitation of vacant structures.

There are many non-residential community buildings that are also of concern, where no structural analysis is identified and no reuse plans appear to be in place.

Rehabilitation costs should be calculated based on purchase of bulk orders of materials rather than on individual building costs. Bulk purchase should be significantly less costly for rehabilitation.

#### Preservation Design Concerns

References are made in the DEIS (pages 2-5 and 2-15) regarding the relocation of buildings, specifically from Tenney to Renton villages. As we discussed in our meeting last week, under the Secretary of the Interior's Standards, the relocation of significant buildings from their original context is not considered an appropriate preservation alternative, and is only accepted as a last resort. The relocation of structures, in this case, will be costly and unnecessary. Rehabilitated houses, from your own calculations, will be the least costly alternative for most residents. Hence, rehabilitation will provide the best vehicle for offering the greatest number of affordable units to community residents. Added costs for moving buildings will only escalate the overall costs of the project.

As noted on page 2-14 of the DEIS, the options of buying or renting existing or new homes within the community, by community residents, is certainly supported by the National Trust. However, the option articulated at the October 29 public meeting of allowing individual tenants the discretion to demolish or move their current residence from their present lot, in order to construct a new residence, would be a substantial added cost to the city, extremely detrimental to the preservation of community character, and would prevent the city from being able to determine in advance, the overall project impacts and costs. We therefore suggest that this option be eliminated.

The individual design and siting of both in-fill residences and additional new housing units within the project boundaries will play an extremely important role in the impact of this project on the historic character of the community. Great care should be taken to seek qualified architects and planners experienced in historic preservation to assist you in this effort. The current proposal would significantly increase the density of housing units in this area. Introducing over 900 new units to an area which currently has a third of this number, and "preserving historic character" is truly a challenge. A suggested approach that we believe merits further exploration is to consider the addition of new housing units as "(a) new village(s)," following historical precedent, so that the existing density of housing can be retained.

We are concerned that your ultimate goals of providing home ownership to current residents and retaining the special historic and community character, while commendable, are not insured until, among other concerns, more-defined economic incentives and a management program is fully designed and in place. This project raises many hopes, but also threatens to be extremely disruptive to the existing community.

#### SPECIFIC COMMENTS

In addition to our overriding concerns outlined above, the following assumptions and proposals presented in the DEIS merit specific comments:

#### Section 2. Description of Proposed Action

##### Residential Units

(Page 2-4)  
If properties are leased to any outside entities, preservation controls should be utilized, in keeping with the overall objectives of this project. These should include requiring use of the Secretary of Interior's Standards for Rehabilitation and the use of easements to insure retention of historic character. Similar controls should be considered for rehabilitation activities for Renton, Tenney and Varona villages.

##### (Page 2-5)

As mentioned above, buildings should not be moved from other villages for in-fill at Renton. Rather, sensitively-designed new in-fill should be considered.

##### Community Facilities

(Pages 2-8, 2-11)

The reuse options for historic community facilities in Renton, Tenney and Varona villages should be seriously addressed and outlined in any future EIS. These structures, as well as remaining structures of the Old Mill site, should be sensitively incorporated into any plans for community and commercial development on this site.

In addition, ancillary activities such as increased commercial and office use as proposed, are likely to have great potential impacts on the historic character and sense of community at Ewa. This needs to be more thoroughly addressed in any future EIS.

##### Infrastructure Improvements

(Page 2-11)

The design and potential widening of roads and curbing could have

If done well, this might better define the historic villages and integrate new construction into the project area with the least impact to the community's historic character and context.

Finally, the City's proposal to relax certain code requirements relating to new developments in the interest of preservation concerns will be extremely important in protecting health and safety while preserving the important historic character of this community. This technique, employed successfully in preservation projects across the country, should address both building rehabilitation as well as infrastructure improvements including roadways, utilities and landscaping considerations.

#### Assessment of Resident Views and Financial Capacity to Remain in Community

There is no concrete documentation that the project, as designed, can actually meet its stated objective of providing home ownership or rental housing opportunities for current residents. While we understand that a residents' survey is being designed and will be conducted jointly by Friends for Ewa and the local union, we believe that the results of this survey need to be both incorporated into the Final EIS, and considered in your overall determination of impact of the proposed project on the community's current residents.

Any future document should outline the components of a reasonable financial package that will insure a high degree of success in achieving this objective. The DEIS should specifically address the following questions: What are the firm costs for acquisition of existing units? (note: this should be based on physical condition assessment) New units? How many residents will be able to afford this? Will the proposed market rate homes subsidize both acquisition and rehabilitation activities? To what extent? What percentage of rental property do you anticipate as part of this plan, based on this data? Are incentives and cost reduction programs clearly and realistically identified, e.g. specific HUD and/or FmHA programs, for their likelihood of support and the extent of that support? What role will they play in overall financing? What, if any, additional state programs will be used to insure affordability for this project? What incentives will be provided to encourage rehabilitation? Will the city serve as primary developer for this project, assisting in both rehabilitation as well as new construction? Will a private developer participate in this program and has the use of low income housing and rehabilitation tax credits been considered? Has consideration been given to the use of a Community Land Trust or the formation of a nonprofit housing organization or other creative affordable housing mechanisms to assist in insuring the affordability of this project?

an extremely detrimental affect on the historic character of the Eva community and should be carefully evaluated before plans move forward. Also, please identify whether any Federal Highway Administration funds will be used for these road projects.

Cost Estimate and Relocation Program

(page 2-16)

Data in this section needs to be presented.

Section 8. Alternatives to the Proposed Action

There are a number of alternative approaches to achieving the goals and objectives outlined for this project that could more sensitively blend with community needs and mitigate some of the adverse effects on historic properties. We believe that a much more thorough exploration and evaluation of alternatives must be included in any future EIS, considering and incorporating the full range of suggestions received during the initial comment period. This would include both economic and design aspects of the proposed project. (See Recommendations below).

RECOMMENDATIONS

Based on our above comments and my recent meetings with numerous interest groups this past week concerning the Eva Villages Development Project, we recommend the following actions:

\* The City should work with the SHPO to determine boundaries for a National Register Historic District and proceed with the Section 106 process. We believe that a considerable amount of research has been gathered already including information held at the SHPO office; materials gathered by students in the University of Hawaii preservation program and Friends for Eva; NPS research gathered as part of the National Historic Landmark assessment process; and general research on plantation architecture and lifestyles which has been conducted for the development of Hawaii's Plantation Village at the Waipahu Cultural Garden Park. If necessary, the National Trust would consider giving a small grant to the City to enable you to retain the services of an experienced consultant to assist you in preparing the necessary paperwork in order to move this project forward. We encourage you to keep us informed if complications arise.

\* The City should proceed with a comprehensive assessment of building conditions and rehabilitation costs within the project area. This assessment must be completed by someone experienced with historic rehabilitation. The National Trust would be happy to provide you with the names of qualified preservation contractors, if desired.

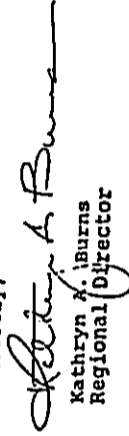
\* A residents survey, including specific options and financial capability of current tenants at Eva, should be carefully designed and conducted in order to completely understand the specific needs of the community you are endeavoring to serve. We would be pleased to review a copy of the draft survey, when available. We request a copy of this document when finalized.

\*We propose that a task force of the myriad interest groups concerned with this project be established immediately. Due to both the exceptional importance and fragility of this site, and the diverse needs and goals of this City initiative, we believe that a consensus building process would be an extremely important component of the City's planning effort. This would allow for the efficient direction of all energies toward the project's timely development and ultimate success. Task Force responsibilities should include a thorough review of all the comments received in the draft comment period, a determination of areas meriting further analysis, and the coordination and direction of an independent "study team" of qualified consultants, including individuals from both the preservation and housing fields, to lend their expertise in the ultimate design of the final project.

The National Trust would be pleased to work with the City, AMFAC, the Campbell Estate and local and state preservation interests to design and staff this effort in order to make the Task Force concept a reality. We have had initial discussions with many of the potential players in this process and believe there is general community support. We will be developing a more detailed proposal for broad consideration in the next week and we welcome your input.

The preservation of Eva Plantation is a complex and challenging task, given local needs for affordable housing, the rapid development of the Kapelei area and the numerous interests involved. Our concern for a primary emphasis on rehabilitation of existing structures is reinforced by current federal housing policy. The National Affordable Housing Act of 1990 clearly directs jurisdictions to give preference to housing rehabilitation in future affordable housing projects in order to be most competitive for limited federal dollars. Over the last ten years, the National Trust has been a leader in demonstrating the common goals of preservation and affordable housing, through the work of our Inner City Ventures Fund, and the Trust has extensive experience facilitating complicated planning processes throughout the country. We welcome the opportunity to work with you and other local interests to ensure the success of a revitalization effort at Eva.

Sincerely,

  
Kathryn A. Burns  
Regional Director

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

630 SOUTH KING STREET, 3TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 533-4437 • FAX: 537-3489



MICHAEL SCARFONE  
DIRECTOR  
GAIL M. KAITO  
DEPUTY DIRECTOR

FRANK FALK  
MAYOR

December 17, 1990

cc: Margaret W. Sweeney, Historic Preservation Officer, HUD  
Richard H. Brown, Director of the Office of Environment and Energy, HUD  
Margaret Pepin-Donat, Chief, National Register Programs, NPS  
Jim Charleston, Historian, NPS  
Claudia Nissley, Director, Western Office of Project Review, ACHP  
John Fowler, General Counsel and Deputy Executive Director, ACHP  
William Paty, Hawaii SHPO  
Don Clegg, Director, City and County Department of Land Utilization  
Clint Churchill, The Campbell Estate  
Rod Wilson, Amfac  
Phyllis Fox, President, Historic Hawaii Foundation  
Emogene Martin, President, Friends for Ewa  
Spencer Leinweber, National Trust Hawaii Advisor  
Barnes Riznik, National Trust Hawaii Advisor  
David Doheny, Vice President/General Counsel, National Trust for Historic Preservation

Ms. Kathryn A. Burns  
Regional Director  
National Trust for Historic Preservation  
One Sutter Street, Suite 707  
San Francisco, CA 94104

Dear Ms. Burns:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

Thank you for your letter of November 9, 1990 regarding the DEIS for the subject project. The following has been prepared in response to your concerns.

- 1. Unresolved Historic Preservation Impacts**  
We recognize the applicability of Section 106 of the National Historic Preservation Act (NHPA) and the State Historic Preservation Office (SHPO) has been contacted for assistance in this matter. We understand that these review processes must be completed prior to the irrevocable commitment of any resources. Disputes, if any, regarding boundaries of the National Historic District and proposed Special District will be referred to the Keeper of the National Register, Department of the Interior.
- 2. Assessment of Physical Condition of Existing Structures**  
A preliminary survey of the existing residential buildings in the project was conducted during the summer of 1990 to ascertain the overall exterior condition of the structures and lots. The survey, conducted on a building-by-building basis, found that many structures in all three villages were found to be in relatively poor exterior condition.  
We have begun a sample building assessment program and will complete a detailed building assessment prior to any work performed on existing buildings. The study will also address: the salvageability of buildings; general rehabilitation cost estimates; and rehabilitation incentives for residents, and financial support for city and non-profit rehabilitation of vacant structures.
- 3. Preservation Design Concerns**  
In reference to your concerns against relocating existing dwelling units between different villages, the Master Plan will be revised to state that the units will be maintained in their present village to the extent practical.

Ms. Kathryn A. Burns

-2-

December 17, 1990

The option to allow individual tenants the discretion to demolish or move their current residence as a "last resort" alternative has been taken under advisement.

In keeping with traditional construction practices in the plantation, new housing clusters will be separated from existing units via wide buffers and/or open areas to the extent possible. This will mitigate the potential for impacts to, and preserve the integrity of, the historic character for areas such as the core restoration area.

4. Assessment of Residential Views and Financial Capacity to Remain  
A resident survey is currently being administered, and results will be incorporated into the Final EIS. We expect to determine many of the concerns you have raised regarding resident concerns and economic ability.

5. Specific Concerns

a. Residential Units

The Secretary of the Interior's Standards for Rehabilitation will be reference in the development of preservation controls for the project. In addition, individual concerns geared specifically to Tenney, Renton and Varona Villages will be designed and implemented.

b. Community Facilities

We concur that potential impacts to any existing community facility buildings could be serious, and as such, will be guided by the Secretary of the Interior and Special District rules and regulations similar to those being considered for residential buildings.

c. Infrastructure Improvements

The design and construction of roads and curbing will consider aspects of both historic and public safety. No federal funds will be used for the road improvements described in the master plan.

d. Cost Estimate and Relocation Program

The Draft EIS currently contains general information on the project development costs. The Final EIS will include a discussion on the proposed relocation program.

e. Alternatives to the Proposed Program

Alternatives to the proposed actions will be discussed more thoroughly in the Final EIS.

6. Recommendations

The City has consulted and received information from SHPO regarding the Section 106 process, and in addition, data has been obtained from the special interest groups and government entities mentioned in your letter. We appreciate your offer to provide a grant for consultant services to facilitate the project.

Ms. Kathryn A. Burns

-3-

December 17, 1990

As aforementioned, a building assessment is currently in progress to ascertain the condition and rehabilitation costs in the project. A rehabilitation specialist from this Department and a qualified architectural firm have been contracted to conduct the assessment. In addition, a resident survey is currently being administered by the City, the ILWU and Friends For Ewa (FFE).

An Ewa Village Advisory Committee, comprised of various interest groups such as FFE, village residents, the ILWU, Ewa Community Church, and the Friendship Bible Church, have been involved in the planning process. They have contributed their expertise from a "user" perspective which has proved to be valuable to the overall shape and direction of the project. A Technical Committee comprised of the principal consultant, Department of Housing and Community Development, City Managing Director, Department of Public Works, Department of Parks and Recreation, Board of Water Supply, and other City agencies, have held regular bi-weekly meetings to resolve the technical- and design-related project concerns.

Your interest and participation in the planning stages of this project are appreciated.

Very Truly Yours,



Michael N. Searfohle, Director

cc: DGP

JOHN WARDLE  
Governor



STATE OF HAWAII  
DEPARTMENT OF DEFENSE  
OFFICE OF THE ADJUTANT GENERAL  
2045 DALLMAN FIELD ROAD, HONOLULU, HAWAII 96814-4046

ALEXIS T. LIM  
MAJOR GENERAL  
ADJUTANT GENERAL

MILES M. MATSUDA  
COLONEL  
CONTRACTING GENERAL

October 3, 1990

Engineering Office

City & County of Honolulu  
Dept of General Planning  
650 South King Street  
Honolulu, Hawaii 96813

To Whom It May Concern:

Ewa Villages Master Plan

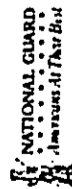
Thank you for providing us the opportunity to review the above subject project.

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

Sincerely,

*Jerry H. Matsuda*  
Jerry H. Matsuda  
Lieutenant Colonel  
Hawaii Air National Guard  
Contracting & Engineering Officer

cc: Ms. Eileen Mark,  
Dept of Housing & Community Development  
✓ Chester T. Koga,  
R. H. Towill Corporation  
OEQC w/atch EIS



DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

850 SOUTH KING STREET, 8TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 533-4427 • FAX: 537-2488



FRANK P. PAI  
Mayor

MICHAEL N. SCARFONE  
DIRECTOR

Gail N. Kaito  
DEPUTY DIRECTOR

December 17, 1990

Lieutenant Colonel Jerry M. Matsuda  
Hawaii Air National Guard  
Contracting and Engineering Officer  
State Department of Defense  
Office of the Adjutant General  
3949 Diamond Head Road  
Honolulu, HI 96816-4495

Dear Lieutenant Colonel Matsuda:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of October 3, 1990 indicating that you have no comments regarding the DEIS for this project. Your interest and participation in the planning stages of this project are appreciated.

Very Truly Yours,

*Michael N. Scarfone*  
for Michael N. Scarfone, Director

cc: DGP



JOHN WILKIE  
DIRECTOR OF HEALTH

STATE OF HAWAII DEPARTMENT OF HEALTH P. O. BOX 3273 HONOLULU, HAWAII 96811		RECD DEC 28 1990 RMTC	
GSY	DRM		

BENJAMIN B. LEE  
-2-  
December 28, 1990

IN COPY, PLEASE REFER TO  
EMRSD

December 24, 1990  
90-3-245

To: Benjamin B. Lee  
Chief Planning Officer  
Department of General Planning  
City & County of Honolulu

From: Director of Health

Subject: DEIS - Ewa Village Master Plan  
Ewa Villages Master Plan  
TAK: 9-1-16; 25 portion; 9-1-17: 2, 1, 4 portion 36, 37, 38, 39, 46, 47, 48, 49 portion, and 51

project. Concurrent programming should include, but not be limited to completion of plans and the initiation of construction drawings with financing to proceed with construction at the earliest possible date.

Vector Control

All requirements of Title 11, Chapter 26, paragraph 35, (Rodents; demolishing of structure and clearing of vacant sites and vacant lots) must be adhered to.

Drinking Water

1) The DEIS indicates that 4-, 8- and 12-inch waterlines will be required as part of the proposed water system improvements. The Department's Administrative Rules, Title 11, Chapter 20, "Potable Water Systems," requires that new or substantially modified distribution systems for public water systems be approved by the Director of Health. However, since the water system is under the jurisdiction of the City and County of Honolulu, the Board of Water Supply will be responsible for the review and approval of the plans.

2) According to the DEIS, the entire project site lies above the Department's Underground Injection Control (UIC) line. Land areas located above the UIC line are generally considered to contain underground sources of drinking water. These areas should therefore be protected against all sources of groundwater contamination.

3) The standard golf course conditions should apply to this project (attached).

4) Please note that if drywells are utilized for the disposal of surface water runoff, they must comply with the Department's Administrative Rules, Title 11, Chapter 23, "Underground Injection Control." Chapter 23 requires UIC permits for the construction and operation of all injection wells.

5) The DEIS indicates that the golf course and landscaped areas will be irrigated with non-potable water. The dual water system must be carefully designed and operated to prevent cross-connections and backflow conditions between the potable and non-potable supplies.

We have reviewed the material on the subject project submitted by your office. The following comments are offered:

Wastewater Disposal

1. The subject project is in a proposed critical wastewater disposal area as determined by the Oahu County Wastewater Advisory Committee.
2. At this time, the details of wastewater treatment and disposal from the project has not been adequately addressed. Any wastewater generated at the site must be treated and disposed of in accordance with Chapter 11-62, Wastewater System. Section 11-62-06(b) requires that projects located within or near proximity of public sewers connect to the sewer system.
3. The developer should be made aware that there is currently insufficient capacity at Honolulu to handle the anticipated wastewater flows from the proposed development.

The Department of Health has recommended approval of the City's Section 301(h) secondary treatment waiver request up to 25 mgd. Thereafter, the Department will require the City to treat all subsequent flows to secondary and consider effluent reuse.

It is therefore, advised that the project proposed be authorized only on the basis of concurrent programming of public facilities to collect, treat, and properly dispose of the wastewater anticipated to be generated from this

*John C. Lewin*  
JOHN C. LEWIN, M.D.

Attachment

cc: Dept. of Housing & Community Development,  
City & County of Honolulu (Attention: Ms. Aileen Mark)  
✓R. M. Towill Corp. (Attention: Chester Koga)



STATE OF HAWAII  
DEPARTMENT OF HEALTH

-2-

April, 1990 (Version 3)

EIGHT (8) CONDITIONS APPLICABLE TO THIS NEW GOLF COURSE DEVELOPMENT

1. The owner/developer and all subsequent owners shall establish a groundwater monitoring plan and system which shall be presented to the State Department of Health for its approval. The groundwater monitoring plan and system shall minimally describe the following components:
  - a. A monitoring system tailored to fit site conditions and circumstances. The system shall include, and not be limited to, the use of monitoring wells, lysimeters and vadose zone monitoring technologies. If monitoring wells are used, the monitoring wells shall generally extend 10 to 15 feet below the water table.
  - b. A routine groundwater monitoring schedule of at least once every six (6) months and more frequently, as required by the State Department of Health, in the event that the monitoring data indicates a need for more frequent monitoring.
  - c. A list of compounds which shall be tested for as agreed to by the State Department of Health. This list may include, but not be limited to the following: total dissolved solids; chlorides; pH; nitrogen; phosphorus; or any other compounds associated with fertilizers, biocides or effluent irrigation.
2. Baseline groundwater/vadose zone water data shall be established as described in this paragraph. Once the monitoring system and list of compounds to be monitored for have been determined and approved by the State Department of Health, the owner/developer shall contract with an independent third-party professional (approved by the State Department of Health) to establish the baseline groundwater/vadose zone water quality and report the findings to the State Department of Health. Testing of the analyses of the groundwater shall be done by a certified laboratory.
3. If the data from the monitoring system indicate the presence of the measured compound and/or the increased level of such compound, the State Department of Health can require the owner/developer or subsequent owner to take immediate mitigating action to stop the cause of the contamination. Subsequently, the developer/owner or subsequent owner shall mitigate any adverse effects caused by the contamination.

4. Owner/developer shall provide sewage disposal by means of connection to the public sewer system; or by means of a wastewater treatment works providing treatment to a secondary level with chlorination. Effluent from this wastewater treatment works may be used for golf course irrigation, subject to Condition #3. The entire system shall be approved by the State Department of Health in conformance with Administrative Rules Title 11, Chapter 62, Wastewater Treatment Systems, effective December 10, 1988.
5. If a wastewater treatment works with effluent reuse becomes the choice of wastewater disposal, then the owner/developer and all subsequent owners shall develop and adhere to a Wastewater Reuse Plan which shall address as a minimum, the following items:
  - a. Management Responsibility. The managers of the irrigation system using reclaiming wastewater shall be aware of the possible hazards and shall evaluate their system for public health, safety, and efficiency. They must recognize that contact with the reclaimed wastewater from treated domestic sewage poses potential exposure to pathogenic organisms which commonly cause infectious diseases (bacteria, viruses, protozoa, and helminths or worms).
  - b. General Recommendations
    - 1) Irrigated areas should be no closer than 500 feet from potable water wells and reservoirs.
    - 2) Irrigated areas should be no closer than 200 feet from any private residence.
    - 3) Application rates should be controlled to minimize ponding. Excess irrigation tailwater in the reclaimed wastewater irrigation area shall be contained and properly disposed. An assessment should be made of the acceptable time and rate of application based on factors such as type of vegetation, soil, topography, climate and seasonal variations.
    - 4) Effluent holding/mixing ponds shall be designed to prevent the infiltration of the wastewater into the subsurface. The holding/mixing ponds shall be made impervious.
    - 5) Irrigation shall be scheduled such that the public is not in the vicinity and the soil is sufficiently dry to accept the irrigation water.
    - 6) Permanent fencing or barriers shall be erected around polishing or holding ponds to prevent public entry or stray feral and tame animals from gaining access to the ponds.

- 7) Adequate irrigation records shall be maintained. Records should include dates when the fields are irrigated, rate of application, total application and climatic conditions. Records should also include any operational problems, diversions to emergency storage or safe disposal and corrective or preventive action taken.
  - 8) The holding/mixing ponds shall be periodically monitored for the purpose of detecting leakage into the subsurface. If leakage is detected, corrective action shall be immediately taken.
- c. Adequate Notice. Appropriate means of notification shall be provided to inform the employees and public that reclaimed wastewater is being used for irrigation on the site.
- 1) Posting of conspicuous signs with sufficient letter size for clear visibility with proper wording should be distributed around the use areas.
  - 2) Signs shall be securely fastened. Periodic surveillance shall be conducted to assure permanent posting at all times. Immediate replacements shall be made when necessitated by deterioration, vandalism or misuse.
- d. Adequate Employee Education. Employees or users should be cautioned and warned of the potential health hazards associated with the ingestion of reclaimed wastewater being used at the site.
- 1) Employees should be warned that the ingestion of reclaimed wastewater is unsafe.
  - 2) Employees should be protected from direct contact of the reclaimed wastewater. If necessary, protective clothing should be provided.
  - 3) Employees should be informed of the following:
    - The irrigation water is unsafe for drinking or washing.
    - Avoid contact of the water or soil with any open cuts or wounds.
    - Avoid touching the mouth, nose, ear or eyes with soiled hands, clothes or any other contaminated objects.
    - Be aware that inanimate objects such as clothes or tools can transport pathogenic organisms.
    - Always wear shoes or boots to protect feet from the pathogenic organisms in the soil or irrigation water.

- 6. Releases from underground storage tanks (USTs) used to store petroleum products for fueling golf carts, maintenance vehicles, and emergency power generators pose potential risks to groundwater.  
Should the owner/developer/operator plan to install USTs that contain petroleum or other regulated substances, the owner/developer/operator must comply with the federal UST technical and financial responsibility requirements set forth in Title 40 of the Code of Federal Regulations Part 280. These federal rules require, among other things, owners and operators of USTs to meet specific requirements in the detection, release response and corrective action. Also, the owner/developer/operator must comply with all State UST rules and regulations pursuant to Chapter 342-L 'Underground Storage Tanks' of the Hawaii Revised Statutes.  
In consideration of the above-mentioned remarks, the Department of Health recommends that the owner/developer/operator implement facility plan alternatives that exclude the installation and operation of UST systems (e.g., the preferential use of electric golf carts, use of above-ground storage of fuel oil for emergency power generators, etc.), or, if USTs are utilized, that secondary containment be considered.
- 7. Buildings designated to house the fertilizer and biocides shall be bermed to a height sufficient to contain a catastrophic leak of all fluid containers. It is also recommended that the floor of this room be made waterproof so that all leaks can be contained within the structure for cleanup.
- 8. A golf course maintenance plan and program will be established based on "Best Management Practices (BMP)" in regards to utilization of fertilizers and biocides as well as the irrigation schedule. BMP's will be revised as an ongoing measure. The golf course maintenance plan will be reviewed by the State Department of Health prior to implementation.

If there are any questions regarding the eight (8) conditions mentioned here, please contact Mr. James K. Ikeda at 543-8304. We ask you cooperation in the protection of Hawaii's valuable groundwater resource.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

800 SOUTH KING STREET, 5TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE 533-4027 FAX 533-5488



FRANK FERN  
1-813-6888

MICHAEL N. SCARFONE  
DIRECTOR  
RONALD B. HUI  
DEPUTY DIRECTOR

Dr. John C. Lewin, M.D.  
Page 2

Drinking Water

1. The existing water system is operated by the Oahu Sugar Company. The City and County proposes to redevelop the water system and install a new system that meets Department of Health standards. This new system will be under the jurisdiction of the Board of Water Supply.
2. Because the project site is located above the Department of Health's Underground Injection Control line all existing structures will be sewerd in order to protect the ground water. A non-potable water source, however, will be developed in this area for the irrigation of the proposed golf course.
3. The project will comply with the Department of Health's standards for new golf course development.
4. We are currently not proposing the use of dry wells. However, should the use of dry wells become a viable alternative for stormwater disposal, we will comply with Title 11, Chapter 23.
5. The water system for the proposed golf course will be designed as a dual system (potable and non-potable). Your cautions regarding designing the system to prevent cross-connections and backflow between the potable and non-potable water supplies have been taken under advisement. One of the primary means we will use to prevent cross-connection between the potable and non-potable systems will be the construction of a lagoon from which all irrigation (non-potable) water will be drawn. Further, "reduced pressure" (RP) backflow prevention devices will be installed pursuant to Board of Water Supply specifications.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

*Michael N. Scarfone*

for  
Michael N. Scarfone, Director

cc: Department of General Planning

January 14, 1991

Dr. John C. Lewin, M.D., Director  
Department of Health  
P.O. Box 3378  
Honolulu, Hawaii 96801

Dear Dr. Lewin:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of December 24, 1990 regarding the Draft EIS for the subject project. The following have been prepared in response to your comments:

Wastewater Disposal

1. The location of the subject area within a proposed "critical wastewater disposal area" has been noted. At the completion of this project all of the existing structures will be connected to the municipal sewer system.
2. The proposed wastewater collection and disposal system will be designed to comply with all applicable County and State regulations. The present plans are for wastewater to be collected through a system of pipes and then conveyed to the Honolulu Wastewater Treatment Plant for treatment and disposal.
3. We are aware that the existing capacity of the Honolulu Wastewater Treatment Plant is currently limited. The proposed project is being planned with the expansion schedule of the treatment plant in mind.

Vector Control

During the construction phase, the provisions of Title 11, Chapter 26, paragraph 35, will be adhered to with regard to demolition of structures and clearing of vacant sites and lots.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

450 SOUTH KING STREET, 37TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 533-4427 • FAX: 537-5488



FRANK FAY  
MAYOR

(P)11832.0

MICHAEL N. SCARFONE  
DIRECTOR  
GAIL H. KAITO  
DEPUTY DIRECTOR

OCT 3 1990

December 17, 1990

Mr. Harold Masumoto  
Director  
Office of State Planning  
State of Hawaii  
Honolulu, Hawaii

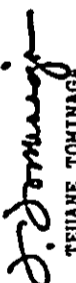
Dear Mr. Masumoto:

Subject: Ewa Villages Master Plan  
Ewa, Oahu, Hawaii  
Petition for State Land Use  
District Boundary Amendment

Thank you for the opportunity to review the subject document. We have no comments to offer.

Should there be any questions, please contact Mr. Ralph Yukumoto of the Planning Branch at 548-7192.

Very truly yours,

  
TEUANE TOMINAGA  
State Public Works Engineer

RY:hc  
cc: City and County of Honolulu,  
Department of Housing and Community Development  
/R. H. Towill Corporation  
Office of Environmental Quality Control

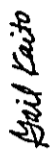
Mr. Teuane Tominaga  
State Public Works Engineer  
Department of Accounting and General Services  
Division of Public Works  
P. O. Box 119  
Honolulu, HI 96810

Dear Mr. Tominaga:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of October 3, 1990 indicating that you have no comments regarding the DEIS for the subject project. Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

  
Michael N. Scarfone, Director

cc: DGP



STATE OF HAWAII  
OFFICE OF HAWAIIAN AFFAIRS  
1600 KAPIOLANI BLVD., SUITE 1500  
HONOLULU, HAWAII 96813  
(808) 546-3000  
(808) 546-3043

October 10, 1990

City and County of Honolulu  
Department of General Planning  
650 South King Street  
Honolulu, Hawaii 96813

Re: Ewa Villages Master Plan

Dear Sir: Thank you for the opportunity to review the above-referenced draft environmental impact statement.

We commend the City and County of Honolulu for its preservation efforts in the Ewa Village Master plan. The cultural attributes that developed around small mill towns have contributed to our cultural heritage and should be preserved.

We encourage the City and County to preserve the unique aspects of the various villages where possible and to include the preservation of Varona village.

We have no other comments or concerns at this time.

Sincerely,

*Richard K. Paglinawan*  
Richard K. Paglinawan  
Administrator

cc: City and County of Honolulu  
Dept. of Housing & Community Development

Chester T. Koga  
R.M. Towill Corporation

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

830 SOUTH KING STREET, 3TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 523-4227 • FAX: 527-5498



FRANK FARI  
MAYOR

MICHAEL N. SCARFONE  
DIRECTOR  
*ua'ii Kaito*  
DEPUTY DIRECTOR

December 21, 1990

Mr. Richard K. Paglinawan, Administrator  
State of Hawaii, Office of Hawaiian Affairs  
1600 Kapiolani Boulevard, Suite 1500  
Honolulu, HI 96814

Dear Mr. Paglinawan:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of October 10, 1990 regarding the DEIS for the subject project. To the extent practical, the City intends to preserve the unique aspects of the Villages, such as residential and non-residential buildings. Your suggestion to include Varona Village in the overall project preservation effort has been taken under advisement.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

*Michael N. Scarfone*  
for Michael N. Scarfone, Director

cc: DGP



STATE OF HAWAII  
DEPARTMENT OF EDUCATION  
P. O. BOX 2104  
HONOLULU, HAWAII 96811

OFFICE OF THE SUPERINTENDENT

October 30, 1990

CHARLES T. TOGUCHI  
SUPERINTENDENT

Mr. Michael Scarfone

-2-

October 30, 1990

Mr. Michael N. Scarfone  
Director  
Department of Housing and Community Development  
Honolulu Municipal Building, 5th Floor  
650 South King Street  
Honolulu, Hawaii 96813

Dear Mr. Scarfone:

Subject: Draft Environmental Impact Statement  
Ewa Villages Master Plan

We have reviewed the subject draft and have revised our projected enrollment impact of July 13, 1990 due to changes in the project:

School	Grade	Projected Enrollment
Ewa Elementary	K-6	230 - 240
Ilima Intermediate	7-8	50 - 60
Campbell High	9-12	90 - 100

The projections are based on a revised project of 789 new single family and 112 new multi-family units. Excluded are 69 existing units in Varona Village and 214 units to be rehabilitated in Renton Village and Tenney Village.

The Department of Education cannot accommodate the additional enrollment growth until additional classrooms are built. Our other comments in the July 13, 1990, letter to your office regarding a previous master plan are still valid. We are greatly concerned about the additional classrooms that would be required at Ewa Elementary School.

The timing of the development and other projects in the area are crucial in determining where classrooms will be sited. The Department of Education will be monitoring the progress of all new subdivisions to determine if revisions of school service areas are necessary.

AN AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY EMPLOYER

The plan proposes to improve the wastewater system. Ewa Elementary does not have a sewer outlet and requires a capacity of 13,500 gallons per day based on a design enrollment of 900 students. The Department requests that the master plan provide a sewer outlet for school connection along Renton Road. The outlet would be required prior to the completion of programmed classrooms in September, 1994.

Your cooperation is requested to keep us informed about any changes to the development plans. If there are any questions, please call the Facilities Branch at 737-4743.

Sincerely,

*Charles T. Toguchi*

Charles T. Toguchi  
Superintendent

CTT:jl(LC)

cc: E. Imai  
L. Chung  
City and County Dept. of General Planning  
Office of Environmental Quality Control  
C. Koga, R.H. Towill Corporation  
City and County Dept. of Housing/Comm. Dev.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

630 SOUTH KING STREET, 8TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 522-4227 • FAX: 527-3488



FRANK F. FISH  
MAYOR

MICHAEL N. SCARFONE  
DIRECTOR  
GAIL M. KAITO  
DEPUTY DIRECTOR

December 17, 1990

Mr. Charles T. Toguchi, Superintendent  
Department of Education  
P. O. Box 2360  
Honolulu, HI 96804

Dear Mr. Toguchi:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of October 30, 1990 regarding the DEIS for the subject project. Your suggested revisions on project enrollment impacts will be incorporated into the Final EIS, and your request for the provision of a sewer outlet for Ewa Elementary School has been noted.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

Handwritten signature of Michael N. Scarfone in cursive.

for Michael N. Scarfone, Director

cc: DGP



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
STATE HISTORIC PRESERVATION DIVISION  
33 South King Street, 6th Floor  
Honolulu, Hawaii 96813

OFFICE OF THE HISTORIC PRESERVATION DIVISION  
33 SOUTH KING STREET, 6TH FLOOR  
HONOLULU, HAWAII 96813

REVISIONS TO THE HISTORIC PRESERVATION DIVISION  
33 SOUTH KING STREET, 6TH FLOOR  
HONOLULU, HAWAII 96813

REF:HP-AL

NOV - 7 1981

Mike H. Scarfone  
Department of Housing and Community Development  
City and County of Honolulu  
650 South King Street, 5th Floor  
Honolulu, Hawaii 96813

Dear Mr. Scarfone:

SUBJECT: Ewa Villages Master Plan

Thank you for the opportunity to review and comment on the Ewa Villages Master Plan draft EIS.

Our department believes that Ewa Plantation, including Tenney, Renton and Varona Villages, is historically significant and appears to meet the criteria for listing in the National Register of Historic Places. In addition, the area is under consideration by the National Park Service for designation as a National Historic Landmark.

We understand from project presentations that federal moneys in the form of Section 8 Rental Assistance and Farmers' Home Administration funds are anticipated to play an important role in the development of the project's economic package. As such, compliance with Section 106 of the National Historic Preservation Act must occur. The initial step in this compliance is consultation with our office to determine the presence of historic properties in the project area.

With regards to the draft EIS for the Ewa Villages Master Plan, our office has a number of concerns:

1. Although this proposal attempts to address the concern to preserve the historic character of Ewa Plantation, it appears the project planners have not as yet honed in on the preservation wavelength. Our State Historic Preservation Office has strong reservations with regards to the project's approach to historic preservation which is articulated on page 2 of the document.

"One of the principal considerations of the development-revitalization program is to retain the historic flavor and design character of a plantation village within a portion of the total development area."

Michael H. Scarfone  
Page Two

Because of the high preservation value of Ewa Plantation and its surrounding villages, more than just the "historic flavor" needs to be retained, and furthermore, the plan needs to address the preservation of Ewa Plantation, rather than a generic "plantation village". The plan's intention to maintain "part of its [Ewa's] character as a plantation town" (p. 4) appears half-hearted at best, and the conclusion that the "appearance of the project site will be altered from its present rural, agricultural character to that of a planned residential, recreational and commercial development" (p. 8-1) is unacceptable. Consideration needs to be given to expanding the portion of the project that addresses itself to historic preservation, and that portion needs to more closely align itself with accepted historic preservation practices and approaches.

2. The only alternatives presented by this plan are the plan or no action. Many other possibilities could and should be explored by the final EIS, including the alternative of building affordable housing at some location other than Ewa Plantation, as the rationale for selecting this location is never addressed.

3. The impact of this project upon the historic character of Ewa town cannot be assessed until further studies have been completed. These include: (a) a study of the desire and economic ability of current residents to purchase their own homes, and (b) a study to determine the costs of restoring and rehabilitating the existing housing stock. It is only after these studies have been completed that various alternatives for the preservation of Ewa Villages can be seriously explored. For example, the study of current tenant desires and economic capabilities might disclose that making "affordable homeownership opportunities" (p. 5) may be less important than the maintenance of affordable residential opportunities, as it has yet to be determined the number of current residents who can afford to purchase and rehabilitate units at the anticipated moderate income prices.

4. The impact of the project upon the historic character of Ewa also cannot be assessed until: (a) the frequently mentioned design guidelines (pp. 2-4, 2-6, and 4-24) are determined to be an appropriate or inappropriate approach to regulate design in the area, and (b) if appropriate, the content of such guidelines is presented and the manner in which the guidelines will be enforced is addressed.

5. Although the goal of the Ewa Villages Master Plan is, "to provide homeownership opportunities to the tenants that reside in the plantation villages of Renton, Tenney and Varona" (p. 2-1), we question how compatible this goal might be with the plan's objective to, "preserve the historic character of Renton and Tenney Villages" (p. 2-1). The goal and objective might reach some accord if the "City Standards" alluded to throughout the document are approached with flexibility in regards to the rehabilitation of dwellings and the infrastructure requirements of the

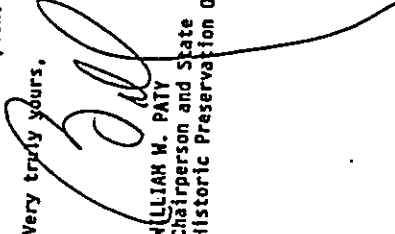
project. However, the current Draft EIS does not give any indication that such an approach is being considered.

6. The plan's use of the term "rehabilitation" in connection with its proposals for Tenney Village (p. 2-1) is very misleading. By no stretch of the word, as it is currently utilized within the parlance of historic preservation, can what is proposed for Tenney Village be considered rehabilitation. The plan anticipates 218 new units to be built in Tenney through infill of 45 vacant lots and redevelopment. The 188 existing units will be "rehabilitated to meet standards for habitable structures." (p. 2-5) From project presentations our Historic Preservation Office has gathered the impression that as much as 70% of the housing in stock in Tenney Village may not be retained as buildings either will be deemed not habitable or will be moved to in-fill Renton Village. Such a high attrition rate cannot be considered to be "rehabilitation." Until the study to determine the costs of restoring and rehabilitating the existing housing stock has been completed, the devastating effect this proposed project might have on Tenney Village's historic character cannot be assessed.
7. It appears doubtful that the proposed more than doubling of the density of Renton Village (p. 2-4 and 2-5) can be considered "restoration", and more than likely should not even be referred to as preservation. Use of this term might only be considered appropriate if the 40 proposed new units in the area are replacing structures which formerly existed in this village, which we have been led to understand is not the situation. This proposal is especially disconcerting from an historic preservation perspective when this area is presented by the plan to be the project's high preservation area. The saturation of this area with residences moved from other historically significant villages cannot be considered an acceptable preservation approach.
8. Although the current grid road pattern is to be retained in the villages, it appears the streets are to be substantially up-graded and widened, trees relocated, and houses set back ten feet from the street. In addition, sidewalks and bikeways are proposed for Renton Road and rolled curbs are proposed on the side streets. (pp. 2-6, 2-11, 2-13) None of these proposals are in keeping with the historic character of Ewa Plantation.
9. The noise studies indicate that noise along Renton Road is expected to almost double and will exceed HUD standards (pp. 3-21 and Appendix B, page 8 of the consultant study). The proposed mitigation measures for this adverse effect are either sound barrier walls, acoustical insulation or air conditioning so windows would not have to be opened. These solutions are not in keeping with the historic character of the district and the houses therein.

10. The cluster of multi-family dwelling units has a high potential of not being compatible with the existing historic fabric. No residential structures should exceed the former Plantation Manager's home in scale. Special attention will have to be devoted to the design of these proposed multi-family units, especially considering its proposed location opposite from Tenney Village.
  11. The construction of an Old Hill Marketplace holds potential to be a good use of the former mill site. Rather than have the marketplace design be compatible with the neighboring historic structures, it might be more historically accurate to have the structures be more reminiscent of the former mill, for example, through the use of corrugated metal as a building material. The introduction of a possible two-story parking structure at this marketplace which is compatible with the historic character of the district may be difficult to achieve.
- In conclusion, we find this Draft EIS understates the potential impacts that this proposed project will have upon the historic character of Ewa Plantation. Characterizations that the historic character of Ewa Plantation is "quickly fading" with "each passing year" (p. 4-23) are not valid, nor are such presumptions that "if these [proposed plan] improvements are not achieved, the villages will continue to decline." (p. 4-27).
- Whether the modern amenities proposed by this plan will offset the loss of a way of life (p. 4-26) is a questionable response to the adverse impacts this project will have upon this significant historic resource. The very statement that the "residential and commercial uses . . . will likely benefit future homeowners, the landowners, private businesses and the City and State governments" (p. 8-2) rather than the current residents of Ewa Plantation does not bode well for the preservation of the current way of life and its physical environment.

From a historic preservation perspective, "the unresolved future" for Ewa Plantation, which is purported to be one of the principal motivations for the development of this plan (p. 2), appears more desirable than the future proposed by this plan.

Very truly yours,

  
WILLIAM W. PATE  
Chairperson and State  
Historic Preservation Officer

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
**CITY AND COUNTY OF HONOLULU**

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FRANK P. PAUL  
DIRECTOR

MICHAEL R. SCARFONE  
DIRECTOR  
GAIL KALICO  
DEPUTY DIRECTOR

December 28, 1990

Mr. William W. Paty, Chairperson  
Board of Land and Natural Resources  
P. O. Box 621  
Honolulu, HI 96809

Mr. William W. Paty  
Chairperson

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December 28, 1990

Surrounding uses will not jeopardize the integrity of the core preservation area as development guidelines such as Conditions, Covenants and Restrictions (CC&R) consistent and compatible with the core area will be implemented. In addition, we are proposing the codification of official boundaries for an Ewa Special District (SD) in conjunction with CC&R's. These guidelines will parallel those proposed by the Community Housing Resource Board of Kauai for the Rehabilitation of Kauai's Old Houses, and are based on the Secretary of the Interior's Standards for Rehabilitation, 1983. At a minimum, the SD guidelines and CC&R's will include the guidelines for acceptable architectural aspects such as roofing, doors and windows, painting and staining, flooring and lanais, building facades, and landscaping.

2. As one of its main objectives is to increase the supply of affordable homes to the people of Oahu, DHCD has, and continues to promote island-wide projects which provide such opportunities, and the subject project is only one among dozens that have been considered for similar development. In addition, such redevelopment is needed to bring infrastructure up to standard, relieve flood conditions, and provide residents the opportunity to own their homes.

3. In January 1979, a comprehensive 3-volume study was conducted for the Ewa Plantation Villages, by Phillips Brandt Reddick, on behalf of the City and County of Honolulu. Eight Villages, Fernandez, Tenney, Renton, Varona, "C", Mill, Lower, and Middle, were included in the study, which discussed the desire of current residents to purchase and rehabilitate their existing homes, and the determination of the costs of restoring and rehabilitating the existing village homes. The City is presently conducting another survey for Tenney, Renton and Varona villages, in order to update and supplement the information gathered from the 1979 survey. Data from both studies will be considered in the overall planning of the historic character of the Villages.

4. Design guidelines mentioned in Section 2 and 4 of the DEIS include combined rules and regulations from the Ewa SD currently under preparation, the CC&R's similar to those implemented in the West Loch Estates development, and the Secretary of the Interior's Standards for Rehabilitation.

5. DHCD's foremost obligation is to provide affordable housing opportunities to the people of Oahu. This obligation, however, will not compromise the integrity of the historic preservation aspects of the project. As aforementioned, the SD and CC&R's will insure appropriate adherence to the applicable "do's and don'ts" of the project.

6. A qualified Rehabilitation Specialist from this Department, and an architectural consultant will determine the overall structural condition, salvageability and rehabilitation costs of existing homes in the Villages. A more detailed assessment of specific rehabilitation requirements and costs for each dwelling unit will be conducted after acquisition of the land.

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of November 7, 1990 regarding the DEIS for the subject project. We appreciate your interest in this project and value the comments you have provided. In undertaking this project the City has recognized its responsibility in providing for the residents in the Ewa Villages as well as maintaining the villages' important link to Hawaii's past.

The historical importance of the Ewa Villages has been acknowledged and we believe that the provision of housing opportunities to the residents and the preservation goals of your Department are not mutually exclusive. To this end we believe that we can work together to meet our individual goals. We will consult with your office in meeting specific requirements of Section 106 of the National Historic Preservation Act.

The following has been prepared in response to your comments:

1. The City intends to preserve as much of the unique aspects of the former Ewa Plantation Town as possible through the preservation of the existing village residential and managerial core. This core area defines the "part of its (Ewa's) character as a plantation town" which will be preserved. The core's surrounding area, however, will be altered from its present rural state to that of a planned community, as a resultant impact of increasing residential needs. New development within the villages, such as new housing clusters, will be separated from the existing village elements via buffers and/or open areas.

Mr. William W. Paty  
Chairperson

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December 28, 1990

7. In keeping with traditional construction practices in the plantation, new housing clusters will be separated from existing units via wide buffers and/or open areas to the extent possible. This will mitigate the potential for impacts to, and preserve the integrity of, the historic character of areas such as the core restoration area.
8. The road network and streetscape will consider both historic character and public safety. In response to your reference to three pages in the DEIS: 1) Page 2-6 states, "Road pavements will remain narrow ... with no sidewalks ..." in consideration of the existing character in the villages; 2) Page 2-11 states, "For existing and redeveloped residential roads in Tenney Village ... a 32-foot right-of-way standard has been established." This 32-foot right-of-way includes a 20-foot pavement width, which is the existing pavement width in the villages, and a 6-foot utilities easement on each side. Whereas, new residential areas will allow for a 36-foot right-of-way, with 24-foot pavement and 6-foot utility easements; and 3) Page 2-13 states that the existing 70-foot right-of-way will be retained for Renton Road. Walkways and bikeways will be provided along Renton Road with due consideration given for safety.

Precisely because the City is sensitive to retaining the historic character of the area, DHCD will request City Council approval of these minor deviations from the City's subdivision standards and street improvement requirements for street widths, sidewalks and planting areas.

9. We concur that the proposed mitigation measures, particularly the sound barrier wall, may impede segments of the historic area. However, these measures will be modified to reduce the impact to historic character, while achieving the goal of noise mitigation.
10. Proposed clusters of multi-family dwelling units will not be overbearing in scale to the manager's house, as careful attention will be devoted to the architectural scale and detail of all units in the project.
11. Your recommendation to design the Old Mill Marketplace to be more reminiscent of the former mill have been taken under advisement.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

*Paul Keith*  
for Michael N. Scarfone, Director

cc: DGP



DEPARTMENT OF BUSINESS,  
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DEPUTY DIRECTOR

Mr. Benjamin Lee  
Page Two  
November 7, 1990

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and 2) calculations by our consultant, Peter Flachsbart, showing the positive impacts that installation of solar water heaters and heat pumps would have on home buyers at Kapaolei.

Thank you for this opportunity to comment. I hope these comments will be useful to you.

November 7, 1990

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

Sincerely,

*Maurice H. Kaya*  
Maurice H. Kaya  
Energy Program Administrator

Dear Mr. Lee:

Subject: Draft Environmental Impact Statement, Ewa Villages Master Plan

The Energy Division has received the subject Draft Environmental Impact Statement (DEIS) and has the following comments:

We note that in Section 6.3.2.3, page 6-4, the DEIS refers to energy conservation measures for this project as follows: "Energy conservation and the utilization of energy-saving devices will be encouraged through homeowner information and orientation programs provided by the City." This is the only reference in the DEIS that addresses energy conservation issues associated with the project. While it indicates an intent to help educate homeowners about energy conservation, it does not signal a commitment by the City to design and construct an energy-efficient project.

The Energy Division would like to see language in the Final Environmental Impact Statement (FEIS) that commits the City to the use of energy conservation design and technologies to help meet the project's energy requirements. In particular, we would like to see the FEIS revised to indicate that the City will (1) require the proposed project's design architects and engineers to include energy conservation measures in their designs, and (2) require the installation of solar water heating systems, heat pumps, and energy efficient lighting to the maximum extent possible.

Also, we recommend that the City adopt "energy efficiency design guidelines" for this project. We are enclosing, for the City's consideration, 1) energy efficiency design guidelines which the Energy Division prepared for the Housing and Finance Corporation (HFDC) and which were included in HFDC's request for proposals for villages two and three of the Villages of Kapaolei,

MHK/PE:do  
Enclosures  
cc: Eileen Mark  
Chester T. Koga

DESIGN GUIDELINES - ADDENDUM NO. 1

ENERGY EFFICIENCY DESIGN GUIDELINES

To minimize the life cycle energy use and life cycle cost of the project while maintaining the project development objectives of cost effectiveness, health, safety, security and aesthetics, the following guidelines should be considered and, where applicable, incorporated into the project plans.

- 1.0 Site Planning and Landscaping
- 1.1 Orient streets to provide an east/west orientation for the long dimension of the houses to minimize heat gains in the morning and afternoon.
- 1.2 Incorporate pedestrian walkways and bikeways to encourage walking and bicycling between home, school, parks and commercial areas.
- 1.3 Select and place landscape materials on the site to provide shading to minimize heat gains in the morning and afternoon.
- 1.4 Minimize exterior paved surfaces that are not shaded by trees, awnings, trellises, roofing or house.
- 1.5 Provide for enclosed yard areas where clotheslines could be utilized.
- 1.6 Incorporate drip irrigation where appropriate, and automate irrigation system to conserve water.
- 1.7 Select drought-tolerant landscape materials where appropriate to reduce the need for water and energy consumption associated with landscape maintenance.
- 2.0 Building Design
- 2.1 Use operable windows to allow cross ventilation in every room, and orient openings toward prevailing winds.
- 2.2 Utilize eaves (minimum 30"), louvers, trellises, or shade screens to shade windows, especially on west, south and east sides.
- 2.3 Ventilate attic with devices such as louvers at or near the roof ridge to reduce attic heat buildup and resultant heat transfer to living areas.
- 2.4 Install a radiant barrier (reflective foil-faced kraft paper material or similar product) in the attic to reduce heat gain into the house attic. Typically installed at the underside of the

roof rafters or the top side of the ceiling joists per manufacturer's recommendations.

- 2.5 Use light colored finishes on roof and wall to reflect sunlight.
- 3.0 Mechanical Equipment and Systems
- 3.1 Consider use of heat pump waterheaters.
- 3.2 Consider use of solar waterheater or provide for future installation by pre-plumbing and running power and control wiring.
- 3.3 Utilize the most efficient refrigerators, clothes dryers, and dishwashers.
- 3.4 Install ceiling fans or provide for future installation.
- 3.5 Use time switches to cut off electricity when not needed to high-usage applications or equipment such as electric waterheater.
- 3.6 Install fluorescent lights with high efficiency ballasts.
- 3.7 Use low water consumption waterclosets.
- 3.8 Install flow restrictors on showers and other water uses which can have high flow rates.

## IMPACTS OF H. B. 3299 ON HOME BUYERS

by  
Peter . . . Flachsbart, Ph.D.

June 23, 1990

HB 3299 allows homeowners to take a 35% (up to \$1,750) tax credit for installation of a solar hot water system and a 20% (up to \$400) tax credit for installation of a heat pump. This report summarizes the financial impacts that this legislation could have on home buyers. Impacts are shown for a family of four that buys a home at Kumu Iki Village in Kapolei. These homes, which will have gas water heaters and ranges, are used as the baseline case for home prices, qualifying incomes and energy consumption (i.e., 445 kwh/mo. and 25.6 therms/mo.). Table I shows the financial impacts if Kumu Iki buyers install energy-saving equipment. Table II shows the impacts if all-electric appliances are provided in a future Kapolei increment.

### Methodology

At Kumu Iki Village, a family of four would consume 585 kwh/mo. if their home had a heat pump and 485 kwh/mo. if it had a solar system. To accommodate the energy improvements, electric water heaters would replace the gas units. The range would consume 3.4 therms/mo. if it was gas and 55 kwh/mo. if electric. The family would pay 8.34¢/kwh and \$1.20/therm plus the \$6/mo. service charges. Utility rates would increase an average 4% per year. The family would need an 80 gal tank for either the heat pump or solar system, and the combined solar panels would be 48 square feet. Installed cost would be \$2,000 for the heat pump and \$4,000 for the solar system.

Affordable housing (\$19,000-\$120,000) would require FHA/Hula rate financing; mid-level market homes (\$179,000-\$217,000) would use FHA financing, and upper-level market homes (\$226,000) would use conventional financing. All home buyers would use a 30-year, fixed rate mortgage. However, buyers who invest in solar hot water

systems and who use FHA financing are eligible for more favorable qualifying ratios. Conventional mortgage underwriters may credit borrowers for their reduced utility bills when calculating the borrower's qualifying income. The underwriter treats the reduced utility bill as a compensating factor that enhances borrowing ability. Since most of the higher mortgage payment is interest, it can be claimed as an itemized deduction on the home owner's income tax returns. Assuming a fixed interest rate on the mortgage, the increase in the mortgage payment for energy equipment will remain level over time, while the utility bill savings may increase if utility rates increase.

The attached tables show the net total savings for the buyer's pocketbook if the home is held either two or five years. The net total savings for the pocketbook equal:

- (the tax credit with interest + cumulative savings on utility bills)
- (increase in down payment + sum of increased mortgage payments).

### Findings

Home buyers who install energy equipment would face a change in qualifying annual incomes, from a decrease of \$983 to an increase of \$1,307, and all would make higher down payments (\$119-\$896) to finance the energy improvements. Further, the amortized cost of the energy improvement would result in higher monthly mortgage payments (\$15.02-\$33.53), which would be offset by the savings on monthly utility bills (\$14.96-\$30.02).

Net total savings for the pocketbook vary from \$95-\$1,404 for property held two years and from \$455-\$1,973 for property held five years. Variation is due to the type of mortgage financing, the buyer's income tax bracket, how long the property is held, and whether a home has gas appliances or is all-electric. Net savings were found to be greater for solar systems over heat pumps, all-electric homes over those with gas appliances, and homes owned five instead of two years. Affordable homes have the greatest net savings for the pocketbook.

**TABLE I. FINANCIAL IMPACTS OF OPTIONAL ENERGY EQUIPMENT ON KAPOLEI HOME BUYERS**  
(Assumes home will be equipped with electric water heater and gas range.)

		Property Held Two Years					Property Held Five Years						
Average home price (\$1,000)	Qualifying gross annual income w/o equipment	Change in qualifying income w/ equipment	Percentage change in qualifying income	Value of tax credit with interest	Cumulative savings on utility bills	Increase in down payment	Sum of increased mortgage payments	Net total savings for pocketbook	Value of tax credit with interest	Cumulative savings on utility bills	Increase in down payment	Sum of increased mortgage payments	Net total savings for pocketbook
\$96	\$32,038	\$678	2.1%	\$424	\$373	\$119	\$295	\$383	\$485	\$92	\$119	\$738	\$620
\$102	\$33,073	\$678	2.0%	\$424	\$373	\$119	\$295	\$383	\$485	\$92	\$119	\$738	\$620
\$109	\$36,447	\$678	1.9%	\$424	\$373	\$119	\$295	\$383	\$485	\$92	\$119	\$738	\$620
\$118	\$39,499	\$678	1.7%	\$424	\$373	\$119	\$295	\$383	\$485	\$92	\$119	\$738	\$620
\$120	\$40,198	\$679	1.7%	\$424	\$373	\$119	\$295	\$383	\$485	\$92	\$119	\$738	\$620
\$189	\$65,565	\$694	1.1%	\$420	\$373	\$254	\$244	\$295	\$470	\$92	\$254	\$624	\$584
\$208	\$65,543	\$621	0.9%	\$420	\$373	\$448	\$250	\$95	\$470	\$92	\$448	\$559	\$465
\$235	\$76,010	\$653	0.8%	\$420	\$373	\$432	\$227	\$134	\$470	\$92	\$432	\$567	\$463
\$248	\$80,295	\$653	0.8%	\$420	\$373	\$432	\$227	\$134	\$470	\$92	\$432	\$567	\$463
\$265	\$85,724	\$653	0.8%	\$420	\$373	\$432	\$227	\$134	\$470	\$92	\$432	\$567	\$463
\$279	\$90,528	\$653	0.7%	\$420	\$373	\$432	\$227	\$134	\$470	\$92	\$432	\$567	\$463

**Solar System**

		Property Held Two Years					Property Held Five Years						
Average home price (\$1,000)	Qualifying gross annual income w/o equipment	Change in qualifying income w/ equipment	Percentage change in qualifying income	Value of tax credit with interest	Cumulative savings on utility bills	Increase in down payment	Sum of increased mortgage payments	Net total savings for pocketbook	Value of tax credit with interest	Cumulative savings on utility bills	Increase in down payment	Sum of increased mortgage payments	Net total savings for pocketbook
\$96	\$32,038	\$243	0.8%	\$1,483	\$581	\$238	\$590	\$1,236	\$1,696	\$1,545	\$238	\$1,475	\$1,528
\$102	\$34,073	\$175	0.5%	\$1,483	\$581	\$238	\$590	\$1,236	\$1,696	\$1,545	\$238	\$1,475	\$1,528
\$109	\$36,477	\$96	0.3%	\$1,483	\$581	\$238	\$590	\$1,236	\$1,696	\$1,545	\$238	\$1,475	\$1,528
\$118	\$39,499	(\$5)	0.0%	\$1,483	\$581	\$238	\$590	\$1,236	\$1,696	\$1,545	\$238	\$1,475	\$1,528
\$120	\$40,198	(\$28)	-0.1%	\$1,483	\$581	\$238	\$590	\$1,236	\$1,696	\$1,545	\$238	\$1,475	\$1,528
\$189	\$65,565	(\$894)	-1.3%	\$1,469	\$581	\$508	\$499	\$1,043	\$1,645	\$1,545	\$508	\$1,247	\$1,434
\$208	\$65,543	(\$983)	-1.5%	\$1,469	\$581	\$896	\$447	\$707	\$1,645	\$1,545	\$896	\$1,117	\$1,176
\$235	\$76,010	\$1,307	1.7%	\$1,469	\$581	\$864	\$454	\$732	\$1,645	\$1,545	\$864	\$1,134	\$1,191
\$248	\$80,295	\$1,307	1.6%	\$1,469	\$581	\$864	\$454	\$732	\$1,645	\$1,545	\$864	\$1,134	\$1,191
\$265	\$85,724	\$1,307	1.5%	\$1,469	\$581	\$864	\$454	\$732	\$1,645	\$1,545	\$864	\$1,134	\$1,191
\$279	\$90,528	\$1,307	1.4%	\$1,469	\$581	\$864	\$454	\$732	\$1,645	\$1,545	\$864	\$1,134	\$1,191

Note: a. Prices represent Kumu ki at Villages of Kapolei.  
 b. Assumes: Tax credit is received 8 months after purchase of home; Tax credit earns interest at 5.75 percent per year compounded monthly; and income taxes are paid on interest.  
 c. Assumes energy equipment is sized for family of four and utility rates will increase an average 4 percent per year.  
 d. Increased mortgage payments for solar = (value of tax credit with interest + cumulative savings on utility bills) - (increase in down payment + sum of increased mortgage payments).  
 e. Net total savings = (value of tax credit with interest + cumulative savings on utility bills) - (increase in down payment + sum of increased mortgage payments).



**TABLE II. FINANCIAL IMPACTS OF OPTIONAL ENERGY EQUIPMENT ON KAPOLEI HOME BUYERS**  
(Assumes home will be equipped with all-electric appliances.)

Average home price (\$1,000's)	Heat Pump				Solar System			
	Qualifying gross annual income w/o equipment	Change in qualifying income w/ equipment	Percentage change in qualifying income	Value of tax credit with interest	Qualifying gross annual income w/o equipment	Change in qualifying income w/ equipment	Percentage change in qualifying income	Value of tax credit with interest
\$96	\$32,038	\$678	2.1%	\$485	\$32,038	\$243	0.8%	\$1,696
\$102	\$34,073	\$678	2.0%	\$485	\$34,073	\$175	0.5%	\$1,696
\$109	\$36,447	\$678	1.9%	\$485	\$36,447	\$96	0.3%	\$1,696
\$118	\$39,499	\$678	1.7%	\$485	\$39,499	(\$15)	0.0%	\$1,696
\$120	\$40,198	\$679	1.7%	\$485	\$40,198	(\$28)	-0.1%	\$1,696
\$189	\$65,565	\$694	1.1%	\$470	\$65,565	(\$894)	-1.3%	\$1,645
\$208	\$65,543	\$621	0.9%	\$470	\$65,543	(\$983)	-1.5%	\$1,645
\$235	\$76,010	\$653	0.9%	\$470	\$76,010	\$1,307	1.7%	\$1,645
\$248	\$80,295	\$653	0.8%	\$470	\$80,295	\$1,307	1.6%	\$1,645
\$265	\$85,724	\$653	0.8%	\$470	\$85,724	\$1,307	1.5%	\$1,645
\$279	\$90,528	\$653	0.7%	\$470	\$90,528	\$1,307	1.4%	\$1,645

Average home price (\$1,000's)	Property Held Two Years				Property Held Five Years			
	Qualifying gross annual income w/o equipment	Change in qualifying income w/ equipment	Percentage change in qualifying income	Value of tax credit with interest	Qualifying gross annual income w/o equipment	Change in qualifying income w/ equipment	Percentage change in qualifying income	Value of tax credit with interest
\$96	\$32,038	\$295	0.9%	\$485	\$32,038	\$738	2.3%	\$1,696
\$102	\$34,073	\$295	0.9%	\$485	\$34,073	\$738	2.2%	\$1,696
\$109	\$36,447	\$295	0.8%	\$485	\$36,447	\$738	2.0%	\$1,696
\$118	\$39,499	\$295	0.7%	\$485	\$39,499	\$738	1.9%	\$1,696
\$120	\$40,198	\$295	0.7%	\$485	\$40,198	\$738	1.8%	\$1,696
\$189	\$65,565	\$244	0.4%	\$470	\$65,565	\$624	1.0%	\$1,645
\$208	\$65,543	\$250	0.4%	\$470	\$65,543	\$559	0.9%	\$1,645
\$235	\$76,010	\$227	0.3%	\$470	\$76,010	\$567	0.7%	\$1,645
\$248	\$80,295	\$227	0.3%	\$470	\$80,295	\$567	0.7%	\$1,645
\$265	\$85,724	\$227	0.3%	\$470	\$85,724	\$567	0.7%	\$1,645
\$279	\$90,528	\$227	0.3%	\$470	\$90,528	\$567	0.6%	\$1,645

Average home price (\$1,000's)	Property Held Two Years				Property Held Five Years			
	Qualifying gross annual income w/o equipment	Change in qualifying income w/ equipment	Percentage change in qualifying income	Value of tax credit with interest	Qualifying gross annual income w/o equipment	Change in qualifying income w/ equipment	Percentage change in qualifying income	Value of tax credit with interest
\$96	\$32,038	\$295	0.9%	\$485	\$32,038	\$738	2.3%	\$1,696
\$102	\$34,073	\$295	0.9%	\$485	\$34,073	\$738	2.2%	\$1,696
\$109	\$36,447	\$295	0.8%	\$485	\$36,447	\$738	2.0%	\$1,696
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\$279	\$90,528	\$227	0.3%	\$470	\$90,528	\$567	0.6%	\$1,645

Note: a. Prices represent Kumu Kai at Villages of Kapolei.  
 b. Assumes: tax credit is received 8 months after purchase of home; tax credit earns interest at 5.75 percent per year compounded monthly; and income taxes are paid on interest.  
 c. Assumes energy equipment is sized for family of four and utility rates will increase an average 4 percent per year.  
 d. Increased mortgage payments for the energy improvement have been offset for the mortgage interest deduction on income tax returns.  
 e. Net total savings = (value of tax credit with interest + cumulative savings on utility bills) - (increase in down payment + sum of increased mortgage payments).

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

810 SOUTH KING STREET, 5TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 533-4427



FRANK FASH  
MAYOR

MICHAEL SCARFONE  
DIRECTOR

Call N. Kaito  
SENIOR DIRECTOR

December 31, 1990

Mr. Maurice H. Kaya  
Energy Program Administrator  
Department of Business and Economic Development  
and Tourism  
Energy Division  
335 Merchant Street, Room 110  
Honolulu, HI 96813

Dear Mr. Kaya:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of November 7, 1990 regarding the DEIS for the subject project. Your suggestions for energy conservation measures have been taken under advisement and, where practical, will be implemented in the design and construction of the project. The City will consider energy-efficient measures in the design of the subdivision and individual homes, and the installation of energy-saving water heating and lighting systems. In addition, your "energy efficiency design guidelines" for site planning and landscaping, building design, and mechanical equipment and systems will be considered.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

*Michael N. Scarfone*

for Michael N. Scarfone, Director

cc: DGP



**OFFICE OF STATE PLANNING**

Office of the Governor

STATE CAPITOL, HONOLULU HAWAII 96813 TELEPHONE 535-5401-5405

**DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU**

810 SOUTH KING STREET, 8TH FLOOR  
HONOLULU HAWAII 96813  
PHONE: 535-4923 / FAX: 535-3438



FRANK F. FARR  
MAYOR

MICHAEL N. SCARFONE  
DIRECTOR  
GAIL M. KAITO  
DEPUTY DIRECTOR

November 13, 1990

The Honorable Benjamin B. Lee  
Chief Planning Officer  
Department of General Planning  
650 South King Street  
Honolulu, Hawaii 96813

Dear Mr. Lee:

Subject: Draft Environmental Impact Statement  
Ewa Village Master Plan  
Ewa, Oahu, Hawaii

It is our understanding that the Master Plan for the 606-acre project area proposes the restoration of some of the existing homes and community buildings, and the construction of new residential units and a new commercial mixed-use plaza at the Old Millsite. The project will also include an 18-hole, municipal golf course which will serve as a flood control measure and open space amenity.

Since the project area is within the State Agricultural and Urban Districts, the Environmental Impact Statement should specify the acreage within each district and whether Land Use Commission action is required.

