August 14, 1986

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

Dear Ms. Uyehara:

Final Environmental Impact Statement (EIS)
Waitec Development Proposal (Village Park Expansion)
Prepared by William E. Wanket, Inc.
For Waitec Development, Inc.
Tax Map Key 9-4-02: 30, and Portion 01, 17

We are notifying you that the above has been found to be an acceptable EIS document by the Department of Land Utilization, pursuant to Chapter 343, HRS, and Title 11, Administrative Rules, Department of Health, Chapter 200, Environmental Impact Statement Rules.

Please publish a notice of this determination in the "OEQC Bulletin" under the Register of Chapter 343, HRS documents.

Permits and approvals will be required to implement the proposed project. These are listed in Section 9 of the EIS.

A copy of our Acceptance Report which describes a number of unresolved issues is attached. If there are any questions, please contact Bennett Mark of our staff at 527-5038.

Very truly yours,

[Signature]

JOHN P. WHALEN
Director of Land Utilization

JPW:sl
0341B
attach: Acceptance Report
Final EIS (1 copy)

cc: w/o attach.: Wm. E. Wanket
FINAL

ENVIRONMENTAL IMPACT STATEMENT

WAITEC DEVELOPMENT PROPOSAL
HOAEAE AND WAIKELE
EWA, OAHU
[VILLAGE PARK EXPANSION]

TAX MAP KEY: 1ST DIVISION
9-4-02, PARCELS 30 AND PORTIONS OF 01 AND 17

JULY 1986

WILLIAM E. WANKET, INC.
JOHN ZAPOTOCKY, CONSULTANT
NOTICE

All reference material borrowed from this library will be on a 14-day loan period, limited to ONE RENEWAL ONLY.
If borrowed material is not returned when DUE, is DAMAGED, or LOST, there will be a REPRODUCTION CHARGE OF 25c PER PAGE.

OEQC LIBRARY - 548-5915
465 South King Street, Room 115
FINAL
ENVIRONMENTAL IMPACT STATEMENT
WAITEC DEVELOPMENT PROPOSAL
HOAEAH AND WAIKELE
EWA, OAHU
[VILLAGE PARK EXPANSION]

JULY 1986

submitted pursuant to chapter 343,
hawaii revised statutes,
environmental impact statement regulations

[Signature]

PRESIDENT
William E. Wanket, Inc.
Pacific Tower 1010
1001 Bishop Street
Honolulu, Hawaii 96813
CONTENTS

SUMMARY ........................................................................................................ iv

1.0 PROJECT DESCRIPTION ........................................................................ 1
1.1. Location and Ownership ....................................................................... 1
1.2. Conceptual Plan .................................................................................... 1
  1.2.1. Land Use ......................................................................................... 5
  1.2.2. Public Facilities ............................................................................... 8
1.3. Changes in Land Use Designations Required to Implement the Project ...... 9
1.4. Development Timetable ......................................................................... 9
1.5. Projected Development Costs ................................................................. 10
1.6. Feasibility ............................................................................................. 10
  1.6.1. Market Analysis—Residential ....................................................... 16
  1.6.2. Market Analysis—Commercial Development and Business Park ...... 16a
1.7. Statement of Objectives ....................................................................... 16c
1.8. Purpose of this EIS .............................................................................. 16c
1.9. Historical Perspective ........................................................................... 17

2.0 EXISTING CONDITIONS AND IMPACT ASSESSMENT .................... 17
  2.1. Physical Environment ........................................................................ 17
  2.1.1. Topography/Geology .................................................................... 17
  2.1.2. Soils .............................................................................................. 21
  2.1.3. Climate ......................................................................................... 21
  2.1.4. Flora/Fauna .................................................................................. 24
  2.1.5. Archaeological/Historic Resources ............................................... 25
  2.1.6. Hazards ....................................................................................... 26a
  2.1.7. Air Quality ................................................................................... 28
  2.1.8. Noise ............................................................................................ 29a
  2.1.9. Water Quality .............................................................................. 30

  2.2. Socio-Economic Environment ............................................................ 30
    2.2.1. Population ................................................................................... 32
    2.2.2. Housing ...................................................................................... 35
    2.2.3. Employment ............................................................................... 36
    2.2.4. Social Issues ............................................................................... 38
    2.2.5. Economic Development ............................................................. 38
      2.2.5.1. Impact on Oahu Sugar Co. .................................................... 38
      2.2.5.2. Impact on Diversified Agriculture and Aquaculture ........... 41

  2.3. Adequacy of Public Facilities and Services ........................................ 43
    2.3.1. Transportation ........................................................................... 43
    2.3.2. Water ......................................................................................... 47
    2.3.3. Wastewater ................................................................................ 48
    2.3.4. Solid Waste ............................................................................... 49
    2.3.5. Drainage .................................................................................... 50
    2.3.6. Electric and Telephone Systems ............................................... 51
    2.3.7. Police Protection ...................................................................... 51
    2.3.8. Fire Protection ......................................................................... 52
    2.3.9. Schools ...................................................................................... 52
    2.3.10. Parks ....................................................................................... 53
    2.3.11. Health Care Services ............................................................... 53

  2.4. Fiscal Impact and Benefit-Cost Analysis ............................................ 54
    2.4.1. Fiscal Impact .............................................................................. 54
    2.4.2. Benefit-Cost Analysis ............................................................... 55
3.0. RELATIONSHIP TO LAND USE POLICIES AND REGULATIONS ..... 58
3.1. State Land Use Law ..... 61
3.2. State Plan and Functional Plans ..... 61
3.3. General Plan ..... 71
3.3.1. Population ..... 71
3.3.2. Housing ..... 72
3.3.3. Economic Activity ..... 72
3.3.4. Natural Environment ..... 73
3.4. Development Plan (Central Oahu) ..... 73
3.5. Zoning and Subdivision ..... 73

4.0. PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED ..... 74

5.0. ALTERNATIVES TO THE PROPOSED ACTION ..... 75

6.0. RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY ..... 80

7.0. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES ..... 82

8.0. AN INDICATION OF WHAT OTHER INTEREST AND CONSIDERATIONS OF GOVERNMENTAL POLICIES ARE THOUGHT TO OFFSET THE ADVERSE ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION ..... 83

9.0. SUMMARY OF NECESSARY APPROVALS ..... 84

10.0. LIST OF CONSULTANTS INVOLVED IN THE PREPARATION OF THE EIS ..... 85

11.0. ORGANIZATIONS AND AGENCIES CONSULTED FOR THE VILLAGE PARK EXPANSION PROJECT ..... 86

12.0. ORGANIZATION AND AGENCY COMMENTS TO DRAFT EIS AND RESPONSES TO COMMENTS ..... Blue Section

APPENDICES

A. Market Study (Chaney, Brooks, & Co.)
B. Archeological/Historic Impact (Chinigao)
C. Socio-economic Study (Community Resources)
D. Agricultural Impact (Decision Analysts Hawaii)
E. Preliminary Engineering Study (Park Engineering)
F. Traffic Impact Report (Park Engineering)
G. Fiscal Impact (Decision Analysts Hawaii)
H. Benefit-Cost Analysis (Decision Analysts Hawaii)
I. Letters from Agencies (Prior to Prep Notice)
J. State of Hawaii Department of Transportation Design Branch, Effects of Central and Leeward Oahu Developments upon the State Highway System, Summary and Recommendations, March 1986
K. Air Quality Study (Barry D. Root)
List of Tables

1-1. Summary of Housing Unit Shortfall 1983-2005, Island of Oahu ........................................... 12
1-2. Comparison of Projects Proposed for Central Oahu .................................................. 13
1-3. Village Park Expansion Income Requirements ......................................................... 15
2-1. Summary of Soil Characteristics ................................................................. 19
2-2. Temperatures and Rainfall in the Central Oahu Area ............................................... 22
2-3. Percentage Frequency of Wind Direction and Speed .................................................. 23
2-4. Projected Population in the Year 2005 for Central Oahu and Ewa ................................. 33
3-1. Pertinent Policy Statements from the Hawaii State Plan, Functional Plans, and County General Plan: Agriculture v. Housing ........................................................... 62
3-3. Pertinent Policy Statements from the Hawaii State Plan and Functional Plans: Facility Planning ................................................................. 70

List of Figures

1-1. Location Map ......................................................... 2
1-2. Proposed Land Use Plan .................................................. 3
2-1. Soils Map ................................................................. 20
2-2. Proposed Improvements to Kunia Road and Interchange ............................................... 45
SUMMARY

LOCATION AND OWNERSHIP

Location: Waiekele and Hoaenu, Ewa, Oahu
TMK 9-4-02: 30 and por. 01, 17
691.5 acres
The site is bounded on the south by the existing Village Park residential development, Kunia Road on the west, Waieke Gulch on the east, and sugar cane cropland on the north.

Ownership: The subject property is owned by the Robinson Estate. Waitec Development, Inc. has an agreement to purchase the entire 691.5 acres in fee simple.

Existing Use: The land is currently leased by Oahu Sugar Company to grow sugar cane.

PROJECT DESCRIPTION

Project Concept: The proposed project is a planned residential community offering a variety of housing types to attract a mix of income groups and household sizes. The commercial and industrial areas will provide employment opportunities and convenient shopping. The golf course will provide recreation and aesthetic amenities. The proposed project is an extension of the existing Village Park. This extension will provide the critical mass population that is necessary for major retail operations to locate in the commercial area and for an elementary school that would serve the existing Village Park and the proposed expansion. Since the existing public facilities have excess capacity, these facilities would be adequate for the first 1,000 units of the proposed project, thereby reducing front-end costs and development time.

Expected Population: 10,000 persons

Land Uses:
Residential (404.6 ac)
-- 3,000 fee simple units (expected price range of $100,000 to $295,000)
-- 480 rental units (provided by county on land dedicated by the developer)
Commercial/Industrial mixed use (28.7 ac)
Golf course (168.2 ac)
Public parks (21.0 ac)
Private recreation (6.9 ac)
Circulation (32.1 ac)
Estimated Cost: $66,200,000

LAND USE DESIGNATIONS

State Land Use District
Existing: Agriculture
Proposed: Urban

Central Oahu Development Plan
Existing: Agriculture
Proposed: Residential, Low-Density Apartment, Commercial, Industrial, Public, Parks, Golf course

Zoning
Existing: AG-1
Proposed: R-6 or PD-H, A-1 or PD-H IMX, P-1

MAJOR ISSUES

Agriculture v. Housing

The proposed project will involve a tradeoff between preserving prime agricultural land and providing affordable housing.

Impact to the Agricultural Industry. The proposed project will not adversely affect the economic viability of OSCO, nor will it require layoffs of sugar workers. Part of the reason for this is that the cost for relocating cane-haul roads, irrigation ditches and pipes, an earthen reservoir, and power poles will be absorbed by the petitioner. In addition, the reduction in sugarcane acreage is expected to be gradual and partially or completely compensated for by increasing yields. Also, reductions in employment will occur through retirement and voluntary movement to other jobs. In the long term, OSCO could accommodate a major reduction in acreage and maintain economies of scale by operating just one mill, rather than two in parallel.

It is extremely doubtful that the proposed project will adversely affect the growth of diversified agriculture and aquaculture in Hawaii. There are three reasons for this assessment: 1) the extensive amount of prime agricultural land and water that has been freed from sugar and pineapple production because of past mill closings and reductions in operations; 2) the very real possibility that additional land and water will be freed from sugar production given the outlook for low sugar prices; and 3) the comparatively small amount of land and water required to grow proven and promising crops to achieve a realistic level of food and animal-feed self-sufficiency, and to increase exports.

Affordable Housing. The project site offers opportunities to deliver affordable housing due to the low site preparation costs associated with agricultural land (flat, rock-free, deep
soil) and the availability of utilities. The existing Village Park demonstrates the commitment and ability of the petitioner to deliver quality, affordable units.

(See sections 1.6.1 (need for housing), 2.1.2 (soils suitability), 2.2.2 (housing), 3.2 (state plan policy), 2.4.2 (benefit-cost analysis)).

Water Supply

The Board of Land and Natural Resources recently allocated 11 mgd from the Pearl Harbor Groundwater Control Area to the Board of Water Supply. Carbon filtration treatment methods have proven successful in removing EDB contaminants that had been previously detected in the Waipahu and Kunia wells.

The Board of Water Supply has accepted the water master plan for the Village Park Expansion. In order to meet the water requirements of the Village Park Expansion the Board of Water Supply has requested an additional 1.04 million gallons from the Department of Land and Natural Resources. The balance of the water necessary for the project will come from an internal Board of Water Supply reallocation. The water to be reallocated will become available as exports outside of the Pearl Harbor Basin by the Board are reduced due to source development projects in export areas which are currently planned or underway. The BWS has requested for additional permitted use for the Kunia Wells II. If the request is approved by the State Board of Land and Natural Resources, it would allow the full utilization of the Kunia Wells II and meet the future demands of the Village Park Expansion.

(See sections 1.2.2 (description of proposed facilities) and 2.3.2 (adequacy of water facilities)).

Traffic

Proposed improvements to Kunia Road and Interchange will mitigate local traffic congestion. Of greater concern is the regional traffic problem concerning the capacity of H-1 Freeway. This regional problem is shared by the existing and proposed communities stretching from Moanalua to Ewa, Waianae, and Central Oahu. Mitigation of this problem is currently under study by the Department of Transportation. The applicant has expressed willingness to form a task force with other developers, community groups, and government agencies in seeking solutions to this complex problem.

(See section 1.1.2 (description of proposed facilities) and 2.3.1 (adequacy of transportation facilities)).
Economic Feasibility

The Village Park Expansion project will have to compete with several other projects proposed for Central Oahu and Ewa. The proposed project has several marketing advantages:

1. Expanded product line-- By offering a wide range of products, from custom to attached units, the developer is able to segment the market into a number of different categories and more closely tailor the product to individual buyers' desires and economic capabilities.

2. Timing-- The proposed project will fill a void in the new single family housing supply. Major residential projects at Gentry Waipio and the Pearl City/Aiea area will be nearing
completion at the end of 1986 and the sales of new units being planned for Waikiki, Waialua, and Ewa will not commence sales until 1991-93. Village Park will be one of the few projects offering moderately priced housing in the market between 1986 and the early 1990's.

3. Location-- Village Park and Mililani are closer to the primary urban center than the new projects proposed for Ewa.

4. Economic factors-- Interest rates and low inflation are favorable to the housing market at this time; the outlook for the near future is favorable.

5. Momentum-- The mobilized construction and sales team for the existing Village Park cuts the lead time that new projects would otherwise incur.

6. Infrastructure availability-- The other proposed projects for Central Oahu will incur additional time to design and to obtain financing for major infrastructure improvements such as freeway on-ramps, new water systems, and sewage pump stations. In comparison, sewer and water facilities are already available for the first 1000 units of the proposed project, and adequate facilities can be reasonably provided for the balance of the project.

(See section 1.6 (feasibility analysis)).

SUMMARY OF IMPACTS

The proposed project would have the following impacts:

1. Beneficial impacts
   -- Housing
     - increased availability of affordably priced housing;
     - development of rental housing;
     - variety of housing types to attract a mix of income groups and family sizes;
   -- Land use policies
     - compliance with the objectives and policies of the State Land Use Law, State Plan, Functional Plans; amendment required for the Development Plan.
   -- Environmental
     - physical characteristics of the land are suitable for urban development (level topography; deep, non-stony soils);
     - absence of endangered species and archaeological sites;
     - absence of flood hazards;
     - no significant degradation of air or water quality;
   -- Public facilities
     - public facilities and services are available or
can be made available at reasonable cost.

---

Social impacts
- employment opportunities generated by construction and light industrial/commercial areas;
- support from and ongoing consultation with the surrounding community.

---

Fiscal impact
- favorable to the public (projected revenues exceed public expenditures).

<table>
<thead>
<tr>
<th>Adverse Impacts</th>
<th>Mitigating Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Loss of Agricultural Land</td>
<td>Other land is available for agricultural activities. The developer will bear the cost of relocating existing ag infrastructure.</td>
</tr>
<tr>
<td>2. Traffic:</td>
<td></td>
</tr>
<tr>
<td>Local: Traffic congestion will increase on Kūnia Road and at the Kūnia Interchange.</td>
<td>The developer will improve Kūnia Road and the Kūnia Interchange to minimize the congestion.</td>
</tr>
<tr>
<td>Regional: The capacity of H-1 is a regional problem shared by existing and proposed communities from Moanalua to Ewa.</td>
<td>This problem is the subject of a Department of Transportation short and long range program that is being publicly discussed. The first phase of this program, adding additional lanes to portions of H-1, is being implemented now.</td>
</tr>
<tr>
<td>3. Clearing and construction work will result in temporary dust, noise and some traffic disruption.</td>
<td>The developer and its contractors will comply with local grading and subdivision ordinances which have provisions to minimize these impacts.</td>
</tr>
<tr>
<td>4. Increased need for utility services, including city supplied water and sewer.</td>
<td>Water consumption would be less than current agricultural use. Both the water and sewer plans must be approved by public agencies.</td>
</tr>
<tr>
<td>5. Increased need for public services such as police, fire, schools and recreational facilities.</td>
<td>A study of impact on state and local finances indicates that the project will generate revenues exceeding expenditures of $2.6 million per year.</td>
</tr>
</tbody>
</table>
Alternatives Considered

The draft EIS considers six alternatives, four alternate land uses, alternate site designs and the "no project" alternative, as described below:

--- Alternative land uses

Industrial- Use of the entire site for industrial use. Good location is offset by availability of land at other locations and the economic prospects of such a development.

Commercial- Use of entire site for commercial purposes. The site has limited potential for commercial due to the availability of commercial developments in close proximity and the lack of adequate access to the site.

Agricultural- Retention of the site in sugar production or conversion of the site to other agricultural pursuits would not allow the applicant to purchase the land and then obtain a reasonable rate of return. In addition such an action would put pressure on other ag lands to be used for residential purposes.

Parks/Recreation- There are limited public funds to purchase and operate large scale park and recreation facilities.

--- Alternate site designs

The current development proposal is the result of governmental and community input to the original developer proposal. The current proposal best meets the issues and comments raised to date.

--- "No Project" Alternative

This alternative is possible at the present time. Essentially the land will remain in sugar production however the demand for residential development will continue unmet.
Unresolved Issues

Regional Traffic is an unresolved issue. As mentioned earlier in the summary the development will contribute to congestion on the H-1 freeway. The fact is that all developments in the Central Oahu and Ewa areas as well as those in the Pearl City to Aiea areas share this problem. The State Department of Transportation has put out for public discussion a program for short and long range mitigation of the traffic congestion on the H-1 freeway. The first phase of the program which calls for the widening of portions of the H-1 freeway is currently being implemented. A summary of the DOT's recommendations is contained in Appendix J of this draft EIS.

Compatibility with Land Use Plans and Policies and Listing of Necessary Permits

The proposed action calls for the amendment of current land use plans. Section 3.0 of this draft EIS describes how the proposed action implements the land use policies of the various state and local governments. The following is a list of the necessary permits to permit the proposed action:

<table>
<thead>
<tr>
<th>Permit</th>
<th>Legal Reference</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Use District</td>
<td>Chap. 205, HRS</td>
<td>Application filed 2/86</td>
</tr>
<tr>
<td>Boundary Amendment</td>
<td>Central Oahu DP (Ord. No. 83-7, 84-59, 85-48)</td>
<td>Application filed on 1/86; decision expected by 6/86</td>
</tr>
<tr>
<td>Development Plan</td>
<td>Chap. 21, R.O. of Honolulu</td>
<td>Will be filed after decision on DP amendment</td>
</tr>
<tr>
<td>Amendment</td>
<td>Chap. 343, HRS</td>
<td>Notice of Preparation filed 10/86</td>
</tr>
<tr>
<td>Zoning Amendment</td>
<td>Chap. 22, R.O. of Honolulu</td>
<td>Will be filed during pendancy of zoning amendment</td>
</tr>
<tr>
<td>EIS</td>
<td>Chap. 23, R.O. of Honolulu</td>
<td>Processed concurrently with subdivision application</td>
</tr>
<tr>
<td>Subdivision Approval</td>
<td>Chap. 177, HRS</td>
<td>BWS applied for additional allocation</td>
</tr>
<tr>
<td>Grading Permit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groundwater Control Area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permit</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Purpose

The reason for preparing this EIS is in anticipation of submitting a request to rezone a 691.5 acre parcel from AG-1 to various urban uses.
Accepting Authority
Department of Land Utilization
650 S. King Street
Honolulu, Hawaii 96813

Applicant
Waitec Development, Inc.

Agent
William E. Wanket, Inc.
1.0. PROJECT DESCRIPTION

1.1. LOCATION AND OWNERSHIP

The proposed development site, consisting of 691.5 acres, is located at Waiekele and Hoaale, Ewa, Oahu, tax map key 9-4-02:30 and portions of 01 and 17.* The parcel is approximately 1900 feet north of the H-1 overpass on Kunia Road. The site is bounded on the south by the existing Village Park residential development, Kunia Road on the west, Waieke Gulch on the east, and sugar cane crop land on the north (see Fig. 1-1).

Although the property is presently owned by the Robinson Estate, WAI TEC Development, Inc., a Hawaii corporation, has an agreement to purchase the entire 691.5 acres in fee simple. The land is currently leased by Oahu Sugar Company (OSCO) to grow sugar cane.

1.2. CONCEPTUAL PLAN

1.2.1. Land Use

The proposed development is an extension of the existing planned community of Village Park. Development of the existing Village Park, which is a community of 1,745 single-family homes and townhouses, is expected to be completed in 1988. The sale of units in the expansion area is expected to commence in 1988 and continue the momentum of sales initiated by the existing Village Park. The proposed plan consists of the following land uses (see Fig. 1-2):

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Acreage</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single-family</td>
<td>404.6</td>
<td>59%</td>
</tr>
<tr>
<td>Multi-family</td>
<td>30.0</td>
<td>4%</td>
</tr>
<tr>
<td>Commercial/Industrial Mix</td>
<td>28.7</td>
<td>4%</td>
</tr>
<tr>
<td>Golf Course</td>
<td>188.2</td>
<td>24%</td>
</tr>
<tr>
<td>Parks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private</td>
<td>6.9</td>
<td>1%</td>
</tr>
<tr>
<td>Public</td>
<td>21.0</td>
<td>3%</td>
</tr>
<tr>
<td>Circulation</td>
<td>32.1</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>691.5</td>
<td>100%</td>
</tr>
</tbody>
</table>

Residential. Approximately 3,480 units are planned for the Village Park Expansion, resulting in an estimated population of 10,000 persons. About 3,000 units will be in fee simple, as compared to the leasehold units at the existing Village Park.

* Although the project site is located in the Ewa Judicial district, which is the basis for U.S. census divisions, it is in the Central Oahu development plan area for purposes of the City & County General Plan.
community. The other 480 units will be rental units constructed and administered by the county on 30 acres of land dedicated to the county by the petitioner (see letter from DHCD, Appendix I).

The project will feature a variety of housing types, from rental apartments to custom lot/home packages, and will appeal to several segments of the housing market. The various housing types include:

1) Prime Building Sites-- These prime sites front the golf course. The product will be custom and semi-custom built single family homes.
   Average lot size (pad area): 5,500 s.f.
   Floor area: 1,800 to 2,800 s.f.
   Sales price: $200,000 to $225,000; average $250,000; targeted to the upper/middle income.
   Number of units: 270 units, or 9% of the 3,000 market units.

2) Upgraded Single Family Housing-- These sites are either in close proximity to the golf course or have good views.
   Average lot size (pad area): 4,750 s.f.
   Floor area: 1,400 to 1,800 s.f.
   Sales price: $165,000 to $195,000; average $185,000; targeted to the middle income.
   Number of units: 445 units, or 15% of the 3,000 market units.

3) Traditional Single Family Housing-- This product is similar to the homes being produced at the existing Village Park.
   Average lot size (pad area): 3,600 s.f.
   Floor area: 1,000 to 1,400 s.f.
   Sales price: $125,000 to $165,000; average $145,000; targeted to first-time buyers.
   Number of units: 1,055 units, or 34% of the 3,000 market units.

4) Starter Single Family Housing-- These products will offer lower priced single family residences on relatively small lot areas.
   Average lot size (pad area): 3,000 s.f.
   Floor area: 800 to 1,200 s.f.
   Sales price: $120,000 to $140,000; average $130,000; targeted to first-time buyers.
   Number of units: 990 units, or 33% of the 3,000 market units.

5) Attached Units-- These units are tentatively planned to be townhouses; experimental designs are being considered.
   Sales price: average $100,000.
   Number of units: 240 units, or 8% of the 3,000 market units.

Commercial/Industrial. The developer proposes 28.7 acres for a mix of commercial and light industrial uses. The requested
Mixed Use Industrial zoning designation (anticipating the adoption of the proposed Land Use Ordinance) allows more flexibility to adjust to market conditions.

The commercial area will probably consist of a shopping center anchored by a supermarket and/or super drug store. Other tenants will include variety stores, food service establishments, personal service establishments, hardware and garden shops, medical services, and community services. Actual floor space will be approximately 143,000 square feet, with the remainder used for abundant parking and extensive landscaping.

The objectives of the light industrial business park are to provide employment opportunities and to take advantage of an excellent location with convenient access to the freeway and located equi-distant between the airport and new deep-draft harbor.

Schools. The petitioner has already dedicated an elementary school site in the existing Village Park. Another 6-acre parcel will be reserved in the expansion area for a second elementary school, for 3 years following zoning.

Parks. The petitioner will dedicate three park sites to the county totaling 21.0 acres. In addition, a 6.9 acre private recreation facility will be provided for the project’s residents.

Golf Course. An 18-hole golf course (168.2 acres) will provide open space and recreational amenities.

Circulation. The internal circulation system will consist of a series of collector streets that will function as thoroughfares and be attractively landscaped. Individual homes will be accessed from an internal street network that will feed into the collector streets. Three of the collector streets will have 56-foot rights-of-way. One street will have a 40-foot right-of-way.

1.2.2. Public Facilities

The petitioner will provide the facilities described in this section, including roads and highway improvements, water, wastewater, drainage, and easements for electrical and telephone.

Circulation. The project will have two accesses from Kunia Road: 1) a new intersection, located approximately two-thirds of a mile north of the existing intersection of North Kupuna Loop and Kunia Road, and 2) the existing North Kupuna Loop intersection. Four collector streets will provide internal circulation:

- Collector street #1 -- This is the main road for the development. Two lanes in each direction will provide the capacity for the projected 1,600 vehicles per hour
one way during the peak hours.

- Collector street #2-- This is a secondary road that intersects collector street #1 at two points and provides a loop for circulation. Two lanes in each direction will provide for the projected 600 vehicles per hour one way during the peak hours. A school and park complex is planned at one of the intersections.

- Collector street #3-- This road will connect with the existing Kupuna Loop to provide a secondary access to Kunia Road. The business and commercial areas will be accessed from this road as well as from Kunia Road. Two lanes in each direction will provide adequate capacity for the projected 200 vehicles per hour one way during the peak hours.

- Collector street #4-- This road will provide access to the remote areas of the development. One lane in each direction will provide adequate capacity for the projected 100 vehicles per hour one way during the peak hours.

In addition to the internal roadways, improvements are proposed to Kunia Road, Kunia Interchange, and various intersections in order to accommodate the expected increase in vehicular traffic. These improvements include:

- Kunia Road widening-- In the northbound direction, an additional lane will be added from the North Kupuna Loop intersection to the Collector Street #1 intersection. In the southbound direction, an additional lane will be added from the Collector Street #1 intersection all the way to Kunia Interchange.

- Intersection signal modifications-- Existing traffic signals at the North and South Kupuna Loop intersections will be converted from 3-phase to 2-phase. One phase will be for the movements on Kunia Road and the other for the movement out of North and South Kupuna Loops. This change would encourage the left turns from Kunia southbound to be made at the Collector Street #1 intersection where the left turns will have a separate phase in a three phase system. The through capacity along Kunia Street would improve with the two phase system as it can pass through more vehicles during the peak hours.

- Kunia Interchange improvements-- Capacity will be increased at two of the ramp intersections by adding additional lanes. Another intersection will be signalized.

For more detail, see section 2.3.1 and the transportation study (Appendix F).

Water. The proposed project will require approximately 2.5 mgd (average flow) of water. The flow requirement was computed according to the Board of Water Supply standards as follows:
<table>
<thead>
<tr>
<th>Residential</th>
<th>500 gpud</th>
<th>3000 units</th>
<th>1.5 mgd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartment</td>
<td>400 gpud</td>
<td>480 units</td>
<td>0.133 mgd</td>
</tr>
<tr>
<td>Commercial/Indus.</td>
<td>3000 gpad</td>
<td>2.7 ac</td>
<td>0.086 mgd</td>
</tr>
<tr>
<td>Golf Course</td>
<td>4000 gpad</td>
<td>168.2 ac</td>
<td>0.673 mgd</td>
</tr>
<tr>
<td>Parks and Schools</td>
<td>4000 gpad</td>
<td>27 ac</td>
<td>0.108 mgd</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>2.500 mgd</strong></td>
</tr>
</tbody>
</table>

Existing water facilities, which service the Harbor View Subdivision and the existing Village Park, consist of two deep wells and a 1.5 MG reservoir at the Kunia Wells II site. First phase improvements will consist of installing an additional 1.0 MG concrete reservoir, an additional well, and additional water treatment facilities at the Kunia Well II site. These improvements, together with the existing facilities, have the capacity to service the first 1000 units of the proposed project below the 340 foot elevation.

The second phase improvements will consist of the following transmission and storage facilities:

a) Construct a booster pump station at the existing Kunia "228" Reservoir and Kunia Well I site. Approximately 1.54 mgd (average flow) of water will be boosted to the Kunia "440" Reservoir.

b) Construct a booster pump station at the Kunia Well II site. Approximately 1.862 mgd (average flow) of water will be boosted to the new Kunia "675" Reservoir.

c) Install approximately 4000 linear feet of 20" and 3900 feet of 30" main from the existing Kunia "440" Reservoir to the new Kunia "675" Reservoir.

d) Construct a 3.0 MG Kunia "675" concrete reservoir.