Thank you for the opportunity to comment.

Sincerely,

*Benjamin B. Lee*  
Benjamin B. Lee  
Director

cc: Ms. Eileen Mark  
✓ Mr. Chester Koga

December 17, 1990

Mr. Harold S. Masumoto, Director  
Office of State Planning  
Office of the Governor  
State Capitol  
Honolulu, HI 96813

Dear Mr. Masumoto:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of November 13, 1990 regarding the DEIS for the subject project. Per your request, the Final EIS will reflect the acreages within State Agricultural and Urban districts and whether action from the Land Use Commission will be required.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

*Michael N. Scarfone*  
Michael N. Scarfone, Director

cc: DCP



JOHN WAINANE  
DIRECTOR

JOSEPH K. CONANT  
EXECUTIVE DIRECTOR

STATE OF HAWAII  
DEPARTMENT OF BUDGET AND FINANCE  
HOUSING FINANCE AND DEVELOPMENT CORPORATION  
SEVEN WATERFRONT PLAZA, SUITE 200  
808 ALA MOANA BOULEVARD  
HONOLULU, HAWAII 96813  
FAX (808) 541-1441

IN REPLY REFER TO:

90:PLNG/3461.JF

November 14, 1990

90:PLNG/3461 jt

July 24, 1990

City & County of Honolulu  
Department of General Planning  
650 South King Street  
Honolulu, HI 96813

Mr. Michael N. Scarfone  
Director, DMCD  
650 South King Street, 5th Floor  
Honolulu, Hawaii 96813  
Attention: Ms. Gail Kaito

Re: Draft Environmental Impact Statement for the Eva Villages  
Master Plan

Dear Mr. Scarfone:

Thank you for the opportunity to review the subject report.

Re: Environmental Impact Statement Preparation Notice (EISPN)  
for the Proposed Eva Villages Master Plan

We do not believe that the draft EIS sufficiently addresses our  
previous concerns of July 24, 1990. (See attached letter.) It is  
difficult for us to comment on the proposed Master Plan without  
adequate information on the affordability of the residential  
units.

We have reviewed the subject EISPN and would like the following  
items to be addressed in the draft Environmental Impact  
Statement.

From a design perspective, we believe that maintaining the rural  
character of the existing villages is an excellent concept.  
However, for a planned community of over 1,100 families, we  
believe that sidewalks could provide additional convenience and  
safety.

1. Development timetable.
2. The income and special need groups that will be targeted for  
assistance. For example, the number of units that will be  
affordable to families earning (1) up to 80%, (2) between  
80% and 120%, and (3) from 120% to 140% of the HUD median  
income.
3. Proposed sales prices and rental rates.

Sincerely,

Joseph K. Conant  
Executive Director

Thank you for the opportunity to comment.

Sincerely,

JT:eks

Enc: HFDC ltr 90:PLNG/3461 jt

c: R.M. Towill Corporation,  
HCD C/C Honolulu  
OEQC

JOSEPH K. CONANT  
Executive Director

JT:eks

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

500 SOUTH KING STREET, 3TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 832-4417 • FAX: 837-5898



FRANK F. TAN  
MAYOR

MICHAEL N. SCARFONE  
DIRECTOR  
GAIL KAITO  
DEPUTY DIRECTOR

December 28, 1990

Mr. Joseph K. Conant  
Executive Director  
Housing Finance and Development Corporation  
Seven Waterfront Plaza, Suite 300  
500 Ala Moana Boulevard  
Honolulu, HI 96813

Dear Mr. Conant:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of November 14, 1990 regarding the DEIS for the subject project. The Final EIS will discuss the development timetable, construction phasing, target income ranges and estimated sales prices. Pedestrian walkways are planned for the project, although these will be limited to Renton Road, and buffer areas.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

*Michael N. Scarfone*

Michael N. Scarfone, Director

*for*

cc: DGP

JOHN W. PATY  
CHIEF OF BUREAU



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
P. O. BOX 521  
HONOLULU, HAWAII 96809

WILLIAM W. PATY, CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES

MEMBERS  
KEITH W. JONES  
SAMUEL TACOMONA  
RUSSELL N. FURUMOTO  
ADVISORY DEVELOPMENT  
PLANNING  
SCIENTIFIC RESOURCES  
CONSERVATION AND  
ENVIRONMENTAL AFFAIRS  
RESOURCES DEVELOPMENT  
CONTRACTS  
FORESTRY AND WILDLIFE  
PLANNING AND RESTORATION  
LAND MANAGEMENT  
STATE PARKS  
WATER AND LAND DEVELOPMENT

File NO.: 91-147  
Doc. NO.: 0299E

NOV 15 1988

REP:OCEA:JN

The Honorable Benjamin Lee  
Chief Planning Officer  
City and County of Honolulu  
650 South King Street  
Honolulu, Hawaii 96813

Dear Mr. Lee:

Subject: Draft EIS Ewa Villages Master Plan, Ewa, Oahu  
THK: 9-1-16; 25 por.; 9-1-17: 2, 1, 4 por., 36, 37,  
38, 39, 46, 47, 48, 49 por., and 51

Thank you for giving our Department the opportunity to comment on this matter. We have reviewed the materials submitted by the Office of Environmental Quality Control and have the following comments.

The Southeastern boundary of the project area overlaps a portion of the land which the State plans to acquire for its East Kapolei project, (Figure 1-2 Project area map, page 1-3), map attached, area shaded in red.

Historic Preservation Program will respond directly if they may have comments.

Our Department does reserve the right to review and comment on the Final EIS.

If you have questions, please call me or Bob Johnson at our Office of Conservation and Environmental Affairs at 548-7837.

Very truly yours,

William W. Paty

Honorable Benjamin Lee  
-2-  
Doc. No.: 0299E

Attachment

CC: City & County Honolulu, Dept. of Housing & Development  
R. H. Towill Corporation  
Office of Environmental Quality Control

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
**CITY AND COUNTY OF HONOLULU**  
 490 SOUTH KING STREET, 5TH FLOOR  
 HONOLULU, HAWAII 96813  
 PHONE: 933-4427



MIKE N. SCARFONE  
 DIRECTOR  
 Cell N. Kaiko  
 DIRECTOR

FRANK F. FISH  
 MAYOR

December 28, 1990

Mr. William W. Paty, Chairperson and  
 State Historic Preservation Officer  
 Department of Land and Natural Resources  
 P. O. Box 621  
 Honolulu, HI 96809

Dear Mr. Paty:

Subject: Ewa Villages Master Plan  
 Draft Environmental Impact Statement (DEIS)

We have received your letter of November 19, 1990 regarding the DEIS for the subject project. The following has been prepared in response to your comments:

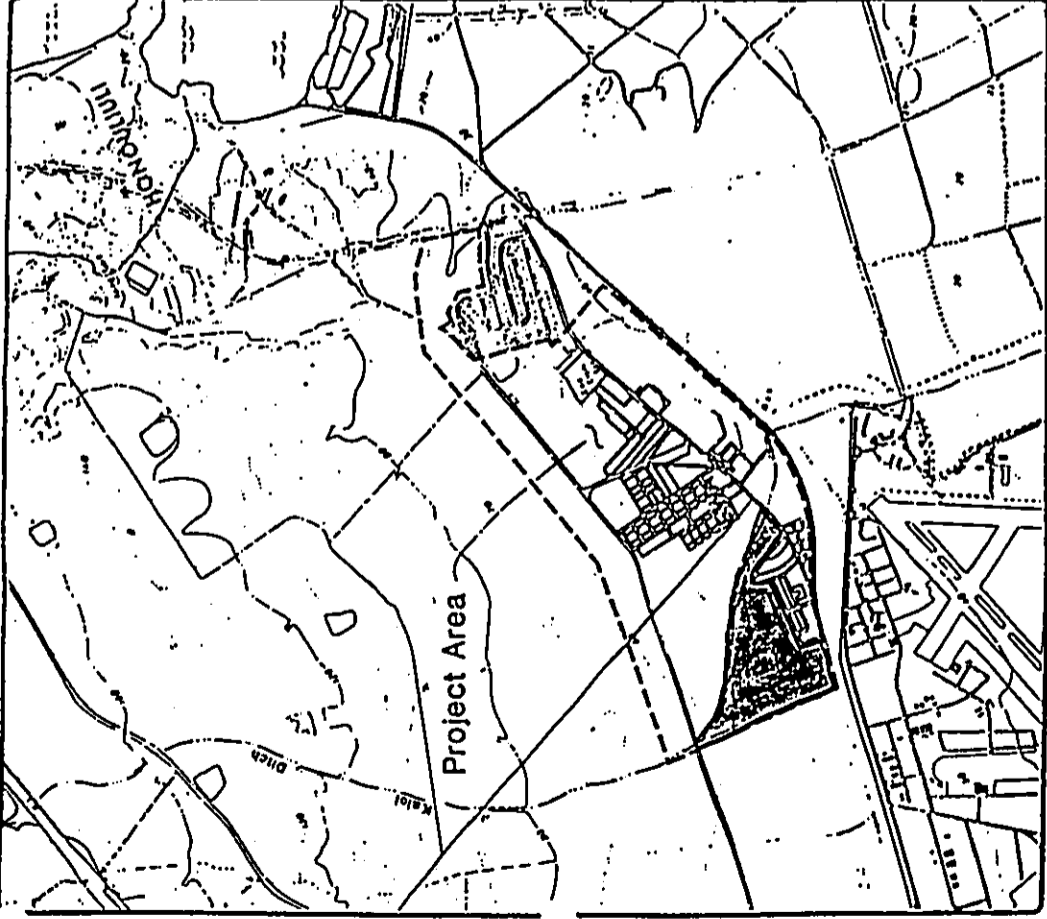
1. We acknowledge the State's plans to acquire the southeastern portion of the project area for the East Kapolei project.
2. The Historic Preservation Program has submitted separate comments on the project to our office.
3. Your desire to review and comment on the Final EIS has been noted.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

*Michael N. Scarfone*  
 for Michael N. Scarfone, Director

cc: DCP



**EWA VILLAGES  
 MASTER PLAN**  
 City & County of Honolulu  
 Department of Housing  
 & Community Development  
 September 1990

**Figure 1-2  
 Project Area Map**  
 R. M. Towill Corporation

JOHN WASHLEE  
GOV. HON.



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
889 PUNCHBOWL STREET  
HONOLULU, HAWAII 96813-3037  
November 19, 1990

EDWARD Y. HIRATA  
DIRECTOR

DEPUTY DIRECTORS  
DAN T. BOCH (PUNAHOU)  
RONALD W. MARIANO  
JEANNE A. SCHWARTZ  
COLUMBA TSUDA

IN REPLY REFER TO

BHY-PS  
2.4570

FRANK F. FAH  
MANAGER

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU  
832 SOUTH KING STREET, 21ST FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 533-4437 • FAX: 537-3439



MICHAEL N. SCARFONE  
DIRECTOR  
GAIL KAITO  
DEPUTY DIRECTOR

December 21, 1990

Mr. Edward Y. Hirata, Director  
Department of Transportation  
869 Punchbowl Street  
Honolulu, HI 96813-5097

Dear Mr. Hirata:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of November 19, 1990 regarding the DEIS for the subject project. The following responds to your comments:

1. Construction on the project is scheduled to begin during the spring of 1992 and will continue over a 5-year period.
2. Applicable roadway mitigation measures for each phase of the project will be implemented. Traffic control plans will be submitted to your department for review.
3. The proposed roadway mitigation measures will be consistent with the Ewa Regional Roadway Master Plan. A TIAR was prepared for the project and identifies the City as one of the participants in the preparation of the master plan, and as such has coordinated with adjacent developers in the planning and design phases, and will participate in the funding and construction of necessary regional traffic improvements determined by the master plan.
4. Plans for construction work proposed within DOT's highway right-of-way will be submitted for your review and approval.
5. Because of the potential for adverse impacts to the Ewa Villages, the realignment of the proposed North-South road through the project will not be considered.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

*Gail Kaito*

for Michael N. Scarfone, Director

MEMORANDUM

TO: Dr. Bruce Anderson, Acting Director  
Office of Environmental Quality Control

FROM: Edward Y. Hirata, Director

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT, EWA VILLAGES  
MASTER PLAN, EWA, OAHU, TNC: 9-1-16; POR. 25;  
9-1-17: 1, 36, 37, 38, 39, 46, 47, 48, 51,  
POR. 4, POR. 49

Thank you for your transmittal of October 1, 1990, requesting our review of the subject Draft EIS.

We have the following comments:

1. An implementation schedule for each project phase should be provided.
2. Applicable roadway mitigation measures for each project phase should be discussed in the report.
3. Roadway mitigation measures must be consistent with the Ewa Regional Roadway Master Plan. The applicant should coordinate with adjacent developers during the project's planning/design phases, and participate in the funding and construction of such regional traffic improvements on a pro-rata basis as determined by the Ewa Roadway Master Plan Report.
4. Plans for construction work within our highway right-of-way must be submitted for our review and approval.
5. Can the new North-South Road be realigned to pass through the project without any serious impacts?



DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

830 SOUTH KING STREET, 8TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 832-4457 • FAX: 832-3488



FRANK F. FARI  
MAYOR

PB 90-839

MICHAEL N. SCARFONE  
DIRECTOR  
GAIL KAITO  
DEPUTY DIRECTOR

October 4, 1990

December 17, 1990

MEMO TO: BENJAMIN LEE, CHIEF PLANNING OFFICER  
DEPARTMENT OF GENERAL PLANNING  
FROM: HERBERT K. MURAOKA  
DIRECTOR AND BUILDING SUPERINTENDENT  
SUBJECT: ENVIRONMENTAL IMPACT STATEMENT (EIS)  
EWA VILLAGES MASTER PLAN

Mr. Herbert K. Muraoka  
Director and Building Superintendent  
Building Department  
650 South King Street, 2nd Floor  
Honolulu, HI 96813

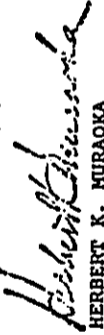
We have reviewed the subject EIS and have no comments to submit.

Dear Mr. Muraoka:

Thank you for the opportunity to review the EIS.


Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of October 4, 1990 indicating that you have no comments regarding the DEIS for the subject project. Thank you for your interest and participation in the planning stages of this project.

  
HERBERT K. MURAOKA  
Director and Building Superintendent

JH:jo  
cc: J. Harada  
Housing & Comm. Develop. Dept.  
R. M. Towill Corp. (C. Koga).

Very Truly Yours,



for Michael N. Scarfone, Director

cc: DGP

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
**CITY AND COUNTY OF HONOLULU**

430 SOUTH KING STREET, 5TH FLOOR  
 HONOLULU, HAWAII 96813  
 PHONE 533-4237 • FAX 537-5488



MICHAEL N. SCARFONE  
 DIRECTOR  
 GAIL KAITO  
 DEPUTY DIRECTOR

December 28, 1990

FRANK P. FARM  
 SALES

Mr. Sam Callejo  
 Director and Chief Engineer  
 Dept. of Public Works  
 650 South King Street  
 Honolulu, HI 96813

Dear Mr. Callejo:

Subject: Ewa Villages Master Plan  
 Draft Environmental Impact Statement (DEIS)

We have received your letter of November 1, 1990 regarding the DEIS for the subject project. The following has been prepared in response to your comments:

1. The proposed pump station will be designed and constructed in accordance with City and County standards. However, in the event that it cannot be designed to standard, the maintenance will be contracted to a certified maintenance firm.
2. The Sewer Master Plan will be submitted to the Division of Wastewater Management for review and approval.
3. The Drainage Master Plan will be submitted to the Division of Engineering, Drainage Section, for review and approval.
- 4/5. In the interest of historic preservation, roadway rights-of-way may not meet DPW's minimum standard 44 feet, 28-foot pavement, however, pavement widths will accommodate emergency and service vehicles.
6. The use of rolled curbs will be limited to rights-of-way less than 44 feet unless the speed limit is reduced accordingly.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,  
*Gail Kaito*  
 Michael N. Scarfone, Director

cc: DGP

DEPARTMENT OF PUBLIC WORKS  
**CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET  
 HONOLULU, HAWAII 96813



FRANK P. FARM  
 SALES

November 1, 1990

MEMORANDUM

TO: BENJAMIN B. LEE, CHIEF PLANNING OFFICER  
 DEPARTMENT OF GENERAL PLANNING

FROM: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)  
 EWA VILLAGES MASTER PLAN  
 TRK: 9-1-16: POR. 25; 9-1-17: 1, 2, POR. 4,  
 36-39, 46-48, POR. 49 AND 51

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

1. If we were to maintain the proposed pump station, it should be constructed in accordance with the City's standards.
2. The sewer master plan should be submitted to our Division of Wastewater Management for review and approval.
3. Also, a drainage master plan should be submitted to our Drainage Section, Division of Engineering, for review and approval.
4. Existing roadways are substandard and should be widened to accommodate additional traffic. 44' right-of-way with 28' pavement should be a minimum width.
5. Pavement areas should be constructed for all other right-of-way. Access for emergency and service vehicles should be verified.
6. Rolled curbs should not be used on right-of-way greater than 44' unless speed limit is reduced accordingly.

*Sam Callejo*  
 SAM CALLEJO  
 Director and Chief Engineer

cc: DHCD  
 K.H. Towill Corporation

RECD NO7	5 1990	RMTC
DK	UT	
RYK		
GSY		
DKAT		

REC'D CALLEJO  
 DIRECTOR AND CHIEF ENGINEER  
 DEPT. OF PUBLIC WORKS  
 650 SOUTH KING STREET  
 HONOLULU, HI 96813  
 IT-REPLY REFER TO:  
 ENV 90-258(448)

BOARD OF WATER SUPPLY  
CITY AND COUNTY OF HONOLULU



**COPY**

November 1, 1990

RM	WES	12/16
DK	BT	
RYK	R7E	
REC'D NOV 7 6 1990 RMTC		
UST		
DM		

TO: BENJAMIN B. LEE, CHIEF PLANNING OFFICER  
DEPARTMENT OF GENERAL PLANNING

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

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS) FOR THE EWA  
VILLAGES MASTER PLAN, EWA, OAHU, HAWAII

We have the following comments on the proposed project:

1. The EIS should provide specific information, such as well numbers and permitted uses for the development, on the Honolulu sources that will be providing potable water to meet the development's estimated needs. The locations and well numbers of Oahu Sugar Company sources currently serving Ewa Villages should also be shown on a map.
2. Although the U.S. Safe Drinking Water Act allows a maximum chloride content of 250 parts per million (ppm) for potable water, we require the chloride content not to exceed 160 ppm for new potable sources.
3. There should be an indication of whether the existing non-potable water systems will be maintained as a private system or turned over to the BWS.
4. A water master plan and hydraulic analysis of the proposed water system for the development should be submitted for our review and approval. The master plan should show the proposed source(s), storage, transmission mains and distribution mains.

If you have any questions, please contact Bert Kuioka at 527-6138.

cc: Department of Housing and Community Development  
A. M. Towill Corporation

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
**CITY AND COUNTY OF HONOLULU**  
850 SOUTH KING STREET, 5TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 923-4227 • FAX: 923-5488



FRANK P. FARM  
MAYOR

MICHAEL N. SCARFONE  
DIRECTOR  
GAIL KAITO  
DEPUTY DIRECTOR

December 17, 1990

Mr. Kazu Hayashida,  
Manager and Chief Engineer  
Board of Water Supply  
630 South Beretania Street  
Honolulu, HI 96813

Dear Mr. Hayashida:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of November 1, 1990 regarding the DEIS for the subject project. The following has been prepared in response to your concerns:

1. To the extent information is available, the Final EIS will discuss well numbers, permitted uses, potable water source(s), and OSCo's current water sources which serve the Ewa Villages.
2. The 160 ppm of maximum chloride content of new potable water sources has been noted.
3. Whether the existing non-potable water systems will be maintained as a private system or turned over to BWS, is currently under evaluation. The final disposition of this source will be done in consultation with your office.
4. A water master plan and hydraulic analysis of the proposed water system for the development will be submitted for BWS review and approval.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

*Gail Kaito*

for Michael N. Scarfone, Director

cc: DGP



FIRE DEPARTMENT  
CITY AND COUNTY OF HONOLULU  
1455 SOUTH BERETANIA STREET, ROOM 308  
HONOLULU, HAWAII 96813

RYM				
DK				
RYK				
REC'D	NOV 12 1990	RMTC		
USY				
DMH				



LIONEL E. CAMARA  
FIRE CHIEF  
DONALD S.M. CHANG  
DEPUTY FIRE CHIEF

FRANK P. FLEMING  
MAYOR

November 9, 1990

TO: BENJAMIN B. LEE, CHIEF PLANNING OFFICER  
DEPARTMENT OF GENERAL PLANNING

FROM: LIONEL E. CAMARA, FIRE CHIEF

SUBJECT: EVA VILLAGES MASTER PLAN

We have reviewed the subject material provided and foresee no adverse impact in Fire Department facilities or services.

Access for fire apparatus, water supply and building construction shall be in conformance to existing codes and standards.

Should you have any questions, please contact Battalion Chief Attilio Leonard of our Administrative Services Bureau at local 3838.

*Lionel E. Camara*  
LIONEL E. CAMARA  
Fire Chief

AKL:ny

Copy to: DMCD  
R. H. Towill Corp.  
DEQC (with EIS report)

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU  
850 SOUTH KING STREET, 8TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 323-4227 • FAX: 527-5488



MICHAEL N. SCARFONE  
DIRECTOR  
GAIL KASITO  
DEPUTY DIRECTOR

December 17, 1990

Mr. Lionel E. Camara, Fire Chief  
Fire Department  
1455 South Beretania Street, Room 308  
Honolulu, HI 96814

Dear Mr. Camara:

Subject: Eva Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of November 9, 1990 that you have received your copy of the DEIS for the subject project, and that no adverse impact to Fire Department facilities or services is anticipated as a result of the project. Access for fire apparatus, water supply and building construction will conform to existing codes and standards.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

*Michael N. Scarfone*  
for Michael N. Scarfone, Director

cc: DGP

OFFICE OF ADVANCE PLANNING  
Ewa Mahiko (4)

DEPARTMENT OF PARKS AND RECREATION  
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET  
HONOLULU, HAWAII 96813

SEARCHED	INDEXED	SERIALIZED	FILED
OCT 15 1990			
FBI - HONOLULU			

WALTER H. OZAMA  
DIRECTOR  
ALVIN K. C. AU  
DEPUTY DIRECTOR

February 23, 1990

TO: BENJAMIN B. LEE, CHIEF PLANNING OFFICER  
DEPARTMENT OF GENERAL PLANNING

FROM: ALVIN K. C. AU, ACTING DIRECTOR

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT  
EWA VILLAGES MASTER PLAN  
TAX MAP KEYS: 9-1-16, 9-1-17

October 15, 1990

We have reviewed the Draft EIS for the Ewa Villages Master Plan and make the following comments.

The Ewa Villages Master Plan is conceptually acceptable. The report adequately addresses the recreational needs of the Ewa Villages project by proposing to expand the existing Ewa Mahiko Park to approximately 25 acres and by constructing additional recreational facilities on the park site. However, the Draft Concept Plan (Figure 2-1) does not reflect the recommendation we made to the Department of Housing and Community Development to extend Ewa Mahiko Park toward West Loch and include the land and buildings along Renton Road.

Thank you for the opportunity to comment on this report. Should you have any questions, please contact Wayne Lee of our Advance Planning Branch at 523-4246.

*Alvin K. C. Au*  
ALVIN K. C. AU  
Acting Director

AKCA:s1

Attachment

cc: Office of Environmental  
Quality Control  
R. M. Towill Corp.  
Department of Housing  
and Community Development

TO: MIKE H. SCARFONE, DIRECTOR  
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

FROM: WALTER H. OZAMA, DIRECTOR

SUBJECT: EWA VILLAGES RESTORATION/REVITALIZATION PLAN

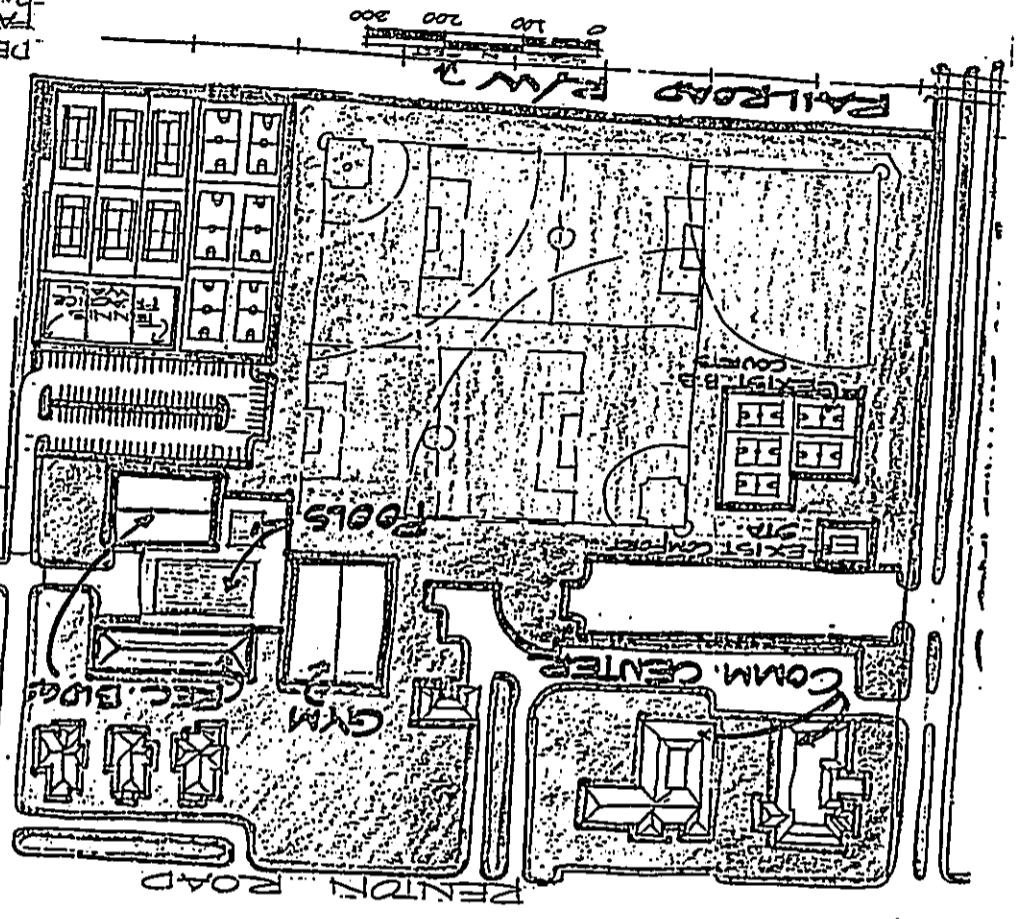
The Managing Director requested the Department of Parks and Recreation to review the preliminary plans for Ewa Villages. Based on the material provided by your staff, we have the following comments as well as a revised plan which is attached.

1. Small Parks in Residential Areas - The randomly placed small parks of less than one acre are not effective from a use standpoint and present a maintenance problem. We recommend the plan be adjusted to consolidate sites into a single block park. (See attachment I.)
2. Ewa Mahiko District Park - The plan shows an expansion of the existing Ewa Mahiko Park into the old Ewa Hill yard and locating the gym and pool and other facilities on the existing park which includes a comfort station and play field. The plan also shows maintaining Lanakila School at its present location which utilizes the existing historical buildings along Renton Road.

We recommend that Ewa Mahiko Park be expanded towards West Loch and include the land and buildings along Renton Road. The park could then expand in an orderly manner and provide a visible access from Renton Road. The historic buildings should be in public use and provide space for community and recreational services. The private religious school is on a temporary lease from Campbell, which has indicated in the past they would prefer Parks to take over eventually. The area particularly around the Manager's house would serve as an attractive passive park area and a focal point for the community. (See attachment II.)

CITY AND COUNTY  
 DEPARTMENT OF PARKS & RECREATION  
 FACILITIES DIVISION/ADVANCE PLANNING  
 DATE: 2-90  
 DRAWN

PROPOSED  
 EWA VILLAGES



Mike H. Scarfone, Director  
 Page 2  
 February 23, 1990

3. Road Connection to Ewa Gentry - We highly recommend that a road connection be established from Ewa Villages to Ewa Gentry development. This would permit access and services to the intended users of the park.

Please keep us informed and involved as your planning continues.

*Walter H. Ozawa*  
 WALTER H. OZAWA, Director

WH0:js (S. Sallis, Advance Planning)

Attach.

cc: J. Harris, Managing Director

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
**CITY AND COUNTY OF HONOLULU**

810 SOUTH KING STREET, 9TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE 323 4427 • FAX 323 3480



FRANK P. PAU  
MAYOR

MICHAEL N. SCARFONE  
DIRECTOR  
Ga'i Ka'io  
DEPUTY DIRECTOR

December 21, 1990

Mr. Alvin K. C. Au, Acting Director  
Department of Parks and Recreation  
650 South King Street, 10th Floor  
Honolulu, HI 96813

Dear Mr. Au:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of October 15, 1990 regarding the DEIS for the subject project. Plans for the Ewa Mahiko Park are presently being revised to incorporate some of your previous suggestions. The park will be expanded, although the permanent locations for Lanakila Baptist School and Friendship Bible Church must be resolved prior to any commitment of buildings situated along Renton Road toward park use.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

Handwritten signature of Michael N. Scarfone.

for  
Michael N. Scarfone, Director

cc: DGP

DEPARTMENT OF LAND UTILIZATION  
**CITY AND COUNTY OF HONOLULU**

630 SOUTH KING STREET  
HONOLULU, HAWAII 96813 • PHONE 933-4432



FRANK F. FAH  
DIRECTOR

October 26, 1990

**MEMORANDUM**

**TO:** BENJAMIN LEE, Chief Planning Officer  
Department of General Planning

**FROM:** DONALD A. CLEGG, DIRECTOR

**SUBJECT:** Draft Environmental Impact Statement (EIS)  
Ewa Village Master Plan  
Tax Map Key 9-1-16: Portion of 25; 9-1-17: 2, 1  
Por. 4, 36-39, 46-Port. 49, 51

We have reviewed the Draft EIS for the above described project and offer the following comments:

1. A clearer description of where Mango Tree Road will be relocated should be included. An exhibit showing the present location and the proposed location would be helpful. In addition, a discussion of any impacts to residents or businesses along the existing Mango Tree Road and whether residents or businesses will be displaced should be included in the Final EIS.
2. An overall exhibit showing what currently exists at the project sites with an overlay showing what is being proposed would be helpful in reviewing the Final EIS.

Thank you for the opportunity to review the Draft EIS for the Ewa Village Master Plan. If you have any questions or require additional information, please contact Diane E. Borchardt of our staff at 527-5349.

*Donald Clegg*

DONALD A. CLEGG  
Director of Land Utilization

DAC:lg

cc: Department of Housing & Community Development  
R.M. Towill Corporation,  
Office of Environmental Quality Control

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
**CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET, 5TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE 933-4437 • FAX 937-8458



FRANK F. FAH  
DIRECTOR

*WE/fo*  
DONALD A. CLEGG  
DIRECTOR  
LORETTA K. C. CHIE  
DEPUTY DIRECTOR  
LU10/90-7398(OEE)

December 21, 1990

Mr. Donald A. Clegg, Director  
Department of Land Utilization  
650 South King Street  
Honolulu, HI 96813

Dear Mr. Clegg:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of October 26, 1990 regarding the DEIS for the subject project. Per your request, the description of the proposed relocation of Mango Tree Road will be clarified in the Final EIS. In addition, the relocation of Mango Tree Road will not cause the displacement of any residences or businesses. Your suggestion to include an overall exhibit showing the existing conditions in relation to proposed conditions has been taken under advisement.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

*Michael N. Scarfone*

Michael N. Scarfone, Director

cc: DGP



DEPARTMENT OF TRANSPORTATION SERVICES  
CITY AND COUNTY OF HONOLULU

HONOLULU MUNICIPAL BUILDING  
430 SOUTH KING STREET  
HONOLULU, HAWAII 96813



Benjamin B. Lee  
November 16, 1990  
Page Two

ALFRED J. THIEDE  
DIRECTOR  
JOSEPH M. MAGALON, JR.  
DEPUTY DIRECTOR

November 16, 1990

MEMORANDUM  
TO: BENJAMIN B. LEE, CHIEF PLANNING OFFICER  
DEPARTMENT OF GENERAL PLANNING  
FROM: ALFRED J. THIEDE, DIRECTOR  
SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE  
EWA VILLAGES MASTER PLAN, EWA, OAHU, HAWAII

The following are our comments on the Draft Environmental Impact Statement (DEIS) for the Ewa Villages Master Plan, Ewa, Oahu, Hawaii:

- TRAFFIC ENGINEERING.** A roadway master plan should designate specific street widths and alignments of all local, residential and major streets.  
Roadways should be constructed to full subdivision standards. Streets which do not conform to established road right-of-way widths and cross sections should be avoided.  
The proposed right-of-way for Renton Road should be increased to a minimum of 80 feet, as specified in the Development Plan. Two clear vehicular travel lanes should be provided in each direction with a minimum median width of 20 feet. Parking on Renton Road should not be permitted.

The proposed right-of-way for the North-South Road should be increased from 108 feet to 116 feet to match the roadway cross section through the Ewa Gentry project. This roadway should be constructed to the full right-of-way width. The interim construction of a partial roadway should not be considered.

The adequacy of Mango Road as a 60 feet roadway should be assessed.

It appears that the traffic counts on Table 5-1 on Page 5-3 should be revised to reflect an increase in traffic on Renton Road at Ala Nui Street and at Peppert Row for conditions with or without the proposed project.

- BUS SERVICES.** The last paragraph in Section 5.1 Transportation System reads: "The area is served by the public mass transit system, The BUS. Route Numbers 50 and 91 (Express Bus) operate at 30-minute intervals on Renton and Fort Weaver Roads, and at 40- to 45-minute intervals during off-peak times."  
The second sentence is incorrect. Route Number 50 (Ewa Hill) provides TheBUS service on Fort Weaver Road, Renton Road and Fleming Road to the terminus at Gate 2 at the Barber's Point Naval Air Station. Route Number 50 (Ewa Beach) services Fort Weaver Road adjacent to the project area. Route Number 91 (Ewa Beach Express) provides express service on Fort Weaver Road with six (6) a.m. trips to Honolulu and six (6) p.m. trips from Honolulu. We have attached schedules of the three routes for your information and use.  
**ELECTRICAL MAINTENANCE AND SERVICES.** The impact and mitigation measures of overhead and underground electric and communication lines and structures have been adequately addressed in the DEIS.  
**RAPID TRANSIT SYSTEM.** At the present time no rapid transit facilities are anticipated in the project area. However, the location of a park-and-ride lot within the project may be desirable.

If you have any questions regarding our comments, please contact Mr. Roy Kaneko at 527-6019.

  
ALFRED J. THIEDE, Director

cc: State OFQC  
C & C DHCD  
R. M. Towill Corp.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
**CITY AND COUNTY OF HONOLULU**

830 SOUTH KING STREET, 5TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE 333-4437 • FAX 337-2488



FRANK J. PABO  
MAYOR

MICHAEL N. SCARFONE  
DIRECTOR  
Gail Kaito  
DEPUTY DIRECTOR

Mr. Joseph Magaldi

-2-

December 21, 1990

2. **Bus Services**  
Per your comment, the discussion on bus service to the project area will be appropriately revised.
3. **Rapid Transit System**  
Your comments regarding the possible location of a park-and-ride lot within the project area have been noted.

Thank you for your interest and participation in the planning stages of this project.

Mr. Joseph Magaldi, Director  
Department of Transportation Services  
Honolulu Municipal Building  
650 South King Street  
Honolulu, HI 96813

Dear Mr. Magaldi:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of November 16, 1990 regarding the DEIS for the subject project. The following has been prepared in response to your comments:

1. **Traffic Engineering**  
The project master plan will designate street widths and alignments of all streets. Roadways will be constructed with consideration given to both historic aspects and public safety.  
The right-of-way for Renton Road will be maintained at its present width of 70 feet, thereby allowing for two vehicular travel lanes in each direction, a 14-foot median, a 2-foot utility easement on either side, and a 6-foot pedestrian walkway on either side. Parking will not be permitted on this roadway.  
The proposed right-of-way for the North-South road will be increased from 108 feet to 116 feet as the counterpart to the roadway cross section through the Ewa by Genyu project.  
The 60-foot right-of-way and 40-foot pavement along the relocated Mango Tree Road will be maintained for cane haul use during the short-term.  
The traffic counts on Table 5-1 will be revised to reflect an increase in morning traffic at the applicable Renton Road intersections.

Very Truly Yours,

*Gail Kaito*

Michael N. Scarfone, Director

cc: DGP



Gasco, Inc.

515 Kamakee Street  
PO Box 3379 Honolulu, Hawaii 96842  
Telephone (808) 547-3333  
Telex (RTT) 7430292

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 3TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 323-4427



MICHAEL SCARFONE  
DIRECTOR  
Cecil H. Keito  
DEPUTY DIRECTOR

FRANK P. FARM  
MAYOR

December 31, 1990

90 OCT -5 P1:44  
& COMM. DEV. DIVISION

October 2, 1990

Mr. Michael N. Scarfone  
Director, DHCD  
650 South King Street, 5th Floor  
Honolulu, Hawaii 96813

Attention: Ms. Eileen Mark  
Gentlemen:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement  
Plan Review and Comment

We refer to R. M. Towill Corporation's letter, dated  
September 20, 1990, requesting the review of the DEIS for the  
subject project. The project area is currently clear of all gas  
utility facilities.

Thank you for the opportunity to review the plans for the  
proposed improvements.

Very truly yours,

*Edwin N. Sava*  
Edwin N. Sava  
Manager, Engineering

ENS:glk  
kkyb

Mr. Edwin N. Sava,  
Manager, Engineering  
GASCO, Inc.  
515 Kamakee Street  
P. O. Box 3379  
Honolulu, HI 96842

Dear Mr. Sava:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of October 2, 1990 regarding the DEIS for the subject project,  
stating that the project area is clear of all gas utility facilities.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

*Michael N. Scarfone*

for Michael N. Scarfone, Director

cc: DGP



**Friendship**  
**BIBLE CHURCH**  
**INDEPENDENT**  
**BAPTIST**  
Pastor David Parker  
671-3776

October 2, 1990

Mr. Mike Scarfone, Director  
Department of Housing and  
Community Development  
650 South King Street, 5th Floor  
Honolulu, Hawaii 96813

Re: Master Plan For Ewa Villages

Dear Mr. Scarfone:

Some time back I submitted a letter to you and to Mr. Jeremy Harris on the wishes of Friendship Bible Church to remain in the Ewa area. Thus far, I have not heard nor seen anything in the city's plans to accommodate our wishes. In talking to Mr. Randy Wong recently he said now is the time to let our voices be heard. I am, therefore, enclosing with this letter a Statement of Intent. Concerning our needs we request attention for two church functions. The first would be the need for a church meeting place and the second for our youth project.

I believe it is in the best interest of the city to keep especially these types of programs in place. If the drug and gang situation in Ewa is not checked, the very property value itself will be affected. Friendship Bible Church is dedicated to make Ewa a better place to live, to reach out to families in need and to help Ewa's kids realize a better way than what is offered by gang involvement. Please consider the city's possible impact upon the moral fiber of this community.

Sincerely,

David B. Parker, Pastor

DBP/clt

Enclosure

cc: Gail Kaito, Deputy Director  
Mr. David Kahanu, Chairman

91-1219 Renton Road, Ewa Town, Hawaii 96706

Statement of Intent  
Prepared By Friendship Bible Church  
Re: Master Plan for Ewa Villages  
October 1990

At present, Friendship Bible Church is renting the east wing of Lanakila Baptist School. The church is comprised of a membership almost entirely of people living in the Ewa Plain. The congregation offers a number of programs to its parishioners as well as to the surrounding community.

In the existing facility at Lanakila school we operate regular Sunday morning and evening religious services, a Wednesday night service and a Bible Institute on Thursday evenings. The church also uses the facility for offices, nursery program and various youth events for all ages. In the area we use we have the capacity to seat 200 people. At present, services are attended by 60-75 people. The Lanakila school also permits us to use the school classrooms for our children's classes.

In connection with the church ministry we also run the community youth project called the Ewa Bike Shop. The church rents the old Tournauler shop on Pepper Row from Oahu Sugar Co. to accomplish this program. The bike shop is unique--a one of a kind youth project--in a community where there is nothing outside of regular school programs for our youth. The bike shop program supplies a hands-on opportunity for Ewa's youth. It is known throughout the Ewa area by the young people in our community as a place where they can play basketball, volleyball and other sports as well as repair or build a bike for free.

The bike shop project was put in place and financed by Friendship Bible Church to supply an alternative to the gang and drug scene. The community has responded extremely well. We have received help from local electricians and plumbers who normally work for Oahu Sugar. The combined efforts of Grace Pacific, Gentry, Oahu Sugar, American Welding Co., Independent Sandblasters and the community at large have made this valuable project possible. We have supplied Ewa's kids with a number of fun events to be involved in such as excursions to the beach, a two-week summer youth camp and a drug awareness night held in September of which scores of young people were involved.

One beautiful fact about this project is that it was born by the desire of Ewa's concerned citizens and the membership of Friendship Bible Church for the sole purpose of helping Ewa's kids. It does not cost the city or the state anything. The church covers the bills as well as the insurance. All of the personnel are volunteers. The program works and will continue to adapt to fulfill young people's needs.

90 OCT -4 P1:44  
RECEIVED  
& COMM. DIVISION

Statement of Intent  
Re: Master Plan for Ewa Villages  
Page Two

Needless to say, based on the city's plan we are very concerned about the future of our ministry. Lanakila school is going to become a public facility and the Tournahauler shop we now rent for our community youth program is non-existent on the city's plan. In fact, the Tournahauler shop, which many view as a historical site, has been placed outside of the special design district.

The Tournahauler shop marks a period of definite change in Ewa's history. Prior to World War 2, locomotives were the primary way of moving cane to the mill. However, during the war a major change was taking place as the Tournahauler came into existence. A special shop was built in 1946 for this new equipment and was in full operation in 1947. Still existing on the property is the main shop, the restroom facility and the foundation of the worker's lunchroom. Many of the people from the old Ewa plantation have commented on how important the building is to them as a landmark of historical significance. They are pleased to see it repainted and being used for such a worth while purpose.

Obviously, the church has made a substantial investment in the community and many families have benefited by its presence. Our desire as a church is to continue our service to the community. We would like to stay in the Lanakila school for as long as possible and if we are required to move, would appreciate as much warning as can be given and of course as much assistance as can be afforded. It is our feeling and the feeling of the vast majority of our neighbors that the youth program on Pepper Row remain in its present facility.

As can be seen from the enclosed pictures, we have substantially improved the Tournahauler premises. We have future plans of re-roofing the shop as well as rebuilding the lunchroom on its original foundation. The church is willing to take on the expense of this project if we had some indication of a secure future of the site.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

150 SOUTH KING STREET, 5TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: 533-4477 / FAX: 533-4478

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FRANK FISH  
DIRECTOR

MICHAEL N. SCARFONE  
DIRECTOR  
Call M. Kaito  
DEPUTY DIRECTOR

October 19, 1990

Mr. David B. Parker, Pastor  
Friendship Bible Church  
91-1219 Renton Road  
Ewa Town, Hawaii 96706

Dear Mr. Parker:

Subject: Ewa Villages

Thank you for your letter of October 2, 1990, informing us of your need to maintain a church meeting place and youth project (bike shop project) in the Ewa Villages project. These functions currently utilize the Lanakila Baptist School and old Tournahauler shop respectively.

As the City completes details of the Ewa Village Master Plan, the needs of your organization and others in the community will be considered and addressed. The City will also provide additional opportunities for community input before the master plan is finalized.

If you have any questions please call Randy Wong at 523-4264.

Sincerely,  
Original signed by  
Michael N. Scarfone

MICHAEL N. SCARFONE

cc: Planning and Analysis Division  
R. M. Towill

*Waialeale Mission House  
Grove Farm Homestead*

HMT	1	YES	1	1
OK				
REV				
REC'D	11/1	5 1990	AWTC	
1990				
DM				

November 2,

Michael N. Scarfone, Director  
Department of Housing & Community Development  
City and County of Honolulu  
850 South King Street, 5th Floor  
Honolulu, Hawaii 96813

Dear Mr. Scarfone,

Comments on Ewa Villages DEIS

On October 24, I attended a briefing by Randy Wong and Chester Koga on the Ewa Villages master plan, and I have reviewed the Draft Environmental Impact Statement prepared for the City and County of Honolulu by the R.M. Towill Corporation.

The challenge of the rehabilitation of Ewa's older houses is a formidable one, and it is one of great community significance. The City and County are to be congratulated for making a start on preservation planning as part of its policy of producing affordable units and avoiding social displacement at Ewa.

An unresolved issue specifically discussed in the DEIS is the relationship of building preservation to new construction. As you may know, most preservation building rehabilitation work to date in Hawaii has encompassed commercial and public structures. Very little work has been done with vernacular plantation camp homes, and the technical building preservation expertise in housing is quite thin statewide. Two years ago, Kauai's Community Housing Resource Board published a set of rehabilitation guidelines approved and funded by HUD. On Kauai, hands-on rehab work following these guidelines has been limited to small-scale projects (ten camp houses at Grove Farm Homestead and one rice farmer's home in Hanalei). These properties are listed on the State and National Register of Historic Places and thus conform to the Secretary of the Interior's standards for rehabilitation.

An important next step in preservation planning for Ewa, I believe, is to make certain that a qualified preservation team be consulted to assist in the preparation of (1) existing building condition reports, (2) the scope of needed repairs and (3) the estimated costs of specific needed repairs of the camp houses at Ewa. This team should include carpenters experienced in housing rehab who have followed the structural guidelines. This structural analysis is as important as establishing design guidelines for new house construction, and it requires a different set of skills.

*M. N. Scarfone  
Director, Housing & Community Development  
11/2/90*

M. N. Scarfone

Page two

As a preservationist and a plantation historian, I would like to add that the design relationship of the new housing locations to the existing camps would be greatly improved if there was open space between the existing camps and the new clusters of houses in the project. These new clusters should be kept separate from the historical camp configurations, by following the tradition of plantation housing. When new homes were needed, new clusters were created.

In conclusion, the result of more detailed preservation evaluation and planning by the City and County will be liveable homes that retain the rural, traditional character of the housing and related community buildings. I am confident that this challenge can be met, and that preservation rehabilitation is a feasible economical and socially sensitive form of affordable housing. The DEIS for Ewa Villages underestimates the planning this project requires, and I encourage the City and County to keep working to produce an excellent affordable housing and community solutions for Ewa.

Sincerely,

*BR*

Barnes Rizaik  
Museum Director

BR:PP

cc: Mr. Chester Koga, Project Manager  
R.M. Towill Corporation  
420 Waiakamilo Road, Suite 411  
Honolulu, Hawaii 96817-4941

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

630 SOUTH KING STREET, 5TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE 923-3427 • FAX 923-3488



FRANK FAN  
MAYOR

MICHAEL N. SCARFONE  
DIRECTOR  
GAIL KAITO  
DEPUTY DIRECTOR

December 28, 1990

Mr. Barnes Riznik, Museum Director  
Waioli Mission House  
Grove Farm Homestead  
P. O. Box 1631  
Lihue, Kauai, HI 96766

Dear Mr. Riznik:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of November 7, 1990 indicating that you have received your copy of the DEIS for the subject project, and that you have specific concerns regarding the integrity and preservation of buildings in the project area. A structural assessment is currently being prepared and will examine: 1) existing building conditions; 2) the scope of needed repairs; and 3) estimated repair costs. The survey will be conducted by a qualified rehabilitation specialist from this department and an architectural consultant. Findings from this report will be disclosed when available in the first quarter of 1991. Additionally, in keeping with the tradition of plantation housing, the Master Plan has been revised to separate existing and new housing clusters, via open spaces and/or buffers.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

*Gail Kaito*

for Michael N. Scarfone, Director

cc: DGP



## University of Hawaii at Manoa

College of Arts and Humanities  
Department of American Studies  
Moore Hall 324 • 1090 East-West Road  
Honolulu, Hawaii 96822-2318

November 5, 1990

Michael N. Scarfone, Director  
Department of Housing  
and Community Development  
650 S. King Street, 5th Floor  
Honolulu, HI 96813

Attention: Ms. Eileen Hark  
Subject: Ewa Villages Master Plan

Dear Mr. Scarfone:

The City and County of Honolulu are to be commended for recognizing the importance of this complex in this Draft Environmental Impact Study (DEIS). As Keeper of the National Register of Historic Places for the Secretary of the Interior for the first thirteen years of that program's existence, I have seen thousands of historic districts all over our country and abroad. Because of its unique quality, I share your interest in attempting to keep Ewa's sense of locality and place in the face of its changing regional environment. Since complexes of this specific nature do not exist on the mainland, we collectively have, it seems to me, an inordinate preservation responsibility to try to keep those tangible and intangible qualities which distinguish Ewa's existing intense sense of place. To achieve this may not be the easiest route to take in development - nor the most convenient. Successfully resolved, however, with the Ewa Villages properly restored and rehabilitated, it will establish the City and County of Honolulu in a national and indeed, especially for the developing nations of the South Pacific, an international position of authority in questions of this nature. The material culture and contribution of the average individual are at stake in the face of escalated market forces bearing on the local environment. This is a generic problem in many parts of the developing world. Hawaii has an opportunity to showcase its astuteness on this issue. Its success or failure will stand in direct relationship to the sensitivity by which it approaches the question and implements the answers.

The comments which follow are offered constructively in an effort to help bring the meaning of the word preservation as a viable development alternative into focus as part of the planning process.

As the surrounding Ewa Plain urbanizes, every attempt must be made to keep the existing rural quality of the Ewa Villages as much as possible. This means that most standard planning policies and procedures will not be adequate for Ewa. It follows also that any consultants brought to bear on Ewa in the

Mr. Michael N. Scarfone  
November 5, 1990  
Page 2

planning/development process must have a professional experienced track record in similar precedent projects of a preservation nature. A good economist, a good sociologist, a good designer, a good planner, etc., in the usually accepted sense of the word, is not enough due to the specialty preservation expertise required of the problem. There is an increasing pool of such expertise in our country, especially since the changes in our tax laws beginning in the late 1970's. They are not difficult to find and need to be part of the process.

To address some of the specifics of the DEIS, all of the villages need to be included in the area considered historic. In the draft I have seen, this is not so. The entire area should be submitted to the State for recognition on the State Register and the National Register of Historic Places for similar recognition at the Federal level. This will afford excellent mechanisms for impartial review when needed.

The Secretary of the Interior's Standards for Rehabilitation should be adopted as the norm in how to rehabilitate the existing buildings. These are readily available through the National Park Service and myriad other sources including the appendix of my own recent basic preservation primer, Keeping Time.

As presented, the project areas proposed density with massive new construction and in-fill will most assuredly destroy the very entity that is being attempted to be preserved, denigrating the integrity of the existing historical area. In-fill should be limited and follow the original configuration of existing buildings in the camps where the in-fill is to be placed. Rather than enlarging the boundaries of existing camps, Ewa's qualities should be better served by in-filling missing units in existing camps, keep these camps their original size and to start new camps (neighborhoods) separated by open space as was the traditional Hawaiian plantation solution to expanded housing needs. This would avoid the historically incompatible density problem of the new suburban sub-division look.

A major failure of the DEIS, in my considered opinion, is the lack of recognition of the negative impact of traffic, with resulting pollution and noise that directing all or a majority of increased traffic through Ewa Villages rather than around and away from them will create. This too will destroy the integrity of the villages. Short term traffic volume will undoubtedly bring pressure for road widening. The objective should be to minimize and restrict traffic to and within the Ewa district and not to facilitate traffic through it. Bypass roads are called for.

This relates further to a disturbing implication in the DEIS of intervention of large scale commercial activity which appears to be conceived to serve the entire region and not the Ewa Villages. Like the traffic patterns which should avoid Ewa save for local residents use, the proposed commercial and other developments should be interpreted as serving the Ewa



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CITY AND COUNTY OF HONOLULU

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FRANK FARR  
MAYOR

MICHAEL N. SCARFONE  
DIRECTOR

Gail Kaito  
DEPUTY DIRECTOR

December 21, 1990

Mr. Michael N. Scarfone  
November 5, 1990  
Page 3

Villages and not the entire developed Ewa Plain. Failure to recognize this will result not only in an incompatibility of scale which can only have a negative impact on Ewa Villages, but an incompatibility of noise, pollution, and traffic as well. All of this will destroy the rural island of historical tranquility, which is the primary contribution that the Ewa Villages can make to the eventual urbanized Ewa region.

The above comments are offered as a professional, with architectural training, expert in the preservation field and not as an official spokesperson for the University of Hawaii.

Sincerely,

*William J. Murtagh /BJ*

William J. Murtagh, Director  
Pacific Preservation Consortium

Mr. William J. Murtagh, Director  
Pacific Preservation Consortium  
University of Hawaii, Dept. of American Studies  
Moore Hall 324, 1890 East-West Road  
Honolulu, HI 96822-2318

Dear Mr. Murtagh:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of November 5, 1990 regarding the DEIS for the subject project.

We share your views on the importance of preserving the Ewa Villages as an important link to our past. The City's goal is the provision of homeownership opportunities to the existing residents while attempting to retain the qualities that make this area unique. We do not believe that our housing goals are mutually exclusive of the preservation goals that many have espoused. While the undertaking of this project poses unique challenges, we believe that we are proceeding on a course that will successfully achieve our primary mission and still retain the historic character of the Ewa Villages.

The Draft EIS we published was an initial plan for what we believed to be a viable alternative. We have since met with a number of community groups to obtain their input on the plan. Like yourself many have offered suggestions on how we can change the plan to better address the myriad of issues involved in this complex project. We would like to offer the following as responses to some of your specific comments:

1. We will be including all of the Ewa Villages in our planning area thus providing for a unified plan for the area. The City has retained a preservation consultant to provide advice on the preparation of the master plan.
2. The Secretary of the Interior's Standards for Rehabilitation will be used as a reference for the rehabilitation of existing buildings as they are applicable.
3. Infilling of new structures will be planned to follow the original configuration of existing buildings in the camps to the extent feasible.
4. Your concern over the potential negative impacts that can result from the automobile is well founded. The automobile has transformed the villages during the course of their evolution. We have attempted to provide for vehicular traffic in a scale more conducive to the village setting. Your suggestion to incorporate bypass roads into the project road network has been taken under consideration for the long-term.

MJM:pf  
cc: Dept. of General Planning  
Office of Environmental and  
Quality Control

Mr. William J. Murtagh,  
Director

-2-

December 21, 1990

5. The proposed commercial complex has been planned in the area of the old mill. The area is currently used by a number of users (mostly industrial). The proposed commercial area is designed with the pedestrian in mind. The complex has been planned for the enjoyment and appreciation of the community as a whole rather than the Ewa Villages exclusively. In the long-term it would seem imprudent to interpret the use of the commercial/museum complex as serving the Ewa Villages exclusively, as the complex should be appreciated by the public rather than the private few. Although this appears to be a relatively generous apportionment of commercial area in comparison to the overall project area, the City foresees this to be a place of historic appreciation as well as commercial activity for the community as a whole, and as such, warrants the proposed square footage.

To the extent possible, regulatory measures will be considered to safeguard the historic integrity of the project area by mitigating the volume of traffic attracted by the complex.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

*Neil Kato*

for Michael N. Scarfone, Director

cc: DGP



# University of Hawaii at Manoa

College of Arts and Humanities  
Hawaii Hall 103 • 2500 Campus Road  
Honolulu, Hawaii 96822

Office of the Dean

Mr. Michael N. Scarfone, Director  
Department of Housing and  
Community Development  
650 S. King St. - 5th Floor  
Honolulu, HI 96813

Dear Mr. Scarfone:

Subject: Eva Villages Master Plan

The City is to be congratulated on its concern for preservation in the Eva Draft Environmental Impact Statement (DEIS). The following comments are made on the basis of extensive conversations that I have had with people knowledgeable about historic preservation in Hawaii and on the mainland. I am speaking as an individual and not representing the University of Hawaii at Manoa in these comments.

A number of informed people have concluded that the Eva Villages represent a unique opportunity for Hawaii to preserve elements of its past plantation life. These people include Walter Beinecke, the very successful developer from Nantucket, and Blair Reeves, emeritus professor of architecture at the University of Florida, and founder of one of the preeminent historic preservation programs in the country, among others. It is because of the signal importance which these people have placed on authentic preservation of Eva, that I hope the City will refine its plans for the area to take full advantage of the opportunity which Eva presents us.

The following are concerns I hope the City will address prior to taking action on Eva:

1. Moving houses from one village to another seems to me to be expensive, an imposition on the residents, and counter-productive to basic preservation standards. It is also not clear what the net impact will be on Varona Village. It would be more appropriate to have responsible infill in all three villages where vacancies now exist, and it certainly would be less disruptive of the lives of the inhabitants of those three villages.

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2. The proposed increased density may overwhelm the historic character of Eva town which so many people feel is worth preserving. It might be better to put the new homes in areas more widely separated from the older villages, as was the usual practice on Hawaii's plantations.
3. The increased density will inevitably lead to much more traffic flowing through Eva Village unless provisions are made to bypass through traffic. The increased traffic will add to the destruction of the character of Eva and should be avoided.
4. It is not clear to me how the residents are going to be assisted in purchasing their homes if they choose to do so. There are models of this kind of procedure that have been done on the mainland, and I would urge the City to bring together people who have had experience in this kind of project.
5. In the same context, it is important to clarify what standards individuals or groups will be held to in the preservation process. National and State standards now exist and clarification of this very important issue prior to changes being made in the buildings is important.
6. In addition, plans should be made to see that as ownership of the buildings changes new owners are responsible for continued maintenance of the restored buildings in their appropriately-restored context. Covenants to that effect have been created throughout the mainland and would be appropriate here.
7. Finally, almost everybody who has had contact with Eva believes that the villages should be listed on the State Register of Historic Places and the National Register of Historic Places.

Communities around the world are finding that short-term gains achieved through destruction of their physical past result in long-term economic and social losses which come to be deeply regretted. The City is to be congratulated in this effort to preserve an important element of our history, a history which is rapidly disappearing throughout the State.

Sincerely,

Judith R. Hughes  
Associate Dean

November 7, 1990  
NOV 17 1990

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

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FRANK F. YAM  
MAYOR

MICHAEL N. SCARFONE  
DIRECTOR  
Call M. Scarfone  
DEPUTY DIRECTOR

Ms. Judith R. Hughes,  
Associate Dean

-2-

December 28, 1990

6. We concur that Conditions, Covenants and Restrictions (CC&R) will be an effective vehicle to ensure responsible maintenance of new and rehabilitated homes by future home owners. Previous CC&R's from similar developments are currently under review and will be followed in the preparation and implementation stages.
7. Your position in favor of listing the villages on the National and State Register of Historic Places has been noted.

December 28, 1990

Thank you for your interest and participation in the planning stages of this project.

Ms. Judith R. Hughes, Associate Dean  
University of Hawaii  
College of Arts and Humanities  
Hawaii Hall 103, 2500 Campus Road  
Honolulu, HI 96822

Dear Ms. Hughes:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of November 7, 1990 transmitting your specific concerns regarding the preservation effort in the project. The following responds to your comments:

1. The moving of houses will be used as a "last resort" alternative in the event that an existing resident wishes to demolish his home rather than rehabilitate it. We are not planning the wholesale movement of homes.
2. The Master Plan will provide for the separation of existing and new housing clusters via open spaces and/or buffers to the extent possible. Houses that are used to infill vacant lots will be designed to match the adjoining lot(s).
3. Your suggestion to incorporate bypass roads into the project road network has been taken under consideration for the long-term development of the area.
4. Current residents wishing to purchase their homes will be given priority for an affordably-priced home which will be directly subsidized by the market-priced units in the project. The project will be designed in order that residents may qualify for the Federal Housing Administration (FHA) mortgage insurance program and State Hula Mae low interest mortgage loan program. Additionally, the project area is located in a rural area and village residents may qualify for Farmers Home Administration assistance if the area is deemed eligible.
5. The standards for the rehabilitation and construction of new structures have yet to be fully articulated. We have used the U. S. Secretary of the Interior's Standards for Rehabilitation and the 1986 Uniform Code for Building Conservation as references as well as other local guidelines. In addition to these guidelines, we are undertaking a special study to create a Special District in the Ewa Villages. The applicable guidelines will be established prior to initiating any work on the existing dwelling units.

Very Truly Yours,

*Michael N. Scarfone*

Michael N. Scarfone, Director

*for*

cc: DGP



**HISTORIC HAWAII**  
FOUNDATION

November 7, 1990

Mr. Michael N. Scarfone  
Director, DHCD  
550 South King Street, 5th Floor  
Honolulu, HI 96813  
Attn: Ms. Eileen Mark

Subject: Ewa Villages Master Plan Draft Environmental Impact Statement

Dear Mr. Scarfone:

We would like to commend the City and County of Honolulu for the approach to the Ewa Villages Master Plan which includes a great regard for the history and respect for preservation of the plantation heritage of the area. We also commend you for your efforts to retain the historic design character within the development area and to provide opportunities for affordable home ownership.

This project can be a socially useful preservation project for the local resident families at Ewa both because of the affordable housing factor and the important retention of cultural resources.

If planned and developed wisely, Ewa can bring the City of Honolulu and its officials tremendous recognition -- statewide, nationally and throughout the Pacific. We recommend that preservation professionals be involved throughout the planning and implementation.

Our comments on the DEIS are meant to strengthen your focus on preservation and community concerns. They are as follows:

**Section 9.3** We recommend that the question of whether or not the project area is to be nominated and placed on the State and National Registers of Historic Places should be resolved as soon as possible since this honored recognition would have a major impact upon the plans and their implementation.

We support the registration of parts of Ewa on the State Register of Historic Places in recognition of its historical significance as one of the most important sugar plantations in the state.

Mr. Michael N. Scarfone  
November 7, 1990  
Page 2

As you are probably aware, properties determined eligible for National Register listing require compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, if any federal funding or permitting will be involved in this project. We encourage you to work closely with the State Historic Preservation Office to meet these obligations since federal funding will clearly play an important role in insuring the ultimate affordability of this project for the residents of Ewa. This process is a constructive tool in bringing diverse interests together to reach agreement on appropriate methods for achieving a common goal.

From the DEIS, it appears that few historical structures will be demolished, but the City should follow standard guidelines in evaluating the feasibility of rehabilitation.

Historic registration affords the simplest and best mechanism for impartial review. Registration would directly address DEIS Section 9-3 and the need for more detailed evaluation of issues relating to historic preservation. There appears to be consensus among community and preservation groups, for example, that Varona Village be included in the historic designation, be preserved and rehabilitated.

Because of the historic significance of the area we recommend that the City adopt the Uniform Code for Building Conservation which was approved in 1986 by the International Conference of Building Officials. This code should be used as the standard building code reference throughout the project.

The U. S. Secretary of the Interior's Standards for Rehabilitation should be used as guidelines in the preservation aspects of the project. An additional practical tool for evaluating the rehabilitation needs of individual plantation structures is the Kauai Community House Resource Board (HUD), Rehabbing Kauai's Old Houses (1988).

Hands-on rehabilitation experience of others in Hawaii such as Grove Farm Homestead, Waimea Plantation Cottages, Alexander and Baldwin Sugar Museum should be called upon as resources.

**Section 7** The Alternative Proposed Action needs to be greatly strengthened. It should address unresolved preservation issues and should consider specifically three problems:

- a. Preservation of Varona Village.
- b. Re-location of Tenney Village houses to the Renton Village area. It does not seem wise to remove and restore as many as 42 houses because of the negative impact which this action would have on the integrity of the historical area.

Mr. Michael N. Scarfone  
November 7, 1990  
Page 3

c. Final configuration of the development of single family housing units in relation to the integrity of the existing camps and the golf course layout.

We would like to suggest that the City planners consider the special nature of "in-fill" new construction in relation to traditional plantation development.

In contrast to urban development, "in-fill", different practices apply traditionally on plantations in the treatment of housing units. Inside the boundaries of separate camps, infill would be practiced as long as it followed the original configuration of separate camps.

However, rather than enlarging the configuration or boundary of individual camps to add new houses (and new residents), it was the traditional plantation practice on every island to start anew with a new camp separated by rural open space (canefields, pasture, etc.) from the existing houses.

This practice would be preferable at Ewa in building new housing units. To avoid the unwelcome density of some sub-divisions, we suggest that the new units should not be contiguous to Tenney and Renlon Villages. Instead, they should be reconfigured as separate groupings around the golf course, perhaps closer to the project area's outer boundary.

Sections 2.2.1.1 - b, 2.2.1.2 - b We recommend that a covenant be attached to the sale of the bachelor's quarters and all other such building sales to assure that the rehabilitation and maintenance of the structures are conducted in line with accepted standards. To assure perpetual preservation within the project area, please consider adding a buy-back agreement or a preservation covenant which would run with the property if the owners sell.

Section 2.2.1.1 - c Following in this thought, we recommend that a similar covenant or agreement be included in leases to assure the quality of the rehabilitation and maintenance work while the lease is in effect.

Section 2.2.1.1 - d We support your plans to adopt and implement design standards based on the historic character of the project area.

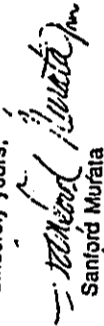
Section 2.3.1 We support your efforts to maintain road and streetscapes in the historic tradition by keeping the existing road widths, by not including curbs and sidewalks, and by placing utilities underground wherever possible.

Mr. Michael N. Scarfone  
November 7, 1990  
Page 4

Section D We support the consultants recommendation contained in the Archaeological Resources Impact Assessment that the issue of subsurface archaeology in association with areas in which pre-WW II plantation structures are known to have existed be resolved by the State Historic Preservation Office prior to the development of any of these areas.

Thank you for considering our recommendations. Please let us know how we can assist you in the planning and implementation for this exceptional historic area.

Sincerely yours,

  
Sanford Murata  
Chairman

Preservation Review Committee

SM:rn

cc: Barnes Riznik, Ph.D.  
Joyce Wilson  
Emogene Martin  
Penny Pagliaro  
Kiyoshi Ikeda, Ph.D.  
Kathryn Burns  
Don Hibbard, Ph.D.  
Chester Koga  
Phyllis G. Fox

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FRANK P. PARR  
DIRECTOR

MICHAEL N. SCARFONE  
DIRECTOR  
GAIL M. KAITO  
DEPUTY DIRECTOR

Mr. Sanford Murata, Chairman

-2-

December 17, 1990

Section 7

Your suggestion to preserve Varona Village has been taken under advisement. The relocation of existing units between Tenney and Renton Villages will not be considered, and as such, will be reflected in the Final EIS.

In keeping with traditional construction practices in the plantation, new housing clusters will be separated from existing units via wide buffers and/or open areas. This will mitigate the potential for impacts to, and preserve the integrity of, the historic character of sensitive areas such as the core restoration area. In addition, this action will maintain the historic densities of Tenney, Renton and Varona villages.

Section 2.2.1.1

As aforementioned, CC&R's will be prepared and implemented for residential and non-residential buildings to assure that the rehabilitation and maintenance of the structures are conducted in line with accepted standards. Similar agreements will be implemented in accordance with leases.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

Michael N. Scarfone, Director

cc: DGP

Mr. Sanford Murata, Chairman  
Preservation Review Committee  
Historic Hawai'i Foundation  
P. O. Box 1658  
Honolulu, HI 96806

December 17, 1990

Dear Mr. Murata:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of November 7, 1990 regarding the DEIS for the subject project. The following has been prepared in response to your comments:

Section 9.3

We acknowledge that the nomination and placement of the Villages on the State and National Registers of Historic Places would influence the project plan and implementation. However, acceptance of such a nomination would ultimately be the prerogative of the land owner, the Estate of James Campbell.