The proposed improvements are in conformance with the Revised Board of Water Supply's (BWS) Water System Standards. The Water Master Plan for the area dated February 10, 1986, was approved by the BWS. The proposed Village Park Expansion refers only to Phase I of that plan. For more detail, see section 2.3.2 and the engineering study (Appendix E).

The Board of Water Supply has accepted the water master plan for the Village Park Expansion. In order to meet the water requirements of the Village Park Expansion the Board of Water Supply has requested an additional 1.04 million gallons from the Department of Land and Natural Resources. The balance of the water necessary for the project will come from an internal Board of Water Supply reallocation. The water to be reallocated will become available as exports outside of the Pearl Harbor Basin by the Board are reduced due to source development projects in
export areas which are currently planned or underway. The BWS has requested for additional permitted use for the Kunia Wells II. If the request is approved by the State Board of Land and Natural Resources, it would allow the full utilization of the Kunia Wells II and meet the future demands of the Village Park Expansion.

Wastewater. The project will generate approximately 1.3 mgd average daily wastewater flow. The flow requirement was computed according to the City and County wastewater standards as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>Flow Rate (gpd)</th>
<th>Units</th>
<th>Flow Requirement (mgd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>320</td>
<td>3000</td>
<td>0.96</td>
</tr>
<tr>
<td>Apartment</td>
<td>224</td>
<td>480</td>
<td>0.107</td>
</tr>
<tr>
<td>Commercial</td>
<td>3,200</td>
<td>10 ac.</td>
<td>0.032</td>
</tr>
<tr>
<td>Business Park</td>
<td>11,200</td>
<td>18.7</td>
<td>0.209</td>
</tr>
<tr>
<td>School</td>
<td>12,500</td>
<td>1 sch.</td>
<td>0.013</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>1.3</strong></td>
</tr>
</tbody>
</table>

Approximately the first 1000 units can be serviced by existing facilities which were installed in accordance with the sewer master plan for the existing Village Park development.

To service the remainder of the project, the petitioner will
provide a new trunk sewer main from the project site to the existing Waipahu Sewage Pump Station. The new trunk sewer main will be capable of handling 2.7 mgd of average daily wastewater flow.

All improvements will be designed to current City and County Department of Public Works wastewater design standards. For more detail, see section 2.3.3 and the engineering study (Appendix E).

Drainage. Approximately 60% of the new development, the westerly portion along Kunia Road, slopes toward the existing Village Park subdivision. The storm runoff from this portion (1900 cfs) will discharge through the existing Village Park drainage facilities, which had been designed to handle this additional flow.

The remaining 40% of the new development, the easterly portion, slopes toward Waikēle Stream. The storm runoff from this portion (1275 cfs) will be discharged to Waikēle Stream.

Waikēle Stream and the drainage facilities in the existing Village Park subdivision discharge into Pearl Harbor.

All drainage improvements will be designed to City and County Department of Public Works design standards. For more detail, see section 2.3.5 and the engineering study (Appendix E).

Electric and Telephone. Hawaiian Electric Company (HECO) is proposing to locate a new substation within the project site adjacent to Kunia Road. A low profile substation will be considered (approximate land area required is 120' x 180'). A primary overhead 46 KV feeder is proposed along Kunia Road to service the substation.

Hawaiian Telephone Company (HTCo) is proposing to install a remote switching unit within the project site. This facility will be housed in a small building. Total land area is estimated at less than 5000 square feet.

As Kunia Road is widened, existing HECO and HTCo overhead facilities are proposed to be relocated underground. HECO has a 12 KV feeder that needs to be placed underground and HTCo has the responsibility to underground the existing WULFE cable. Work for all HECO and HTCo facilities will be planned to coincide to the needs of the proposed expansion.

For more detail, see section 2.3.6 and the engineering study (Appendix E).

1.3. CHANGES IN LAND USE DESIGNATIONS REQUIRED TO IMPLEMENT THE PROJECT

Amendments to the State Land Use District, Development Plan, and zoning will be required.
State Land Use District
Existing: Agriculture
Proposed: Urban
Development Plan (corresponding zoning designation in parentheses)
Existing: Agriculture (AG-1)
Proposed: Residential (R-6 or PD-H)
          Apartment (A-1 or PD-H)
          Commercial (IMX)
          Industrial (IMX)
          Public
          Parks (P-1)
          Golf course (P-1)

1.4. DEVELOPMENT TIMETABLE

The petitioner plans to commence construction within two years of receiving all government approvals. At a projected absorption rate of 430 units per year, the project should be completed within 7 years.

1.5. PROJECTED DEVELOPMENT COSTS

The project will encounter relatively low front-end costs because sewer and water facilities are already available for the first 1000 units, or the first 2 years of development.

Estimated costs for infrastructure improvements are as follows:

Roadway
  Internal roadways $3,200,000
  Kula Road improvements 1,400,000
  Drainage facilities 8,000,000
  Water facilities 7,600,000
  Wastewater facilities 4,000,000
  Total $24,200,000

Estimated onsite costs are as follows:

Residential areas $41,000,000
Commercial areas 1,000,000
$42,000,000

Estimated total project costs amount to $66,200,000.

No public funds will be involved; the project will be financed by the petitioner.
1.6. FEASIBILITY

1.6.1. Market Analysis-- Residential (see Appendix A)

Need for housing. Oahu has been experiencing a housing shortage for the past 25 years due to the following factors:

1. Increase in number of households and decrease in household size. The number of households has increased because of a number of socio-demographic factors including changes in lifestyle, decline in family size, extended life expectancies, increase in divorce rates, formation of nonconventional households, immigration, undoubling, and a variety of other reasons. As the trend in declining household size continues, more dwelling units will need to be built even if there is little or no net increase in population.

2. Population increase. The population has increased significantly since statehood (1959), an event generally recognized as a major turning point in the growth of post World War II Hawaii. Between 1970 and 1980, the population on Oahu grew from 630,528 to 762,565 persons, an average annual growth rate of 2.1 percent. The January 1985 population is estimated at 815,300 persons, an estimated 1.2% increase over 1984. Although the annual growth rate has declined from the rapid growth of the 1950's and 1960's, it appears to have stabilized at about 1.5%. The Department of Planning and Economic Development, State of Hawaii, is presently utilizing the M-F Series projections as the official population projections for the State of Hawaii. The projected population for the Island of Oahu in the year 2005 is approximately 954,500 persons, an increase of 139,200 persons from the 1985 population that will be in need of housing.

3. Increase in land costs. Land costs have increased rapidly over the last 25 years, reflecting over and above inflation, a shortage of developable land with proper use and zoning designations.

National housing studies have cited vacancy rates of 3-5% for sale and 5-8% for rent as the levels necessary to permit households an adequate choice of housing. This would allow sufficient mobility in order to take advantage of job opportunities, promote price competition, and provide a choice of unit type and location. Oahu vacancy rates have been traditionally well below these standards. In 1983, the actual rates for Oahu were 0.6% for single family residences and 2.1% for apartments, resulting in a composite average of 1.3%, well below the recommended 3-5% vacancy rate.

Public housing is also generally unavailable. The total placements for 1981-82 were 372 of 4,242 applications on file with the Hawaii Housing Authority.
Neither the increased production of new housing nor the economic recession of the past three years seems to have appreciably affected the vacancy rates. The apparent oversupply of condominium units during 1981/82 have been absorbed by purchasers and renters during 1983/84. This would indicate that there is still a long-term need for additional housing in order to create a desirable vacancy factor.

An annual shortfall of housing units from 1983 to the year 2005 is estimated to be between 2,200 - 3,000 units. These estimates are based on the DPED M-F population projections, an average household size of 2.7 persons/unit, replacement of demolitions, and a 5% vacancy factor. A range in housing units results from the incorporation of two assumptions. One assumption is that the PUC would not be able to achieve the level of redevelopment anticipated by DGP. The reasons for this skeptical assumption include the resistance to displace existing populations (e.g., Chinatown, Date-Lau, Huna Street - Nuuanu Park Place), small lot sizes, inadequate infrastructure, higher land costs in the PUC, and unproven track record for redevelopment projects such as Kaka'ako. The second assumption is that housing units within Waikiki will be converted to visitor use to meet the projected unmet demand for hotel rooms. The alternative assumptions and projections are summarized in Table 1-1.

Distribution of housing and alternative locations to meet housing need. Several residential projects have been proposed in the Central Oahu and Ewa areas to meet the island-wide housing needs. Table 1-2 compares the major projects proposed for Central Oahu. The proposed project is slightly larger than Waikiki, but smaller than the proposed Mililani Expansion and Waiawa.

Distinguishing Characteristics of the Village Park Expansion. Compared to the other projects proposed in Central Oahu, Village Park Expansion has the following distinguishing characteristics:

- Momentum -- Any large new development faces a long lead time to assemble a development team, obtain the necessary approvals, and finally deliver the units. In the case of the Village Park Expansion, the development team is already in existence, a track record of financial and technical competence has been demonstrated, and the momentum of sales generated from the marketing of the existing Village Park units can be carried over.

- Infrastructure availability -- Each of the other developments proposed for Central Oahu will require major infrastructure development such as new water systems, freeway on-ramps, and sewage pump stations. These items will add to the time necessary to deliver the product since further negotiations will be required between the petitioner and government agencies, and
<table>
<thead>
<tr>
<th>Assumptions</th>
<th>Alt.I</th>
<th>Alt.II</th>
<th>Alt.III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total housing units required by 2005 (1)</td>
<td>378,033</td>
<td>378,033</td>
<td>378,033</td>
</tr>
<tr>
<td>Existing housing units 1983</td>
<td>259,574</td>
<td>259,574</td>
<td>259,574</td>
</tr>
<tr>
<td>New housing units permitted by 2005</td>
<td>118,459</td>
<td>118,459</td>
<td>118,459</td>
</tr>
</tbody>
</table>

Subtract

| DGP's projection of additional units permitted by 2005 under the existing GP & DP's | 69,824 | 69,824 | 69,824 |
| Subtotal                                       | 48,635 | 48,635 | 48,635 |

Add

| Inability of PUC to achieve DGP assumptions for redevelopment | -      | 15,000 | 15,000 |

Add

| Balance of projected unmet demand for hotel rooms met through conversion of Waikiki housing units to visitor accommodations (2) | -      | -      | 4,500  |
| Total unmet housing demand                      | 48,635 | 63,635 | 68,135 |

ANNUAL SHORTFALL OF HOUSING UNITS 1983-2005

| 2,210   | 2,892 | 3,097 |

(1)a. DPED M-F Population projections (954,500 in the year 2005)

b. Average 2.7 persons per household = 353,519 units
c. Replacement of demolitions = 12,848 units
d. 5% vacancy factor = 11,666 units. Total 378,033

(2) 3,000 units already included in 15,000 above

Alt.I: Units developed as proposed by DGP

Alt.II: Assumption that PUC unable to meet DGP's estimate

Alt.III: Alt.II assumption plus assumption that Waikiki housing units converted to hotel rooms

Source: Chaney, Brooks & Co., 1986 (Appendix A)
<table>
<thead>
<tr>
<th></th>
<th>Village Park</th>
<th>Mililani</th>
<th>Waiawa</th>
<th>Waikele</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population Accommodated</td>
<td>10,000</td>
<td>20,655</td>
<td>31,000</td>
<td>8,100</td>
</tr>
<tr>
<td>Acres</td>
<td>691</td>
<td>1,250</td>
<td>2,100</td>
<td>570</td>
</tr>
<tr>
<td>Units</td>
<td>3000 Mkt 450+/-City</td>
<td>6,600</td>
<td>11,000</td>
<td>2,760</td>
</tr>
<tr>
<td>Estimated Units per year</td>
<td>345-500</td>
<td>450-500</td>
<td>400-500</td>
<td>330</td>
</tr>
<tr>
<td>Estimated Life of Project</td>
<td>7 yrs.</td>
<td>13-15 yrs.</td>
<td>25-30 yrs.</td>
<td>8-9 yrs.</td>
</tr>
<tr>
<td>Unit Distribution</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single-family</td>
<td>80%</td>
<td>66%</td>
<td>64%</td>
<td>60%</td>
</tr>
<tr>
<td>Multi-family</td>
<td>20%</td>
<td>34%</td>
<td>36%</td>
<td>40%</td>
</tr>
</tbody>
</table>

1/ From Lear Siegler Waiawa submittal February, 1985
2/ DGP Summary of General Plan Amending Proposals October, 1984

Source: Chaney, Brooks & Co., 1986 (Appendix A)
financing will need to be obtained for these front-end improvements. Infrastructure for the first increment of the Village Park Expansion (1000 units) is already available.

- Delivery of Affordable, Quality Products. Village Park Expansion offers an opportunity to continue an existing project which has been providing moderately-priced housing to local families over the past seven years.

In short, the proposed project can deliver affordable housing while the other projects are still being planned.

**Targeted Market and Absorption Rate.** Village Park Expansion has been planned to offer a variety of housing types and prices. For single-family dwellings, the majority of the market will be first-time buyers with small to medium-sized families who have been renting or doubling up with other family members. A second but smaller segment of purchasers may have owned a previous residence which may have been a single-family dwelling in a less convenient location or a condominium apartment which is no longer suitable to the size requirements of the family. A third group, consisting of higher income families or families who have accumulated a significant amount of savings will also be attracted to the prime lots and the upgraded single-family units that will be offered.

In the above cases, it is projected that there will be a high percentage of two-income families. It is estimated that 85% or more of the single-family dwelling households will have two sources of income. Some larger families may have three or more sources of income, the aggregate of which will range from $36,900 per year to $59,900 with an average of $44,600. The estimates are based on a projected price from $120,000 to $195,000 with an average price of $145,000 (based on 1985 costs) (see Table 1-3).

For multi-family dwellings, family size would be predictably smaller, probably averaging closer to 2.0 persons per dwelling unit, compared to 3.0 persons per dwelling for single-family dwellings. The group would consist of young married couples without children, nonconventional households (e.g., two singles or divorcee with child), empty nesters, mature couples, and single individuals.

Purchasers in the multi-family groups will require incomes ranging from $31,100 to $39,100 with an average income of approximately $35,000 in order to qualify for multi-family units ranging in price from $90,000 to $110,000 with an average of $100,000.

The market study projects sales ranging from 345 to 500 units per year with an average of 430 units per year. At this rate, the 3,000 market units would be sold in less than seven years, absent any major unforeseen changes in the economy.
Table 1-3

VILLAGE PARK EXPANSION INCOME REQUIREMENTS

<table>
<thead>
<tr>
<th></th>
<th>LOW</th>
<th>AVERAGE</th>
<th>HIGH</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Single-family dwelling (fee simple)</strong>(1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Price:</strong></td>
<td>$120,000</td>
<td>$145,000</td>
<td>$195,000</td>
</tr>
<tr>
<td><strong>80% Mortgage:</strong></td>
<td>$ 96,000</td>
<td>$116,000</td>
<td>$156,000</td>
</tr>
<tr>
<td><strong>Debt Service:(2)</strong></td>
<td>$ 987/mo.</td>
<td>$ 1,193/mo.</td>
<td>$ 1,604/mo.</td>
</tr>
<tr>
<td><strong>CTF:(3)</strong></td>
<td>$ 120/mo</td>
<td>$ 145/mo</td>
<td>$ 195/mo.</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>$ 1,107/mo.</td>
<td>$ 1,338/mo.</td>
<td>$ 1,799/mo.</td>
</tr>
<tr>
<td><strong>Required Income (4):</strong></td>
<td>$ 36,900</td>
<td>$ 44,600</td>
<td>$ 59,966</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>LOW</th>
<th>AVERAGE</th>
<th>HIGH</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Multi-Family Dwelling (fee simple)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Price:</strong></td>
<td>$ 90,000</td>
<td>$100,000</td>
<td>$110,000</td>
</tr>
<tr>
<td><strong>90% Mortgage:</strong></td>
<td>$ 81,000</td>
<td>$ 90,000</td>
<td>$ 99,500</td>
</tr>
<tr>
<td><strong>Debt Service:</strong></td>
<td>$ 833</td>
<td>$ 925</td>
<td>$ 1,023</td>
</tr>
<tr>
<td><strong>CTF</strong></td>
<td>$ 100</td>
<td>$ 125</td>
<td>$ 150</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>$ 933</td>
<td>$ 1,050</td>
<td>$ 1,173</td>
</tr>
<tr>
<td><strong>Required Income</strong></td>
<td>$ 31,100</td>
<td>$35,000</td>
<td>$39,100</td>
</tr>
</tbody>
</table>

(1) Single-family product excluding prime sites
(2) 30 year 12% mortgage
(3) Customer trust funds (insurance, real property taxes, etc.)
(4) 35% of debt free income for housing

Source: Chaney, Brooks & Co., 1986 (Appendix A)
Several factors support this estimated absorption rate.

1) Expanded product line-- By offering a wider range of products, from custom to attached units, the petitioner is able to segment the market into a number of different categories and more closely tailor the product to individual buyers' desires and economic capabilities.

2) Timing-- The proposed project will fill a void in new single family housing supply. Major residential projects at Gentry Waipio and the Pearl City/Aiea area will be nearing completion at the end of 1986 and new construction planned at Waikiki, Waialua, and Ewa will not commence sales until 1991-93. Village Park will be one of the few projects offering moderately priced homes between 1986 and the early 1990's.

3) Location-- Village Park and Mililani are closer to the primary urban center than the new projects proposed for Ewa.

4) Economic factors-- Interest rates and low inflation are favorable to the housing market at this time.

1.6.2. Market Analysis-- Commercial Development and Business Park (see Appendix A)

Commercial Development. The area proposed for commercial development is approximately 10 acres with 145,000 square feet of commercial space. Since demand for commercial space is population driven, the market study recommends that the commercial area be developed in two increments, the first half by year four (1991) and the second half by the seventh year (1994).

Business/Light Industrial Park. A 18.7 acre site is proposed for business/light industrial uses to take advantage of the convenient access to the freeway, airport, and new deep-draft harbor.

Demand for industrial land seems to be increasing due to the conversion of industrial areas in Kakaako and Kalahi to residential and other uses (see letters from Hawaiian Dredging & Construction Co. and Pacific Construction Co., Ltd., Appendix I). Furthermore, economic policy in this state has recently emphasized industrial growth to counter Hawaii's anti-business image, to diversify the economy, and to advantageously position itself for the computer age.

Other proposed industrial areas on Oahu include the Campbell Industrial Park expansion, high tech park proposed by Oceanic Properties near Wahiawa, Waikiki office park, and Gentry Park. Because the Village Park Expansion will cater to users who are more sensitive to locational and transportation factors, it is estimated that this project will capture between 5% - 10% of the statewide market for industrial space (about 75 acres per year). Assuming an average of 7.5%, or 5 acres per year, the market will absorb the proposed 18.7 acres within 3 - 4 years.
STATEMENT OF OBJECTIVES

1.7 Statement of Objectives

The Village Park Expansion has been proposed as a response to an acknowledged shortage of and a future need for housing. The applicant, Waitec Development, Inc., is the developer of the existing Village Park Project. This project has enjoyed market acceptance and economic success by concentrating on the low end of the for-sale single family housing market on the Island of Oahu. The applicant has less than two years of inventory left to be developed in the existing Village Park Development. The success of the initial development demonstrates that there is a demand for the product currently being offered. The Village Park Expansion proposes to continue the existing development program with a few modifications to expand the market for the product. The applicant recognizes that any development proposal which uses resources necessarily eliminates the use of those same resources for other purposes. It is the applicant's belief that the proposed project represents a course of action whose advantages outweigh alternate uses of those resources. The objectives of the Village Park Expansion are as follows:

To Expand Opportunities for the First Time Home Buyers

Buyer profiles for recent purchasers in the existing Village Park community indicate that in excess of 60% of purchasers are first time homebuyers. The development being proposed will target over 80% of the for-sale units to this market.

To Expand Housing Opportunities for Lower Income Groups

The applicant has agreed to dedicate 30 acres of land to the City for the purpose of providing subsidized housing units. This agreement was reached with the Department of Housing and Community Development to satisfy the applicant's obligation to provide such housing. The Department estimates that approximately 450 units of rental housing can be accommodated on this site.

To Provide Employment Opportunities

It is estimated that the industrial, commercial and recreational activities planned in the Village Park Expansion will provide for approximately 700 full-time permanent jobs. In addition, during the seven-year development time frame approximately 300 to 400 full-time jobs will be available for construction and sales personnel involved in the development of the project.
To Increase Recreational Opportunities In Village Park and in The Waipahu Region

Over 28% of the land area in the proposed Village Park Expansion will be dedicated to public and private recreational activities including a golf course, recreational center and public parks. The golf course will increase the recreational activities available in the region while the private recreational center will offer a wide range of opportunities not only to the residents of the Village Park Expansion but will also be available to residents of the existing Village Park community.

To Continue, Enhance and Expand the Existing Symbiotic Relationship Between Waipahu Town and the Village Park Community

The Waipahu Community benefits from the expansion program because the additional population generated will expand opportunities for existing and future Waipahu merchants and the labor pool for businesses wishing to locate or expand in the Waipahu area. The Village Park community benefits because of the existence in close proximity of Waipahu shopping, employment and cultural activities which could not be supported by the present or projected population of Village Park. Growth is an integral part of the Waipahu Town Revitalization Program.

To Continue the Development of Village Park as a Planned Community

The existing Village Park Development and most new developments proposed in the future are based on the Planned Community concept. This concept is very popular among both buyers and government officials because long-term planning can eliminate many of the disagreements that surface in unplanned communities about the architectural character and the amenities to be included in the community over the long run. The party that will be responsible for future improvements or ongoing maintenance is identified prior to development.

To Promote Energy Conservation

The applicant will participate in the ride sharing program proposed by the State Department of Transportation by providing a park and ride facility and by subsidizing a ride sharing coordinator during the formative stages of the State’s ride sharing program. In addition, the project includes shopping facilities and industrial and recreational activities which should lessen external traffic that would ordinarily be generated by such a community. In addition, the location of the project within close proximity to Waipahu offers other energy saving advantages.
To Promote a Well Balanced Community that will be an Asset to its Residents and the Region

The completed development will be an asset to individual buyers as well as the community as a whole. It will provide housing in an aesthetically pleasing setting, will provide employment, and will be part of the Waipahu Community.

To Be Supportive of the Oahu Sugar Survival Plan

The applicant is coordinating the phasing of the project to minimize the impact of the development on Oahu Sugar. In addition, the applicant will bear the cost of relocating agricultural infrastructure in order to minimize the fiscal impact on Oahu Sugar. The applicant has cooperated with sugar company management in the planning and will cooperate with sugar company management in the development of the project.

1.8 Purpose of this EIS

In order to implement the objectives described above the proposed development site must be rezoned to the appropriate designations, i.e., Residential, Industrial/Commercial (IMX), Park and Preservation. City and County of Honolulu requires that an EIS be prepared and accepted prior to the approval of such zoning changes. This EIS is being prepared to satisfy those requirements.

1.9 Historical Perspective

The project site is currently owned by Robinson Estate. Waitec Development Inc. has an option to purchase the property. The site is currently in sugarcane production with the Oahu Sugar Company leasing the land from the Robinson Estate. The site has been in continuous sugar production for approximately 90 years.

In 1969 the State Land Use Commission designated 300+ acres of land immediately south of the proposed project site for urban use. In 1971 the City and County of Honolulu amended its general plan to permit residential, low density apartments, schools and commercial land uses on the State designated urban area. The existing Village Park Development started construction in 1979 and as of 1986 approximately 1,200 of the projected 1,750 units have been developed.

Recognizing that the inventory of developable land in Village Park would be exhausted in approximately two years, Waitec Development, Inc. made application to amend the Central Oahu Development Plan to include the subject property for residential, commercial, industrial, recreation and other uses during the 1985-1986 Development Plan Review. In February of 1986
Waitec Development, Inc. submitted the project to the State Land Use Commission for a boundary change amendment. The EIS Preparation Notice for the project was published in the January, 1986 OEQC Bulletin.

At the present time the proposed project site retains its designation as agriculture under the State and County land use plans, however, there is a boundary change pending before the Land Use Commission and a Development Plan amendment pending before the City Council.
2.0. EXISTING CONDITIONS AND IMPACT ASSESSMENT

2.1. PHYSICAL ENVIRONMENT

2.1.1. TOPOGRAPHY/GEOLOGY

Existing Conditions

The site slopes downward from the northwest to the southeast at a gradient of 4 - 7%. The ground elevations range from approximately 220' to 470' MSL. Two drainageways traverse the middle section of the site.

There are no unusual or unique geological features or scenic landmarks at or near the project site.

Impacts

The entire site will be graded. Expected impacts from grading include:

-- Dust from grading operations; and
-- Exposed soil subject to wind and rainfall erosion.

These impacts will be mitigated to acceptable levels as described below.

No scenic or geological landmarks will be affected.

Mitigation Measures

Dust generation and soil erosion will be minimized by compliance with the city's grading ordinance (Chapter 23, Revised Ordinances of Honolulu). Typical controls that are incorporated in an erosion control plan include:

- limiting the extent of exposed area at any one time;
- structural measures, including dikes, berms, interceptor ditches, sediment traps, and sediment basins;
- temporary and permanent vegetative cover or mulching;
- spraying chemicals or liquid asphalt;
- temporary wind barriers.

2.1.2. SOILS

Existing Conditions

Red to reddish brown residual soils are generally found on the site. A detailed soils investigation conducted for the existing Village Park indicated that the surface soils are underlain by rocks, generally near depths of about 10 feet. Boulders and cobbles were encountered at lesser depths.
The U.S. Soil Conservation Service (SCS) classifies the soils as Molokai silty clay loam (MuA, MuB, MuC, MuD) and Lahaina silty clay (LaB) (see Table 2-1 and Fig. 2-1). The Molokai and Lahaina soils have similar characteristics—they are moderately permeable, have slight erosion hazards, and are underlain by bedrock at depths greater than 5'.

Under the Unified Soil Classification System, which is used for engineering purposes, the soils are classified as ML and MH. The "M" indicates that the soils are silt with high ("H") and low ("L") liquid limits. These designations have limited value in Hawaii since engineering properties for tropical soils may be significantly different than temperate soils having the same classifications. Tropical soils exhibit a higher shear strength and lower shrink-swell volume change with change in moisture content. The difference is apparently related to the very fine particulate size, microstructure, and high aggregate stability of tropical soils (USDA, 1972). In fact, experience at the existing Village Park Subdivision indicates that the soils are generally good for homesite development. Roadways have been constructed without utilizing a subbase course. Good bearing values of up to 4000 pounds per square foot have been used for the design of footings and walls.

The soils are suitable for agriculture as indicated by the ALISH (Agricultural Lands of Importance to the State of Hawaii), Land Study Bureau (LSB), and Soil Conservation Service (SCS) classification systems:

   ALISH: prime (691.5 acres)
   LSB: A or B (irrigated); D or E (non-irrigated)
   SCS: I or II (irrigated); III or IV (non-irrigated)

The Land Evaluation and Site Assessment (LESA) Commission developed a rating system to synthesize these various classification systems for agricultural suitability. The soils were rated quite highly (LESA, 1985).

Impacts

The soils have good bearing capabilities to adequately support the planned residential structures. Additional soil engineering investigations are necessary for the heavier structures planned for the commercial and light industrial areas.

The prime agricultural soils will be lost for commercial agricultural operations.

Mitigation Measures

Findings from detailed soils investigations will be used in developing the construction plans. These plans will be reviewed and approved by various county agencies as part of the subdivision approval and building permit process.
<table>
<thead>
<tr>
<th>SCS Soil Classification</th>
<th>Unified Soil Classification</th>
<th>Permeability (inches/hour)</th>
<th>Depth to Consolidated Material</th>
<th>Erodibility</th>
<th>Expandibility</th>
<th>Agricultural Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lahaina silty clay (LaB)</td>
<td>CL - ML</td>
<td>0.63 - 2.0 (moderate)</td>
<td>S'</td>
<td>slight</td>
<td>low</td>
<td>Irrigated: IIe A prime</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Non-irrigated: IIIC E prime</td>
</tr>
<tr>
<td>Molokai silty clay loam (MuA, MuB, MuC, MuD)</td>
<td>ML</td>
<td>0.63 - 2.0</td>
<td>S'</td>
<td>slight - moderate</td>
<td>low</td>
<td>Irrigated: I (MuA) A prime</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IIe (MuB)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IIIe (MuC)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IVe (MuD)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Non-Irrigated: IVc (MuA, E prime</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IVC (MuB)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IVe (MuC)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Vle (MuD)</td>
</tr>
</tbody>
</table>
The loss of prime agricultural land is an unavoidable impact. The acceptability of this impact is a policy determination that must weigh the trade-offs between agriculture and housing. These policy issues are discussed in more detail in Section 3.0. Briefly, the analysis concludes that the loss to the agricultural industry would not be significant since the proposed project area is not essential to maintain the viability of sugar nor diversified agriculture. Moreover, the relatively low site preparation costs associated with level, non-stony soils will enable the delivery of affordable housing to help alleviate the housing shortage problem.

2.1.3. CLIMATE

Existing Conditions

The project site is located above Waipahu with elevations from 220' to 440' MSL. This elevation and associated climate is comparable to Gentry-Waipio.

The annual median rainfall is about 34" (State gage no. 740.1). The months of May - September are usually drier than October - April. Temperatures at the project site are about 1 degree F. higher than Wahiawa (based on a general observation that temperatures in Hawaii decrease about 3.2 degrees F. per 1,000 feet in elevation) (see Table 2-2). Predominant wind direction and the higher wind speeds are from northeast to east (based on data from Wheeler AFB). These tradewinds prevail 41.5% of the time with an average speed of 6.1 knots (see Table 2-3).

Impact

Climatic factors are being considered in the planning, design, and construction of the project. Such factors as the wind direction, path of the sun, and amount of rainfall influence the siting and orientation of housing, grading practices, and landscaping. By considering these factors, natural ventilation of homes can be maximized, solar heating options ensured, erosion during construction minimized, and water consumption for landscape irrigation minimized.

Mitigation Measures

None necessary since there are no adverse impacts.

2.1.4. FLORA/FAUNA

Existing Conditions

Sugar cane production since the early 1900's has resulted in the removal of the original flora from the project site. It is unlikely, therefore, that rare and endangered species of flora or fauna exist on the property.
Table 2-2. TEMPERATURES AND RAINFALL IN THE CENTRAL OAHU AREA

<table>
<thead>
<tr>
<th>Months</th>
<th>Temperature</th>
<th>Rainfall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ave. Max.</td>
<td>Ave. Min.</td>
</tr>
<tr>
<td></td>
<td>Temp. (°F)</td>
<td>Temp. (°F)</td>
</tr>
<tr>
<td>January</td>
<td>75.8</td>
<td>60.1</td>
</tr>
<tr>
<td>February</td>
<td>76.3</td>
<td>60.1</td>
</tr>
<tr>
<td>March</td>
<td>76.2</td>
<td>60.8</td>
</tr>
<tr>
<td>April</td>
<td>77.0</td>
<td>62.3</td>
</tr>
<tr>
<td>May</td>
<td>79.1</td>
<td>63.6</td>
</tr>
<tr>
<td>June</td>
<td>81.0</td>
<td>65.8</td>
</tr>
<tr>
<td>July</td>
<td>81.9</td>
<td>66.7</td>
</tr>
<tr>
<td>August</td>
<td>82.5</td>
<td>67.1</td>
</tr>
<tr>
<td>September</td>
<td>82.7</td>
<td>66.5</td>
</tr>
<tr>
<td>October</td>
<td>81.9</td>
<td>65.4</td>
</tr>
<tr>
<td>November</td>
<td>78.9</td>
<td>63.6</td>
</tr>
<tr>
<td>December</td>
<td>76.5</td>
<td>62.2</td>
</tr>
<tr>
<td>Ave. Annual</td>
<td>79.2</td>
<td>63.7</td>
</tr>
</tbody>
</table>


2 Average of the highest temperatures for the month

3 Average of the lowest temperatures for the month

4 Department of Land and Natural Resources, Median Annual Rainfall, state key no. 740.1, gage name is Field 220A, 21 record years of data.
Table 2-3. PERCENTAGE FREQUENCY OF WIND DIRECTION AND SPEED  
(Hourly Observations, Surface Winds)  

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>7.8</td>
<td>2.0</td>
<td>1.8</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>6.0</td>
</tr>
<tr>
<td>NNE</td>
<td>1.1</td>
<td>1.9</td>
<td>1.6</td>
<td>0.6</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>4.4</td>
</tr>
<tr>
<td>NE</td>
<td>1.0</td>
<td>2.2</td>
<td>1.5</td>
<td>0.3</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>10.0</td>
</tr>
<tr>
<td>ENE</td>
<td>1.1</td>
<td>2.2</td>
<td>1.5</td>
<td>0.3</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>12.0</td>
</tr>
<tr>
<td>E</td>
<td>1.8</td>
<td>2.6</td>
<td>2.4</td>
<td>0.3</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>12.1</td>
</tr>
<tr>
<td>ESE</td>
<td>0.7</td>
<td>0.9</td>
<td>1.3</td>
<td>0.3</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>3.4</td>
</tr>
<tr>
<td>S</td>
<td>1.2</td>
<td>1.6</td>
<td>1.5</td>
<td>0.3</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>4.7</td>
</tr>
<tr>
<td>SSE</td>
<td>0.5</td>
<td>0.8</td>
<td>0.9</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>3.0</td>
</tr>
<tr>
<td>W</td>
<td>0.2</td>
<td>0.8</td>
<td>0.9</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>2.1</td>
</tr>
<tr>
<td>SW</td>
<td>0.6</td>
<td>0.3</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>1.5</td>
</tr>
<tr>
<td>NW</td>
<td>0.5</td>
<td>0.3</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>2.7</td>
</tr>
<tr>
<td>NW</td>
<td>0.5</td>
<td>0.3</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>2.7</td>
</tr>
<tr>
<td>N</td>
<td>1.1</td>
<td>1.3</td>
<td>0.7</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>3.5</td>
</tr>
<tr>
<td>NNE</td>
<td>0.0</td>
<td>0.5</td>
<td>0.4</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>22.6</td>
<td>22.6</td>
<td>22.6</td>
<td>12.7</td>
<td>1.8</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>100.0</td>
<td>6.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Data Processing Division  
ETAC, USAF  
Asheville, N.C. 28801
A previous field reconnaissance undertaken for the existing Village Park development indicated that the plants, insects, avifauna, and mammals living in the gulch and open areas are exotic species which are not endangered (HUD, 1979).

**Impact**

Since no rare or endangered species are found on the site, there will be no significant impacts.

**Mitigation Measures**

None necessary since there are no adverse impacts.

2.1.5. **ARCHAEOLOGICAL/HISTORICAL RESOURCES**

**Existing Conditions**

An archaeological reconnaissance survey and literature search were conducted for the proposed project site (see Appendix B). The literature search included inspection of The Hawaiian Planter (Handy, 1940), Archaeology of Oahu (McAllister, 1933), Sites of Oahu (Sterling and Summers, 1978), Hawaiian Petroglyphs (Cox and Stasack, 1970), maps on file at the State of Hawaii Survey Office, site maps on file at the State Historic Preservation Office, and reports and publications in the Hawaiian collection of the University of Hawaii.

No archaeological or historical sites were previously recorded in the petition area. Handy and McAllister discuss sites located outside the petition area.

Handy mentions terraces along Waikele stream, immediately outside of the survey area on the east:

In the flatland, where the Kamehameha Highway crosses the lower valley of Waikele Stream, there are the remains of terraces on both sides of the road, now planted to bananas, beans, cane, and small gardens. For at least 2 miles upstream there were small terrace areas. (Handy, 1940, p. 82).

McAllister discusses three sites to the south of the survey area, all of which have been destroyed:

Site 127. Mokoua heiau, southwest of the main road in the village of Waipahu.

The heiau has been completely destroyed for building purposes of the neighborhood. The site is at the edge of a 50-foot elevation which projects out into the present rice fields and was pointed out by Kaluawai, a kamaaina undoubtedly more than 100 years old.
Site 128. Waipahu spring, famous in tradition as the place at which the tapa mallet appeared after having been lost in Kahuku. A pump has been placed over the site.

Site 129. Heiau, Waipahu, said to have been named Hapupu.

The Waipahu plantation stables on the mountain side of the road across from the schoolhouse west of the town now occupy the site of the former heiau at Waieele. Nothing remains of the heiau. According to Thurin, it was a 'Heiau pookanaka, where the chief Hao was surprised during temple worship and slain with his priest and attendant chiefs by direction of the mo'oi of Oahu, about 1650. The site was pointed out by Kapano. (McAllister, 1933, p. 106).

To the south of the project site, on the makai side of the H-1 Freeway, is a small petroglyph site:


The fieldwork consisted of a two-day walk-through of the property. Structural remains (e.g., platforms, terraces, shelters) would have been destroyed by sugarcane production long ago, so the only evidence of past human utilization expected were unearthed fragments of food remains (e.g., bones and shells) and artifacts. In the unplanted and recently-planted northern and eastern three-quarters of the property, it was possible to walk anywhere and search for such items at will. The southwestern one-quarter was accessible only along irrigation ditches cutting through the thick stands of sugarcane. No evidence of past utilization of any kind were observed either in the open fields or in the exposed earthen faces of the irrigation ditches.

Impact

Because no evidence of past utilization in the form of structural or midden remains was found, and because there have been no archaeological or historical sites previously recorded on the property, there should be no adverse impacts caused by the proposed development.

Mitigation Measures

Should any archaeological or historic remains be uncovered during construction, the contractor will stop further construction in the area and will immediately notify the State Historic Preservation Office.

2.1.6. Hazards

Existing Conditions

The probabilities for flooding and earthquakes are very low
for the project site. The flood insurance hazard rating for this area is Zone C, areas of minimal flooding. The seismic risk classification for the entire island of Oahu is Zone 1 (Uniform Building Code). Zone 1 indicates that the island is subject to minor earthquake damage.

Potential man-made hazards in the project vicinity include fire hazards from nearby sugar cane harvesting, and safety hazards posed by cane haul trucks and the steep slopes of the gulch. In addition the proposed project's eastern (Honolulu) border is shared with Naval Magazine Waikele Branch. (See Preliminary Map insert on page 27a.)

Agricultural Operations (Sugar Cultivation) pose a potential hazard to the environment due to the potential for accumulation of toxic substances found in agricultural chemicals (fertilizers, pesticides and herbicides) in the environment. This hazard may be from accidents or from long run accumulation of "safe" applications.

**Impact**

All hazards will be mitigated to acceptable levels, as described below.

The suburban planned community being proposed will contain an industrial/commercial area which has the potential to generate industrial and hazardous wastes. At the present time the potential for such waste generation cannot be known because the mix of commercial and industrial users is unknown. The development will also contain a golf course which poses risks similar to the potential hazards from the existing agricultural operations.

**Mitigation Measures**

Flooding— Drainage facilities will be constructed to county standards. No special flood-proofing measures are necessary.

Earthquake— Structural designs will conform to building code requirements.

Steep slopes— Fences will be constructed along the top of steep slopes along the gulch.

Sugarcane burning— Oahu Sugar complies with State Department of Health controls for burning sugar cane. These controls ensure that burning is undertaken during favorable wind conditions. In addition, the subdivision design provides an adequate fire break between the sugarcane and any structures.

Cane haul trucks— There will be cane hauling north of the proposed project; however, the roads will be located far away enough to pose no hazards to residents.
Naval Magazine Waikele Branch—No residential development will take place in the area described by the Department of the Navy as being within the official blast zone for the Naval Magazine Waikele Branch.

Industrial and hazardous wastes—There are State and Federal laws dealing with the generation and disposal of industrial and hazardous wastes. The EPA and the State Health Department enforce these laws and regulations which mandate mitigating measures in Industrial/Commercial areas. Golf course operations do pose a threat similar to other agricultural operations; however, the risks should be lessened by the fact that the area involved is only one-fourth the size of the area currently involved in agricultural production and that chemical application on golf courses is done in a more controllable fashion than the aerial spraying method prevalent in sugar operations.

2.1.7 AIR QUALITY

The following information was excerpted from the Air Quality Study prepared for the project in July 1983 by Barry D. Root (see Appendix E).

Existing Conditions

Judging from readings at nearest long term monitoring stations, air quality in the project area is presently well within allowable State and National Ambient Air Quality Standards. Existing air pollutants in the area include dust and smoke generated by sugar cane cultivation, and emissions from vehicles traveling on nearby roadways.

Impact

Except for dust emissions during the construction phase of the development, no significant short term direct air quality impacts are expected. Adequate control measures exist to limit the impact of windblown dust, but special care will have to be exerted to insure that previously developed residential areas are not subjected to excessive levels of particulate pollution from construction activities.

Indirect air quality impacts are expected to result from new demands for electrical energy. This impact is most likely to occur in the vicinity of existing power plants such as the Kahe Plant on the Waimanalo coast where increased levels of particulates and sulfur dioxide can be expected. Maximum use of solar energy designs in project development can at least partially mitigate the magnitude of this impact. New methods of generating electrical power such as wind or ocean thermal energy conversion may eventually also play a mitigative role in this regard.

Increased traffic generated by the Village Park Expansion will increase emissions of carbon monoxide along Kunia Road in the project area and along the H-1 Freeway corridor. Modeling of
current and projected peak hour worst case concentrations of
carbon monoxide at three critical receptor sites in the project
area indicates that levels will be well within allowable State
and National ambient air quality standards with or without
project development. For that reason no special air pollution
mitigation measures other than those roadway and intersection
improvements already planned as an integral part of the develop-
ment are proposed by this study.

Mitigation Measures

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

Long Term: Once completed, the proposed Village Park
Expansion is expected to have little direct impact on the air
quality of the surrounding region. In fact, direct contributions
of particulate pollutants to the air will be decreased somewhat
since open field fires and fugitive dust from sugar cane growing
activities will no longer be taking place. On the other hand,
there are likely to be some emissions from commercial develop-
ments such as emissions from restaurant grills or emissions from
light industrial activities within the proposed project. Most
likely such emitters will be too small to fall under existing air
pollution control regulations, but should any substantial new air
pollution emission source be proposed for the site it would have
to meet fairly stringent new source performance standards and
prevention of significant deterioration requirements.

Indirect long term impacts in the form of increased air
pollutant emissions from power plants serving new residences in
the project area can be mitigated somewhat by planning and
implementing solar energy design features to the maximum extent
possible.

Other indirect long term air quality impacts are expected in
those areas where traffic congestion can potentially be worsened
by the addition of vehicles traveling to and from the proposed
project. Project planners can do very little to reduce the
emission levels of individual vehicles, but the traffic impact
study for the project lists several major roadway improvements
which should serve to decrease traffic congestion in the imme-
diate project area since these improvements are scheduled to be
an integral part of project development.
EXHIBIT TO LETTER DATED JUNE 25, 1986 FROM NAVY TO DGP

STATE LAND
USE COMMISSION
PETITION A86-800

AREA OF CONCERN

1,000 FT

1,500 FT

NAVAL MAGAZINE - LUALUALEI
WAIKELE BRANCH

AREA OF CONCERN BEING REEVALUATED BY THE DEPARTMENT OF THE NAVY

ENCLOSURE (1)
2.1.8. NOISE

Existing Conditions

Sources of noise in the project site include vehicular traffic along the cane haul road and Kunia Road. Noise has not been a concern with the existing Village Park residents.

Impact

Reaction to noise differs from person to person. The most common complaints include:

- Interference with rest and recreation;
- Interference with speech communication;
- Interference with radio, music, and television listening;
- Interference with sleep.

The severity of the impact is a function of the following factors:

- Frequency and amplitude of the noise;
- Loudness and duration;
- Time of occurrence (day, evening, night);
- Number of occurrences per day;
- Ambient noise levels;
- Activity the person happens to be engaged in when the noise intrusion occurs;
- Health and noise exposure history of the person.

Because approximately 10% of the population is apparently supersensitive and would object to any noise (except that of their own making), complaints should be expected under any conditions. On the other extreme, approximately 25% of the population tolerate noise of any level. The remaining 65% generally do not complain until the indoor noise level exceeds 56 dBA for more than 10% of the exposure time. This means, for light weight structures such as those found in Hawaii, the outdoor L10 value should not exceed 66 dBA. For concrete and masonry structures, the outdoor L10 noise level can be as much as 79 dBA. Complaints can expect to increase rapidly as the noise level exceeds these limits.

Potential sources of noise in the area include vehicular traffic from H-1 Freeway, Kunia Road, cane haul roads, and aircraft operations.

H-1 Freeway and Cane Haul Roads. The EIS for the existing Village Park (HUD, 1979) identified potential noise problems for residential units located near cane haul roads and the H-1 Freeway. These noise sources are not present near the proposed project. The existing Village Park lies between the proposed project and H-1 Freeway. The only cane haul road that will remain in the vicinity of the proposed project will be located
over a mile north of the project site.

Kunia Road. Commercial and industrial uses are proposed in the areas between Kunia Road and the residential units. Highway noise from Kunia Road would be buffered by the distance and intervening structures between the highway and the residential units.

Aircraft Operations. Honolulu International Airport, Hickam Air Force Base, and Barbers Point Naval Station are all active airports located within 10 to 17 miles of the project. No noise problems from aircraft operations were identified in the previous EIS for the existing Village Park (HUD, 1978, p. II-38) nor have any problems been actually experienced by the current residents.

Commercial/Industrial Noise Impact on Residential Areas. There is a potential for noise generated in commercial and industrial areas to impact residential areas. The applicant believes that any impacts would be minimal because with the exception of two apartment designated parcels, all other residential areas are buffered from commercial/industrial activities by a golf course fairway. In addition, the new commercial/industrial areas are a significant distance from any existing or planned development in the existing Village Park Development.

Recreation Noise Impact on the Residential Areas. The proposed development will contain three park sites, a private recreation center and a golf course and clubhouse. Recreational activities conducted on these sites may generate noise which will impact the residential areas. The applicant believes that the noise impacts of these facilities on residential areas will be minimal and that numerous mitigating measures are available.

Mitigation Measures

Commercial/Industrial Noise. The applicant will follow all City and State laws and regulations relating to noise. In addition the applicant will follow City ordinances relating to the separation of commercial/industrial and residential districts. Current ordinances require setbacks, solid walls, and landscaping. In certain instances, uses are restricted within the commercial industrial districts where there is an abutting residential district. In addition the applicant intends to develop restrictive covenants for the commercial/industrial development which will ensure a harmonious relationship with the residential development in close proximity including restrictions on noise, and other items incompatible with residential development.

Recreation Noise. The primary mitigating measure will be in facilities design. For the Golf Course and Clubhouse the siting of the clubhouse facilities, their orientation and the location
of the tees and greens on the course will have a major impact on the potential noise impact of the facilities. The siting and design, as well as landscaping, will be major considerations during the design phase of the golf complex. Selection of maintenance equipment which includes noise minimization features can also mitigate against noise impacts. In addition the scheduling of maintenance operations and golf activities can also be done to minimize noise impacts.

The same mitigation measures as apply to the golf courses also apply to the private recreation center and the park areas. In addition, the Village Park expansion area will have a community association which will be a forum for balancing the needs of residents for recreational activities with those of the nearby residents for minimal noise impacts. This organization will assure that the rules and regulations governing the various recreational facilities of the development will continue to meet the needs of the community that they serve.

2.1.9. WATER QUALITY

Existing Conditions

Groundwater Quality. The existing conditions and impact on groundwater quality are addressed in section 2.3.2, Water Facilities.

Coastal Water Quality. About 40% of the project area presently drains into Waikele Stream and ultimately into Pearl Harbor.

Impact

Development of the project site is not expected to have any noticeable impact upon the configuration of Waikele Stream. Flow levels and water quality of Waikele Stream are not expected to be altered or changed to any noticeable or measurable degree. This conclusion is based on the relatively small area of that portion of the project site that presently drains directly into Waikele Gulch (275 acres) as compared to the large area of the Waikele Stream hydrological basin (29,000 acres).

Mitigation Measures

Erosion control measures will be implemented to mitigate impacts during construction (see section 2.1.1).
2.2. SOCIO-ECONOMIC ENVIRONMENT

2.2.1. POPULATION (see Appendix C)

Existing Conditions

Population Size. The resident population of Oahu as of July 1, 1984 was estimated to be 805,266 (DPED, 1985). The last U.S. Census counts were 762,565 in 1980 and 630,528 in 1970. More than half of Oahu's 1980 population lived in the Primary Urban Center, which extends from Kahala to Pearl City. About 13% (100,953 persons) lived in the Central Oahu area, and 5% (36,234) in the Ewa area. The Ewa and Central Oahu areas were the fastest growing parts of Oahu during the 1970's, with resident population increasing by about 50% in each area over the 10-year period, or average annualized growth rates of 4.17% in Ewa and 4.31% in Central Oahu.

Population Characteristics. Population characteristics for Waipahu, the existing Village Park residents, and the Central Oahu and Ewa areas compare with Oahu as a whole as follows:

- Ethnicity-- Compared to Oahu as a whole, Ewa's population was proportionately more Caucasian and Filipino, less Japanese and Chinese. Central Oahu's population was a somewhat closer match to the islandwide figures, although still with more Filipinos and also with proportionately fewer Hawaiians and Chinese. The existing Village Park residents were more similar in ethnic composition to Waipahu residents than with the Crestview/Waipio residents. The dominant ethnic groups in 1980 were Japanese and Filipino (34.4% each), with smaller proportions of Caucasians (11.7%) and Hawaiians and part-Hawaiians (8.3%).

- Age-- Both the Ewa and Central Oahu areas grew older on average from 1970 to 1980, but both still feature a much higher proportion of children and a smaller proportion of senior citizens than Oahu as a whole. This is borne out by the higher proportion of Ewa and Central Oahu residents living in family situations. The 1980 Village Park residents exemplified the high proportion of children (37%) and young homebuyers (two-thirds under 35 years of age).

- Mobility-- Compared to the island as a whole, Ewa and Central Oahu residents in 1980 were much more likely to have been Mainland-born and/or to have moved from the Mainland in the past five years. The influence of the military population is particularly evident. However, the existing Village Park residents are extremely "local", with high proportions either Hawaii-born and/or living on the islands five years previous to 1980.
Education-- Residents of Central Oahu and, particularly, Ewa were less likely than other Oahu residents to have graduated from college. However, the 1980 Village Park population featured a relatively high proportion of college-educated people (32%), probably due to the high proportion of young adults who tend to be better educated than older adults.

Family Composition-- Residents of Central Oahu and, particularly, Ewa were more likely than other Oahu residents to be living in family-household situations, and these families were more likely to include children at home under age 18. These families were also more likely than other Oahu families to have both a husband and wife present, although there was a substantial increase in the percentage of Central Oahu families (with or without children) to be headed by a single female. Nearly 100% of the 1980 Village Park residents lived in such family situations with conventional two-spouse households.

Labor Force Characteristics-- The 1980 civilian labor force unemployment rate was substantially higher in Ewa (8.0%) and Central Oahu (6.0%) than it was islandwide (4.5%). Of those employed in the civilian labor force, residents of Central Oahu and Ewa were less likely than other Oahu residents to be in managerial or professional jobs. Rather, they were more likely to report working in the agricultural (particularly in Central Oahu), construction, or manufacturing industries. Employment in the armed forces was substantially higher for residents of Ewa (18.5%) and Central Oahu (22.8%), compared to the island as a whole (10.1%). The general occupational profile of the existing Village Park residents is that of a skilled blue-collar and middle-class labor force.

Family Income-- In Ewa and Central Oahu areas, median 1980 family income lagged behind the islandwide median. However, the 1980 mean family income in Village Park was $31,724, substantially higher than that for Waipahu, Central Oahu, or even the island as a whole. The basis of the higher family incomes was primarily to two-income households rather than higher paying jobs.

Impact

Population Size. The existing Village Park community is tentatively scheduled to be built out by the end of 1988, at which time it will have an estimated population of 5,600 people. The proposed expansion would result in an additional 10,000 persons. There have been important amenities which the existing Village Park residents have been denied thus far due to an inadequate population base-- e.g., development of commercial
facilities and a school. The additional population would justify
the provision of such facilities.

The projected islandwide population for the year 2005 is
954,500 people, an increase of 149,200 people over the 1984
estimated population. The Village Park Expansion population of
10,000 people would represent 6.7% of the incremental population
growth from 1984 to 2005, and 1.1% of the 2005 population of
954,500.

Population Distribution. Central Oahu has more potential to
locate needed housing for the projected population growth than
previously anticipated by the General Plan. If all four of the
proposed projects in Central Oahu (Waikule, Wailua, Mililani
Expansion, Village Park Expansion) are developed at the rate
assumed in Table 2-4, then 46.8% of the incremental population
increase on Oahu could be directed to Central Oahu. As a result,
in the year 2005, 19.4% of Oahu's population would reside in
Central Oahu, a slight increase from the 13% in 1980.

These figures would of course rise if the combined areas of
Ewa and Central Oahu were considered. The existing and approved
projects alone in Ewa and Central Oahu would comprise about 50% of
the incremental growth on Oahu from 1984 to 2005. If all
proposed projects are included, 93.1% of the incremental growth
on Oahu would be directed to the Ewa and Central Oahu areas,
resulting in 30.3% of the year 2005 population on Oahu residing
in Ewa and Central Oahu.

Population Characteristics. Overall purchasers of the
Village Park Expansion units would be basically similar to
current Village Park residents. Because it is anticipated that
the Village Park Expansion sales prices would remain somewhat
below those of the other proposed projects, the population would
be a younger, more family-oriented, comparatively more working-
class community.

Mitigation Measures

None necessary since the projected population
characteristics harmonize with nearby communities. The projected
population size will cause minimal secondary impacts, as
discussed in sections on public facilities (section 2.3) and
fiscal impact (section 2.4).

2.2.2. HOUSING (see Appendix C)

Existing Conditions

Both Ewa and Central Oahu areas were sites of major housing
construction efforts during the 1970's. In Central Oahu, such
additions to the housing stock inventory have been continuing in
the 1980's with ongoing build-out of communities such as Village
Park, Waipio, and Mililani. In Ewa, however, there has been
<table>
<thead>
<tr>
<th>CENTRAL OAHU</th>
<th>Existing</th>
<th>Additional Capacity</th>
<th>Potential Year 2005</th>
<th>Islandwide Increment 1985-2005 (149,200)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing/Approved</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waipahu</td>
<td>29,300</td>
<td>2,200</td>
<td>31,500</td>
<td></td>
</tr>
<tr>
<td>Village Park</td>
<td>2,400</td>
<td>3,200</td>
<td>5,600</td>
<td></td>
</tr>
<tr>
<td>Crestview/Waipio</td>
<td>9,800</td>
<td>3,200</td>
<td>13,000</td>
<td></td>
</tr>
<tr>
<td>Waiehu</td>
<td>0</td>
<td>8,100</td>
<td>8,100</td>
<td></td>
</tr>
<tr>
<td>Helemanu</td>
<td>23,700</td>
<td>5,900</td>
<td>29,600</td>
<td></td>
</tr>
<tr>
<td>Whitmore</td>
<td>3,500</td>
<td>900</td>
<td>4,400</td>
<td></td>
</tr>
<tr>
<td>Whitmore Exp.</td>
<td>0</td>
<td>1,200</td>
<td>1,200</td>
<td></td>
</tr>
<tr>
<td>Nahiku</td>
<td>37,200</td>
<td>700</td>
<td>17,900</td>
<td></td>
</tr>
<tr>
<td>Remainder</td>
<td>28,900</td>
<td>0</td>
<td>28,900</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>114,800</td>
<td>27,600</td>
<td>142,400</td>
<td>14.9%</td>
</tr>
<tr>
<td>Proposed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waiehu</td>
<td>0</td>
<td>31,000</td>
<td>10,300</td>
<td></td>
</tr>
<tr>
<td>Helemanu (moku)</td>
<td>0</td>
<td>20,700</td>
<td>20,700</td>
<td></td>
</tr>
<tr>
<td>Helemanu (maki)</td>
<td>0</td>
<td>1,300</td>
<td>1,300</td>
<td></td>
</tr>
<tr>
<td>Village Park Exp.</td>
<td>0</td>
<td>10,000</td>
<td>10,000</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>0</td>
<td>63,000</td>
<td>42,300</td>
<td>4.4%</td>
</tr>
<tr>
<td>Total</td>
<td>114,800</td>
<td>90,600</td>
<td>184,700</td>
<td>19.3%</td>
</tr>
<tr>
<td>Islandwide Increment 1985-2005 (149,200)</td>
<td>46.8%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EWA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing/Approved</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ewa Beach</td>
<td>14,400</td>
<td>200</td>
<td>14,600</td>
<td></td>
</tr>
<tr>
<td>Ewa Marina</td>
<td>0</td>
<td>13,000</td>
<td>13,000</td>
<td></td>
</tr>
<tr>
<td>Ewa Village</td>
<td>0</td>
<td>10,000</td>
<td>10,000</td>
<td></td>
</tr>
<tr>
<td>Makakilo</td>
<td>8,200</td>
<td>10,200</td>
<td>18,400</td>
<td></td>
</tr>
<tr>
<td>Makakilo Exp.</td>
<td>0</td>
<td>2,400</td>
<td>2,400</td>
<td></td>
</tr>
<tr>
<td>West Beach</td>
<td>0</td>
<td>10,400</td>
<td>10,400</td>
<td></td>
</tr>
<tr>
<td>Remainder</td>
<td>13,400</td>
<td>1,100</td>
<td>14,500</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>36,000</td>
<td>47,500</td>
<td>83,500</td>
<td>8.7%</td>
</tr>
<tr>
<td>Proposed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Beach Exp.</td>
<td>0</td>
<td>13,300</td>
<td>13,300</td>
<td></td>
</tr>
<tr>
<td>Ewa City Center</td>
<td>0</td>
<td>91,400</td>
<td>8,400</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>0</td>
<td>104,700</td>
<td>21,700</td>
<td>2.3%</td>
</tr>
<tr>
<td>Total</td>
<td>36,000</td>
<td>152,000</td>
<td>105,000</td>
<td>11.0%</td>
</tr>
<tr>
<td>GRAND TOTAL</td>
<td>150,800</td>
<td>242,600</td>
<td>289,700</td>
<td>30.3%</td>
</tr>
<tr>
<td>Islandwide Increment 1985-2005 (149,200)</td>
<td>93.01%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1/ Estimated by Community Resources (see Appendix C, Table 4)
2/ Year 2005 figures assume one-third of total Waianae population and 100% of total Mililani population by that year, based on market analysis by Kusu, 1984)
3/ Year 2005 figures assume 100% of potential West Beach Expansion population and about 5% of total Ewa City Center population by that year.
little additional net gain to the housing inventory during the past five years, although preliminary approvals have recently been obtained for a number of major new projects.

With most of the new housing developments aimed at the owner-occupant rather than the rental market, homeownership rates increased dramatically in both areas during the 1970's. They had been below the islandwide average in 1970 but were slightly greater than the islandwide average in 1980.

The incidence of substandard units dropped as new units comprised an increased proportion of the total, but pockets of crowding remain in the region, especially in the Waipahu area. Waipahu's average household size in 1980 (4.20) was greatly in excess of the norms for either Oahu (3.31) or the overall Central Oahu area (3.56).

The rental costs in 1980 for the Central Oahu and Ewa areas were fairly consistent with islandwide costs, but the median value of owner-occupied units were generally lower than the islandwide median. Since the region's housing stock is relatively young, this lower value would support the notion that developers in the area aimed for the "middle" and "lower" ends of the ownership market during the 1970's.

**Impact**

**Housing Supply.** The proposed Village Park Expansion would increase the number and variety of fee simple and rental units. Given the already mobilized Village Park development, construction, and sales team, the proposed Expansion would provide an uninterrupted supply of new housing inventory throughout the 1980's and into the early 1990's.