We have contacted DLNR Historic Preservation Office regarding the process for compliance with Section 106 of the National Historic Preservation Act.

The City will use the Uniform Code for Building Conservation (1986) from the International Conference of Building Officials, U. S. Secretary of the Interior's Standards for Rehabilitation and the literature received from your office entitled "Rehabbing Kauai's Old Houses" as references in the preservation aspects of the project. Special design regulations to be enacted as an Ewa Special District ordinance and Conditions, Covenants and Restrictions for the project area will be prepared. The City has also retained a preservation consultant who will advise the City in issues related to preservation.



# University of Hawaii at Manoa

Environmental Center  
Crawford 317 • 2550 Campus Road  
Honolulu, Hawaii 96822  
Telephone (808) 946-7381

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November 7, 1990  
RE:0566

Department of General Planning  
City and County of Honolulu  
650 South King Street  
Honolulu, Hawaii 96813

Dear Sir:

## Draft Environmental Impact Statement (EIS) Ewa Villages Master Plan Ewa, Oahu

The referenced document addresses the proposed Master Plan for the restoration and rehabilitation of Ewa Villages. The project includes residential, commercial, public facility, and recreational and open space uses on 666 acres.

The Environmental Center has reviewed this Draft EIS with the assistance of Paul Ekern, Henry Gee, and Y.S. Fok of Water Resources Research Center; James Hollyer, Agricultural and Resource Economics; and Lee Lyttle, Environmental Center.

### Description of Proposed Action (pages 2-5 to 2-8)

Throughout the description of the proposed action, the Draft EIS stated that many roads will not include sidewalks in order to "maintain the visual rural character of the village..." Our reviewers questioned why 'rural character' is equated to 20 to 36 foot-wide newly paved roads for automobiles and no place for people to walk. Trails and footpaths provide for pedestrian safety and can be designed to enhance a desired country-like setting.

### Climate, Soils, and Hydrology (pages 3-1 to 3-9)

Our reviewers felt that this section was incomplete, particularly since climatological patterns are closely related to important ground water and salinity issues discussed elsewhere in the document. Our concerns are heightened because this section fails to recognize the effects of proposed land use changes on solar reflectivity and regional microclimates. At a

EWA EQUAL OPPORTUNITY EMPLOYER

Department of General Planning  
November 7, 1990  
Page 2

minimum, a water budget should be formulated for the area, taking into consideration factors such as rainfall (particularly during the dry summer months), evaporation, changes in vegetative evapotranspiration, solar radiation rates, and wind pattern data. Sufficient climatic data specifically on the Ewa area are readily available (e.g. Department of Land and Natural Resources report R76: the Rainfall Atlas of Hawaii, 1956; Ekern and Yoshinara, Hawaii Solar Radiation Summary, 1977; Mochizuki, Deforestation of Trees, 1979; and Leopold, Diurnal Weather Patterns on Oahu, 1948). The Environmental Center can assist the preparers by providing additional sources for investigation into these topics.

According to the FEMA 100 year floodplain boundary map shown on page 3-7, part of the residential area is within the floodplain boundary. As a mitigative measure, the Draft EIS states that the proposed golf course will serve as a flood water retention area. Accordingly, the Final EIS should indicate the relationship of the proposed new boundary for a 100 year flood to the project site.

### Possible Resumption of Railroad Operation (page 3-23)

Sourced data from the quoted 1984 Noise Study should be incorporated into the EIS together with a full citation to the study. Railroad activities, even if tourist oriented, adjacent to residential land uses have a history of posing conflicts. The EIS should contain expected noise levels encountered by the closest saleable housing lot from passing locomotive engines.

### Air Quality (pages 3-27 to 3-28)

Appendix C presents a thorough discussion of air quality deterioration due to the periodic burning of sugar cane, yet no synopsis of this assessment is brought forward into the main text of the Draft EIS. Regardless of the uncertainty of future cane cultivation in the area, potential impacts resulting from the juxtaposition of cane harvesting operations and a suburban residential development should be evaluated thoroughly in the EIS.

### Golf Course Trends (pages 4-34)

The impacts and mitigative measures associated with the proposed golf course are discussed in relation to the physical environment, yet socio-economic effects are ignored. Since this would be a municipal course developed with public funds, issues such as financial viability, public access, and effect on the affordability of housing in Ewa Villages should be discussed.

### Transportation and Infrastructure Systems (pages 5-1 to 5-15)

The EIS should address the issue of the pedestrian circulation system, including the safety of children on their walks to and from the school and community facilities. (See also our earlier comments on the 'Proposed Action'.)



Department of General Planning  
November 7, 1990  
Page 3

Water System (pages 5-15 to 5-17)

In view of growing demands for water in this historically arid area, several issues require further elaboration in the EIS. Figures provided indicate that measured chloride levels from OSCo's Honouliuli wells were 216, 262, and 300 mg/L for the years 1973, 1975, and 1978, respectively, when levels of 250 mg/L and above are deemed unpalatable. This suggests that the community has been drinking unpalatable water for at least 15 years. Are there more recent sampling figures? The EIS does not state whether water from these wells will be blended with more potable sources to reduce chloride levels or will be used for irrigation in the future.

Our reviewers expressed substantial concern over long-term trends in recharge rates of the caprock aquifer and quality of the caprock water. In a water-poor region with two golf courses under irrigation with non-potable water within a mile of one another, an assessment of potential effects of nutrient and pesticide infiltration should be a part of the environmental analysis.

Historic Preservation (pages 9-1)

The Draft EIS notes that many issues remained unresolved relating to historic preservation. Given the significant history of this area, these should not be considered minor, and a full discussion should appear in the Final EIS.

Thank you for the opportunity to comment on this document, and we hope that you will find our comments helpful in the preparation of a comprehensive and informative Final EIS.

Yours truly,

John T. Harrison, Ph.D.  
Environmental Coordinator

cc: Dept. of Housing and Community Dev.  
OEQC  
Royer Fujitoka  
Paul Ekern  
James Hollyer  
Henry Gee  
Y.S. Yok  
Lee Lyttle

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
**CITY AND COUNTY OF HONOLULU**

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FRANK ZABI  
DIRECTOR

MICHAEL R. SCURFONE  
DIRECTOR  
Gail Kaito  
DEPUTY DIRECTOR

December 21, 1990

Mr. John T. Harrison, Ph.D.  
Environmental Coordinator  
University of Hawaii, Environmental Center  
Crawford 317, 2550 Campus Road  
Honolulu, HI 96822

Dear Mr. Harrison:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of November 7, 1990 regarding the DEIS for the subject project. The following has been prepared in response to your comments:

Description of Proposed Action

The plan proposes to maintain the rural character of the Villages by retaining the existing 20- to 36-foot roadways. There have historically been no sidewalks in the villages, and interested parties from the community and government have expressed a preference toward continuing in this manner. We concur that pedestrian safety is also an important consideration, and the plan will provide for pedestrian pathways along Renton Road and the proposed golf course periphery, as well as near the Ewa Elementary School.

Climate, Soils, and Hydrology

Your comments on climate and the relationship between the project and future floodplain boundary have been noted.

Possible Resumption of Railroad Operation

The Final EIS will address the expected increase in noise levels, which would impact residential units, from passing locomotives should railroad activities resume.

Air Quality

Per your comment, a discussion on the potential impacts of cane harvesting operations on the development will be included in the Final EIS.

Mr. John T. Harrison, Ph.D.

-2-

December 21, 1990

Golf Course Trends

Trends in golf course development have typically indicated increased residential prices for those homes adjacent to, or in the periphery/proximity of, a golf course. This added value will be used to write down costs for the affordable units. Additionally, the proposed golf course will be open to, and readily accessible by, the public.

Transportation and Infrastructure Systems

As aforementioned, pedestrian pathways will be incorporated into the plan with consideration for historic and public safety aspects.

Water System

The villages will be provided with a potable municipal water supply which will be developed, whereas golf course irrigation will involve non-potable water. Your concerns regarding potential infiltration of the caprock aquifer have been noted.

Historic Preservation

Your comments regarding unresolved issues surrounding historic preservation within the project have been taken under advisement. Issues related to historic preservation will be more fully addressed in the Final EIS.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,

*Michael N. Scarfone*

for Michael N. Scarfone, Director

cc: DGP

Hawaiian Electric Company, Inc. • PO Box 2750 • Honolulu, HI 96840-0001

RMV	WES	BIT	EST
DK	RT	RT	RT
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DKM			

William A. Bonnet  
Manager  
Environmental Department

City & County of Honolulu  
Dept of General Planning  
650 South King St.  
Honolulu, Hawaii 96813


Dear Sir:

Subject: Environmental Impact Statement (EIS)  
Ewa Villages Master Plan, Ewa, Oahu, Hawaii

We have reviewed the subject EIS, and have the following comments:

1. On page 5-20, a statement needs to be added that this development will be served by Ewa Nui 138 kv Substation.
2. If the City does not respond to HECO's application to amend the Public Facilities Map to include the Ewa Nui Substation, the service to this development may be jeopardized.

HECO shall reserve further comment pertaining to existing power lines within and around the proposed development until construction plans are finalized.

Sincerely,  


cc: Ms. Eileen Mark, C & C, Dept. of Housing & Community Development  
Mr. Chester T. Koga, R. H. Towill Corp.

AnHEI Company

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

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December 17, 1990

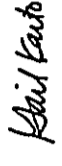
Mr. William Bonnet, Manager  
Environmental Department  
Hawaiian Electric Company, Inc.  
P. O. Box 2750  
Honolulu, HI 96840-0001

Dear Mr. Bonnet:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

We have received your letter of November 8, 1990 regarding the DEIS for the subject project. Per your comment, the Final EIS will be revised to include the statement that the project will be served by the Ewa Nui 138 kv substation. In addition, your concern regarding the status of HECO's application to amend the Development Plan Public Facilities Map has been noted.

Thank you for your interest and participation in the planning stages of this project.

Very Truly Yours,  
  
Michael N. Scarfone, Director

cc: DGP





EWA BEACH COMMUNITY ASSOCIATION  
P.O. BOX 3, EWA BEACH, HAWAII 96706

December 17, 1990

Mr. Michael N. Scarfone  
Director, DHCD  
650 South King Street, 5th Floor  
Honolulu, HI 96813  
Attention: Ms. Eileen Mark

Subject: Draft EIS for the Ewa Villages Master Plan.  
Dear Mr. Scarfone:

Thank you for the opportunity to review the subject Draft EIS.

In general we support this project to preserve the unique character of the Ewa Villages. We realize that drainage is one of the major problems to be addressed and we support plans to handle this problem through construction of a golf course to collect and divert storm water from the residential areas. We believe that the golf course will also provide the green open space to separate the restored area of the project from the new construction of residential units.

We do have some concerns however, regarding infrastructure improvements. On page 2-11, mention is made of construction of a segment of the East-West arterial to connect the Kapolei and Ewa By Gentry developments, but no mention is made of any provisions for connection with a new North-South arterial connecting Ewa Beach/Ewa Marina with the H-1 to the west of Fort Weaver Road, which we were assured would be developed to relieve the traffic pressure on Fort Weaver Road.


In addition we are in general agreement with the comments of Friends for Ewa in their response of November 7, 1990 in that we believe that additional details is needed in the areas of the Housing Program, Historic Resources and Traffic systems.

P. 2 Ewa Villages EIS

The Ewa Beach Community Association has a special interest in seeing that the concerns of the residents of the Ewa Villages are satisfactorily addressed.

Although we realize that the official review period has passed, we hope that our comments will be taken into consideration.

Very truly yours,

  
Charles "Dick" Beamer  
President  
Ewa Beach Community Association

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
CITY AND COUNTY OF HONOLULU

850 SOUTH KING STREET, 8TH FLOOR  
HONOLULU, HAWAII 96813  
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FRANK P. JAHN  
DIRECTOR

MICHAEL N. SCARFONE  
DIRECTOR

Gaji Kaito  
DEPUTY DIRECTOR

December 28, 1990

Mr. Charles Beamer, President  
Ewa Beach Community Association  
P. O. Box 3  
Ewa Beach, Hawaii 96706

Dear Mr. Beamer:

Subject: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

Thank you for your letter of December 17, 1990 regarding the DEIS for the subject project.

We appreciate your support for the project as a venue for preserving the Ewa Villages. The golf course, as you noted, is being planned to mitigate drainage problems and buffer impacts to the existing villages.

Your concern about infrastructure improvements, specifically the need for a new North-South arterial connecting the Ewa Beach/Ewa Marina area to the H-1 Freeway, has been noted. The North-South road is one of a range of potential improvements which will be evaluated in the Ewa Region Highway Transportation Master Plan, currently under preparation. As noted in the DEIS, the City belongs to the Working Group that is overseeing the preparation of the Highway Master Plan. As a member of the Working Group, the City is committed to supporting the development of the improvements identified in the Plan.

Your request to include more information regarding the Housing Program, Historic Resources and Traffic Systems has been taken under advisement. If available, more details on these elements of the master plan will be included in the EIS.

Your interest and participation in the planning stages of this project are appreciated.

Sincerely,

*Gaji Kaito*

MICHAEL N. SCARFONE  
Director

cc: Department of General Planning

# Friends for Ewa

P. O. Box 1356  
Ewa, Hawaii 96706

November 7, 1990

City and County of Honolulu  
Department of General Planning  
650 South King Street  
Honolulu, Hawaii 96813

Gentlemen,

We are pleased that the Department of Housing & Community Development of the City & County of Honolulu has recognized the unique cultural and historic significance of Ewa Plantation and made a commitment to a Master Plan theme of "restoration and revitalization of the Ewa Villages community". Ewa Plantation holds the promise of becoming Hawaii's first National Historic Landmark District. It is also home to almost three hundred plantation families with deep attachments to their rural heritage and lifestyle. The Ewa Villages Master Plan offers the DHCD a rare and pioneering opportunity to preserve a historic community while providing affordable housing opportunities for existing residents.

To successfully execute the design theme of restoration and revitalization, DHCD will need to explore and implement a new approach to community planning and design quite different from what has been applied to other planned communities. To successfully preserve the Ewa Plantation community will require even more than the historically appropriate preservation and rehabilitation of its buildings and rural landscape. It will require the preservation of the best characteristics of Ewa's historic plantation lifestyle - characteristics which are a major source of pride and cultural identity for the people of Ewa.

The Draft EIS for the proposed Master Plan initiates the analysis of many very complex issues. While the proposed Master Plan has made an ambitious start, there are many aspects of the proposed Master Plan objectives that, in our opinion, will work against the stated Master Plan theme of "restoration and revitalization". The DEIS shows a clear lack of in-depth analysis and coordination of project objectives and their means of execution. It is doubtful that community preservation can be achieved with the application of standard design policies and procedures.

Furthermore, while the DEIS introduction states that its purpose is to provide detailed planning information, there are numerous areas within the DEIS which show an inadequate scope of inquiry and offer insufficient data. Particularly disappointing sections of the DEIS are those on the Housing Program, Historic Resources and Traffic Systems. Not surprisingly, historic preservation is identified in Section 9 Summary of Unresolved Issues, and acknowledged as being perhaps the most complex project issue. What is surprising, is that the DEIS was issued without achieving a greater resolution of such a pivotal issue. Clearly, much work remains to be done. Friends for Ewa is unique among the consultant parties to the EIS in that its membership is made up of present and former residents and friends whose sole purpose is to promote the preservation of the Ewa Plantation Community. We are also fortunate in being supported by a Professional Resources Committee made up of qualified and well known preservation professionals. We offer you our combined assistance and cooperation in doing whatever is necessary to make our common dream come true - that the proud heritage of the plantation worker be saved for all of the people of Hawaii and of our nation through the preservation of the historic Ewa Plantation community.

*Eugene S. Martin*

Ms. Eugene Martin  
President, Friends For Ewa

cc. Mr. William Murtagh, Ph.D  
Mr. Leonard Hoshijo  
City Councilman John DeSoto  
State Rep. Annette Amal  
Congresswoman Patsy Mink  
Senator Daniel Akaka  
Senator Daniel Inouye  
Mr. James Charlton  
Mr. Barnes Riznik, Ph.D  
Mr. Don Hibbard, Ph.D  
Mr. Kiyoshi Ikeda, Ph.D  
Ms. Spencer Lienweber, AIA  
Mr. John Fowler  
Ms. Jane Ross  
Ms. Kathryn Burns  
Ms. Phyllis FOX  
OEQC  
Mr. Richard Beamer  
Ms. Claudia Nissley  
Ms. Joyce Wilson  
Mr. Chester Koga  
Mr. Michael Scarfone,  
Dir., DHCD

Eva Villages Master Plan  
Eva, Oahu, Hawaii  
Draft Environmental Impact Statement  
September 1990

Response from Friends For Eva

November 7, 1990

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I Planning Philosophy: Respecting Eva Plantation's Cultural Landscape

Eva plantation is unique among Hawaii's plantation communities for many reasons and its preservation will require careful coordination of all project needs.

Section "2.1 PROJECT OVERVIEW" identifies the Eva Villages Master Plan as a "restoration and revitalization project with the goal of providing home ownership opportunities to tenants that reside in the plantation villages of Renton, Tenny and Varona". The plan objectives, which include the preservation of Tenny and Renton Villages, are not prioritized. It is highly probable that if a high priority is not placed on preservation and special attention paid to the planning implications of the other stated objectives, many of these development objectives will be achieved at the expense of preservation of the community.

Eva Plantation's siting on the Eva Plain expresses a relationship between the raw, natural environment and a man-made rural agricultural community. The three elements - the town plan, the cane fields, the natural environment - are pieces of one whole. The preservation of all three is necessary to retain this relationship and is the reason so many of Eva's residents cannot imagine their community without its mountain views and fields of sugar cane.

Eva Plantation was one of the first planned towns on the island of Oahu. Basically, the Eva plantation town plan can be described as a series of camp/villages linked by pedestrian paths and Renton Road. Each village occupied a simply defined geographic area surrounded by either sugar cane fields or raw land. The pattern promoted harmonious living by establishing well defined neighborhoods, with their own boundaries and style of housing, that provided a heightened sense of territoriality and possession. The strong identity and level of privacy regulation afforded by each village's layout and narrow street widths further contribute to this. Even today, visitors to any village feel somewhat "on notice" that they are guests in someone else's neighborhood. Historically, growth on the plantation was accommodated by adding new villages (camps) separated from the others by canefields or open space. This allowed for growth but maintained community identity within each village and the plantation as a whole. Although the primary motivation for this planning philosophy may have been a desire to reinforce social stratification on the plantation, planners today can learn much from its other accomplishments.

The DEIS, in sections 2.1, 2.2.1, 2.2.1.2, 2.2.1.4.a, 4.2.7, 4.3.2.a, 6.3.1.4, states categorically that efforts will be made to preserve, restore and retain the historic rural character of the villages, yet elsewhere in Section 8 it is stated that the community's rural character will be altered to that of a planned urban development. This conflict will be difficult to reconcile without greater effort devoted to the prioritization of plan objectives, analysis of the proposed

proposed community center and district park because of their size and location. There is some fear that the new community center and district park will not be "for Eva folks" but will function more as regional facilities. Residents have expressed a preference that the proposed community center be a replacement of the original Tenney Center in its original location, design, and level of service. The original Tenney Center functioned as a combined community and recreation center for Eva Plantation residents and it is reasonable to expect that such a facility could be replaced. We recommend that plans be revised accordingly. If a larger, district oriented community center and district park are required for other area housing projects, they should be located outside of the Eva Villages project area, or on the fringe, with access planned so that any traffic generated would not impact Renton Road or the villages.

While the proposed Golf Course will function as a flood control mechanism and recreational amenity, its size, location and point of access leaves much to be desired. There is inadequate information presented to justify the necessity for an 18 hole versus a 9 hole course with respect to flood control, market-enhanced golf course homes, and community recreational needs. As one resident recently pointed out, "I don't play golf and none of my neighbors do!" Residents have also suggested that the proposed flood basin could just as easily be leased back to OSCo and planted with sugar cane instead of a golf course, without the maintenance expense of a "passive park". This would also satisfy residents who object to the destruction of prime sugar producing land. The Golf Course does have a relatively unique potential to effectively buffer the existing villages from new housing areas or villages, and we recommend that both the new housing and the golf course be laid out to this end. It is also recommended that passive recreational activities such as biking, jogging, and horse trails be integrated within the golf course design to enhance its enjoyment by Eva residents, whether they play golf or not.

Many members of FFE are against the removal of prime agricultural land for a golf course and propose that the proposed flood basin be allowed to stay in agricultural use if it can provide the needed flood control. We recognize that the enhanced market value of the golf course homes is desired by the DRCD to subsidize the rehabilitation of existing homes for Eva Plantation residents, but we request that alternative mechanisms of subsidizing the development be explored.

#### C. Commercial and Retail Facilities

Section "2.2.4 COMMERCIAL AND RETAIL FACILITIES" of the DEIS describes the proposed development of the Old Mill Marketplace and Eva Village Business Park. Their size and projected market are of particular concern to Eva Plantation residents. A district sized commercial development of this type will ultimately prove more beneficial to the surrounding communities, tourists, local developers, and local taxing authorities, than to the residents of Eva Plantation. The traffic and congestion attendant to developments of this scale

actions, and the development of more appropriate and sensitive planning principles and urban design methodology.

We propose that a reinvestigation of historically appropriate planning principles be undertaken.

#### II MASTER PLAN COMPONENTS

The specification of Master Plan Components forms the basis of the proposed Master Plan and is deserving of careful analysis prior to its being judged. The comments which follow are the result of exhaustive discussion between Friends For Eva members, its Board of Directors, and its Professional Resources Committee:

Section "2.2 MASTER PLAN COMPONENTS" restates the restoration and revitalization theme of the Eva Villages Master Plan. If the intent of the Plan is truly to revitalize the community, as stated, then the Plan components should be designed, and evaluated with this in mind. We have evaluated the Master Plan components in terms of how they contribute to the long term restoration and revitalization of the Eva Plantation community:

##### A. Residential Community

In section "2.2.1 RESIDENTIAL UNITS" the sheer number of residential units planned for the Eva Plantation community poses a great threat to its identity and survival. The number of planned housing units represents a 400% increase (1184 proposed/283 existing). This is clearly an overwhelming number of units to add to a small rural community and the social impacts of such an action could be grave. If the preservation of the character is to remain the major objective of the Master Plan, careful planning will be required.

In its present form, the Plan for the existing villages does not offer the degree of protection necessary to achieve the stated plan goal of restoration and revitalization. The restoration area currently proposed for Renton Village is a concept that should be applied to all three villages. No single village can be justified as being more important than any other - historically, culturally, or otherwise. Each village is an equally important piece of the whole.

##### B. Recreational Facilities

In section "2.2.3 RECREATIONAL FACILITIES" the District Park and Golf Course are described. While there is no doubt that all existing community facilities will continue to fulfill valued roles within the Eva Plantation community, the proposed addition of new community facilities requires further analysis in terms of how such facilities would meet the needs of the Eva Plantation residents. District sized facilities would most likely be of greater benefit to residents of surrounding areas than to existing Eva residents. Indeed, an overwhelming majority of existing residents have expressed resistance to the



Friends For Ewa

Response to EIS Preparation Notice  
West Loch Bluffs & Ewa Villages Master Plan  
Ewa, Oahu, Hawaii

June 28, 1998

The significance of the Ewa Villages is cultural, as well as historic, and is the result of a unique relationship between the built and natural environment initiated one hundred years ago. This unique relationship is Ewa's "cultural landscape", and includes its houses, community buildings, open spaces, lush vegetation, streetscape, scale, and vistas over the cane fields to the mountains. The preservation of this cultural landscape is our primary goal, and to this end, we submit the following comments:

Historic & Cultural Integrity

The definition of the project in Section 1.1 as a development and revitalization program states that the character and flavor of a plantation village will be created within the existing villages. We submit that the character and flavor of the existing villages does not need to be created, it already exists. Instead, it requires recognition, preservation, and maintenance. Furthermore, the design theme of new housing should be subordinate to, and compatible with, the existing housing.

Only three of the original Ewa Plantation Villages survive - Renton, Tenney, and Varona. These villages are part of a common history that is one hundred years old. Each village contributes individually, and as a group, to the cultural identity of the Plantation and the Master Plan should include provisions for rehabilitating all three.

As the natural environment is an important component of Ewa's cultural landscape, the planned study of flora and fauna outlined in Section 3.4 should include recommendations for retaining some of canefields and the significant views to the mountains. Coordination with the City Parks & Recreation Dept. is suggested.

Section 4.1 makes reference to an archaeological reconnaissance study to be conducted. Archaeological resources are not the primary component of Ewa's historic and cultural significance. A study of Ewa's historic resources should focus on its built environment and its relationship to the rural landscape. It should include a comprehensive survey of resources prior to the classification of any structure. We request that guidelines and review procedures be established prior to the designation of any structure for removal, relocation or demolition. Concurrently, guidelines should be formulated for rehabilitation and preservation.

New Development Within the Villages

Planned development densities for new housing within and around the Ewa Villages should be compatible with the existing character, scale, setbacks, building heights, and streetscape vocabulary. Existing vehicular and pedestrian circulation patterns within the Villages should be retained. While new roadways should be carefully planned and compatible with the volume of existing circulation.

Home Ownership & Funding

The issue of Home Ownership should be clarified and the process by which any individual would acquire property defined in detail.

We request that in accordance with Section 1.3, all funding sources for the projects be disclosed.

The Bluffs

The planned development of the Bluffs should be evaluated in terms of its impact on the historic Ewa Plantation Hospital and Honolulu town.

Impacts

Our estimation of the impact the project will have on the community is as follows;

- A. Disruption of the existing peace and tranquility in the Villages,
- B. Potential for destroying the cultural identity, built environment and fellowship of a 100 year old community,
- C. Loss of nationally significant historic site of the State of Hawaii

will disrupt community life and destroy the community's rural character. Insufficient information has been provided to support the need for a development of this scale. The tourism/visitor component of the Commercial Center is one of the most troubling aspects of the proposal. Residents have expressed a high degree of concern about how this Center will transform their community into a sort of "Eva Land" for the amusement of tourists.

In light of the strong community resistance to this proposed commercial center, we recommend that the scale of this development be reduced to no more than 25,000 SF of combined retail and office space, made up of businesses that will serve the Eva Plantation community, i.e. dry cleaner, grocery store, drug store, etc. The parking for the facility should be located below grade rather than in above ground parking structures.

### III Historic Preservation

#### A. Restoration/Rehabilitation Guidelines

In sections 2.2.1.1.b, 2.2.1.1.d, 2.2.1.2.a, 2.2.1.2.b, 2.2.2, 2.2.5, 2.4.2, 2.4.3, 6.2 and 6.8 of the DEIS, design guidelines and standards have been proposed to be the controlling element in the restoration and revitalization of Renton, Tenney and Varona Villages. The Land Use Ordinance of the City and County of Honolulu provides for the Special Design District (SDD) as the local mechanism to protect special areas and historic districts. The SDD is governed by guidelines written for each Special District which define the urban, architectural and landscape elements which are to be preserved and regulated.

On September 20, 1989, the Honolulu City Council adopted Resolution 89-147, which was introduced by Councilman John Desoto with the support of Friends for Eva. The resolution states that "Eva Plantation, Oahu provides a historical encounter with the rural residential setting, which is an integral part of Hawaii's history" and further requests "appropriate planning and design controls to guide development in a manner that will protect and enhance the physical and visual aspects" of the Plantation be studied. To date this has yet to be completed.

We submit that the DEIS as proposed is premature without these guidelines and that until this resolution has been fulfilled, no plan can be adequately evaluated. We further submit that it would be prudent on the part of DHCD to utilize the Secretary of the Interiors Standards for Rehabilitation (Exhibit A) until more specific local guidelines can be agreed upon. Nationally, the "Secretary of the Interior's STANDARDS FOR REHABILITATION" (SISR) are the accepted standards which define what is appropriate for the rehabilitation of historic properties.

#### B. Architectural Assessment

In Appendix D "Archaeological Resources Impact Assessment" prepared by Cultural Surveys Hawaii (CSH) section "B. Methods" states that the evaluation of existing structures at Eva is "outside of the sphere of our expertise". The DEIS as submitted is incomplete without this level of information and it is inexcusable that qualified consultants with documented expertise in the assessment of historic properties were not consulted. We recommend that this inadequacy be corrected immediately. Advice as to qualified consultants can be easily obtained from organizations such as Historic Hawaii Foundation, which has a Professional Resources Directory for this purpose. The proper documentation of any property deemed eligible for national historic designation is absolutely essential prior to any alteration of said property.

#### C. District Boundaries

In 1966 the National Preservation Act included districts as one of the entities which should be identified and added to the National Register of Historic Places. A historic district is a geographically definable area containing sites or structures which establish a continuity of people, places and events to the past which contribute to the history and heritage of the region, state or nation. Eva Plantation meets this criteria, which is why it is presently under consideration as a National Historic Landmark.

Thus, the definition of a historic district's boundaries should be appropriate to its history and significance. The district boundaries should be defined by the historic geographic region occupied presently or in the past by structures, people or events. Given this, the concept for the Renton Restoration area should be expanded to include all villages, Renton Road, and enough of the surrounding rural environment necessary to preserve its rural context.

#### D. Construction, Restoration & Rehabilitation

The DEIS provides that development will be of three types: restoration & relocation, rehabilitation, and new construction/infill.

Restoration/Rehabilitation should follow the SISR guidelines and respect existing land use patterns for setback, height, scale, streetscape, landscaping and sight lines.

Restoration/relocation is not an appropriate mechanism by which to preserve a historic district. District boundaries and original structures within an area should not be moved to create a new and improved character. The original character and composition of each village must be respected for preservation to be successful. This means retaining original buildings in place.

a larger rural community. Upon entering each village, privacy regulation is what defines the interaction of people, either establishing formal or informal means of approach. The DEIS makes no reference to this type of analysis and consequently does not include any provision for its retention and enhancement. FFE request that this be specifically addressed and planned for with drawings and physical models showing the proposed streetscape of each village.

#### IV Traffic, Noise, Air Quality

The traffic design for each of the Master Plan components will have a profound effect on the success of the restoration and revitalization of the Eva Plantation community. In general, the proposed layout of and vehicular access for the new housing areas, the Community Center, the District Park, the Golf Course, the Old Mill Marketplace and the Business Park, will act to diminish the peace, tranquility and level of privacy regulation currently enjoyed by Eva residents within and around their existing villages. Renton Road, currently functioning as a small town "Main Street" for Eva Plantation residents, will suffer the most from the proposed Plan. We offer the following recommendations:

##### 1. New Housing Areas

Vehicular access to new housing areas should not be routed through existing villages. Mango Tree Road has the potential for handling the majority, if not all, of the vehicular traffic for and access to the new housing areas. While Mango Tree Road currently functions as a cane haul road, it could, in its proposed location, be designed to carry public traffic as well.

The main entrance to the Multifamily Housing area should be relocated to the Future East-West Road.

The Golf Course approach and entrance should be relocated to Mango Tree Road so that golfers will not have to circulate through Renton Road and Tenney and Renton Villages.

##### 2. Golf Course

A recreational amenity of this size and use will generate a sufficient amount of traffic to disrupt the peace and tranquility of the present villages. The proposed location for the golf course/clubhouse entrance and parking facilities is a poor choice because it will bring all of this traffic through Renton road and between Renton and Tenney Villages.

##### 3. Community Center/District Park

Consolidate the Eva Plantation community needs for community and recreational facilities into a smaller multi-purpose center, like the original Tenney Center. This consolidation, in combination with a more centralized location, will go a long way towards reducing the amount of traffic generated on Renton Road. If a District Park is necessary to serve adjacent

Existing vacant lots within each village should be in-filled with new construction that replicates the exterior design, construction, and scale of existing homes within that particular village, not with homes relocated from other villages. The proposal to relocate existing homes from Tenney to use as infill in Renton would not only be more expensive than rehabilitating them in place, but it would create a false and contrived appearance. For the same reason, new lots should not be added to the existing village layout. Instead, the proposed new housing units should be located in new villages separated from the original plantation villages, in the same manner they would have been added historically. This recommendation is not made solely to fulfill historic preservation objectives, but will also work towards minimizing the loss of community identity and solidarity among the existing residents. This is a tried and true planning strategy.

The design of new construction/infill should carefully replicate the significant architectural features and materials of the original structures.

In addition, no existing buildings, residential or other, should be offered for sale or lease to any individual or organization without the attachment of legal covenants and/or easements that would ensure their rehabilitation in accordance with accepted preservation standards. All rehabilitation work performed prior to resale or lease should be done in accordance with the Secretary of the Interior Standards for Rehabilitation.

The DEIS does not provide adequate explanation of its usage of the terms "restoration" and "rehabilitation". FFE requests clarification of this terminology and the provision of graphic. Detailed construction drawings should be provided for review prior to the commitment to any one design proposal for infill housing.

##### E. Rural Landscape

The landscape in and around the plantation is mature and provides warm sense of a community with its roots in the land. The DEIS indicates that due to the moving of houses and establishment of roadways, some of the landscaping may need to be moved or replaced.

FFE requests that a landscape plan be provided which would clearly identify all new and proposed landscaping and that all relocation be approved by the community prior to the work.

##### F. Streetscape

The streetscape of the plantation provides a sense of place and character for the resident and visitor alike. This identity is defined by its density, scale of structures, height, setbacks and landscaping, which also act to establish privacy regulation. Ultimately, it is this sense of privacy regulation that allows each village its own identity within the context of

subdivisions, alternative locations should be explored that will not generate increased traffic to or through Renton Road.  
4. Old Mill Marketplace/Business Park

The size of the Old Mill Marketplace and the Business Park should be reduced to serve immediate community needs only - not to serve district commercial needs. A significant reduction in square footage is the most effective means of reducing the traffic that will be generated by added commercial activity. In addition, the entrance to this commercial center should be relocated from Renton Road to the Future East-West Road.

Propose an alternative to the use of Renton Road as a major traffic artery.

Explore alternatives to the proposed routing for the Future East-West Road. The proposed routing is objectionable because it bisects the plantation, separating Varona Village from the rest of the community.

#### V INFRASTRUCTURE

The proposed infrastructure is easily the most significant element that could destroy the community's rural character. FFE recognizes the need for these improvements, but is understandably skeptical that such improvements can be made without results similar to those at Fernandez Village. We recommend that all new infrastructure improvements be placed underground, that sidewalks not be placed in the villages, curbing not be put in and drainage systems be hidden from view. Our priority is that such improvements have little visual impact on the existing streetscape. The DEIS states that these improvements will be installed according to the standards of the City and County of Honolulu. It is likely that these standards may not meet our objectives. We recommend that more detailed information concerning these proposed improvements and their potential visual and functional effects on the environment be provided prior to further development of these plans. Once again, if Eva Plantation is special, some standards may be inappropriate to the retainage of its historic rural character.

#### VI. ECONOMICS

FFE requests more specific information on the amount of revenues to be generated from the sale of market priced homes and how they will be used to subsidize the rehabilitation of existing homes. Is this subsidy a gift such as a grant-in-aid or will the funds be extracted back as the rehabilitated homes are sold to residents? The DHCD should explore other mechanisms to enhance affordability such as life tenancy and shared equity. The feasibility of rehabilitating existing homes should not be determined solely in terms of economics.

#### VII IMPLEMENTATION

FFE is concerned about DHCD's current methods for gathering community input through the formation of small committees which have a very limited scope of review. The need for direct input from the community about themes, density, scale, infrastructure and architectural elements is paramount to a successful solution. Input from surrounding communities is necessary, but it is the 300 families in the Eva Plantation community that are most directly affected by the proposal. The current DHCD proposal to conduct a community survey jointly with the ILMU and FFE is a good one, only if the survey is conducted under the direction and supervision of a professional survey consultant. The survey consultant should be hired by the DHCD to direct, supervise, and ensure the accuracy and consistency of all stages of the survey work: survey formulation, execution, tabulation and interpretation. It will be necessary for the professional surveyor to work directly with the ILMU and FFE to coordinate implementation efforts, particularly during the door-to-door execution of the survey.

The response prepared by FFE for the EIS Preparation Notice (EISP) was not published in this draft and no explanation of this deletion has been provided by DHCD. A verbal complaint has been made to the Office of Environmental Quality Control by FFE concerning this procedural irregularity. We are hopeful that this DEIS response will be more carefully received and given voice our concern over the hiring of project consultants who have little or no experience in the area of historic preservation. The selection of consultants with expertise in historic preservation is crucial to the successful development of a nationally significant historic site.

FFE requests additional information concerning the proposed implementation of the Housing Program. We recommend that tenants who do not wish to remain in their homes be given the opportunity to relocate to new or existing homes elsewhere in the project, but that their rejected home not be moved, with or without them, to another area. The rejected home should be rehabilitated in place, in conformance with the Secretary of the Interior Guidelines for Rehabilitation, and resold or leased with protective covenants and/or easements attached.

The use of Varona as a relocation resource is problematic. Not enough homes in Varona are vacant to provide space for all the potential residents of Tenney and Renton houses during their rehabilitation. We believe that the short and long term relocation impacts have been underestimated - particularly for older residents.

The project phasing for the development is of great concern. Families forced to live on a construction site for a 24 month period could suffer greatly. The DEIS provides no information on this. FFE request a full and detailed project schedule indicating phasing and construction time frames for the entire project.

# CORRECTION

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

subdivisions, alternative locations should be explored that will not generate increased traffic to or through Renton Road.  
4. Old Mill Marketplace/Business Park

The size of the Old Mill Marketplace and the Business Park should be reduced to serve immediate community needs only - not to serve district commercial needs. A significant reduction in square footage is the most effective means of reducing the traffic that will be generated by added commercial activity. In addition, the entrance to this commercial center should be relocated from Renton Road to the Future East-West Road.

Propose an alternative to the use of Renton Road as a major traffic artery.

Explore alternatives to the proposed routing for the Future East-West Road. The proposed routing is objectionable because it bisects the plantation, separating Varona Village from the rest of the community.

#### V INFRASTRUCTURE

The proposed infrastructure is easily the most significant element that could destroy the community's rural character. FFE recognizes the need for these improvements, but is understandably skeptical that such improvements can be made without results similar to those at Fernandez Village. We recommend that all new infrastructure improvements be placed underground, that sidewalks not be placed in the villages, curbing not be put in and drainage systems be hidden from view. Our priority is that such improvements have little visual impact on the existing streetscape. The DEIS states that these improvements will be installed according to the standards of the City and County of Honolulu. It is likely that these standards may not meet our objectives. We recommend that more detailed information concerning these proposed improvements and their potential visual and functional effects on the environment be provided prior to further development of these plans. Once again, if Eva Plantation is special, some standards may be inappropriate to the retainage of its historic rural character.

#### VI. ECONOMICS

FFE requests more specific information on the amount of revenues to be generated from the sale of market priced homes and how they will be used to subsidize the rehabilitation of existing homes. Is this subsidy a gift such as a grant-in-aid or will the funds be extracted back as the rehabilitated homes are sold to residents? The DHCD should explore other mechanisms to enhance affordability such as life tenancy and shared equity. The feasibility of rehabilitating existing homes should not be determined solely in terms of economics.

#### VII IMPLEMENTATION

FFE is concerned about DHCD's current methods for gathering community input through the formation of small committees which have a very limited scope of review. The need for direct input from the community about themes, density, scale, infrastructure and architectural elements is paramount to a successful solution. Input from surrounding communities is necessary, but it is the 300 families in the Eva Plantation community that are most directly affected by the proposal. The current DHCD proposal to conduct a community survey jointly with the ILWU and FFE is a good one, only if the survey is conducted under the direction and supervision of a professional survey consultant. The survey consultant should be hired by the DHCD to direct, supervise, and ensure the accuracy and consistency of all stages of the survey work: survey formulation, execution, tabulation and interpretation. It will be necessary for the professional surveyor to work directly with the ILWU and FFE to coordinate implementation efforts, particularly during the door-to-door execution of the survey.

The response prepared by FFE for the EIS Preparation Notice (EISPN) was not published in this draft and no explanation of this delation has been provided by DHCD. A verbal complaint has been made to the Office of Environmental Quality Control by FFE concerning this procedural irregularity. We are hopeful that this DEIS response will be more carefully received and given the consideration we feel it deserves. We will also continue to voice our concern over the hiring of project consultants who have little or no experience in the area of historic preservation. The selection of consultants with expertise in historic preservation is crucial to the successful development of a nationally significant historic site.

FFE requests additional information concerning the proposed implementation of the Housing Program. We recommend that tenants who do not wish to remain in their homes be given the opportunity to relocate to new or existing homes elsewhere in the project, but that their rejected home not be moved, with or without them, to another area. The rejected home should be rehabilitated in place, in conformance with the Secretary of the Interior Guidelines for Rehabilitation, and resold or leased with protective covenants and/or easements attached.

The use of Varona as a relocation resource is problematic. Not enough homes in Varona are vacant to provide space for all the potential residents of Tenney and Renton houses during their rehabilitation. We believe that the short and long term relocation impacts have been underestimated - particularly for older residents.

The project phasing for the development is of great concern. Families forced to live on a construction site for a 24 month period could suffer greatly. The DEIS provides no information on this. FFE request a full and detailed project schedule indicating phasing and construction time frames for the entire project.

FFE once again offers our assistance in bringing together our community membership of Eva Plantation residents, our Board of Directors, and our Professional Resource Committee to work directly and cooperatively with DHCD in formulating the Master Plan.

EXHIBITS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

THE SECRETARY OF THE INTERIOR'S STANDARDS FOR REHABILITATION

The Standards for Rehabilitation are as follows:

1. Every reasonable effort shall be made to provide a compatible use for a property which requires minimal alteration of the building, structure, or site and its environment, or to use a property for its originally intended purpose.
2. The distinguishing original qualities or character of a building, structure, or site and its environment shall not be destroyed. The removal or alteration of any historic material or distinctive architectural features should be avoided when possible.
3. All buildings, structures, and sites shall be recognized as products of their own time. Alterations that have no historical basis and which seek to create an earlier appearance shall be discouraged.
4. Changes which may have taken place in the course of time are evidence of the history and development of a building, structure, or site and its environment. These changes may have acquired significance in their own right, and this significance shall be recognized and respected.
5. Distinctive stylistic features or examples of skilled craftsmanship which characterize a building, structure, or site shall be treated with sensitivity.
6. Deteriorated architectural features shall be repaired rather than replaced, wherever possible. In the event replacement is necessary, the new material should match the material being replaced in composition, design, color, texture, and other visual qualities. Repair or replacement of missing architectural features should be based on accurate duplications of features, substantiated by historic, physical, or pictorial evidence rather than on conjectural designs or the availability of different architectural elements from other buildings or structures.
7. The surface cleaning of structures shall be undertaken with the gentlest means possible. Sandblasting and other cleaning methods that will damage the historic building materials shall not be undertaken.
8. Every reasonable effort shall be made to protect and preserve archeological resources affected by, or adjacent to any project.
9. Contemporary design for alterations and additions to existing properties shall not be discouraged when such alterations and additions do not destroy significant historical, architectural or cultural material, and such design is compatible with the size, scale, color, material, and character of the property, neighborhood or environment.
10. Wherever possible, new additions or alterations to structures shall be done in such a manner that if such additions or alterations were to be removed in the future, the essential form and integrity of the structure would be unimpaired.



JOHN DESOTO  
VICE CHAIR

September 25, 1989

CITY COUNCIL  
CITY AND COUNTY OF HONOLULU  
HONOLULU, HAWAII 96813 / TELEPHONE 523-4000

This letter is to inform you that on September 20, 1989 Resolution 89-347 has been adopted by the City Council on Honolulu. This resolution is in regard to the Special Design District in Ewa.

The resolution requests a study by The Department of Land Utilization of the feasibility of establishing a Special Design District for the Ewa Villages. It also requests the organization of an Ewa Plantation Advisory Committee to assist with the study.

I would like to thank those of you who were available to attend the meeting and offer testimony in support of Resolution 89-347.

If you need further information on this item or any other City matter, please do not hesitate to call my office at 523-4742.

John Desoto

John Desoto  
Vice-Chair  
Councilman IX District

JD:dkm



REPORT OF THE COMMITTEE ON ZONING

Dona Mercado LL, Chair; Jobe DeSoto, Vice-Chair  
Leigh-Ann Doo, John Henry Feller, Gary Gill, Members

Committee Meeting Held  
September 12, 1989

Honorable Arnold Morgado, Jr.  
Chair, City Council  
City and County of Honolulu

Mr. Chair:

Your Committee on Zoning to which was referred  
Resolution 89-347 entitled:

"RESOLUTION REQUESTING THE DEPARTMENT OF LAND UTILIZATION  
STUDY THE FEASIBILITY OF AMENDING ARTICLE 7 OF CHAPTER 21A  
OF THE REVISED ORDINANCES OF HONOLULU, OTHERWISE KNOWN AS  
THE LAND USE ORDINANCE, REGARDING SPECIAL DISTRICT  
REGULATIONS."

which was introduced July 24, 1989, reports as follows:

The purpose of Resolution 89-347 is to request a study by  
the Department of Land Utilization (DLU) of the feasibility of  
establishing an Ewa Plantation Special District by amending the  
Land Use Ordinance. DLU is requested to organize an Ewa  
Plantation Advisory Committee to assist with the study. The  
report should provide recommendations as to possible objectives,  
district boundaries, significant public views and resources, and  
design controls for the proposed district. A summary of the  
status of planning for future development of the Ewa Villages is  
requested, along with any additional studies that should be  
undertaken. The report, including findings, recommendations, and  
proposed legislation, is to be submitted to Council within three  
months.

Your Committee finds that Campbell Estate should be included  
as a member of the Ewa Plantation Advisory Committee.  
Resolution 89-347, CD-1 adds Campbell Estate to the list of  
participants.

ADOPTED ON \_\_\_\_\_

COMMITTEE REPORT NO. 496

CITY COUNCIL  
CITY AND COUNTY OF HONOLULU  
HONOLULU, HAWAII

CITY COUNCIL  
CITY AND COUNTY OF HONOLULU  
HONOLULU, HAWAII

No. 89-347  
CD-1

RESOLUTION

REQUESTING THE DEPARTMENT OF LAND UTILIZATION STUDY THE  
FEASIBILITY OF AMENDING ARTICLE 7 OF CHAPTER 21A OF THE REVISED  
ORDINANCES OF HONOLULU, OTHERWISE KNOWN AS THE LAND USE  
ORDINANCE, REGARDING SPECIAL DISTRICT REGULATIONS.

WHEREAS, the City Council finds that the Ewa Plantation  
Villages, Oahu provide a historical encounter with a rural  
residential setting, which is an integral part of Hawaii's  
history; and

WHEREAS, the Council finds that it is necessary to preserve,  
protect, and enhance Ewa's plantation era character; and

WHEREAS, the Council recognizes that Ewa Plantation was  
established in August 1890 and will mark its 100th anniversary  
in 1990; and

WHEREAS, the Council also finds that projected population  
growth and long-range development plans for the Ewa plains  
are likely to significantly affect the historic character of that  
area and the nature of its communities; and

WHEREAS, the Council further finds that the Ewa Plantation  
Villages are in need of restoration, preservation, redevelopment,  
and rejuvenation; and

WHEREAS, the Council is concerned that without appropriate  
planning and design controls to guide development in a manner  
that will protect and enhance the physical and visual aspects of  
the area for the benefit of the community as a whole, development  
may take place that is not sensitive to the historic atmosphere  
and architectural integrity of the Villages, as well as the  
strong sense of community among present and former residents;  
now, therefore,

BE IT RESOLVED by the Council of the City and County of  
Honolulu that the Department of Land Utilization, working in  
conjunction with the Department of General Planning, the  
Department of Housing and Community Development, the Department  
of Parks and Recreation, and any other appropriate City, State,  
or Federal agency, is requested to study the feasibility of an  
amendment to Article 7 of Chapter 21A of the Revised Ordinances  
of Honolulu, known as the Land Use Ordinance, to establish an Ewa  
Plantation Special District; and

Attachment to ZCR 496

**RESOLUTION**

BE IT FINALLY RESOLVED that the Clerk be, and he is hereby directed to transmit copies of this resolution to the Director of Land Utilization, the Chief Planning Officer, the Director of Housing and Community Development, the Director of Parks and Recreation, the Mayor and the Managing Director of the City and County of Honolulu.

INTRODUCED BY:

*Gene Powell*

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Councilmembers

DATE OF INTRODUCTION:

Honolulu, Hawaii

(OCS/071289/ec)

Mr. Michael Scarfone  
Director, Dept. of Housing & Community Development  
City & County of Honolulu  
658 S. King Street, 5th Floor  
Honolulu, HI 96813

Subject: Response to EIS Preparation Notice,  
West Loch Bluffs & Ewa Villages Master Plan,  
Ewa, Oahu, Hawaii

Dear Mr. Scarfone,

We are pleased to provide the attached comments regarding the planned EIS draft for the West Loch Bluffs & Ewa Villages Master Plan. Our comments are primarily focused on the proposed scope of the EIS and its coverage of the issues of greatest concern to us.

The goal of Friends For Ewa, as a community organization of present and former residents and friends, is to promote the rehabilitation and preservation of the Ewa Villages as a significant historic and cultural resource by pursuing resident ownership and implementing protective measures to maintain their historic integrity and character. We welcome the City's assistance in the achievement of these goals and hope that through working together, they can be realized in the proposed Ewa Villages Revitalization & Restoration Plan.

Sincerely,  
Emogene Martin,  
President, Friends For Ewa

**CITY COUNCIL**  
CITY AND COUNTY OF HONOLULU  
HONOLULU, HAWAII

I hereby certify that the foregoing RESOLUTION was adopted by the COUNCIL OF THE CITY AND COUNTY OF HONOLULU on the date and by the vote indicated to the right.

ATTEST:

RAYMOND K. PUA  
CITY CLERK

ARNOLD MORGADO, JR.  
CHAIR AND PRESIDENT

Dated

ADOPTED MEETING HELD		DATE	PLACE
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DATE			
DO			
FAIR			
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EXAMINE			
FILE			
NUMBER			
NUMBER			

Reference:  
Report No.

Resolution No.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
**CITY AND COUNTY OF HONOLULU**

850 SOUTH KING STREET, 21st FLOOR  
HONOLULU, HAWAII 96813  
PHONE 122-4427 • FAX 327-3496



FRANKY PAI  
DIRECTOR

MICHAEL R. SCARFONE  
DIRECTOR  
GAIL M. KAITO  
SUPERVISOR

Ms. Emogene Martin, President

-2-

January 24, 1991

2. Master Plan Components

A. Residential Community. We recognize your concerns regarding the social impacts resulting from the proposed increase in housing units. However, the high costs of the proposed revitalization activities require that the number of dwelling units be increased in order to maintain housing prices at affordable levels. Efforts will be made, nonetheless, to design the project to minimize negative social impacts and protect the historic character of the community. Your suggestion to include all three villages in the proposed rehabilitation area has been taken under advisement.

B. Recreational Facilities. The recreational facilities being proposed for the area, namely, the golf course and district park, will be planned as regional facilities. We can appreciate your desire to keep the facilities planned for the area small, however, we believe that the district park will be an overall asset to the community. It is our understanding that the old Tenney Center did function as a regional facility with its gymnasium, swimming pool and lighted ball field. We have taken note of your request to consider other means of subsidizing the affordable housing through the development of a golf course. The City did examine alternatives and determined that a golf course will function as a recreation amenity and flood control measure as well as a means of adding value to adjacent housing. Other alternative plans that were evaluated did not perform all three functions. Keeping the flood control area as a passive park was not deemed a viable alternative because of the maintenance cost associated with such a facility. Further, the cost of the land will need to be distributed to the potential home buyers in the villages. This extra financial burden, we believe, may make homeownership much more expensive and contrary to our goal of providing affordable housing. The same would be true if the land was kept in agriculture. Your request to include bicycle, jogging and horse trails within the golf course complex has been taken under advisement.

C. Commercial and Retail Facilities. The commercial and retail facilities will be down-scaled by approximately 30 percent to approximately 140,000 square feet. We believe the space being provided will be utilized by some of the existing mill tenants and will attract new businesses. This infusion of new activity will contribute to the revitalization of the villages. Your concerns regarding the negative social impacts resulting from the proposed development of a visitors' center within the commercial center have been noted.

3. Historic Preservation

A. Restoration/Rehabilitation Guidelines. Your concern that the Master Plan cannot be adequately evaluated until the guidelines of the forthcoming Ewa Special district are set forth has been noted. For your information, the technical study that will provide the basis for the Special District regulation is underway. It is in too early a stage for specific guidelines to have been outlined for inclusion in the DEIS. Nevertheless, be assured that every effort will be made to ensure that the visual and historic aspects of the villages are

Ms. Emogene Martin, President  
Friends for Ewa  
P.O. Box 1356  
Ewa, Hawaii 96706

Dear Ms. Martin:

SUBJECT: Ewa Villages Master Plan  
Draft Environmental Impact Statement (DEIS)

This letter acknowledges the receipt of your letter, dated November 7, 1990, regarding the subject project.

The City is committed to the objectives of providing homeownership opportunities to the residents of the Ewa Villages and preserving the historic aspects of the Ewa Villages. We believe that both objectives can be met through our planning process. The comments regarding the issue of historic preservation, which we have received from various segments of the community, including your organization, have indicated strong support for the preservation of the villages and as we are able, we will incorporate the suggestions you have made. While we may disagree on specific issues, our overall goals are mutual and can be achieved.

The following addresses the specific concerns you have raised.

1. Planning Philosophy

The plan for the Ewa Villages has been evolving since its initial inception and efforts are being made to address your concerns. We are proposing to preserve the existing villages in their present configuration by providing specifically for the in-filling of empty lots with new homes that are compatible, if not identical, to neighboring homes. New housing will be built in "new villages" that are separated from other existing villages by buffers and/or open spaces. These buffers may take the form of landscaped open space.

protected. As stated in the DEIS, we will be establishing guidelines for the rehabilitation of the villages that will be structured in three primary components. The first component will consist of deed restrictions that will be contained in the documents for the sale of each home. The second will be a set of covenants, conditions and restrictions that will establish community design standards and must be adopted by the homeowners association. The third will implement governmental regulations (via the forthcoming special district ordinance). As suggested by your organization, we will use the Secretary of the Interior's "Standards for Rehabilitation" until specific local guidelines can be adopted.

**B. Architectural Assessment.** We are in the process of setting the framework for the assessment of the existing buildings in the Ewa Villages. A team of consultants, including a preservationist and a builder specializing in historic preservation, has been retained to conduct this assessment.

**C. District Boundaries.** We are in the process of delineating the boundaries for the Ewa special district. Your organization will be consulted prior to the finalization of the boundaries. Your recommendation to include all of the Ewa Villages and enough of the surrounding lands to preserve the rural context of the community has been taken under advisement.

**D. Construction, Restoration and Rehabilitation.** We fully intend to utilize the Secretary of the Interior's Standards for Rehabilitation as we proceed with this project. New in-fill housing will be compatible, if not identical, to adjacent housing stock in terms of architectural and landscape design. The deed restrictions, covenants, conditions and restrictions and the special district regulations discussed previously with respect to historic preservation guidelines will provide for the appropriate legal means to ensure preservation of the homes.

**E. Rural Landscaping.** A landscaping plan will be developed for the project area. It should be noted that we are not contemplating the wholesale change to the existing landscape of the villages, nor are we contemplating the removal of any trees, unless public health and safety are threatened.

**F. Streetscape.** We have noted your concern that the DEIS fails to analyze the distinct identity maintained by each Village through its streetscape. Analyses of streetscapes will be a part of the technical study being prepared in conjunction with the special district evaluation. However, we do plan to retain the basic pattern, scale and relationship between homes, the street and users. The single change to the streetscape will be the lowering of the road grade to facilitate drainage in the villages. The basic width and character (tree lined but no sidewalks) of the villages will be retained by locating all utilities underground unless this proves to be infeasible. Further, lot sizes will not be affected. The plans for the villages will include a number of conditions, covenants and restrictions that will control the types of actions individuals can take with regard to his/her property. In order to implement

these controls, specific guidelines may be developed for each village.

**4. Traffic, Noise, Air Quality**

**A. New Housing Areas.** To the extent possible, traffic generated from the "new villages" will be routed away from the existing villages.

**B. Golf Course.** The traffic generated by the golf course is one of the unavoidable impacts of this project. At this juncture, to route the golf course road away from the villages would create a financial burden that would be unacceptable. To the extent possible, we will provide landscaped roadway setback to minimize the disruption to residential areas.

**C. Community Center/District Park.** We believe that the community center and district park should be located along Renton Road. Placing the community center-recreation facility within the residential area would be counter-productive because it would require users to drive into the residential areas. The community center that is being proposed will be smaller than the former Tenny Center. The site selected for the center was chosen because it is located on Renton Road and is convenient to vehicular traffic.

**D. Old Mill Marketplace/Business Park.** Similar to the location of the recreation facilities, it is necessary to locate the marketplace in a visible area. The traffic generated by the marketplace and business park is not fully a function of the amount of floor area allocated to it. We will attempt to create an environment that will have a blend of activities that will complement the lifestyle of the community. We have examined the provision of an alternative route to the business park from the proposed East-West Road and have decided against this action because we would be placing two intersections within close proximity to each other and this would be inappropriate in terms of sound highway engineering. In this regard we have modified our plan to maintain the current alignment of Renton Road between Tenny Village and Varona Villages. An alternative to Renton Road serving as a major collector has been considered and is reflected in the plans of the Campbell Estate. The principal alternative that is being considered is the upgrading of Mango Tree Road serving as a major arterial.

**5. Infrastructure**

The proposed utility upgrades will be designed to meet City standards for health and safety. Where public health and safety will not be compromised we will modify the standards to preserve the existing character of the villages. We are currently planning to place all utilities underground unless it proves to be financially infeasible.

6. Economics

The final sales prices for both the existing and new homes have yet to be determined. However, the new and existing affordable homes will be sold according to guidelines established for other affordable housing projects sponsored by the City. The market homes will be priced according to the market at the time of sales. The basic financing scheme that is being proposed is that the profits from the sale of the market unit lots will be used to reduce the cost of the affordable lots. The basic lot cost includes the land, utility upgrades, roadway upgrades, and a proportionate contribution to community amenities such as landscaping. The cost of the home and its rehabilitation is not included in the lot cost. Therefore, revenues from the sales of market units will not be used to subsidize rehabilitation activities. For households acquiring lots with existing units, the City will provide low interest loans for the rehabilitation of the homes. There will continue to be rental units available for those who cannot or do not wish to purchase homes. Rents will be affordable but nowhere near the levels currently enjoyed by village residents. The feasibility of promoting housing affordability through alternative programs such as life tenancy and shared equity is currently being explored.

7. Implementation

Community input is the cornerstone of our planning efforts and we have provided a number of avenues for individuals and organizations to contribute to this process, ranging from one-on-one meetings to large community gatherings. The community survey, planned with the assistance of the ILWU, Dr. Ikeda and your organization, is only one of the means that we will be using to gain knowledge of the community. This survey is not all-inclusive, but rather a means to acquire additional information.

The housing program will be developed through an iterative process. Once we have confirmed the number of persons wishing to purchase and/or continue to rent, we will be able to determine how to specifically accommodate each family. Please be assured that we are not planning to move homes except on a last resort basis. Existing homes will be rehabilitated in place.

The use of Varona as a relocation resource has been reconsidered in that Varona will be revitalized like Renton and Tenney. The rehabilitation work on Varona will be started after the work on Renton and Tenney have been completed. We recognize that residents will be inconvenienced during the construction phases of the project, however to the extent possible, we will try to minimize their inconveniences.

Again, we apologize for not including your comments on the preparation notice in the DEIS. A number of letters commenting on the EIS Preparation Notice, including the letter from your organization was inadvertently overlooked during the preparation of the DEIS. A replacement Chapter for the DEIS was issued on December 28, 1990. The new chapter

contains copies of the complete set of comment letters and the Department's responses to them.

We appreciate your thoughtful comments and your taking the time to comment on this most important project.

Very Truly Yours,  
*Michael Scarfone*  
Michael Scarfone, Director

cc: Department of General Planning



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## APPENDICES

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*Biological Survey Report - APPENDIX A*

*Noise Quality Impact Assessment - APPENDIX B*

*Air Quality Impact Assessment - APPENDIX C*

*Archaeological Resources Impact Assessment - APPENDIX D*

*Market Assessment - APPENDIX E*

*Agricultural Resources Impact Assessment - APPENDIX F*

*Traffic Impact Assessment - APPENDIX G*

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APPENDIX A  
BIOLOGICAL SURVEY REPORT  
Evangeline J. Funk, Ph.D

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BIOLOGICAL RESOURCES SURVEY REPORT FOR EWA VILLAGES DEVELOPMENT

For

R. H. Towill Corporation  
420 Waialalo Road - Suite 411  
Honolulu, Hawaii 96817-4941

by

Evangelina J. Funk Ph.D.  
Botanical Consultants  
P.O. Box 90765  
Honolulu, Hawaii 96835



#### INTRODUCTION

A botanical survey of the proposed Eva Villages development site was undertaken in April, 1990. The purpose of the survey of this 470 acre site was to collect data for the preparation of a species list; to describe the vegetation of the area; and to ascertain if any proposed or listed, threatened or endangered plants are growing on the property (USFWS 1989).

#### METHODS

The walk-through method was used during the data collection phase of the survey. All parts of the site were examined except the interior sections of the sugar cane fields.

#### BOTANICAL HISTORY

In 1971 the first environmental impact statement for a site in the Eva District was submitted to the City and County of Honolulu Planning Commission by the Hawaii Housing Authority (HHA 1971). It was for a project known as Ewalani Village. It appears, that at that time, no information on either the flora or fauna of the study site was required because none was included. It wasn't until 1976 that an environmental impact statement for a project in the Eva area included reports and observations of environmental specialists who had been engaged especially to inventory the natural resources of the project site. The pioneer work was commissioned by the U. S. Army Corps of Engineers and carried out by Derral Herbst (Herbst 1976). Dr. Herbst's report alerted the community to the presence of endangered plant species in the area. This pioneer work is still consulted by naturalists interested in the flora of the Eva Plains.

Since 1976, more than twenty-eight environmental impact statements for projects in the area have been prepared and are on file at the Environmental

Center of the University of Hawaii. In spite of this large body of biological information, nothing has been published on either the botany or birds of the area under consideration herein.

#### ENDANGERED SPECIES

The endangered species found by Herbst in 1976 were *Achyranthes splendens* var. *rotundata* HBK and *Euphorbia skottsbergii* var. *kaiekoana* Sharff (USFWS 1989). These are listed endangered species. They have been reported from Barber's Point Naval Air Station and near the Deep Draft Harbor (Herbst 1976, Funk 1984). No proposed or listed, threatened or endangered species were found on the proposed Eva Villages site.

#### RESULTS

Three vegetation types can be found in the study area (Figure 1). They are Village and House Sites, Ruderal Fields, Sugar Cane Fields, and in parts of the site, there are now some fallow fields. None of these vegetation types contained endemic (native only to Hawaii), or indigenous (native to Hawaii and other places) plant species in great numbers. In fact, the only indigenous taxa found were *Pa'u-o-hi-i-'aka* (*Jacquemontia sandwicensis* Gray) and *Alena* (*Boerhavia diffusa* L.) along with one Polynesian introduction, *Kukul* (*Aleurites moluccana* Willd.). All are quite common in the Ruderal Vegetation makai of Renton Road.

A Village and House Sites (Figure 2). In and around the village of Eva there are many vacant lots where the houses have been destroyed either by fire or termites or old age. In these areas, dense plant communities have developed. These communities are composed of landscape plants that have gone wild and weed species. One such plant is a sapling sandalwood tree (*Santalum album* L.) growing in a vacant lot near Renton Road. Between 1935 and 1955, the Territory of Hawaii Forestry Service, in an effort to

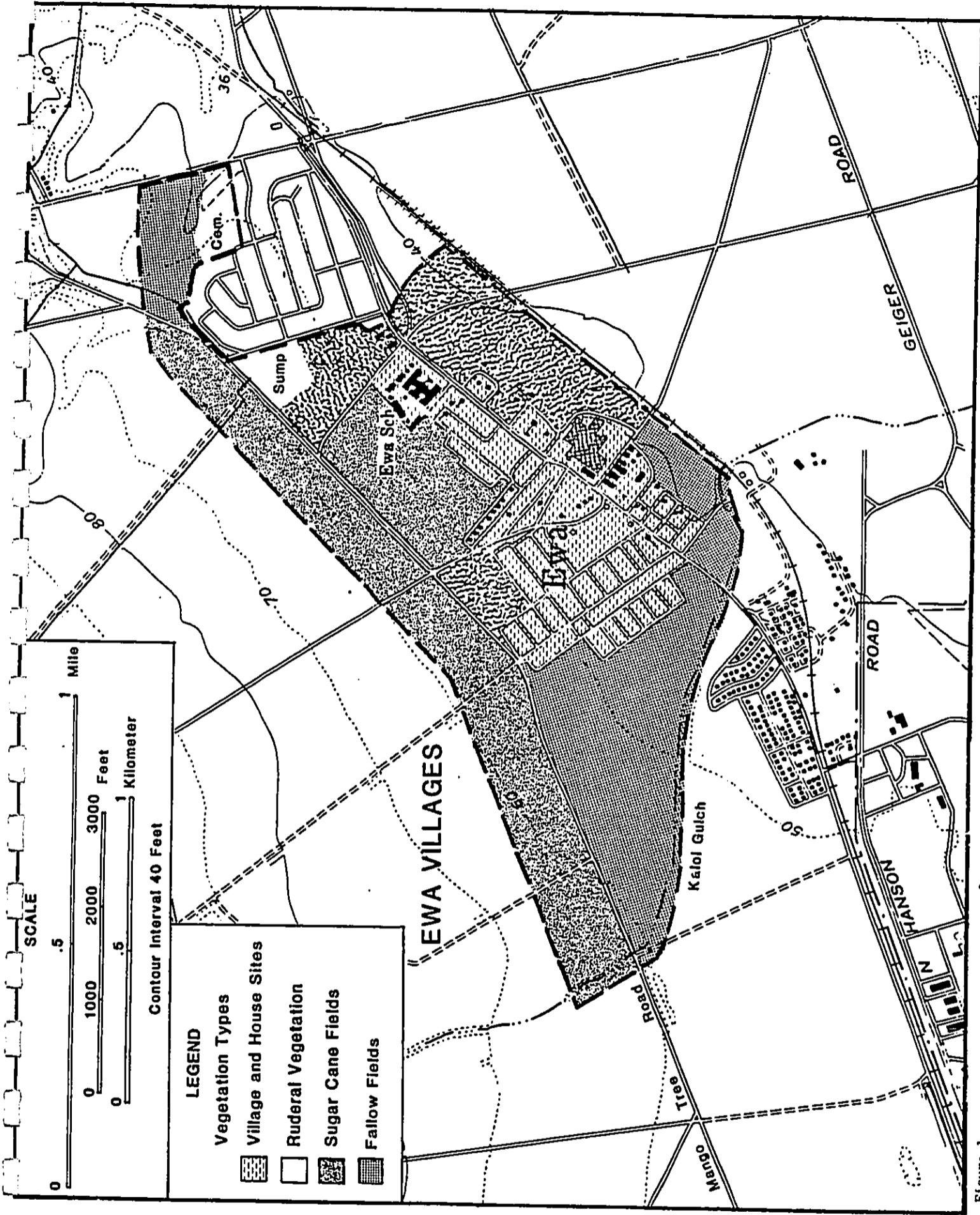


Figure 1.

start a sandalwood industry, planted 668 Indian sandalwood trees in the Eva area (Skolman 1980). This small tree is undoubtedly the result of those early plantings. Otherwise, the vegetation of the Village and House Sites does not differ greatly from the vegetation of the Ruderal Fields.