This affordably priced housing inventory would produce the following results:

- Higher homeownership rate;
- Less crowding as existing residents living in extended family situations "undouble" to take advantage of greater choices within the area;
- Slight increase in overall proportion of single-family units.

**Housing Quality.** The number of substandard housing units (as indicated by the lack of some or all plumbing) is very small in the Ewa area (0.6%) and Central Oahu area (1.2%). The rental units proposed for the Village Park Expansion would provide opportunities for lower income households to improve their housing conditions.

**Speculation in Land and Housing.** Speculation is unlikely since most of the proposed units (75% of the 3000 units) are moderately priced and targeted to the first-time buyer. About
87% of such moderately priced units at the existing Village Park were owner-occupied. The median value of such owner-occupied units were generally lower than the islandwide median. Since the housing stock in the existing Village Park is young, this would support the notion that developers aimed for the "middle" and "lower" ends of the ownership market.

The units in the proposed project would be sold in fee simple, in contrast to the leasehold interest in the existing Village Park. The proposed project may stimulate more interest among existing Village Park residents in lease-fee conversions. However, the residents seeking such conversions are more interested in homeownership and community values than selling for speculative purposes and moving elsewhere.

Property Values of Existing Homes. Property values of the existing Village Park would be maintained or enhanced as a result of the proposed golf course and other amenities. Current Village Park residents with homes near the proposed low-density apartment project have expressed concern about possible negative impacts on their property values, and the petitioner has pledged to take a strong negotiating stance with the City to assure both adequate design controls and tight management of the rental project in order to protect nearby property values.

Mitigation Measures

None necessary since housing impacts will be beneficial.

2.2.3. EMPLOYMENT (see Appendix C)

Existing Conditions

The types of employment in the existing Village Park community include construction (about 310 full-time construction workers) and a small sales staff. Because the existing Village Park population is not yet sufficiently large to attract anchor clients to the planned commercial area, there is not currently any retail-related employment.

About one-half of the recent Village Park residents work in Honolulu, one-third in the Pearl City/Waipahu/Central Oahu area, 13% in the Airport area, and 7% in Waipahu.

Impact

Availability and Diversity of Jobs. The proposed Village Park Expansion would provide construction-related and permanent employment. Construction-related employment would involve the continuation of the current average 310 full-time construction jobs from 1988 through most of the 1990's. Village Park's figure of 310 represents 2.1% of the approximately 14,700 construction jobs on Oahu, as of 1983.
Permanent employment in the Village Park Expansion would total about 710 jobs. About 68% of this total would be located within the commercial area, another 26% in the industrial area, and the remainder at the golf course.

The Waipahu Town labor force in 1980 had an above-average unemployment rate and civilian workers were employed disproportionately in service and trade occupations. The types of jobs that would be offered at the Village Park areas appear to be a good match between the existing Waipahu workforce and these future jobs.

The Expansion area would also create some indirect and induced employment in the Waipahu area through expenditures of residents, employees, and businesses. The extent of this impact is less easily measured, primarily because of difficulties in making assumptions about how much of the restaurant and retail demand generated by residents and employees would be met by the Expansion's own commercial area, and how many of the Expansion residents or businesses would still be located elsewhere in the Waipahu area even if the Expansion is not built.

Mitigation Measures

None necessary since the impacts are beneficial.

2.2.4. SOCIAL ISSUES (see Appendix C)

Existing Conditions

Hawaii State Plan surveys conducted during the 1980's showed Oahu residents placed a higher priority on affordable housing than on preserving agricultural land. A 1982 Waipahu survey showed equal priority for housing and protecting Oahu Sugar Company. It also showed most Waipahu residents welcome growth so long as it is well-planned. In addition, a sampling of the community concerns was obtained through interviews held in July and August 1985 with 26 "key informants" (primarily persons active in community organizations) in Village Park and Waipahu. General results of the key informant interviews were as follows:

- Overall attitude toward proposed project. The overall attitude at this time was generally positive toward the project as a whole. Project components which seemed most responsible for this positive attitude were (for Waipahu) the continued provision of housing which can be afforded by young people and (for Village Park) the proposed golf course.

- Most frequently raised concern. The most frequently raised concern (especially in Waipahu) involved public infrastructure capability, particularly traffic impacts. Usually, these concerns were expressed as
questions about how the problems can be solved rather than as a basis for opposing the project. Other concerns included: a) apartment rental project (desire for compatible design and careful management); b) Department of Education's recommended deletion of a school site within the proposed expansion; and c) the original park acreage distribution (which has been subsequently reallocated to meet residents' concerns).

Most emotional issue. The issues which usually generated the strongest emotional response (especially below the freeway) had to do with whether Village Park and the Expansion would become well-integrated into the larger Waipahu community or would become a distinct, possibly even "competitor" community. For example, there was concern about possible deterioration of Waipahu schools if Village Park and Waiekele students are bussed elsewhere.

Mitigation Measures

- Integration of the Expansion Area with the Existing Village Park. Parks in the Expansion area should be sited to achieve a better geographical distribution. For example, an Expansion park in the southeastern portion of the project area would provide needed open space for existing residents in the eastern portion of the existing Village Park. Although the petitioner is willing to locate the park in the southeastern area, the City Department of Parks and Recreation must approve. Another means to integrate the existing Village Park with the new residents in the expansion area is to establish a loose "umbrella" organization encompassing the homeowners' association of the Expansion area and the existing Village Park.

- Integration of Expansion Area and Existing Village Park with Waipahu. Encourage the integration of the Village Park community into the Waipahu community by pursuing current plans to have Village Park's older students attend Waipahu Intermediate and Waipahu High School. Maintain a dialogue between the petitioner and such Waipahu community groups as the Waipahu Community Association, the Waipahu 2000 Community Council, the Waipahu Business Association, and the Waipahu Neighborhood Board. The petitioner has already committed to several activities to improve relations with the Waipahu community including the funding of a "Welcome to Waipahu" sign at the Kunia Road end of Farrington Highway, preparing a master plan for beautifying Kunia Road, providing in-kind support to the Waipahu Cultural Garden Park and the Waipahu 2000 Community Council, and participating in a number of other community projects.

- Community Awareness of Proposed Plans. Maintain an ongoing dialogue between the petitioner and the community through presentations and newsletters.
Cumulative Impacts of Major Proposals in Leeward Oahu. Encourage the responsible public agencies to establish a joint task force comprising City and State representatives, developers, and community representatives to investigate the cumulative impacts of the major proposals.

Design and Management Control of City Apartment Project. The petitioner is currently seeking some degree of input on the physical design and management of the proposed City rental project to ensure both physical and social compatibility with surrounding residences. However, the extent and nature of developer controls are still a matter of negotiation with the City Department of Housing and Community Development.

2.2.5. ECONOMIC DEVELOPMENT (see Appendix D)

2.2.5.1. Impact on Oahu Sugar Company

Existing Conditions

Scale of Production. Amfac's Oahu Sugar Company is the fourth largest sugar operation in the State. It cultivates about 14,200 acres of sugarcane land, and produces about 90,000 to 95,000 tons of raw sugar, or nearly 10 percent of Hawaii's total sugar production. Its lands cover portions of Central Oahu on each side of Kunia Road above Pearl Harbor, and portions of the Ewa Plain to the west of Pearl Harbor.

Another 4,200 acres were in production until 1982. These fallow lands are mostly mauka lands with high pumping costs, and lands close to the seashore where soils tend to be inferior, yields low, and hauling costs high because of the distance to the mill.

Because of favorable growing conditions, good farming practices, and drip irrigation, sugar yields at OSCO are very high, about 15 to 16 tons per acre, versus a 1984 Statewide average of 11.86 tons per acre. In fact, OSCO holds the world record for the highest yield per acre.

Lease Rents. Nearly all of the land which OSCO cultivates is leased, principally from Campbell Estate with a lease expiration date of 1985, and Robinson estate with a lease expiration date of 1996. The lease rents on these lands are the highest in the State for sugarcane acreage, and are adjusted as a function of the revenues from sugar operations. Both leases allow partial withdrawal of lands for urbanization. The Campbell Estate lands above H-1 Freeway and west of Kunia Road have been dedicated to agricultural use in order to obtain special property tax assessments.

Water Use. OSCO is one of the major water users on Oahu, pumping 92.5 mgd of groundwater, and diverting in normal
rainfall-years 28 to 30 mgd from the Windward side via Waiahole Ditch.

Impacts

Economics of Scale. The proposed Village Park Expansion is one of several proposed projects that will consume sugarcane lands. However, the Village Park expansion, individually or in combination with other major projects planned and proposed for Ewa and Central Oahu, will not adversely affect the economic viability of OSCO. Part of the reason for this is that the cost for relocating cane-haul roads, irrigation ditches and pipes, an earthen reservoir, and power poles will be absorbed by the petitioner. In addition, the reduction in sugarcane acreage is expected to be gradual and partially or completely compensated for by increasing yields.

OSCO currently runs two mills in parallel. In the long term, OSCO could accommodate a major reduction in acreage by operating one mill. Because of this, OSCO could reduce acreage and production substantially without losing economies of scale. Of significance, Amfac's Kekaha Sugar Company, Inc., which has climactic conditions similar to that of OSCO, is one of the most profitable sugar operations in the State. Yet this plantation has only about 8,000 acres under cultivation, and produces only about 55,000 tons of sugar per year versus 14,200 acres and 90,000 to 95,000 tons per year for OSCO.

Assuming that OSCO could be reduced to a level similar to that of Kekaha Sugar Company without losing its economies of scale, then about 6,200 acres could be freed. Therefore, nearly all of the major housing developments planned and proposed for the Ewa/Central Oahu area could be safely accommodated without having OSCO lose its economies of scale and be forced to close.

Employment. An important component of OSCO's cost reduction is a continued decline in the labor force. This is to be accomplished by attrition— that is, employees who retire or leave OSCO for other voluntary reasons generally will not be replaced. According to Amfac, over at least the next decade (to the end of the major leases), the Village Park expansion or any combination of the major housing projects planned and proposed for the Ewa/Central Oahu area, and the resulting loss in sugarcane acreage, will not require layoffs of sugar workers. This is because of the expectation for relatively gradual reduction in sugarcane acreage, partial or complete compensation of this acreage loss by increasing yields, and rapid employment loss by attrition.

If OSCO were to cease operations for whatever reason (most likely because of low sugar prices), the loss of jobs would be less than 600 direct jobs and 650 indirect jobs, with the actual number dependent upon the reduced employment made possible by continuing productivity increases. The opening of just one or two major hotels at West Beach Resort will create as many new
jobs as all of OSCO and, when tip income and all indirect jobs are considered, will provide higher average wages. Other new jobs in the Ewa area will be provided by Barbers Point Harbor, expansion of Campbell Industrial Park, growth of diversified agriculture and aquaculture, and other economic activities which may be attracted to the area because of the availability of land and water, and home prices which should be less than that in most other areas on Oahu.

Long-term Outlook. In the long term, the survival of OSCO will depend primarily on the price of sugar, for which the outlook is pessimistic. In the world market, the average price of sugar is expected to remain well below the production costs for all countries. This is because sugar in excess of various trade agreements is dumped on the world market, particularly by the European Economic Community (EEC) which, because of generous price supports to local sugar-beet growers and generous trade agreements with former colonies, is a major sugar producer, importer, and exporter, even though the EEC is one of the highest-cost sugar producers in the world, is self-sufficient in sugar and has no need to import it, and must sell its excess sugar on the world market at enormous losses.

In the U.S., Federal legislation protects sugar from the low world prices by import quotas, tariffs, and import fees. However, U.S. sugar prices are managed so that they are fairly low in order to prevent accelerating the growth of high-fructose-corn syrup (HFCS), which costs less to produce than normal sugar. In addition, the new sweetener aspartame is capturing market share and putting additional downward pressure on U.S. sugar prices. For more detail on the outlook for sugar prices, see "Overview of the sugar and sweetener Market and Outlook for Prices" in Appendix D.

In view of the poor outlook for sugar prices, and combined with the fact that sugar plantations are in place with substantial infrastructure, but suitable replacement crops have yet to be identified, Amfac has developed a Master Agricultural Plan which includes a Survival Plan for OSCO. This plan amounts to a holding action to gain time to find as many replacement crops as possible before OSCO may be forced by outside economic factors to cease operations. Key components of the plan are:

- Continue to improve the economic efficiency of OSCO by increasing sugar yields and reducing production costs (both of which have been improved substantially in the last few years);
- Urbanize Waikelo (the only land of OSCO owned by Amfac) in order to derive revenues to help support and justify continued sugar operations; and
- Experiment with a variety of crops (papaya, sweetcorn, potatoes, forage and feed crops, etc.) in order to find profitable replacements to sugar.
Success of this plan will depend on continued Federal price supports for sugar sufficiently high to justify continued operations, union support to reduce costs, and an adequate allocation of water from the Pearl Harbor aquifer. After the major leases expire with Campbell Estate and Robinson Estate in 1995 and 1996, respectively, continued sugar operations will also depend on success in negotiating favorable lease terms.

Mitigation Measures

The petitioner will absorb the cost of relocating cane-haul roads, irrigation ditches and pipes, an earthen reservoir, and power poles. In addition, the phasing plan for the proposed project will allow OSCO to gradually reduce sugarcane acreage, rather than completely terminating cultivation at one time. Oahu Sugar Co. has no objections to the project (see letter, Appendix 1).

2.2.5.2. Impact on Diversified Agriculture and Aquaculture

Existing Conditions

Land Supply. There is an enormous and growing supply of prime agricultural land which has been recently freed from sugar and pineapple production. On Oahu, OSCO freed about 4,200 acres of agricultural land from sugar production in 1982 and 1983, and Waialua Sugar Co. on the north shore of Oahu recently released about 1,400 acres from sugar. On Kauai, Lihue Plantation Co. recently released 1,700 acres from sugar production. On the Big Island, 15,640 acres were released by the closing of Puna Sugar Co. Considerable land also was made available to diversified agriculture as a result of previous reductions in sugar acreage: 3,000 acres released on Oahu in 1971 with the closing of Kahuku Plantation Co.; 12,000 acres released on Kauai in 1971 with the closing of Kilauea Sugar Co.; 4,300 acres released in 1973 with the closing of Kohala Sugar Co.

Also, at least 33,600 acres of land have been freed from pineapple production over the last two decades: 11,800 on Oahu, 7,500 on Kauai, and over 20,000 on Molokai and Lanai.

Some of the land freed from sugar and pineapple production has or will be converted to urban, diversified agriculture, and aquaculture uses. Also, some of the land freed from pineapple use on Oahu was converted to sugar production. Making allowances for the various conversions, uncommitted acreage which remains available to diversified agriculture and aquaculture amounts to many tens of thousands of acres, with a large share of this on Oahu. Furthermore, this supply probably will increase given the unfavorable outlook for sugar prices. In addition, many acres of land are made available to diversified agriculture in government-sponsored agricultural parks throughout the State.

Land Demand. The market demand for diversified agriculture and aquaculture products consists of the local market (with the
goal to increase Hawaii's self-sufficiency) and the export market.

The acreage needed to support the local demand is estimated as follows:

- **Fresh produce**—At most, 1,200 acres of additional land would be required for all potentially feasible produce crops to increase Hawaii's self-sufficiency to a realistic level, and to accommodate resident-plus-visitor population growth to the year 2000. The potential would be much greater if potatoes, which Amfac has experimented with near Kunia, were to prove profitable. The most promising produce crops grown commercially in other parts of Hawaii with climate comparable to Kunia include Chinese bananas, broccoli, sweet corn, sweet peppers, Italian squash, and watermelon. However, the high ground rents in Kunia is a major constraint.

- **Feed crops**—A strong market exists for feed crops, but most of these crops are not commercially feasible for Hawaii. A possible exception is corn silage to feed cattle in feedlots. However, at most 2,600 acres would be needed Statewide to feed all cattle in feedlots, even with an increase in cattle operations. Amfac has experimented with corn silage and other feed crops in the Barbers Point area, but returns per acre were low.

- **Other**—Livestock operations are another possibility, but the returns are low from cattle grazing. The trends are not favorable for increased dairy, egg, and swine and pork operations. Only a small amount of land is required for poultry operations. Neither livestock nor poultry operations should be located near residences because of odor, dust, and fly problems.

Export products consist of crop exports and aquaculture delicacies. The outlook for these products is as follows:

- **Crop exports**—Papaya is a possibility being explored by Amfac, although the land requirement for increased production is relatively small. Total Statewide plantings are a little over 2,000 acres, primarily on the Big Island. Macadamia nuts offer the potential of absorbing a significant amount of agricultural land, but increasing competition indicates that this is a high-risk venture unable to compete in those areas where other activities offer higher land rents. Other export crops are not agronomically suited for the Kunia area and/or require very little land. Finally, efforts for over a century indicate that it is extremely difficult to identify new export crops and develop them into new and profitable industries. Nevertheless,
Amfac has been experimenting with a new tropical sweet corn for export to the mainland during the winter.

- Aquaculture—Problems with freshwater prawns include low profitability, a local market that is saturated, and an export market of doubtful potential. Other potential freshwater aquaculture activities suffer from low prices, stiff competition from the mainland, a small local market, unsuitable climate, and/or other problems. Brackish or saltwater aquaculture would be unsuited for Kunia because of elevation and location over the Pearl Harbor basal water lens. It is extremely important that this freshwater supply not be contaminated by seepage of brackish or saltwater.

Impact

It is extremely doubtful that the Village Park Expansion combined with other major housing developments in the Ewa/Central Oahu area will affect adversely the growth of diversified agriculture or aquaculture. This conclusion derives from the fact that there is a very large amount of prime agricultural land and water that has been freed from sugar and pineapple production in recent years, the very real possibility that additional sugarcane acreage and water will be freed given the outlook for low sugar prices, and the modest land requirements for diversified agriculture and aquaculture in the Kunia area given its particular climate, high lease rents, and high elevation pumping costs.

When and if OSCO should cease operations, then an enormous amount of land and water will be freed from sugar production—far more land and water than could be absorbed by urban development. At that time, land rents should drop considerably in order to accommodate what will then become the highest and best use for these lands. Low rents and proximity to Honolulu could result in rapid development of diversified agriculture and aquaculture in the Ewa/Central Oahu area—development that probably will be at the expense of Neighbor Island farmers.

Mitigation Measures

None necessary since there are no significant adverse impacts.

2.3. ADEQUACY OF PUBLIC FACILITIES AND SERVICES

2.3.1. TRANSPORTATION (see Appendix F)

Existing Conditions

Highways. The existing Kunia Road runs along the frontage of the proposed development. It varies in width from two lanes along the frontage and widens to five lanes at the southern end.
of the existing Village Park. Two intersections provide access to this existing residential area.

Kunia Road forms the Kunia Interchange with the Interstate Route H-1 at the southern end of the existing Village Park. This interchange provides all required movements to and from the freeway with ramps which provide connections to Pearl Harbor, Honolulu International Airport, Downtown Honolulu, Barbers Point Naval Air Station, Campbell Industrial Park, and Wai'anae. Three of the eight ramp movements require left turns across the Kunia Road through traffic. Two of those left turns are controlled by traffic signals.

Kunia Road continues past H-1 and is connected to Fort Weaver Road with an overpass over Farrington Highway. It also connects with Farrington Highway and makes partial connections (right turns only) with Honowai and Waipahu Streets. This leg of Kunia Road provides the development with circulation with Waipahu and Ewa.

The petitioner made improvements to Kunia Road and Kunia Interchange in conjunction with the existing Village Park development. Kunia Road was widened one lane in each direction and two of the ramps were widened from one to two lanes.

Public Transit. The existing Village Park is currently served by two express buses in conjunction with service to Makakilo. There are two runs in the morning to Downtown Honolulu (Village Park pick-up at 6:02 and 6:32) and two runs in the afternoon (depart Downtown at 4:15 and 4:45). The ridership as of July 1985 was approximately 25 persons from Village Park per run, which is about one-half the seating capacity and one-third the total capacity of a standard bus.

Impact

Highways. The number of trips generated from the development was based on a conservative factor of 0.8 vehicles per unit during the peak hours. The total number of units from the existing Village Park and the proposed expansion is 5,220 units, resulting in 4,180 vehicles upon full development of the proposed project. Directional distribution was assumed to be 80% outbound and 20% inbound for the morning peak hour and vice-versa for the afternoon peak hour.

The petitioner proposes the following improvements to ensure adequate capacity of Kunia Road and Kunia Interchange during peak hours at full development of the proposed project (see Fig. 2-2).

- Collector Street No. 1 intersection—Collector Street #1 will have 5 lanes. Three lanes would be for outbound traffic from the proposed project to Kunia Road; two inside lanes for left turns only (heading southbound along Kunia Road), and one outside lane for
right turns only (heading northbound along Kunia Road). For inbound traffic to the project area, one inside lane will be for left turns from Kunia Road southbound. The outside lane will be for right turns from Kunia Road northbound. Assuming that substantial traffic will be diverted to the North Kupuna Loop intersection, Collector Street #1 intersection would operate below capacity during peak hours.

Additional lanes on Kunia Road—Kunia Road will be widened to accommodate the increased traffic generated by the proposed project and the normal growth of the through traffic on Kunia Road. The northbound lane will be widened to two lanes from North Kupuna Loop to the proposed Collector Street No. 1 intersection. From whence the widening will transition back to the existing roadway. The southbound lane will also be widened to two lanes from the proposed Collector Street No. 1 intersection all the way to Kunia Interchange. This additional southbound lane will increase the through capacity at the North and South Kupuna Loop intersections.

Traffic signal modifications—A substantial portion of the traffic generated by the proposed project would be diverted to the existing North Kupuna Loop because of the congestion at the proposed Collector Street No. 1 intersection. To increase the capacity of the North and South Kupuna intersections, the traffic signals at these intersections will be converted from a three-phase system to two-phase. One phase will be for the movements on Kunia Road and the other for the movements out of North and South Kupuna Loops. This change would encourage left hand turns from Kunia Road southbound into North or South Kupuna Loops to be made at the Collector Street No. 1 intersection, where left turns will have a separate phase in a three phase system. The change would also increase the through traffic capacity along Kunia Road. The traffic signal modifications, coupled with the additional southbound lane, will upgrade the North and South Kupuna Loop intersections to operate at adequate capacity during peak hours.

Additional lanes to ramp intersections—Additional lanes will be provided for two of the intersections that would experience congestion. At the off-ramp from H-1 westbound (intersection "KO"), which is congested during the afternoon, an additional lane along Kunia Road northbound from the ramp to South Kupuna Loop will be added. Further widening is constrained by the Board of Water Supply well site located adjacent to Kunia Road. Additional lanes will also be added to northbound Kunia for left turns into the on-ramp for H-1 westbound (intersection "KI") and for right turns.
into the on-ramp for H-1 eastbound (ramp KI-A`). These latter improvements are primarily for Ewa traffic along Pt. Weaver Road feeding into H-1, rather than traffic generated from the proposed project.

- Signalization of one ramp intersection—One presently unsignalized intersection will be signalized (intersection "KC").

The State Department of Transportation has reviewed and approved these conceptual plans (see letter from DOT, Appendix I).

Public Transit. To serve the proposed development, the current express bus service would have to be extended 0.6 miles mauka on Kunia Road from North Kupuna Loop. The internal street network would extend one mile east of Kunia Road. These impacts are not significant.

Mitigation Measures

The proposed improvements will upgrade Kunia Road and Kunia Interchange to operate at adequate capacity during peak hours at full development of the proposed project. The developer is committed to assisting the mitigation of downstream traffic impact from the proposed project. Currently under consideration is a Park and Ride facility and a carpool coordinator subsidy.

2.3.2. WATER (see Appendix E)

Existing Conditions

Water for the existing Harbor View Subdivision and Village Park Subdivision is provided by Kunia Well II. Source and storage facilities at the Kunia Well II site, located about 0.8 miles above Village Park along Kunia Road, includes a 1.5 MG "440" reservoir and two deep wells. The petitioner has completed construction of a granular activated carbon water treatment facility at the Kunia Well II site for contaminant removal. This facility will be turned over to the Board of Water Supply (BWS). As an emergency measure until the treatment facilities are fully operational, the areas served by Kunia Wells II have been served by Hoaeae Wells.

Impact

Quantity. The project, which is located in the Pearl Harbor Ground Water Control Area (GWCA), will require 2.5 mgd (average flow) of water. The petitioner will provide one new well (0.852 mgd) to service the project; the balance of the water requirements can be served by existing water facilities. The Board of Land and Natural Resources (BLNR) recently reallocated 1.1 mgd in the Pearl Harbor GWCA to the BWS. The BWS has submitted a request to the DLNR to specifically increase the allocated withdrawal from Kunia Wells II well field from 0.96 mgd to 2.0 mgd.
The Board of Water Supply has accepted the water master plan for the Village Park Expansion. In order to meet the water requirements of the Village Park Expansion the Board of Water Supply has requested an additional 1.04 million gallons from the Department of Land and Natural Resources. The balance of the water necessary for the project will come from an internal Board of Water Supply reallocation. The water to be reallocated will become available as exports outside of the Pearl Harbor Basin by the Board are reduced due to source development projects in export areas which are currently planned or underway. The BWS has requested for additional permitted use for the Kunia Wells II. If the request is approved by the State Board of Land and Natural Resources, it would allow the full utilization of the Kunia Wells II and meet the future demands of the Village Park Expansion.

Compared to sugar cane irrigation, the proposed urban use will result in a net decrease in water consumption from the Pearl Harbor aquifer. Drip irrigation requires about 7500 gpd. About 20% infiltrates to recharge the aquifer, resulting in a net consumption of 6000 gpd. In contrast, the proposed project will be require 2.5 mgd, or about 3,600 gpd (2,500,000 gpd / 682 acres). Assuming negligible infiltration due to the paved surfaces, the net consumption of 3,600 is about 40% less than the amount required for drip irrigation.

Quality. Trace amounts of EDB have been detected at Kunia Wells II. The activated carbon treatment will reduce the concentrations to nearly non-detectable levels, as demonstrated by pilot-scale field tests.

Mitigation Measures

Water requirements for landscaping irrigation will be minimized by selecting drought-tolerate plant species. Alternative non-potable water sources to irrigate the golf course are being investigated.

2.3.3. WASTEWATER (see Appendix E)

Existing Conditions

Wastewater from the existing Village Park Subdivision is conveyed through a 12" and 18" trunk line to the Kunia Pump Station, Waipahu Pump Station and finally into the Honouliuli Wastewater Treatment Plant (WWTP). Honouliuli WWTP is an advance primary treatment facility. The effluent is discharged through a deep ocean outfall.

Impact

Average daily wastewater flow generated by the development will be approximately 1.3 mgd. The first 1000 units can be
accommodated by the existing facilities. The petitioner will provide a new trunk sewer, with a capacity of 2.7 mgd, that will convey the sewage to Waipahu Sewage Pump Station (SPS).

As discussed in section 2.3.3 (Wastewater), there is an additional 1,000 unit capacity at both the Honouliuli WWTP and the Waipahu WWPS. Approval of the Waitec Development in total would require the expansion of both the WWTP and the WWPS. If Federal funds are not available for the expansion then the additional capacity would have to be funded through additional County and State appropriations. It is anticipated that these appropriations would be based on requests from the City administration based on recommendations made by the Department of Public Works. The Department of Public Works is constantly monitoring the flows at its various pump stations and treatment plants as well as future development approvals in order to make funding requests of the City Council.

Mitigation Measures

None necessary, since expansions to the Waipahu SPS and Honouliuli WWTP could accommodate the projected wastewater flows.

2.3.4. SOLID WASTE (see Appendix E)

Existing Conditions

The City and County of Honolulu provides refuse collection service for the existing Village Park Subdivision. The refuse is disposed at the county-operated Waipahu Incinerator or at the privately operated Palailai Sanitary Landfill (SLF).

Impact

Fully developed, the proposed project would generate approximately 30 tons of mixed commercial, institutional, and residential solid waste per day. This quantity represents about one percent of the total solid waste generated on Oahu each day at the present time. The proposed light industrial activity is not anticipated to generate hazardous wastes.

Refuse collection services will be provided by both government and private work forces. The City and County services single family residences, while private collectors service commercial and business establishments. Apartment units can be served by either the City and County or private collectors.

Although the Palailai SLF is expected to be closed within two to three years, the Waipahu Incinerator will be kept in service indefinitely. Furthermore, the City and County and the private industry are both pursuing government approvals to establish sanitary landfills at Waimanalo Gulch and Wai'aiwa Gulch, respectively. These additional landfills would accommodate
future growth in Central and Leeward Oahu until the City and County's resource recovery plant at Campbell Industrial Park is constructed.

**Mitigation Measures**

If hazardous waste is generated, disposal methods will conform to strict standards established by the Department of Health and U.S. Environmental Protection Agency.

2.3.5. **DRAINAGE** (see Appendix E)

**Existing Conditions**

The proposed project site is within the Waikiki Stream hydrological basin that has a total drainage area of about 29,000 acres. Waikiki Stream originates in the western slopes of the Koolau range, courses through Central Oahu, and discharges with an annual average flow of 25 mgd into Pearl Harbor (Middle Loch).

The flood insurance hazard rating for this area is Zone C, areas of minimal flooding. Any proposed structures will not require special flood-proofing measures.

There is an existing ponding earth reservoir within the proposed development site that is being utilized for agricultural purposes. The incoming and outgoing flows are controlled by Oahu Sugar Co.

**Impact**

Approximately 60% of the storm runoff (1900 cfs) generated by the new development will discharge through the existing Village Park drainage system. The other 40% (1275 cfs) will drain into Waikiki Stream.

Development of the project site is not expected to have any noticeable impact upon the flow levels or water quality of Waikiki Stream. This conclusion is based on the relatively small area of that portion of the project site that drains into Waikiki Gulch (275 acres) as compared to the large area of the Waikiki Stream hydrological basin (29,000 acres). Water quality impacts from construction activities will be mitigated through erosion control measures in compliance with the county grading ordinance.