B. Ruderal Fields (Figure 3). There are two types of ruderal fields in the Eva Villages site. The largest is found from Mango Tree Road, between the producing sugar cane field and the old water storage pond, makai across Renton Road to the old railroad tracks and westward to just past the sugar mill. The second and much smaller ruderal field is found between Eva Village and the producing sugar cane fields in what was once a baseball field. Both of these fields support large communities of alien plant species or weeds. In the field near the elementary school the emergent plants are hummocks of sugar cane. The emergent plants in the old baseball field are large pasture grass species. The remaining vegetation of these areas is recorded in the species list (Appendix A).

C. Sugar Cane Fields (Figure 4). The Sugar Cane fields are monocultures of a single species, *Saccharum officinarum* L. Except for the weed communities and the Mango (*Mangifera indica* L.) trees which have grown up along the cane haul roads and Mango Road, there is nothing to report from this part of the site.

D. Fallow Fields (Figure 5). At the northeast corner of the study site along Fort Weaver Road and between Eva Village and the railroad tracks and west of the sugar mill to Kalo'i Gulch can now be found several fallow farm fields. Botanically these fields are of little interest, but they provide food for many species of introduced birds. Along the western boundary of the site, the rapidly spreading vine, *Coccinia grandis* is becoming a real pest (Figure 6).



Figure 2. Village and House Sites.



Figure 3. Ruderal Fields.



Figure 4. Cane Fields.



Figure 5. Fallow Fields.

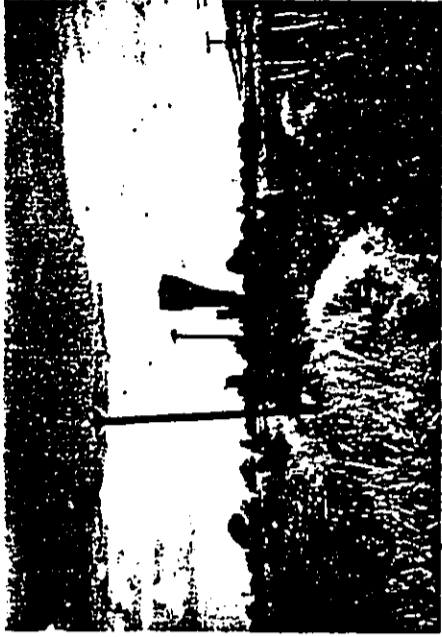


Figure 6. *Cocinia grandis* covers everything along Kaloi culch.

E. Other Features. South of Mango Road, between Eva School and

Fernandez Village, is an abandoned water storage pond. This pond is 5 to 10 feet below the prevailing ground level. At one time the water level of the pond was controlled by two large gate valves which are still in place although this facility has not been used for some time. The 5 to 6 acre site is now quite dry and is partially filled with rubble. The latest USGS map of the area indicates that this spot is a wetland. However, this pond has not been used for water storage for a long, long time, in addition there are no wetland indicator plant species in the area. In the early days when the sugar cane was irrigated by surface water, this catchment was probably built to collect the run-off. Now, with drip irrigation there is no longer a need for such a structure and it has been phased out.

A second site of some interest is the cemetery between Fernandez Village and Fort Weaver Road. It occupies from 3 to 5 acres and from the grave markers it is probably the resting place of many immigrant plantation laborers. The cemetery has been vandalized and is badly neglected and in need of maintenance.

#### CONCLUSIONS

No proposed or listed threatened, rare or endangered species were found. Two native plants, Pa'u-o-hi'i'aka and Kukui, were found near the old railroad tracks. Both taxa are common in many other places in all of the islands. The remaining vegetation is made up of introduced plants most of which can be considered to be weeds or ruderal vegetation. Botanically, nothing will be lost as this project goes forward.

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#### APPENDIX A

#### SPECIES LIST

The plant families in the following species list have been alphabetically arranged within two groups, Monocotyledons, and Dicotyledons. The genera and species are arranged alphabetically within families. The taxonomy and nomenclature follow that of St. John (1973) and Wagner et al (1990). For each taxon the following information is provided:

1. An asterisk before the plant name indicates a plant introduced to The Hawaiian Islands since Cook or by the aborigines.
2. The scientific name.
3. The Hawaiian name and or the most widely used common name.
4. Abundance ratings are for this site only and they have the following

meanings:

Uncommon - a plant that was found less than five times.

Occasional - a plant that was found between five to ten times.

Common - a plant considered an important part of the vegetation

Locally abundant - plants found in large numbers over a limited area. For example the plants found in grassy patches.

This species list is the result of an extensive survey of this site at the end of the rainy season (April 1990) and it reflects the vegetative composition of the flora during a single season. Minor changes in the vegetation will occur due to introductions and losses and a slightly different species list would result from a survey conducted during a different growing season.

CHECKLIST OF ALL PLANTS FOUND ON THE EVA VILLAGES STUDY SITE

Scientific Name Common Name Abundance

MONOCOTYLEDONES

ARECACEAE - Palm Family

\**Roystonea regia* (Kunth) Cook Royal Palm Uncommon

CACTACEAE - Cactus Family

\**Opuntia megacantha* Salm-Dyck Opuntia Uncommon

CYPERACEAE - Sedge Family

\**Cyperus gracilis* R. Br. McCoy Grass Locally abundant

\**Cyperus hypochlorus* Hilleb. Nut grass Uncommon

\**Fimbristylis dipylla* Vahl Tall fringe-rush Common

GRAMINEAE - Grass Family

\**Bothriochloa percuta* (L.) A. Camus Nose hairgrass Common

\**Brachiaria mutica* (Forsk.) Stapf Paragrass Locally abundant

\**Cenchrus echinatus* L. Sandbar grass Locally abundant

\**Chloris barbata* Swartz Swollen fingergrass Locally abundant

\**Coix lacryma-jobi* L. Job. & tears Common

\**Cynodon dactylon* (L.) Pers. Bermuda grass Locally abundant

\**Dactyloctenium aegyptium* Willd. Beach wiregrass Occasional

\**Digitaria adscendens* (HBK) Hent. Henry's crabgrass Locally abundant

\**Echinochloa colonum* (L.) Link Jungle rice Common

\**Eleusine indica* (L.) Gaertn. Wiregrass Locally abundant

\**Eragrostis tenella* (L.) Beauv. R. & S. Japanese lovegrass Locally abundant

\**Leptochloa uniuervia* Hitchc. Guinea grass Occasional

\**Panicum maximum* Jacq. Quack grass Locally abundant

\**Panicum repens* L. Natal redtop Common

\**Rhynchelytrum repens* C.E. Hubb. Ko or sugar cane Common

\**Saccharum officinarum* L. Bristly foxtail Common

\**Seteria verticillata* P. Beauv. Beach dropseed Locally abundant

\**Sporobolus virginicus* (L.) Kunth Sourgrass Occasional

COMNELINACEAE - Spiderwort Family

\**Commelina diffusa* Burm. f. Honohono grass Locally abundant

LILIACEAE - Lily Family

*Aloe vera* L. Panini'ava'ava Uncommon

*Crinum asiaticum* Spider lily Uncommon

Scientific Name Common Name Abundance

DICOTYLEDONES

ACANTHACEAE - Acanthus Family

\**Asystasia gangetica* (L.) T. Anders Chinese violet Common

\**Barleria cristata* L. Philippine violet Occasional

\**Beloperone guttata* Nees Shrimp plant Locally abundant

AMARANTHACEAE - Amaranth Family

\**Achyranthes aspera* L. Spiny amaranth Common

\**Amaranthus spinosus* L. Slender amaranth Common

\**Amaranthus viridis* L. Globe amaranth Occasional

\**Gomphrena globosa* L. Occasional

ANACARDIACEAE - Mango Family

\**Mangifera indica* L. Mango Locally abundant

\**Schinus terebinthifolius* Raddi Christmas berry Occasional

APOCYNACEAE - Dogbane Family

\**Cascabela thevetia* Lippod Be-still tree Locally abundant

ASCLEPIADACEAE - Milkweed Family

\**Asclepias physocarpa* Schlechter Ballon vine Occasional

CAPPARACEAE - Caper Family

\**Cleome gynandra* L. Wild Spider flower Uncommon

CHENOPODIACEAE - Goosefoot Family

\**Atriplex semibaccata* R. Br. Australian saltbush Occasional

\**Chenopodium album* L. Lambs quarters Locally abundant

\**Chenopodium carinatum* R. Br. Keel'd goosefoot Occasional

COMPOSITAE - Sunflower Family

\**Ageratum conyzoides* (Tourn.) L. Ageratum Occasional

\**Bidens pilosa* L. Spanish needle Common

\**Conyza canadensis* Cronq. Canadian fleabane Occasional

\**Emilia sonchifolia* (L.) DC Lalac puale Common

\**Erechtites hieracifolia* (L.) Raf Fireweed Occasional

\**Lactuca scariola* L. Wild lettuce Common

\**Pluchea indica* (L.) Less. Indian pluchea Common

\**Pluchea odorata* (L.) Cass. Pluchea Common

\**Synedrella nodiflora* (L.) Gaertn. Synedrella Locally abundant

Family Scientific Name Common Name Abundance

LEGUMINOSAE - Bean Family Con't  
 \*Medicago polymorpha L. Bur clover Locally abundant  
 \*Pachyrhizus erosus (L.) Urban Chopani yam Locally abundant  
 \*Phaseolus coccineus L. Scarlet runner Common  
 \*Pithecellobium dulce Benth. Madras thorn Occasional  
 \*Prosopis pallida HBK Kiawe, algaroba Occasional  
 \*Vigna sesquipedalis Wight Long beans Uncommon

MALVACEAE - Hibiscus Family  
 \*Abutilon molle Sweet Hairy abutilon Uncommon  
 \*Gossypium barbadense L. Cotton plant Uncommon  
 \*Malva parviflora L. Little mallow Occasional  
 \*Malvestrum coromandelianum Garcke False mallow Common  
 \*Sida fallax Walp. 'Ilima Common  
 \*Sida rhombifolia L. Cuba jute Occasional  
 \*Sida spinosa L. Prickly sida Occasional

MORACEAE - Fig Family  
 \*Ficus microcarpa L. Chinese banyan Uncommon

MORINGACEAE - Moringa Family  
 \*Moringa oleifera Lam. Horseradish tree Uncommon

NYCTAGINACEAE - Four o'clock Family  
 Boerhavia diffusa L. Alena Common

SAPINDACEAE - Soapberry Family  
 \*Koeberuteria formosana Hayata Golden rain tree Uncommon

SOLANACEAE - Tomato Family  
 \*Lycopersicon esculentum Mill Tomato Locally abundant  
 \*Nicotiana glauca R. C. Graham Tree tobacco Occasional  
 \*Nicotiana glauca R. C. Graham Tree tobacco Occasional  
 \*Physalis peruviana L. Cape Gooseberry Uncommon  
 \*Solanum americanum Hill Popolo berry Occasional

STERCULIACEAE - Stink tree Family  
 \*Aithya americana L. Hi'aloa, uha-loa Locally abundant

TILIACEAE - Linden Family  
 \*Grewia asiatica L. Uncommon

Scientific Name Common Name Abundance

COMPOSITAE - Sunflower Family Con't  
 \*Tridax procumbens L. Coat buttons Locally abundant  
 \*Verbesina encalloides Cav. Golden crown-beard Occasional  
 \*Xanthium saccharatum Vahlr. Cocklebur Uncommon

CONVOLVULACEAE - Morningglory Family  
 \*Ipomoea carnea (L.) Sweet Koa'i'ai Locally abundant  
 \*Ipomoea congesta R. Br. Koa'i'ai Occasional  
 \*Ipomoea obscura (L.) Ker-Gawl Little Bell Occasional  
 \*Ipomoea triloba L. Pa'u-o-hi'i'aka Locally abundant  
 \*Jacquemontia sandwicensis Gray Hairy merremia Common

CUCURBITACEAE - Cucumber Family  
 \*Coccinia grandis Ivory gourd Common  
 \*Momordica charantia Crantz Balsam apple Common

EUPHORBIACEAE - Spurge Family  
 Aleurites moluccana (L.) Willd. Kukui Locally abundant  
 \*Euphorbia cyathophora Hurr. Mexican fire plant Locally abundant  
 \*Euphorbia glomerata L. Graceful spurge Locally abundant  
 \*Euphorbia hirta L. Hairy spurge Common  
 \*Euphorbia prostrata Ait Prostrate spurge Occasional  
 \*Ricinus communis L. Castor bean Occasional

LABIATAE - Mint Family  
 \*Leonotis nepetifolia Ait Lion's-ear Common

LEGUMINOSAE - Bean Family  
 \*Acacia farnesiana L. Klu Occasional  
 \*Albizia leonensis (L.) DC. One-leaved clover Locally abundant  
 \*Cassia bicapsularis L. Cassia Common  
 \*Cassia leschenaultiana DC. Japanese tea Locally abundant  
 \*Cicer arietinum L. Chick pea Locally abundant  
 \*Clitoria ternata L. Fuzzy rattlebox Occasional  
 \*Crotalaria incana Smooth rattle-pod Common  
 \*Crotalaria virgata Willd. Virgate mimosa Occasional  
 \*Dolichos lablab DC. Lablab bean Occasional  
 \*Indigo spicata Forsk. Creeping indigo Locally abundant  
 \*Indigofera suffruticosa Mill. Indigo Occasional  
 \*Lablab purpureus (L.) sweet Hyscynth bean Locally abundant  
 \*Leucaena leucocephala deHit Koa-hable Common  
 \*Macroptilium haythroides (L.) Urb. Scarlet runner bean Locally abundant

Family	Scientific Name	Common Name	Abundance
VERBENACEAE - Verbena Family			
*Lantana	<i>canara</i> L.	Lantana	Occasional
*Stachytarpheta	<i>jamaicensis</i> Vahl.	Vervain	Common
*Verbena	<i>litorea</i> HBK	Wood verbena	Uncommon
<i>Vitex</i>	<i>rotundifolia</i> L.	Beach vitex	Occasional
ZYGOPHYLLACEAE - Tribulus Family			
*Tribulus	<i>terrestris</i> L.	Puncture vine	Uncommon

#### EVA VILLAGES FAUNA REPORT

##### Introduction and Methods

This report summarizes the results of a fauna survey of the 470 acre Eva Villages Site which was conducted in April 1990. Although more than twenty-eight environmental impact statements have been written for projects proposed for the Eva area since 1971 and all have contained faunal reports of one sort or another, virtually nothing has been published on either the birds or the mammals of the region. The standard references for birds of Hawaii (Munro 1944, Berger 1981, Hawaii Audubon Society 1984) do not specify the area in the distribution of species.

Walkthrough and circular plot censuses were carried out during early and late daylight hours in order to take advantage of the higher activity levels of both birds and mammals during cooler parts of the days.

##### Results

**Mammals** - Five species of mammals were found during the survey. These species are listed in Table 1. All are introductions to Hawaii. None is considered endangered or threatened in any way.

Table 1. Mammals of Proposed Eva Villages Site

<i>Rattus norvegicus</i>	Brown Rat	One sighting in an old house.
<i>Mus musculus domesticus</i>	House mouse	Five in open fields and in trash.
<i>Canis familiaris</i>	Feral dog	One in waste area.
<i>Felis catus</i>	Feral cat	Four around deserted houses.
<i>Herpestes auro-punctatus</i>	Mongoose	One in the abandoned baseball field.



Birds - Because the entire site has been extensively modified from its original state, it has almost no value as native bird habitat. However, it does support a variety of non-native species. The three bird habitats in the study area are as follows:

A. Human habitation area (15%).

Houses, Public buildings, parking, and plantation buildings. This area supports a variety of bird species which are most frequently found associated with human settlement.

B. Open Weed scrub (15%).

Abandoned sugar field and abandoned baseball field. Because most of the bird species found on the site are seed eaters, the open weed fields provide important forage habitat.

C. Sugar cane fields (35%).

Sugar cane fields are an important vegetation type on the site, but they are not of much value to birds. Some birds were seen to overfly the cane fields, but none appeared to perch or rest in this part of the site.

D. Fallow fields (45%).

Some birds such as the cattle egret, barred doves, and house finches collect seeds and insects in freshly plowed fields. This is a short time resource for the birds. If the fields remain fallow, weeds will quickly fill the space and provide seeds and insects for introduced birds.

Thirteen species of birds were found on and around the study site. No threatened or endangered species were found and only one endemic species inhabits the area. The annotated checklist follows the nomenclature of Pratt, Bruner and Berrett (1987).

Family Zosteropidae: White-eyes

Zosterops japonicus

White-eyes are one of the most widespread introduced bird species in Hawaii. Although their preferred habitats are wetter than the study area, they were found in all habitats in low numbers.

Family Passeridae: Old World Sparrows

Passer domesticus (House sparrow)

House sparrows are sometimes called feathered mice. These streaky brown and gray birds are a familiar commensal species and were found around the houses and in the weedy scrub.

Family Estrilidae: Voxbills, Mannikins, and Parrotfinches

Amundava amandava (Red avadavat or strawberry finch)

Two of these tiny finches were seen in the abandoned baseball field. The strawberry finch is believed to have been brought to Hawaii as a cage bird some time between 1900 and 1910. It has been known to be common in the Pearl Harbor area for many years and has only recently begun to spread to other areas.

Lonchura malabarica (Warbling silverbill)

A small colony of these tiny finches inhabit the abandoned baseball field. The pale, nondescript colors of silverbills make them difficult to see, but their thin, high pitched call is quite distinctive.

Lonchura malacca (Chestnut mannikin)

Chestnut mannikins are smallish birds and both sexes have dark heads, breasts, and abdomens. Tail and body plumage is reddish-brown. A flock of these small birds was seen in the grassy area between the houses and the sugar fields.

*Padda oryzivora* (Java sparrow)

A small covey of these tiny, boldly patterned finches, with huge pink bills and prominent, white cheeks was seen in the guinea grass along Renton Road. Originally found only in Kapiolani Park, Java sparrows are apparently spreading to other dry areas of Oahu.

Family Eberizidae: Eberizine Finches

*Parosia coronata* (Brazilian or red crested cardinal)

Several pairs of Brazilian cardinals were seen in and around the houses and open weedy scrub. The bright red head of the male bird makes this species fairly easy to recognize.

Family Pycnonotidae: Bulbuls

*Pycnonotus cafer* (Red-vented bulbul)

Many of these large, raucous birds inhabit the study site. They were common among the houses, on power lines and in the large trees. Bulbuls are conspicuous for their noisy call and the bright red feathers beneath their tails. They are fruit eaters and they may be responsible for the spread of ivory gourd (*Coccoloba grandis* (L.) Voigt), the large, dark green cucurbit vine which bears bright red fruits, and is becoming such a pest in the area.

Family Ardeidae: Herons, Egrets and Bitterns

*Bubulcus ibis* (Cattle egret)

Several of these large, white birds were collecting bugs near the Eva Post Office and additional birds were seen flying above the cane fields.

Introduced in 1957 to help control cattle insect pests, cattle egrets have proliferated and are now pests themselves.

Family Fringillidae: Cardueline Finches

*Carpodacus mexicanus* (House finch)

The house finch is a small, sparrowlike bird with a streaked appearance. The head, throat and breast of male birds may vary from dull yellow to bright red. The females and the bodies of males are similar with gray to black streaks of color.

Introduced into Hawaii during the last century, the house finch has adapted and is now widespread throughout the islands. Many pairs of birds inhabit the village and the waste places surrounding it.

Family Charadriidae: Plovers and Doves

*Piuvialis dominica* (Lesser Golden Plover)

Two long-legged plovers in breeding plumage i.e. brightly speckled with gold above, black below with a distinct white strip across the forehead, were seen in the open, short-grass field, inland from Eva Village. This species is a winter migrant to Hawaii. It is often seen in wetlands, grasslands, and on lawns.

Family Columbidae: Pigeons and Doves

*Streptopelia chinensis* (Spotted Dove)

The spotted dove is a large bird which is grayish brown with rosy blushed breast feathers. At the sides and back of the neck is a patch of black with white spots. The low, repetitive cooing of the spotted dove was heard in Eva Village and in the open weed scrub areas. Many pairs and individuals were seen.

*Geopelia striata* (Zebra Dove)

This ground dwelling, seed eating dove is smaller and even more abundant than the spotted dove. Zebra doves were found in similar densities as the spotted dove in the open weed scrub, but was more common in the Village.

Family Mimidae: Mockingbirds and Thrashers

*Mimus polyglottos* (Mocking Bird)

This gray, long-tailed bird with prominent flashes of white in wings and tail, was introduced into Hawaii in 1921. It is now well established on all of the main islands. A pair of Mocking birds are nesting in one of the old light standards of the abandoned baseball field, inland from Ewa Village.

Family Sturnidae: Starlings and Mynas

*Acridotheres tristis* (Common Myna)

The ubiquitous myna is a plump brown bird with a black head and tail. It has a white belly, tail tip and wing patches, and bright yellow legs, feet, bill, and eye liners. They are common throughout the site.

Family Phasianidae: Gallinaceous Birds

*Phasianus colchicus* (Ring-necked Pheasant)

A pair of these large, chicken-like birds is nesting makai of the Ewa sugar mill near the railroad tracks. The male has a long, pointed tail, ringed neck, green head and coppery breast, while the female is smaller, dull buff with dark mottling above and plain below. The pair appear to be using the run-off from the irrigation of the small ball park nearby.

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APPENDIX B

NOISE QUALITY IMPACT ASSESSMENT

Darby and Associates

#90-13  
December 10, 1990

R. M. TOWILL CORPORATION  
420 Waiakamilo Road, #411  
Honolulu, Hawaii 96817-4941

Attention: Mr. Chester Koga

RE: ENVIRONMENTAL NOISE ASSESSMENT  
EMA VILLAGES, OAHU

Dear Mr. Koga:

In this report we present our findings on environmental noise aspects of the subject project.

**1. SUMMARY OF FINDINGS**

1.1 Existing daytime, background (L90) noise levels at and near the project site varied from about 45 dBA, in areas located some distance from Fort Weaver and Renton Roads, to upwards of 55 dBA near Fort Weaver Road. Apart from traffic, the main noise sources were aircraft operations, particularly on the west side of the site, and, more commonly, the wind.

1.2 Although aircraft movements associated with Naval Air Station Barbers Point and Honolulu International Airport produce maximum noise levels of, typically, up to 55 to 70 dBA, almost all of the site is exposed to a Day-Night Average Sound Level (Ldn) from aircraft noise of less than the State Department of Transportation's 60 dBA limit. Because of noise abatement procedures at Honolulu International Airport, most aircraft movements near the site normally occur during the daytime between the hours of 7 am and 7 pm.

1.3 It is estimated that, apart from locations near Fort Weaver and Renton Roads (and those areas that are occasionally exposed to noise from sugar cane operations), almost all of the site is currently exposed to an overall Ldn of 60 dBA or less, an acceptable noise environment for residential, recreational and commercial purposes.

1.4 It is expected that the most significant noise impact associated with the Ewa Villages Development will be that from project-generated traffic.

1.5 The development, as currently proposed, will lead to substantially increased traffic volumes on Renton Road, causing potentially-significant noise impacts at the closest existing and proposed residential buildings.

1.6 Possible measures that could mitigate noise at the new residential structures on Renton Road include sound barrier walls, minimum setback distances and appropriate building orientation and design. However, noise mitigation measures that can be applied at existing homes are probably limited to providing increased acoustical insulation and/or air conditioning (to allow windows to be kept closed for noise reduction purposes).

1.7 Although no traffic data are yet available, noise from the "Future East-West Road," between the railroad right-of-way and Renton Road, could significantly impact the adjacent multi-family residential area. Possible noise mitigation measures include using a depressed (i.e., below-grade) road alignment, sound barrier walls and appropriate building orientation and design.

1.8 Residential areas near the northern site boundary may, at times, be adversely affected by noise from sugar cane activities. Possible noise mitigation measures include incorporating substantial earth berms and/or sound barrier walls in the proposed 40 ft buffer zone between the Mango Tree Cane Haul Road and the closest homes, avoiding the use of two-storey residential structures in this area, and orienting the buildings so that bedroom windows do not directly face Mango Tree Road.

1.9 Use of the proposed 18-hole golf course should not have any significant noise impact on nearby residents.

1.10 The possible resumption of limited railroad operations on the Oahu Railroad & Land Company's right-of-way (e.g., a tourist train between Ko Olina and Waipahu) is not expected to have a significant noise impact on existing and proposed residential areas adjacent to the track.

1.11 The dominant noise source during construction activities will probably be earth moving equipment such as bulldozers and diesel powered trucks. Any noise impact from these activities on existing residential areas should, however, be relatively short-term.

2. **PROJECT DESCRIPTION**

The proposed Ewa Villages Development, indicated in Figure 1, comprises a mixture of residential, commercial and recreational areas, including an 18-hole golf course. Included in the project are the restoration of residential structures in the historic Renton Village, the rehabilitation of existing housing in Tenney and Varona Villages, and the provision of new affordable and market value housing. The site is bounded by the Oahu Railroad Land Company's right-of-way to the south, Fernandez Village and Fort Weaver Road to the east, and sugar cane fields to the north and west. The existing sugar cane fields within the site boundaries will make way for some of the new residential areas and the golf course.

3. **THE EXISTING ACOUSTICAL ENVIRONMENT**

Ambient noise measurements were made at and near the project site on July 25 and 26, and August 22, 1990. Noise levels were recorded over 10-minute sampling periods at Locations A through J (shown in Figure 2), using a Larson-Davis Laboratories Model 700 Sound Level Meter. The measurement locations are described below:

- A. In agricultural land, about 100 ft from Fort Weaver Road (on its Diamond Head side) and about 400 ft from the Arizona Road/Fort Weaver Road intersection.
- B. At the entrance driveway to Hale O Ulu (the Child & Family Services facility), about 100 ft from Fort Weaver Road.
- C. About 100 ft from Fort Weaver Road, on the Maianae/makai side of its intersection with Old Fort Weaver Road.
- D. Adjacent to the existing "Expandable Housing" development, about 1,000 ft from Fort Weaver Road and 35 ft from Renton Road.
- E. In the parking lot adjacent to the Lanakila Baptist Junior/Senior School High School, about 65 ft from Renton Road.
- F. In agricultural land near the existing Kaloi Ditch, about 500 ft makai from Renton Road.
- G. On Ala Hui Mauka, adjacent to Ewa Elementary School, about 400 ft from Renton Road.
- H. About 350 ft from Fort Weaver Road, behind the cemetery.

J. At the intersection of Renton Road and Kihi Street.

Further measurements were made at Location F, over a 2-1/2 hour period on July 26, and at Location J, over a 1-hour period on August 22, 1990, to assess the noise from aircraft operations associated with Haval Air Station Barbers Point (HMSBP) and Honolulu International Airport (HIA). A 24-hour noise measurement, commencing at 6 pm on August 19, 1990, was also made at Location F.

Weather conditions during the measurements were clear, with temperatures near 90 degrees and tradewinds at 10 to 20 mph.

The ambient noise measurement results, in terms of the Equivalent Continuous Noise Level (Leq), the minimum noise level (Lmin), the levels exceeded for 90%, 50%, 10%, and 1% of the time (L90, L50, L10, L1, respectively), and the maximum noise level (Lmax), are presented in Table 1 and summarized below. These statistical noise levels are commonly used descriptors of environmental noise; for example, L1 (the level exceeded 1% of the time) describes the near-maximum noise, while L90 (the level exceeded 90% of the time) is a good measure of the background noise. Leq is an "energy-weighted" average noise level. (A brief description of acoustical terminology is presented in the Appendix.)

Location Measured Noise Levels - dBA

Location	Leq	Lmin	L90	L50	L10	L1	Lmax
A	56	47	51	55	59	64	69
B	65	52	58	63	68	71	73
C	63	54	58	61	66	73	78
D	68	48	53	60	68	82	89
E	59	46	49	56	63	69	70
F	59	42	46	50	61	71	74
G	54	45	48	52	56	63	66
H	57	48	53	57	59	63	64
J	60	44	46	50	65	73	74

Figure 3 shows the hourly statistical noise levels measured at Location F over a 24-hour period, commencing at 6 pm on August 19, 1990. The Day-Night Average Sound Level (Ldn) over this 24-hour period was 54 dBA.

Tables 2 and 3 present a summary of the single-event aircraft noise levels measured at Locations F and J.

Thus, existing daytime background (L90) noise levels at and near the project site varied from about 45 dBA. In areas located some distance from Fort Weaver and Renton Roads, to upwards of 55 dBA near Fort Weaver Road. Apart from traffic the main noise sources were aircraft operations, particularly on the west side of the site, and, more commonly, the wind.

The most common aircraft movements were wide-body jets approaching HIA on flight tracks 18 and 19 (to land on Runway 8L), and P-3 military aircraft performing touch-and-go operations at NASBP, on flight track 04L16 (see Figures 4 and 5). At Location F the Lmax from wide-body jets ranged from 57 to 69 dBA; P-3's produced slightly lower maximum noise levels, ranging from 54 to 68 dBA. The highest Lmax recorded at Location F was 74 dBA from two F-18 military jets on their approach into HIA.

At location J the noise levels from civilian aircraft were similar to those recorded at Location F. However, military aircraft were generally noisier at Location J because of its proximity to NASBP.

It should be noted that, for noise abatement purposes, aircraft do not normally land on Runway 8L at HIA between 7 pm and 7 am. During these evening and nighttime hours, aircraft normally land on Runway 4R, unless special circumstances dictate otherwise. Thus, aircraft operations near the project site would, typically, occur far less often at night than the relatively frequent daytime operations indicated in Tables 2 and 3.

The aircraft noise contours in Figure 6 show almost all of the site to be exposed to an Ldn from aircraft noise of less than 60 dBA.

Based on these aircraft noise data and the short-term noise measurement results presented in Table 1, it is estimated that, apart from locations near Fort Weaver and Renton Roads (and those areas that are occasionally exposed to noise from sugar cane operations), almost all of the site is currently exposed to an overall Ldn of 60 dBA or less.

#### 4. NOISE STANDARDS AND GUIDELINES

Land-use compatibility guidelines are commonly presented in terms of Ldn, a measure of noise exposure over a typical 24-hour period. It is essentially the Leq measured over a 24-hour period (after adding 10 dBA

to the noise levels recorded between 10 pm and 7 am, to account for people's higher sensitivity to noise at night.)

For example, the U.S. Environmental Protection Agency and the Department of Housing and Urban Development (HUD) specify that residential and other noise-sensitive developments can normally be constructed in areas subjected to noise exposure levels of up to Ldn 65, with no special noise control measures required in buildings of conventional construction (References 1 and 2). Sites exposed to Ldn's in the range of 65 to 75 dB are considered normally unacceptable for residential development, with building approval subject to additional noise control measures. These criteria are generally consistent with the land use compatibility guidelines shown in Figure 7.

In Hawaii, the State Department of Transportation stipulates an aircraft noise exposure limit of Ldn 60 for residential buildings.

Criteria for noise exposure levels inside buildings are commonly presented in terms of Ldn and, for single-event noise sources such as aircraft movements and train passbys, criteria are also presented in terms of the maximum noise level (Lmax). For example, HUD has a design goal of Ldn 45 or less for the interior spaces of dwelling units. The California Department of Transportation's "Airport Land Use Planning Handbook" (Reference 4) recommends an Lmax of 40 dBA or less due to aircraft noise in sleeping areas of residential buildings (although less restrictive Lmax criteria, of up to 50 dBA, have also been proposed).

On Oahu, State and County noise regulations may be enforced whenever noise emissions exceed specified levels and cause complaints from occupants of neighboring properties. However, the State Department of Health (DOH) and City and County of Honolulu Land Use Ordinance (L00) noise regulations are expressed in terms of maximum allowable noise levels rather than Ldn (see Figures 8 and 9).

The DOH regulations use A-weighted sound levels and state that the allowable noise levels shall not be exceeded for more than 10% of the time during any 20-minute period (Reference 5). The L00 regulations differ from those of the DOH in that they use octave band sound levels instead of A-weighted levels and no temporal factor is involved (Reference 6). In addition, the DOH also specifies maximum allowable noise levels for vehicles, including trucks (Reference 7).

As indicated in Figure 8, the DOH property line noise limit for agriculturally-zoned land is 70 dBA (daytime and nighttime). However,

the DOH regulations also allow conditional permits for agricultural field preparation and harvesting provided that 90 dBA is not exceeded at the property line. The DOH limits at residential property lines are far more stringent - 55 dBA during the day (7 am to 10 pm) and 45 dBA at night (10 pm to 7 am).

The "grandfather" clause of the DOH regulations states that the appropriate noise limits at a common boundary between different land uses depends "on the order of precedence in which uses were initiated". Thus, in cases where agricultural land is rezoned for residential use, the higher agricultural noise limits would apply at the new common boundaries between the agricultural and residential areas.

**5. POTENTIAL IMPACTS AND DESCRIPTION OF CONTROLS**

**5.1 Aircraft Noise** - Although aircraft movements associated with Naval Air Station Barbers Point and Honolulu International Airport produce maximum noise levels of, typically, 55 to 70 dBA on the west side of the site, almost all of the site is exposed to an Ldn from aircraft noise of less than the State Department of Transportation's 60 dBA limit. The only area where the Ldn may marginally exceed 60 dBA is the western side of Varona Village, where no new development is planned. Also, because of noise abatement procedures at HIA, most aircraft movements near the site normally occur during the less-sensitive day period, between the hours of 7 am and 7 pm.

**5.2 Additional Traffic Generated by the Project** - Traffic counts were performed during the short-term noise measurements at Locations A, B, C, D, E and H to permit calibration of the Federal Highway Administration (FHWA) Traffic Noise Prediction Model (Reference 8). The FHWA traffic noise model was then used, in conjunction with projections of future (1996) traffic volumes with and without the project, to estimate increases in noise levels due to project-generated traffic.

The results, presented in Table 4, show that the project-generated traffic will cause noise level increases along Fort Weaver Road of 0.5 dBA or less. This is an insignificant increase in terms of subjective response. It is estimated that the closest proposed housing to Fort Weaver Road (adjacent to the cemetery) will be exposed to a future Ldn of less than 60 dBA, i.e., in compliance with HUD's Ldn 65 limit.

Renton Road, Pepper Row and Ala Hui will, however, be subjected to significantly higher increases in noise from project-generated traffic than Fort Weaver Road. For example, the estimated increases in noise level along Renton Road due to project-generated traffic range from

4 to 6 dBA, corresponding to an increase in loudness of about 50%. (A 10 dBA increase in noise level corresponds to a approximate doubling of loudness.) In addition, most of the new and existing housing along Renton Road (between Fort Weaver Road and Pepper Row) will be exposed to estimated future Ldn's higher than HUD's 65 dBA limit. But the new and existing homes along Ala Hui and Pepper Row will be exposed to estimated future Ldn's that comply with the 65 dBA limit.

Thus, the most significant noise impact from project-generated traffic will be along Renton Road. Possible measures that could mitigate noise at the new residential structures include sound barrier walls, minimum setback distances and appropriate building orientation and design. However, noise mitigation measures that can be applied at existing homes along Renton Road are probably limited to providing increased acoustical insulation and/or air conditioning (to allow windows to be kept closed for noise reduction purposes).

Although no traffic data are yet available, noise from the "Future East-West Road", between the railroad right-of-way and Renton Road, could significantly impact the adjacent multi-family residential area. Possible noise mitigation measures include using a depressed (i.e., below-grade) road alignment, sound barrier walls and appropriate building orientation and design.

**5.3 Sugar Cane Activities** - Residential areas near the northern site boundary may, at times, be adversely affected by noise from sugar cane activities. Although relatively infrequent, operations such as land preparation, harvesting, etc., are characterized by periods of intense activity.

The primary sources of noise are the equipment used during cane harvesting and land preparation and the cane haul trucks. Typically, sugar cane fields are harvested every two years. The equipment involved operates 24 hours per day and includes bulldozers (push rakes) and clam-shell cranes loading trucks. Land preparation for planting occurs typically every six years and involves a sequence of operations such as harrowing, plowing, leveling, and stone removal. The DOH noise regulations mentioned earlier allow sugar cane operations to generate 70 dBA at the property line, for 10% of the time in any 20-minute period. However, the regulations also allow conditional permits for agricultural field preparation and harvesting, provided that 95 dBA is not exceeded at the property line.

According to data presented in Reference 9, cane haul trucks produce maximum passby noise levels of, typically, up to 85 dBA at a distance of 50 ft. Thus, the new, single-family residential areas near the



northern site boundary will. In spite of the proposed 40 ft buffer zone between the closest homes and the relocated Mango Tree Lane Haul Road, occasionally be subjected to high noise exposure levels from cane haul trucks and from harvesting and land preparation activities. Possible noise mitigation measures include:

- (1) Incorporating earth berms and/or sound barrier walls in the proposed 40 ft buffer zone. But, because of the effective height of the noise sources involved (particularly the trucks), the berms and/or sound barrier walls will need to be at least 10 to 12 ft high to provide any significant noise attenuation.
- (2) Avoiding the use of two-story residential structures in this area, and orienting the buildings so that bedroom windows do not directly face Mango Tree Road.

In addition, prospective residents should be advised that they will occasionally experience periods of high noise exposure from sugar cane activities near the northern site boundary.

**5.4 Golf Course Operations** - Apart from additional road traffic generated by the proposed 18-hole golf course, potential noise sources include the club house, the public address system and ground maintenance activities.

Noise from sources at and near the club house, such as the kitchen, refrigeration and air conditioning equipment, exhaust fans, golf cart chargers, pumps and other stationary equipment, should be inaudible at the closest proposed homes (which are more than 500 ft away). If live music and entertainment are planned inside the club house, provided the building structure incorporates an adequate degree of "sound proofing", noise from these activities will also be inaudible at the closest homes. A public address system near the club house using state-of-the-art "low level", directional loudspeakers, should have minimal impact on nearby residential areas.

If the equipment associated with ground maintenance activities (including grass cutters, lawn mowers and leaf blowers) is adequately silenced, noise from these operations should not significantly impact residents living near the golf course.

**5.5 Possible Resumption of Railroad Operations** - A 1984 study into the potential noise impact on the Ewa Village Expandable Housing Project, from a possible resumption in railroad operations on the existing right-of-way, concluded that the noise from ten, slow-moving (10 to 15 mph) steam or diesel-powered train passbys per day would be in

compliance with the appropriate noise exposure criteria (Reference 10). This conclusion was based on estimated noise levels of 60 to 76 dBA at 100 ft from the locomotive (or about 66 to 82 dBA at 50 ft, the approximate setback distance of the closest residential structures). This conclusion was also based on the assumption that the locomotive's horn or whistle would not be routinely activated near the housing.

Thus, the possible future introduction of a tourist train (operating in a similar fashion to that described above) making up to three daily round trips between Ko Olina and Waipahu, should not have a significant noise impact on existing and proposed residential areas adjacent to the Oahu Railroad & Landing Company's right-of-way.

**5.6 Construction Noise** - Development of the project site will involve demolition, excavation, grading and the construction of infrastructure and buildings. The various construction phases of a development project may generate significant amounts of noise; the actual amounts are dependent upon the methods employed during each stage of the process. Typical construction equipment noise ranges in dBA are shown in Figure 10. Earthmoving equipment, such as bulldozers and diesel powered trucks, will probably be the loudest equipment used during construction. Any noise impact from these operations on existing residential areas should, however, be relatively short-term.

In cases where construction noise exceeds, or is expected to exceed, the DOH's "allowable" property line limits, a permit must be obtained from the DOH to allow the operation of vehicles, construction equipment, power tools, etc. which emit noise levels in excess of the "allowable" limits. Required permit conditions for construction activities are:

"No permit shall allow construction activities creating excessive noise...before 7:00 am and after 6:00 pm of the same day."

"No permit shall allow construction activities which emit noise in excess of ninety-five dB(A)...except between 9:00 am and 5:30 pm of the same day."

"No permit shall allow construction activities which exceed the allowable noise levels on Sundays and on... [certain] holidays. Activities exceeding ninety-five dB(A) shall [also] be prohibited on Saturdays."

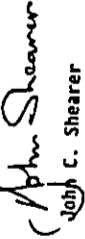
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In addition, construction equipment and on-site vehicles or devices requiring an exhaust of gas or air must be equipped with mufflers. Also, construction vehicles using traffic-ways must satisfy the DMV's vehicular noise requirements.

This completes our assessment of environmental noise aspects of the proposed Ewa Villages Development. Please call if you have any questions on the above, or if you require any further information at this stage.

Sincerely,

  
John C. Shearer

Enclosures

JCS/ld

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1. "HUD Environmental Criteria and Standards," 24 CFR Part 51, Federal Register, Volume 44, No. 135, July 12, 1979; amended 49 FR 880, January 6, 1984.
2. "Toward a National Strategy for Noise Control," U.S. Environmental Protection Agency, April 1977.
3. Appendix to American National Standard ANSI S3.23-1980, "Sound Level Descriptors for Determination of Compatible Land Use."
4. "Airport Land Use Planning Handbook - A Reference and Guide for Local Agencies," prepared for the California Department of Transportation by the Metropolitan Transportation Commission and the Association of Bay Area Governments, July 1983.
5. "Chapter 43 - Community Noise Control for Oahu," Department of Health, State of Hawaii, Administrative Rules, Title 11, November 6, 1981.
6. "Section 3.11, Noise Regulations," Land Use Ordinance, City and County of Honolulu, October 22, 1986.
7. "Chapter 42 - Vehicular Noise Control for Oahu," Department of Health, State of Hawaii, Administrative Rules, Title 11, November 6, 1981.
8. "FHWA Highway Traffic Noise Prediction Model," FHWA - RD - 77 - 108; U.S. Department of Transportation, December 1978.
9. "Noise from Sugar Operations in Hawaii--A Study of the Extent and Effect on the Community," prepared by Ronald A. Darby for the Sugar Industry Environmental Standards Committee of the Hawaii Sugar Planters' Association, January 22, 1971.
10. "Potential Railroad Noise Impact on Ewa Village Expandable Housing Project," prepared by Darby-Ebisu & Associates for Mark Development, Inc., December 12, 1984.

TABLE 1  
NOISE DATA RECORDED AT NINE LOCATIONS AT AND NEAR THE SITE OF  
THE PROPOSED ERM VILLAGES DEVELOPMENT ON JULY 25 & 26, 1990

Location	Time (Date)	Measured Noise Levels - dBA					Dominant Noise Sources		
		Leq	L <sub>01n</sub>	L <sub>50</sub>	L <sub>10</sub>	L <sub>1</sub> L <sub>max</sub>			
A	1:20 - 1:30 pm (7/25/90)	56	47	51	55	59	64	69	Traffic on Ft. Weaver Road, wind, distant aircraft
B	1:57 - 2:07 pm (7/25/90)	65	52	58	63	68	71	73	Traffic on Ft. Weaver Road
C	2:28 - 2:38 pm (7/25/90)	63	54	58	61	66	73	78	Traffic on Ft. Weaver Road
D	3:18 - 3:28 pm (7/25/90)	68	48	53	60	68	82	89	Traffic on Benton Road, distant aircraft, wind
E	3:39 - 3:49 pm (7/25/90)	59	46	49	56	63	69	70	Traffic on Benton Road, distant aircraft, birds, wind
F	4:05 - 4:15 pm (7/25/90)	59	42	46	50	61	71	74	Aircraft, wind, distant construction activities, birds
G	4:36 - 4:46 pm (7/25/90)	54	45	48	52	56	63	66	Wind, distant traffic, distant construction activities, children playing
H	4:28 - 4:38 pm (7/26/90)	57	48	53	57	59	63	64	Traffic on Ft. Weaver Road, wind
J	3:21 - 3:31 pm (8/22/90)	60	44	46	50	65	73	74	Aircraft, birds, roosters, wind, occasional local traffic

\* See Figure 2

TABLE 2

SUMMARY OF SINGLE-EVENT AIRCRAFT NOISE LEVELS  
RECORDED AT LOCATION F

Date	Time	Aircraft Type	L <sub>MAX</sub> (dBA)	*SEL (dBA)	Associated Airport
7/25/90	4:06 pm	B-747	63	--	HIA
"	4:10	B-747	67	77	HIA
"	4:11	Two F-18's	74	84	HIA
"	4:24	L-1011	66	73	HIA
7/26/90	1:33 pm	L-1011	67	75	HIA
"	1:39	P-3	65	70	NASBP
"	1:41	DC-9	61	--	HIA
"	1:43	P-3	60	67	NASBP
"	1:45	B-737	58	--	HIA
"	1:48	DC-10	68	78	HIA
"	1:51	DC-10	69	79	HIA
"	1:52	P-3	63	71	NASBP
"	1:54	Helicopter (2-rotor, military)	57	--	NASBP
"	1:55	B-737	59	--	HIA
"	1:56	P-3	59	67	NASBP
"	1:58	DC-10	57	--	HIA
"	2:01	P-3	61	70	NASBP
"	2:05	DC-10	67	79	HIA
"	2:14	P-3	62	71	NASBP
"	2:21	C-5A	70	81	HIA
"	2:23	B-737	58	71	HIA
"	2:38	Helicopter (1-rotor, military)	54	60	NASBP
"	2:42	DC-10 & P-3 (Simultaneously)	63	76	HIA/NASBP
"	2:46	L-1011 & P-3 (Simultaneously)	66	78	HIA/NASBP

\* SEL is the Sound Exposure Level, a commonly-used aircraft noise metric. It is the Equivalent Continuous Level (Leq) of noise from the aircraft movement, normalized to 1 second.

TABLE 2  
(CONTINUED)

Date	Time	Aircraft Type	Lmax (dBA)	*SEL (dBA)	Associated Airport
7/26/90	2:59 pm	P-3	61	70	NASBP
"	3:03	P-3	58	68	NASBP
"	3:06	DC-10	65	76	HIA
"	3:07	P-3	61	68	NASBP
"	3:08	DC-9	60	70	HIA
"	3:10	B-737	58	69	HIA
"	3:12	P-3	60	70	NASBP
"	3:13	DC-10	62	74	HIA
"	3:17	DH-7	57	69	HIA
"	3:20	P-3 & DC-10 (Simultaneously)	68	79	NASBP/HIA
"	3:21	P-3	54	64	NASBP
"	3:24	Two F-18's	69	80	HIA
"	3:25	P-3	57	66	NASBP
"	3:27	F-18	69	79	HIA
"	3:29	P-3 & DC-10 (Simultaneously)	68	78	NASBP/HIA
"	3:34	DC-8 & two F-18's (Simultaneously)	63	76	HIA
"	3:37	Helicopter (1-rotor, civilian)	69	80	--
"	3:45	P-3	59	69	NASBP
"	3:47	C-5A	73	81	HIA
"	3:50	DC-10	66	80	HIA
"	3:51	DC-10	61	75	HIA
"	3:53	B-737	62	74	HIA
"	3:54	L-1011	64	77	HIA
"	3:55	P-3	68	75	NASBP
"	3:57	DC-9	61	73	HIA
"	3:58	B-747	69	80	HIA

\* SEL is the Sound Exposure Level, a commonly-used aircraft noise metric. It is the Equivalent Continuous Level (Leq) of noise from the aircraft movement, normalized to 1 second.

TABLE 3

SUMMARY OF SINGLE-EVENT AIRCRAFT NOISE LEVELS  
RECORDED AT LOCATION J ON AUGUST 22, 1990

Time	Aircraft Type	Lmax (dBA)	*SEL (dBA)	Associated Airport
3:21 pm	DC-10	67	-	HIA
3:22	P-3	74	-	NASBP
3:24	DC-10 & KC-135	66	-	HIA/NASBP
3:26	DH-7	67	-	HIA
3:27	P-3	63	-	NASBP
3:28	KC-135	62	-	NASBP
3:32	P-3	70	75	NASBP
3:35	DC-10	69	79	HIA
3:38	KC-135	72	79	NASBP
3:43	KC-135	57	-	NASBP
3:50	B-737	64	73	HIA
3:57	DC-10	67	79	HIA
4:00	P-3	63	-	NASBP
4:02	DC-10	68	80	HIA
4:05	Helicopter (1-rotor, military)	73	83	NASBP
4:06	L-1011	67	79	HIA
4:13	G.A.	58	65	HIA
4:15	B-747	70	82	HIA
4:20	B-737	63	74	HIA
4:24	L-1011	69	80	HIA

\*SEL is the Sound Exposure Level, a commonly-used aircraft noise metric. It is the Equivalent Continuous Level (Leq) of noise from the aircraft movement, normalized to 1 second.

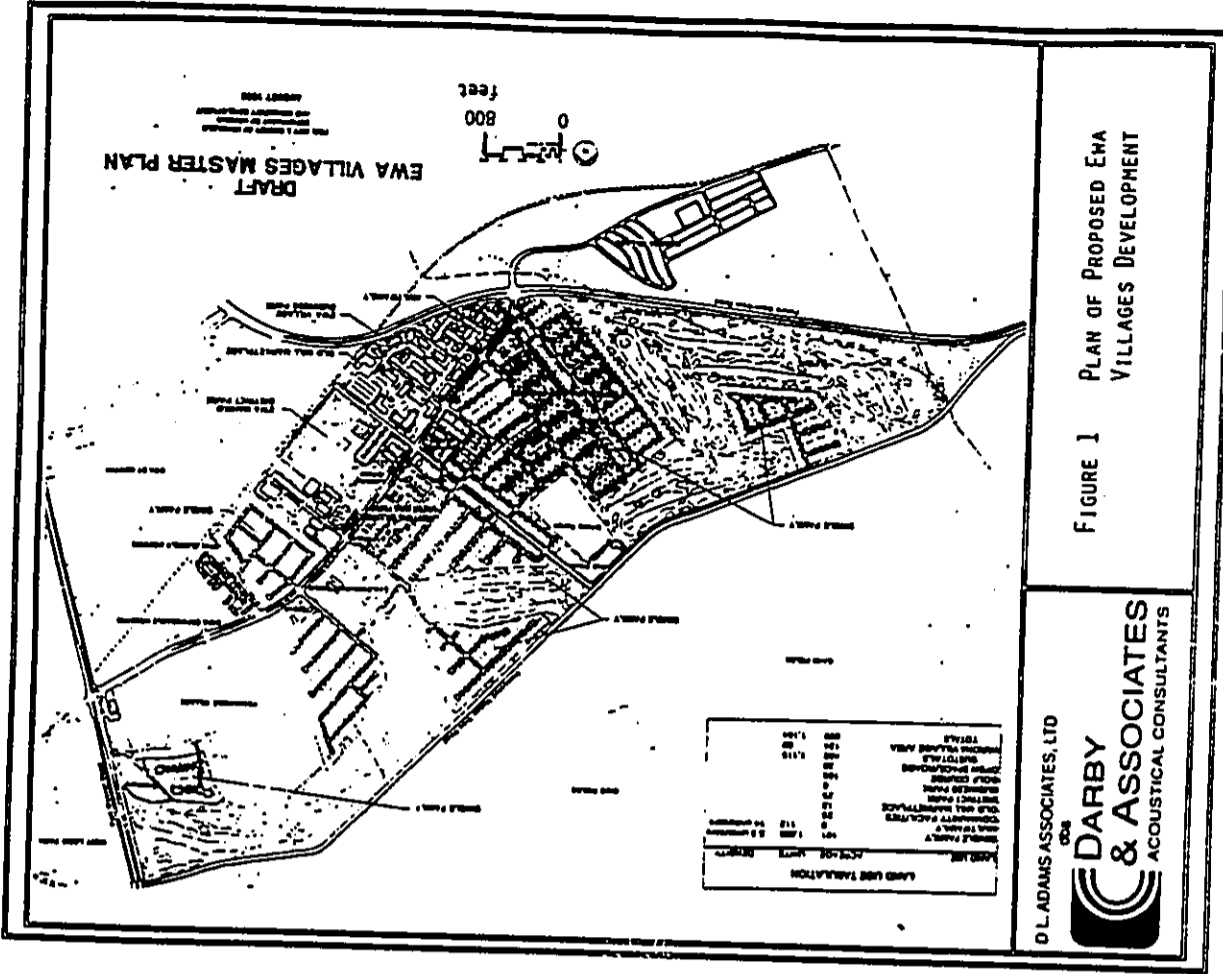
TABLE 4

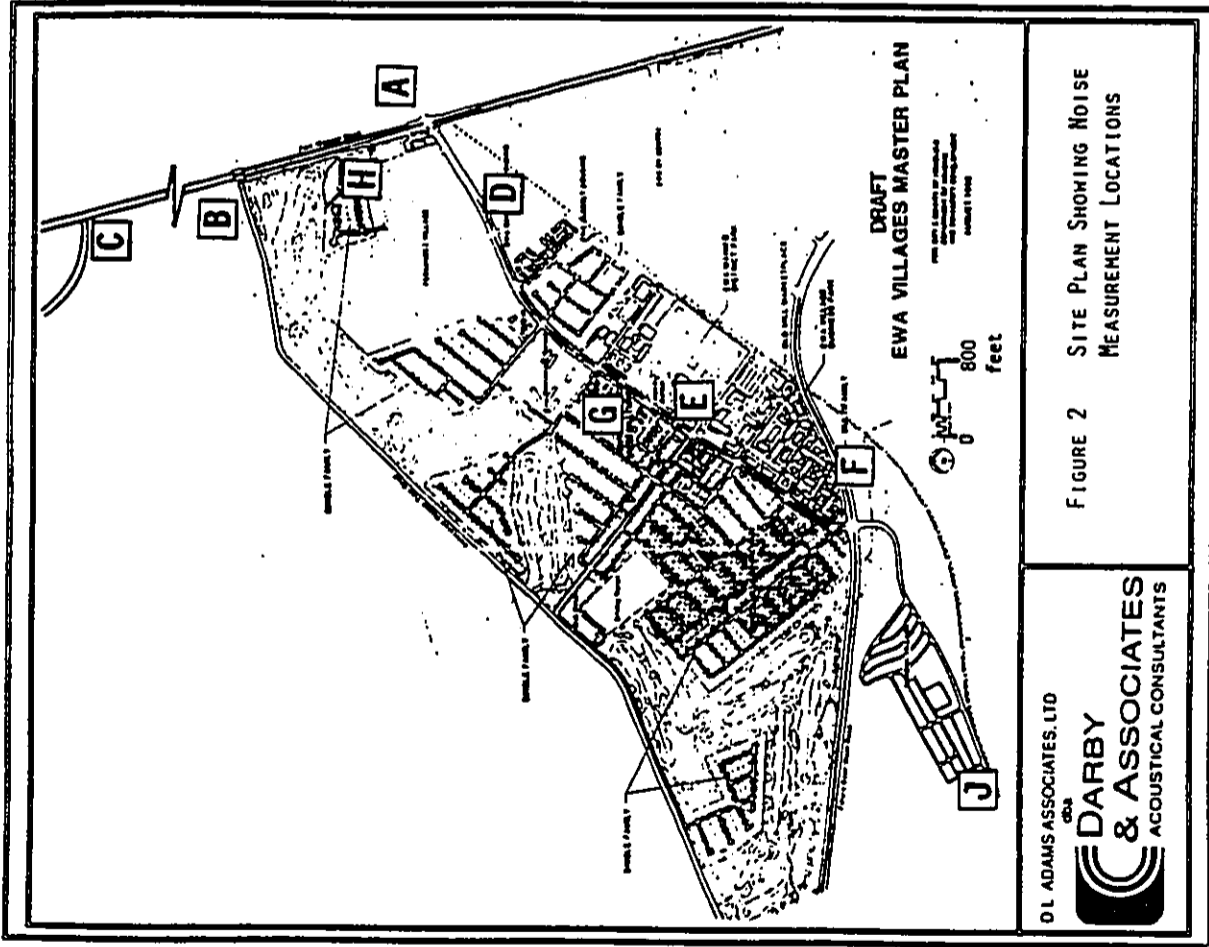
PREDICTED FUTURE (1996) TRAFFIC NOISE LEVELS

AT SELECTED LOCATIONS

Condition	Location			
	Ft. Weaver Rd. (South of Benton)	Benton Rd. (West of Ft. Weaver)	Benton Rd. (East of Alia Hill)	Benton Rd. (Between Alia Hill & Pepper)
a.m. Peak with Project	72.6	64.0	60.7	58.3
a.m. Peak without Project	72.1	59.7	54.8	52.6
Increase in a.m. Peak due to Project-Generated Traffic	+0.5	+4.3	+5.9	+5.7
p.m. Peak with Project	73.7	64.2	60.4	58.6
p.m. Peak without Project	73.3	59.0	55.9	55.1
Increase in p.m. Peak due to Project-Generated Traffic	+0.4	+5.2	+4.5	+3.5

Note: Noise levels are Equivalent Continuous Noise Levels in dBA, at arbitrary 100 ft reference distance.

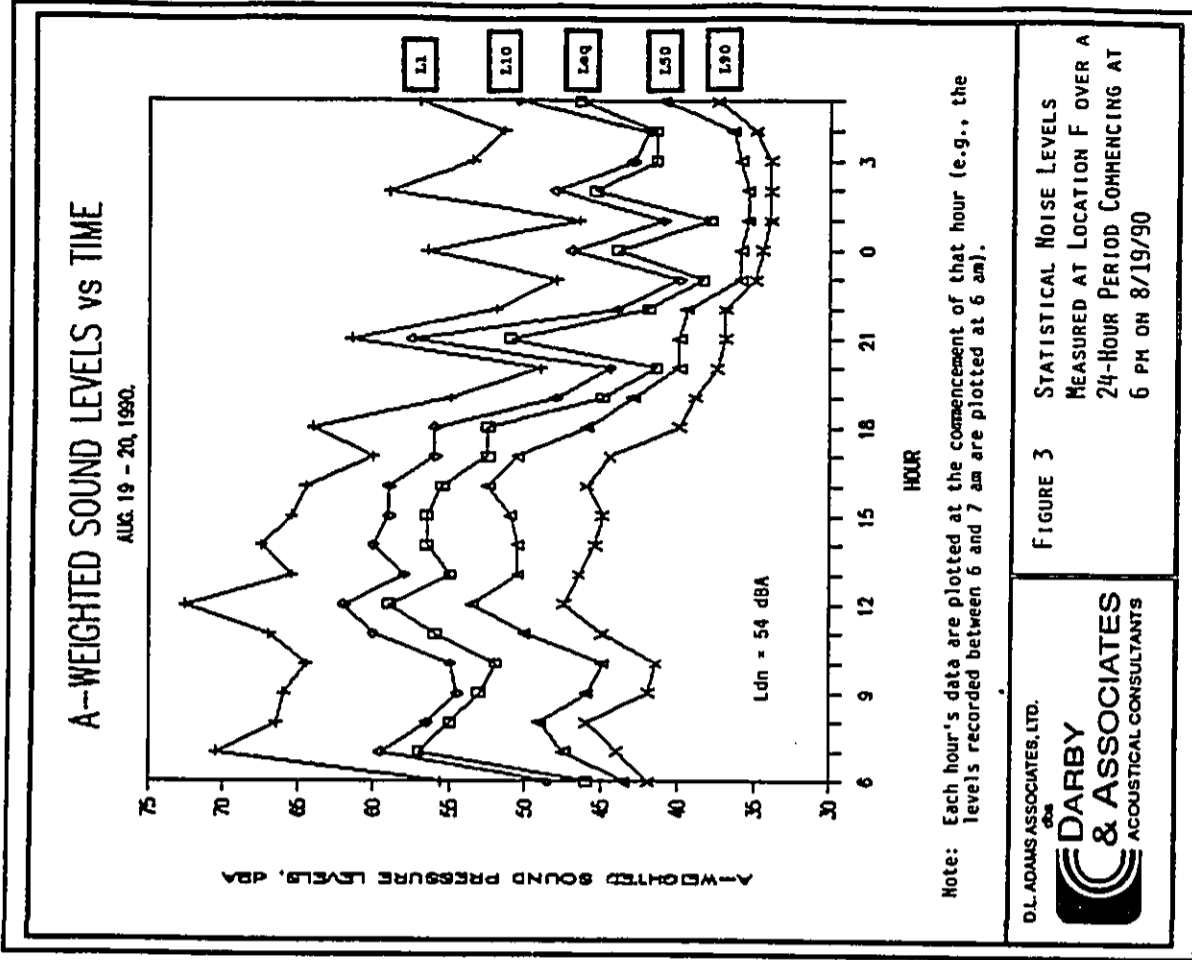




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FIGURE 2 SITE PLAN SHOWING NOISE MEASUREMENT LOCATIONS



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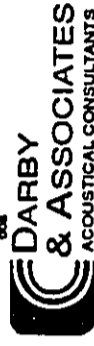