The existing earth reservoir will be filled and used as part of the golf course, thus eliminating any concerns.

**Mitigation Measures**

None necessary since existing and proposed facilities are adequate to serve the proposed project.
2.3.6. ELECTRIC AND TELEPHONE SYSTEMS (see Appendix E)

The electric and telephone services for the existing Village Park Subdivision are available from HECO and HTCO facilities on Kunia Road.

Impact

HECO and HTCO facilities must be improved.

HECO already owns a lot on Kunia Road of sufficient size to accommodate the improvements. HECO will need to construct a substation initially with one 10 MVA transformer to service the additional load. This, in turn, will require the new construction of two 46kV feeders on Kunia Road from existing lines makai and mauka. This total 46kV line construction of about three quarters of a mile length on Kunia Road will require prior approval from the State Department of Transportation.

HTCO facilities are also inadequate to service the proposed project. HTCO proposes to install a remote switching unit within the project site.

Mitigation Measures

Work for all HECO and HTCO facilities, including the relocation of existing cables underground, will be planned to coincide with the Kunia Road widening.

2.3.7. POLICE PROTECTION

Existing Conditions

City and County police facilities are presently located at a substation in Pearl City on Waimano Home Road.

Impact

Adequate police service can be maintained in the Village Park area provided sufficient personnel and vehicles are added. The primary concern is the increased traffic and its impact on public safety (see letter from Police Chief, Appendix I). Traffic impacts will be mitigated as described below.

Mitigation Measures

Proposed traffic improvements are described in section 2.3.1 (adequacy of transportation facilities) and Appendix P (traffic engineering report).

The cost for additional police officers and vehicles will be offset by the tax revenues generated from the project. For more detail, see section 2.4.1 and Appendix G (fiscal impact analysis).
2.3.8. FIRE PROTECTION

Existing Conditions

A City and County fire station is located at 94-121 Leonui Street, Waipahu Industrial Park. A new fire station is being considered in the Waiekele area to service the future Waiekele development and Gentry Waipio. Additional fire stations in the region are located at Pearl City and Makakilo.

The Village Park area (including the proposed expansion) receives fire protection from the Waipahu Fire Station, housing an engine and ladder company. Secondary service is provided by an engine company at Pearl City Fire Station, and engine and ladder companies from the Waiau Fire Station.

Existing fire protection for the Village Park area (including the proposed expansion) is considered marginal in terms of distance and response time. Future development, mauka of Village Park, will require an additional fire station housing an engine company in the Kunia area.

Impact

The two fire stations, located at Waipahu and Waiekele, would be adequate to serve the proposed project. Waipahu Fire Station would be 3.5 miles from the furthest point of the proposed project. The proposed Waiekele/Gentry Waipio Fire Station would be about the same distance as the Pearl City Fire Station because of the need to travel around Waiekele Gulch. Pearl City and Makakilo Fire Stations would be 5 and 6 miles from the proposed project, respectively, and would provide adequate back-up service. Further development in the surrounding areas would eventually require an additional fire station in the upper Kunia area (see letter from the Fire Chief, Appendix I).

Mitigation Measures

None necessary, since existing and planned facilities are adequate to serve the proposed project.

2.3.9. SCHOOLS

The proposed project would become a part of the state's Waipahu educational complex. This complex consists of the following schools:

Grade levels (K-6): Ahrens, Honowai, Waipahu, Kanoelani
Intermediate (7-8): Waipahu Intermediate
High school (9-12): Waipahu High School

Students from the existing Village Park currently attend Kanoelani Elementary School (Crestview), Highlands Intermediate (Pearl City), and Pearl City High School.
Impact

The proposed project would generate sufficient students to justify the opening of a new elementary school at the existing Village Park school site. Grade school students from the existing Village Park would continue to attend Kanoelani Elementary School until the opening of the new school.

A second elementary school site will be reserved within the proposed project. If the need for another elementary school does not materialize, the site will be converted to residential use.

Waipahu Intermediate and Waipahu High School can be expanded to accommodate the new students from the proposed project (see letter from Department of Education, Appendix I).

Mitigation Measures

None necessary since a 6-acre school site has already been dedicated to the state for construction of a new elementary school within the existing Village Park Subdivision and a second 6-acre site has been reserved within the proposed project and necessary classroom at intermediate and high school levels can be provided as part of the Department of Education overall development program.
2.3.10. PARKS

Existing Conditions

The Park Dedication Ordinance (Chap. 22, Article 7, Revised Ordinances of Honolulu) requires a developer to dedicate sufficient land or pay a fee in lieu of land in order to meet the recreational needs of the project's residents. The minimum standards require a dedication of 350 square feet of park per residential unit. These provisions are implemented through the subdivision approval process.

Impact

The developer proposes to dedicate a total of 21 acres to the city for three separate parks. The 21-acre dedication meets the standards of the Park Dedication Ordinance. Acceptance of the land by the city commits public funds for site improvements and maintenance.

Mitigation Measures

Additional public funds will be needed to improve and maintain the park sites. These impacts are acceptable since the tax revenues generated from the project will offset the costs. For more detail, see section 2.4.1 and Appendix G (fiscal impact analysis).

2.3.11. HEALTH CARE SERVICES

Health care facilities in the Waipahu region include the Waipahu Clinic and the Punawai Clinic (Kaiser Foundation). The Waipahu Clinic has a staff of about 70 doctors, nurses, and aides, serving the basic health needs of residents from Waipahu to Waianae. The Waipahu Clinic offers a variety of services such as physical, occupational, speech therapy, public health nursing, children's health services, leprosy clinics, and complete mental health services. The nearest hospital services are available at Wahiawa General Hospital.

Impact

The existing facilities would be adequate to serve the residents of the proposed project.

Mitigation Measures

None necessary.
2.4. **FISCAL IMPACT AND BENEFIT-COST ANALYSIS**

Fiscal impact analysis is concerned with the financial impact of private development on the public sector’s capital improvement and operational budgets. Cost-benefit analysis examines both economic and non-economic impacts that may be conferred differentially on various groups in the community.

2.4.1. **FISCAL IMPACT**

Fiscal impact analysis is a projection of the direct public (state and county) costs and revenues associated with residential and nonresidential growth. Only direct impacts are considered because indirect impacts, such as increased property values of parcels adjacent to shopping centers, are impossible to predict accurately and may result in double counting. Only public costs and revenues are considered, as distinguished from private costs incurred by the developer and passed on to the consumers. Such private costs include dedication requirements for parks and infrastructure, as well as private services provided by homeowners’ associations. All costs and revenues are expressed in 1985 dollars; the effects of inflation would not significantly change the relative relationship of costs and revenues.

**Revenues.** Revenues to the State will be generated during the construction and operational phases of the proposed project. During the construction phase, the project will generate an estimated $29.9 million, or about $4.3 million per year during the 7-year construction period. Revenue sources include a 4 percent excise tax on finished development, excise taxes on building materials, 0.05 percent conveyance tax, and State income taxes.

During the operational phase, the project will generate about $6.8 million per year to the State. The sources of revenue include:

- Income taxes—about $4.0 million per year;
- Excise tax on retail sales (4%)—about $1.1 million per year;
- Excise tax on wholesale sales (0.5%)—about $0.1 million per year;
- Other (inheritance and estate taxes, conveyance taxes, licenses and permits, fines, forfeits, and penalties, charges for services)—about $177 per resident, or $1.6 million per year.

Revenues to the County will be generated during the operational phase at about $4.6 million per year. Revenue sources include:

- Property taxes—about $2.9 million per year from residential and commercial/industrial property;
- Other (license and fees for motor vehicles, bicycles,
relicensing, and animals; user charges for sewers, water, public transportation; motor fuel tax)—about $185 per resident, or $1.7 million per year.

Expenditures. All major capital improvements for the project, with the possible exception of regional highway improvements, will be provided by the petitioner. The only government capital expenditures to serve the project will be the cost for an elementary school and for park development on land donated by the developer. The estimated cost to the county for the park improvements is $1 million; the debt service is about $0.1 million per year (assuming financing with an 8.5%, 30-year bond). The estimated cost to the state for the school improvements is $1.7 million; the debt service is about $0.2 million per year.

Operational expenditures to support residents of the proposed project will be about $3.1 million for the County and $5.7 million for the State. These expenditures are estimated at $333 and $615 per resident per year for the County and State, respectively, and are based on analysis of County and State finances, with appropriate adjustments for federal and State grants and transfers. The expenditures cover general government, public safety, health, sanitation, education, culture and recreation, water, highways and streets, and public transportation.

Net Impact. For the County, revenues are expected to exceed expenditures by about $1.5 million per year. For the State, the $29.9 million construction-generated revenue will more than offset the $1.7 million expense to develop an elementary school. In addition, tax revenues generated during the operational phase of the project will exceed annual expenditures by about $1.1 million per year if debt service on the school is included, or $1.3 million per year if it is not (see Table 2-5).

2.4.2. BENEFIT-COST ANALYSIS (see Appendix H)

The principal benefit of the project will be its contribution to an improved housing market on Oahu—an increased supply of homes, increased competition with other land owners and housing developers, a variety of homes at prices which range from affordable to moderately expensive, land to be provided to the City and County of Honolulu for low- to moderate-income rental housing, conveniently located homes, and timely development. Homebuyers throughout Oahu would benefit, particularly those in Ewa and Central Oahu.

Recreational benefits will include the addition of three parks, a private recreational area, and a golf course. Residents of the proposed project and the existing Village Park will benefit from the parks and golf course. Other Oahu residents will benefit indirectly in terms of reduced congestion at other parks and golf courses.
Table 2-5. VILLAGE PARK EXPANSION, IMPACT ON STATE AND COUNTY FINANCES: SUMMARY
[In 1985 dollars.]

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>COUNTY, Full Operations:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenues</td>
<td>$ 4.6</td>
<td>million per year</td>
</tr>
<tr>
<td>Expenditures:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Debt Service</td>
<td>0.1</td>
<td>million per year</td>
</tr>
<tr>
<td>O&amp;M, and Services^2</td>
<td>3.0</td>
<td>million per year</td>
</tr>
<tr>
<td>Total County Expenditures</td>
<td>$ 3.1</td>
<td>million per year</td>
</tr>
<tr>
<td>Net County Revenues</td>
<td>$ 1.5</td>
<td>million per year</td>
</tr>
<tr>
<td>STATE:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction Phase, Average Revenues</td>
<td>$ 4.3</td>
<td>million per year</td>
</tr>
<tr>
<td>Full Operations:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenues</td>
<td>$ 6.8</td>
<td>million per year</td>
</tr>
<tr>
<td>Expenditures:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Debt Service</td>
<td>$ 0.2</td>
<td>million per year</td>
</tr>
<tr>
<td>O&amp;M, and Services^2</td>
<td>5.5</td>
<td>million per year</td>
</tr>
<tr>
<td>Total State Expenditures</td>
<td>$ 5.7</td>
<td>million per year</td>
</tr>
<tr>
<td>Net State Revenues</td>
<td>$ 1.1</td>
<td>million per year</td>
</tr>
<tr>
<td>STATE AND COUNTY, Full Operations:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenues</td>
<td>$ 11.4</td>
<td>million per year</td>
</tr>
<tr>
<td>Expenditures^2</td>
<td>8.8</td>
<td>million per year</td>
</tr>
<tr>
<td>Net State and County Revenues</td>
<td>$ 2.6</td>
<td>million per year</td>
</tr>
</tbody>
</table>

1 Excludes State and Federal transfers to the County, and Federal transfers to the State.
2 Assumes the same level of per-capita government service as currently.
The increased population in the area will justify expanded government services (schools, police, and fire), with the proposed project residents paying their fair share for these services through State and County taxes. The additional population should justify constructing a new elementary school, with resulting safety and convenience benefits for parents and children of the existing Village Park who currently travel to distant schools. Furthermore, the additional population should also support the planned commercial area, providing neighborhood conveniences to the residents of the proposed project and the existing Village Park.

An additional benefit will be increased employment at the proposed commercial, business, and recreational areas. Construction employment will also benefit the construction labor force.

The proposed project, individually or in combination with major projects proposed for Ewa and Central Oahu, will not adversely affect the economic viability of Oahu Sugar Company, nor will it require layoffs of sugar workers. Similarly, it is extremely doubtful that the proposed project will adversely affect growth of diversified agriculture and aquaculture in Hawaii. Also, the greenery of sugarcane will be replaced by the lawns, trees, and shrubbery typical of suburban neighborhoods.

Potential Minor Variation in Benefit-Cost Analysis

As discussed in section 2.3.3 (Wastewater), there is an additional 1,000 unit capacity at both the Honouliuli WWTP and the Waipahu WWPS. Approval of the Wai'elec Development in total would require the expansion of both the WWTP and the WWPS. If Federal funds are not available for the expansion then the additional capacity would have to be funded through additional County and State appropriations. It is anticipated that these appropriations would be based on requests from the City administration based on recommendations made by the Department of Public Works. The Department of Public Works is constantly monitoring the flows at its various pump stations and treatment plants as well as future development approvals in order to make funding requests of the City Council.

There should be no impact on State and County Finances if this project triggers sewage facilities expansion beyond those considered in the State and County impact analysis. This is because the estimated expenses were increased to provide current levels of services and therefore should include the necessary debt service to handle capital costs.

However, even if this expenditure is in addition to projected expense, cost estimates provided in the Water Quality Management Plan for the City and County of Honolulu October 1978 inflated to 1986 dollars on a per person basis are $144 for primary treatment and $284 for secondary treatment. If the Village Park Expansion were to require that service for 10,000
persons be provided then even at the secondary level total cost would be $2,840,000. Using the same financing estimates used in the Decision Analysts Hawaii Study (30 year 8 1/2% bond) indicates an average annual debt service of $264,000 or a 10% reduction in the estimated $2.6 million dollar positive impact of the development on State and County Finances.

The EIS consultant believes that this possible reduction in the positive benefits of the development on State and County finances is insignificant and doubtful in light of the fact that increases in debt service were already considered in the expense portion of the State and County Impact Analysis.
3.0 RELATIONSHIP TO LAND USE POLICIES AND REGULATIONS

State and county land use policies that are relevant to the proposed project are identified and analyzed in this chapter. State policies are expressed in the State Land Use Law (Chapter 205, HRS), State Plan (Chapter 228, HRS), and State Functional Plans. County policies are expressed in the General Plan, Development Plans, and zoning ordinance.

3.1 STATE LAND USE LAW

The 1985 Legislature replaced the Interim Land Use Guidance Policies (formerly Section 205-16.1, HRS) with a new set of criteria (Act 230/85 and codified as Section 205-17, HRS). The new criteria fall into three categories: (1) conformance with the State Plan, (2) conformance with the applicable district boundary standards contained in the Land Use Commission's (LUC) rules and regulations, and (3) impact on particular statewide concerns. This section will discuss the district boundary standards and the impact on statewide concerns. The State Plan is discussed in section 3.2.

A boundary change amendment request is pending before the Land Use Commission.

3.1.1. Conformance with the Urban District Boundary Standards (Section 205-17(2), HRS)

The applicable standards are found in the LUC District Boundary Regulations (Section 2-2).

Proximity to centers of trading and employment facilities except where the development would generate new centers of trading and employment.

The proposed site is in proximity to several employment centers, including Pearl Harbor/Airport, Ewa, and Schofield/Wahiawa. Existing Village Park residents work in Honolulu (50%), Pearl City (17%), airport (13%), central Oahu (10%), Waipahu (7%), and windward Oahu (3%). The project site is also conveniently located to the proposed secondary urban center at Ewa. In addition, the proposed commercial and industrial areas within the project site will generate new employment opportunities. For more detail, refer to section 2.2.3 (employment) and Appendix C (socio-economic study).

Substantiation of economic feasibility by the petitioner.

The proposed project is economically feasible, as demonstrated by the petitioner's finances (Appendix J), market projections (section 1.6 and Appendix A), and fiscal impact (section 2.4.1 and Appendix G).
Proximity to basic services such as sewers, water, sanitation, schools, parks, and police and fire protection.

The proposed project is in proximity to facilities and services that serve the existing Village Park and Waipahu Town. These facilities can be expanded at reasonable cost to adequately service the proposed project. For more detail, see sec. 2.3 (adequacy of public facilities and services), Appendix E (engineering study), and Appendix I (letters from agencies).

Sufficient reserve areas for urban growth in appropriate locations based on a ten (10) year projection.

Hawaii has been experiencing a housing shortage for the past 25 years. An annual shortfall of housing units on Oahu from 1983 to the year 2005 is estimated to be between 2,200 - 3,000 units. The market study (Appendix A) estimated that the market would absorb the proposed units at an average of 430 units per year based on the type of units being offered and the timing of the project relative to other proposed projects. The proposed project would contribute towards mitigating the chronic housing shortage problem. For more detail, see sec. 1.6 (feasibility analysis) and Appendix A (market study).

Lands included shall be those with satisfactory topography and drainage and reasonably free from the danger of floods, tsunami and unstable soil conditions and other adverse environmental effects.

The proposed site is highly suitable for urban development: its topography is relatively flat and non-stony, it is not prone to flooding or other natural hazards, and the soils are stable. For more detail, see sec. II.A (Physical environment).

In determining growth for the next ten years, or in amending the boundary, lands contiguous with existing urban areas shall be given more consideration than non-contiguous lands, and particularly when indicated for future urban use on State or County General Plans.

It shall include lands in appropriate locations for new urban concentrations and shall give consideration to areas of urban growth as shown on the State and County General Plans.

The proposed project site is contiguous with the existing Village Park. The petitioner has applied for an amendment to the county development plan to redesignate the proposed site from agriculture to urban use. The county administration favors increased urban growth in the area.

It shall not include lands, the urbanization of which will contribute towards scattered spot urban development, necessitating unreasonable investment in public supportive services.

The proposed site is contiguous to existing urban areas.
Supportive services will be provided by the petitioner or will be offset by tax revenues generated by the project. For more detail, see sec. 2.4.1. and Appendix G (fiscal impact).

It may include lands with a general slope of 20% or more which do not provide open space amenities and/or scenic values if the Commission finds that such lands are desirable and suitable for urban purposes and that official design and construction controls are adequate to protect the public health, welfare and safety, and the public's interests in the aesthetic quality of the landscape.

The only lands within the project site with slopes exceeding 20% are the two gulches. These lands will be left in open space (e.g., golf course, park). For more detail, see sec. 1.2.1 (land use plan) and 2.1.1 (topography).

3.1.2. Impact on Areas of Statewide Concern (sec. 205-17(3), HRS)

Preservation or maintenance of important natural systems or habitats.

There are no native or endangered species habitats within the vicinity of the proposed project site. The Waikiki stream habitat will not be affected by the project. For more detail, see sec. 2.1.4. (flora/fauna) and 2.3.5. (drainage).

Maintenance of valued cultural, historical, or natural resources.

There are no valued cultural, historical, or scenic resources within the project site. For more detail, see sec. 2.1.1 (topography), 2.1.5 (archaeological/historical resources), and Appendix B (archaeological survey).

Maintenance of other natural resources relevant to Hawaii's economy, including, but not limited to, agricultural resources.

Although prime agricultural land will be lost, this acreage is not essential to maintain the viability of the sugar industry or diversified agriculture. For more detail, see sec. 2.2.5 (economic impacts), 3.2 (state plan), and Appendix D (impact on agriculture).

Commitment of state funds and resources.

The only state capital expenditures resulting from the proposed project will be the new elementary school located within the existing Village Park and possibly a second elementary school located within the proposed project. The cost to construct both schools will be more than offset by the $29.9 million projected construction-generated tax revenues. The increased operational expenses for such public services as public safety, maintenance of streets and highways, education, culture and recreation will
be offset by income and excise tax revenues contributed by the project's residents and businesses. For more details, see section 2.4.1 and Appendix G (fiscal impact).

Provision for employment opportunities and economic development.

The proposed project will continue the full-time construction jobs connected with the existing Village Park (about 400 jobs). In addition, employment opportunities (about 800 jobs) would be generated by the proposed commercial-industrial area and the golf course. For more detail, see section 2.2.3 (employment) and Appendix C (socio-economic study).

Provision for housing opportunities for all income groups, particularly the low, low-moderate, and gap groups.

The project will offer a mix of housing types to attract a range of income groups. About 76% of the proposed fee simple units are targeted for moderate income groups. In addition, 30 acres will be dedicated to the county to construct about 480 rental units for the low-moderate income groups.

3.2 STATE PLAN AND FUNCTIONAL PLANS

The reclassification of land from agriculture to urban raises three major issues addressed by the State Plan: (1) reconciliation of competing policies between provision of affordable housing and preservation of prime agricultural land; (2) population distribution patterns; and (3) compatibility with facility plans. Conformance with the State Plan, Priority Guidelines, and Functional Plans is analyzed in terms of these policy issues.

Agriculture v. Housing

According to the ALISH classification, 691.5 acres of the proposed project site consists of prime agricultural land. The economic rationale for Hawaii's long-standing policies to protect prime agricultural land are two-fold: (1) to maintain the viability of sugar and pineapple industries, and (2) to encourage the growth of diversified agriculture. On the other hand, there is an acute need for affordable housing. Land use policies that protect prime agricultural land have the effect of limiting the supply of land for housing, thus contributing to the high urban land costs and the widely recognized high cost of housing.

The pertinent statements from the State Plan and functional plans are listed in Table 3-1. These statements are primarily from the State Plan sections on the "Economy--Housing," "Socio-cultural Advancement--Housing," the Agricultural Functional Plan, and the Housing Functional Plan. The factors discussed below were distilled from the policy statements in Table 3-1.

61
### Table 3-1. Pertinent Objectives and Policies from the State Plan, Priority Directions, and Functional Plans

#### Agriculture

**Economy—Agriculture (Sec. 226-7)**

**Objectives** *(Sec. 226-7(a), HRS)*:
1. Increase viability in sugar and pineapple industries.
2. Continue growth and development of diversified agriculture throughout the State.

**Policies** *(Sec. 226-7(b), HRS)*:
6. Assure the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.

#### Housing

**Socio-Cultural Advancement—Housing (226-19)**

**Objectives** *(Sec. 226-19(a), HRS)*:
1. Greater opportunities for Hawaii's people to secure reasonably priced, safe, sanitary, livable homes located in suitable environments that satisfactorily accommodate the needs and desires of families and individuals.
2. The orderly development of residential areas sensitive to community needs and other land uses.

**Policies** *(Sec. 226-19(b), HRS)*:
2. Stimulate and promote feasible approaches that increase housing choices for low-income, moderate-income, and upper-income group households.
3. Increase home ownership and rental opportunities and choices in terms of quality, location, cost, densities, style, and size of housing.
5. Promote design and location of housing developments that take into account the physical setting, accessibility to public facilities and services, and other concerns of existing communities and surrounding areas.
6. Facilitate the use of available urban lands to accommodate the housing needs in various communities.

#### Priority Directions

**Seek to protect prime agricultural and aquacultural lands through affirmative and comprehensive programs (Sec. 226-103(d)(1)).**

**Encourage urban growth primarily to existing urban areas where adequate public facilities are already available and can be utilized with reasonable public expenditures.**

**Encourage urban growth away from areas where other important benefits are present, such as protection of valuable agricultural land or preservation of life styles (104(c)/3)).**
AGRICULTURE

Implementing Actions:

Recommendation to the State Land Use Law to provide standards and criteria to conserve and protect important agricultural lands. [B(5)(a), Agricultural Functional Plan].

Identify important agricultural lands to promote diversified agriculture, increase agricultural self-sufficiency, and ensure the availability of agriculturally suitable lands. [B(5)(b), Agricultural Functional Plan].

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, substantial injustice or inequity will result or overriding public interest exists to provide such lands for other economic or social objectives of the Hawaii State Plan. [B(5)(c), Agricultural Functional Plan].

HOUSING

Implementing Actions:

Assess and delineate lands suitable for future housing development [B(5)(a), Housing Functional Plan].

Comments: . . . Identification of lands suitable for future housing development would be made by the counties as a continuation of general and development plans and should specifically be made in consonance with important agricultural lands.

1. Water availability should be considered for future housing development with regard to designated important agricultural lands, and be made on an area-by-area basis.

2. The location of areas identified for future housing development should consider the proximity of existing and planned urban development in order to maximize energy conservation efforts by encouraging compact, concentrated developments.

3. Consideration should be given to the cost of building infrastructure, utilities and providing open space.

4. Consideration should be given to the feasibility of the use of existing urban lands for housing.

5. Development should avoid critical environmental areas, including but not limited to, watershed and recharge areas, important wildlife habitats, streams and water bodies, scenic or recreational shoreline, and historic and cultural sites . . .

Encourage the use of opportunities and incentives in the State land use redistricting process to provide lands or homes for affordable or assisted housing development. [B(5)(c), Housing Functional Plan].
Impact on the viability of sugar or pineapple (sec. 226-7(a)(1), HRS)

Although the proposed project will utilize land presently leased by Oahu Sugar Co., the project will not affect the viability of Oahu Sugar Company (see Appendix I). The petitioner will absorb costs to relocate cane-haul roads, irrigation ditches and pipes, an earthen reservoir, and power poles. The reduction in sugarcane acreage will be gradual and partially compensated for by increasing yields. Oahu Sugar Co. can maintain its economies of scale by running only one of two mills currently in operation. For more detail, see section 2.2.5.1 and Appendix D (impact on sugar industry).

Impact on the projected amount of land needed for diversified agriculture (sec. 226-7(a)(2), 226-7(b)(2), HRS)

The agricultural acreage in the project site is not needed by the diversified agriculture industry. The sugar and pineapple industries have been declining in Hawaii. As land and water are freed by plantation cutbacks, the only remaining rationale to preserve prime agricultural lands is if diversified agriculture is able to take the place of sugar and pineapple.

Primarily due to market limitations, diversified agriculture has not grown as fast as sugar and pineapple are declining. Generally, the export sector of diversified agriculture has more growth potential than the local market sector. This means that the demands of increased population and increased buying power are being met by increased imports. In other words, Hawaii has suffered a further loss of self-sufficiency.

The State projects that approximately 20,000 acres will be needed for diversified agriculture by the year 1990 (DPED, 1985). Because of reduced plantings in sugar cane and pineapple in the past and likely future, a surplus of prime agricultural land exists on the neighbor islands and on Oahu to more than meet the projected needs of diversified agriculture, even if the proposed site is converted to urban use. Thus, although the proposed site is considered prime agricultural land, it is not essential to the future growth of diversified agriculture. For more detail, see section 2.2.5.2 and Appendix D (impact on diversified agriculture).

Suitability for agriculture (sec. 226-7(b)(6), 226-104(c)(2), HRS; Implementing Actions B(5)(a), B(5)(b), B(5)(c), State Agricultural Functional Plan)

The proposed site has some constraints that limit its suitability for agriculture. The State Plan Priority Directions (sec. 226-104(c)(2), HRS) and Housing Functional Plan (B(1)(a)) indicate that if housing cannot be accommodated by existing urban areas, then urban growth should be preferably directed to marginal agricultural lands. The determination of "marginal"
quality is complex—it must consider physical characteristics such as soil conditions, climate, and topography; it must also consider non-physical characteristics such as county policies, availability of irrigation water, distance from urban infrastructure systems, and compatibility with surrounding land uses. This difficult task has been delegated to the Land Evaluation Site Assessment (LESA) Commission (Act 273/83).

The LESA Commission developed preliminary criteria (LESA Commission, 1985). Based on this criteria, the project site is considered highly suitable for agriculture by the physical criteria. However, the site has the following non-physical constraints:

1) County policies—The General Plan indicates that diversified agriculture is to occur primarily in the Windward and Waianae areas; agricultural lands in the Central Oahu area are to be preserved only as needed to maintain the viability of sugar or pineapple. Since Oahu Sugar Company has stated that no adverse impact on their operations would occur from withdrawing the project site from agriculture, withdrawing the proposed project site from agricultural use would not be incompatible with the General Plan policies. The General Plan directs future urban growth substantially to the Ewa and Central Oahu areas.

2) Dependence on large amount of irrigation water—Without irrigation, the project site would be classified as D or E by the LSB system, or III or IV by the SCS system. Sugar cane crops have a particularly high water demand, averaging about 7,500 gpd for drip irrigation. Lands in lower elevations with plentiful sunshine and inexpensive irrigation water are more desirable than higher elevation land with more expensive pumping costs.

3) Contiguity to urban areas—Because of the contiguity to existing urban areas, the pressures to urbanize are greater due to the readily available infrastructure and higher land values.

The policies for protecting prime agricultural land have been in a state of transition. In surveys conducted for the State Plan Revision, the sentiment for protecting agricultural land has consistently lost support over the years when residents were asked to choose between more affordable housing or preserving prime agricultural land (DPED, 1985).

- Delivery of a variety of affordable housing units (sec. 226-19(a)(1), 226-19(b)(2)(3), HRS);

The State Plan policies encourage development of existing urban areas in hopes of meeting the demand for affordable housing while relieving development pressures in the urban fringe areas.
However, the delivery of affordable housing in existing urban areas is constrained by high land costs, small parcels that require consolidation, and the social dislocation and additional demolition costs to clear away existing structures.

In comparison, the proposed project is better able to ensure the delivery of affordable housing prices because of the following characteristics:

1) Relatively low site preparation costs—Mass grading of former agricultural lands is very cost-effective. The physical attributes that make the land suitable for agriculture (i.e., flat, rock-free, deep soil) are also the easiest to develop for urban use because of ease in installing underground utilities and constructing roads (LSB, 1969).

2) Available utilities—Existing water and sewer facilities are available for the first 1000 units, and can be readily expanded to accommodate the balance of the proposed project.

3) Mobilized development team—Since the proposed project will continue the existing Village Park project, the construction and sales teams are already assembled.

Besides providing affordable fee simple homes, affordable rental units will be provided through the combined efforts of the petitioner and the county. The petitioner will dedicate 30 acres of land to the county for the construction of about 480 units.

- Suitable location relative to employment and public facilities (sec. 226-19(a)(2), 226-19(b)(5), HRS; Implementing Action B(1)(a), State Housing Functional Plan)

The proposed project site is conveniently located near to employment centers, including Honolulu/Pearl Harbor, the future secondary urban center at Ewa, and Schofield/Wahiawa. Access to the H-1 freeway by means of the Kunia Interchange is located one-third of a mile away.

Existing sewer and water facilities are adequate to accommodate the initial two years of the project. Additional facilities required to service the balance of the project can be reasonably provided by the petitioner.


The potential for induced urbanization of surrounding agricultural lands is limited. The only agricultural land susceptible to urbanization is the acreage located adjacent to the northern boundary of the project site. Additional urbanization is constrained by gulches which serve as natural barriers to the north and east.
Population Distribution

Population distribution policies guide land use decisions by determining where future growth should occur. Pertinent State Plan policies and priority directions are excerpted in Table 3-2.

The primary determinants for locating future growth, as synthesized from the policy statements in Table 3-2, are discussed below.

- Adequacy of urban rehabilitation efforts to meet housing needs (HRS sec. 104(c)(1) and (2))

Reliance on urban infilling and rehabilitation will not completely satisfy the need for affordable housing. Most of the population capacity projected for the Primary Urban Center and, to varying degrees, those projected in other areas come from plans for redevelopment and infilling of previously passed over sites. The projections for development in these areas are overly optimistic for the following reasons:

1) They ignore the public and special interest groups' awareness and propensity to use their ability through legal and political means to stop or delay projects which may have a negative impact either socially or economically on their property or the community.

2) They ignore the immense number of factors which must all come together to make a redevelopment physically and economically attractive, and the human constraints on undeveloped and underdeveloped properties.

For more detail, see section 1.6.1 and Appendix A (market analysis).

- Presence of critical habitats on proposed site (HRS sec. 226-104(c)(2) and (4))

No critical resources will be irretrievably damaged by the project. There are no native or endangered species habitats or archaeological sites within the project site. For more detail, see section 2.1.4 (flora/fauna).

- Adequacy of support services and facilities (HRS sec. 226-5(b)(3))

The petitioner will provide the necessary support facilities for sewer, water, roads, and drainage. Tax revenues generated by the project will exceed the costs of facilities and services that will be publicly funded. For more detail, see section 2.4.1 and Appendix G (fiscal impact analysis).
Table 3-2. PERTINENT POLICY STATEMENTS FROM THE HAWAII STATE PLAN: POPULATION DISTRIBUTION

POPULATION

Objectives and Policies

Manage population growth statewide in a manner that provides increased opportunities for Hawaii's people to pursue their physical, social and economic aspirations while recognizing the unique needs of each county. (HRS sec. 226-5(b)(1)).

Encourage an increase in economic activities and employment opportunities on the neighbor islands consistent with community needs and desires. (HRS 226-5(b)(2)).

Ensure that adequate support services and facilities are provided to accommodate the desired distribution of future growth throughout the state. (HRS 226-5(b)(3)).

Promote increased opportunities for Hawaii's people to pursue their socio-economic aspirations throughout the islands. (HRS sec. 226-5(b)(4)).

Priority Directions

Plan the development and availability of land and water resources in a coordinated manner so as to provide for the desired levels of growth in each geographic area. (HRS sec. 226-104(b)(2)).

PHYSICAL ENVIRONMENT

Objectives and Policies

Take into account the physical attributes of areas when planning and designing activities and facilities. (HRS sec. 226-11(b)(3)).

Encourage design and construction practices that enhance physical qualities of Hawaii's communities. (HRS sec. 226-15(b)(5)).

Encourage urban developments in close proximity to existing services and facilities. (HRS sec. 226-13(b)(7)).

Priority Directions

Pursue rehabilitation of appropriate urban areas. (HRS sec. 226-104(c)(1)).

Encourage urban growth primarily to existing urban areas where adequate public facilities are already available or can be provided with reasonable public expenditures. Secondarily, encourage urban growth away from areas where other important benefits are present, such as protection of valuable agricultural land or preservation of lifestyles. (HRS sec. 226-104(c)(2)).

Direct future urban development away from critical environmental areas or impose mitigating measures so that negative impacts on the environment would be minimal. (HRS sec. 226-104(c)(4)).
Availability of water (HRS sec. 226-104(b)(2));

Sufficient water is available. Since the project site is within the Pearl Harbor Ground Water Control Area (GWCA), allocation of groundwater is controlled by DLNR. DLNR recently allocated about 11 mgd to the BWS. The BWS in turn will allocate this 11 mgd to proposed development projects in Central Oahu and Ewa. The BWS has informally reviewed the proposed project and has tentatively indicated that there is adequate water to serve the project with existing wells and one additional new well. For more detail, see section 2.3.2 (adequacy of water facilities) and Appendix E (preliminary engineering report).

Sensitivity of design and construction to the environment (HRS sec. 226-13(b)(6))

The site plan will consider climate, topography, wind direction, views and other environmental factors.

Proximity to existing services and facilities (HRS sec. 226-13(b)(7)).

The existing Village Park borders the proposed project site to the south.

Facility Planning

Land use decisions and facility planning should be coordinated to ensure that facilities have adequate capacity, as well as to ensure that facilities do not stimulate undesirable urban growth. The applicable State Plan and functional plan policies are excerpted in Table 3-3 and discussed in terms of the following factors.

The provision of public facilities should complement urban growth policies (HRS sec. 226-15(b)(1), 226-17(b)(2), Transportation Functional Plan Implementing Action E(1)(a)).

The proposed project conforms with urban growth policies in the State plan (see previous sections on "Agriculture v. Housing" and "Population Distribution"), the County General Plan (see section 3.3), and the County Development Plan for Central Oahu (see section 3.4). Therefore, expanding the capacity for such public facilities as highways, sewer, and water to serve the proposed project would be consistent with the state plan and other plans.

The provision of public facilities should not exceed resource limitations (HRS sec. 226-16(b)(1), Water Resources Functional Plan Implementing Action D(1)(a), HRS sec. 226-18(b)(5)).

The resource limits for water and energy will not be exceeded (see sections 2.3.2 and 2.3.6).
Table 3-3. PERTINENT POLICY STATEMENTS FROM THE HAWAII STATE PLAN AND FUNCTIONAL PLANS: FACILITY PLANNING

**Sewage**
Encourage the adequate development of sewer systems that complement planned growth. (HRS sec. 226-15(b)(1)).

**Water**
Relate growth activities to existing and potential water supply. (HRS sec. 226-16(b)(1)).
Expand State exploration program for new sources of surface and ground water supply, with emphasis on areas experiencing critical water problems. (State Water Resources Functional Plan, Implementing Action H(1)(a)).

**Transportation**
Coordinate state, county, federal, and private transportation activities and programs toward the achievement of statewide objectives. (HRS sec. 226-17(b)(1)).
Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawaii's natural environment. (HRS sec. 226-17(b)(10)).
Support land use management policies which encourage development within urban areas by developing land transportation plans which complement that land use. (State Transportation Functional Plan, Implementing Action H(1)(a)).

**Power and Communications**
Ensure that the development or expansion of power systems and sources adequately consider environmental, public health, and safety concerns, and resource limitations. (HRS sec. 226-18(b)(5)).
The provision of public facilities should not adversely affect the environmental and neighborhoods (HRS Section 226-17(b)(10), 226-18(b)(5)).

The proposed facilities for water, sewage, drainage, transportation, electrical, or telephone will not cause any adverse environmental or social impacts (see section 2.3).

3.3. GENERAL PLAN

During the 1985-1986 Development Plan Review the Waitec Development proposal was granted partial approval. (Approximately 100 acres and 500 units were approved.) Development Plan changes can only be granted if they are in compliance with existing General Plan Requirements. Therefore, at least the portion of the project covered by the DP change is in compliance with the General Plan.

Further, the City's Chief Planning Officer recommended a General Plan change in 1986 and further recommended approval of the entire 691.5 acre contingent on the general plan change.

The General Plan five-year review will take place in 1987. It is the applicant's contention that the proposed development complies with the existing General Plan.

3.3.1. Population

The City & County of Honolulu General Plan was adopted eight years ago with a primary aim to alleviate the housing shortage. The policies focus on the development of Ewa as a major urban center second in importance to the Waikiki-Honolulu-Pearl City area and more controlled growth in urban fringe areas such as Central Oahu.

The proposed development being planned for Central Oahu strongly emphasizes residential use and the petitioner is willing to work with the City in providing for the housing needs of low, moderate, and gap group income households. Furthermore, in terms of locational considerations, Central Oahu enjoys many of the same advantages as Ewa in terms of accessibility to the transportation system and proximity to major job centers which originally led to the selection of Ewa for a secondary urban center.

It should be noted that the foregoing development opportunities are complemented by a diminished need for agricultural land in Central Oahu. Due in part to improved production practices such as the use of drip irrigation, the amounts of land needed to maintain viable sugar and pineapple operations have been significantly reduced. For example, since 1982 the Oahu Sugar Company has reduced the amount of land under cultivation for sugar cane from 18,500 to 14,200 acres resulting in a crop size reduction of only 10 percent from 100,000 to 90,000 tons.
3.3.2. Housing

Objective A, Policy 3: Encourage innovative residential development which will result in lower costs, add convenience and privacy, and the more efficient use of streets and utilities.

Objective A, Policy 8: Encourage and participate in joint public-private development of low and moderate income housing.

Objective A, Policy 11: Encourage the construction of affordable homes within established low density communities by such means as "ohana" units, duplex dwellings, and cluster development.

Objective A, Policy 12: Encourage the production and maintenance of affordable housing.

Objective C, Policy 1: Encourage residential developments that offer a variety of homes to people of different income levels and to families of various sizes.

Objection C, Policy 3: Encourage residential development near employment centers.

Objective C, Policy 4: Encourage residential development in areas where existing roads, utilities, and other community facilities are not being used to capacity.

The proposed project will offer a mix of housing types to attract people of different income levels and families of various sizes. Although a few of the units will be custom units, about 76% of the 3,000 fee simple units will be affordable priced units. The county will construct an additional 480 rental units for low-income households on land dedicated by the developer to the county. The project is conveniently located near to several employment centers.

3.3.3. Economic Activity

Objective C, 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.

Objective C, 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.

Although the proposed project will reduce sugar cane acreage, the viability of Oahu Sugar Co. will not be affected (see section 2.2.5.1). The major areas for diversified agriculture are the Windward, North Shore, and Waianae coasts; these are the rural areas of Oahu. The General Plan directs future growth away from those rural areas and instead focuses growth in the Primary Urban Center, Ewa, and Central Oahu.
3.3.4. Natural Environment

Objective A, Policy 4: Require development projects to give due consideration to natural features such as slope, flood and erosion hazards, water-recharge areas, distinctive land forms, and existing vegetation.

Objective B, Policy 2: Protect Oahu's scenic views, especially those seen from highly developed and heavily travelled areas.

The project design considered natural features of the site such as slope (see section 2.1.1), erosion hazards (see section 2.1.2), flood and other types of hazards (see section 2.1.6), flora/fauna (see section 2.1.4), distinctive landforms (see section 2.1.1), and scenic views identified in the Central Oahu Development Plan.

3.3.5. Recreation

Objective D, Policy 9: Require all new developments to provide their residents with adequate recreation space.

Objective D, Policy 10: Encourage the private provision of recreation and leisure-time facilities and services.

The petitioner will satisfy the requirements of the Park Dedication Ordinance by dedicating 21 acres to the county for public parks. An additional 6.9-acre private recreation facility will be constructed for the project's residents.

3.4. DEVELOPMENT PLAN

The proposed project site is within the Central Oahu planning district. The petitioner is presently seeking amendments to the land use and public facilities map. The existing land use designation is agriculture. The proposed designations are residential, low-density apartment, commercial, industrial, public, and golf course. The Waipahu Neighborhood Board No. 22, among other community groups, has expressed support for the proposed amendments (see letter, Appendix I).

During the 1985-1986 Development Plan Review the Waitec Development proposal was granted partial approval. (Approximately 100 acres and 500 units were approved.) It is the applicant's understanding that where a General Plan amendment is involved there may not be a 1986-1987 annual review. The next processing period would be the 1987 review. The Waitec Development Project has been submitted for processing during the 1987 review period and consists of 591.5 acres (the portion of the development not approved in the 1985-1986 review). The application has been filed and is under consideration by the Department of General Planning for processing.
3.5. ZONING AND SUBDIVISION

The existing zoning is AG-1. The proposed rezoning consists of the following designations: R-6 (or PD-H), A-1 (or PD-H), IMX (in anticipation of enactment of the proposed Land Use Ordinance), and P-1 (golf course and parks). A rezoning request cannot be approved unless it conforms with the General Plan and the applicable Development Plan (Revised City Charter, Section 5-412.3). Thus, rezoning will be sought upon approval of the proposed General Plan and Development Plan amendments.

To conform with the subdivision requirements, the petitioner will ensure that the public facilities provided by the petitioner are designed and built to county standards, the number and size of lots conform with the building code, the grading plans conform with erosion control guidelines, and park dedication requirements have been met.
4.0 Probable Adverse Environmental Effects Which Cannot Be Avoided

The following adverse environmental effects, short and long run, cannot be avoided if the project is implemented as proposed:

<table>
<thead>
<tr>
<th>Environmental Effect</th>
<th>Mitigating Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Loss of Agricultural Land</td>
<td>Other land is available for agricultural activities. The developer will bear the cost of relocating existing ag infrastructure.</td>
</tr>
<tr>
<td>2. Traffic:</td>
<td></td>
</tr>
<tr>
<td>Local: Traffic congestion will increase on Kunia Road and at the Kunia Interchange.</td>
<td>The developer will improve Kunia Road and the Kunia Interchange to minimize the congestion.</td>
</tr>
<tr>
<td>Regional: The capacity of H-1 is a regional problem shared by existing and proposed communities from Moanalua to Ewa.</td>
<td>This problem is the subject of a Department of Transportation short and long range program that is being publicly discussed. The first phase of this program, adding additional lanes to portions of H-1, is being implemented now.</td>
</tr>
<tr>
<td>3. Clearing and construction work will result in temporary dust, noise and some traffic disruption.</td>
<td>The developer and its contractors will comply with local grading and subdivision ordinances which have provisions to minimize these impacts.</td>
</tr>
<tr>
<td>4. Increased need for utility services, including city supplied water and sewer.</td>
<td>Water consumption would be less than current agricultural use. Both the water and sewer plans must be approved by public agencies.</td>
</tr>
<tr>
<td>5. Increased need for public services such as police, fire, schools and recreational facilities.</td>
<td>A study of impact on state and local finances indicates that the project will generate revenues exceeding expenditures of $2.6 million per year.</td>
</tr>
</tbody>
</table>

Countervailing policies are discussed in section 3 of this report. The reasons for proceeding with the proposed project in light of the adverse impacts are similarly discussed in section 3.
5.0 Alternatives to the Proposed Action

The purpose of this section is to develop, describe, and weigh alternatives to the proposed action which can involve significant tradeoffs among the uses of available environmental resources.

The proposed project will have a number of impacts, both beneficial and adverse, in the process of its implementation. Six alternatives are identified within three main options:

- Alternative land uses
  - Industrial
  - Commercial
  - Agricultural
  - Park/Recreational
- Alternative Site Designs
- "No project" Alternative

The choice of the most viable alternative depends on a thorough analysis and comparison of the varied factors relating to each, weighed in relation to community values and proposed growth rates and trends for the region.

This EIS evaluates the total project of 691.5 acres in terms of land use, intensity of development and building types.

ALTERNATE LAND USES

Industrial

Campbell Industrial Park, Gentry Business Park and Bougainville Commercial Center, all of which are within 10 miles of the subject property, still have industrial land available. In late 1985 six new industrial parks were being proposed at various locations on Oahu, including 40 acres in Halawa Valley and 60 acres in Sand Island.

The General Plan for Oahu and Development Plan for Central Oahu shows 250 acres for industrial use in Mililani. The first phase of the proposed development, Hawaii Technology Park, (150
acres) is in the Zoning process and is expected to be approved in 1986.

Village Park. There are several advantages to development of the site for industrial use.

- It is situated in the urban-fringe area conveniently located in relation to the H-1 freeway and in close proximity to the markets and potential labor force.

- It could serve as an employment center for the central corridor and north shore of Oahu as well as for Nanakuli and the west coast of the island. This could reduce traffic to work centers in the downtown area.

- Access to the site is by the H-1 Freeway and Kunia Road, which connects Wahiawa to Waipahu.

- Land on three sides of the site is compatible to industrial use. These areas include Waikiki Gulch on the east, agricultural land to the north, highway/agricultural land use to the west. Residential use to the south could be buffered from the industrial use.

- The creation of a well designed industrial park could attract businesses currently unwilling to combine administrative and warehouse space in the same location. Comparing site, physical characteristics, improvement costs and availability of land in fee, an industrial distribution center could provide needed space at economical and competitive prices.

Disadvantages of industrial use of the site include:

- Air polluting industries would create adverse impacts.

- Noise generation would raise complaints.

- Implementation of this proposal may conflict with Campbell Industrial Park as a major industrial area.

- The existence of several other industrial areas which, in combination, provide adequate facilities to meet the current demand.

- Profits in relation to residential proposals may make feasibility of industrial uses questionable.

Use of the site as an industrial park to attract industries to satisfy their needs reveals a need for strict environmental controls.
The use being proposed includes only 28.7 acres of the site as an Industrial/Commercial Mixed Use area. The marketing study foresees 18.7 acres with industrial uses.

Commercial

Availability of Other Sites. The Pearl Ridge Regional Shopping Center is located within eight miles of the project site and is adequately serving the needs of the area.

Sub-regional commercial facilities are also located in nearby Ewa, Waipahu, Waimalu and Pearl City. In addition the proposed Waikale Development, which is adjacent to the project on the East, contains 52 acres of Commercially designated land. Mililani is expected to commence development on a regional type commercial center within the next year.

Village Park. Disadvantages of the site for large scale commercial purposes outweigh favorable aspects. Close proximity to an existing regional shopping center. Availability of local commercial facilities. Limitations of accessibility due to one highway. Low intensity of development in surrounding area.

Advantages for large scale commercial use are extremely limited due to the overriding disadvantages and problems of business interests and economic feasibility.

Agricultural

Availability of Other Sites. Large parcels of available land with accessible utilities and services comparable to the Village Park site are extremely limited in the Waipahu-Crestview area.

Village Park. All of the project site is currently under sugar cane production. The proposed project site is part of a land withdrawal program considered in the Oahu Sugar Company survival program. In recent years the company has voluntarily withdrawn over 4,000 acres from production—almost 25% of its acreage—while production has declined only slightly. Other lands are available for production should they be necessary.

The applicant in the EIS process is not the owner of the land and would not be able to purchase the land and then maintain it in its current use or another agricultural use at a reasonable economic rate of return.

Retaining this land in agricultural use will put pressure on other lands currently employed in agricultural uses to be converted to residential use to meet the demand for housing.
Parks/Recreation

Availability of Other Sites. The only existing large scale public recreation area is the Ted Makalena golf course near the Middle Loch of Pearl Harbor. The City and County has long range plans to develop the adjacent Waipahu Garden Park into a regional park. The existing golf course would then become a part of the entire parcel. Other than the above, there are no other large scale park facilities for the region. However, the Department is aware of the need for future land areas for recreational purposes.

Village Park. Public recreational use of the site would be a distinct benefit to the region, especially since there is a lack of public facilities. It has a cool climate, the sloping land provides vistas of the Pearl Harbor and Waianae area; the topography with its gulches provides natural opportunities to modify the site for intensive and/or passive recreational uses.

This course of action has the overwhelming disadvantages of:

- Limited public funds to purchase the land at a reasonable cost to pay for basic costs, taxes, and profit for the present owner, nor for operation and maintenance.

- Additionally, the DPR does not have the manpower or funds for operation and maintenance of a large scale regional park area.

The proposed development includes a privately funded golf course, recreation center and public parks which will increase the recreational amenities of the region at no cost to the public.

Alternative Site Designs

Since the Village Park Expansion was initiated a number of changes have been made.

The number of housing units, changes in land use, and other modifications are the result of input from various government agencies involved in the review process and analysis. A number of potentially undesirable impacts have led to several changes. The monitoring of housing requirements and market trends will also determine the type and number of units built over the construction period. Continued interest of all agencies, community groups and the general public will most likely result in further monitoring and specific changes to the development plan.

The current site design is the result of over a year of planning and study with numerous changes made to the proposal based on governmental and community input.
"No Project" Alternative

Since the project site is presently in sugar production, the "no project" alternative is feasible at this time. Therefore, non-implementation would allow the land to remain in agricultural use as described in Chapter I. By allowing the agricultural use to continue, the open space value and drainage characteristics of the site would remain unchanged. Any adverse or beneficial impacts created by project implementation would not be generated. For example, there would be no adverse impacts from air pollution, noise, traffic, or requirements for municipal services. The beneficial impacts of controlled land use, services, cultural and recreational facilities would also then be non-existent.

If the project was not implemented at this time, it is probable that the land would remain in its present condition for only a short period of time while other alternatives were being considered by the owners and developer. Some action is likely to take place that could include:

- Selling the project site.
- Allowing the project site to continue the current use until the demand for housing creates public or governmental pressure to utilize this area.
- Pressure for urbanizing other agricultural lands of further development of existing urbanized areas to provide housing units that would have been provided by this project.
- Allowing for a smaller portion of the site to be developed and/or decreasing the density.

It is recognized that there may be many more viable alternatives; however, such a list would only be conjecture at this point.
6.0 Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

Implementation of the proposed project clearly defines the short-term uses of the environment and the maintenance and enhancement of long-term productivity. The short-term uses are physical actions required to establish and develop this residential community. These actions include clearing, grubbing, installing infrastructure, constructing varied buildings and the developing of support facilities to sustain users at each stage of development.

Short-Term

- Construction-related activities will create noise, increase air pollution, disrupt traffic circulation and generate dust from dump trucks, earth-moving equipment, and various mechanical construction tools, etc. During grading operations, the existing vegetation cover will be lost and surface soils will be subject to erosion. Immediate mitigation measures will be required to prevent increased siltation in streams leading to Pearl Harbor. Construction will result in a short-term negative impact on the environment. Completion of the project in accordance with local standards provides sufficient mitigation measures to reduce and virtually eliminate these temporary conditions. However, increased traffic, concentrations of CO and ambient noise levels will increase upon completion of the project.

- Jobs will be created during the construction period. In terms of "cash flow", this results in a short-term positive impact on employment within the area.

- Materials purchased and their utilization will also create a short-term beneficial impact on the economy of the area.

Long-Term

- The completed community of 3,480 residential units, infrastructure, recreational facilities, community facilities and a commercial and industrial area reflects the long-term commitment of resources to the project. The continuing interaction of the community with the surrounding area through its support facilities, services and social activities will contribute to its long-term productivity.

- The development of the project is a long-term commitment of prime agricultural land to a permanent residential community.
- Maturing of plant materials and maintenance of the golf course and park areas and private yards will have the positive impact of increasing the livability for all occupants in the community.

- Air pollution levels will increase slightly due to internal traffic within the project and, to a lesser extent, the use of power tools and equipment used for maintenance of streets and park areas. A negative impact will be the long-term increase of pollution due to increased vehicular traffic on the freeway and Kualoa Road at the entrance to the project. Air pollution will decrease from agricultural sources including cane burning, plowing, harvesting and transportation of harvested crops.

- Maintenance of necessary infrastructure elements, community facilities and municipal services will sustain the project at a high degree of livability for an average of 30 to 50 years.

- Job opportunities will change from short-term construction-oriented to those created by the service requirements of the intended residents. In addition, the golf course will offer employment in the recreation industry.

The urbanization of the land forecloses the land's future option for agriculture. Once the infrastructure and buildings are constructed, it would be extremely difficult to change the designated land use to agricultural or other land uses especially in relation to investment and return on private capital.

The project also presents an opportunity for the City to make housing units available to low and moderate income families and individuals through its development of rental housing.
7.0 Irreversible and Irretrievable Commitments of Resources

Completion of each phase of the Village Park Expansion will add a progressive and permanent commitment of resources for each development site.

- Conversion of agricultural land to a long-term commitment of 30 to 50 years' urbanization would not be retrievable unless structures were demolished.
- Building materials necessary to construct the project will be irretrievably committed. There would be only limited salvage value.
- Human resources and energy expended to construct, maintain, and service the project would be irretrievable.
- Infrastructure and service consumption factors are essentially irreversible.
- State and local governments would have a long-term public financial commitment to support facilities, services and programs such as fire, police, utilities, education, solid and liquid waste disposal, parks and recreation, cultural, social and health care services.
- Environmental resources will be committed or changed according to the community's needs and desires. Air masses will change and become polluted with dust and vehicular exhaust emissions. Water resources will be tapped, used and returned in polluted form to the environment. Ecological balance will be modified between such natural events as precipitation, ground run-off, evaporation and ground water storage as surface permeability is reduced due to construction. The developer must control erosion and establish new drainage patterns with man-made structures and landscaping. All structures placed on the site will result in a loss of views, vistas and existing open space.
- Use of the land for urbanization illustrates the trend of growth in the Central Oahu area. Development will also irreversibly close another gap in the central corridor of the island.
- The present shift in population distribution patterns towards the Ewa and urban-fringe areas will be irreversibly accommodated by implementation of the project.
8.0 An Indication of What Other Interest and Considerations of Governmental Policies are Thought to Offset the Adverse Environmental Effects of the Proposed Action

The proposed project was considered the best alternative use for the project site. The negative impacts generated by the proposed action are small when compared to the positive impacts of the project.

The project will provide needed housing, recreational benefits, convenient shopping facilities, industrial land for an employment base and an opportunity to provide housing for low and moderate income families in a desirable area through the City Department of Housing and Community Development's rental housing program.

The project is also expected to generate a 2.6 million dollar a year surplus in public revenue over public expenditure.

The project also conforms to State and City plans as discussed in section 3 of this report.

The combination of uses being proposed allows for the integration of a number of varying objectives sought by government and by the surrounding community. The alternatives considered and discussed achieve these ends to a lesser degree.
Summary of Permits and Approvals

The permits and approvals that must be obtained before construction can start are listed below. The status of these permits is also indicated. The project site is not located within the special management area; therefore, the shoreline protection ordinance and coastal zone management act are not applicable.

### Necessary Permits and Approvals for the Village Park Expansion

<table>
<thead>
<tr>
<th>Permit</th>
<th>Legal Reference</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Use District Boundary Amendment</td>
<td>Chap. 205, HRS</td>
<td>Application filed 2/86</td>
</tr>
<tr>
<td>Development Plan Amendment</td>
<td>Central Oahu DP (Ord. No. 83-7, 84-59, 85-48)</td>
<td>Application filed on 1/85; decision expected by 6/86</td>
</tr>
<tr>
<td>Zoning Amendment</td>
<td>Chap. 21, R.O. of Honolulu</td>
<td>Will be filed after decision on DP amendment</td>
</tr>
<tr>
<td>EIS</td>
<td>Chap. 343, HRS</td>
<td>Notice of Preparation filed 10/86</td>
</tr>
<tr>
<td>Subdivision Approval</td>
<td>Chap. 22, R.O. of Honolulu</td>
<td>Will be filed during pendency of zoning amendment</td>
</tr>
<tr>
<td>Grading Permit</td>
<td>Chap. 23, R.O. of Honolulu</td>
<td>Processed concurrently with subdivision application</td>
</tr>
<tr>
<td>Groundwater Control Area Permit</td>
<td>Chap. 177, HRS</td>
<td>BWS applied for additional allocation</td>
</tr>
</tbody>
</table>
## 10.0 List of Consultants Involved in the Preparation of the EIS

<table>
<thead>
<tr>
<th>Consultant</th>
<th>Area of Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>William E. Wanket, Inc.</td>
<td>Consultant in charge of EIS preparation and coordination of other consultants</td>
</tr>
<tr>
<td>Roy Takeyama, Esq.</td>
<td>Legal Consultants</td>
</tr>
<tr>
<td>Jan N. Sullivan, Esq.</td>
<td></td>
</tr>
<tr>
<td>Chaney, Brooks &amp; Co.</td>
<td>Marketing Consultants</td>
</tr>
<tr>
<td>John Zapotocky, Consultant</td>
<td></td>
</tr>
<tr>
<td>Chiniago</td>
<td>Archaeological/Historic Consultant</td>
</tr>
<tr>
<td>Community Resources</td>
<td>Socio-Economic Consultants</td>
</tr>
<tr>
<td>Decision Analysts</td>
<td>Agricultural Impact</td>
</tr>
<tr>
<td>Park Engineering</td>
<td>Fiscal Impact</td>
</tr>
<tr>
<td></td>
<td>Cost-Benefit Analysis</td>
</tr>
<tr>
<td></td>
<td>Preliminary Engineering</td>
</tr>
<tr>
<td></td>
<td>Traffic Impact</td>
</tr>
</tbody>
</table>
11.0 Sent Copies of Notice of Preparation

City and County of Honolulu

Honolulu Fire Department
Dept. of General Planning
Dept. of Parks & Recreation
Board of Water Supply
Honolulu Police Dept.
Dept. of Public Works
Dept. of Transportation Services
Dept. of Housing & Community Development

State of Hawaii

Dept. of Agriculture
Dept. of Education
Dept. of Social Services & Housing (Hawaii Housing Authority)
Dept. of Transportation
Dept. of Planning & Economic Development
Dept. of Health
Dept. of Land & Natural Resources
Office of Environmental Quality Control

Federal

U.S. Army Corps of Engineers
U.S. Fish & Wildlife Service
U.S. Soil Conservation Service

University of Hawaii

Environmental Center
Water Resources Research Center

Community Organizations

The Sierra Club
Outdoor Circle
Life of the Land
American Lung Association of Hawaii
Mililani/Waipio/Melemanu Neighborhood Board
Waipahu Neighborhood Board
Wahiawa Neighborhood Board
Waipahu 2000 Association
<table>
<thead>
<tr>
<th>Organization/Agency</th>
<th>Date of Comment</th>
<th>Date Comment Received</th>
<th>Date of Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dept. of Agriculture</td>
<td>01/31/86</td>
<td>02/03/86</td>
<td>03/12/86</td>
</tr>
<tr>
<td>Dept. of Education</td>
<td>01/18/86</td>
<td>01/23/86</td>
<td>03/12/86</td>
</tr>
<tr>
<td>Dept. of Health</td>
<td>02/03/86</td>
<td>02/07/86</td>
<td>03/12/86</td>
</tr>
<tr>
<td>Dept. of Social Services &amp; Housing (Hawaii Housing Authority)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dept. of Planning &amp; Economic Development</td>
<td>01/29/86</td>
<td>02/03/86</td>
<td>03/12/86</td>
</tr>
<tr>
<td>Dept. of Land &amp; Natural Resources</td>
<td>02/20/86</td>
<td>02/25/86</td>
<td>03/12/86</td>
</tr>
<tr>
<td>Dept. of Transportation</td>
<td>02/13/86</td>
<td>02/18/86</td>
<td>03/12/86</td>
</tr>
<tr>
<td>Office of Environmental Quality Control</td>
<td>01/24/86</td>
<td>01/28/86</td>
<td>03/12/86</td>
</tr>
<tr>
<td>University of Hawaii Water Resources Research Center</td>
<td>02/03/86</td>
<td>02/06/86</td>
<td>**</td>
</tr>
<tr>
<td>University of Hawaii Environmental Center</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City and County</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Board of Water Supply</td>
<td>02/06/86</td>
<td>02/10/86</td>
<td>03/12/86</td>
</tr>
<tr>
<td>Honolulu Fire Department</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dept. of General Planning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dept. of Housing &amp; Community Development</td>
<td>01/31/86</td>
<td>02/05/86</td>
<td>03/12/86</td>
</tr>
<tr>
<td>Dept. of Parks &amp; Recreation</td>
<td>01/24/86</td>
<td>01/28/86</td>
<td>03/12/86</td>
</tr>
<tr>
<td>Honolulu Police Department</td>
<td>01/15/86</td>
<td>01/20/86</td>
<td>03/12/86</td>
</tr>
<tr>
<td>Dept. of Public Works</td>
<td>02/04/86</td>
<td>02/06/86</td>
<td>03/12/86</td>
</tr>
<tr>
<td>Dept. of Transportation</td>
<td>01/15/86</td>
<td>01/17/86</td>
<td>03/12/86</td>
</tr>
<tr>
<td>Federal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S. Army Corps of Engineers</td>
<td>01/30/86</td>
<td>02/05/86</td>
<td>03/12/86</td>
</tr>
<tr>
<td>Dept. of Interior Fish &amp; Wildlife Division</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dept. of Interior Soil Conservation Service</td>
<td>01/27/86</td>
<td>01/30/86</td>
<td>**</td>
</tr>
<tr>
<td>Dept. of Housing &amp; Urban Development</td>
<td>02/06/86</td>
<td>02/13/86</td>
<td>**</td>
</tr>
<tr>
<td>Private Organizations and Agencies</td>
<td>Date of Comment</td>
<td>Date Comment Received</td>
<td>Date of Response</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------------</td>
<td>-----------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>American Lung Association</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life of the Land</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neighborhood Boards</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mililani</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wahiawa</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waipahu</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Outdoor Circle</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Sierra Club</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waipahu 2000 Association</td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Denotes that organization was sent an unsolicited copy of the EIS Preparation Notice on January 8, 1986 and did not respond during the 30-day period for consultation.