FIGURE 3 STATISTICAL NOISE LEVELS MEASURED AT LOCATION F OVER A 24-HOUR PERIOD COMMENCING AT 6 PM ON 8/19/90

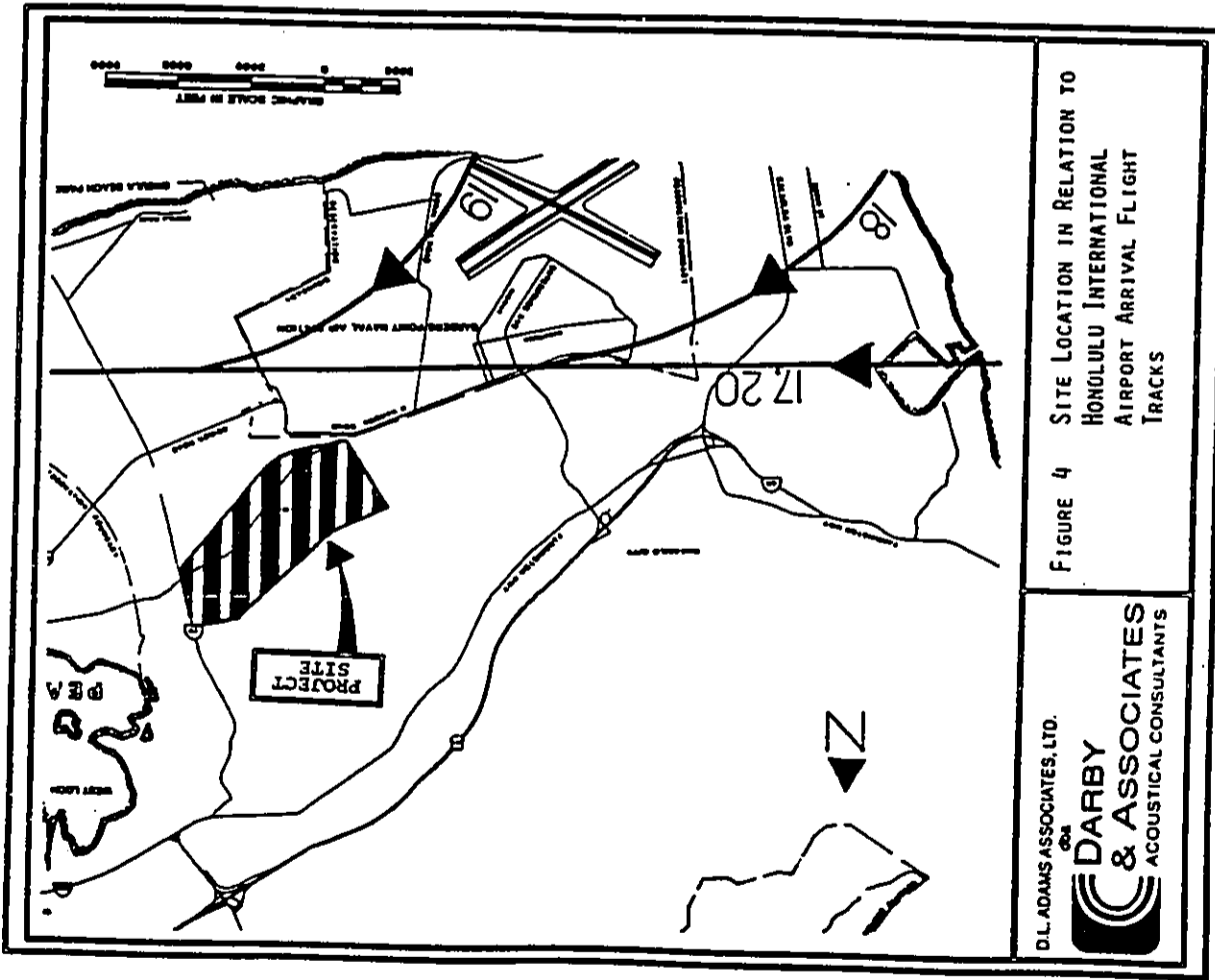


FIGURE 4 SITE LOCATION IN RELATION TO HONOLULU INTERNATIONAL AIRPORT ARRIVAL FLIGHT TRACKS

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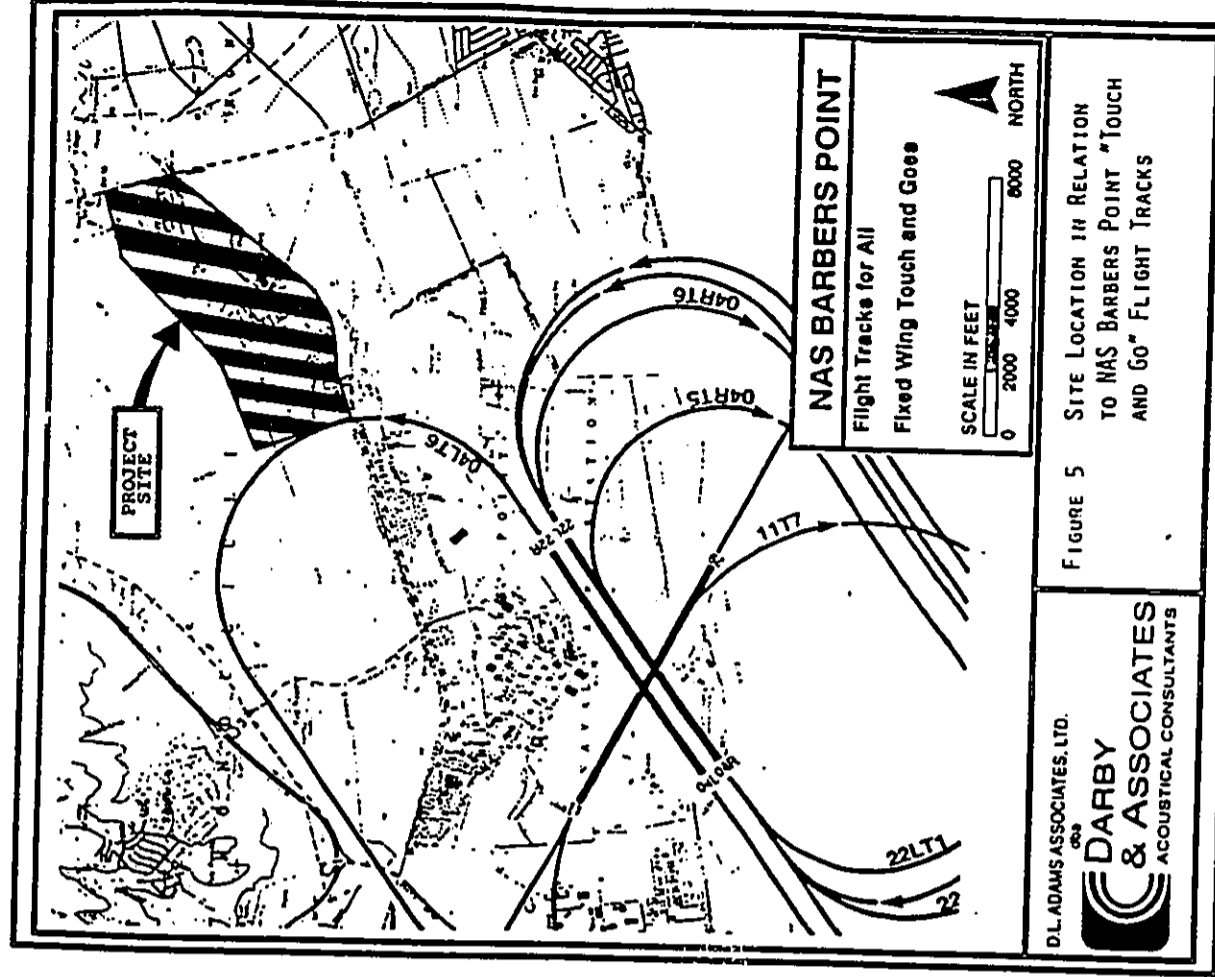
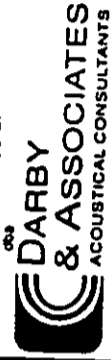
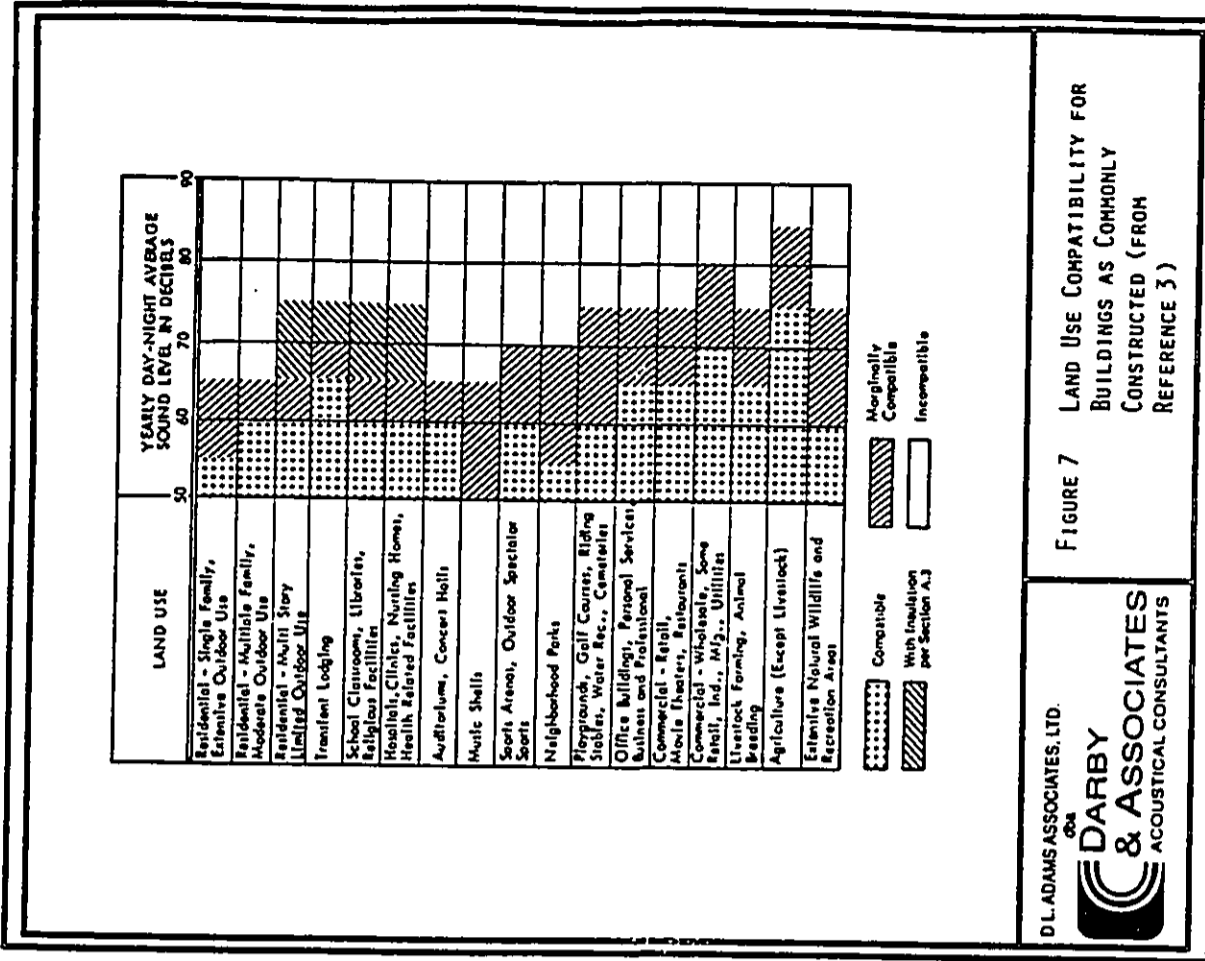
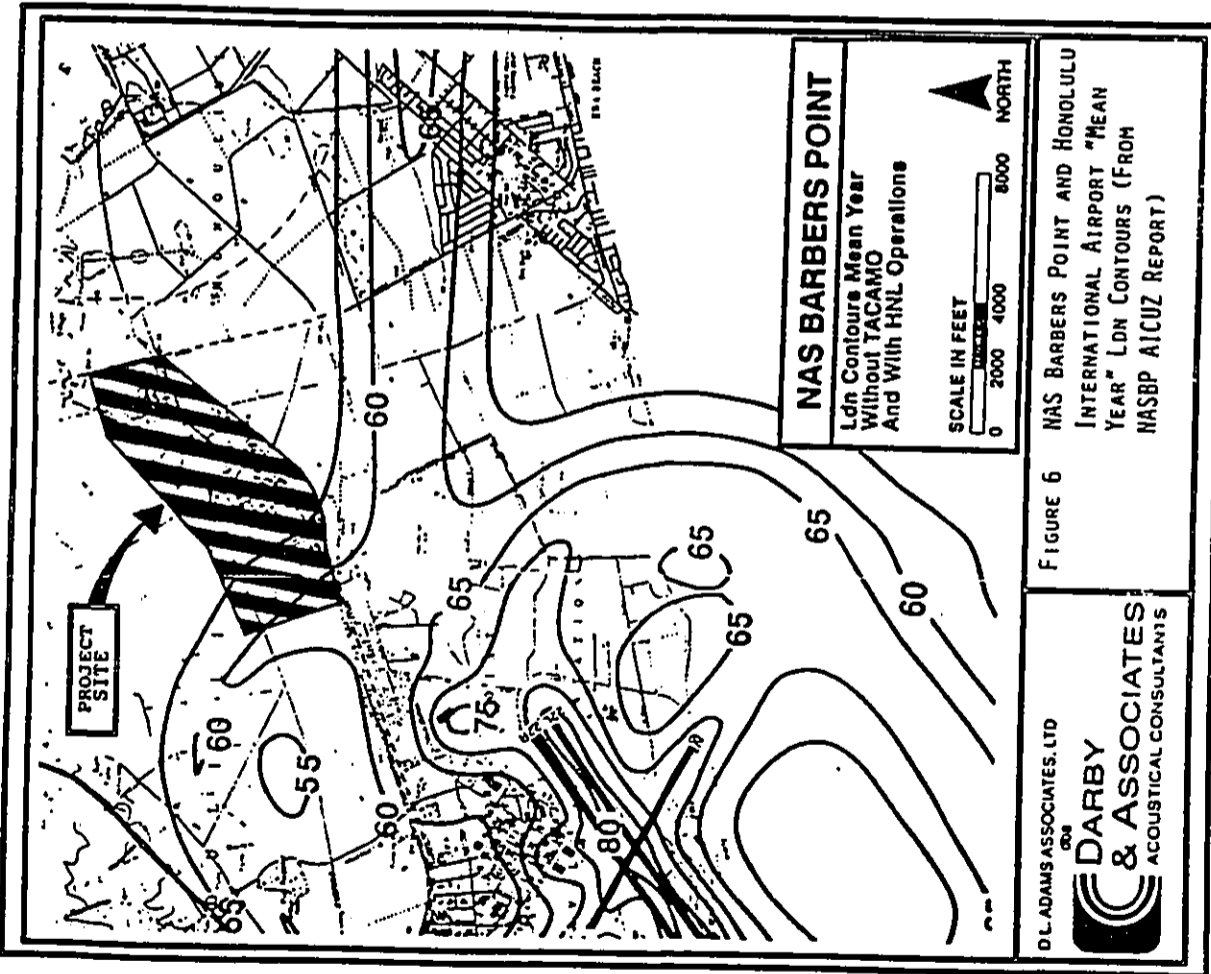


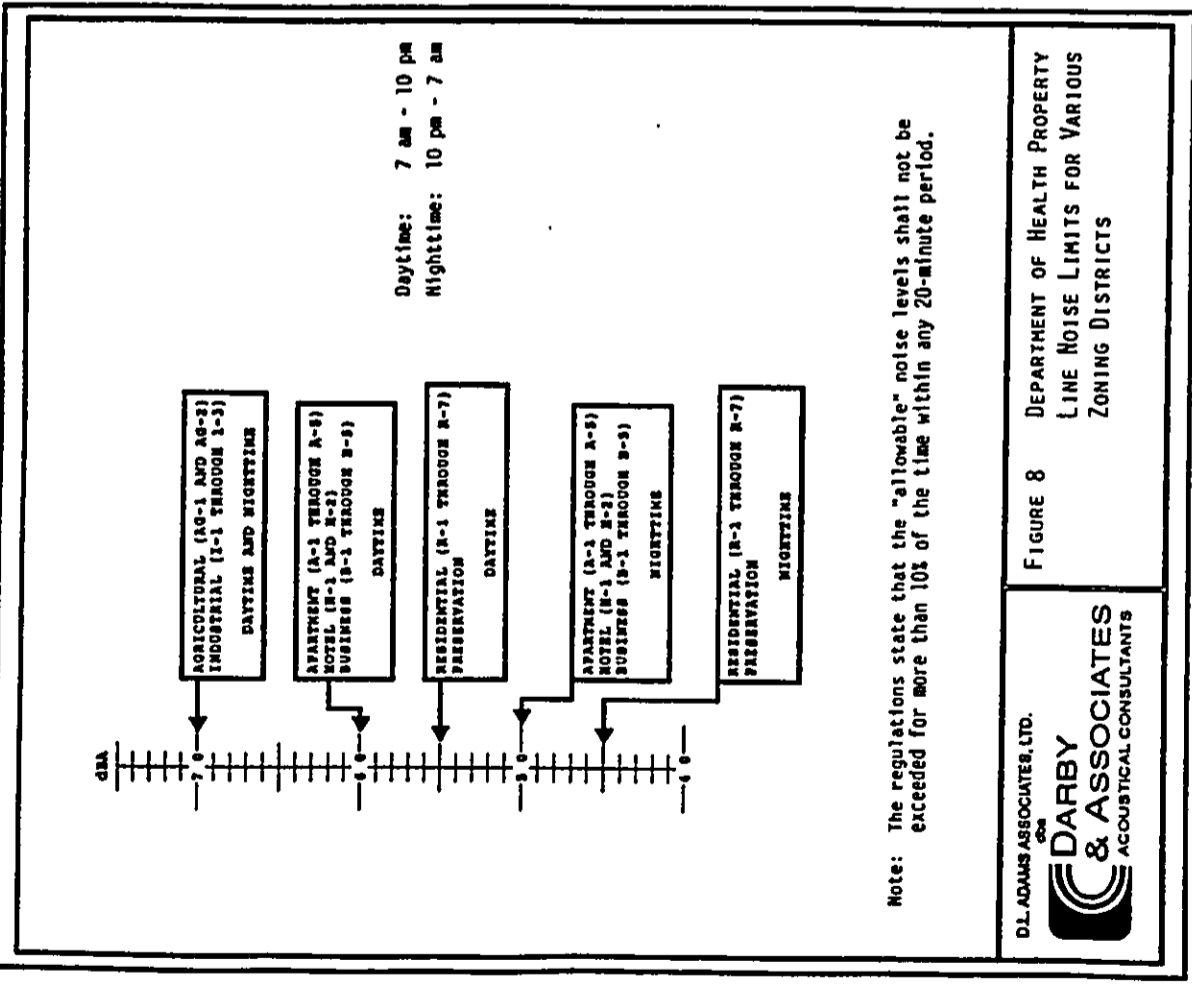
FIGURE 5 SITE LOCATION IN RELATION TO NAS BARBERS POINT #1 TOUCH AND 60' FLIGHT TRACKS

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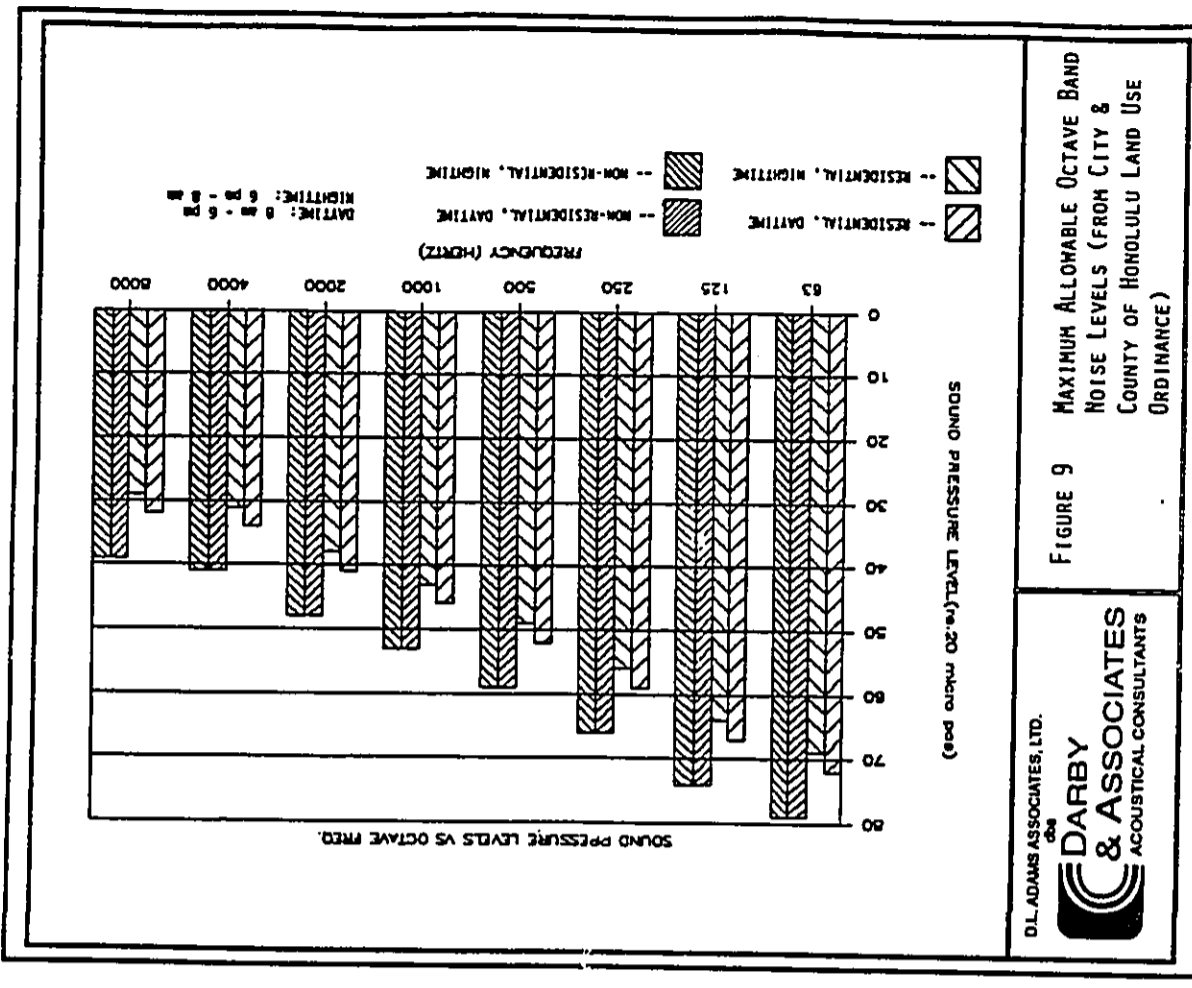






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FIGURE 8 DEPARTMENT OF HEALTH PROPERTY  
LINE NOISE LIMITS FOR VARIOUS  
ZONING DISTRICTS



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FIGURE 9 MAXIMUM ALLOWABLE OCTAVE BAND  
NOISE LEVELS (FROM CITY &  
COUNTY OF HONOLULU LAND USE  
ORDINANCE)

APPENDIX

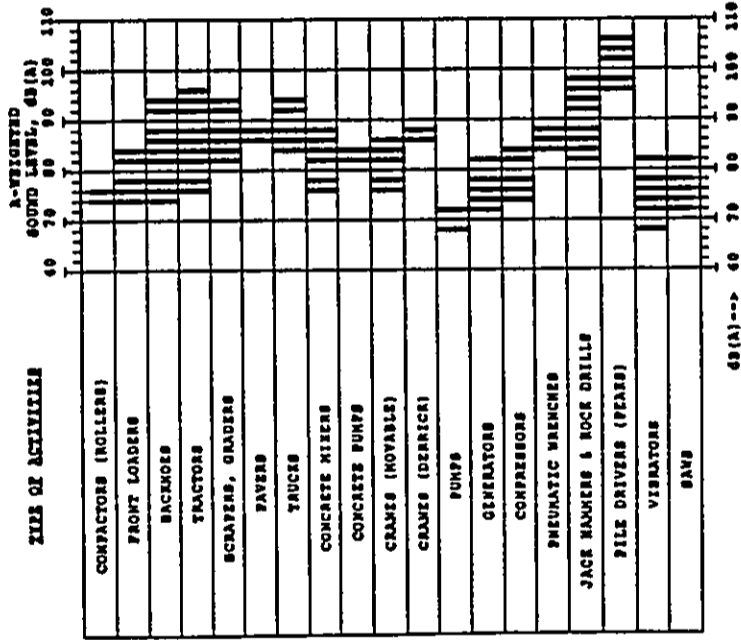
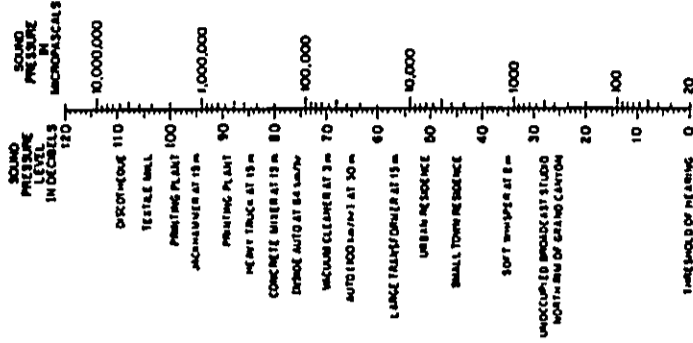
ACOUSTICAL TERMINOLOGY

Sound (Noise) Level

Sound or noise consists of minute fluctuations in atmospheric pressure capable of evoking the sense of hearing. It is measured using precision instruments known as sound level meters, in terms of decibels, abbreviated dB. Sound Level, or Sound Pressure Level, is defined as:

$$SPL = 20 \log (P/P_{ref}) \text{ dB}$$

where P is the sound pressure fluctuation (above or below atmospheric pressure) and P<sub>ref</sub> is 20 micropascals, which is approximately the lowest sound pressure that can be detected by the human ear. So if P is 20 micropascals, SPL = 0 dB, if P is 200 micropascals, SPL = 20 dB, and so on. The chart below indicates the relation between sound pressure and sound pressure level, and also shows typical dBA levels of various sources of noise.



CONSTRUCTION EQUIPMENT NOISE RANGES @ 50 FEET  
NOTE: BASED ON LIMITED AVAILABLE DATA SAMPLES

FIGURE 10 TYPICAL CONSTRUCTION NOISE LEVELS @ 50' DISTANCE

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When two sound levels are combined, the result is the logarithmic sum. For example, two sound levels of 50 dB produce a combined level of 53 dB, not 100 dB; two sounds of 40 and 50 dB produce a combined level of 50.4 dB.

dBa

Sound level, or noise level, is usually expressed in terms of dBA which is measured using the "A-weighting" filter incorporated in sound level meters. This is an electronic filter having a similar frequency response to the human ear, which is most sensitive to sounds in the range 1000 to 4000 Hz, and less sensitive to lower and higher frequencies. The level of a sound in dBA is a good measure of the loudness of that sound, and so different sounds having the same dBA level sound about equally as loud.

A change of 1 or 2 dBA in the level of a sound is difficult for most people to detect, but a 3 to 5 dBA change corresponds to a small but noticeable change in loudness. A 10 dBA change corresponds to an approximate doubling or halving in loudness.

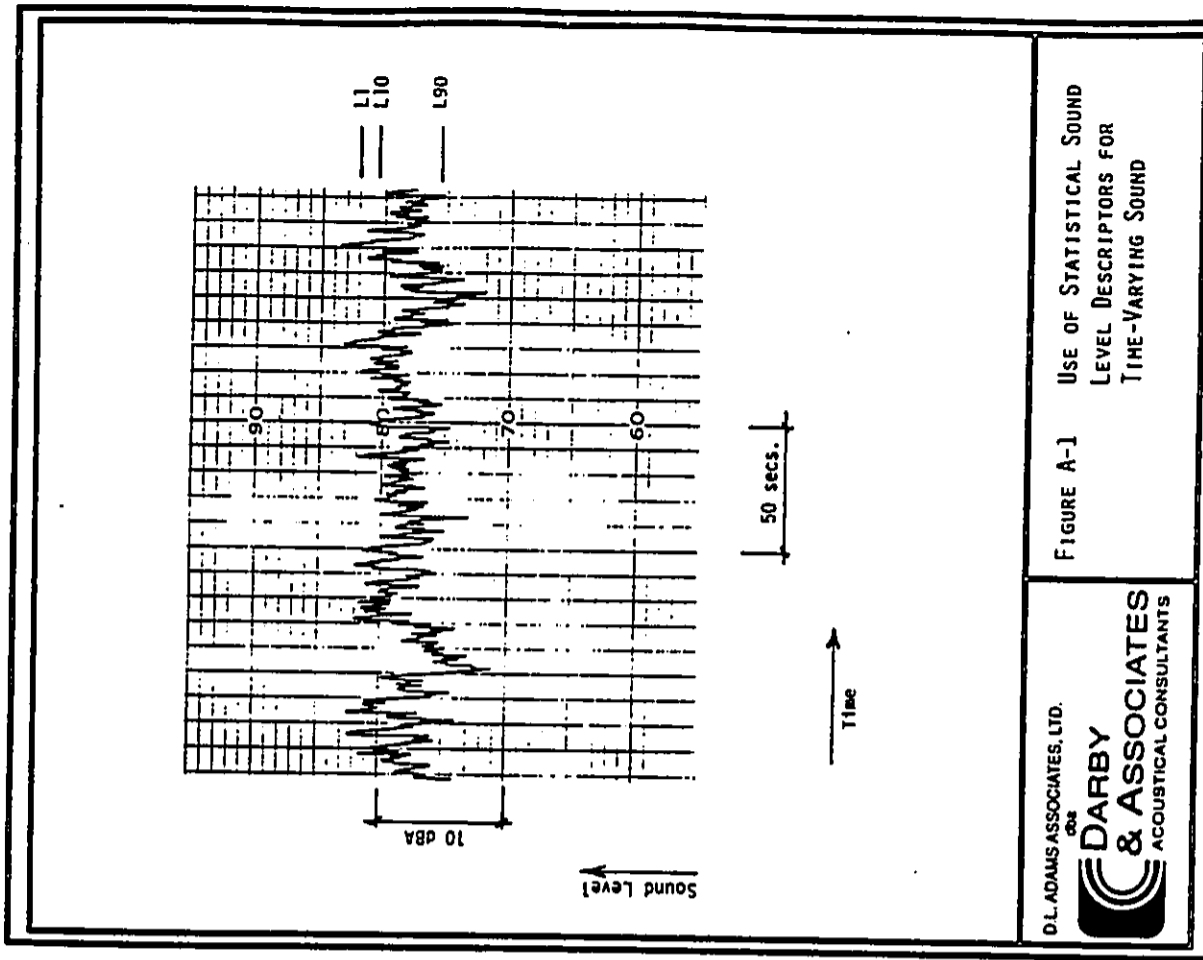
#### Statistical Sound (Noise) Levels

Sounds that vary in level over time, like road traffic noise and most community noise, are commonly described in terms of  $L_x$ , where  $L$  is the noise level exceeded for  $x\%$  of a given measurement period, and/or  $L_{eq}$ , the Equivalent Continuous Noise Level. For example,  $L_1$  is the noise level exceeded for 1% of the time,  $L_{10}$  the noise exceeded for 10% of the time, and  $L_{50}$  on.  $L_{eq}$  is defined as the steady sound level that contains the same amount of acoustical energy as the given time-varying sound.

Figure A-1 illustrates the relationship between selected statistical sound levels.

#### Day-Night Average Sound Level ( $L_{dn}$ )

$L_{dn}$  is essentially the Equivalent Continuous Noise Level measured over a 24-hour period. However, in calculating the Day-Night Average Sound Level, 10 dBA is added to the noise levels recorded between 10 pm and 7 am to account for people's higher sensitivity to noise at night. Figure A-2 shows typical  $L_{dn}$  levels in outdoor locations.



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FIGURE A-1 USE OF STATISTICAL SOUND LEVEL DESCRIPTORS FOR TIME-VARYING SOUND

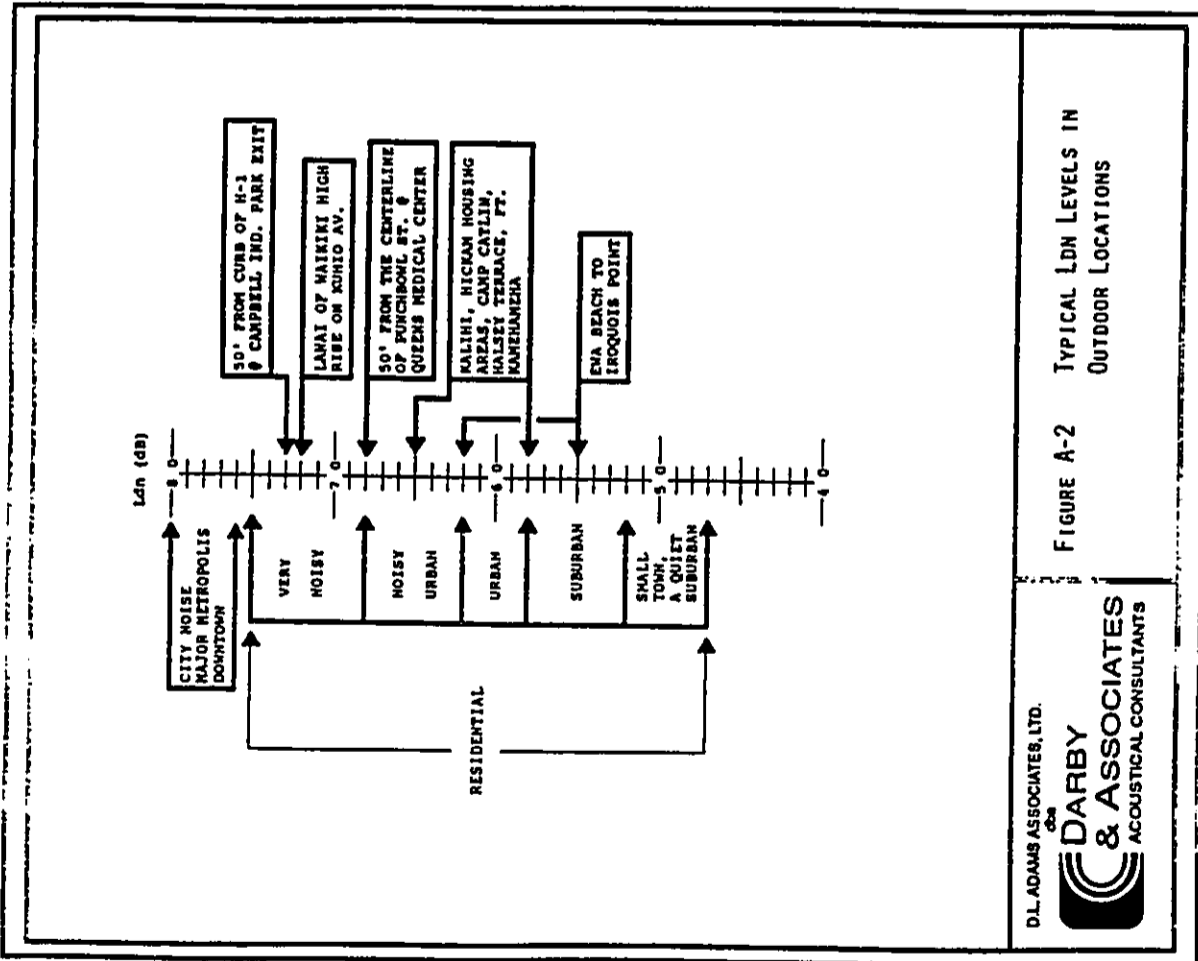


FIGURE A-2 TYPICAL LDN LEVELS IN OUTDOOR LOCATIONS

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APPENDIX C

AIR QUALITY IMPACT ASSESSMENT

Barry D. Neal and Associates

**AIR QUALITY STUDY  
FOR THE PROPOSED  
EWA VILLAGES PROJECT  
EWA, OAHU, HAWAII**

**Prepared for:  
R. M. Towill Corporation**

**September 1990**



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## 1.0 INTRODUCTION AND PROJECT DESCRIPTION

The Department of Housing and Community Development of the City and County of Honolulu is proposing a master plan for the Eva Villages located in the Eva Plains area on the island of Oahu (see Figure 1). Existing villages involved in the proposed master plan include Tenney, Renton and Varona. The major focus of the Eva Villages Master Plan is to establish homeownership programs for the current residents, who stand to lose their homes when Oahu Sugar's lease expires in 1995, while at the same time implementing restoration and revitalization programs within the community. To support and supplement these programs, several new or expanded facilities will be constructed within the master plan area. These include affordable and market single- and multi-family housing units, community facilities, a district park, a marketplace, a business park, roads, flood control facilities and other infrastructure. A total of approximately 606 acres will be involved in the plan. Construction of the proposed project will be accomplished in phases beginning early in 1991. Full development is expected to be achieved sometime during 1996.

The purpose of this study is to describe existing air quality in the project area and to assess the potential short-term and long-term direct and indirect air quality impacts that could result from construction/redevelopment and use of the proposed facilities as planned. In addition to assessing potential impacts on the air quality of the surrounding area created by the project, this study also examines potential impacts on the project from existing nearby air pollution sources. Measures to mitigate these impacts are suggested where possible and appropriate.

## 2.0 AMBIENT AIR QUALITY STANDARDS

Ambient concentrations of air pollution are regulated by both national and state ambient air quality standards (AAQS). National AAQS are specified in Section 40, Part 50 of the Code of Federal Regulations (CFR), while State of Hawaii AAQS are defined in Chapter 11-59 of the Hawaii Administrative Rules. Table 1 summarizes both the national and the state AAQS that are specified in the cited documents. As indicated in the table, AAQS have been established for six air pollutants. These regulated air pollutants include: particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone and lead. National AAQS are stated in terms of primary and secondary standards. National primary standards are designed to protect the public health with an "adequate margin of safety". National secondary standards, on the other hand, define levels of air quality necessary to protect the public welfare from "any known or anticipated adverse effects of a pollutant". Secondary public welfare impacts may include such effects as decreased visibility, diminished comfort levels, or other potential injury to the natural or man-made environment, e.g., soiling of materials, damage to vegetation or other economic damage. In contrast to the national AAQS, Hawaii State AAQS are given in terms of a single standard that is designed "to protect public health and welfare and to prevent the significant deterioration of air quality".

Each of the regulated air pollutants has the potential to create or exacerbate some form of adverse health effect or to produce environmental degradation when present in sufficiently high concentration for prolonged periods of time. The AAQS specify a maximum allowable concentration for a given air pollutant for one or more averaging times to prevent harmful effects. Averaging times vary from one hour to one year depending on the pollutant and



type of exposure necessary to cause adverse effects. In the case of the short-term (i.e., 1- to 24-hour) AAQS, both national and state standards allow one exceedance per year.

State of Hawaii AAQS are in some cases considerably more stringent than comparable national AAQS. In particular, the State of Hawaii 1-hour AAQS for carbon monoxide is four times more stringent than the comparable national limit.

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

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

### 3.0 REGIONAL AND LOCAL CLIMATOLOGY

Regional and local climatology significantly affect the air quality of a given location. Wind, temperature, atmospheric turbulence, mixing height and rainfall all influence air quality. Although the climate of Hawaii is relatively moderate throughout most of the state, significant differences in these parameters may occur from one location to another. Most differences in regional and local climates within the state are caused by the mountainous topography.

Hawaii lies well within the belt of northeasterly trade winds generated by the semi-permanent Pacific high pressure cell to the north and east. On the island of Oahu, the Koolau and Waianae Mountain Ranges are oriented almost perpendicular to the trade winds, which accounts for much of the variation in the local climatology of the island. The site of the proposed project is located on the broad Ewa Plain leeward of the Koolau Mountains.

The nearest and most representative long-term wind data available for the site are collected at the Barbers Point Naval Air Station located about 3 miles to the southwest. Data available from the Honolulu International Airport, located about 8 miles to the east, may also be at least semi-representative in some cases. Wind frequency data given in Table 2 for Barbers Point show that the annual prevailing wind direction for this area of Oahu is east northeast (the same as at Honolulu International Airport). On an annual basis, 38.1 percent of the time the wind is from this direction, and more than 80 percent of the time the wind is in the northeast quadrant. Winds from the south are infrequent occurring only a few days during the year and mostly in winter in association with Kona storms. Wind speeds average about 10 knots (12 mph) and

mostly vary between about 5 and 15 knots (6 and 17 mph). Surface winds at the project site are very similar to those recorded at Barbers Point.

Air pollution emissions from motor vehicles, the formation of photochemical smog and smoke plume rise all depend in part on air temperature. Colder temperatures tend to result in higher emissions of contaminants from automobiles but lower concentrations of photochemical smog and ground-level concentrations of air pollution from elevated plumes. In Hawaii, the annual and daily variation of temperature depend to a large degree on elevation above sea level, distance inland and exposure to the trade winds. Average temperatures at locations near sea level generally are warmer than those at higher elevations. Areas exposed to the trade winds tend to have the least temperature variation, while inland and leeward areas often have the most. The Eva Villages near coastal, leeward location results in a relatively moderate temperature profile compared to other locations around Oahu and the state. Based on more than 50 years of data collected at Eva Plantation, average annual daily minimum and maximum temperatures in the project area are 65°F and 84°F, respectively [3]. The extreme minimum temperature on record is 47°F, and the extreme maximum is 93°F.

Small scale, random motions in the atmosphere (turbulence) cause air pollutants to be dispersed as a function of distance or time from the point of emission. Turbulence is caused by both mechanical and thermal forces in the atmosphere. It is oftentimes measured and described in terms of Pasquill-Gifford stability class. Stability class 1 is the most turbulent and class 6 the least. Thus, air pollution dissipates the best during stability class 1 conditions and the worst when stability class 6 prevails.

In the Eva Villages area, stability class 5 or 6 is generally the highest stability class that occurs, developing during clear, calm nighttime or early morning hours when temperature inversions form due to radiational cooling. Stability classes 1 through 4 occur during the daytime, depending mainly on the amount of cloud cover and incoming solar radiation and the onset and extent of the sea breeze.

Mixing height is defined as the height above the surface through which relatively vigorous vertical mixing occurs. Low mixing heights can result in high ground-level air pollution concentrations because contaminants emitted from or near the surface can become trapped within the mixing layer. In Hawaii, minimum mixing heights tend to be high because of mechanical mixing caused by the trade winds and because of the temperature moderating effect of the surrounding ocean. Low mixing heights may sometimes occur, however, at inland locations and even at times along coastal areas early in the morning following a clear, cool, windless night. Coastal areas also may experience low mixing levels during sea breeze conditions when cooler ocean air rushes in over warmer land. Mixing heights in Hawaii typically are above 3000 feet (1000 meters).

Rainfall can have a beneficial affect on the air quality of an area in that it helps to suppress fugitive dust emissions, and it also may "washout" gaseous contaminants that are water soluble. Rainfall in Hawaii is highly variable depending on elevation and on location with respect to the trade wind. The Eva Plain is one of the driest areas on Oahu due to its leeward and near sea level location. Average annual rainfall amounts to about 21 inches but may vary from about 10 inches during a dry year to more than 40 inches during a wet year [3]. Most of the rainfall usually occurs

during the winter months. Monthly rainfall may vary from as little as a trace to as much as 15 inches or more.

#### 4.0 PRESENT AIR QUALITY

Present air quality in the project area is mostly affected by air pollutants from vehicular, industrial, natural and/or agricultural sources. Table 3 presents an air pollutant emission summary for the City and County of Honolulu that was compiled in 1980. These are the latest data that are available. Emissions are undoubtedly higher at this time, but the proportional relationships may continue to be about the same. The mineral products industry was the most significant source category for emissions of particulate matter. Sulfur dioxide emissions originated mainly from power plants, while motor vehicles accounted for much of the emissions of nitrogen oxides, carbon monoxide and hydrocarbons.

Fort Weaver Road, adjacent to the project site on the northeast, is a major arterial roadway that presently carries moderate levels of vehicle traffic during peak traffic hours. Emissions from motor vehicles using this roadway, primarily nitrogen oxides and carbon monoxide, will tend to be carried over the project site by the prevailing winds. Emissions emanating from traffic on the H-1 Freeway, situated about two miles to the north, probably do not significantly impact the site.

Several sources of industrial air pollution are located in the Campbell Industrial Park, which is located about 4 miles to the southwest at Barbers Point. Industries currently operating there include the Chevron and PRI refineries, H-Power and others. Prevailing winds from the northeast will carry these emissions away

from the site most of the time. As indicated in the previous section, winds from the southwest (which will carry emissions toward the site) occur less than 5 percent of the time.

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

Air pollution originating from agricultural sources can mainly be attributed to sugar cane operations which nearly surround the site on three sides. To the northeast (directly upwind of the prevailing wind direction), sugar cane cultivation has been discontinued, which should improve the air quality at the site. This land has been set aside to accommodate Phase II of West Loch Estates. Smoke and dust from the remaining cane fields may occasionally impact the site, particularly from fields to the east. This potential problem is examined in more detail in Section 7 of this report.

The State Department of Health operates a network of air quality monitoring stations at various locations on Oahu. Each station, however, typically does not monitor the full complement of air quality parameters. Table 4 shows an annual summary of air quality measurements that were made nearest to the project site for each of the regulated air pollutants for the period 1985 through 1989.

Sulfur dioxide is monitored by the State Department of Health at an air quality station located in nearby Campbell Industrial Park. Monitoring consisted of measurements of 24-hour average sulfur dioxide concentration every sixth day. There were no exceedances

of the state/national 24-hour AAQS for sulfur dioxide during the 5-year period. Concentrations monitored during the last 4 years reported were consistently low with daily mean values at or below  $5 \mu\text{g}/\text{m}^3$ .

The nearest total suspended particulate concentrations were monitored at Pearl City, about 5 miles to the northeast. During the 1985-89 reporting period, the highest 24-hour average total suspended particulate concentration measured was  $65 \mu\text{g}/\text{m}^3$ . Average daily concentrations were about  $30 \mu\text{g}/\text{m}^3$ . No exceedances of the state AAQS for this parameter were recorded.

The closest PM-10 monitoring station is located in Campbell Industrial Park. Twenty-four hour average PM-10 concentrations monitored at this location ranged from 7 to  $66 \mu\text{g}/\text{m}^3$  between 1985 and 1989. Average daily concentrations were generally less than  $25 \mu\text{g}/\text{m}^3$ . All values reported were within the national AAQS.

The nearest carbon monoxide measurements were made at the Department of Health building in downtown Honolulu. During the past five years, the average daily maximum 1-hour concentration measured at this location was about  $2 \text{ mg}/\text{m}^3$ . During the most recent year reported, 1989, the daily maximum 1-hour concentration ranged from  $0.3$  to  $7.8 \text{ mg}/\text{m}^3$ , and no exceedances of the state 1-hour AAQS were recorded. During previous years (1985-88), maximum 1-hour concentrations were higher, and one to three exceedances of the state 1-hour AAQS were measured each year. Daily maximum 8-hour values for 1988 and 1989 have not been reported at this writing, but concentrations for the 1985-87 period ranged from  $0.1$  to  $4.7 \text{ mg}/\text{m}^3$ . The average of the daily maximum 8-hour values was about  $1.3 \text{ mg}/\text{m}^3$ . No exceedances of the state 8-hour AAQS were

recorded. Present concentrations of carbon monoxide in the project area are estimated later in this study based on air quality modeling of vehicular emissions.

The nearest available ozone measurements were obtained at Sand Island (about 11 miles east of the project site). Except for 1985, the maximum 1-hour concentration each year during the past few years has averaged about  $90 \mu\text{g}/\text{m}^3$ . No exceedances of the state AAQS have been recorded since 1985.

The closest and most recent measurements of ambient lead concentrations that have been reported were made at the downtown Honolulu monitoring station between 1985 and 1987. Lead concentrations at this location had a downward trend, most probably reflecting the increased use of unleaded gasoline. Average quarterly concentrations were near or below the detection limit. No exceedances of the state AAQS have ever been recorded.

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

Based on the data and discussion presented above, it appears likely that the State of Hawaii AAQS for sulfur dioxide, nitrogen dioxide and lead are currently being met at the project site. The ozone AAQS has not been exceeded during the past four years at the Sand Island monitoring station. Carbon monoxide readings from urban Honolulu indicate that the state AAQS for carbon monoxide may be

exceeded at a rate of one to three times per year in traffic-congested areas. Sugar cane operations in the project vicinity likely cause occasionally elevated levels of both carbon monoxide and particulate.

#### 5.0 SHORT-TERM IMPACTS OF PROJECT

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

Fugitive dust emissions may arise from renovation activities, from the demolition and removal of existing structures on the site and from the grading and dirt-moving activities associated with site preparation work for new construction. The emission rate for fugitive dust emissions from construction activities is difficult to estimate accurately because of its elusive nature and because the potential for its generation varies greatly depending upon the type of soil at the construction site, the amount and type of dirt-disturbing activity taking place, the moisture content of exposed soil in work areas, and the wind speed. The EPA (4) has provided a rough estimate for uncontrolled fugitive dust emissions from construction activity of 1.2 tons per acre per month under conditions of "medium" activity, moderate soil silt content (30%),

and precipitation/evaporation (P/E) index of 50. Uncontrolled fugitive dust emissions in the project area would likely be higher because the PE index for the Ewa Plain area is less than 50 due to the relatively dry climate and because the soil silt content in the area is probably greater than 30 percent. In any case, State of Hawaii Air Pollution Control Regulations [5] prohibit visible emissions of fugitive dust from construction activities at the property line. Thus, an effective dust control plan for the project construction phase is essential.

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

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

Indirectly, slow-moving construction vehicles on roadways leading to and from the project site could obstruct the normal flow of traffic to such an extent that overall vehicular emissions are increased, but this impact can be mitigated by moving heavy construction equipment during periods of low traffic volume. Likewise, the schedules of commuting construction workers can be adjusted to avoid peak hours in the project vicinity. Thus, most potential short-term air quality impacts from project construction can be mitigated.

## 6.0 LONG-TERM IMPACTS OF PROJECT

### 6.1 Roadway Traffic

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

Federal air pollution control regulations also call for increased efficiency in removing carbon monoxide and nitrogen oxides from the

Federal air pollution control regulations also call for increased efficiency in removing carbon monoxide and nitrogen oxides from the exhausts of new motor vehicles. By the year 1995 carbon monoxide emissions are expected to be about 30 percent less than the amounts now emitted due to the replacement of older vehicles with newer, more emission efficient models. Further reductions in vehicular emissions have recently been proposed by the President for areas of the country that do not currently meet AAQS, mainly through the use of alternative fuels.

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

For this project, three scenarios were selected for the carbon monoxide modeling study: year 1990 with present conditions, year 1996 without the project, and year 1996 assuming the project is built and complete. To begin the modeling study, critical receptor areas in the vicinity of the project were identified for analysis. Generally speaking, roadway intersections are the primary concern because of traffic congestion and because of the increase in

vehicular emissions associated with traffic cycling: decelerating, idling, queuing and accelerating. For this study, the three key intersections identified in the traffic study were also selected for air quality analysis. These include: Fort Weaver Road at Renton Road, Renton Road at Ala Nui Mauka and Renton Road at Pepper Row. The traffic impact assessment report for the project [6] describes the present and future conditions and configurations of these intersections in detail.

The main objectives of the modeling study were to estimate both current and projected levels of maximum 1-hour average carbon monoxide concentrations that could then be directly compared to the national and state AAQS. The traffic impact assessment report indicates that traffic volumes generally are or will be higher during the afternoon peak hour than during the morning peak period. Worst-case emission and meteorological dispersion conditions typically occur during the morning hours at many locations. Thus, both morning and afternoon peak traffic hours were examined to ensure that worst-case concentrations were identified.

The EPA computer model MOBILE4 [7] was used to calculate vehicular carbon monoxide emissions for each year studied. One of the key inputs to MOBILE4 is vehicle mix. Based on recent vehicle registration figures, the present and projected vehicle mix in the project area is estimated to be 91.9% light-duty gasoline-powered vehicles, 5% light-duty gasoline-powered trucks and vans, 0.5% heavy-duty gasoline-powered vehicles, 0.6% light-duty diesel-powered vehicles, 1% heavy-duty diesel-powered trucks and buses, and 1% motorcycles.

Other key inputs to the MOBILE4 emission model are the cold/hot start fractions. Motor vehicles operating in a cold- or hot-start mode emit excess air pollution. Typically, motor vehicles reach stabilized operating temperatures after about 4 miles of driving. For traffic operating within the project area, it was assumed that during both the morning and the afternoon peak traffic hours about 25 percent of all vehicles would be operating in the cold-start mode and that about 5 percent would be operating in the hot-start mode. These operational mode values were estimated based on a report from the California Department of Transportation [8] and taking into consideration the likely origin of traffic in the project area. MOBILE4 idle emissions were adjusted to account for excess cold/hot-start emissions per a recent U.S. EPA memorandum [9].

Ambient temperatures of 59 and 68 degrees F were used for morning and afternoon peak-hour emission computations, respectively. These are conservative assumptions since morning/afternoon ambient temperatures will generally be warmer than this, and emission estimates given by MOBILE4 are inversely proportional to the ambient temperature.

After computing vehicular carbon monoxide emissions through the use of MOBILE4, these data were then input to the latest version of the computer model CALINE4 [10]. CALINE4 was developed by the California Transportation Department to simulate vehicular movement and atmospheric dispersion of vehicular emissions. The model is designed to predict 1-hour average pollutant concentrations along roadways based on input traffic and emission data, roadway/receptor geometry and meteorological conditions.

Input peak-hour traffic data were obtained from the traffic study cited previously. Traffic queuing estimates were made based on the project traffic study, Transportation Research Board procedures (11), U.S. EPA guidelines (12), and traffic observations at the subject intersections. Vehicles using Fort Weaver Road were assumed to accelerate to 45 mph, while Renton Road traffic was assumed to move at 25 mph. These are the posted speed limits. Deceleration and acceleration times of 10 and 12 seconds, respectively, were assumed for vehicles traveling at 25 mph, whereas values of 20 and 25 seconds were assumed for those traveling at 45 mph.

Model roadways were set up to reflect actual roadway geometry, physical dimensions and operating characteristics. Pedestrian walkways either exist or were assumed to exist within a few meters of the roadways within the project area. Thus, model receptor sites were located within a few meters from the edge of the roadways near the intersections studied. All receptor heights were placed at 1.5 meters above ground to simulate levels within the normal human breathing zone.

Input meteorological conditions for this study were defined to provide "worst-case" results. One of the key meteorological inputs is atmospheric stability category. For these analyses, atmospheric stability category 6 was assumed for morning scenarios and stability category 4 was assumed for afternoon cases. These are the most conservative stability categories that can be used for estimating pollutant dispersion at suburban or undeveloped locations. A surface roughness length of 100 cm was assumed with a mixing height of 300 meters. Worst-case wind conditions were defined as a wind speed of 1 meter per second with a wind direction resulting in the highest predicted concentration.

Existing background concentrations of carbon monoxide in the project vicinity are believed to be at relatively low levels. Hence, background contributions of carbon monoxide from sources or distant roadways not directly considered in the analysis were accounted for by adding a background concentration of 0.1 ppm to all predicted concentrations for the 1990 scenarios. Due to the expected significant development that is predicted to occur in the Ewa area within the next few years, a background value of 0.5 ppm was used for all 1996 scenarios.

Table 5 summarizes the final results of the modeling study in the form of the estimated worst-case 1-hour morning and afternoon ambient carbon monoxide concentrations. These results can be compared directly to the state and the national AAQS. Estimated worst-case carbon monoxide concentrations are presented in the table for three scenarios: year 1990 with existing traffic, year 1996 without project traffic and year 1996 with project traffic. The locations of these estimated worst-case 1-hour concentrations all occurred at or very near the indicated intersections.

As indicated in the table, the estimated present worst-case 1-hour carbon monoxide concentration in the project area, 17.9 mg/m<sup>3</sup>, occurs during the morning peak hour near the Renton Road/Fort Weaver Road intersection. Peak hour concentrations estimated for the existing case were significantly higher in the vicinity of Renton Road at Fort Weaver Road compared to the other two intersections studied due to the much higher traffic volume at this intersection and the higher speed limit on Ft. Weaver Road. Estimated worst-case 1-hour values at other locations along Renton



Road in the project area where traffic is relatively light were less than 1 mg/m<sup>3</sup>.

In the year 1996 without the proposed project, a worst-case 1-hour concentration of 31.0 mg/m<sup>3</sup> was predicted to occur during the morning peak traffic hour near the intersection of Renton Road and Fort Weaver Road, the same location and time as the highest concentration for the existing case. Worst-case afternoon peak hour concentrations at this location were estimated to reach 23.8 mg/m<sup>3</sup>. Even without the proposed project and with the widening of Fort Weaver Road to six lanes, the traffic study indicates that this intersection will be over capacity by the year 1996. Thus, long queues will form causing air pollution concentrations to accumulate in the area. Worst-case values at the other locations studied for this scenario remained less than 1 mg/m<sup>3</sup>.

Predicted 1-hour worst-case concentrations for the 1996 with project scenario ranged from 36.3 mg/m<sup>3</sup> during the morning at Renton Road and Fort Weaver Road to 1.7 mg/m<sup>3</sup> during the afternoon at Renton Road and Ala Nui Mauka. Compared to the without project case, predicted worst-case concentrations were generally about 20 to 30 percent higher at the Renton/Ft. Weaver Road intersection, which would operate substantially over capacity. Predicted concentrations at this intersection are probably unrealistic due to excessive over capacity conditions. Worst-case 1-hour concentrations at the other two intersections studied along Renton Road will increase two to tenfold compared to the without project case but will still remain relatively low.

Thus, all estimated worst-case 1-hour carbon monoxide levels for all scenarios are within the national AAQS of 40 mg/m<sup>3</sup>, although

concentrations near Renton Road at Ft. Weaver Road could approach this standard in 1996. Existing concentrations of carbon monoxide as well as future concentrations either without or with the project may substantially exceed the more stringent State of Hawaii 1-hour AAQS of 10 mg/m<sup>3</sup> on occasion at the Renton/Ft. Weaver Road intersection.

Worst-case 8-hour carbon monoxide concentrations were estimated by multiplying the worst-case 1-hour values by a persistence factor of 0.5. This accounts for two factors: (1) traffic volumes averaged over eight hours are lower than peak 1-hour values, and (2) meteorological dispersion conditions are more variable (and hence more favorable) over an 8-hour period than they are for a single hour. Based on monitoring data, 1-hour to 8-hour persistence factors for most locations generally vary from 0.4 to 0.8 with 0.6 being the most typical. One recent study based on modeling [13] concluded that 1-hour to 8-hour persistence factors could typically be expected to range from 0.4 to 0.5. EPA guidelines [12] recommend using a value of 0.6 to 0.7 unless a locally derived persistence factor is available. Recent monitoring data for Honolulu reported by the Department of Health [14] suggests that this factor may range between about 0.35 and 0.55 depending on location and traffic variability. Considering the location of the project and the traffic pattern for the area, a 1-hour to 8-hour persistence factor of 0.5 will likely yield reasonable estimates of worst-case 8-hour concentration.

The resulting estimated worst-case 8-hour concentrations are indicated in Table 6. For the 1990 scenario, the estimated worst-case 8-hour carbon monoxide concentration within the project area was 9.0 mg/m<sup>3</sup> at the intersection of Renton Road and Ft. Weaver

Road; 8-hour concentrations at other locations along Renton Road were only about  $0.3 \text{ mg/m}^3$ . The predicted maximum values for the year 1996 without and with project scenarios were 15.5 and  $18.2 \text{ mg/m}^3$ , respectively; both occurred at the Renton/Ft. Weaver intersection assuming over capacity conditions. At the other two locations studied, 8-hour concentrations were about  $0.4 \text{ mg/m}^3$  without the project and ranged from 2.0 to  $4.2 \text{ mg/m}^3$  with the project. Either with or without the project, 1996 8-hour concentrations near the Renton/Ft. Weaver Road intersection will be substantially higher than existing concentrations. Comparing the predicted values for the existing case to the AAQS, it appears that although the national 8-hour standard will be met during 1990, the state 8-hour standard may be exceeded on occasion at the Renton/Ft. Weaver Road location. In 1996 with or without the project, worst-case concentrations will likely exceed both the state and the national 8-hour AAQS at Renton/Ft. Weaver Road; other intersections studied along Renton Road should meet both standards with or without the project.

The results of this study reflect several assumptions that must be made concerning traffic movement and worst-case meteorological conditions. Assumptions concerning worst-case meteorological conditions that were made include that a wind speed of 1 meter per second with a steady direction for 1 hour will occur and that any coincident wind direction is possible. Such conditions may occur only once a year or less. With wind speeds of 2 meters per second, for example, computed carbon monoxide concentrations would be only about one-half the values given above.

## 6.2 Electrical Demand

The proposed project also will cause indirect emissions from power generating facilities as a consequence of electrical power usage. The annual electrical demand of the project when fully developed is not expected to exceed about 15 million kilowatt-hours. This power demand will most probably be provided mainly by oil-fired generating facilities located on Oahu. However, with H-Power now online and plans for a coal-fired power plant at Campbell Industrial Park in the near future, some of the project power could well come from sources burning other fuels. In order to meet the electrical power needs of the proposed project, power generating facilities will be required to burn more fuel and hence more air pollution will be emitted at these facilities. Given in Table 7 are estimates of the indirect air pollution emissions that would result from the project electrical demand assuming all power is provided by burning more fuel oil at Oahu's power plants. If power is supplied instead or in part by coal or solid waste burning facilities, emissions will likely be higher than the values given in the table.

## 6.3 Solid Waste Disposal

Solid waste generated by the project when fully completed is expected to amount to about 8 to 9 tons of refuse per day. Most if not all of this refuse will likely be hauled away in one to two truckloads per day and either landfilled or burned at another location. If all refuse is landfilled, the only air pollution emissions associated with solid waste disposal will be due to exhaust fumes and fugitive dust from the trucks and heavy equipment used to place the refuse in the landfill. If, on the other hand, all or part of the refuse is burned at a municipal incinerator or other facility (such as H-Power), disposal of solid waste from the

project will also result in emissions of particulate, carbon monoxide and other contaminants from the incineration facility. Table 8 gives emission factors for municipal refuse incinerators (without controls) in terms of pounds of air pollution per ton of refuse material charged. Thus, uncontrolled air pollutant emission rates in terms of pounds per day, for example, can be estimated by multiplying the emission factors given in the table by the number of tons per day of refuse that is burned. Particulate emissions from the H-Power facility are much lower because emissions will be treated by a high-efficiency particulate control system. It should also be noted that if the project electrical demand derives all or in part from H-Power, this will help to offset emissions from burning oil or coal to produce power that might otherwise result.

#### 7.0 IMPACTS OF SUGARCANE OPERATIONS ON PROJECT

In addition to assessing the impact of the project on the surrounding areas, the reverse problem of impacts of air pollution sources located in the surrounding area on the residents of the project is also of concern. For the Ewa Villages Project, the issue of primary concern is the ongoing sugarcane operations in the fields adjacent to the project. Insofar as air quality is concerned, sugarcane burning and cane haul road usage present the two greatest potential problems.

##### 7.1 Sugarcane Burning

Sugarcane fields are generally harvested every two years. Prior to harvesting, sugar cane is burned in the field to remove unwanted foliage as well as to control rodents and insects. The major air pollution emissions associated with sugarcane burning include particulate, carbon monoxide and volatile organic compounds.

Portions of the site of the proposed project as well as much of the surrounding area are currently in use for sugar cane cultivation. This includes the land immediately to the north and to the west of the proposed project as well as that directly to the east across Ft. Weaver Road. Within about two miles of the proposed project there currently are about 25 cane fields varying in size from roughly 50 to 200 acres each which total about 2800 acres. These fields will have the greatest potential impact on the development.

Construction of the proposed project will remove approximately 350 acres of land from sugarcane cultivation and thus provide a benefit to current nearby residents in that this will eliminate some sugarcane burning emissions that will otherwise occur in the area. Table 9 shows the estimated emissions in tons per year that will be eliminated by the proposed development. Values given in the table represent 175 acres per year harvested (reflecting the biennial harvesting procedure for sugar cane) and are mid-range estimates.

In accordance with state air pollution control regulations, an agricultural burning permit must be obtained by a field operator before burning can be performed. Burning cannot be done on "no burn" days when stagnant air conditions are expected to occur. If it is assumed that the remaining fields are harvested every other year and that about 60 acres are burned on a burn day, there would be about 20 days per year when burning will take place on the nearby fields. Depending on field and meteorological conditions, smoke from the fires could potentially impact the project area.

Estimates of worst-case emissions from a burn event are given in Table 10. Based on these emission estimates, worst-case assessments of ground-level concentrations of carbon monoxide and particulate matter were made using the Gaussian dispersion equation as described by Turner [15]. The virtual point source technique described in this reference was used, and a plume height of 10 meters was assumed with a wind speed of 5 meters per second (11 mph). Horizontal diffusion was assumed to occur under stability class 4, while vertical diffusion corresponding to stability class 3 was supposed. The basis for using a more unstable stability class for the vertical diffusion coefficient due to the relatively large dimensions of a sugarcane fire is suggested in a study conducted several years ago [16]. Due to some of the relatively large particle sizes involved in a cane fire, 50 percent fallout of particulate matter was assumed.

Based on dispersion calculations and on measurements that have been made immediately downwind of a cane fire [16, 17], it is estimated that worst-case ground-level concentrations of particulate matter of up to  $20 \text{ mg/m}^3$  could occur within 100 meters (330 feet) of the fire and that concentrations of up to  $2 \text{ mg/m}^3$  could occur as far away as 1600 meters (1 mile). Assuming a background concentration of  $40 \text{ }\mu\text{g/m}^3$ , which is typical for the state, and that elevated particulate concentrations from the cane fire will persist for about 1 hour, it is likely that the state 24-hour ambient air quality standard for particulate matter ( $150 \text{ }\mu\text{g/m}^3$ ) could be exceeded for a distance of about 1 mile from the fire during worst-case conditions.

Estimates of worst-case ground-level concentrations of carbon monoxide show that values of up to  $400 \text{ mg/m}^3$  for a 1-hour period

could occur within 100 meters (330 feet) of the burning fields. Estimated concentrations drop off to about  $40 \text{ mg/m}^3$  at a distance of about 1600 meters (1 mile). Thus, it is possible that the 1-hour national AAQS for carbon monoxide ( $40 \text{ mg/m}^3$ ) could be exceeded within 1 mile of the fire, while the more stringent state AAQS ( $10 \text{ mg/m}^3$ ) could be exceeded out to a greater distance.

The nearest remaining cane fields will be located to the north and to the west of the project site where the usual prevailing northeast trade winds will move the smoke away from the development. Although located somewhat farther away, smoke from the closest cane fields directly to the east across Ft. Weaver Road will likely have the greatest potential for impacting the project site. These fields are located about one-half to one mile from the project. As discussed in Section 3 and indicated in Table 2, winds from the east occur nearly 20 percent of the time, while those from the east northeast have nearly a 40 percent frequency of occurrence. Based on the analysis presented above, if these cane fields are burned during periods when winds are from the east or east northeast, exceedances of the state and/or the national AAQS for particulate matter and for carbon monoxide are possible within the area which will be occupied by the project.

#### 7.2 Cane Haul Road Usage

Several cane haul roads exist in the vicinity of the project. The closest and most frequently used is Mango Tree Road which provides a major east-west route for cane haul trucks in the area. Presently, this haul road is paved and passes through the project site on the north. One of the major elements of the proposed project will be the relocation of this road outside the project boundary. The new alignment will entail the construction of a 5-

foot berm along the north project boundary on which the road will sit. The relocated haul road will have a 40-foot paved cross section with 10-foot shoulders.

Fugitive dust emissions emanating from paved haul roads are primarily a function of road silt loading, vehicle speed, weight and number of wheels, and local climate. Much of the dust generated will be in the form of larger particles that will settle to the surface within a short distance of the roadway. Larger dust particles do not generally constitute a health hazard but mainly are a nuisance. However, dust particles smaller than 10 microns in diameter can remain suspended indefinitely and inhaled rather readily. Thus, it is the smaller particles that are of most concern. The recently revised national AQOS pertain to particulate matter less than 10 microns in diameter, while the state standards pertain to total suspended particulate (generally taken to be particles less than 30 microns in diameter).

Based on the U.S. EPA emission factor for paved haul roads (4), it is estimated that cane haul road traffic would generate about 2 pounds of dust smaller than 10 microns in diameter and about 4 pounds of dust smaller than 30 microns diameter per vehicle mile of travel during relatively dry periods and assuming the road has a relatively moderate silt loading. In a 24-hour period, assuming 10 truck passes per hour and 1 mile of travel in the vicinity of the project, it is estimated that about 450 pounds of the smaller particle dust (or about 900 pounds of the larger 30 micron particles) could be generated in the worst case. Dispersion calculations indicate that both the national and the state 24-hour air quality standards for particulate matter could be exceeded for a distance of about 1000 feet (300 meters) downwind under these conditions.

The nearest residents of the proposed project will be located about 100 feet from the relocated haul road. However, prevailing winds in the area will tend to carry any fugitive dust emissions emanating from truck traffic on Mango Tree Road away from the project and into the cane fields. Based on the wind data presented in Table 2, winds from the northwest quadrant (which will tend to carry dust toward the project) occur less than 4 percent of the time. Thus, this should not be a chronic problem.

## 8.0 SUMMARY OF IMPACTS AND MITIGATIVE CONSIDERATIONS

### 8.1 Impacts Summary

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

The primary long-term air pollution impact from the project will arise from the increased motor vehicle traffic associated with the project. Potential increased levels of carbon monoxide concentrations along roadways leading to and from the proposed development will be the primary concern. Based on mathematical modeling of projected vehicular traffic and on atmospheric dispersion estimates of vehicular emissions, it is predicted that with the proposed

project carbon monoxide concentrations along roadways in the project vicinity will unavoidably be higher compared to the without project case. The highest concentrations will occur in the vicinity of Renton Road at Ft. Weaver. With or without the project, traffic projections for 1996 indicate that this intersection will be over capacity even if it is widened from four to six lanes. Even so, worst-case concentrations should remain within the national 1-hour ambient air quality standard set by the U.S. Environmental Protection Agency. The U.S. EPA 8-hour standard for carbon monoxide, however, may be exceeded occasionally with or without the project near this intersection in the year 1996. Concentrations at other intersections within the project area will remain well within the 1-hour and 8-hour national standards with or without the project.

The more stringent State of Hawaii ambient air quality standards for carbon monoxide may be exceeded at times during the current year and either with or without the project in the year 1996 at the Renton/Ft. Weaver Road intersection due to vehicular emissions. Concentrations along Renton Road at Ala Nui Mauka and at Pepper Row are estimated to currently comply with the state standards and will continue to do so with or without the project in 1996. It should be mentioned here that the state standards are set so low that they are probably exceeded at many intersections in the state that have even moderate traffic volumes. It is also worth noting that, although the national AAQS allow higher levels of carbon monoxide, the national standards were developed after extensive research with the objective of defining levels of air quality that would protect the public health with an adequate margin of safety.

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

Assessments of the potential worst-case impacts on the proposed project from sugarcane burning indicate that state and/or national AAQS for both particulate matter and carbon monoxide could be exceeded for a distance of about one mile or more downwind of the fire. Cane fields located to the east, while more distant, present the greatest potential for impact due to the prevailing winds.

Even though the cane haul road to the north of the project will be paved, fugitive dust concentrations may exceed state and national AAQS at times for a distance of about 1000 feet (300 meters) downwind. Except for occasional brief periods, prevailing winds in the area will carry the dust away from the nearest residents of the proposed project.

## 9.2 Mitigative Considerations

Strict compliance with State of Hawaii Air Pollution Control Regulations regarding establishment of a regular dust-watering program and covering of dirt-hauling trucks will be required to effectively mitigate fugitive dust emissions from construction activities. Twice daily watering is estimated to reduce dust emissions by up to 50 percent. Use of chemical wetting agents or

soil stabilizers may increase control efficiency. Paving of parking areas and establishment of landscaping early in the construction schedule will also help to control dust. Further mitigation can be achieved by limiting the total area that can be disturbed at any given time and/or by using wind screens. Increased vehicular emissions due to disruption of traffic by construction equipment and/or commuting construction workers can be alleviated by moving equipment and personnel to the site during off-peak traffic hours.

Options available to mitigate traffic-related air pollution are to improve roadways, reduce traffic or reduce individual vehicular emissions. Long-term projections of carbon monoxide emissions from vehicular traffic associated with the completed development are based on the traffic impact study findings. Traffic projections indicate that even with the widening of Ft. Weaver Road to six lanes, the Renton Road intersection will be over capacity with or without the project. It is further suggested in the project traffic study that an alternate north-south roadway will be necessary by 1996 with or without the project. This study also supports that conclusion.

Aside from improving roadways, air pollution impacts from vehicular emissions can be mitigated by reducing traffic through the use of mass transit and car pooling and/or by adjusting local school and business hours to begin and end during off peak times. Emissions from individual vehicles can be reduced in the vicinity of intersections by lowering speed limits (and thus reducing acceleration emissions). It is estimated that lowering the speed limit on Ft. Weaver Road from 45 mph to 35 mph will reduce emissions (and hence carbon monoxide concentrations) at the Renton Road intersection by about 20 to 25 percent. Although it is conceivable that

the efficiency of motor vehicle engines and/or emission control equipment will be improved or that vehicles will be developed which burn cleaner fuels at some point in the future, it is unlikely that these developments will occur before project completion in 1996. With regard to cleaner burning fuels, vehicles burning methanol or compressed natural gas or powered by electrical motors are some of the possibilities for technological development that are currently being contemplated. Lastly, even without technological breakthroughs, it is also possible that at some point in the future the State may decide to adopt either a motor vehicle inspection and maintenance program, which would ensure that emission control devices are properly maintained and thereby reduce emissions, or more restrictive emission control standards.

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

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

facility which is fitted with fabric filters to control air pollution. Use of solid waste to generate power offsets emissions that would otherwise occur from fossil-fueled power plants.