** Indicates that a response was received; however, it contained no significant comment and therefore did not require a response prior to filing of the draft EIS.

Note: The Waipahu Neighborhood Board and the Waipahu 2000 Community Association did not respond to the EIS Preparation Notice, however, have endorsed the project in other communications which are included in the Draft EIS.
William E. Manket, Inc.
Pacific Tower, Suite 1010
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Manket:

Subject: Environmental Impact Statement Preparation Notice (EISPW) for Raising Application; Waiteo Development, Inc.; Waikoloa and Housse, Ewa, Oahu
THK: 9-4-021 30, por. 1 and 17

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

According to the EISPW, the applicant will be seeking to raise the subject parcels and develop a planned, multiple-activity community on the 593.2-acre site.

On December 30, 1985, we reviewed and submitted comments to the Department of Land Utilization on an application for a consolidation and resubdivision of THK: 9-4-021 31, 33, 35, 36, 37, 38, 39, and 9-4-031 1, 9 (2,249.160 acres) into three lots of 191.477, 1,171.025, and 866.457 acres for conveyance purposes. The subject project site includes all of the 191.477-acre lot and approximately one-half of the 1,171.025-acre lot.

The subject site is entirely within the preliminary "Important Agricultural Lands" (IAL) boundary as defined by the Land Evaluation and Site Assessment Commission ("A Draft Report of the State of Hawaii Land Evaluation and Site Assessment System", November 1985). These lands capable of producing high agricultural yields, lands which produce commodities for export and local consumption, lands not currently in production but needed to attain desired projected levels of agricultural activities and income, and lands designated by public policy as important agricultural lands resulting from some unique quality, setting or use.

The subject parcels are classified "Prime" (approximately 520 acres), "Other Important" (65 acres), and a small residual (10 acres) according to the Agricultural Lands of

January 31, 1986
Mr. William E. Manket
Page 2

Importance to the State of Hawaii (AIL) system. The Soil Conservation Service Soil Survey identifies the predominant soils as (1) Lehua Silty Clay loam (LH) with 0 to 3 percent slopes which is used for sugarcane and pineapple, and (2) Molokai Silty Clay loam (MUS, MUC, MUC, MUD) with 0 to 10 percent slopes which are used for sugarcane and pineapple. The crop capability classifications for these soils range from 1 to 2CV (soils with few limitations that restrict their use to soils with severe erosion hazard if cultivated and not protected). The less agriculturally suitable soils, Waikoloa Silty Clay (WAC) and rock land (RKL), are found along the banks of Waikoloa Stream.

The project site has Land Study Bureau Overall Productivity Ratings of "A", "B", and "C" (within the gulches and stream). By this method of classification, the "A" and "B" soils have good to very good productivity potential for most agricultural uses.

The draft EIS should include discussion on the following issues:

- the impact of the removal of productive lands from sugarcane production on Oahu Sugar Company's economic viability;
- the broader economic impact to the State attributable to the irreparable loss of prime, irrigated agricultural land;
- present source(s) and potential alternative uses of agricultural irrigation water at the project site;
- the potential of establishing viable alternative agricultural uses on the project site;
- how the proposed project conforms to the State Agriculture Functional Plan and its objectives and policies, in particular, Implementing Action 5(5)(c);
- the impact on agriculture resulting from the withdrawal of 2,764 million gallons/day of water from the Pearl Harbor Groundwater Control area.

We appreciate the anticipatory nature of this EISP which provides us the opportunity to review the subject project at this early stage of the approval/development process. We continue to believe, however, that the substantial impact of an EIS should be required earlier in the development approval process.
January 31, 1986
Mr. William E. Wnek
Page 2

(at the time of General Plan, Development Plan, or Land Use Commission boundary amendments) rather than later (at the time of zoning or Special Management Area permit applications). The State Attorney General's opinion No. 85-30 (December 20, 1985) states that "...Chapter 341, Hawaii Revised Statutes, is applicable to non-county initiated actions which propose amendment or change to a county's planning documents, however, denominated, as development plans or otherwise, and which would result in a land use designation other than agriculture, conservation, or preservation."  

In our September 13, 1985, comments on the Department of General Planning's FY 1985-86 Development Plans Annual Review, we concluded that "The ongoing work of the LSBW Commission to systematically identify important agricultural lands should not be pre-empted by the potential redesignation of large acreages of agricultural land to urban classification for which there is no immediate need, and for which the impacts of the proposed uses have not been assessed in accordance with state law. The proposed DP amendments to redesignate land from agricultural to other uses, which are not fully consistent with the General Plan, should not be approved at this time."

Sincerely,  

Jack K. Suma  
Chairman, Board of Agriculture

Attachments

CC: STD, EPSC, DLUH, DCP

---

March 12, 1986
Mr. Jack K. Suma, Chairman  
Board of Agriculture  
P.O. Box 22159  
Hilo, Hawaii 96720-0159

Re: DEA Comments to Written EIS Prep Notice

Dear Mr. Suma:

Thank you for your comments of January 31, 1986 on the subject of DEA Comments to Written EIS Prep Notice. We respond as follows:

A report titled "Proposed Village Park Expansion: Impact on Agriculture and Aquaculture" by Decision Analysts, Inc., was not received in time to address the concerns raised in your comments. A summary of the information contained in this report which relates to your concern will be included in the EIS. We will provide your department with a copy of the report in its entirety should you request it.

In addition, the EIS will discuss the relationship of the project to the State Plan, including implementing Action B(5)(c) of the Agricultural Functional Plan.

It should be noted that this EIS is being submitted early (not during zoning or DEA as indicated in your letter) as we are still in the middle of obtaining a Development Plan amendment, and are still in the process of submitting our boundary amendment petition.

Again, thank you for your comments. We look forward to your review and further comment on the draft EIS.

Sincerely,

[Signature]

William E. Wnek  
Director
WILLIAM E. WANKET
P.O. Box 2360
Honolulu, Hawaii 96804

March 12, 1986

Mr. Francis H. Natanaka
Superintendent
State of Hawaii
Department of Education
P.O. Box 2360
Honolulu, Hawaii 96804

Re: EIS Prep Notice - Water Development

Dear Mr. Natanaka:

We are in receipt of your comments of January 16, 1986 and respond as follows: The EIS will contain a section discussing public schools.

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

Sincerely,

WILLIAM E. WANKET
P.O. Box 2360
Honolulu, Hawaii 96804

cc: V. Honda, OBS
W. Araki, Leeward Dist.
Mr. William E. Warkel  
February 3, 1986

Mr. William E. Warkel  
February 3, 1986

Dear Mr. Warkel,

Subjects: EIS Preparation Notice for the Proposed Wailea Development Located at Wailea and Haana, Ewa, Oahu

Thank you for allowing us to comment on the subject EIS preparation notice. We provide the following comments:

Drinking Water

It is our understanding that the proposed project involves the development of 3,000 residential units, a golf course, a recreational center, a shopping center, and a commercial/light industrial complex. The estimated water consumption for this project is 2,704 MGD. The developer is proposing to install a new well and additional water treatment facilities at the existing Kona Well site to support approximately 3,000 of the proposed units. In addition, plans are to construct two booster pump stations and a new Kona 4675 reservoir. One booster station is proposed at the Kona Well II site to boost additional water to the Kona 4675 reservoir. A second booster station will be installed at the Kona Well II site to boost approximately 2,076 MGD to the new Kona 4675 reservoir.

Section II-20-29 of Chapter 20 requires all new sources of potable water supply public water system to be approved by the Director of Health prior to their use to serve potable water. Such approval is based primarily upon the satisfactory submission of an engineering report which adequately addresses all concerns as set down in Section II-20-29. The engineering report must be prepared by a registered professional engineer and bear his or her seal upon submission.

Section II-20-30 requires that new or substantially modified distribution systems for public water systems be approved by the Director of Health. Such approval depends on the submission of plans and specifications for the project prior to construction and the demonstration that the new or modified portion of the system is capable of delivering potable water in compliance with all maximum contaminant levels as set down in Chapter 20 once the distribution system or modification is completed. In the case of modifications to a Honolulu Board of Water Supply system, approval authority has been delegated to the Honolulu Board of Water Supply.

The location of this project makes the question of water supply an extremely critical issue. The EIS should fully address all issues related to both water availability, demand, and quality. Potential contamination by the commercial and industrial establishments being proposed for this project must also be assessed with respect to potential groundwater contamination and cross connection with potable water.

Noise

1. Noise problems are anticipated due to the integration of various land uses within the project location. In preparation of the Environmental Impact Statement, these concerns must be addressed, including mitigation measures to control such noise impacts.

a. Noise from activities associated with commercial and industrial facilities can have an adverse effect on residents in the surrounding neighborhood. The proposed plan indicates low density apartments adjacent to commercial and industrial mix-use areas. Increased vehicular traffic, including vehicles utilized for deliveries and vehicles within off-street parking areas, may also create noise impacts on adjacent residential communities.

b. Noise from activities associated with the use of recreational facilities and sites can have adverse effects, in terms of annoyance, on residential areas. The proposed concept of housing residential units along the golf course may result in noise disturbances from ground maintenance and club activities. Other recreational areas, such as public parks and recreation centers, may also create disturbances.

c. Plans should be initiated to locate areas discussed above away from adjacent residential communities. Areas utilized for such usage should be designed in such a way to minimize possible noise impacts.

2. Through facility design, noise from equipment such as air conditioning/ventilation units, generators, compressors, pumps, and exhaust fans must be attenuated to meet the allowable noise levels of Title II, Administrative Rules Chapter 43, Community Noise Control for Oahu. Such design must be especially directed toward building facilities in commercial, shopping center and industrial areas.

3. Should the proposed development utilize residential lots within structures in close proximity to each other, such as duplexes or zero lot line, these cluster homes should be designed so as to minimize the containment of noise.

4. Should the proposed project site include parking structures, effort should be directed toward control of noise from tire squeals and vehicular noise emissions.

5. Plans should be developed to locate residential units away from major highways, as noise impact from vehicular traffic may occur.

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

a. The contractor must obtain a noise permit if the noise levels from the construction activities are expected to exceed the allowable levels of the regulations.
Mr. William E. Wanket
February 3, 1986

Page 3

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

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

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

8. Areas north and west of the proposed project location continue to be utilized for agricultural purposes. Noise associated with these activities can have a negative impact on residential areas. Additional disturbances may occur from heavy vehicles utilized to transport agricultural products, while travelling through or nearby the development.

Sincerely yours,

James K. Reda
Deputy Director for Environmental Health

March 12, 1986

Mr. Leslie E. Matsubara
Director
Department of Health
P.O. Box 3578
Honolulu, Hawaii 96801

Re: DOT Comments to the Notice EIS Prep Notice

Dear Mr. Matsubara:

Thank you for your comments of February 3, 1986 on the subject Prep Notice; we respond as follows:

Drinking Water. Our consultants, Berk Engineering, are working with the various governmental agencies to secure the necessary permits and approvals necessary for new water sources. The drinking water issues and its status will be discussed in the draft EIS.

Note: The EIS will address the noise concerns of the Department of Health.

Thank you for your comments; we look forward to your review and comments on the EIS in the future.

Sincerely,

William E. Wanket

FEB 7 1986
January 29, 1986

Mr. William E. Warkent
William E. Warkent, Inc.
Pacifica Tower, Suite 1010
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Warkent:

Subject: Environmental Impact Statement Preparation Notice for Wai'anae Development, Oahu

We have reviewed the environmental impact statement preparation notice and recommend that the draft environmental impact statement (DEIS) discuss the relationship of the proposed project to applicable objectives, policies and priority guidelines of the Wai'anae State Plan.

We would appreciate the opportunity to review the DEIS and subsequent EIS documents.

Very truly yours,

[Signature]

[Name]

Cc: Office of Environmental Quality Control
Mr. John Maile
Department of Land Utilization
City and County of Honolulu

March 12, 1986

Mr. Kent W. Keith, Director
Department of Planning and Economic Development
P.O. Box 2251
Honolulu, Hawaii 96804

Re: DEIS Comments to Wai'anae EIS Prep Notice

Dear Mr. Keith:

We are in receipt of your comments dated January 29, 1986 to the subject Prep Notice and respond as follows:

The draft EIS will include a discussion on the relationship of the proposed project to the applicable objectives, policies and priority guidelines of the Wai'anae State Plan.

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

Sincerely,

[Signature]

[Name]
March 12, 1986

Mr. Kuzumuchi, Chairman
Board of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96810

Subject: Water Development Proposal - RIS Prep Notice

Dear Mr. Kuzumuchi,

Thank you for your comments of February 20, 1986 to the Water RIS Prep Notice. We respond as follows:

We hope that the Board and the staff will be able to complete its review of the application for a water use permit so that the results of your review can be included in the Draft RIS due to be published in the near future.

The applicant commissioned a study of the archaeological resources of the site which included a field survey and historical research. The investigation confirmed the lack of any significant resources in the project area. The draft RIS will contain a summary of the conclusions of the report as well as any significant information.

The applicant is committed to working with the State Historic Preservation Officer to expand our knowledge of Hawai'i's past. Our consultants and contractors will be advised of our commitment to this important activity. Of course, the applicant and their consultants and contractors will comply with all laws dealing with the preservation of archaeological sites.

Sincerely,

[Signature]
Chairperson and State Historic Preservation Officer

FEB 25 1986
Thank you again for your comments; we look forward to your review and further comment on the draft EIR.

William F. Wshet

Mr. William E. Wanket, Inc.
Pacific Tower, Suite 1010
1001 Bishop Street
Honolulu, Hawaii 96813

Gentlemen:

Environmental Impact Statement Preparation Notice for the Proposed Waite Development, Waikiki, Moana, Eva, Oahu

We have reviewed the subject preparation notice and offer the following comments for your consideration:

1. The proposed development has been previously coordinated with the Department of Transportation, Highways Division, and it is essential that this coordination be continued as the project is further developed.

2. In the EIS, it is stated that the development will further congest Interstate Route H-1; however, possible measures to mitigate this impact were not described. Because of conflicts with the large volume of right turners from Kunia Road to H-1, a portion of the 1,500 vehicles (turning left from Kunia Road to H-1) during the A.M. peak period may choose to utilize other facilities such as Farrington Highway. These effects should also be discussed.

3. Plans for improvements along Kunia Road must be reviewed and approved by the Department of Transportation, Highways Division, prior to actual construction.

4. All costs for highway and access improvements shall be borne by the developer.

5. The developer should be informed that we are greatly concerned about the effects of large developments on the
downstream sections of our highways. Consequently, we are presently considering methods requiring developers' participation in funding construction of needed improvements/mitigation measures.

We appreciate this opportunity to provide comments.

Very truly yours,

[Signature]

Director of Transportation

February 11, 1986

Mr. Clarence K. Tannoaka
Vice President/Treasurer
Park Engineering, Inc.
Kawashio Plaza, Suite 300
547 South King Street
Honolulu, Hawaii 96813

Dear Mr. Tannoaka:

Village Park Expansion
Traffic Impact Report

We have reviewed the revised Traffic Impact Report which was submitted with your letter of January 28, 1986.

Our only comment refers to page 16, first sentence of the first paragraph, after item 3. We suggest that the sentence be changed to read: "It is the developer's intention to construct and fund the above-mentioned improvements." We feel this modification will more clearly state the developer's total responsibility for providing the proposed improvements. Otherwise, we found the report satisfactorily addressed our concerns and it should be included or referenced in the project's EIR.

Thank you for this opportunity to provide comments.

Very truly yours,

[Signature]

Wayne J. Yamashita
Director of Transportation
March 12, 1986

Mr. Wayne J. Yamashiki, Director
Department of Transportation
655 Punchbowl Street
Honolulu, Hawaii 96813

Re: RIA Prep Notice for the Proposed Waitea Development at Waialae, Moana, Ewa, Kahului
DOT Reference No. RIF 8.1103

Dear Mr. Yamashiki,

We are in receipt of your comments of February 12, 1986 and respond as follows:

1. Our staff and consultants will continue to coordinate the traffic study for the proposed project with the Department of Transportation.

2. The traffic study for the proposed project has discussed the impact of traffic from the development on the H-1 Interstate system. However, an assessment of the total impact must be made from inputs from all proposed developments in the region. This assessment must also consider the timing of the aggregate developments.

We therefore believe that proposing improvements on H-1 to mitigate the impact of the proposed Waitea development is not the proper approach to the solution of the overall problem. Rather, we support the recommendations of the DOT report titled "Effects of Central and Leonard Canal Developments Upon the State Highway System" dated February 1986. A flexible approach to the growing traffic demand of new developments as they are constructed and occupied is the only viable approach to the problem.

Alternate routes such as Farrington Highway are part of the overall flexible program. To make this highway an attractive alternative for the proposed Waitea Development, it would require a major improvement, especially in view of other larger proposed developments in close proximity.

3. Plans for improvements along Kunia Road will be submitted to DOT for review and approval when they are completed.

4. All cost for Kunia Road, including the interchange and access improvements as required, will be borne by the developer.

5. We are aware of the department's concern over the impact of large developments on downstream traffic. The developer is willing to work with the Department in developing methods which would enable the developer to participate in the mitigation of these items.

Thank you for your comments; we look forward to your review and further comment on the draft RIA.

Sincerely,

William E. Winkel
March 22, 1986

Ms. Letitia H. Uyehara, Director
Office of Environmental Quality Control
465 South King Street, Room 115
Honolulu, Hawaii 96813

Re: EIS Prep Notice - Wai'ale Development

Dear Ms. Uyehara:

We are in receipt of your comments dated January 24, 1986 and respond as follows:

1. The responses of the Board of Water Supply and the Department of Land and Natural Resources to our request for an increase in water allocation from the Pearl Harbor Basin have not been received as of this date. We will include them in the EIS if they are received prior to the filing date. Our consultant, Park Engineering, will discuss the issue with both departments. The water allocation is necessary before the project can proceed.

2. A traffic report will be included as part of the EIS.

3. The permanent conversion of 691.5 acres of prime agricultural land classified under the Agricultural Lands of Importance to the State (ALISL) system will be permanently converted to urban use.

Thank you for your comments. We look forward to your review and further comment on the draft EIS.

Sincerely,

[Signature]

Letitia H. Uyehara
Director

[Signature]
University of Hawaii at Manoa
Water Resources Research Center
Hulama Hall 220, 2620 Dole Street
Honolulu, Hawaii 96822

3 February 1986

William E. Wombat, Inc.
Pacific Tower, Suite 1010
1001 Bishop Street
Honolulu, Hawaii 96813

Gentlemen:


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

Sincerely,

Edwin T. Moriyama
EIS Coordinator

NO RESPONSE REQUIRED

AN EQUAL OPPORTUNITY EMPLOYER
February 6, 1986

William E. Wanket, Inc.
Pacific Tower, Suite 1010
1001 Bishop Street
Honolulu, Hawaii 96813

Gentlemen:

Subject: Your Letter of January 8, 1986 for Comments to the Environmental Impact Statement (EIS) Preparation Notice for the Proposed Waitec Development,

THK: 9-4-8135

Thank you for the opportunity to comment on the Waitec Development Environmental Impact Preparation.

We have the following comments on the proposed water system:

1. **Existing Facilities:** The granular activated carbon (GAC) treatment facility is anticipated to be operational very shortly. The construction has been completed and will be placed in operation when the facility is turned over to the Board by the developer, Waitec Development.

2. **Water Requirements:** We have submitted a request to the Board of Land and Natural Resources to increase the allocated withdrawal from Kunia II well field to 2.0 million gallons per day (MGD).

3. **Water Master Plan:** The new water facilities indicated in the EIS Preparation Notice were based on a master plan which is in the process of being revised by the developer's engineer.

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

Very truly yours,

KAZU HAYASHI
Manager and Chief Engineer

March 12, 1986

Mr. Kazu Hayashida
Manager and Chief Engineer
Boards of Water Supply
630 South Beretania Street
Honolulu, Hawaii 96813

Re: Comments to Waitec Development EIS Prep Notice

Dear Mr. Hayashida:

Thank you for your comments of February 6, 1986 on the subject Prep Notice. We respond as follows:

The EIS will contain a discussion of the water facilities necessary for the development of the project including the existing granular activated carbon treatment facility, the status of the Board of Water Supply's request to the Board of Land and Natural Resources to increase the allocated withdrawal from the Kunia II well field, and the latest revision of the Water Master Plan available.

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

Sincerely,

WILLIAM E. WANKET
Manager, Public Affairs
January 31, 1986

William E. Waskett, Inc.
Pacific Tower, Suite 1010
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Waskett:

Subject: Environmental Impact Statement - Preparation Notice

Project: Wailea Development

THK: B-4-02: 30 and Portion of 1 and 17

Area: 692.51 acres

Request: To rezone parcel from A-1 Agricultural to various urban uses.

The Department of Housing and Community Development has reviewed the information provided regarding the Wailea development and found it to be consistent with the Housing Assistance Plan (Census Tract 89.02).

We have mandated to provide housing units for low- and moderate-income families on Gahou. We are happy to note that the developer has made a commitment to provide an estimated 400 rental housing units on lands to be dedicated by the developer.

If you have any questions, please contact Mr. James Miyagi of our Housing Division at 623-4824, who will assist the developer in formulating a program to provide these units.

Sincerely,

Alvin K. H. Pang

March 12, 1986

Mr. Alvin Pang, Director
Department of Housing and Community Development
650 South King Street
Honolulu, Hawaii 96813

Re: Response to Comments on Wailea EIS

Dear Mr. Pang:

Thank you for your comments on January 31, 1986. We respond as follows:

We will continue to work closely with your department to ensure that our commitment to supply land to the City for low/moderate income housing units is met.

We look forward to your review and further comment on the draft EIS.

Sincerely,

William E. Waskett

March 12, 1986
Thank you for allowing our department to review and comment on the Environmental Impact Statement Preparation Notice for the Wai-tec Development.

Sincerely,

[Signature]

TOM T. NUKI, Director

January 24, 1985

William E. Wanket, Inc.
1001 Bishop Street
Honolulu, Hawaii 96813

Gentlemen:

Subject: Environmental Impact Statement Preparation Notice
Proposed Wai-tec Development - Horse
Tax Map Key 64-4-02: 20, par. 1 and 13

The size of the proposed Wai-tec Development would have a significant impact on our public parks in the subject area. Consequently, it is important that an effective park system be established to serve the project's recreational needs.

We have made an assessment of the project's recreational needs together with the existing Village Park area. We have determined that the existing Village Park, when fully developed, and the proposed Village Park Expansion area would have a projected population of 5,100 and 9,000, respectively, or a total of 14,100. Based on our guidelines, two community type parks would be required to serve a population this size. Honolulu Community Park has already been established as one community park, with the other community park to be located in the Village Park Expansion Area.

Our guideline for a community park would be a park ten or more acres in size, serve an area of one mile radius, and a population of approximately 10,000. Facilities in the park would include children's play areas, outdoor basketball and volleyball courts, soccer and softball fields, parking area and a recreation building.

The development of a community park in the Expansion Area, together with Honolulu Community Park, will provide the Village Park residents with ample recreational facilities.

We recommend that the developer contact Mr. Jason Tum at our Advance Planning Section at 522-4235 to discuss the project's recreational needs and park dedication requirements. The size and location of the community park to serve the Expansion Area must be established before detailed planning of the proposed project is done.
March 12, 1986

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

Re: RIS Prep Notice - Walter Development

Dear Mr. Mabake:

We are in receipt of your comments of January 24, 1986 and respond as follows:

We have been in contact with your staff and have provided for three park sites within the "Expansion Area". The location and size of the sites were selected with the input of your staff.

A discussion of the park system for the Village Park development will be contained in the RIS.

Thank you for commenting; we look forward to your review and further comment on the draft RIS.

Sincerely,

William E. Wanket
Walter Development

January 15, 1986

William E. Wanket, Inc.
Pacific Tower, Suite 1010
1001 Bishop Street
Honolulu, Hawaii 96813

Gentlemen:

The Honolulu Police Department wishes to be consulted during the preparation of the Environmental Impact Statement for the Village Park development between Kunia Road and Waipahu High.

Our concerns are the traffic safety problems that will be created by a large number of vehicles being added to the already congested highways serving Honolulu proper and the large population increase that is envisaged in our police district III serviced by the Pearl City police station. This station is presently operating at near capacity and cannot adequately support the additional personnel and other resources that will be required.

Thank you for providing us the opportunity to become involved in planning for this development in its early stages.

Sincerely,

DOUGLAS G. GIBB
Chief of Police

By

DAVID SHEARD 
Assistant Chief of Police
Administrative Bureau

P.O. Box 4000
Honolulu, Hawaii 96813
(808) 548-8000
(808) 548-8161
(808) 548-8162
(808) 533-9137
March 12, 1986

Douglas C. Gibb, Chief of Police
City and County of Honolulu
1555 South Beretania Street
Honolulu, Hawaii 96814

Re: EIS Prep Notice - Wai-te Development

Dear Chief Gibb,

We are in receipt of your comments of January 15, 1986 and respond as follows:

1. Traffic is a concern of the Wai-te Developer as well as other City and State agencies. To evaluate the impact of the development on traffic, the developer has commissioned a traffic impact study for the project. In addition, the developer and his consultants have been cooperating with the State Department of Transportation in its current review of the islandwide impact of future growth. The traffic impact study will be a part of the EIS.

2. Your concern over the adequacy of the Pearl City station to handle the proposed growth in the area will be noted in the EIS. Our staff will be happy to meet with your staff to expand on or clarify the planning information contained in the Prep Notice and to be provided in the EIS. We would also be happy to provide your staff with any other information that might help the Police Department in planning its facilities or manpower requirements to meet the needs of future growth.

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

Sincerely,

[Signature]

William E. Wanket
WAI-TE
Dear Mr. Smith:

Thank you for your comments of February 4, 1986. We respond as follows:

Engineering: Our consultants, Park Engineering, will update the existing drainage master plan and submit it for your review and approval.

Refuse Collection: Refuse collection will be covered in the EIR.

Sanitary Sewers: Our consultants are working closely with your staff to make sure that adequate improvements in existing facilities are included in the Public Facilities amendments to the Central Oahu Development Plan.

Thank you for your comments; we look forward to your review and further comment on the draft EIR.

Sincerely,

[Signature]

March 12, 1986

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

Re: Comments to Waste EIR Prep Notice

February 4, 1986

William E. Wanket, Inc.
Pacific Tower, Suite 1010
1001 Bishop Street
Honolulu, Hawaii 96813

Gentlemen:

Subject: Your Letter of January 9, 1986, Relating Proposed MAIPEC Development

We have the following comments to assist you in the preparation of an Environmental Impact Statement for the above project:

Engineering:

The developer shall submit a drainage master plan and report for our review and approval.