Harvesting sugarcane without burning would be the most effective means to mitigate impacts on the project from this source of air pollution, but studies conducted during the past few years have indicated that this is not an economically viable solution in Hawaii [18]. Given that burning is a necessity, adherence to state regulations pertaining to agricultural burning [5] will help to minimize impacts on the proposed project. In accordance with these regulations, field operators must apply for burning permits for all fields to be harvested. Applications must include maps of areas to be burned showing fields by number and acreage, direction of prevailing winds, locations of residences, schools, commercial establishments, public buildings, airports and public utilities, the designation of fields to be burned under specified wind conditions and other information. Burning is prohibited during periods of stagnation. Burning of the fields adjacent to the project should not be permitted when wind conditions will carry the plume over the proposed development. New residents of the project should be forewarned of this potential problem.

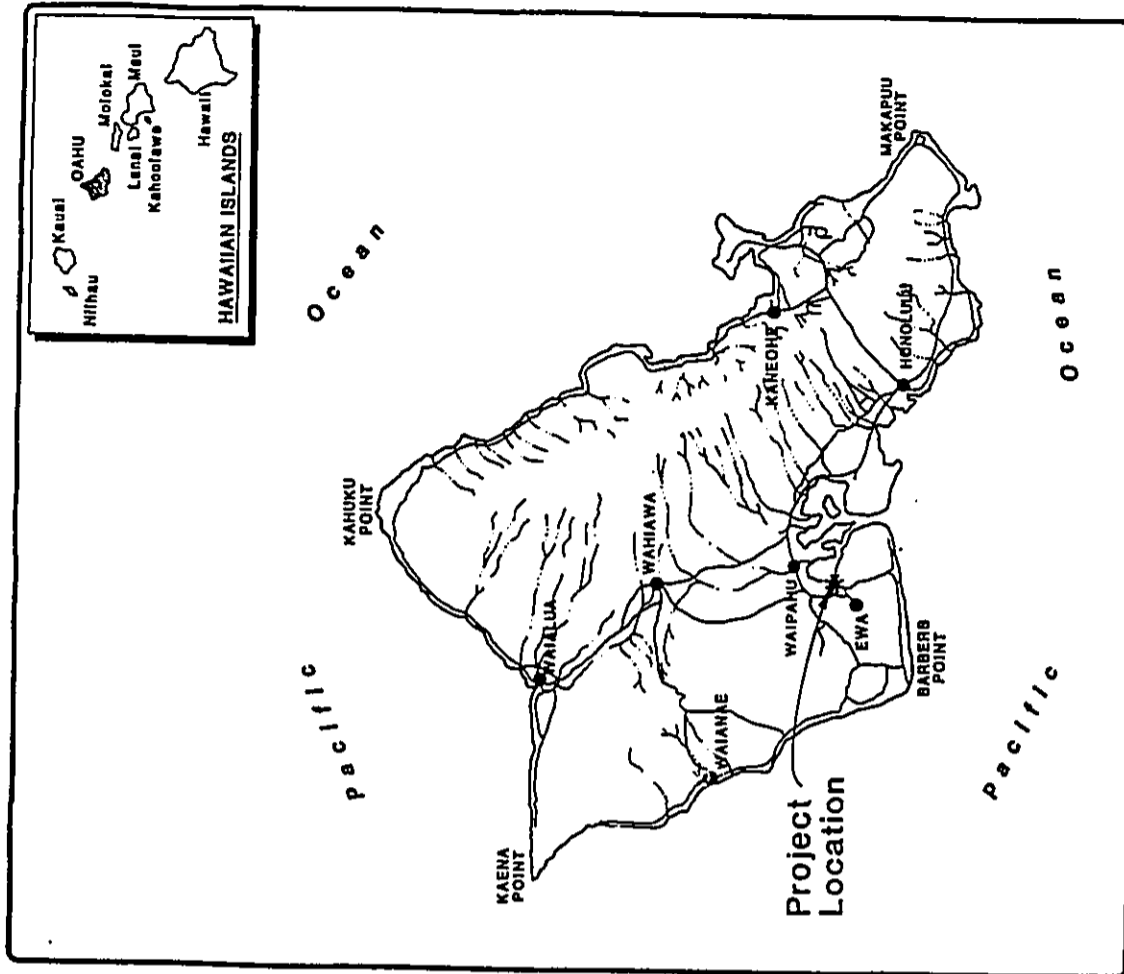
Relocation and paving of Mango Tree Road as planned should effectively mitigate potential fugitive dust impacts on the project from cane haul trucks. Impacts can be further lessened by keeping the road clean and free of debris. Maintaining a separation distance of about 1000 feet (300 meters) between the project residential areas and the haul road is recommended, although prevailing winds in the area should allow a smaller buffer.

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**EWA VILLAGES  
MASTER PLAN**  
City & County of Honolulu  
Department of Housing  
& Community Development  
July 1980

**Figure 1  
Location & Vicinity Map**  
R. M. Town Corporation

Table 1  
SUMMARY OF STATE OF HAWAII AND NATIONAL  
AMBIENT AIR QUALITY STANDARDS

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

<sup>a</sup>Geometric mean

<sup>b</sup>Not to be exceeded more than once per year

<sup>c</sup>Particles less than or equal to 10 microns aerodynamic diameter

Table 2  
ANNUAL WIND FREQUENCY FOR BARBERS POINT, OAHU (%)

Wind Direction	Wind Speed (knots)						Total
	0-3	4-6	7-10	11-16	17-21	>21	
N	0.1	0.4	0.3	0.1	0.0	0.0	0.9
NNE	0.4	1.5	2.3	1.1	0.2	0.0	5.5
NE	1.2	7.9	5.8	2.6	0.2	0.0	17.8
ENE	2.7	16.2	12.0	7.0	0.2	0.0	38.1
E	0.8	6.2	8.3	4.4	0.1	0.0	19.8
ESE	0.2	0.4	1.2	0.7	0.0	0.0	2.5
SE	0.0	0.3	1.2	1.3	0.0	0.0	2.9
SSE	0.0	0.3	1.1	1.0	0.1	0.0	2.5
S	0.1	0.6	1.5	0.7	0.2	0.0	3.1
SSW	0.1	0.3	0.8	0.3	0.0	0.0	1.5
SW	0.0	0.2	0.5	0.3	0.0	0.0	1.1
WSW	0.0	0.1	0.5	0.3	0.0	0.0	1.0
W	0.1	0.2	0.5	0.4	0.0	0.0	1.2
WNW	0.0	0.1	0.4	0.4	0.0	0.0	0.9
NW	0.0	0.1	0.2	0.2	0.0	0.0	0.5
NNW	0.0	0.2	0.1	0.0	0.0	0.0	0.3
CALH	0.4						0.4
TOTAL	6.1	35.0	36.8	20.8	1.2	0.1	100.0

Source: "Monthly and Annual Wind Distribution/Pasquill Stability Classes, STAR Program, Barbers Point Hawaii, 1/72-12/76, 8 Observations/Day", U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Environmental Data Service, National Climatic Center, Asheville, NC.

Table 4

ANNUAL SUMMARY OF AIR QUALITY MEASUREMENTS FOR MONITORING STATIONS NEAREST OAH VILLAGES PROJECT

Parameter / Location	1985	1986	1987	1988	1989
<b>Sulfur Dioxide / Barbers Point</b>					
No. of 24-hr Samples	59	57	53	59	54
Range of 24-hr Values (ppm)	10-48	<5-10	<5-13	<5-19	<5-20
Average Daily Value (ppm)	24	<5	5	<5	<5
No. of State AQS Exceedences	0	0	0	0	0
<b>Particulate / Pearl City</b>					
No. of 24-hr Samples	27	60	51	-	59
Range of 24-hr Values (ppm)	8-24	17-65	20-61	-	16-48
Average Daily Value (ppm)	15	29	34	-	30
No. of State AQS Exceedences	0	0	0	-	0
<b>PM-10 / Barbers Point</b>					
No. of 24-hr Samples	9	52	46	56	58
Range of 24-hr Values (ppm)	10-26	7-66	10-49	10-48	10-44
Average Daily Value (ppm)	20	26	21	24	26
No. of State AQS Exceedences	NA	NA	NA	NA	NA
<b>Carbon Monoxide / Downtown Honolulu</b>					
No. of Days of 1-hr Samples	342	348	345	360	323
Range of Daily Max. 1-hr Values (ppm)	0.0-10.4	0.2-13.5	0.3-11.1	0.2-10.4	0.3-7.8
Avg. Daily Maximum 1-hr Value (ppm)	1.5	2.2	1.7	1.7	1.9
No. of State 1-hr AQS Exceedences	1	3	1	1	0
No. of Days of 8-hr Samples	266	213	228	-	-
Range of Daily Max. 8-hr Values (ppm)	0.1-4.4	0.3-4.7	0.3-3.9	-	-
Avg. Daily Maximum 8-hr Value (ppm)	1.3	1.4	1.2	-	-
No. of State 8-hr AQS Exceedences	0	0	0	-	-
<b>Ozone / Sand Island</b>					
No. of Days of 1-hr Samples	341	346	342	362	342
Range of Daily Max. 1-hr Values (ppm)	8-198	10-88	4-84	0-94	0-96
Avg. Daily Maximum 1-hr Value (ppm)	43	39	38	13	15
No. of State AQS Exceedences	3	0	0	0	0
<b>Lead / Downtown Honolulu</b>					
No. of 24-hr Samples	58	57	57	-	-
Range of 24-hr Values (ppm)	0.0-0.3	0.0-0.2	0.0-0.2	-	-
Average Quarterly Value (ppm)	0.2	0.0	0.0	-	-
No. of State AQS Exceedences	0	0	0	-	-

Source: State of Hawaii Department of Health

Table 3

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

Source Category	Emissions (tons/year)			
	Particulate	Sulfur Dioxide	Nitrogen Oxides	Carbon Monoxide
Steam Electric Power Plants	2,092	36,756	12,455	1,065
Gas Utilities	14	0	199	0
Fuel Combustion in Agricultural Industry	1,068	579	358	0
Refinery Industry	622	7,096	2,149	266
Petroleum Storage	0	0	0	1,261
Metallurgical Industries	28	96	40	0
Mineral Products Industry	6,884	1,833	597	0
Municipal Incineration	42	145	2,029	0
Motor Vehicles	1,413	1,014	17,270	239,198
Construction, Farm and Industrial Vehicles	184	193	2,507	3,729
Aircraft	382	145	1,751	5,594
Vessels	42	386	438	533
Agricultural Field Burning	1,399	0	0	15,982
<b>Total:</b>	<b>16,190</b>	<b>48,273</b>	<b>39,793</b>	<b>266,367</b>

Source: State of Hawaii, Department of Health

Table 5

ESTIMATED WORST-CASE 1-HOUR CARBON MONOXIDE CONCENTRATIONS  
ALONG ROADWAYS NEAR EWA VILLAGES PROJECT  
(milligrams per cubic meter)

Roadway Intersection	Year/Scenario			
	1990/ Present AM PM	1996/ Without Project AM PM	1996/ With Project AM PM	1996/ With Project AM PM
Renton at Ft. Weaver	17.9 11.4	31.0 <sup>a</sup> 23.8 <sup>a</sup>	36.3 <sup>b</sup> 30.7 <sup>b</sup>	
Renton at Ala Nui Mauka	0.6 0.5	0.8 0.8	8.4 <sup>c</sup> 1.7 <sup>c</sup>	
Renton at Pepper Row	0.6 0.6	0.8 0.9	2.5 4.1	

Hawaii State AAQS: 10  
National AAQS: 40

<sup>a</sup> Assumes Ft. Weaver Road widened from four to six lanes.

<sup>b</sup> Assumes Ft. Weaver Road widened from four to six lanes and right turn lane added for eastbound Renton Road traffic entering onto Ft. Weaver Road.

<sup>c</sup> Assumes right turn lane added for southbound Ala Nui Mauka traffic entering onto Renton Road.

Table 6

ESTIMATED WORST-CASE 8-HOUR CARBON MONOXIDE CONCENTRATIONS  
ALONG ROADWAYS NEAR EWA VILLAGES PROJECT  
(milligrams per cubic meter)

Roadway Intersection	Year/Scenario		
	1990/ Present	1996/ Without Project	1996/ With Project
Renton at Ft. Weaver	9.0	15.5 <sup>a</sup>	18.2 <sup>b</sup>
Renton at Ala Nui Mauka	0.3	0.4	4.2 <sup>c</sup>
Renton at Pepper Row	0.3	0.4	2.0

Hawaii State AAQS: 5  
National AAQS: 10

<sup>a</sup> Assumes Ft. Weaver Road widened from four to six lanes.

<sup>b</sup> Assumes Ft. Weaver Road widened from four to six lanes and right turn lane added for eastbound Renton Road traffic entering onto Ft. Weaver Road.

<sup>c</sup> Assumes right turn lane added for southbound Ala Nui Mauka traffic entering onto Renton Road.

Table 7  
**ESTIMATED INDIRECT AIR POLLUTION EMISSIONS  
 FROM EWA VILLAGES PROJECT ELECTRICAL DEMAND\***

Air Pollutant	Emission Rate (tons/year)
Particulate	1
Sulfur Dioxide	38
Carbon Monoxide	3
Volatile Organics	<1
Nitrogen Oxides	11

\*Based on U.S. EPA emission factors for industrial boilers [4]. Assumes electrical demand of 15 million kw-hrs per year and low sulfur oil used to generate power.

Table 8  
**UNCONTROLLED AIR POLLUTION EMISSION FACTORS FOR  
 MUNICIPAL REFUSE INCINERATORS (lb/ton)†**

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

\*Emission factors are given in terms of weight of material emitted per unit weight of refuse material charged. †Assumes incinerator equipped with settling chamber and water spray.

Source: U.S. Environmental Protection Agency [4]

Table 9

ESTIMATED AIR POLLUTION EMISSIONS ELIMINATED  
BY WITHDRAWING FIELDS FROM SUGAR CANE AT  
EWA VILLAGES PROJECT\*

Air Pollutant	Emission Rate (tons/year)
Particulate	9
Carbon Monoxide	86
Volatile Organics	13

\*Based on mid-range of U.S. EPA emission factors [3]. Assumes 175 acres per year harvested.

Table 10

ESTIMATED WORST-CASE AIR POLLUTION EMISSIONS FROM  
SUGARCANE BURNING EVENT NEAR EWA VILLAGES PROJECT\*

Air Pollutant	Emissions (tons)
Particulate	4
Carbon Monoxide	41
Volatile Organics	8

\*Based on upper range of U.S. EPA emission factors [3]. Assumes 60 acres burned.

APPENDIX D

ARCHAEOLOGICAL RESOURCES IMPACT ASSESSMENT

Cultural Surveys Hawaii

# Archaeological Reconnaissance of the 'Ewa Villages Project Site Honouliuli, 'Ewa, O'ahu

By

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Prepared for

R. M. Towill Corporation

by

*Cultural Surveys Hawaii*  
September 1990

## Abstract

An archaeological reconnaissance survey of an approximately 616 acre 'Ewa Village project area in Honouliuli, 'Ewa, O'ahu was conducted by Cultural Surveys Hawaii at the request of R.M. Towill Corporation as a part of an E.I.S. for their client, the City and County of Honolulu. The project area includes three extant plantation villages (Renton Village, Tenney Village and Varona Village), the sites of three former plantation villages (C Village, Mill Village, Middle Village) and several other sites associated with the 'Ewa Plantation infrastructure, including the Plantation Cemetery, the site of the 'Ewa Depot, the site of a previous Buddhist temple and the 'Ewa Japanese School, the site of a reservoir, and fields presently under sugar cane cultivation.

The 'Ewa Villages have been a focus of historic preservation concern at the City and County, State and National levels and have been found to have national significance and to be eligible for nomination as a National Historic Landmark -- the highest national historic designation. The 'Ewa Villages are presently a focus of study by the National Park Service, the State Historic Preservation Office and the City and County Department of Land Utilization.

This archaeological reconnaissance survey found no evidence of any prehistoric activity within the project area and recommends no further archaeological research in association with concerns for Hawaiian prehistory.

However, because of the historic preservation concern the 'Ewa Villages have merited, further documentation of some ruined sites is recommended. It is also recommended that the issue of subsurface archaeology in association with areas in which pre-WWII plantation structures are known to have existed be explicitly resolved by the State Historic Preservation Office prior to the development of any of these areas. These areas are specifically indicated.

Data is provided to facilitate resolution of the question of subsurface archaeology but the determination is left to the appropriate agency and may require extensive background research, which is beyond the scope of this research, or subsurface testing. Our assessment is that because of the nature of the structures, the disposal pattern and subsequent land modification the potential of subsurface archaeology is quite limited. Some surface features, including the remains of the Roundhouse, the long store and the community bathhouse (*fukū*), are recommended for further study.

It is recommended that attention be given to avoid impacting the O.R. & L. Right-of-Way, and the importance of two appurtenances of the Right-of-Way within the project area is discussed.



Acknowledgements

We would like to thank Mr. Chester Koga and Ms. Laura Fujioka of R.M. Towill Corporation for providing maps and research materials. We would like to thank Mr. Takeo Yasui, Mr. Susumu Ishii, Mr. Tony Bise, Ms. Mieko Ogawa, Ms. Imogene Martin, Mr. Fred and Audrey Toopes, and Pastor David Parker for their wealth of information about the history of 'Ewa. We would like to thank Mr. Jim Charleton of the National Park Service for his input. The authors are completely responsible for any errors of fact. Fieldwork was performed by Mr. William Folk and Mr. David Shideler. Typing services were by Dr. Vicki Creed of Windword Processing.

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## I. Introduction

An archaeological reconnaissance survey of an approximately 616 acre 'Ewa Village project area (Figs. 1-3, 7) was conducted by Cultural Surveys Hawaii during August and September of 1990 at the request of R.M. Towill Corporation for their client, the City and County of Honolulu.

The purpose of this survey was to provide information on the presence of any sites or features of possible archaeological significance within the project area limits appropriate to and sufficient for an Environmental Impact Statement (E.I.S.) being prepared in accordance with Chapter 343 - Hawaii Revised Statutes. Written statements of our findings were given to Ms. Laura Fujioka and Mr. Chester Koga of R.M. Towill on August 26, 1990 and September 10, 1990. Arrangements were made to discuss our findings and concerns with Dr. Don Hibbard of the State Historic Sites section. Discussions were held with the Friends for 'Ewa and Mr. Jim Charleton of the National Park Service.

### A. Scope of Work

Our Scope of Work for the archaeological reconnaissance survey of the 'Ewa Villages project area consists of the following:

1. Performance of a surface archaeological reconnaissance of the project area. The study was to include the notation of any significant archaeological or cultural site(s). The identification of the sites was to



Figure 1 State of Hawaii



Figure 2 General Location Map, O'ahu Island

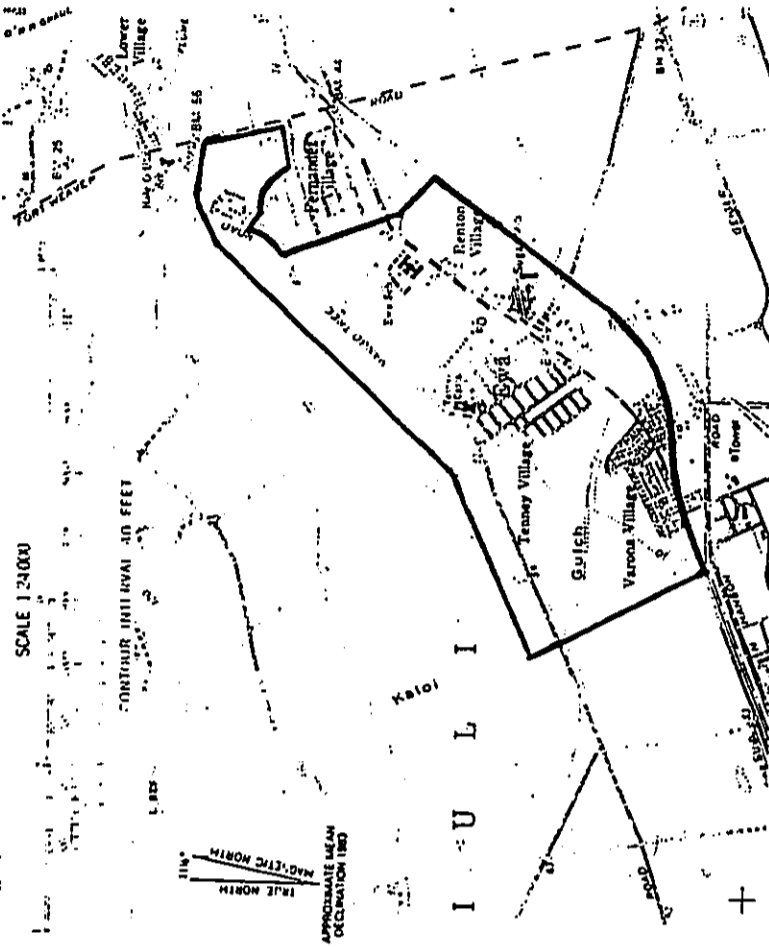


Fig. 3 U.S.G.S. Map, 'Ewa Quad Showing Project Area  
1983

conform to procedures recognized by the Historic Site Section, of the Department of Land and Natural Resources (DINR).

2. Literature research on the area to identify former land use and assess the potential for subsurface archeological remains and that would identify the site as an historical area or as any area with the potential for the uncovering of historic/cultural remains.
3. Preparation of a report detailing the findings and suitable for inclusion in an Environmental Impact Statement (E.I.S.) for the project with a brief introduction, methodology used, and the findings and conclusions.
4. Consultation with the State Historic Sites Section or the DINR regarding the findings and conclusions.

#### B. Methods

The parcel was traversed by foot and vehicle. As the project area is a focus of historic preservation concern at the City and County, State, and National levels and has been found eligible for nomination as a National Historic Landmark, particular attention was given to identify the location of plantation camps and other historic features -- no longer extant -- which might have associated archaeological deposits which might be of significance in the documentation of the history and lifestyle of 'Eva Plantation. This focused on a literature survey of maps, photographs, records of 'Eva plantation, and previous research --

which has been extensive. Discussions were held with four long-time (40 years or more) employees of the plantation to gain a better understanding of the distribution of the historic sites of the 'Eva Villages.

As any further documentation of structures at 'Eva is best left to professional architectural historians, we have no comment to make on any existing structures. Similarly, an evaluation of the adequacy of present documentation of these structures is outside of the sphere of our expertise. Unfortunately, portions of the 'Eva Villages have been destroyed without documentation in accordance with present standards. As portions of the project area have been found to have national significance and to be eligible for nomination as a National Historic Landmark, we have judged it as prudent to approach the sites of former plantation villages and other structures conservatively until decisions regarding the adequacy of documentation and the role of subsurface archaeology in further documentation has been fully addressed by the State Office of Historic Sites. We have attempted to provide data that will facilitate that assessment.

## II. Project Area Description

The approximately 616-acre 'Eva Villages project area lies in the *shupua'a* of Honouliuli in the District of 'Eva in the SW corner of the Island of O'ahu. Lying between approximately 38'-66' (11.6m. - 20.1 m.) elevation, the project area is located on the 'Eva Plain, which is a Pleistocene reef platform overlain by alluvium from the southern end of the Wai'anae Mountain Range. This alluvium has supported commercial sugar cane cultivation for over a century and much of the project area is still under a dense cover of sugar cane (*Saccharum sp.*). The project area is hot and dry with an average mean temperature of 74° F and with rainfall of 25 inches per year. Despite the aridity, the area is prone to flooding with the floods of 1916, 1917 1923, and 1927 well documented by Bishop Museum photos (1974.87.1288); some of which show standing water as far as the eye can see. The only landform to speak of within the project area is Kalo'i Gully which cuts across the width of the south portion of the project area. Substantial occupation of the project area began in 1890 with the construction of housing for over 500 plantation workers. Much of the project area underlies three extant plantation villages: Renton Village, Tenney Village and Varona Village. The project area is perhaps best known for the well executed statue of Abraham Lincoln on the grounds of 'Eva Elementary School. It has been said that Mr. Lincoln was known as a particularly fair cock-fighting judge.

The S.W. boundary for a distance of approximately 2 kms is the Oahu Railway and Land roadbed (Site 50-80-12-9714). The SW

boundary extends from the southern tip of Varona Village NW to Mango Tree Road. The north boundary runs roughly parallel and just NW of Mango Tree Road until crossing the road just SW of Hale Ulu School. A northern neck of the project area extends east to Fort Weaver Road and then curves around the northern edge of Fernandez Village (outside the project area) before heading SE back to the railway bed just east of 'Eva Elementary School.

The 'Eva Villages have been under study by agencies of the City and County of Honolulu, the State Historic Sites Preservation Office and the National Park Service for some time. The National Park Service has completed fieldwork and has determined that this area has national significance and is eligible to be nominated as a National Historic Land Mark; the highest national historic designation. A decision has not been made (as of 9/8/90) on the boundaries of the parcel to be nominated. It is anticipated that National Park Service Historians will have completed their study and will mail it out for review around February 1, 1991. The City and County Department of Land Utilization is looking to establish a special district for the area, but as of this date no final decision has been made.

### III. Previous Archaeological Research

To our knowledge no previous archaeological research has been undertaken within the present project area. Three recent archaeological studies have been undertaken in adjacent parcels. An archaeological reconnaissance survey (Rosendahl, 1987) was conducted in association with the development of the 232-acre West Loch Estates Residential Increments I and II project, part of which lies just east of the north portion of the present study area. An archaeological reconnaissance (Kennedy, 1988) and subsequent archaeological subsurface survey (Davis, 1988) were conducted in association with the development of the 1016-acre 'Ewa Gentry project area which lies immediately to the SE, across the O.R. & L. right-of-way from the present study area.

The combined surface and subsurface reconnaissance survey of the West Loch Estates project area confirmed an initial impression that the project area had been extensively and almost entirely modified by decades of commercial sugar cane cultivation (Rosendahl, 1987:9). This study identified a modern cemetery, two historic sites of minimal integrity and a midden deposit which was ambiguous as to whether or not it even was a cultural feature (Ibid.:7,9). One of the historic sites noted (T-3) was related to the plantation settlement of Lower Village. It was noted that some artifacts "indicate the possibility of pre-1900 occupation" (Ibid.:8).

In the 'Ewa Gentry project area the initial reconnaissance (Kennedy, 1988) found no surface evidence of potentially significant cultural/historic remains. A subsequent subsurface

exploration was undertaken. Eighteen backhoe trenches were excavated including two trenches (Trenches 17 and 18) which were just SH (approx. 50 m.) from the present project area. "No evidence of past in situ cultural activity was found anywhere in the 'Ewa Gentry project area" (Davis, 1988:10).

The southeast boundary of the project area is the alignment of the O'ahu Railroad and Land Company (O.R. & L.) Right-of-Way. This railroad bed, from the intersection with Fort Weaver Road to the intersection of Farrington Highway and Lualualei Road in Nanakuli is currently listed on the National Register of Historic Places (Site 50-80-12-9714) and thus any development activities must take particular care to avoid impacting the remains of this railroad bed.

#### IV. History of Land Use

##### A. Prehistory and Early History

No evidence of prehistoric occupation was found within the present project area. However, this is not surprising considering the intensive use of this area for over a hundred years for sugar cane cultivation and as the hub of a plantation community. Three archaeological studies on two adjacent parcels totaling 1,248 acres documented no clear evidence of any prehistoric occupation. The vast majority of these lands had similarly been impacted by decades of intensive sugar cane cultivation. Traditional sources, the earliest maps, and early archaeological studies are mute regarding this portion of Honouliuli ahupua'a.

Kalo'i Gully was of particular interest as the only known Hawaiian named land form within the project area. Puku'i (1984:77) translates the name to mean "the taro patch" and Sterling and Summers (1978:35) relate a number of vignettes regarding the "Waihuna" or "Punahuna" hidden spring. Ida E.K. von Holt (In Sterling and Summers, 1978:35) relates the account of "two old Hawaiians" that the hidden spring "had been one of the principle sources of water for all that country, which was quite heavily populated before the smallpox epidemic of 1840." We believe this spring and any associated taro patches would most likely have been upslope (north) of the project area. Possibly the naming of 'Ewa "crooked" relates to the meandering nature of Kalo'i Stream which turns 60° to the east as it enters the project area.

In discussing the trails of Honouliuli, John Papa Ii

(1983:97) suggests that the most common traditional Hawaiian trail from the West Loch area to the northern Wai'anae Coast was via Kolekole Pass. He mentions another trail from Pu'uloa (Pearl Harbor) to Pu'u Kapolei and Waimanalo ('Ewa). It seems most likely that this trail followed the route drawn by Paul Rockwood (Ibid.:96) which was roughly the alignment of Farrington Highway (approx. 3.5 km) north of the project area.

The earliest detailed map of the area (Alexander, 1873) shows no habitation closer than the western edge of West Loch in the vicinity of Papapahu Point some 2.5 km. distant. The Monsarrat survey map of 1878 documents substantial settlement at the "Honouliuli Taro Lands" in the Papapahu Point area and it seems clear that in early historic times that was the focus of the population of Honouliuli ahupua'a (See Dicks et al., 1987). The amenities of that area; such as fishponds, taro lo'i, shellfish collecting, and salt drying would have focused population there in prehistoric times and the name of that place must have secondarily come to apply to the entire ahupua'a.

A search for Hawaiian Land Commission Awards (L.C.A.) in the project area similarly showed no evidence of small private land holdings in the vicinity. The only land commission award in the vicinity is Royal Patent 6071, LCA 11216, Apana 8 to Miriam Ke'ahi-Kuni Kekau'onohi who was granted the ahupua'a of Honouliuli, 'Ewa, O'ahu by Kamehameha III on 28 January 1848 (Native Register).

Kamakau (1961:208-209) relates the following: "Kamehameha's granddaughter, Ke-ahi-Kuni Kekau'onohi ... was also a tabu

chiefess in whose presence the other chiefesses had to prostrate and uncover themselves, and Kamehameha would lie face upward while she sat on his chest." She was one of Liholiho's (Kamehameha II's) wives, and after his death, she lived with her half-brother, Luanu'u Kahala'i'a, who was governor of Kaua'i (Kelly, 1983:21). Subsequently, "that mischievous girl" (Kamakau, 1961:280) ran away with Queen Ka'ahumanu's stepson, Keli'i-ahonui, and then became the wife of Chief Levi Ho'alealea. Ke-ahi-Kuni Kekau-'onohi inherited Honouliuli from Levi Ha'alealea. She is listed as having received a total of 55 lands in the Mahele, one of which was 43,250 acres at Honouliuli which included the entire project area.

The earliest archaeological study in Honouliuli by McAlister (1933) documented Site 146. "The 'Eva coral plains contain many sites throughout the area. The greatest extent of old stone walls, particularly near the Pu'uloa Salt Works, belongs to the ranching period of about 75 years ago [circa 1858]." The type locale for this site lies more than 3 kms to the SE. The only other early documented site in the vicinity was a heiau on Pu'u Kapolei, located more than 3 kms to the west.

In brief, very little is known about the prehistory of the immediate vicinity of the project area but there is no indication of occupation or any other utilization.

#### B. A Brief Summary of the History of 'Eva Plantation

In 1871, Ke-ahi-Kuni Kekau-'onohi rented much of Honouliuli to James Dowsett and John Meek for stock running and grazing

(Frierson 1973:13). When James Campbell paid \$95,000 for most of Honouliuli in 1877 he drove off the land 32,347 head of stock belonging to Dowsett, Meek and James Robinson (Dillingham in Frierson, 1973:13)

Up until 1889 the lands of the project area were used exclusively for cattle ranching. At that time, one planter remarked "the country was so dry and full of bottomless cracks and fissures that water would all be lost and irrigation impracticable" (Eva Plantation Co. 1923:67). But the vision and capital of men like James Campbell, Benjamin Dillingham and W. R. Castle and the rapid development of artesian water made 'Eva Plantation happen. A Hawaii Visitor Bureau marker, located about 1 km. north of the project area, points to a plaque bearing the inscription "Site of First Artesian Well in the Hawaiian Islands drilled by James Ashley for James Campbell owner of Honouliuli Ranch brought in on Sept. 22, 1879." This well was "near Campbell's ranch house" (Kuykendall, 1967:III,67).

The plantation grew relatively quickly. This growth included the deliberate inducement of erosion by plowing slopes vertically just before the rainy season in order to induce erosion, cause soil deposition on the limestone plain, and increase arable land (Frierson, 1973:17).

The 'Eva Plantation Company annual reports provide a fairly detailed chronology of construction, but are extremely vague as to where that construction occurred. The most valuable maps we have thus far identified (Figs 3-6, 7) are mostly U.S.G.S. or War Department maps.



In the decade of the 1890s the plantation built 72 houses, cottages or dwellings: in the first decade of this century, 536; in the 19-teens, 132; in the 20s, 285; in the 30s, 168; and in the 40s, only 35. Census of population of 'Eva Plantation are only given for 1928 (4967), 1929 (4477), and 1932 (4100). It seems probable that 1928 had about the highest population. The military aerial photograph of 'Eva (Fig. 6) in 1940 looks superficially much like the 'Eva of today. The outbreak of WWII siphoned off a lot of manpower from the plantation and after the changeover to practically complete reliance on mechanical harvesting in 1938 there was little need of the large multiracial (Japanese, Chinese, Okinawan, Korean, Portuguese, Spanish, Hawaiian, Filipino, European) labor force that had characterized most of the early history of the plantation.

It is to be noted that in the history of construction buildings were moved, demolished and replaced all the time. As early as 1899 the plantation moved "the lower camp of thirty houses to a position on the bluffs nearby ... principally for sanitary reasons" ('Eva Plantation Company Annual Report). In 1921 "all of the old barracks in the Chinese-Korean Village were torn down and new cottages and dormitories erected" (Ibid.). Thus all of the earliest workers' dwellings were likely to have been moved or demolished, leaving no trace as early as 1921. On the other hand, several vestiges of plantation life remains as amazing testimonies to a world that has now largely passed away. In researching the history of 'Eva one commonly comes across photos such as the one of six 'Eva Hill engines ensconced within the

Round House or references to the presence of 3 general stores, a butcher shop, soda water and ice manufacturing plant, ranch, dairy and bank ('Eva Plantation Annual Report, 1928).

The study of some specific archaeological sites, such as the Roundhouse, the long store and the community bath house (fyuro), in conjunction with oral histories and written and photographic records can more adequately document life at 'Eva Plantation.

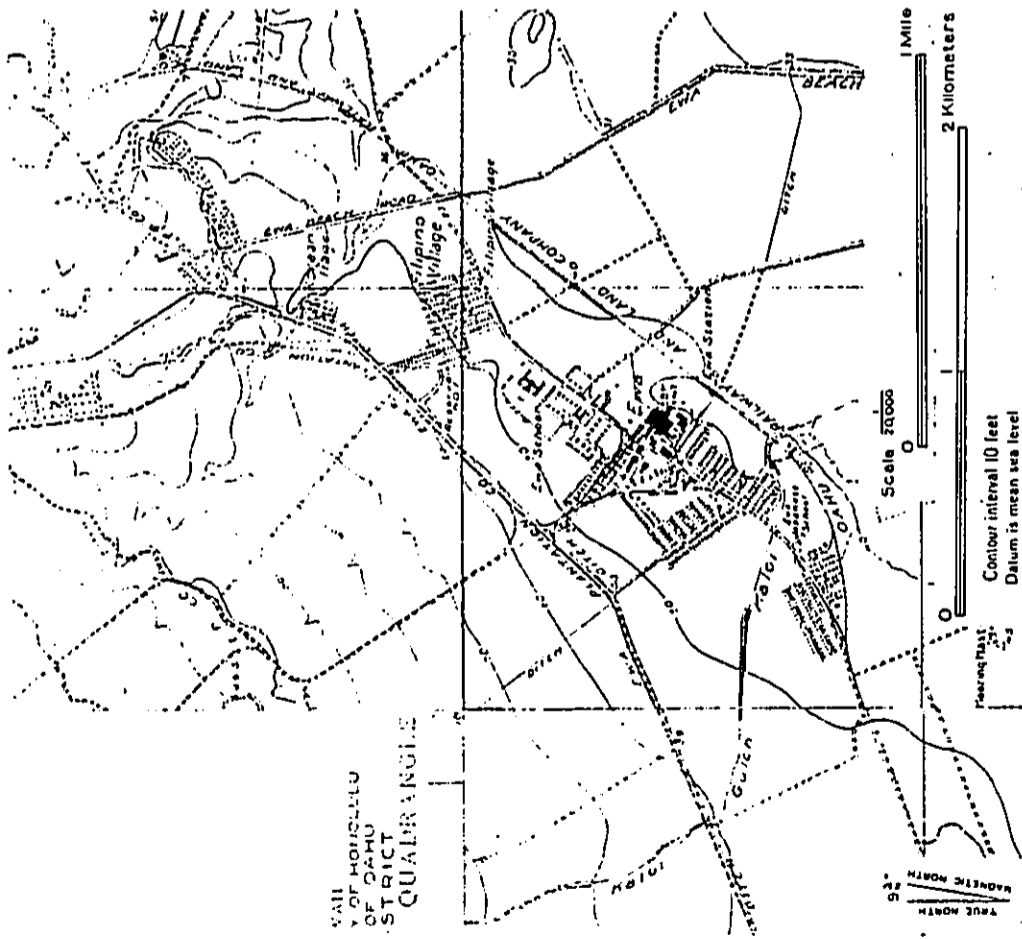


Fig. 4 Portions of U.S.G.S. Hawaiian Territorial Survey Maps ('Ewa, Waipahu and Barbers Point', Showing Vicinity of Project Area 1928

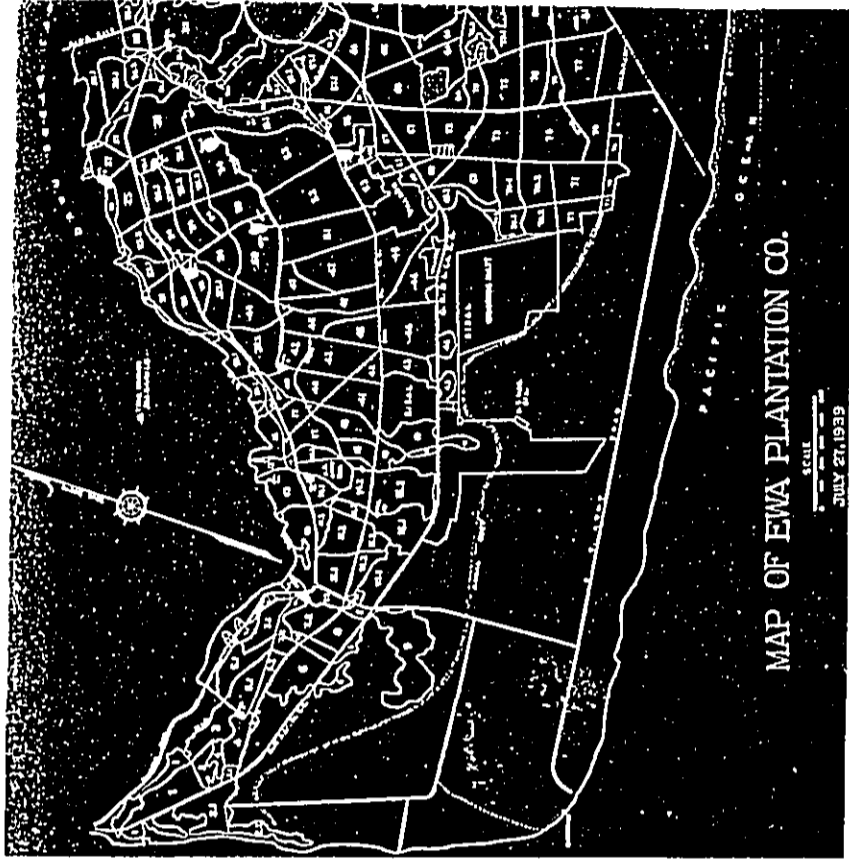


Fig. 5 Map of 'Ewa Plantation Company, 1939

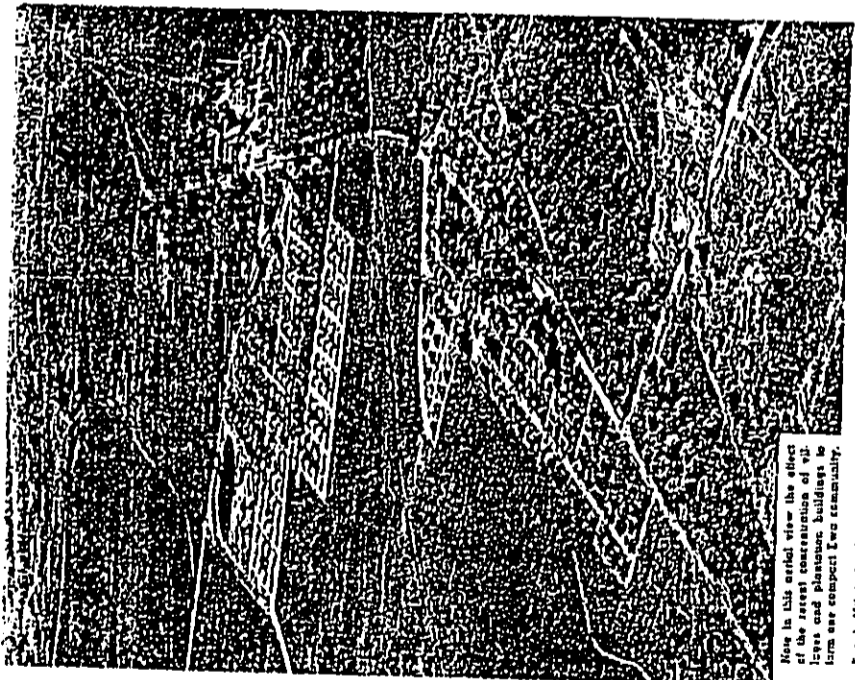
#### V. Results of Fieldwork

Fieldwork was first focused on identifying any possible Hawaiian sites or features within the project area. The entire project area was found to have been extensively disturbed by more than a century of cane cultivation and plantation infrastructure construction as background research had suggested. Kalo'i Gully (Fig. 8) was a particular focus for its known cultural associations but the gulch is little more than a 5 m. wide, 2 m. deep ditch as it traverses the project area. The frequent flooding mentioned previously and and 100 years of sugar cane cultivation would have severely impacted any trace of prehistoric cultural association. There was no sign of prehistoric occupation along Kalo'i Gully or anywhere else within the project area.

No historic sites predating the beginning of the 'Ewa Plantation were observed. The results of archaeological reconnaissance of post 1890 sites (Fig. 7) will be discussed in the following order: the 'Ewa Plantation Cemetery, the Reservoir (Reservoir #1), the demolished Korean Village (Middle Village), the demolished Mill Village, the demolished "C" Village, the 'Ewa Depot, the potential of archaeology in Renton Village and the mill, the potential of archaeology in Tenney Village, and the potential of archaeology in Varona Village.

#### 'Ewa Plantation Cemetery

The 'Ewa Plantation Cemetery served the final needs of the remarkably diverse population of 'Ewa Plantation from approxi-



Note in this aerial view the effect of the recent construction of villages and plantation buildings. The farm are compact 'Ewa communities.

Fig. 6 - 111A. An Aerial View of 'Ewa. U.S. Dept. of Agriculture, U.S. Geol. Surv. Map 1:50,000.

Fig. 6 Aerial View of 'Ewa Showing Most of the Project Area in Sugar Cane and Villages (1940)



Fig. 8 View of Kalo'i Gully from Mango Tree Road, View To SE

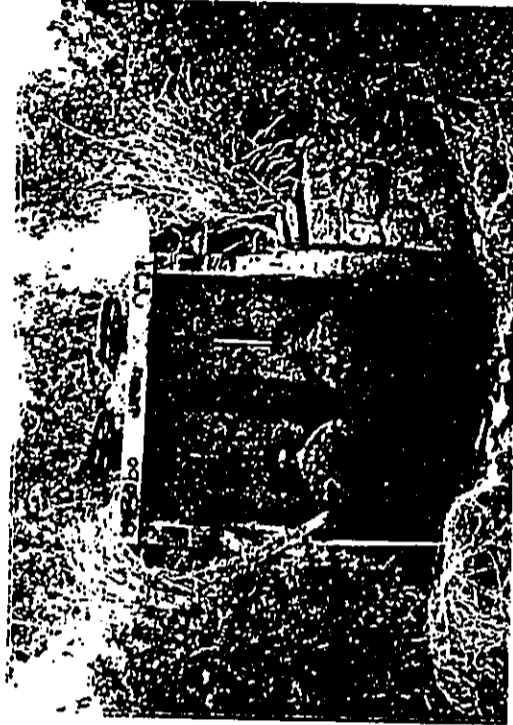


Fig. 9 Interior View of the Gates of the Reservoir View To SE

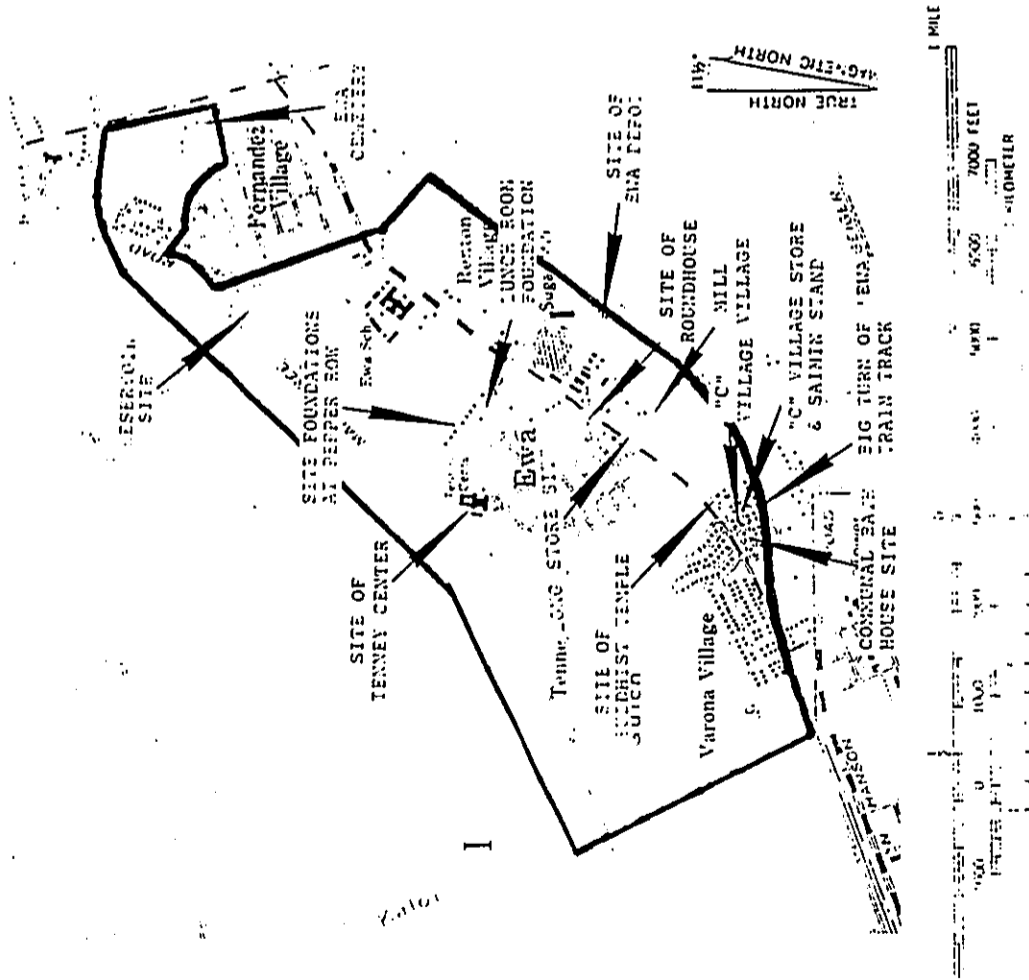


Fig. 7 Map Showing Location of Known Foundations

mately 1900-1970. There is no evidence of previous interment there. It is one of the largest, if not the largest, cemetery in SW O'ahu. The cemetery is bounded on the east by Fort Weaver Road, on the south by Karayan Street which is a major access road to Fernandez Village, on the west and north by narrow dirt roads, and on the northeast by a cemented culvert. The cemetery is dominated by a large stone memorial to the Pioneers, erected in 1947 by three Buddhist sects. Interment there ceased very close to 1970 and many of the remains were removed to Mililani Cemetery at about that time. The celebration of annual Buddhist rituals there seems to have largely ceased about three years ago and the cemetery is notably forlorn. Unmarked graves are believed to exist within the cemetery and other graves, marked at present by as little as a piece of iron rebar, may be unmarked soon. Informants have mentioned that some grave markers have been removed by family members with the interment left in situ. The cemetery is quite discrete and is unlikely to extend beyond the dirt road perimeter but if any subsurface excavation is ever to be performed on these dirt roads or within their bounds it would be prudent to have an archaeological monitor present.

#### Reservoir #1

Reservoir #1, presently dry, is located just south of Mango Tree road, just west of Fernandez Village, and about 200 m. north of 'Eva Elementary School. In the past the State Historic Sites Section has expressed concern for notable historic reservoirs and the 'Eva Plantation Reservoir #1 would seem a likely candidate to

merit further data recovery if it is to be impacted by development. The date of construction is uncertain but the exterior spillway bears the date April 1926 and it appears in its present configuration on the 1928 U.S.G.S. map. Reservoir #1 may well be significantly older as by 1928 the irrigation system of 'Eva Plantation was quite elaborate. Its cultural importance is primarily as the most concrete symbol of the genius in water management that made 'Eva Plantation possible, as well as in the uniqueness of its valves (Fig. 9).

#### Korean Village (Middle Village)

Korean Village, as it is called on the U.S.G.S. map of 1928 and by many of the longtime residents of 'Eva, or Middle Village as it is called on the 'Eva Mill Camp Map of 1968 and in the 'Eva Plantation Villages Housing Study (Phillips et al., 1979) was located on the "bluffs" just a few meters north of Fernandez Village abutting Mango Tree Road. In the 'Eva Plantation Villages study it is asserted that this was the oldest village (1979:II,265) and it is dated to 1924. The 1979 housing survey and the 1983 U.S.G.S. map show 16 houses present. Today there is only limestone gravel, cement rubble and a few shards of broken pipe left to demarcate this village. The thoroughness of the obliteration is quite striking and the potential of significant subsurface deposits is thought to be very low. No further archaeological work is recommended there. The thoroughness of the obliteration of this village, which appears on a 1983 U.S.G.S. map, suggests that there is likely to be little trace of

any sites within the project area that were converted to cane cultivation at an earlier date.

#### Mill Village

Mill Village was located just SW of the mill on the SE side of Renton Road. In the 1928 U.S.G.S. map this is shown as a very populous area with nearly 150 structures between Renton Rd. on the west, Kalo'i Gully to the south, the O.R. & L. Right-of-Way to the east and Depot Rd. to the north. The 1968 Mill Camp Map shows 9 houses and two other complexes. The 1979 housing study cited 8 houses as present, dated them as 50+ years old (pre 1929) and recommended that the village be discontinued. The Bishop Museum visual collection (1974.87.1288, pgs 14-19) documents New Mill Village" in 1925 but photos of "Old Mill Village" dated 1924 suggest that the origin of the village may go back to the turn of the century or earlier. Almost nothing is standing at Mill Village. Reconnaissance indicated that archaeological survey could be of value in gleaning more information about Mill Village than might be available from other sources.

Of particular interest was the foundation of Long Store (1694 Renton Road; Fig. 10). This 2-story long store (more than 30 m. long) was evidently one of the first foci of private enterprise at 'Eva and a survey of the slab could augment oral history and literature research. There is debris and foundation remnants of a number of domestic structures as well.

#### "C" Village

"C" Village was bounded to the NW by Renton Road, to the south of the O.R. & L. Right-of-Way and to the NE by field 046 and Kalo'i Gully and was built on a constructed terrace (Fig. 11). The Bishop Museum visual collection (1974.87.1288; pgs 17-19) has photos of "C Village Remodeled Annex Camp" dated 1926 and photos of "Old C Village" dated 1924 that suggest that the origin of "C" Village may go back to the turn of the century or earlier. The 1928 and 1943 U.S.G.S. maps indicate about 50 houses and the 'Eva Japanese School. The 1968 survey indicates about 45 houses and the 'Eva Hongwanji mission. The 1979 study indicates 38 structures as present and recommended demolition. Today only the Buddhist Mission and a couple of associated structures still stand, the rest has been leveled. However, reconnaissance indicates there is much of interest still extant. Foremost is the slab of a Japanese *furō* or bathhouse (Fig. 12). This may be one of the oldest extant sites of a communal bathhouse in the United States. The Annual Reports of 'Eva Plantation Company mention bath house construction only during 3 years 1899, 1903, and 1921 and only in 1899 is a communal bath house suggested - "the bath houses furnished for the comfort of laborers [were] consolidated." This bathhouse appears to be located on the 1928 U.S.G.S. map as a small circle. Also of interest are the slabs of two "single men's lunch rooms" (Fig. 13) and the site of a WWII bomb shelter. The site of the 'Eva Mill Railroad as it left the O.R. & L. alignment and doubled back to the NE to the mill was tentatively identified (Fig. 14) as it curves through "C"



Fig. 10 View of Long Stone Foundations, Mill Village, View



Fig. 11 View of 1 m. High Terrace at South Edge of Former "C" Village Site, View to N

Village. This alignment linked the O.R. & L, which is on the National Register of Historic Sites, with the heart of 'Ewa Plantation. The route of this appurtenance is still free of later construction. At least one previous Buddhist structure stood near the site of the 'Ewa Hongwanji Mission and was burned down during WWII (arson by a marine was suspected). Just south-east of the present 'Ewa Hongwanji Mission fence are two small boulder platforms which may relate to earlier constructions. Much might be learned by a survey of what remains of the layout of "C" Village and limited subsurface testing might reveal more.

#### 'Ewa Depot

The 'Ewa Depot (Fig. 15) was the way out of the plantation in more ways than one as high school students would ride to A'ala Park, transfer to a streetcar to McKinley School and repeat the process at the end of the day. A Bishop Museum photograph (BM46983) dated 1943 shows a wooden platform flush with the O.R. & L. track and elevated on the NW side. Other photos depict the architectural well (Fig. 15). This site has been visually impacted by recent 2-story housing construction, but the specific site is undeveloped and merits further consideration by appropriate parties.

#### Renton Village

The reconnaissance of Renton Village noted house slabs at vacant lots (49, 53, 57) of Pepper Row (Fig. 16). A map of 'Ewa houses by Fernando Ziaicita dates some of the earliest houses in



Fig. 14 View of a Portion of the Probable Alignment of the 'Ewa Hill Railroad As It Turns Away From the O.R. & L. and Bends Back NE Towards the Hill, View to North

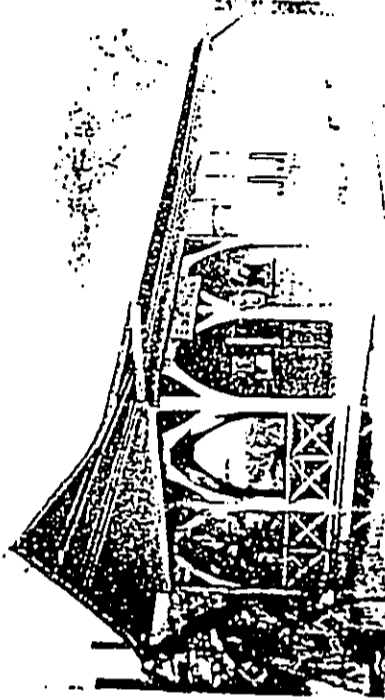


Figure 15 Photo of 'Ewa Hill Station of O.R. & L. Co. (from Conde and Best, 1973)



Fig. 12 View of Communal Bath House Foundation, View to NW



Fig. 13 View of Foundation of "C" Village Store and Attached Salmon Stand



Renton Village to this vicinity (circa 1907). A Bishop Museum photo (dated 1908) shows "first residences built in Pepper Row" (1974.87.1288). A survey of these and other house slabs in Renton Village might go far to complete the picture of the history and nature of construction at Renton Village. Just SW of Pepper Row are a number of foundations, like the lunchroom foundation for the Tournahauler Shop and Cane Haul Drivers (Fig. 17) for which it is unclear that documentation adequate for historic preservation concerns exists.

#### Tenney Village

At Tenney Village reconnaissance suggests that survey of vacant house lots would be unlikely to yield significant data on domestic structures. However, slabs and walls believed to be associated with the gas station, and Tenney Center and the slab tracks of the roundhouse (Fig. 18, 19) are still extant and survey coordinated with archival research, photo collection research, and oral history research could result in far better documentation than is presently known to exist.

#### Varona Village

Reconnaissance suggests that survey of vacant house lots would be unlikely to yield significant data on domestic structures. The demolition of the recreation building and of houses forming the central U-shape lot configuration was so complete that there is little hope of significant data recovery from survey or subsurface testing. There is a ruin of a lamp post on

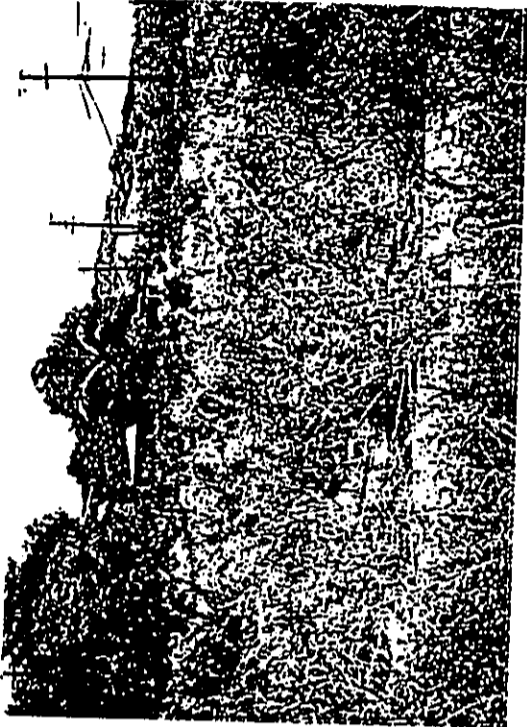


Fig. 16 View to NW of 3 Lots on Pepper Row (49 53, 57), Foundation of House in Foreground



Fig. 17 View of Foundation of Lunch Room for Tournahauler Shop and Cane Haul Drivers. View to NW from Pepper Row



Fig. 18 View of Foundation of Roundhouse, View to NW

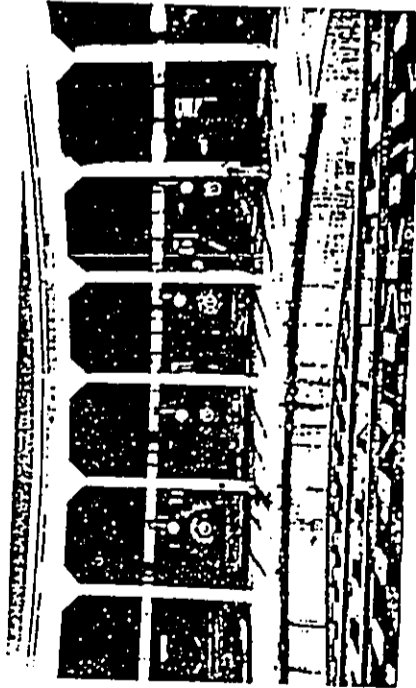


Fig. 19 Photo 'Eva Plantation Roundhouse (Conde and Best, 1973)

Renton Road that might well merit proper recording or preservation.

#### VI. Summary and Recommendations

No prehistoric sites were identified during archaeological reconnaissance within the project area. No Land Commission Awards other than the LCA of most of the ahupua'a of Honouliuli to Kekau'onohi (L.C.A. 11216) lie within the project area. Other archaeological surveys on adjacent parcels have identified no prehistoric occupation or utilization of the immediate area. No prehistoric sites are likely to be encountered within the project area. Virtually the entire project area has been extensively graded repeatedly over the past century by the 'Ewa Plantation Company in association with sugar cultivation and the construction of sugar plantation infrastructure.

In light of the findings of previous subsurface testing in the immediate vicinity (Davis, 1988:10ff), the absence of indications prehistoric utilization, and the massive historic alteration of these lands no subsurface testing for traces of Hawaiian prehistory seem warranted and none are recommended.

Within the project area are the (post 1890) sites of a number of plantation villages and other plantation era structures which have been dismantled, bulldozed or otherwise removed. These include the former site of "C" village, the former site of Mill Village, the former site of Middle Village, and the former sites of a number of other plantation structures including early plantation houses, religious structures, and other plantation infrastructure. The project area has been a focus of historic preservation concern by many organizations within the private

sector, in addition to the City and County of Honolulu, the State of Hawaii, and the Federal Government. National Park Service historians have determined that the 'Ewa Villages are eligible for nomination as a National Historic Landmark; the nation's highest historical designation. Because of the clear historic importance of the 'Ewa Villages we must urge caution with regard to the development of any portions of the 'Ewa Villages project area in which historic structures are known to have existed as there may be subsurface archaeology (building foundations, latrines, etc.) relevant to historic preservation concerns. We must recommend that any consideration of development of portions of the 'Ewa Village project area, in which any pre-WWII historic structures are known to have existed, be done in close consultation with the State Historic Sites Preservation Office to evaluate the possible relevance of subsurface archaeology to the further documentation of previously existing structures or other historic preservation concerns. The locations of pre-WWII structures are indicated in Figs 4-7.

An attempt was made to evaluate the possible role of subsurface archaeology with regard to the documentation of pre-WWII historic structures and plantation life in the 'Ewa Villages. Previous subsurface archaeological studies of historic structures we have been involved with at Waiole Mission, Kaua'i; Koele, Lana'i; and Fort Alexander, Kaua'i were fruitful in elucidating the history of these sites in the early twentieth century offering historical information not available in the literature.

However, in the case of the 'Eva Villages project area we foresee little role for subsurface archaeological studies owing to 1) the nature of construction 2) the pattern of discard, and 3) the extent of subsequent land modification.

Most plantation structures were of wood and sat lightly upon the earth, often on small cement post supports, leaving little trace of a building print once gone. The plantation and the plantation workers themselves were notably thrifty and the records of the 'Eva Plantation and the recollection of long-time residents, supports a common pattern of utilizing any useful portions of structures (eg. fixtures, boards) in later construction. A Bishop Museum photo (1974.87.128:p98) of the tearing down of the old ('Eva Union) church, dated 1926 suggests that there would be little trace of this structure owing to the thoroughness of the demolition. There is good reason to believe on the basis of the testimony of long-time residents that the disposal of structural debris and other rubbish was outside of the present project area from a very early date. There are Bishop Museum photos of various "nail drives" in which children scoured the camps collecting all the nails they could find. The general thriftiness of the plantation extended to a pattern of quick reutilization of lands once structures were removed by building new structures on the site or placing the land back in sugarcane production. These operations typically involved massive impact to the former site by heavy machinery.

Thus, it is anticipated that subsurface archaeology will

have little role in the historic preservation concerns for 'Eva Plantation. However, because of the historic preservation concern the project area has merited, we recommend that the issue of subsurface archaeology be explicitly raised with the State Historic Preservation Office prior to the development of any land by the City and County upon which pre-WWII plantation structures are known to have existed. This would include the vicinity of Renton Village, Tenney Village, Varona Village, C Village, Mill Village, Middle Village, 'Eva Mill, 'Eva Elementary School, 'Eva Station and the 'Eva Japanese School site. It is anticipated that in many areas no subsurface archaeological reconnaissance would be deemed necessary and that short-term archaeological monitoring during construction would suffice in other areas but this recommendation should be made by the State Historic Sites Section or their designated authorities.

We recommend that particular attention be given to avoid further impact to the O.R. & L. Right-of-Way, and the two appurtenances of this National Historic Site that lie within the project area. The 'Eva depot site (0.344 acre) was an intrinsic portion of the O.R. & L. and of tremendous importance to the story of 'Eva Plantation. It was one of the few aspects of 'Eva Plantation Life in which Hawaiian people participated (Auwana family). The other appurtenance of the O.R. & L. National Historic Site is the 40' wide (3.43 acre) link to the 'Eva Mill running through "C" Village and along Renton Road, through which the lifeblood of the plantation, machinery and supplies coming in

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APPENDIX E

MARKET ASSESSMENT

John Child and Company, Inc.

john  
child

& COMPANY, INC.

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of the Pacific  
1381 Kalia Road, Suite 1040  
Honolulu, Hawaii 96813  
Telephone  
(808) 533-2951  
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(808) 523-7672

December 12, 1990

Mr. Chester Koga  
R.M. Towill Corporation  
420 Waiakamilo Road, Suite 411  
Honolulu, Hawaii 96813

Dear Chester:

At your request, John Child & Company, Inc. has prepared market assessments covering the proposed Ewa Villages project. This letter summarizes our assessments that are presented in the accompanying summary report.

**BACKGROUND**

R.M. Towill Corporation has been selected by the City & County of Honolulu (City) to develop a master plan and Environmental Impact Statement (EIS) for the City's proposed Ewa Villages project. Ewa Villages is a restoration and revitalization project of about 1,184 single- and multi-family units. The project would include a neighborhood commercial facility. The Ewa Villages project would include 474 detached, single-family, market-priced units and 710 units oriented toward the affordable market.

To complete your assistance, you have undertaken the following Work Elements:

1. Research and Analysis
2. Design Studies
3. Draft Master Plan and EIS
4. Final Master Plan and EIS.

As an integral part of the planning, design and EIS, you require market assessments for the proposed residential units. In this regard, you asked us to assist you by preparing market assessments for the proposed residential development at Ewa Villages.

Edward Wilson, Ltd. Inc.  
P.O. Box 118  
P.O. Box 118  
P.O. Box 118  
P.O. Box 118  
P.O. Box 118

Report to  
R.M. Towill Corporation

Covering market assessments  
for the proposed

EWA VILLAGES PROJECT

Ewa, Oahu, Hawaii

December 1990

john  
child

& COMPANY, INC.

REAL ESTATE  
APPRAISERS &  
CONSULTANTS



STUDY OBJECTIVES

The objectives of our assistance are to estimate the current and projected market support for the proposed residential units in Da Villages in terms of:

- Property characteristics and amenities
- Typical market sales prices
- Projected annual absorption.

MARKET ASSESSMENTS FOR  
DA VILLAGES MARKET UNITS

The market outlook for Da Villages supports development of the 474 units. The projected housing demand for detached single-family units is expected to remain strong. The most competitive inventory would be from market-priced units in:

- Da by Centry
- Kapolei Village
- Mililani Mauka
- Waikole
- Royal Kunia.

Unit Type

The market-priced single-family units in Da Villages would be 3 to 4 bedroom units similar in size and design to units in West Loch Fairways. The typical market-priced multi-family unit in Da Villages would be a 2 bedroom/2 bath unit with approximately 700<sup>sq</sup> ft.

Selling Prices

The Da Village detached single-family units could be priced between \$350,000 and \$400,000. A 20% premium for golf course frontage would be appropriate. The multi-family units could be priced between \$140,000 and \$175,000.

Absorption

Da Villages would have competitive advantages over other developments in the area. The master planned development would include:

- Plantation heritage and unique design features
- Large 5,000<sup>sq</sup> ft and 6,000<sup>sq</sup> ft lots
- Da's only district park

- Mature, tree-lined access road
- Theme commercial center
- Train stop and museum
- Mature landscaping in established neighborhoods
- Golf course.

The market support for market-price units at West Loch Estates, Kapolei Villages and Royal Kunia has been strong. The long term absorption rates for major housing projects in Da and Central Oahu have ranged from 250 to 400 units per year; however, recent projects have experienced sales rates of 200 to 300 units per month.

Da Villages would market 474 market priced units within the next 2 to 3 years. Based on recent trends, it is probable that the project would be sold within a year.

MARKET ASSESSMENT FOR  
DA VILLAGES AFFORDABLE UNITS

Projected demand for the 710 affordable housing units in Da Villages is strong. The island-wide market demand for affordable housing is expected to remain very strong over the foreseeable future. Most residential developments in the Central Oahu/Da area will have small portions of their inventory oriented to the low- and moderate income families; however, sufficient demand would exist to accommodate all anticipated supply.

Affordable Unit Description

The proposed plan would provide about 60% of the estimated 1,164 housing units as affordable units. Of the indicated 710 units, 214 would be rehabilitated existing structures, 112 would be new multi-family units, and the remaining 384 would be new single-family units.

New Units

The new multi- and single-family units would be built according to current building standards and would be comparable to the designs, sizes and prices of affordable units in competing projects such as West Loch Estates and Ewa by Gentry.

Existing Units

The vast majority of the existing houses are of post and pier construction and were built in the 1920's and 1930's. The dwellings are typically constructed out of lumber, is single-walled, and has either sliding, hung or casement windows. There are several styles of roof, which may be constructed from wood shake, rolled asphalt, or newer, respectively. Most of the structure is older, middle-aged, or newer, respectively. Most of the homes are two- or three-bedroom, with the average size ranging from 1,250<sup>sq</sup> to 1,350<sup>sq</sup>. The largest homes which average about 1,700<sup>sq</sup> are found in Renton Village. The more modest-sized homes averaging about 800<sup>sq</sup> to 1,000<sup>sq</sup> are found in Tenney Village. Lot sizes range from 5,000<sup>sq</sup> to 6,000<sup>sq</sup>.

Overall, the exteriors of the homes require rehabilitation. All existing homes would be rehabilitated to meet standards for habitable structures. Two options are considered regarding the required renovations of these structures: (1) the existing tenant could purchase the unit "as is" and perform the necessary repairs or (2) the unit could be rehabilitated and offered for sale to qualified buyers.

Preliminary average pricing of the existing single family units in their as-is and rehabilitated condition is summarized as follows:

Unit type	Average Prices	
	As-is condition	Rehabilitated
2-bedroom	\$45,000	\$110,000
3-bedroom	55,000	130,000

Absorption

Comparable single-family development oriented to the low-moderate families have experienced rapid absorption rates. The affordable units in Ewa Villages are also expected to experience absorption rates similar to Villages at Kapolei, West Loch Estates and Soda Creek. It is probable that the affordable units would be sold within a month.

We appreciate having the opportunity to prepare this summary report for you and look forward to working with you on this interesting assignment.

Very truly yours,

JOHN CHILD & COMPANY, INC.

Karen Char, MAI  
Executive Vice President

KC/WVE/jn

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ADDENDA

Addendum A - Study Conditions

I - MARKET ASSESSMENT - MARKET PRICED HOUSING

This section summarizes the study approach and market assessments for market priced units in Ewa Villages.

STUDY APPROACH

The study approach used to complete the market assessments is summarized as follows:

- Reviewed current and projected demand for housing units on Oahu and especially in Ewa and Central Oahu.
- Reviewed sales absorption rates, sales prices, buyer profiles, and unit characteristics of comparable projects.
- Inventoried competitive under-construction, planned and proposed housing units in major residential developments in Ewa and Central Oahu.
- Estimated average annual absorption of the Ewa Villages market-priced single-family units.

REGIONAL BACKGROUND

Trends in Hawaii, Oahu and Ewa were reviewed in terms of population, personal income, employment and economic activity. Significant trends are outlined as follows:

- Resident population of Hawaii is projected to reach 1,137,200 by 1990 and 1,435,500 by 2010.
- Personal income in Hawaii has increased 7% to 12% annually since 1965 this rate is comparable to National levels.
- Employment continues to grow in all areas except for manufacturing and agriculture; Hawaii's current unemployment rate of 2.6% compares favorably to National averages.
- Resident population of Oahu is expected to reach 861,500 by 1990 and 999,500 by 2010.
- Most dramatic growth in the past 10-15 years occurred in Central Oahu; however, over the next 10-20 years most growth would be focused in Ewa.
- Current population distribution on Oahu includes about 4.7% in Ewa and 8.3% in Central Oahu.

CURRENT HOUSING DEMAND

Historical and current demand for housing on Oahu was reviewed. Significant trends are outlined as follows:

- Since 1981, between 2,000 and 3,700 units have been added annually on Oahu.
- At the same time vacancies have remained relatively low.
- About 41% of Hawaii's housing inventory is owner-occupied.
- Since 1980 over 36,882 new housing units have been added on Oahu. About 18,100 (49%) were single-family units.
- Average annual new unit sales in major residential developments in Ewa and Central Oahu are summarized as follows:

Milliani	300-400
Makakilo	100-200
Genry	300-400
Village Park	250-300

- Overall, an estimated annual average of 800 to 1,200 units have sold in Ewa and Central Oahu over the recent past.
- Average sales prices for residential properties on Oahu have increased between 13% and 31% annually over the 1985 to 1989 period.
- Average Oahu sales prices for single- and multi-family residential properties have ranged as follows:

	Average Sales Prices	
	Single-family	Multi-family
1985	\$188,016	\$ 99,597
1986	212,140	107,857
1987	278,296	126,358
1988	316,957	137,449
1989	376,710	167,129

PROJECTED HOUSING DEMAND

Demand for housing is expected to remain strong as population, employment, and household incomes continue to increase. Significant trends in projected housing demand are outlined as follows:

- Department of Business and Economic Development (DBED) projects Oahu's population to increase to 999,500 by 2010. The increase in population by 2010 would represent an additional demand for at least 54,400

housing units, assuming an average household size of 2.9 persons on Oahu.

- New demand for housing on Oahu would be focused in Ewa and Central Oahu because of new employment opportunities created by:

- West Beach Resort
- Expansion of Campbell Industrial Park
- Barber's Point Harbor
- Kapolei Town Center.

- Ewa and Central Oahu would be expected to represent about 40,000 units (74%) of the total demand based on projected population increases in the Development Plan Review, 1989.

This projection is reasonable because of:

- New job opportunities in Ewa and Central Oahu.
- Availability of competitively priced residential properties.
- Considering an average vacancy of about 5%, actual new housing units required to accommodate projected demand would be about 42,100 units.
- Historical absorption levels have been 800 to 1,200 units per year. Projected demand for 42,100 units would indicate an average annual demand for 2,105 units per year over the next 20 years in Central Oahu and Ewa.

EXISTING AND PROJECTED HOUSING INVENTORY

Major residential developments in Ewa and Central Oahu were analyzed in terms of current and proposed inventory.

- A review of the master plans for the major projects in Ewa and Central Oahu indicated over 50,700 single-family and multi-family units are proposed.
- Approximately, 38,700 units are in various projects that have some or all of the approvals in place.
- Considering the relatively small size of the Ewa Villages project (474 units), and based on proposed timing and current development status, only about 4,000 to 5,000 units would be competitive with Ewa Villages over the next two to three years. Competition is summarized as follows:
  - 1,157 market priced units scheduled to be marketed in late 1990 or early 1991.

Between 1,500 and 2,500 units per year in established residential developments would be marketed over the 1992 to 1993 period.

- Projects to begin marketing in late 1990 or early 1991 include:

Millilani Mauka	311	0
Ewa by Gentry	0	500
Makakilo	98	280
Waikale	0	244
Kapolei	618	0
<b>Total</b>	<b>1,027</b>	<b>1,024</b>

- Sales price ranges for new inventory to be marketed in late 1990 and early 1991 are summarized as follows:

	Single-Family	Multi-family
Millilani Mauka	\$335,000 - \$450,000	
Ewa by Gentry		\$235,000+
Waikale		92,000+
Makakilo	340,000 - 430,000	85,000 - 155,000
Kapolei Villages II & III	89,000 - 120,000	
Affordable Market	300,000+	

#### ESTIMATED MARKET SUPPORT FOR HOUSING DEVELOPMENT IN EWA AND CENTRAL OAHU

Projected housing demand in Ewa and Central Oahu is compared to projected supply. Demand for Ewa and Central Oahu is projected to be 2,105 units annually.

Projected supply of housing includes the most current data available through public records and from interviews with developers. About 1,500 to 2,500 units annually are projected to be added to the Central Oahu and Ewa districts over the next 3 years.

At the lower end of the projected supply there would be an unfulfilled demand for about 600 units per year. At the upper end of the projected supply there is the potential for an oversupply of homes. However, major projects would be expected to delay or decrease the proposed phasing to minimize the surplus inventory.

#### MARKET ASSESSMENTS FOR EWA VILLAGES MARKET UNITS

The market outlook for Ewa Villages supports development of the 474 units. The projected housing demand for detached single-family units is expected to remain strong. The most competitive inventory would be from market-priced units in:

- Ewa by Gentry
- Kapolei Village
- Millilani Mauka
- Waikale
- Royal Kunia.

#### Unit Type

The market-priced single-family units in Ewa Villages would be 3 to 4 bedroom units similar in size and design to units in West Loch Fairways. The typical market-priced multi-family unit in Ewa Villages would be a 2 bedroom/2 bath unit with approximately 700sq.

#### Selling Prices

The Ewa Village detached single-family units could be priced between \$350,000 and \$400,000. A 20% premium for golf course frontage would be appropriate. The multi-family units could be priced between \$140,000 and \$175,000.

#### Absorption

Ewa Villages would have competitive advantages over other developments in the area. The master planned development would include:

- Plantation heritage and unique design features
- Large 5,000sq and 6,000sq lots
- Ewa's only district park
- Mature, tree-lined access road
- Theme commercial center
- Train stop and museum
- Mature landscaping in established neighborhoods
- Golf course.

The market support for market-price units at West Loch Estates, Kapolei Villages and Royal Kunia has been strong. The long term absorption rates for major projects in Ewa and Central Oahu have ranged from 250 to 400 units per year; however, recent projects have experienced sales rates of 200 to 300 units per month.

Ewa Villages would market 474 market priced units within the next 2 to 3 years. Based on recent trends, it is probable that the project would be sold within a year.

## II - MARKET ASSESSMENT - AFFORDABLE HOUSING

This section summarizes the study approach and market assessments for the affordable units at Ewa Villages.

### STUDY APPROACH

The study approach to complete the affordable housing market assessments is summarized as follows:

- Reviewed absorption rates, sales price range, buyer profile and unit characteristics of comparable projects oriented to the families with 80% to 120% of median family income on Oahu.
- Identified and evaluate current and proposed competitive residential developments on Oahu sponsored by HUD, DHCD, or private developers.
- Assessed the competitiveness of the proposed Ewa Villages project in relation to the current and proposed affordable housing projects on Oahu.
- Estimated the sales absorption period for the proposed Ewa Villages project based on the absorption rates experienced by recent comparable projects; projected market trends and the competitive position of the Ewa Villages project.

### AFFORDABLE MARKET HOUSING BACKGROUND

Trends in the affordable housing market were reviewed in terms of household incomes, population, and supply and demand relationships on Oahu. Significant trends relating to the affordable housing market on an island-wide basis are outlined as follows:

- Specific needs of the low- and moderate-income families desiring to become homeowners include: smaller, lower cost "starter homes," and/or reduced initial cost to enable them to qualify to purchase.
- Affordability will remain the primary housing problem on Oahu for the foreseeable future.
- In 1980 estimated low- and moderate-income households on Oahu totaled 39,366 households, of which 27,292 were renting.
- Sales prices of homes have risen faster than increases in household income. This has resulted in an increase in the number of low- and moderate-income households since 1980.
- The number of affordable units developed by the public and private sector has not been sufficient to significantly reduce the overall demand for affordable housing units.

- The problem of housing affordability shows no sign of dissipation in the near future; factors influencing both supply and demand are expected to continue pushing the cost of housing further out of reach of the average household.

- Demand for affordable housing will increase because of increasing numbers of household formations which increase the competition and push prices further upward.

- The outlook from the production (supply) side is not encouraging; rising material costs, coupled with the increasing cost and limited supply of suitable land, can be expected to continue pushing the costs of producing housing units higher.

### CURRENT HOUSING DEMAND

The historical and current demand for affordable housing on Oahu was reviewed. Significant trends and findings are outlined as follows:

- There is currently demand for about 30,000 affordable housing units on Oahu.
- The affordable housing market is an island-wide market. Projects located in reasonable proximity to employment, schools and shopping would effectively compete for the low- and moderate-income buyer.
- Relatively few affordable housing projects have been marketed over the recent past. Those which offered a single-family detached unit in a reasonable location attracted many more qualified buyers than units available for sale, and consequently, experienced short marketing periods.
- The low- to moderate-income household is defined in relation to median household income. The DHCD definition is a maximum of 120% of the median household income estimate provided by HUD for metropolitan areas of Hawaii. Current median household income is set at \$41,200 for a family of four.
- The maximum income levels for typical household sizes under the current DHCD guidelines are as follows:

Number persons in household	Maximum Low- and Moderate-Incomes	
	Low-income	Moderate-income
2	\$26,350	\$39,600
3	29,650	44,400
4	32,950	49,440
5	35,000	53,400

- The maximum purchase prices a low- to moderate-income household could afford, based on household size, income, 10% down payment, a 33% qualifying ratio, \$100 per month reserves and financing at conventional rates (10.0% interest), are summarized as follows:

Affordable Unit Pricing			
Number persons in household	Low-income households	Moderate-income households	
2	79,100	\$125,200	
3	90,500	142,000	
4	102,000	159,500	
5	109,200	173,300	

#### EXISTING AND PROJECTED HOUSING INVENTORY

While affordable housing developments are generally stand-alone projects, many large residential developments orient a portion of the project inventory to the moderate-income market. A review of major housing projects which are currently being developed or are proposed for development and contain competitive affordable units indicates the following:

- The current proposed projects represent 8,670 proposed affordable residential units. This includes units which are priced to be affordable to people at 80-185% of median income.
- About 321 (2,770 units) of the affordable units are projected to be single-family units. The remaining units are unspecified at this time.

#### ESTIMATED MARKET SUPPORT FOR AFFORDABLE HOUSING

Over 30,000 households on Oahu are in the market for affordable housing. In contrast over the next 20 years current proposed developments would add only 8,670 units oriented to this market. This imbalance in demand and supply is evident in the marketing experience of the limited number of housing projects which have been oriented to the affordable market. Typically the projects have attracted 5-10 times as many buyers as units available for sale.

The prospective purchasers come from wide geographic areas. As a result, if single-family housing can be offered at affordable prices, there will be strong demand for the product. Location is not expected to be a significant factor for this market.

#### MARKET ASSESSMENT FOR EWA VILLAGES AFFORDABLE UNITS

Projected demand for the 710 affordable housing units in Ewa Villages is strong. The island-wide market demand for affordable housing is expected to remain very strong over the foreseeable future. Most residential developments in the Central Oahu/Ewa area will have small portions of their inventory oriented to the low- and moderate income families; however, sufficient demand would exist to accommodate all anticipated supply.

#### Affordable Unit Description

The proposed plan would provide about 60% of the estimated 1,184 housing units as affordable units. Of the indicated 710 units, 214 would be rehabilitated existing structures, 112 would be new multi-family units, and the remaining 384 would be new single-family units.

#### New Units

The new multi- and single-family units would be built according to current building standards and would be comparable to the designs, sizes and prices of affordable units in competing projects such as West Loch Estates and Ewa by Century.

#### Existing Units

The vast majority of the existing houses are of post and pier construction and were built in the 1920's and 1930's. The dwellings are typically constructed out of lumber, is single-walled, and has either sliding, hung or casement windows. There are several styles of roof, which may be constructed from wood shake, rolled asphalt, or corrugated metal depending on whether the structure is older, middle-aged, or newer, respectively. Most of the homes are two- or three-bedroom, with the average size ranging from 1,250<sup>sq</sup> to 1,350<sup>sq</sup>. The largest homes which average about 1,700<sup>sq</sup> are found in Remton Village. The more modest-sized homes averaging about 800<sup>sq</sup> to 1,000<sup>sq</sup> are found in Tenney Village. Lot sizes range from 5,000<sup>sq</sup> to 6,000<sup>sq</sup>.

Overall, the exteriors of the homes require rehabilitation. All existing homes would be rehabilitated to meet standards for habitable structures. Two options are considered regarding the required renovations of these structures: (1) the existing tenant could purchase the unit "as is" and perform the necessary repairs or (2) the unit could be rehabilitated and offered for sale to qualified buyers.

Preliminary average pricing of the existing single family units in their as-is and rehabilitated condition is summarized as follows:

Average Prices		
Unit type	As-is condition	Rehabilitated
2-bedroom	\$45,000	\$110,000
3-bedroom	55,000	130,000

Absorption

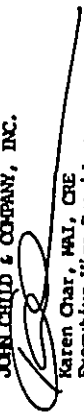
Comparable single-family development oriented to the low-moderate families have experienced rapid absorption rates. The affordable units in Dda Villages are also expected to experience absorption rates similar to Villages at Kapelel, West Loch Estates and Soda Creek. It is probable that the affordable units would be sold within a month.

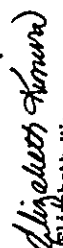
CERTIFICATION

We certify, to the best of our knowledge and belief:

1. Statements of fact in this report are true and correct.
2. Reported analyses, opinions and conclusions are limited only by the reported assumptions and limiting conditions and are our unbiased professional analyses, opinions and conclusions.
3. We have no present or prospective interest in the property that is the subject of this report, and we have no personal interest or bias with respect to the parties involved.
4. Our compensation is not contingent on an action or event resulting from the analyses, opinions or conclusions in, or use of, this report.
5. Our analyses, opinions and conclusions were developed and this report conforms with the requirements of the Uniform Standards of Professional Appraisal Practice, Code of Professional Ethics and Standards of Professional Practice of the American Institute of Real Estate Appraisers (Appraisal Institute), International Society of Real Estate Appraisers (Society) and American Society of Appraisers (ASA), and the use of this report is subject to the requirements of these professional organizations relating to review by its duly authorized representatives.
6. Karen Char, MAI is currently certified under the continuing education program of the Appraisal Institute.  
ASA has a mandatory recertification program. Uson Y. Bwart is currently certified under this program.
7. Mr. Bwart and Mrs. Kimura made a personal inspection of the property that is the subject of this report.
8. No one other than the undersigned prepared the analysis, opinions and conclusions in this report.

JOHN CHILD & COMPANY, INC.

  
Karen Char, MAI, CRE  
Executive Vice President  
Uson Y. Bwart, ASA  
Appraiser

  
Elizabeth Kimura  
Real Estate Analyst



STUDY CONDITIONS

This report is subject to the following study conditions:

Property Description

A complete legal description was not reviewed by the appraisers.

The appraisers reviewed maps, site plans and other descriptive material covering the existing site and proposed development site plans. Conclusions relating to the physical character of the site and its adaptability for residential development is based upon information developed by various consultants for the City & County of Honolulu.

Hazardous Substances

The existence of hazardous substances that may or may not be present on the property, or other environmental conditions that may impact the property were not called to our attention nor did we become aware of any hazardous substance or condition during our site visit. We are not trained or qualified to detect hazardous substances or conditions even if these hazards, or evidence of potential presence of these hazards, are visible on the property.

This report assumes no hazardous substance or condition exists that would impact the analysis, opinions or conclusions.

Assessment Assumptions

The absorption rate conclusions assume the project is marketed as fee simple house-and-lot packages, and reflect the sizes, characteristics, and price ranges concluded as appropriate in the analysis.

The analyses assume the individual developer(s) of Eva Villages would have the experience and expertise to design, construct, and market the individual units on a competitive basis.

The pricing of units oriented to the low- and moderate-income families will vary in relation to median income levels and interest rates. The analysis assumes current affordable pricing levels will remain relatively stable over the projected marketing period.

Basis of Analysis, Opinions, and Conclusions

The analysis, opinions, and conclusions of this report are our informed judgment based on market and economic conditions as of the effective date of the report.

We have relied on data and information provided by others. We believe the information to be reliable; however, we do not assume any responsibility for the accuracy of information provided by others.

Our analysis, opinions, and conclusions assume:

1. No hidden or unapparent surface or subsurface conditions of the property, structures, soils, subsoils, geological formations, ground water, or drainage conditions exist that would render the property more or less valuable.
2. The client has provided us with all significant, relevant information covering the subject of this report.

No responsibility is assumed for matters legal in nature affecting the property or its title, which is assumed to be good and merchantable.

Properties in Hawaii typically include a reservation in favor of the State of Hawaii of all mineral and metallic mines. Our analyses, opinions and conclusions assume these reservations do not have an impact on the value or use of the property.

Any drawings, maps, photographs, and similar exhibits accompanying this report are included to assist the reader in visualizing the property. No responsibility is assumed for the accuracy of these exhibits.

All applicable public and private zoning codes and regulations, building and health codes, and other factors that affect the utility and value of the property were considered.

Terms of Assignment

We have no obligation to update our report because of events and transactions occurring subsequent to the effective date of the report.

Neither our fees nor payment were contingent upon the results of the report.

Report Format

This report summarizes our analysis, opinions and conclusions covering the property. The supporting documentation is available in our files.

Our professional qualifications have been separately provided to the client.

Use of Report

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This report is valid only if presented in whole, with original photographs and exhibits, if any, and the official seal of John Child & Company, Inc. embossed on the letter of transmittal and certification.

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APPENDIX F

AGRICULTURAL RESOURCES IMPACT ASSESSMENT

Pacific Business and Economic Consultants

AGRICULTURAL IMPACT ASSESSMENT OF THE PROPOSED  
EWA VILLAGES MASTER PLAN

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Prepared for R. M. Towill Corporation

by

Pacific Business and Economic Consultants  
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July 1990

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**AGRICULTURAL IMPACT ASSESSMENT OF THE PROPOSED  
EWA VILLAGES MASTER PLAN**

**EXECUTIVE SUMMARY**

The Ewa Villages Master Plan would result in the withdrawal of 290 acres of agricultural land from sugarcane production. The soils are highly suitable for agriculture and the lands are located near to markets and support services and is fully improved for crop production. However, the project lands border urban areas and their continued use in agriculture conflicts in the longer term with County and State plans for developing low cost housing in the area.

Given the rapidly urbanization of Ewa, sugarcane production is the most viable agricultural alternative in the short term. There is concern that withdrawals of sugarcane lands will impede Oahu Sugar Company's (OSCO) ability to survive. But the withdrawal of 290 acres will not have a major impact on the continued viability of OSCO, who farms the land under lease to the James Campbell Estate. It is questionable that the lands should be included in the inventory of "core lands" OSCO maintains are necessary for continued financial viability since the project lands have already been classified into the State Urban District.

It appears likely at this time that OSCO will continue in sugar until its leases expire in 1995 and 1996. Thereafter, there are a number of uncertainties, including federal sugar price support policy and lease renewal terms, that cast a shadow over the ability of OSCO to continue operating.

In the event of the closure of OSCO, the potential for diversified agriculture is limited in Ewa. Government policies directing much of Honolulu's future housing development to Ewa will discourage landowners from committing their land to long term leases necessary for significant diversified agricultural production to occur. Farmers will be reluctant to establish operations in Ewa under short-term and uncertain land tenure arrangements.

The proposal to reclassify and rezone the project lands from agriculture to urban rests on the argument of overriding public interest. These lands are ideally suited for low-cost housing development and are located in the vicinity of the "Second City" where most of Honolulu's urban expansion is planned to occur.

The City and County of Honolulu, Department of Housing and Community Development, is proposing to develop new housing units (approximately 80 percent new) and one 18-hole public golf course on 470 acres of land in Ewa. The principal landowner is the Estate of James Campbell who, in turn, has leased all of this land to Oahu Sugar Company (OSCO). Approximately 290 acres of the project lands are agricultural lands, currently used for sugarcane production. The other 180 acres provide housing and community infrastructure for area residents, mostly current and retired employees of OSCO. This report assesses the impact of withdrawal of the 290 acres of agricultural lands on OSCO on State and County agricultural policies.

**I. SOILS AND SITE ASSESSMENT**

**A. Description and Ratings of Soils**

Nearly all, i.e. 96 percent, of the soils in the Ewa Villages Master Plan area, including land in urban uses, are classified as HxA by the soil survey conducted by the U.S. Soil Conservation Service. These soils are Honouliuli clay with slopes ranging from 0 to 2 percent. The soils are nonstony, have moderate machine tillability and good water retention, are well drained, and have a depth of over 30 inches.

Several soil quality rating methods have been developed for evaluating the agricultural potential of soils in Hawaii.

Ratings from three commonly used methods are discussed below.

### 1. Soil Conservation Service Land Capability Classification

This Soil Conservation Service (SCS) rating method groups soils according to the limitations of the soils when used for crop production, the risk of damage when they are used, and the way they respond to treatment. The SCS rating system includes 8 soil groups, designated by Roman numerals I through VIII, which indicate progressively greater limitations and narrower choices for practical use. Capability subclasses indicate the main limitation for the soils when used for crop production.

Nearly all of the project lands are rated as Class I soils. This means that few limitations restrict their agricultural use.

### 2. Land Studies Bureau Overall Productivity Ratings

The Land Studies Bureau (LSB) issued its Detailed Land Classification for the Island of Oahu in 1972. The Bureau grouped all lands in the State, except those in the urban district, into homogeneous units or land types, based on soil properties, topography and climate. Each land type was rated on its overall quality, in terms of agricultural productivity, and appraised for its performance in selected alternative crops. A five-class productivity rating system was developed, with "A" representing the class of highest productivity, and "E" the lowest.

The entire project area is composed of class "B" soils.

Although not given the highest rating, this soil type is still of high quality for agricultural use.

The LSB also appraised each soil type for its performance for selected crops. Selected crop productivity ratings range from "a" (the highest yield potential) to "e" (the lowest yield

potential). With irrigation, the soils in the project area are rated "a" for production of sugar cane and grazing, "b" for vegetables, forage and orchard crops, and "e" for pineapple production. Without irrigation, the soils are rated "d" for forage and grazing and "a" for all other crops.

### 3. Hawaii Department of Agriculture ALISH Ratings

The Soil Conservation Service initiated a nationwide inventory of important farm lands in 1975. The classification system and criteria were further developed for Hawaii through the cooperative effort of several State agencies. The ALISH, or Agricultural Lands of Importance to the State of Hawaii, study classifies agriculturally important land into three categories: "prime," "unique," and "other farm lands of State-wide and local importance."

ALISH classifies 199 acres in the project area as "prime." This designation means that the land has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops economically when treated and managed according to modern farming methods.

### B. Site Considerations

Factors other than soil characteristics are also important determinants of the suitability of land for agricultural use.

The proposed Land Evaluation and Site Assessment (LESA) system identifies ten site factors. The system has not been formally adopted by the Legislature or any State agency and may undergo revision. Therefore, no LESA score will be estimated. Site assessment factors will be discussed within one of two groups:

(1) factors favorable toward agricultural use and (2) factors not favorable toward agricultural use.

1. Factors favorable toward agricultural use:

(1) Conformance with land use designation on County plans.

The Development Plan of the City & County of Honolulu designates the project sugarcane lands as "Agricultural." However, the City & County of Honolulu has designated the Ewa area as a "Secondary Growth Center" which will be developed to accommodate a major portion of Honolulu's future population growth.

(2) Availability of irrigation water.

The area is fully irrigated with low cost, but slightly saline, groundwater.

(3) On-site capital improvements.

The area is fully improved for crop production, including a drip irrigation system and access roads.

(4) Access to off-site agricultural facilities and services.

The site is located in reasonable proximity to the mill at Waipahu, Honolulu harbor and other services supporting agriculture.

(5) Compatible agricultural uses in area.

Area agricultural uses involve one crop: sugarcane. There are no conflicts with other agricultural activities.

(2) Factors unfavorable toward agricultural use:

(1) Proximity to off-site infrastructure and services.

(2) Impact of non-agricultural uses in area.

For lands abutting urban areas, these two factors measure

similar conditions. These two factors consider the potential for conflicts between agriculture and urban areas, which could be caused by such factors as blowing dirt from land cultivation, smoke from cane burning, chemical drift, and noise. Agricultural operations incur higher costs in trying to ameliorate problems with urban neighbors and in providing greater security from vandalism. For the first factor, Hawaii's LESA system rates lowest areas within 1/4 mile of the developed urban areas and without a physical barrier and areas within 1/2 mile without a physical barrier are also considered rate low for agricultural use.

Most of the agricultural lands within the project all within 1/4 mile and all but a small portion are within the 1/2 mile of the existing Tenney and Renton Villages and Ewa Elementary School. Complaints from residents bordering OSCo lands are frequent enough that the plantation employs one person at one-third FTE to manage complaints. Although Hawaii's Right-to-Farm law provides legal protection from most lawsuits, the company tries to be a good neighbor and maintain good relations with surrounding neighborhoods. Complaints can be expected to increase as the population in the Ewa area grows.

A golf course will be located between the housing areas and the sugar plantation, thus providing a buffer between housing and agricultural uses. The Ewa Villages Master Plan will therefore improve the interface between agriculture and residential housing in the area.

(3) Relationship to State projects/programs.

The State Land Use Commission has already classified the

entire project area in the Urban District. The State has recently moved to land bank 2284 acres just mauka of the project. Although the short-run plans of the State are to lease the lands to OSCo for sugarcane production, the lands are to be eventually developed for housing (Decision Analysts Hawaii, 1989). These actions provide a clear indication that agricultural use conflicts with State plans for the area. However, sugarcane is a desirable interim use until such time as land is required for housing since cultivation provides green, open space and keeps down weeds and pests.

14) Parcel size, configuration, location, etc.

Segmentation of fields into smaller, poorly configured parcels reduces productivity. For example, tractors must spend proportionately more time turning around in the field. Other production activities, e.g. irrigation, are similarly impacted. The agricultural lands between Renton Road and a mauka cane haul road are presently segmented by two villages and a school. The cane lands mauka of the cane haul road are part of large well-configured fields.

15) Off-site drainage facilities.

The site has limited drainage facilities and is subject to serious flooding. Approximately 50 percent of the site is within the 100-year flood plain as determined by FEMA.

**II. IMPACT OF CANE LAND WITHDRAWAL ON OSCo**

OSCo, a subsidiary of Amfac/JHB Hawaii (Amfac), first milled sugar in 1899. Today the plantation farms about 12,500 acres, all under leases which expire in 1995 and 1996. In the face of

low sugar prices and expected withdrawals of sizeable acreage from cane production, OSCo initiated a "survival plan" in the early 1980's. A large number of active housing, industrial and golf course projects are in various stages of planning, approval, and development. If these projects were to develop on schedule, OSCo expects to be farming around 8,200 acres of "core" agricultural lands by the end of the decade. However, given inevitable delays, full development will take considerably longer. Maintaining sufficient land to capture economies of scale is one of several conditions OSCo considers essential to the plantation's survival.

**A. Land Owners and Lease Expirations**

Slightly less than 12,000 acres of leased sugarcane land are currently farmed. Another 1,500 acres of leased land in Kunia lie fallow, but potentially some could be brought back into production. OSCo is currently planning to resume cane production on 500 of these fallowed acres.

The largest amount of land is leased from Campbell Estate. Campbell cane lands lie on the Ewa plains and above the H-1 Freeway, west of Kunia Road. The lease expires in mid-1995. Under the terms of the lease, Campbell Estate has withdrawal rights to 4,000 acres and OSCo is obligated to support these withdrawals before State and County planning authorities.

Withdrawals due to condemnations by the State or County would not affect this limit.

The State of Hawaii has recently condemned 2,284 acres of Campbell Estate lands leased to OSCo, virtually all in sugarcane



production. The property lies below H-1 Freeway and just mauka of the Ewa Villages project boundary. This land will be "banked" for eventual housing development (Decision Analysts Inc., 1989). According to OSCo, Governor Waihee recently sent the company a letter confirming the State's intention to lease the land to the plantation for an indefinite period.

The Robinson Estate is the second largest lessor for OSCo lands. Robinson cane lands lie above the H-1 Freeway and between Kunia Road and Waikele Stream. The lease expires at the end of 1996. Nihonkai Corp. has purchased about 200 acres of Robinson cane land but the new owner is committed to leasing the land to OSCo until the end of 1996. OSCo does not consider this parcel as part of its core lands because of the new owner's probable plans to develop a golf course; the lease is not likely to be renewed when it expires.

The U.S. Navy also leases to OSCo 1700 acres located on Waipio Peninsula and on the eastern portion of the Ewa Plain.

Although the lease is competitive, no other agricultural firm has offered a competing bid for the lands. Half of the acre is under a 5-year lease that runs until mid-1995. The lease on the remaining area is in the process of being renegotiated. These lands lie within a blast zone and the Navy prefers to lease them to OSCo because of the low level of capital investment and human activity involved in sugarcane production.

#### B. THE OSCO SURVIVAL PLAN

OSCo sugar production in 1988 was 83,766 tons of raw sugar, making it the third largest sugar producer in Hawaii. This amounted to 9 percent of Hawaii's total sugar production.

Because of favorable growing conditions, total conversion to drip irrigation, and good management, sugar yields at OSCo are high: 13.16 tons per harvested acre in 1988, compared with the Hawaii industry average of 11.78 tons per harvested acre. According to OSCo records, production increased to 86,059 tons in 1989.

Table 1. SUGAR PLANTATION ACREAGE AND SUGAR YIELDS IN HAWAII, 1988

Name of Plantation	Island	Acres	Tons Sugar per Harvested Acre
Gay and Robinson	Kauai	2,742	15.92
Pioneer Mill	Mauai	6,627	14.14
H&S	Mauai	35,596	13.91
Kekaha	Kauai	8,375	13.71
Olokele	Kauai	4,747	13.66
Wailuku	Mauai	1,225	13.39
Oahu Sugar	Oahu	13,561	13.16
Waialua	Oahu	12,083	11.26
Hamakua Sugar	Hawaii	34,383	10.64
McBryde	Kauai	11,296	10.26
Ka'u Agribusiness	Hawaii	15,203	9.86
Mauna Kea	Hawaii	15,256	9.80
Lihue	Kauai	14,744	9.18
Total All Companies		177,693	11.78

SOURCE: HSPA, Hawaiian Sugar Manual, 1989

After losing \$9 million in 1981 and anticipating continued low sugar prices, OSCo developed and implemented a "Survival Plan." The Plan, which has been fully implemented, has been successful in reducing costs and increasing yields. Sugar price supports were also raised beginning in 1982 and compared to prices in the late 1970's, have remained comparatively high. OSCo claims have earned an "acceptable profit" in the last

several years.

As part of the plan, OSCo experimented with a variety of alternative crops but did not identify a more profitable replacement for sugarcane. It is now doubtful that the company would commit to alternative crops should sugarcane production cease, given that OSCo doesn't own the land and pressures to urbanize much of the area are mounting.

In spite of added costs for farming in the shadow of the city, the plantation is profitable, because the plantation contains some of the best growing conditions in the world. Production practices are also efficient, including use of drip irrigation on all of the farmed land. Adequate water resources is another important asset. All of the Ewa lands and some of the Kunia lands are irrigated with groundwater, both basal and caprock. The Waihole Ditch diverts high quality water from the windward side of the island to irrigate 2,000 to 3,000 acres of higher elevation fields in Kunia.

OSCo has stated that a number of conditions need to hold for the plantation to continue to survive:

- continued federal price supports sufficiently high to allow profits;
- continued union support in reducing costs;
- an adequate allocation of water to permit full irrigation of plantation lands;
- retention of sufficient land to permit reasonable mill economies-of-scale.

OSCo and the Hawaii sugar industry in general can exert influence but cannot control the destiny of any of these conditions. Because many decisionmakers are involved in determining the outcome of these conditions, it is difficult to

predict the ability of OSCo to survive. Large failures in any one of these conditions could cause the plantation's demise. More realistically, the plantation will experience varying degrees of success in these conditions, such that no one condition will determine its fate.

To date, the Union (ILWU) has supported the plan and has been moderate in its wage demands. The State has also given OSCo sufficient water allocation for full irrigation of currently cultivated lands. The other two conditions entail considerable uncertainty and require more discussion.

#### C. U.S. Sugar Policy and the Outlook for Sugar Prices

For the most part, the price and long-run profitability of sugar in the U.S. are determined by federal sugar policy. And federal sugar policy is influenced by the levels of protection other sugar-producing countries offer to their domestic industries. Prices have been supported at around 21-22 cents per pound since 1982. This is an improvement over prices in the latter 1970's, when actual raw sugar market prices hovered around 13-15 cents per pound.

The present Farm Bill expires this year, 1990, and a replacement Farm Bill is currently under consideration in Congress. Multilateral trade negotiations are also occurring under the framework of GATT, the General Agreement on Tariffs and Trade. The current Uruguay Round of GATT negotiations is scheduled to finish at the end of 1990. There is considerable uncertainty at this time as to the outcome of both the Farm Bill and the GATT negotiations.

It is likely that the new Farm Bill will continue the

current system of sugar price supports. The debate in Congress is not whether to support sugar but at what level sugar should be supported. Until other sugar-producing countries agree to reduce the protection of domestic sugar industries, it is unlikely that U.S. farm legislation will unilaterally do away with protective policies. The House and Senate Agriculture Committees have recommended maintaining sugar support prices at the current level of approximately 18 cents per pound of raw sugar. However, a Congressional proposal to lower the support price to 16 cents, supported by the Secretary of Agriculture, will likely be debated on the floors of both houses.

The optimistic scenario includes a sugar support price that will remain flat for the next 5 years. Given rising costs of labor and purchased inputs, Hawaii plantations will need to cut costs and increase yields just to maintain their current profit level. A 2 cent cut in support price could mean disaster for some of Hawaii's plantations. OSCo is particularly vulnerable since it rents all of its farmed acreage. OSCo land lease payments have cost \$33 per ton of sugar, much higher than rents paid by other sugar plantation on Oahu or the rest of the State and much higher than the industry average of \$7 per ton.

Even if the optimistic outlook for the new Farm Bill occurs, a major change is U.S. sugar policy could result from the current round of GATT multilateral trade negotiations, scheduled to end in December 1990. The objective of the GATT negotiations is substantial progressive reduction (and ultimate elimination) of all trade-distorting government production supports, import

barriers, and export subsidies of agricultural commodities. The U.S. officially supports total elimination of all agricultural support programs but the governments of the European Common Market and Japan have been reluctant to abandon strong protection for their domestic agricultural industries, including sugar.

Although high cost producers, the Common Market has become a major exporter of sugar due to high levels of domestic protection and export subsidies. If successfully negotiated, the impact of multilateral decreases in sugar support levels of world sugar prices is far from certain. U.S. sugar producers have supported the U.S. position, arguing that they can be competitive in a free market. But Hawaii producers as a whole are considered to have the highest costs in the U.S. (USDA, 1990) and are therefore most vulnerable to international competition.

There is also support in Washington, D.C. for a Caribbean free trade agreement. Such an agreement could provide easier access for Central and South American countries to the U.S. sugar market, lowering U.S. sugar prices. U.S. imports have declined dramatically during the 1980's due to higher use of domestically-produced corn sweeteners and to increased domestic production of sugar. This has occurred at the expense of the Caribbean nations and other sugar exporting nations.

Given the number and diversity of participants in the Farm Bill debate and GATT negotiations, the eventual outcome and impact on U.S. sugar prices is highly uncertain. But it is conceivable that U.S. sugar policy could change in the near future in response to international trade negotiations and foreign policy considerations. OSCo and other marginally-

profitable sugarcane plantations could be forced out of business if policy changes produced a significant decline in sugar prices.

**D. Planned Withdrawals and "Core" Plantation Lands**

OSCo has been subject to urbanization pressures for several decades. The City and County of Honolulu has designated the Eva area as a "Secondary Urban Center" which will be developed to accommodate a major portion of Honolulu's future growth.

Since the 1960's four ridges west of Halawa, previously in sugarcane, have been urbanized. Some new sugarcane plantings were started on lands in the Waianae mountain foothills and on former pasture lands. New agricultural lands can no longer be feasibly developed to compensate for future withdrawals but approximately 500 acres of fallowed sugarcane land in the Waianae foothills could be brought back into production. However, these lands are more difficult to farm and/or have higher irrigation (pumping) costs.

Table 2 summarizes the projects that have at least been partially approved by the State of Hawaii and the City and County of Honolulu. Some of the sugarcane fields within these projects have already been withdrawn from cultivation. These major projects, when fully developed, will substantially reduce the size of land cultivated by OSCo.

In the face of these planned withdrawals, OSCo has plans to reduce the mill operation from a two-tandem to a single mill, at a cost of about \$1 million. The conversion is not anticipated for at least another year, depending on when farmed acreage falls to a level that which can be serviced by a single

mill. With a single mill, OSCo can be expected to reduce production from its historic level of 90,000 to 95,000 tons per

**Table 2. FULLY OR PARTIALLY APPROVED DEVELOPMENTS AFFECTING OAHU SUGAR COMPANY ACREAGE: 1990**

Project	Sugarcane Acreage
Royal Kunia, Phases I and II	1,386
Eva Gentry	891
Eva Marina	777
Kapolei Villages, State of Hawaii	775
Kapolei Town Center, Campbell Estate	693
Ko Olina Resort	281
Seibu Golf Course	270
West Loch Estates, City & County of Honolulu	195
Kapolei Business-Industrial Park	145
Kapolei Knolls	55
<b>Total</b>	<b>5,468</b>
Eva Villages, City & County of Honolulu	230

Source: Decision Analysts Hawaii, Inc. (1989) and discussions with Oahu Sugar Campbell Estates.

year to 60,000 to 75,000 tons without losing its mill economies of scale (Decision Analysts Hawaii, Inc., 1989).

A single mill would support about 10,000 acres of cane land based on recent average plantation yields. The plantation's average yield may rise because average yield of withdrawn lands is probably less than that of remaining core lands. Continued yield improvements could also reduce the amount of cane land needed to support at near capacity. However, yield increases statewide have been small in recent years after years of steady improvement. Future gains are likely to prove harder to attain. With these considerations, a production area of 8,000-10,000 acres seems a reasonable estimate of the acreage needed to

maintain full economies of scale for a single mill.

In light of major cane land withdrawals and concerns for maintaining economies of scale in production and mill processing, OSCo has identified "core" lands which it believes are vital to the plantations survival. Core lands included all acreage leased from the Navy and the lands now cultivated that leased from Campbell and Robinson Estates for which urban projects are planned and have received partial approval. Excluded are a 200 plus acre Robinson Estate parcel sold to developers with probable plans for a golf course so renewal of the lease after 1996 seems unlikely, and noncontiguous parcels which have become isolated by surrounding urban uses.

Table 3. "CORE" LANDS LEASED BY OAHU SUGAR COMPANY

MAJOR LESSORS	FARMED CANE AREA (acres)	LEASE EXPIRATION	CORE AREA (acres)
Campbell Estate* (State of Hawaii)		6-30-95 (indefinite)	5,000 (2,200)
Robinson Estate		12-31-96	1,500
U.S. Navy West Loch		6-30-95	1,700
Total	11,850		8,200

\*includes 2200 acres recently condemned by the State of Hawaii

OSCo includes the Ewa Villages agricultural lands as part of its core plantation lands. However, because the parcels lie on the periphery of the plantation and about several villages and an elementary school, withdrawal of these lands from sugarcane production would not be as detrimental with other core lands.

Since ANPAC supported the reclassification of these lands into the State Urban District some years ago, it is questionable that OSCo should now consider them to be "core."

D. Economic Impact of Project on OSCo and Hawaii's Economy

The Ewa Villages project can be anticipated to have a negative but minor impact on the profitability of OSCo. Although included in the "core" lands that OSCo claims is needed for the plantation's survival, the small amount of acreage, its location on the periphery of farmed lands, and its closeness to urban areas suggest that this land is less important than other core lands.

Cane land withdrawals due to this project represent 2.1 percent of OSCo's 1988 cultivated acreage and 3.5 percent of core acreage. The downsizing of the mill is already planned and will occur regardless of the Ewa Villages project. A small increase in the cost of producing and milling sugar can be expected to be an impact of the project but such an impact pales in significance to potential declines in sugar price supports or costs in future labor and land negotiations. The Ewa Villages project cannot be expected to be an important determinant of OSCo's survivability.

Only a few jobs would be lost due to withdrawal of 290 acres of cane land, small enough to be handled by attrition. The impact would be even less if lands now lying fallow are not brought back into production.

It is conceivable that OSCo will close when leases expire in the mid 1990's because of urbanization pressures, higher costs, and low sugar prices. Given State and County policies directing

growth to the Ewa and Central Oahu areas, pressures to withdraw lands for urban uses are not likely to subside. In the event of plantation closure, it is doubtful that OSCo will pursue agricultural diversification. The time frame for developing new crops in this area is too short and the company's investigation into alternative crops failed to identify profitable alternatives to sugar.

While OSCo is a major employer, the economic impact on the County and the State of Hawaii would be relatively small. OSCo employed 410 people in 1990. In addition to 410 direct jobs, an estimated 463 indirect jobs would be lost (using the State employment multiplier of 1.13). Over the past 10 years, Oahu's job count has increased an average of nearly 7,000 jobs per year, indicating that the County's economy is large and strong enough to absorb a plantation shutdown. Additionally, the entire state is currently in the midst of labor shortage; workers from outside the state are actively being sought. Workers directly and indirectly impacted by an OSCo shutdown would be absorbed elsewhere in the economy, such that the real impact is to lower the demand for out-of-state workers.

#### IV. IMPACT OF CANE LAND WITHDRAWAL ON STATE AND COUNTY AGRICULTURAL POLICIES

A number of County and State planning objectives pertain to the issue of protecting Hawaii's agricultural lands. Those contained in the Hawaii State Plan and Agricultural Functional Plan and the City and County of Honolulu's General Plan are listed in the Appendix. In general, the plans speak to two agricultural land issues: (1) encouraging the continuation of

sugar and pineapple industries and (2) encouraging the growth of diversified agriculture.

Agricultural land protection was an important national issue in the late 1970's and early 1980's. Many economists strongly criticized the presumption that there was a national shortage of agricultural land threatening the nation's food and fiber supply. These criticisms, coupled with the farm crisis in the early 1980's caused the issue of agricultural land protection to subside as a national concern. But State and regional governments in rapidly urbanizing areas have continued to offer protection for agricultural land in order to maintain a viable agricultural industry, limit the undesirable effects of urbanization, and preserve environmental quality (Ferguson, Bowen, et. al. 1990).

This section assesses the impact on policies to support continuation of Hawaii's sugar industry. The pattern and timing of cane land withdrawals is an important issue in the survival of OSCo. However, it is argued that preserving agricultural land in Ewa for potential diversified agricultural use is no longer an appropriate policy. Development of the Ewa plains is proceeding swiftly and the window of opportunity for developing alternative crops is too short.

#### A. Impact on Policies Encouraging Continuation of Sugar

OSCo argues that the health of the entire Hawaiian sugar industry is dependent upon the survival of its major plantations and that sugar cannot be viewed on a plantation by plantation basis or even island by island basis. The survival of OSCo would

impact Waialua Sugar Company mainly because the two Oahu firms share shipping terminal costs. The closure of OSCo would therefore cause a significant increase in Waialua Sugar's cost per pound of sugar shipped. Maintaining adequate raw sugar for the C&H refinery in California is also a concern of the Hawaii sugar industry. The producers in Hawaii are in the process of establishing and ensuring a sufficient amount of Hawaiian sugar for the efficient operation of the refinery, which is owned by the Hawaiian Producers Cooperative. Also, the HSPA Kunia Substation is located in the core area of OSCo and would no longer operate if OSCo is shut down. This is an important research station because of its location in excellent growing

TABLE 3: PROPOSED AGRICULTURAL LAND CONVERSION RELATIVE TO PRESENT SUGAR LANDS AND PRIME AGRICULTURAL LANDS

SUGAR LANDS ALISH PRIME & UNIQUE			
	1988 acres	Row 1 as % of	Row 1 1988 acres as % of
Row 1: Cane land in project	290		199
Oahu Sugar Plantation	13,561	2.14%	NA
OSC Core Area	8,200	3.54%	NA
OAHU	25,644	1.13%	59,419 0.33%
MAUI, MOLOKAI, LANAI	43,448		98,387
HAWAII	66,697		116,860
KAUAI	41,904		53,778
STATE OF HAWAII	177,693	0.16%	328,444 0.06%

NA = information not available

\* Declines in Prime ALISH lands since 1977 were estimated in an analysis of State Land Use Commission records (Santos-George, et. al. 1990, draft)

SOURCE: HSPA, Hawaiian Sugar Manual, 1987; Department of Agriculture, State Agriculture Functional Plan: Technical Reference Document, 1987

conditions and close proximity to scientists and research staff. All of these are important considerations in the survival of OSCo. But the withdrawal of 290 acres of project sugarcane land represents only 1.1 percent of sugarcane lands in production on Oahu in 1988 and 0.16 percent of statewide sugarcane lands. By itself, a withdrawal of this size is not going to seriously impact these concerns.

**B. IMPACT ON POLICIES ENCOURAGING DIVERSIFIED AGRICULTURE.**

The 290 acres of agricultural land in the Ewa Villages project represents 0.33 percent of Oahu's and 0.06 of the State's Prime and Unique agricultural land (Table 3). Land Use Commission records show that 3,919 acres of Prime and Unique land on Oahu and 5,953 acres land statewide were reclassified out of the Agricultural District between 1975 and 1989 (Santos-George, et. al.).

Withdrawals of prime agricultural land have been largest on Oahu and have been higher in recent years. With a large portion of Oahu's best agricultural land lying directly in the path of Honolulu's planned expansion path, it is likely that a high withdrawal of prime agricultural lands will continue indefinitely.

Sugarcane is ideally suited to the area and represents the best agricultural use of the land. However, if OSCo should close its sugar operations, the diversified agricultural alternatives are technically feasible but financially questionable.

The project area is relatively hot, dry and sunny. Without irrigation, the only agricultural alternative is livestock

grazing. However, the carrying capacity would be low because of limited rainfall on the Ewa plains and grazing would be a very low valued activity. A study done for Campbell Estate estimated that grazing leases on Campbell lands would only be worth between \$20 and \$120 per year, with Ewa lands in the lower part of this range.

With irrigation, the area could be agronomically suitable for production of forage, low elevation vegetables and orchard crops. Waianae, Lale, and Molokai are three areas in diversified agriculture with comparable growing conditions. Crops grown in these areas include mustard cabbage, daikon, eggplant, onions, green peppers, tomatoes, green beans, corn, bananas, sweet potatoes, squash, watermelon and flowers/nursery products.

Forage and feed crops have not proven economically feasible in general in Hawaii. OSCo itself has experimented with different forage crops but found none more profitable than sugarcane. In the event that OSCo ceases sugarcane production, the most viable sites in the vicinity are the Navy lands now leased by OSCo. The Navy prefers to lease these blast zone lands to for extensive operations like sugarcane and forage. Access to adequate water for irrigation would need to be secured. Financially feasible production of the other vegetable crops listed above would require that both land and water be provided at low rates and for a long lease period.

The State is attempting to land bank a large tract of land in Ewa, including the West Bluffs project area, for eventual housing development. One argument is that the State could afford to lease land at attractive rates to farmers or develop an

agricultural park. But it is unlikely the State will commit the financial resources required to develop an agricultural park in the land banked area, given plans to develop affordable housing on the property. Short term leases for diversified agriculture may be an option that the State would consider if OSCo closes. But the insecurity of short-term leases would not make the area as attractive as State agricultural parks, where long term leases are available. Farmers are not likely to invest in expensive irrigation systems or other improvements for a short and uncertain future.

Maintaining sufficient high quality land for the growth of diversified agriculture is an agricultural land policy supported by the State and County. But the policy is inappropriate in this situation. It is unrealistic to assume that anyone will attempt to develop an major alternative crop in the Ewa plains in light of imminent urbanization of the area. Additionally, alternative crops have not kept pace with sugarcane land withdrawals statewide due to limited market opportunities. Preserving agricultural land in the face of strong governmental efforts to provide low cost housing and low demand for agricultural land is unwise.



APPENDIX

I. STATE AND COUNTY OBJECTIVES, POLICIES AND PRIORITY GUIDELINES CONCERNING PROTECTION OF AGRICULTURAL LANDS

HAWAII STATE PLAN  
(Chapter 226, Hawaii Revised Statutes, as amended by Act 276, Session Laws of Hawaii, 1986)

SECTION 226-7 Objectives and policies for the economy-- agriculture.

- (a) Planning for the State's economy with regard to agriculture shall be directed towards achievement of the following objectives:
- (1) Continued viability in Hawaii's sugar and pineapple industries.
  - (2) Continued growth and development of diversified agriculture throughout the State.
- (b) To achieve the agricultural objectives, it shall be the policy of the State to:
- (6) Assure the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.

SECTION 226-103 Economic priority guidelines

- (c) Priority guidelines to promote the continued viability of the sugar and pineapple industries:
- (1) Provide adequate agricultural lands to support the economic viability of the sugar and pineapple industries.

- (d) Priority guidelines to promote the growth and development of diversified agriculture and aquaculture:
- (1) Identify, conserve, and protect agricultural and aquacultural lands of importance and initiate affirmative and comprehensive programs to promote economically productive agricultural and aquacultural uses of such lands.

SECTION 226-104 Population growth and land resources priority guidelines.

- (b) Priority guidelines for regional growth distribution and land resource utilization:
- (2) Make available marginal or non-essential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.

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**II. HAWAII STATE AGRICULTURAL FUNCTIONAL PLAN**

(Adopted by House Concurrent Resolution No. 37, as amended)  
June 1985

**B. Objective:** Achievement of Productive Agricultural Use of Lands Most Suitable and Needed for Agriculture.

(5) **Policy:** Provide greater protection to agricultural lands in accordance with the Hawaii State Constitution.

(c) **Implementing Action:** Identify important agricultural lands to promote diversified agriculture, increased agricultural self-sufficiency, and assure the availability of agriculturally suitable lands.

(d) **Implementing Action:** Until standards and criteria to conserve and protect important agricultural lands are enacted by the Legislature, important agricultural lands should be classified in the State Agricultural District and zoned for agricultural use, except where, by the preponderance of the evidence presented, injustice or inequity will result or overriding public interest exists to provide such lands for other objectives of the Hawaii State Plan.

**CITY AND COUNTY OF HONOLULU GENERAL PLAN**  
(Resolution No. 87-211)

**Economic Activity**

**Objective C.** To maintain the viability of agriculture on Oahu.

**Policy 4.** Provide sufficient agricultural land in Ewa, Central Oahu, and the North Shore to encourage the continuation of sugar and pineapple as viable industries.

**Policy 5.** Maintain agricultural land along the Windward, North Shore, and Waianae coasts for truck farming, flower growing, aquaculture, livestock production, and other types of diversified agriculture.

APPENDIX G

TRAFFIC IMPACT ASSESSMENT  
Pacific Planning and Engineering, Inc.

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TRAFFIC IMPACT ASSESSMENT REPORT

for

EWA VILLAGES

Ewa, Oahu, Hawaii

TMK: 9-1-17: 2, 4, 36-39, 46-49, 51, por. 25

Revised

December 18, 1990

Prepared for:

Dept. of Housing and Community Development  
City and County of Honolulu

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EXECUTIVE SUMMARY

Pacific Planning & Engineering, Inc. (PPE) was engaged to undertake a study to identify and assess future traffic impacts of the proposed Ewa Villages Revitalization project. This report presents the findings and recommendations of the traffic study.

This traffic impact report identifies and evaluates the probable impact of the project generated traffic by comparing traffic conditions with and without the project traffic at three intersections in the study area and two ramps of the Kunia interchange during the weekday morning and afternoon peak hours.

Project Description

The Department of Housing and Community Development proposes to restore and rehabilitate the existing Renton and Tenney Villages while maintaining their historic plantation character along with constructing new development. The new development includes 786 single-family and 110 multi-family homes, expansion to Ewa Elementary School, 20 acre expansion of Ewa Mahiko District park, 36,000 square feet for commercial uses, 80,000 square feet business park, a Plantation Mill Museum, and a 186 acre golf course. The report assumes a full occupancy date for the project of 1996.

Conclusions and Recommendations

The Ewa Villages Project, when completed in 1996, will have an impact on traffic operations along Fort Weaver Road. The impact of the Project will be relatively small compared to the combined impact from other planned developments along Fort Weaver Road.

Even without the project, the results of the analysis indicate that Fort Weaver Road and certain ramps on the Kunia Interchange will not have the capacity to handle traffic generated by planned developments along Fort Weaver Road. Major infrastructure improvements are needed to handle the traffic from the following developments: West Loch Estates Phase I and II; Ewa by Gentry; Ewa Marina; and Honouliuli; Myers/Siba Golf Course; and Ewa Shopping Center. In order to accommodate the projected traffic, some or all of the following types of improvements are necessary:

- Widen Fort Weaver from four to six lanes. Even with the additional lanes Fort Weaver will not have sufficient capacity to handle projected traffic.
- Construct a North-South Road, from the Ewa Marina development to connect to the H-1 Freeway, to provide sufficient capacity along the Fort Weaver Corridor.
- Provide additional ramps to the Kunia Interchange.
- Construct an interchange at the intersection of the H-1 Freeway and the North-South Road.
- Widen and improve Farrington Highway to a four-lane arterial between Fort Weaver Road and Barbers Point NAS Access Road.

The specific improvements should be identified in a broader system context with analysis of alternatives because of the regional growth in the area. Improvements are necessary even without the Ewa Villages Project. Traffic studies for other developments (i.e. Ewa Marina, Gentry, etc.) along Fort Weaver Road have also indicated the need for similar improvements such as the North-South Road.

With the project, improvements may be required at the intersection of Fort Weaver and Renton Road and intersections within the project area. These localized improvements would depend on the type of improvements implemented to accommodate the regional traffic in the Fort Weaver corridor and at the H-1 Freeway.

The percent of total traffic along Fort Weaver Road generated by the various developments that will be completed by 1996 is shown on Table 6. Based on the percentages, the Ewa Villages Project is estimated to generate 13% to 14% of the total traffic entering onto Fort Weaver Road.

#### Ewa Region Highway Transportation Master Plan

Due to the major developments planned for the Ewa region, the State Department of Transportation has formed a Working Group, which includes the City Department of Transportation Services, major developers of the Ewa region, and other State and City Planning agencies. The developers are funding the preparation of an Ewa Region Highway Transportation Master Plan. The purpose of the Master Plan is to forecast future traffic in the region, identify a roadway improvements to accommodate forecasted traffic, and determine a distribution of fair share costs to implement the required improvements for the Ewa region.

The Master Plan will determine roadway needs along Fort Weaver and the H-1 Freeway corridors. The proposed North-South Road is being considered as a possible improvement to accommodate traffic from developments along Fort Weaver Road.

**PROJECT DESCRIPTION**

The Department of Housing and Community Development proposes to restore and rehabilitate the existing Renton and Tenney Villages while maintaining their historic plantation character along with constructing new development. The project site is located in Ewa, Oahu, along Renton Road off Fort Weaver Road. The project location is shown on Figure 1.

The new development includes 786 single-family and 110 multi-family homes, expansion to Ewa Elementary School, 20 acre expansion of Ewa Mahiko District park, 36,000 square feet for commercial uses, 80,000 square feet business park, a Plantation Mill Museum, and a 186 acre golf course. A summary of land uses is provided in Table 1 below. The project is expected to be completed and fully occupied by 1996. The project site plan is shown in Figure 2. It is made up of parcels TMK 9-1-17: 2, 4, 36-39, 46-49, 51, por. 25.

**Table 1. Land Uses for Ewa Villages Project**

Existing Land Use	Quantity	Unit
Renton and Tenney Village single family housing	214	DU
Ewa Elementary School	386	students
Lanakila School	600	students
Ewa Mahiko Park	5	acres
Proposed Land Use	Quantity	Unit
single family housing	786	DU
multi-family housing	110	DU
Ewa Elementary expansion	200	students
Ewa Mahiko Park expansion	20	acres
Retail marketplace	26	1000 sf
Convenience store	10	1000 sf
Mill and Train Museum	39	1000 sf
Business Park	80	1000 sf
Golf course	186	acres

Presently, the only access route to the project site is Fort Weaver Road via Renton Road. Three pertinent intersections were studied for this report. These intersections, shown in Figure 3, are:

- Fort Weaver Road at Renton Road,
- Renton Road at Ala Nui Road,
- Renton Road at Pepper Row,

In addition to these intersections, two ramps at the Kunia interchange were studied.

These ramps shown in Figure 4, are:

- H-1, Waianae bound, off-ramp to Ewa Beach
- H-1, Honolulu bound, on-ramp from Ewa Beach and Kunia

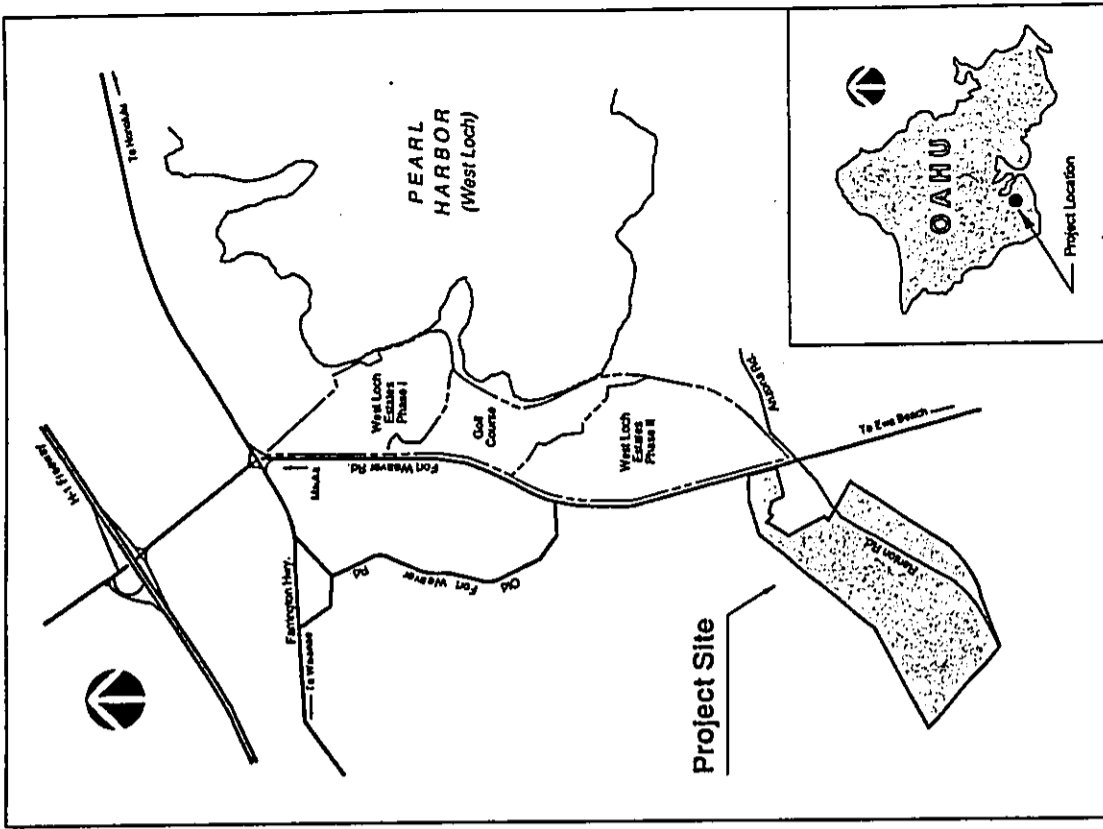


Figure 1. Project Location Map



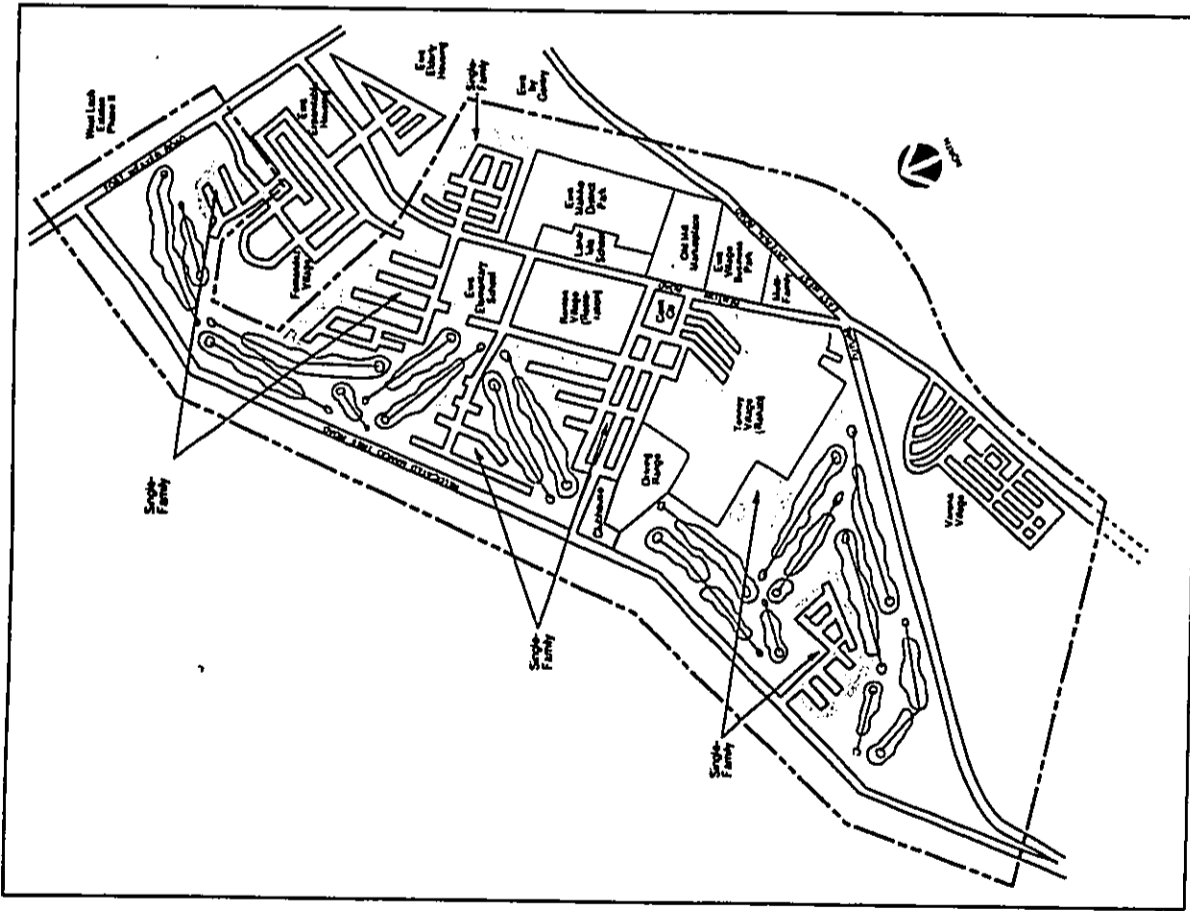


Figure 2. Project Site Plan

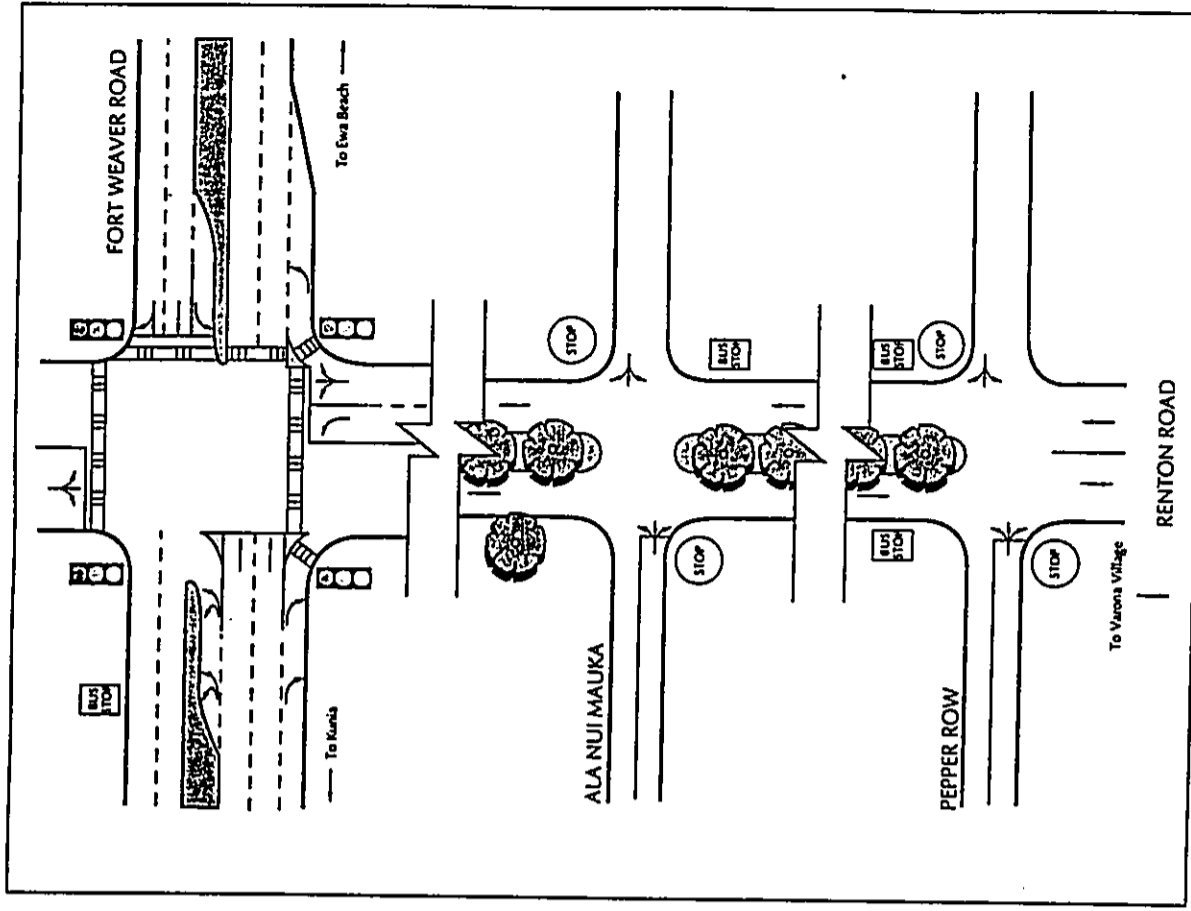


Figure 3. Schematic Intersection Layout

## AREA CONDITIONS

A survey of existing conditions was conducted to better understand the traffic impact of the proposed project. The review included the land uses in the area, roadway facilities, and existing traffic conditions.

### Existing Land Uses

The Ewa Villages is a small rural community that consists of three separate villages, Renton, Tenney, and Varona. The homes in these villages are single family detached plantation type which were constructed during the middle of the century. Public facilities within the villages are: Ewa Elementary School, Ewa Post Office, Ewa Mahiko Park, Hale O' Ulu, Soroji Mission, Lanakila Baptist School, Ewa Community Church and Ewa Immaculate Conception Church.

Land uses in the vicinity of The Ewa Villages include sugar cane fields, Fernandez Village residential subdivision, Ewa Expandable Housing, elderly housing and a portion of the Ewa by Century development.

### Roadway Facilities

The main roadway servicing the east Ewa area is Fort Weaver Road. It stretches from the H-1 freeway to Ewa Beach and serves the communities of Waipahu, West Loch Estates, Ewa Beach, Iroquois Point Military Housing, Barbers Point Naval Air Station as well as the Ewa Villages.

Fort Weaver Road is a State maintained four lane divided highway from the Kunia Interchange to the vicinity of Hanakahi Street. From Hanakahi Street to the Fort Weaver

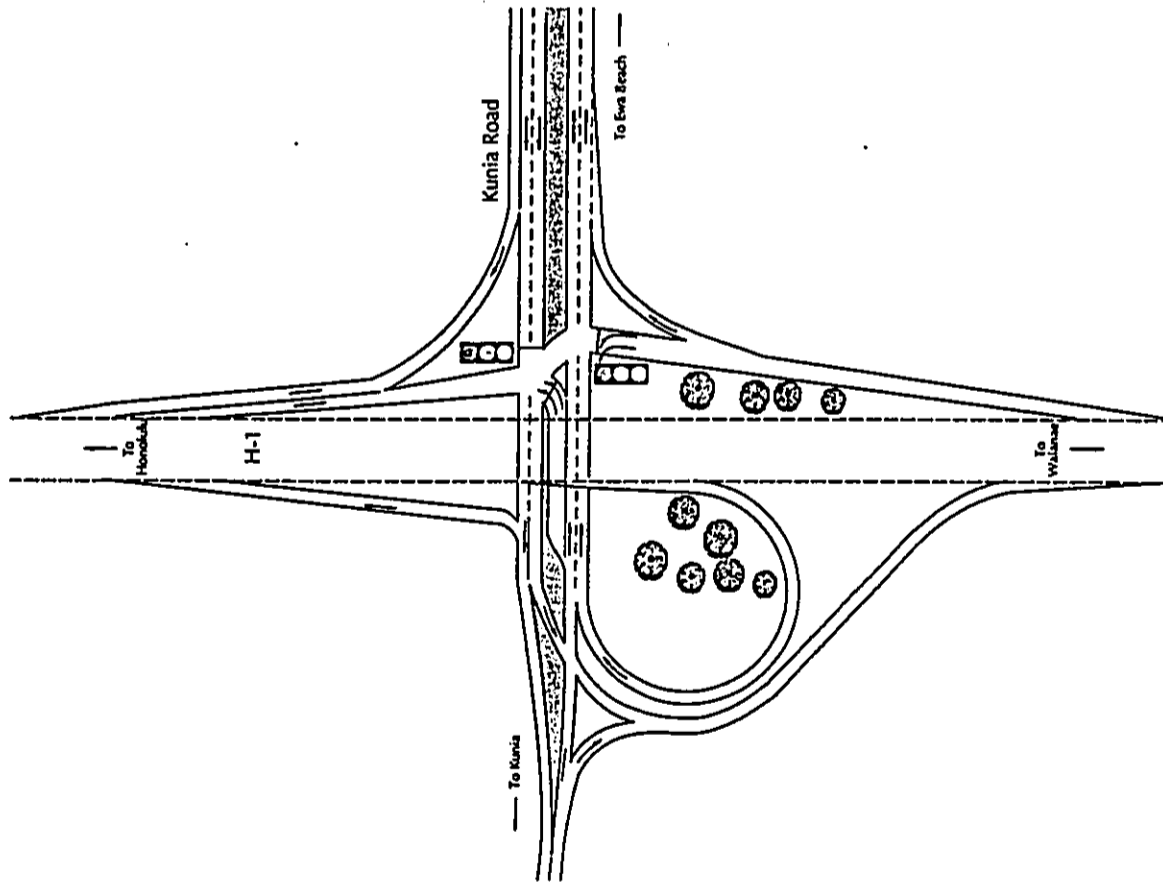


Figure 4. Kunia Interchange

Gate the roadway is a two lane undivided road. The roadway has 12 foot lane widths and 10 foot paved shoulders in the divided section with a posted speed limit of 45 miles per hour (mph). In the two-lane undivided section, the lane widths decrease to 11 feet and the shoulders are 15 foot coral and grass and the posted speed limit varies from 25 to 35 miles per hour.

Renton Road is the primary road servicing the Ewa Villages and stretches from Fort Weaver Road to its end at Varona Village. The initial 4,500 feet of the roadway, which extends from Fort Weaver Road to the Ewa Post Office is owned by the City. The remaining 2,800 feet is privately owned, and will be acquired by the City. The first 900 feet is a two lane road with an 80-foot right-of-way. The remainder is a two lane road divided by a tree-lined median with a 55-foot right-of-way. Sections within Renton Village have asphalt sidewalks. The interior roads along Renton Road are generally between 20-25 feet wide, without curbs, gutters, or sidewalks, with the exception of Ornick Road in Tenney Village, which has a 4-foot wide sidewalk along one side.<sup>1</sup>

#### Traffic Conditions

Traffic counts along Fort Weaver Road taken over a 24 hour period were obtained from the State Department of Transportation, Highways Division (DOT). The State counts indicated that the weekday morning and afternoon peak hour generally occurs from 5:30 to 7:30 AM and 2:45 to 4:45 PM respectively.

Manual traffic counts were conducted during the weekday afternoon peak period on February 28, 1990, and during the morning peak period on March 1, 1990 at the intersection of Fort Weaver Road and Renton/Arizona Road. During the count the weather was overcast with slight rain and the pavement was wet. Manual traffic counts were also conducted during the weekday afternoon peak period on August 8, 1990, and during the

<sup>1</sup> Preliminary Master Plan for the Ewa Villages Ewa, Oahu Hawaii, by RM Towill Corp., August 1990

morning peak period on August 9, 1990 at the Honolulu bound on-ramp and the Ewa Beach bound off-ramp from Honolulu at the Kunia Interchange. During the count the weather was sunny and the pavement was dry. Manual traffic counts were again conducted during the weekday afternoon peak period on August 15, 1990, and during the morning peak period on August 16, 1990 at the intersections of Ala Nui with Renton Road and Pepper Row with Renton Road. During the count the weather was sunny and the pavement was dry. The resultant volumes are shown in Figures 5 and 6. The existing traffic volumes were analyzed to determine their level of service, utilizing the analysis techniques for unsignalized intersections from the Highway Capacity Manual. The results are discussed in the section titled "Traffic Impact Analysis."

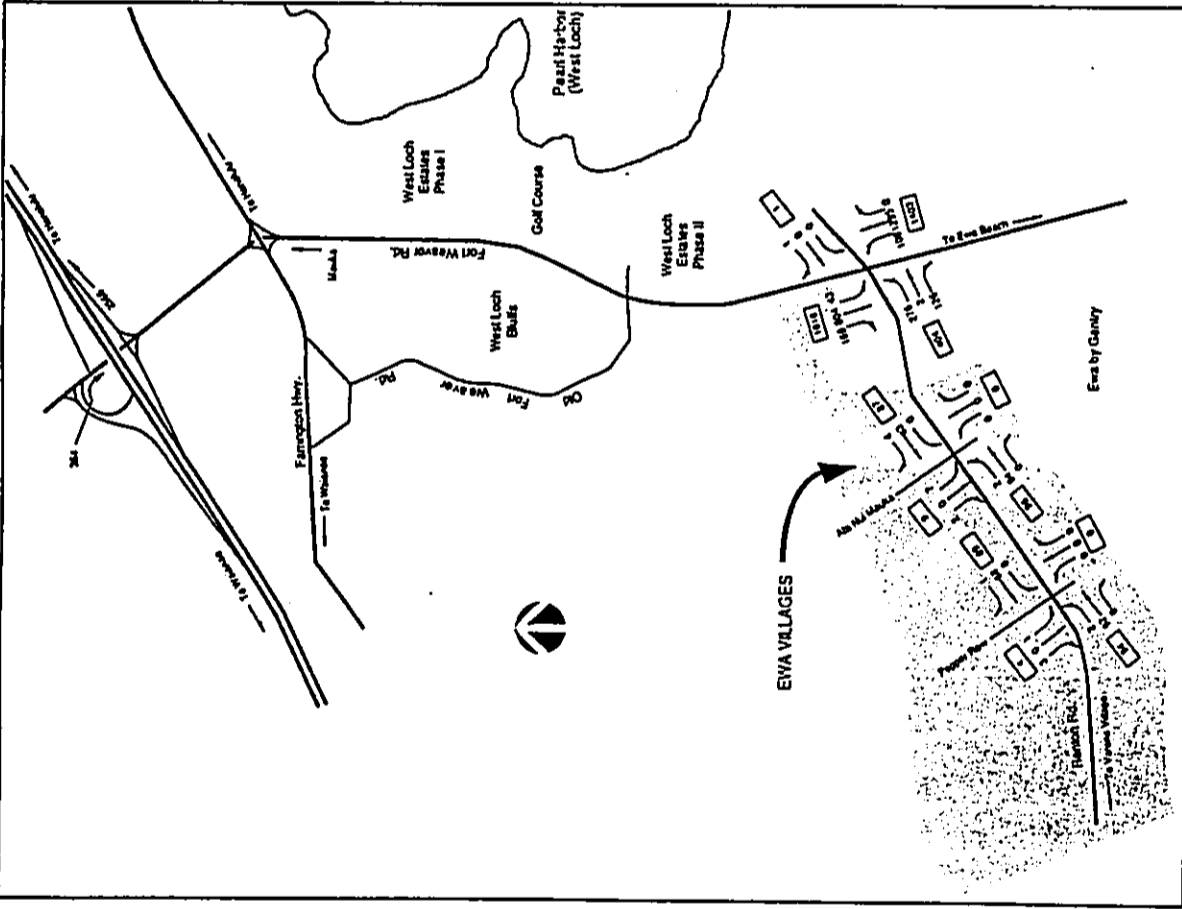


Figure 5. Existing Morning Peak Hour Traffic

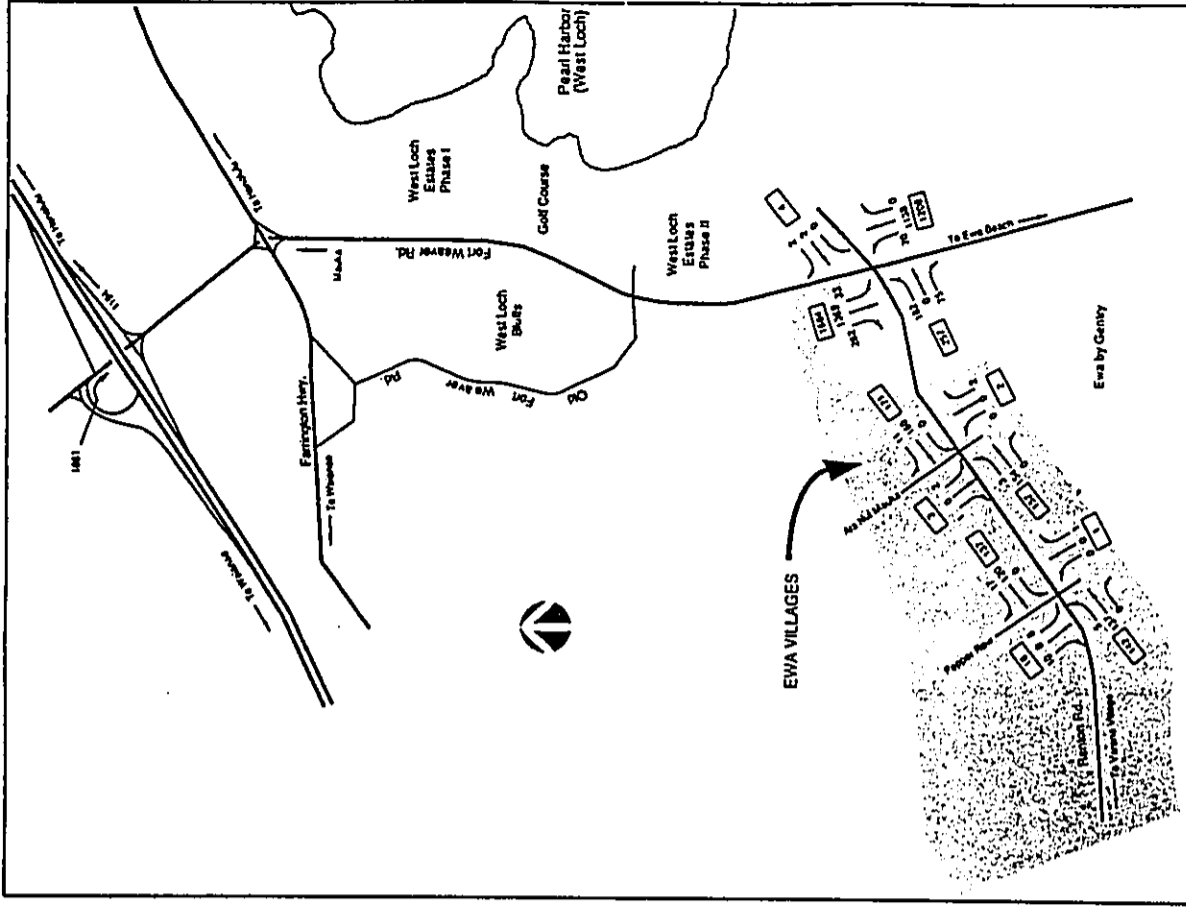


Figure 6. Existing Afternoon Peak Hour Traffic

Observed Traffic Conditions

The following observations were made during the field surveys:

*At the Fort Weaver at Renton/Arizona Road Intersection:*

During the morning:

- Drivers exiting Renton Road would cross the intersection to drop people off at the Mauka bound bus stop. There was no other traffic on Arizona Road.
- Drivers waiting at the left turn signal on Fort Weaver Road, Makai bound, sometimes made u-turns on red light.

During the afternoon:

- Drivers turn right onto Renton from Fort Weaver Makai bound, then u-turn out to skip the light.
- At 4:30 pm the Arizona Road is closed off with a gate.
- Cars exiting the Gas Express onto Fort Weaver Road, Makai bound, sometimes block the right turn lane to get onto the other lanes.
- Drivers heading Makai bound on Fort Weaver would turn right into Renton Road then u-turn and turn left out of Renton Road in order to head Mauka bound on Fort Weaver.
- A few pedestrians would cross Fort Weaver Road directly from the bus stop without walking to the intersection crosswalks.
- Insignificant number of pedestrians.

*At the Renton Road at Ala Nui Road and Pepper Row Intersections:*

During the morning and afternoon:

- Drivers would speed at approximately 35 to 45 mph; posted speed limit is 25 mph.

*At the H-1 on-ramp, Honolulu bound:*

During the morning:

- Not all vehicles from Kunia were able to enter the on-ramp during their green phase.

## PROJECTED TRAFFIC CONDITIONS

Future traffic forecasts without and with the project were estimated for the year 1996. Additional traffic generated by future major developments in the area and traffic growth trend along H-1 were used to forecast future traffic without the project. These additional traffic volumes were added to the present traffic counts and traffic generated by the proposed project to arrive at the 1996 forecast volumes.

### Future Ambient Traffic

Ambient traffic growth is the increase in traffic which would occur if the proposed project were not built. Ambient traffic was forecasted by increasing the existing through traffic volumes along Fort Weaver Road by adding traffic generated by proposed developments within the immediate area. A growth trend analysis was used to determine the ambient traffic that would occur along H-1 Freeway using 24 hour counts obtained from the State Department of Transportation (DOT).

### Traffic from Other Proposed Developments

The three step procedure of trip generation, trip distribution, and traffic assignment was used to forecast future peak hour traffic from other developments in the immediate area.

The trip generation step estimates the number of trips which would be generated during the weekday morning and afternoon peak hours by the other developments in the area. The number of trips from the Ewa by Gentry, West Loch Estates, Honouliuli, Ewa Marina, Meyers/Seibu Golf Course and Ewa Shopping Center developments were estimated based on the amount of each development and data from the Trip Generation Report<sup>2</sup>. Table 2

<sup>2</sup> Trip Generation Report, by the Institute of Transportation Engineers, Fourth Edition, 1987

shows trips generated by the proposed developments.

Table 2. Trip Generation for Future Developments

Future Development	AM Peak		PM Peak	
	Enter	Exit	Enter	Exit
West Loch Estates Phase I	201	224	293	304
West Loch Estates Phase II	682	588	935	882
Honouliuli	50	136	162	95
Ewa by Gentry	1185	2363	2966	2000
Ewa Marina <sup>1</sup>	130	420	480	270
Meyers/Seibu Golf Course	57	14	8	96
Ewa Shopping Center	107	46	272	202
Total	2412	3791	5116	3930

<sup>1</sup> Numbers based on estimate of 70% completion of Ewa Marina Phase I development by 1996

The trip distribution step assigns trips to their expected origins and destinations. Trips to and from the proposed developments were distributed based on the distribution of population and employment on Oahu and the existing traffic patterns. The distribution for the West Loch Estates Phase I and II<sup>3</sup>, Ewa by Gentry<sup>4</sup>, and the Meyers Golf Course<sup>5</sup> developments were based on previous studies for these projects.

The distribution of jobs on Oahu was used to distribute the trips generated from the residential units during the morning and afternoon peak hour. It was estimated that approximately 40% of the trips would be towards Honolulu, 15% towards Waianae, 5% towards Kūia, 20% toward Waipahu and 20% within the east Ewa area.

<sup>3</sup> West Loch Estates Traffic Impact Assessment Report, by Pacific Planning & Engineering, Inc., September 1987

<sup>4</sup> West Loch Estates Phase II Traffic Impact Assessment Report, by Pacific Planning & Engineering, Inc., June 1990

<sup>5</sup> Ewa Gentry Traffic Impact Study, by Parsons Brinckerhoff, August 1988

<sup>6</sup> Meyers/Seibu Golf Course Traffic Impact Study, by Austin, Tausumi & Associates, Inc.

The commercial centers in the developments as well as Ewa Beach Shopping Center will generate pass-by trips. Pass-by trips occur for land uses which attract traffic (bound for other destinations such as from work to home) from the passing stream of traffic. Examples of such land uses include retail establishments, service stations, banks, and convenience stores. Pass-by trips do not add trips to the adjacent roadway, in this case, Fort Weaver Road. Therefore trips generated by the future developments shown in Table 1 were adjusted accordingly.

The traffic assignment step assigns trips to a specific route on the roadway network that will take the driver from origin to destination. Traffic was assigned based on the estimated shortest path or travel time from origins to destinations. All traffic was assigned to Fort Weaver Road since it is the only roadway expected to service the area by 1996.

#### Future Traffic Volumes Without Project

The traffic generated by the other proposed developments as well as volumes derived from increasing through traffic by the historical growth trend along H-1 freeway were added to the existing traffic volumes to arrive at the forecast traffic volumes for the morning and afternoon peak hours in 1996 without the project, and are shown in Figures 8 and 9.

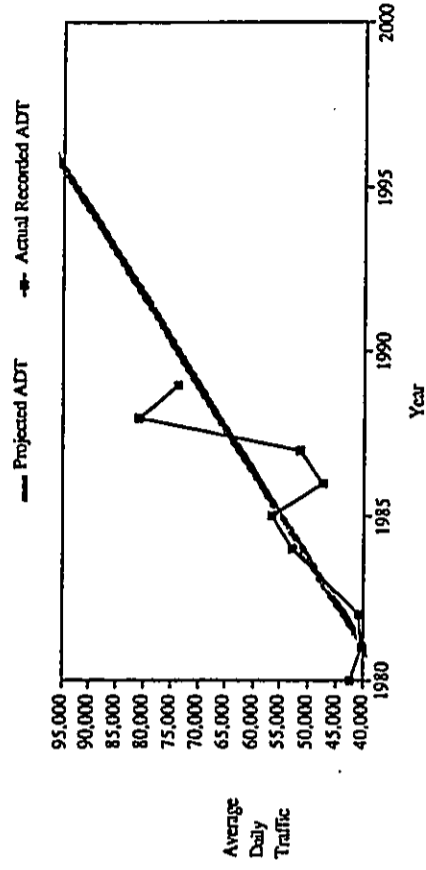


Figure 7. Traffic Growth Trend on H-1 Freeway at Waikale Bridge

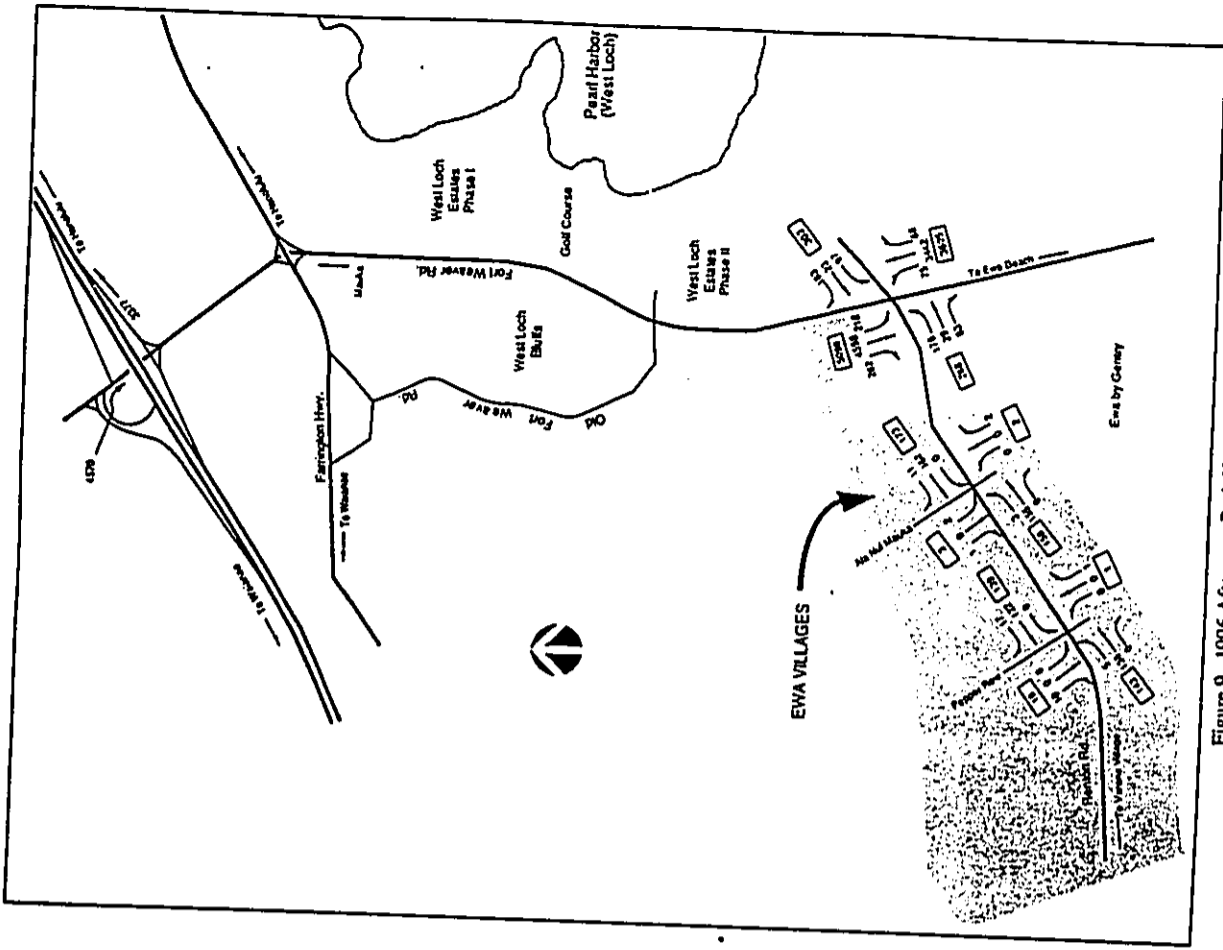


Figure 9. 1996 Afternoon Peak Hour Traffic Without Project

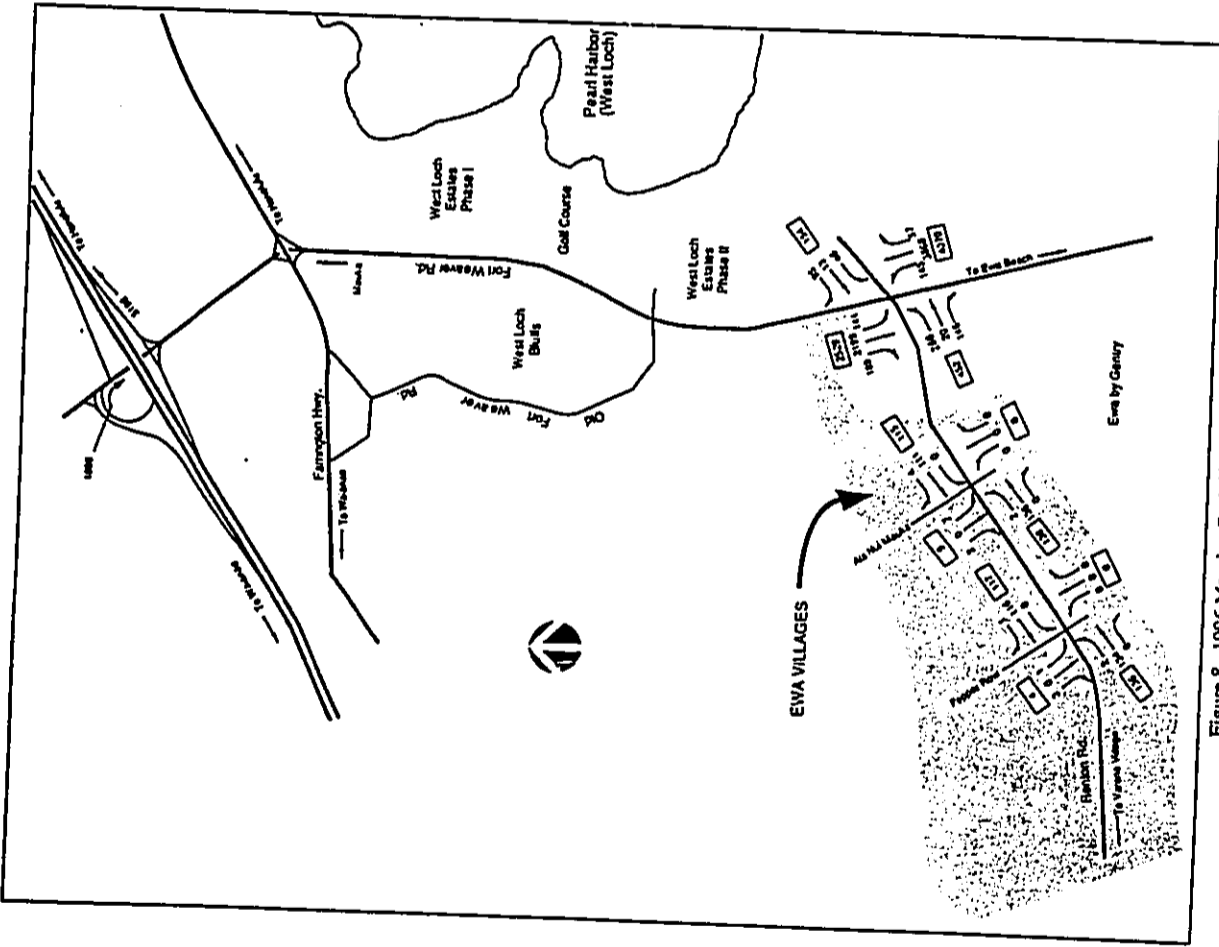


Figure 8. 1996 Morning Peak Hour Traffic Without Project



**Project Generated Traffic**

The traditional three-step procedure of trip generation, distribution and assignment was used to forecast future peak hour traffic from the proposed project.

The number of trips from the proposed Ewa Villages development was based on the amount of land uses and data from the Trip Generation Report. Table 3 shows the number of trips generated by the proposed project.

**Table 3. Trip Generation for Ewa Villages Project**

Morning Peak Hour		Afternoon Peak Hour	
Land Use	Quantity	Land Use	Quantity
single family housing	786	single family housing	786
multi-family housing	110	multi-family housing	110
Ewa Elementary expansion	200	Ewa Elementary expansion	200
Ewa Mahiko Park expansion	20	Ewa Mahiko Park expansion	20
Retail marketplace	26	Retail marketplace	26
Convenience store	10	Convenience store	10
Mill and Train Museum	39	Mill and Train Museum	39
Business Park	80	Business Park	80
Elderly housing <sup>3</sup>	84	Elderly housing <sup>3</sup>	84
Golf course	186	Golf course	186
<b>Total</b>	<b>186</b>	<b>Total</b>	<b>186</b>

Unit	Enter	Exit
DU	142	385
DU	9	48
students	198	132
acres	24	24
1000 sf	54	23
1000 sf	31	13
1000 sf	22	22
1000 sf	85	15
DU	17	17
acres	40	10
<b>Total</b>	<b>622</b>	<b>689</b>

Unit	Enter	Exit
DU	476	279
DU	46	22
students	1	2
acres	34	34
1000 sf	152	158
1000 sf	92	96
1000 sf	102	90
1000 sf	31	115
DU	17	17
acres	6	66
<b>Total</b>	<b>955</b>	<b>790</b>

<sup>3</sup> Not actually a part of Ewa Villages project

The trip distribution step assigns trips to their expected origins and destinations. Trips to and from the proposed project were distributed based on the distribution of population and employment on Oahu and the existing traffic patterns.

The distribution of jobs on Oahu was used to distribute the project generated trips from the residential units during the morning and afternoon peak hour. It was estimated that approximately 65% of the jobs are located towards Honolulu, 10% of the jobs are located towards Waianae, 2% of the jobs are located toward Waipahu, 3% toward Kula and 20% remain within the East Ewa area.

The traffic assignment step assigns trips to a specific route on the roadway network that will take the driver from origin to destination. Traffic was assigned based on the estimated shortest path or travel time from origins to destinations.

#### Total Traffic

The ambient traffic volumes were added to the project generated volumes to obtain the total forecast volumes shown in Figures 10 and 11.

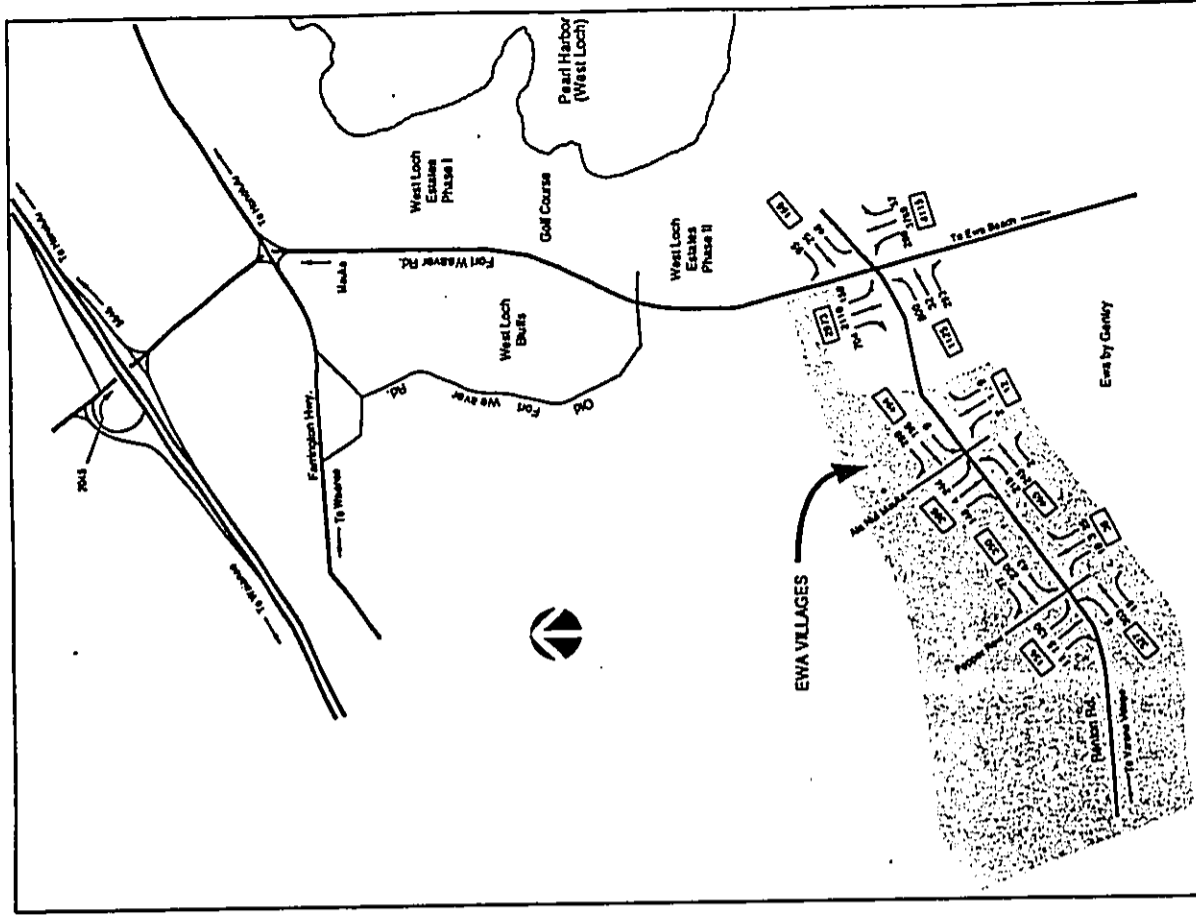


Figure 10. 1996 Morning Peak Hour Traffic With Project  
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## TRAFFIC IMPACT ANALYSIS

Impacts from the proposed project were measured by the change in level of service (LOS) for specific turning movements with and without the project. The existing traffic volumes in Figures 5 and 6, the ambient traffic volumes in Figures 7 and 8, and the total forecast traffic volumes in Figures 9 and 10 were analyzed. The methodologies for analyzing unsignalized intersections, signalized intersections, freeway ramps, and multi-lane highways in the TRB Highway Capacity Manual, Special Report 209 (1986) were used.

The methodology for Unsignalized Intersection analysis yields levels of service ranging from A to F (summarized in Appendix A). The LOS for the traffic movements at an intersection is classified into six categories ranging from little or no delay (LOS A) to extreme delays (LOS F).

The methodology for Signalized Intersection analysis also yields levels of service ranging from A to F (summarized in Appendix A). The LOS for the traffic movements at an intersection is classified into six categories ranging from less than 5 seconds of average delay per vehicle (LOS A) to over 60 seconds of average delay per vehicle (LOS F).

The methodology for On-Ramp analysis again yields levels of service ranging from A to F (summarized in Appendix A). The LOS for the traffic movements at an on-ramp is classified into six categories ranging from merge flow rate of less than 600 passenger cars per hour (pcph) (LOS A) to merge flow rate of greater than 2000 passenger cars per hour (pcph) (LOS F).

The methodology for Off-Ramp analysis again yields levels of service ranging from A to F (summarized in Appendix A). The LOS for the traffic movements at an off-ramp is

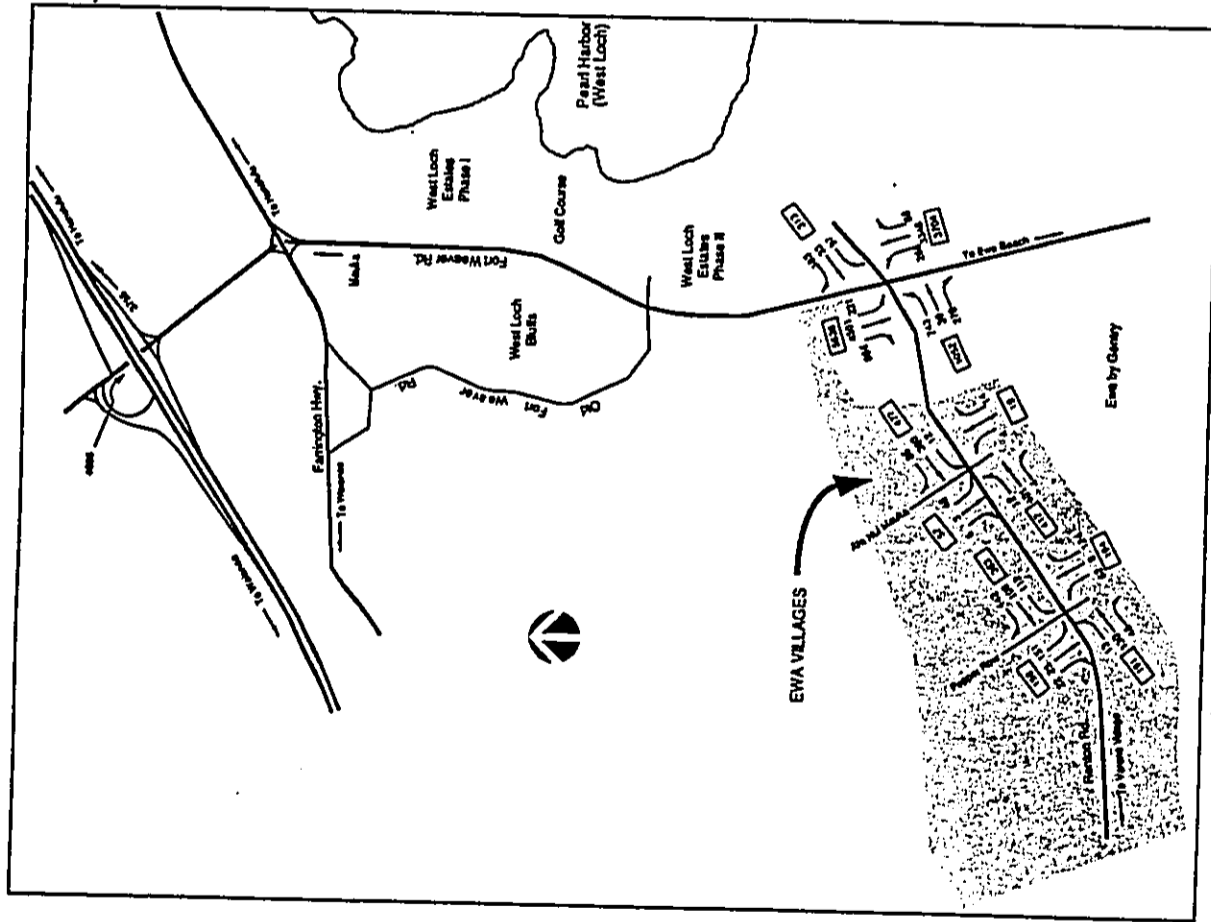


Figure 11. 1996 Afternoon Peak Hour Traffic With Project

classified into six categories ranging from merge flow rate of less than 650 passenger cars per hour (pcph) (LOS A) to merge flow rate of greater than 2000 passenger cars per hour (pcph) (LOS F). The results of the analysis for the morning and afternoon peak hours are summarized on Tables 4 and 5, respectively.

The methodology for Multi-lane Highway analysis again yields levels of service ranging from A to F (summarized in Appendix A). The LOS for the traffic volumes on a multi-lane highway is classified into six categories ranging from a density of less than 12 passenger cars per mile per lane (pcmppl) (LOS A) to a density of greater than 67 passenger cars per mile per lane (pcmppl) (LOS F). The results of the analysis for the morning and afternoon peak hours are summarized on Tables 4 and 5, respectively.

#### Present Level of Service

• *Fort Weaver Road & Renton Road (Signalized)*: Presently, this intersection is operating with an average of 21 seconds delay/vehicle (LOS C) during the morning peak hour and 17 seconds delay/vehicle (LOS C) during the afternoon. The longest delays occur for left turning vehicles from Fort Weaver Road into the minor roads which wait the longest for their green phase.

• *Renton Road & Ala Nui (Unsignalized)*: Presently, this intersection is operating at LOS A for all four approaches during both the morning and afternoon peak hours.

• *Renton Road & Pepper Row (Unsignalized)*: Presently, this intersection is operating at LOS A for all four approaches during both the morning and afternoon peak hours.

• *H-1 On-ramp from Ewa Beach to Honolulu*: Presently the left-most lane of the two-lane on-ramp operates with a merge volume of 1994 passenger cars per hour (pcph) or LOS E during the morning and 1063 pcph (LOS C) during the afternoon peak hour. The

right lane of the two-lane on-ramp operates with a merge volume larger than 2000 pcph (LOS F) during the morning and 1512 pcph (LOS D) during the afternoon peak hour.

• *H-1 Off-ramp from Honolulu to Ewa Beach*: Presently, the single lane loop type off-ramp operates with a diverge volume of 746 pcph (LOS A) during the morning and 1847 pcph (LOS E) during the afternoon peak hour.

• *Fort Weaver Road*: Presently, the four-lane divided highway operates with free flow conditions in both directions during the morning and afternoon peak hours. Density of traffic in both directions is less than 20 passenger cars per mile per lane (pcmppl).

Table 4. Level-of-Service for AM Peak Hour

Turning Movement	Existing Traffic 1990	Without Project 1996	With Project 1996
<b>Fort Weaver Road at Renton/Arizona Road (Signalized)</b>			
Fort Weaver Road Northbound	D	F	F
LT			
YH	C	F	F
RT	C	F	F
Southbound	D	F	F
LT			
TH	C	D	F
RT	B	B	E
<b>Renton/Arizona Road Eastbound</b>			
LT	C	F	F
TH	D	F	F
RT	D	F	F
Westbound	C	E	F
LT			
TH	C	E	F
RT	C	E	F
Capacity Analysis	Under	Over	Over
<b>Renton Road at Ala Nui (Unsignalized)</b>			
Renton Road Westbound - LT	A	A	A
Eastbound - LT	A	A	A
Ala Nui Road Mauka bound - LT/TH/RT	A	A	B
Makai bound - LT/TH/RT	A	A	F

Table 4. (continued) Level-of-Service for AM Peak Hour

Turning Movement (continued)	Existing Traffic 1990	Without Project 1996	With Project 1996
<b>Renton Road at Pepper Row (Unsignalized)</b>			
Renton Road Westbound - LT	A	A	A
Eastbound - LT	A	A	A
Pepper Row Mauka bound - LT/TH/RT	A	A	A
Makai bound - LT/TH/RT	A	A	C
<b>Ramp Movement</b>			
H-1 on-ramp (from Ewa Beach to Honolulu) ramp lane 1 merge	E	F	F
ramp lane 2 merge	F	F	F
H-1 off-ramp (from Honolulu to Ewa Beach) ramp lane diverge	B	D	F
<b>Multi-lane Highway</b>			
Existing 4-Lane Divided Fort Weaver Road Northbound	B	F	F
Southbound	A	E	E
6-Lane Divided Fort Weaver Road Northbound	A	E	E
Southbound	A	C	C

Table 5. Level-of-Service for PM Peak Hour

Turning Movement	Existing Traffic 1990	Without Project 1996	With Project 1996
<b>Fort Weaver Road at Renton/Arizona Road (signalized)</b>			
Fort Weaver Road Northbound	D	F	F
LT			
TH	C	F	F
RT	C	F	F
Southbound	D	F	F
LT			
TH	C	D	F
RT	B	C	F
<b>Renton/Arizona Road</b>			
Eastbound	D	F	F
LT			
TH	D	F	F
RT	D	F	F
Westbound	C	F	F
LT			
TH	C	F	F
RT	C	F	F
<b>Capacity Analysis</b>			
	Under	Over	Over
<b>Renton Road at Ala Nui (unsignalized)</b>			
Renton Road			
Westbound - LT	A	A	A
Eastbound - LT	A	A	A
Ala Nui Road			
Mauka bound - LT/TH/RT	A	A	A
Makai bound - LT/TH/RT	A	A	C

Table 5. (continued) Level-of-Service for PM Peak Hour

Turning Movement (continued)	Existing Traffic 1990	Without Project 1996	With Project 1996
<b>Renton Road at Pepper Row (unsignalized)</b>			
Renton Road			
Westbound - LT	A	A	A
Eastbound - LT	A	A	A
Pepper Row			
Mauka bound - LT/TH/RT	A	A	A
Makai bound - LT/TH/RT	A	A	D
<b>Ramp Movement</b>			
H-1 on-ramp (from Ewa Beach to Honolulu)			
ramp lane 1 merge	C	E	F
ramp lane 2 merge	D	F	F
H-1 off-ramp (from Honolulu to Ewa Beach)			
ramp lane diverge	E	F	F
<b>Multi-lane Highway</b>			
Existing 4-Lane Divided Fort Weaver Road			
Northbound	B	F	F
Southbound	B	F	F
6-Lane Divided Fort Weaver Road			
Northbound	A	D	E
Southbound	A	F	F

1996 Level-of-Service Without Project

• *Fort Weaver Road & Renton Road (Signalized)*: This intersection will operate with an average delay/vehicle greater than 60 seconds (LOS F) during the morning and afternoon peak hours. The longest delays will occur for the through traffic along Fort Weaver Road due to the large traffic volumes. The analysis indicates that this intersection will be over capacity.

• *Renton Road & Ala Nui (Unsignalized)*: This intersection will continue to operate at LOS A for all four approaches during both the morning and afternoon peak hours since the traffic will remain relatively unchanged from existing conditions.

• *Renton Road & Pepper Row (Unsignalized)*: This intersection will continue to operate at LOS A for all four approaches during both the morning and afternoon peak hours since the traffic will remain relatively unchanged from existing conditions.

• *H-1 On-ramp from Ewa Beach to Honolulu*: The left-most lane of the two-lane on-ramp will operate with a merge volume larger than 2000 passenger cars per hour (pcph) or LOS F during the morning and 1909 pcph (LOS E) during the afternoon peak hour. The right lane of the two-lane on-ramp will operate with a merge volumes larger than 2000 pcph (LOS F) during the morning and afternoon peak hours.

• *H-1 Off-ramp from Honolulu to Ewa Beach*: The single lane loop type off-ramp will operate with a diverge volume of 1613 pcph (LOS D) during the morning and greater than 2000 pcph (LOS F) during the afternoon peak hour.

• *Fort Weaver Road*: As a four-lane divided highway, the roadway will have a density greater than 67 pcppm (LOS F) for the Northbound approach and 44 pcppm (LOS E) for the Southbound approach during the morning peak hour. In the afternoon, both

approaches will have densities greater than 67 pcppm (LOS F).

As a six-lane divided highway, the roadway will have a density 51 pcppm (LOS E) for the Northbound approach and 23 pcppm (LOS C) for the Southbound approach during the morning peak hour. In the afternoon, the Northbound approach will operate with a density of 41 pcppm (LOS D) and the Southbound approach will operate with a density greater than 67 pcppm (LOS F).

1996 Level-of-Service With Project

• *Fort Weaver Road & Renton Road (Signalized)*: This intersection will operate with an average delay/vehicle greater than 60 seconds (LOS F) during the morning and afternoon peak hours. The longest delays will occur for the through traffic along Fort Weaver Road due to the large traffic volumes. This intersection will continue to operate over capacity.

• *Renton Road & Ala Nui (Unsignalized)*: This intersection will operate with moderate delay (LOS B) for the Mauka-bound Ala Nui approach during the morning and with little delay (LOS A) during the afternoon peak hour. The Makai bound Ala Nui approach will operate with extreme delays (LOS F) during the morning and with average delays (LOS C) during the afternoon peak hour. Approaches on Renton will continue to operate with little delay (LOS A) during both morning and afternoon peak hours.

• *Renton Road & Pepper Row (Unsignalized)*: This intersection will operate with little delay (LOS A) for the Mauka-bound Pepper Row approach during the morning and afternoon peak hours. The Makai bound Pepper Row approach will operate with average delays (LOS C) during the morning and with above average delays (LOS D) during the afternoon peak hour. Approaches on Renton will continue to operate with little delay (LOS A) during both morning and afternoon peak hours.

• *H-1 On-ramp from Ewa Beach to Honolulu:* The left-most lane of the two-lane on-ramp will operate with a merge volumes larger than 2000 passenger cars per hour (pcph) or LOS F during the morning and afternoon peak hours. The right lane of the two-lane on-ramp will also operate with a merge volumes larger than 2000 pcph (LOS F) during the morning and afternoon peak hours.

• *H-1 Off-ramp from Honolulu to Ewa Beach:* The single lane loop type off-ramp will operate with a diverge volumes of greater than 2000 pcph (LOS F) during the morning and afternoon peak hours.

• *Fort Weaver Road:* As a four-lane divided highway, the roadway will have a density greater than 67 pcpmpl (LOS F) for the Northbound approach and 61 pcpmpl (LOS E) for the Southbound approach during the morning peak hour. In the afternoon, both approaches will have densities greater than 67 pcpmpl (LOS F).

As a six-lane divided highway, the roadway will have a density 52 pcpmpl (LOS E) for the Northbound approach and 29 pcpmpl (LOS C) for the Southbound approach during the morning peak hour. In the afternoon, the Northbound approach will operate with a density of 42 pcpmpl (LOS E) and the Southbound approach will operate with a density greater than 67 pcpmpl (LOS F).

## CONCLUSIONS AND RECOMMENDATIONS

The Ewa Villages Project, when completed in 1996, will have an impact on traffic operations along Fort Weaver Road. The impact of the Project will be relatively small compared to the combined impact from other planned developments along Fort Weaver Road.

Even without the project, the results of the analysis indicate that Fort Weaver Road and certain ramps on the Kunia Interchange will not have the capacity to handle traffic generated by planned developments along Fort Weaver Road. Major infrastructure improvements are needed to handle the traffic from the following developments: West Loch Estates Phase I and II; Ewa by Centre; Ewa Marina; Myers/Seibu Golf Course; and Ewa Shopping Center. In order to accommodate the projected traffic, some or all of the following types of improvements are necessary:

- Widen Fort Weaver from four to six lanes. Even with the additional lanes Fort Weaver will not have sufficient capacity to handle projected traffic.
- Construct a North-South Road, from the Ewa Marina development to connect to the H-1 Freeway, to provide sufficient capacity along the Fort Weaver Corridor.
- Provide additional ramps to the Kunia Interchange.
- Construct an interchange at the intersection of the H-1 Freeway and the North-South Road.
- Widen and improve Farrington Highway to a four-lane arterial between Fort Weaver Road and Barbers Point NAS Access Road.

The specific improvements should be identified in a broader system context with analysis of alternatives because of the regional growth in the area. Improvements are necessary even without the Ewa Villages Project. Traffic studies for other developments



(i.e. Ewa Marina, Gentry, etc.) along Fort Weaver Road have also indicated the need for similar improvements such as the North-South Road.

With the project, improvements may be required at the intersection of Fort Weaver and Renton Road and intersections within the project area. These localized improvements would depend on the type of improvements implemented to accommodate the regional traffic in the Fort Weaver corridor and at the H-1 Freeway.

The percent of total traffic along Fort Weaver Road generated by the various developments that will be completed by 1996 is shown on Table 6 below. Based on the percentages, the Ewa Villages Project is estimated to generate 13% to 14% of the total traffic entering onto Fort Weaver Road.

Table 6. Percent of Total Traffic Entering onto Fort Weaver Road in 1996

Development	Morning Peak Hour	Afternoon Peak Hour
West Loch Estates	14%	16%
Ewa by Gentry	34%	38%
Ewa Marina	6%	6%
Myers Golf Course	<1%	<1%
Ewa Beach Shopping Center	<1%	<1%
Ewa Villages	14%	13%
Existing	31%	27%
	Total: 100%	Total: 100%

**Ewa Region Highway Transportation Master Plan**

Due to the major developments planned for the Ewa region, the State Department of Transportation has formed a Working Group, which includes the City Department of Transportation Services, major developers of the Ewa region, and other State and City Planning agencies. The developers are funding the Ewa Region Highway Transportation

Master Plan. The purpose of the Master Plan is to forecast future traffic in the region, identify a roadway improvements to accommodate forecasted traffic, and distribution of fair share costs to implement the required improvements for the Ewa region.

The Master Plan will determine roadway needs along Fort Weaver and the H-1 Freeway corridors. The proposed North-South Road is being considered as a possible improvement to accommodate traffic from developments along Fort Weaver Road.

DEFINITION OF LEVEL-OF-SERVICE  
FOR  
UNSIGNALIZED INTERSECTIONS

For unsignalized intersections, the traffic most impacted will be the minor or cross-street with the stop or yield control. The major roadway will have the right-of-way. The level-of-service is the amount of delay expected for the average vehicle desiring to cross or enter the major road. The following gives a general description of the measure.

The concept of levels of service is defined as a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers. A level of service definition generally describes these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety.

Six levels of service are defined for each type of facility for which analysis procedures are available. They are given letter designations, from A to F, with level-of-service A representing the best operating conditions and level-of-service F the worst.

Level-of-Service definitions--In general, the various levels of service are defined as follows for uninterrupted flow facilities:

Level-of-service A represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high. The general level of comfort and convenience provided to the motorist, passenger, or pedestrian is excellent.

Level-of-service B is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is slight decline in the freedom to maneuver within the traffic stream from LOS A. The level of comfort and convenience provided is somewhat less than at LOS A, because the presence of others in the traffic stream begins to affect individual behavior.

Level-of-service C is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream. The selection of speed is now affected by the

APPENDIX A

LEVEL-OF-SERVICE DEFINITIONS  
FOR  
UNSIGNALIZED INTERSECTIONS  
SIGNALIZED INTERSECTIONS  
ON-RAMPS  
OFF-RAMPS  
MULTI-LANE HIGHWAYS

presence of others, and maneuvering within the traffic stream requires substantial vigilance on the part of the user. The general level of comfort and convenience declines noticeably at this level.

Level-of-service D represents high-density, but stable, flow. Speed and freedom to maneuver are severely restricted, and the driver or pedestrian experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level.

Level-of-service E represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Freedom to maneuver within the traffic stream is extremely difficult, and it is generally accomplished by forcing a vehicle or pedestrian to "give way" to accommodate such maneuver. Comfort and convenience levels are extremely poor, and driver or pedestrian frustration is generally high. Operations at this level are usually unstable, because small increases in flow or minor perturbations within the traffic stream will cause breakdowns.

Level-of-service F is used to define forced or breakdown flow. This condition exists whenever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations. Operations within the queue are characterized by stop-and-go wave, and they are extremely unstable. Vehicles may progress at reasonable speeds for several hundred feet or more, then be required to stop in a cyclic fashion. Level-of-service F is used to describe the operating conditions within the queue, as well as the point of the breakdown. It should be noted, however, that in many cases operating conditions of the vehicles or pedestrians discharged from the queue may be quite good. Nevertheless, it is the point at which arrival flow exceeds discharge flow which causes the queue to form, and level-of-service F is an appropriate designation for such points.

These definitions are general and conceptual in nature, and they apply primarily to uninterrupted flow. Levels of service for interrupted flow facilities vary widely in terms of both the user's perception of service quality and the operational variables used to describe them.

REFERENCE: Highway Capacity Manual (Special Report 209, 1985)

## DEFINITION OF LEVEL-OF-SERVICE FOR SIGNALIZED INTERSECTIONS

Level of service for signalized intersections is defined in terms of *delay*. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Specifically, level-of-service criteria are stated in terms of the average stopped delay per vehicle for a 15-minute analysis period.

Level-of-service A describes operations with very low delay, i.e., less than 5.0 sec per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

Level-of-service B describes operations with delay in the range of 5.1 to 15.0 sec per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.

Level-of-service C describes operations with delay in the range of 15.1 to 25.0 sec per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

Level-of-service D describes operations with delay in the range of 25.1 to 40.0 sec per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or a high v/c ratios (volume of cars to capacity of intersection). Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

Level-of-service E describes operations with delay in the range of 40.1 to 60.0 sec per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle length, and high v/c ratios. Individual cycle failures are frequent occurrences.

Level-of-service F describes operations with delay in excess of 60.0 sec per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with

oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

#### DEFINITION OF LEVEL-OF-SERVICE FOR ON-RAMPS and OFF-RAMPS

Level of service for signalized intersections is defined in terms of *flow rates*.

Level-of-service A represents unrestricted operation. Merging and diverging vehicles have little effect on other freeway flows.

Level-of-service B merging vehicles have to adjust their speed slightly to fill lane 1 gaps; diverging vehicles still do not experience any significant turbulence. Flow may be described generally as smooth and stable.

Level-of-service C Both lane 1 and on-ramp vehicles must adjust their speed to accomplish smooth merging, and under heavy on-ramp flows, minor ramp queuing may occur. Some slowing may also occur in diverge areas. Overall speed and density of freeway vehicles are not expected to be seriously deteriorated.

Level-of-service D Smooth merging becomes difficult to achieve. Both lane 1 and on-ramp vehicles must frequently adjust their speed to avoid conflicts in the merge area. Slowing in the vicinity of diverge areas is also significant. At heavily used on-ramps, ramp queues may become a disruptive factor.

Level-of-service E Represents capacity operation. On-ramp queues may be significant. Diverge movements are significantly slowed, and some queuing may occur in the diverge area. All vehicles are affected by turbulence on freeway.

Level-of-service E All merging is on a stop-and-go basis, and ramp queues and lane 1 breakdowns are extensive. Much turbulence is created as vehicles attempt to change lanes to avoid merge and diverge areas. Considerable delay is encountered in the vicinity of the ramp terminal, and conditions may vary widely, from minute to minute, as unstable conditions create "waves" of alternately good and forced flow.

REFERENCE: Highway Capacity Manual (Special Report 209, 1985)

REFERENCE: Highway Capacity Manual (Special Report 209, 1985)

DEFINITION OF LEVEL-OF-SERVICE  
FOR  
MULTI-LANE HIGHWAYS

Level of service for signalized intersections is defined in terms of *density*.

Level-of-service A describes completely free-flow conditions. Maximum density is 12 passenger cars per mile per lane (pc/mpl) and the ability to maneuver within the traffic stream is high.

Level-of-service B is also indicative of free flow. The maximum density is 20 pc/mpl. Minor disruptions to flow are still easily absorbed at this level.

Level-of-service C represents a range in which the influence of traffic density on operations becomes marked. The ability to maneuver within the traffic stream, and to select an operating speed, is now clearly affected by the presence of other vehicles. The maximum density is 30 pc/mpl.

Level-of-service D borders on unstable flow. Speeds and ability to maneuver are severely restricted because of traffic congestion. The maximum density is 42 pc/mpl.

Level-of-service E represents operations at or near capacity and is quite unstable. The maximum density is 67 pc/mpl. This is the minimum spacing at which uniform flow can be maintained, and effectively defined a traffic stream with no usable gaps.

Level-of-service F represents forced or breakdown flow. It occurs at a point where vehicles arrive either at a rate greater than that at which they are discharged or at a point on a planned facility where forecasted demand exceeds the computed capacity. Densities are higher than 67 pc/mpl. Queues form behind the breakdowns and are highly unstable.

REFERENCE: Highway Capacity Manual (Special Report 209, 1985)

APPENDIX B

MANUAL TRAFFIC COUNT DATA

Date: August 9, 1990

Location: H-1 On-Ramp Honolulu Bound (Kunia Interchange)

Time (am)	From Kunia	From Ewa Beach
5:30-5:45	159	396
5:45-6:00	180	421
6:00-6:15	219	502
6:15-6:30	239	450
6:30-6:45	195	351
6:45-7:00	155	336
7:00-7:15	141	280
7:15-7:30	120	250

Peak Hour 5:30-6:30  
Totals 797 1769

APPENDIX B

MANUAL TRAFFIC COUNT DATA

Date: August 9, 1990

Location: H-1 Off-Ramp Waianae Bound (Kunia Interchange)

Time (am)	To Ewa Beach
5:30-5:45	55
5:45-6:00	77
6:00-6:15	87
6:15-6:30	145
6:30-6:45	182
6:45-7:00	248
7:00-7:15	173
7:15-7:30	199

Peak Hour 5:30-6:30  
Totals 364

APPENDIX B

MANUAL TRAFFIC COUNT DATA

Date: August 8, 1990

Location: H-1 On-Ramp Honolulu Bound (Kunia Interchange)

Time (am)	From Kunia		From Ewa Beach	
	LT	RT	LT	RT
3:00-3:15	62		232	
3:15-3:30	57		270	
3:30-3:45	79		320	
3:45-4:00	60		217	
4:00-4:15	64		252	
4:15-4:30	49		253	
4:30-4:45	60		239	
4:45-5:00	43		191	
Peak Hour 3:45-4:45	233		961	
Totals				

Date: August 8, 1990

Location: H-1 Off-Ramp Waihuanu Bound (Kunia Interchange)

Time (am)	To Ewa Beach	
	LT	RT
3:00-3:15	224	
3:15-3:30	286	
3:30-3:45	314	
3:45-4:00	416	
4:00-4:15	394	
4:15-4:30	408	
4:30-4:45	443	
4:45-5:00	369	
Peak Hour 3:45-4:45	1661	
Totals		

APPENDIX B

MANUAL TRAFFIC COUNT DATA

Date: August 16, 1990

Location: Renton Road and Pepper Row

Time (am)	Renton Road				Makai bound				Pepper Row			
	Eastbound		Westbound		LT		RT		LT		RT	
	LT	RT	LT	RT	LT	RT	LT	RT	LT	RT	LT	RT
6:30-6:45	0	30	0	0	35	0	1	0	0	0	0	0
6:45-7:00	1	19	0	0	27	0	0	0	2	0	0	0
7:00-7:15	1	18	0	0	13	0	0	0	0	0	0	0
7:15-7:30	0	25	0	0	13	1	0	0	1	0	0	0
7:30-7:45	0	9	0	0	13	0	2	0	0	0	0	0
7:45-8:00	0	22	0	1	17	0	0	0	0	0	0	0
8:00-8:15	0	18	1	0	18	1	0	0	0	0	0	1
Peak Hour 6:30-7:30	0				88				1			
Totals	2				92				1			

Date: August 16, 1990

Location: Renton Road and Ala Nui Mauka

Time (am)	Renton Road				Makai bound				Ala Nui Mauka			
	Eastbound		Westbound		LT		RT		LT		RT	
	LT	RT	LT	RT	LT	RT	LT	RT	LT	RT	LT	RT
6:30-6:45	0	30	0	0	35	0	3	0	0	0	0	0
6:45-7:00	0	20	0	0	20	1	1	0	0	0	0	0
7:00-7:15	0	20	0	0	14	2	0	0	0	0	0	0
7:15-7:30	2	24	0	0	14	1	3	0	2	0	0	0
7:30-7:45	0	14	0	0	15	1	0	0	0	0	0	1
7:45-8:00	2	20	0	0	15	0	2	0	0	0	0	0
8:00-8:15	0	18	0	0	18	1	2	0	1	1	0	0
Peak Hour 6:30-7:30	0				88				1			
Totals	2				92				1			

APPENDIX B

MANUAL TRAFFIC COUNT DATA

Date: August 15, 1990

Location: Renton Road and Pepper Row

Time (pm)	Renton Road						Pepper Row					
	Eastbound			Westbound			Makai bound			Mauka bound		
	LT	IH	RT	LT	IH	RT	LT	IH	RT	LT	IH	RT
3:00-3:15	1	12	0	1	19	6	3	0	2	0	0	0
3:15-3:30	0	15	0	3	25	4	6	0	1	0	0	1
3:30-3:45	1	42	0	0	28	6	0	0	1	0	0	0
3:45-4:00	2	32	0	1	39	4	3	0	3	0	0	0
4:00-4:15	0	34	0	0	31	3	2	0	2	0	0	0
4:15-4:30	2	29	0	0	22	4	3	0	4	0	0	1
Peak Hour 3:30-4:30												
Totals	5	137	0	0	120	17	8	0	10	0	0	1

Date: August 15, 1990

Location: Renton Road and Ala Nui Mauka

Time (pm)	Renton Road						Ala Nui Mauka					
	Eastbound			Westbound			Makai bound			Mauka bound		
	LT	IH	RT	LT	IH	RT	LT	IH	RT	LT	IH	RT
3:00-3:15	0	20	0	1	30	4	1	0	0	0	0	0
3:15-3:30	0	33	0	1	35	2	0	0	0	0	0	0
3:30-3:45	0	45	0	0	46	1	0	0	1	0	0	2
3:45-4:00	1	35	0	0	50	2	0	0	0	0	0	0
4:00-4:15	0	41	0	0	34	6	1	0	0	1	0	0
4:15-4:30	2	33	0	0	30	2	1	0	0	0	0	0
Peak Hour 3:30-4:30												
Totals	3	154	0	0	160	11	2	0	1	0	0	2