Refuse Collection:

Refuse collection for this large development will require increases in personnel and trucks. Plans should be submitted for review.

Sanitary Sewers:

Existing sewers are available for approximately 1,000 units which were approved under the original master plan. The Waipahu Sewage Pump Station will have to be expanded before the entire development can be accommodated.

Very truly yours,

[Signature]

Russell L. Smith, Jr.
Director and Chief Engineer
January 15, 1986

Mr. William E. Wanket, Inc.
Pacific Tower, Suite 1010
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Wanket:

Subject: Wailea Development
Waikoloa/Hoasina, Oahu

This is in response to your request of January 8, 1986.

We recommend that a traffic study be included in your Environmental Impact Statement for the above project.

The traffic study should address the following concerns:

1. The amount of vehicular traffic to be generated by the project and its impact on the surrounding streets. A capacity analysis for the critical intersections near the project should be included for the a.m. and p.m. peak hours.
2. The traffic impact of the project on the arterial system that will be affected.
3. The impact of the project on public bus service in the area.
4. The need for street improvements on the surrounding street system to support the proposed project.

If there are any questions, please contact Kenneth Hirata of my staff at 523-5059.

Sincerely,

L. John Hirata

March 13, 1986

Mr. John Hirata, Director
Department of Transportation Services
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Re: EIS Prep Notice - Wailea Development

Dear Mr. Hirata:

We are in receipt of your comments of January 15, 1986 and respond as follows:

A traffic study will be included in the EIS for the above-referenced project and will cover the areas of concern expressed in your letter.

1. Vehicular Traffic to be Generated and Its Impact.
   The estimated traffic volume to be generated by the subject project is covered in detail in the study. The proposed and existing intersections of the main collector streets and Kaniau Road have been analyzed for capacity and evaluated from the standpoint of delays at the intersections for the a.m. and p.m. peak hours. These determinations are made using the methodology and criteria set forth in the 1985 Highway Capacity Manual, published by the Transportation Research Board.

2. Traffic Impact of the Project on the Arterial System.
   The impact on the existing intersections of the Kaniau Interchange and on the ramp terminals at the east side of the interchange are analyzed and evaluated in conformance with the Highway Capacity Manual.
3. Public bus service as well as other public transportation modes are addressed. The existing express bus service is described and an extension of it is proposed. The study also summarizes the ongoing work being done by the Bali 2000 Studies.

4. Wherever the study revealed inadequacies in the road system in the surrounding vicinity, improvements are proposed. However, improvements on the R-3 Freeway proper and other broad regional type projects will require more extensive studies. The State Highways Division has two improvement projects on R-3 under design and are developing conceptual plans of other improvements.

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

Sincerely,

[Signature]

William A. Manhet
Executive
Mr. William E. Wanket
William E. Wanket, Inc.
Pacific Tower, Suite 1010
1001 Bishop Street
Honolulu, Hawaii 96813

January 30, 1986

Dear Mr. Wanket:

Thank you for the opportunity to review and comment on the EIS Preparation Notice for Waitea Development, Waikiki, Ewa, Oahu. The following comments are offered:

a. A Department of the Army permit is not required since no fill is proposed in waters of the United States (Section 404 of the Clean Water Act).

b. According to the Flood Insurance Study prepared by Federal Insurance Administration for the City and County of Honolulu, the proposed project is within an area of minimal flooding, designated Zone C.

Sincerely,

[Signature]
Chief, Engineering Division

---

March 12, 1986

Mr. Kiso Cheung, Chief
Engineering Division
Department of the Army
U.S. Army Engineer District, Honolulu
Ft. Shafter, Hawaii 96850

Re: Comments to Waitea EIS Prep Notice

Dear Mr. Cheung:

Thank you for your comments of January 30, 1986 on the subject Prep Notice. We respond as follows:

Although no Army permit is required, we will send you a copy of the draft EIS for further review and comment.

The flood designation of the subject area will be reported in the EIS.

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

[Signature]
Chief, Engineering Division

[Signature]
William E. Wanket
William E. Wanket, Inc.
January 27, 1986

Mr. William E. Wackett,
Wacked Lit Inc.,
Pacific Tower, Suite 1010
1001 Bishop Street
Honolulu, Hawaii 96813

Subject: WAI EIS Preparation Notice for the Proposed WAI Development
Waikiki and Moana, Oahu, Hawaii

We have no comments to offer at this time, but would appreciate the opportunity to review the draft environmental impact statement on this project.

Sincerely,

FRANCIS C.M. LIM
State Conservationist

February 6, 1986

Mr. William E. Wackett,
Wacked Lit Inc.,
1001 Bishop St., Suite 1010
Honolulu, HI 96813

Dear Mr. Wackett:

Subject: WAI EIS Preparation Notice
3000 Unit Residential Development

This responds to your request for information on HUD's role in your preparation of an environmental impact statement on the subject project under Chapter 343 HRS.

Under HUD's Local Area Certification process we have reviewed the City and County's Planning process and various standards that govern the development of housing on Oahu and find them acceptable to HUD. Other resources protected by federal statutes also do not appear to be threatened by the proposed development. Consequently HUD will not require a full EIS under 24 CFR part 50.

We would be interested in receiving a copy of the draft EIS when it is published.

If you have any questions, you may contact Frank Johnson at 546-5570.

Sincerely,

Michael S. Flores
Director, Housing Division

OBI D. JAMES
OFF H. SING
EHO CHRON

NO RESPONSE REQUIRED
### 12.0. ORGANIZATION AND AGENCY COMMENTS TO DRAFT EIS AND RESPONSES TO COMMENTS

<table>
<thead>
<tr>
<th>ORGANIZATION</th>
<th>DATE OF COMMENT</th>
<th>DATE OF RECEIPT</th>
<th>DATE OF RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Agriculture</td>
<td>08/23/86</td>
<td>06/24/86</td>
<td>07/07/86</td>
</tr>
<tr>
<td>Department of Defense</td>
<td>05/27/86</td>
<td>06/29/86</td>
<td>No response required</td>
</tr>
<tr>
<td>Department of Education</td>
<td>06/08/86</td>
<td>06/11/86</td>
<td>07/07/86</td>
</tr>
<tr>
<td>Department of Health</td>
<td>06/19/86</td>
<td>06/21/86</td>
<td>07/07/86</td>
</tr>
<tr>
<td>Department of Land and Natural Resources</td>
<td>06/01/86</td>
<td>06/11/86</td>
<td>No response required</td>
</tr>
<tr>
<td>Department of Planning and Economic Development</td>
<td>06/20/86</td>
<td>06/24/86</td>
<td>07/07/86</td>
</tr>
<tr>
<td>Department of Transportation</td>
<td>06/10/86</td>
<td>06/14/86</td>
<td>07/07/86</td>
</tr>
<tr>
<td>Additional comments*</td>
<td>06/30/86</td>
<td>07/02/86</td>
<td>07/07/86</td>
</tr>
<tr>
<td>UH Environmental Center+</td>
<td>06/25/86</td>
<td>06/27/86</td>
<td>07/07/86</td>
</tr>
<tr>
<td>UH Water Resources Center+</td>
<td>06/35/86</td>
<td>06/37/86</td>
<td>07/07/86</td>
</tr>
</tbody>
</table>

### County

<table>
<thead>
<tr>
<th>ORGANIZATION</th>
<th>DATE OF COMMENT</th>
<th>DATE OF RECEIPT</th>
<th>DATE OF RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Department</td>
<td>05/24/86</td>
<td>05/30/86</td>
<td>No response required</td>
</tr>
<tr>
<td>Fire Department</td>
<td>06/23/86</td>
<td>06/24/86</td>
<td>No response required</td>
</tr>
<tr>
<td>Department of Housing and Community Development</td>
<td>06/12/86</td>
<td>06/14/86</td>
<td>No response required</td>
</tr>
<tr>
<td>Department of Land Utilization</td>
<td>06/20/86</td>
<td>06/21/86</td>
<td>07/07/86</td>
</tr>
<tr>
<td>Department of Parks and Recreation</td>
<td>06/09/86</td>
<td>06/21/86</td>
<td>07/07/86</td>
</tr>
<tr>
<td>Police Department</td>
<td>06/02/86</td>
<td>06/04/86</td>
<td>No response required</td>
</tr>
<tr>
<td>Department of Public Works</td>
<td>05/30/86</td>
<td>06/05/86</td>
<td>07/07/86</td>
</tr>
<tr>
<td>Clarification Memo*</td>
<td>07/07/86</td>
<td>07/07/86</td>
<td>07/07/86</td>
</tr>
<tr>
<td>Department of Transportation Services</td>
<td>06/16/86</td>
<td>06/21/86</td>
<td>07/07/86</td>
</tr>
</tbody>
</table>

### U.S. Government

<table>
<thead>
<tr>
<th>ORGANIZATION</th>
<th>DATE OF COMMENT</th>
<th>DATE OF RECEIPT</th>
<th>DATE OF RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Agriculture</td>
<td>06/13/86</td>
<td>06/19/86</td>
<td>No response required</td>
</tr>
<tr>
<td>Soil Conservation</td>
<td>06/03/86</td>
<td>06/21/86</td>
<td>07/07/86</td>
</tr>
<tr>
<td>Department of Army Engineers</td>
<td>06/20/86</td>
<td>06/28/86</td>
<td>No response required</td>
</tr>
<tr>
<td>Department of Housing and Urban Development</td>
<td>06/20/86</td>
<td>06/21/86</td>
<td>07/07/86</td>
</tr>
<tr>
<td>Department of Interior Fish and Wildlife</td>
<td>06/02/86</td>
<td>06/04/86</td>
<td>07/07/86</td>
</tr>
<tr>
<td>Department of Navy</td>
<td>06/02/86</td>
<td>06/04/86</td>
<td>07/07/86</td>
</tr>
</tbody>
</table>

### Private Organizations

<table>
<thead>
<tr>
<th>ORGANIZATION</th>
<th>DATE OF COMMENT</th>
<th>DATE OF RECEIPT</th>
<th>DATE OF RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Lung Association</td>
<td>06/20/86</td>
<td>06/24/86</td>
<td>07/07/86</td>
</tr>
<tr>
<td>Hawaiian Electric Co.</td>
<td>06/23/86</td>
<td>06/25/86</td>
<td>07/07/86</td>
</tr>
</tbody>
</table>

* Postmarked and received after 06/23/86 deadline for comments.
MEMORANDUM

To: Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu

Subject: Draft Environmental Impact Statement (EIS) for
Kiihin Development Proposal
Walton Development, Inc.
THK: 3-4-021 por. 1, 17, 20 Waikoloa, Oahu
Access: 691.8

The Department of Agriculture has reviewed the Draft EIS and offers the following comments:

According to the Draft EIS, the applicant seeks to acquire the subject parcels and develop a planned community.

We have reviewed and submitted comments on the EIS Preparation Notice for the subject project on January 31, 1986.

We have also reviewed and submitted comments on a petition for an amendment to the State Land Use Agricultural District boundary for the subject project. The subject draft EIS largely duplicates the information found in the Preliminary Planning and Environmental Assessment (prepared by Law Office of Roy Y. Takeyama, Eng. and Jan N. Sullivan, Eng., February 1986) and the various Appendices for the project petition.

The Draft EIS inadequately addresses several of the concerns found in our comments on the EIS Preparation Notice (letter to Mr. William E. Hanke, dated January 31, 1986). Since we have, in essence, already reviewed the Draft EIS in its form as the State Land Use Agricultural District boundary amendment (State Land Use Commission Docket No. 884-689) for the boundary amendment petition.

"Support Hawaiian Agricultural Products"

ISSUES THAT NEED TO BE ADDRESSED

1. The impact of the removal of productive lands from sugarcane production on Oahu Sugar Company's economic viability.

According to the information found in Section 2.2.5 of the Draft EIS and Appendix D ("Proposed Village Park Expansion: Impact on Agriculture and Aquaculture"); prepared by Decision Analysts Hawaii, Inc.: February 1986, "...the Village Park Expansion, individually or in combination with other major projects planned and proposed for Oahu and Central Oahu, will not adversely affect the economic viability of OSCO (Oahu Sugar Company..." (EIS, page 30 and Appendix D, page 6). This conclusion is based on four factors: (1) the developer will absorb the costs to relocate sugarcane field infrastructure, (2) increasing yields are expected to partially or completely compensate for reduced sugarcane acreage, (3) OSC could operate one mill, and (4) employment reductions will occur through retirement and voluntary movement to other jobs.

To this, we offer the following:

a. It is not clear to us how relocating various facilities will be "...in support of continued sugar operations..." especially in light of the statement that "...plantings of new lands to compensate for lost fields is no longer feasible..." (Appendix D, page 2). Existing fields presumably have supporting infrastructure. Compensations to OSC for losing the use of the facilities should also be considered, especially since most of the project site has drip irrigation installed.

b. Regarding the second factor, it should be noted that (1) the expectation of increasing yields to compensate for lost production acreage usually does not come without additional costs (i.e., additional inputs of research, chemicals, labor, etc.), and (2) acreage yields on the subject property are already among the highest in the State. The EIS should show how lost yields from nearly 700 acres of very productive sugarcane land can be economically replaced by further improved yields in existing, possibly less productive, fields.

c. Finally, regarding the reduction in OSC operations to a single mill, it should be explained why this would justify removal of the most productive fields from production rather than less productive fields. From
what we know of CSC's operations, it appears they have been able to reduce or maintain their variable costs at a viable level. The stated reason why sugarcane production is marginally profitable is lease rents charged for the subject site and leases charged for comparable sites in sugarcane production elsewhere in the State. There should also be discussion on what portion of the subject parcels' lease rent is attributable to agricultural productivity as well as other non-agricultural considerations.

2. The broader economic impact on the State attributable to the irrevocable loss of prime, irrigated agricultural land.

According to the Draft EIS (Section 2.2.5.2, page 43) and Appendix D (page 11), "It is extremely doubtful that the Village Park Expansion combined with other major housing developments in the Ewa/Central Oahu area will affect adversely the growth of diversified agriculture or aquaculture."

The Draft EIS bases this conclusion on (1) "...an enormous and growing supply of prime agricultural land which has been recently freed from sugar and pineapple production" (page 41), and (2) the acreage needed to support the local demand for diversified agricultural and aquacultural products is considerably less than the supply of prime agricultural land.

We see the two key issues in the position put forth by the applicant as (1) the definition of "prime" agricultural land, and (2) the relative importance of the affected parcels in meeting agricultural demands in the future.

The EIS should identify the elements that comprise the definition of "prime" agricultural land. The type of information required is provided or referred to in our letter of January 31, 1986, to William E. Hankel, but also includes issues such as elevation, temperature, degree of insulation, irrigation water availability and cost, distance to mill, etc.

The Draft EIS states that the "...uncommitted acreage which remains available to diversified agriculture and aquaculture amount to many tens of thousands of acres, with a large share of this on Oahu" (page 41). It can be reasonably inferred from this statement that, among other things, such lands (if they exist) would be relatively more affordable for diversified agricultural use. The EIS should identify the location of these lands, their availability to farmers for sale or lease, and at what prices and terms. The EIS should also compare the findings to the sale prices or lease rents and terms that could be expected for lands within the Washoe project site if the lands were made available for agricultural use.

3. Present source(s) and potential alternative uses of agricultural irrigation water at the project site.

Everything else being equal, the ability to control moisture is one of the principal means to increase agricultural production. According to our information, more than one-half of the Washoe project site has drip irrigation installed on the various fields, and a substantial portion of the irrigation water for the site is obtained from the Waahole Ditch at much lower cost than groundwater pumped. The EIS should include detailed information on current water consumption for sugarcane cultivation on the project site, water sources and the relative costs of supplying water from these sources, and how the cost and availability of water at the project site compares to other Oahu Sugar Company fields.

4. The potential of establishing viable alternative agricultural uses on the project site.

The Draft EIS (pages 2, 4) and Appendix D (pages 8-1 to B-22) represent an effort to identify the role that the project site can play in meeting local consumption of produce at a level that is "realistically" self-sufficient, as well as producing export-oriented crops. The Draft EIS states that of the crops that are agriculturally suited to the project site, 1,300 acres are needed to meet the demand for produce by the year 2000. However, Appendix D concludes that "...in order to have a significant amount of production occur in Hawaii, agricultural ground rents would have to be reduced significantly..." (page B-9). The same is often said for the export crop agriculturally suited to the project site. We agree that an important variable in determining the economic utilization of arable (or otherwise) land for agricultural use is the availability of land at lease rents that are supportive of agricultural activities.

5. How the proposed project conforms to the State Agriculture Functional Plan and its objectives and policies. In particular, implementing Action B151.01.
Mr. John P. Whalen  
June 23, 1986  
Page 5

The Draft EIS should explain how the proposed project conforms with implementing Action B(5)(c) and not simply mention it (page 63). On a related issue, the statement "The agricultural acreage in the project site is not needed by the diversified agricultural industry" (EIS, page 64) should be deleted from the document until the concerns raised earlier in this memorandum are addressed. It would also be prudent to contact the Hawaii Farm Bureau Federation, an association comprised of many diversified farmers, and solicit their opinion.

Thank you for the opportunity to comment.

Jack T. Ayer
Chairman, Board of Agriculture  

CC: Mr. William E. Manket  
OSCO  
DPI  
DPED

July 7, 1986

Mr. Jack Suva, Chairman  
Board of Agriculture  
Department of Agriculture  
1428 S. King Street  
Honolulu, Hawaii 96814

Re: Comments to Draft EIS Maltec Development Proposal  
(Village Park Expansion)

Thank you for your comments of June 20, 1986 to the Draft EIS. We respond as follows:

Comment 1: "... the Village Park Expansion, individually or in combination with other major projects planned and proposed for Ewa and Central Oahu, will not adversely affect the economic viability of OSCo."

For clarification, this conclusion is based on evaluations done by A&W and OSCo.

Comment 2: "The stated reason why sugarcane production is marginally profitable is high lease rent (EIS, page 38 and Appendix B, page 1, et seq.)."

For clarification and as stated in Appendix B, OSCo is marginally profitable ... The marginal profitability is measured before accounting for any capital investment needed to replace equipment. When this is accounted for, OSCo is still profitable. Also as stated in the report, OSCo's financial difficulties are primarily because of low sugar prices.

The requested information on lease rents is irrelevant to the petition since it beyond the control of Maltec or OSCo.

Comment 3: Definition of "prime" agricultural lands.

For clarification, "prime" agricultural lands are defined to be those lands capable of producing high yields and profits from a variety of crops, assuming market expansion without adversely affecting prices.

JUN 25 1986
The EIS should identify the location of these lands (uncommitted acreage which remains available to diversified agriculture and aquaculture), their availability to farmers for sale or lease, and at what prices and terms.

As known by the Department of Agriculture, the large withdrawals of land from sugar operations which occurred since 1970 were the result of the closing of sugar plantations at Kilauea on Kauai, Kahuku on Oahu, and Kahalu and Puna on the Big Island. For pineapple, major land withdrawals have occurred on Kauai, Oahu, Lanai and Molokai. In addition to this acreage, there is a very real possibility that additional lands will be freed from sugar given that nine of the thirteen sugar plantations in Hawaii are unprofitable and the Federal price support for sugar is scheduled to remain unchanged until at least 1991. Also, vast acreages of sugarcane lands are actually in a holding operation waiting the discovery of profitable replacement crops.

As stated in Appendix D, page 8, the supply of agricultural lands to small farmers is limited because of subdivision regulations which require expensive infrastructure.

Regarding rents, agricultural and other land rents near Honolulu are higher than those far from town and these, in turn, are higher than land rents in rural Neighbor Island areas.

Contrary to Department of Agriculture's information, Waahole Ditch water is not normally used on the project site, although it can be and sometimes is used. Normally, the supply of Waahole Ditch water is sufficient to irrigate only the fields at higher elevations. But when heavy rainfall decreases the water requirements on the higher elevation fields and increases the Ditch flow, then some lower elevation fields can be irrigated using Ditch water.

The relevant information on water is that the Village Park expansion will reduce OSCo's water requirements by about 6 MGD, while the project will require about 2.8 MGD. Thus, about 2.2 MGD of water will become available for other uses. In reducing its requirements by 6 MGD, OSCo will release ground water for other uses since this is the company's most expensive water.
Mr. Jack Soua, Chairman  
July 7, 1966 
Page 4

environments. Nevertheless, certain priority guidelines (but not objectives or policies) dealing with population growth and distribution (but not economic growth) do call for encouraging urban growth primarily to existing urban areas and marginal agricultural lands, and away from important agricultural lands. While this is desirable, it is unrealistic in terms of the supply of lands suitable for building reasonably priced housing, and unrealistic as to the agricultural market which could use the vast supply of prime agricultural lands profitably.

Since the Village Park expansion will not adversely affect the economic viability of OSCO, will not limit the growth of diversified agriculture, but will contribute to a healthier housing market, the project is consistent with the major thrust of the Hawaii State Plan and the State Agriculture Functional Plan.

Regarding implementing Action D(3)(c), it should be noted that the Village Park Expansion will not adversely affect the economic viability of OSCO, nor the growth of diversified agriculture. Furthermore, the City and County has designated a portion of the project in its Central Oahu Development Plan.

It is the belief of the EIS consultant that the impact of the proposed project on agriculture has been adequately discussed in the Draft EIS, especially in light of the conclusion that agricultural land would be lost. We believe that the divergence of views between the Agricultural Impact Report prepared for the project and the comments made by the Department of Agriculture have served to provide an even more thorough review of the impacts of the proposed development.

We wish to thank the Department of Agriculture and its staff for its review and comments.

Sincerely,

William E. Manke

cc: Dept. of Land Utilization
Mr. John P. Whalen, Director  
Department of Land Utilization  
City and County of Honolulu  
650 S. King Street  
Honolulu, Hawaii  96813

Dear Mr. Whalen:

SUBJECT: Waialae Development Proposal  
(Village Park Expansion)

Our review of the subject development indicates that the following student enrollment may be generated:

<table>
<thead>
<tr>
<th>SCHOOL</th>
<th>GRADE</th>
<th>APPROXIMATE ENROLLMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Naunane Elementary (Planned)</td>
<td>K-6</td>
<td>620 - 850</td>
</tr>
<tr>
<td>Waipahu Intermediate</td>
<td>7-8</td>
<td>120 - 230</td>
</tr>
<tr>
<td>Waipahu High</td>
<td>9-12</td>
<td>330 - 420</td>
</tr>
</tbody>
</table>

The subject development is expected to generate a severe impact on the need for additional classroom space at all grade levels. For the elementary level, the new school is scheduled to be completed for September, 1969 occupancy. The construction of additional classrooms are being scheduled to accommodate the anticipated growth at the secondary schools.

Please keep us informed of the development schedule so that classrooms can be provided on a timely basis.

Should you have any questions, please contact Mr. Richard Inouye at 733-4743.

Sincerely,

Francis M. Hataoka  
Superintendent

cc: W. Araki, Leeward Dist.  
W. Winket, Winket, Inc.  
OHS

July 7, 1986

Mr. Francis M. Hataoka  
Superintendent  
Department of Education  
P.O. Box 2360  
Honolulu, Hawaii 96804

Re: Comments to Draft EIS Waialae Development Proposal  
(Village Park Expansion)

Dear Mr. Hataoka:

Thank you for your comments of June 6, 1986. We respond as follows:

We will continue to keep your Department informed of the progress of our development through the planning process so that classrooms can be provided on a timely basis.

Sincerely,

William E. Winket  
Winket, Inc.

cc: Dept. of Land Utilization

AN AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY EMPLOYER
MEMORANDUM

To: Mr. John P. Whalen, Director
   Department of Land Utilization
   City & County of Honolulu

From: Deputy Director for Environmental Health

Subject: Draft Environmental Impact Statement for Waipec Development Proposal (Village Park Expansion), Waikele, Ewa, Oahu

Comments were made on February 3, 1986 to the "EIS Preparation Notice" concerning noise problems that are anticipated to be associated with the project. On page 28 in the Draft EIS, the applicant addresses the problems of noise associated with traffic and with aircraft, but does not address the concerns about noise from adjacent commercial/industrial facilities, and recreational activities, on the residential area within the project. The applicant must address these specific concerns, and should develop plans to mitigate these noise-related problems.

JAMES K. IKEHATA

cc: Mr. William E. Wanklet

July 7, 1986

Mr. James K. Ikeda
Deputy Director for Environmental Health
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96802

Re: Comments to Draft EIS Waipec Development Proposal (Village Park Expansion)

Dear Mr. Ikeda:

Thank you for your comments of June 19, 1986. We respond as follows:

No formal noise study is necessary as noise standards and mitigating measures are included in existing State laws and City ordinances. A mixture of land uses is the norm rather than an extraordinary occurrence. The proposed development poses no extraordinary circumstances that would suggest a formal noise study is necessary. The applicant will include these statements in the final EIS.

Commercial/Industrial Noise Impact on Residential Areas

There is a potential for noise generated in commercial and industrial areas to impact residential areas. The applicant believes that any impacts would be minimal because with the exception of two apartment designated parcels, all other residential areas are buffered from commercial/industrial activities by a golf course fairway. In addition, the new commercial/industrial areas a significant distance from any existing or planned development in the existing Village Park Development.
Mitigating Measures

The applicant will follow all City and State laws and regulations relating to noise. In addition, the applicant will follow City ordinances relating to the separation of commercial/industrial and residential districts. Current ordinances require setbacks, solid walls, and landscaping. In certain instances, uses are restricted within the commercial/industrial districts where there is an abutting residential district. In addition, the applicant intends to develop restrictive covenants for the commercial/industrial development which will ensure a harmonious relationship with the residential development in close proximity, including restrictions on noise, and other items incompatible with residential development.

Recreation Noise Impact on the Residential Areas

The proposed development will contain three park sites, a private recreation center, and a golf course and clubhouse. Recreational activities conducted on these sites may generate noise which will impact the residential areas. The applicant believes that thenoise impacts of these facilities on residential areas will be minimal, and that numerous mitigating measures are available.

Mitigating Measures

The primary mitigating measure will be in facilities design. For the Golf Course and Clubhouse, the siting of the clubhouse facilities, their orientation, and the location of the terraces, and greens on the course will have a major impact on the potential noise impact of the facilities. The siting and design, as well as landscaping, will be major considerations during the design phase of the golf complex. Selection of maintenance equipment which includes noise minimization features can also mitigate against noise impacts. In addition, the scheduling of maintenance operations and golf activities can also be done to minimize noise impacts.

The same mitigation measures apply to the golf courses also apply to the private recreation center and the park areas. In addition, the Village Park expansion area will have a community association which will be a forum for balancing the needs of residents for recreational activities with those of the nearby residents for minimal noise impacts. This organization will assure that the rules and regulations governing the various recreational facilities of the development will continue to meet the needs of the community that they serve.

Sincerely,

William E. Wacket

[Signature]

[Address]

cc: Dept. of Land Utilization

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
SYSTEM OF STATE PARKS
P.O. BOX 19
HONOLULU, HAWAII 96813

June 5, 1986

Mr. William E. Wacket
Land Use Consultant
Pacific Tours, Suite 1010
1051 Bishop Street
Honolulu, Hawaii 96813

Subject: Review of "Village Park, Waipahu, Oahu: Archaeological Reconnaissance" (Chilango, 1985)
Walter Development Inc.
Homes and Villages, Ewa, Oahu

Thank you for your letter of April 26, 1986 which included the subject archaeological reconnaissance report for our consideration. We are pleased to indicate that the subject parcel does not occur in an area that is listed on the Hawaii State Register of Historic Places. The parcel is not considered eligible for placement on the National Register of Historic Places.

Our review of the reconnaissance report has resulted in our conclusion that the subject parcel does not contain any evidence of past utilization of the property (1985) and therefore no further archaeological mitigation is necessary.

We do recommend that in the event that any previously undetected sites or remains such as artifacts, shell, bone, or charcoal deposits, human burials, rock or coral alignments, pavings, or walls are encountered, please direct the applicant to stop work and contact our office at 548-7460. We will be able to assess the impact and make further recommendations for mitigation activity, if warranted.

Sincerely yours,

[Signature]

RALSTON H. NAGETA
State Parks Administrator
June 20, 1986

The Honorable John P. Whalen
Director
Department of Land Utilization
City and County of Honolulu
600 South King Street
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Subject: Draft EIS for Maukie Development Proposal (Village Park Expansion) Hau, Oahu

We have reviewed the subject draft environmental impact statement (EIS) and have the following comments to offer:

1. The draft EIS should contain a discussion on the generation and disposal of industrial and hazardous wastes.

2. Mitigating measures should be identified in the draft EIS to reduce the erosion and pollution of Maukie Stream and to deal with the hazards of the Naval Magazine in Maukie Gulch.

3. The draft EIS should state the developer's commitment to assist the mitigation of downstream traffic impacts resulting from the proposed project.

4. The proposed project site is within the Maukie Stream hydrologic basin. Drainage from the site will flow into Maukie Stream (401), the Village Park drainage system (601), and finally into Pearl Harbor. While discharge in terms of quantity may only be a small part of the total basin drainage, the potential impact on receiving water quality should be addressed in the draft EIS. This is particularly relevant to the proposed golf course which comprises one-fourth of the total area proposed for development and the associated use of pesticides and other chemicals.

5. No study was conducted on the noise levels within the development area. In their letter to our agency dated April 8, 1986, the State Department of Health expressed reservations toward the proposed development because of noise levels from the mixture of land uses within the development. A noise study should be made.

6. The draft EIS indicates that there will be a net increase in automobile carbon monoxide emissions. A study should be conducted to determine the air quality as a result of automobile emissions from existing and future projected traffic. The future projected traffic should include those resulting from the subject project and those from previously approved developments. The study should also propose mitigating actions.

7. The proposed development is not consistent with the Hawaii State Plan policies, objectives, and priority directions and those of the Agriculture Functional Plan relating to the preservation and prudent use of important agricultural lands, and ensuring the viability of agricultural activities.

8. The proposed development of agricultural land does not conform with the State Land Use District Regulations for determining Agricultural District boundaries.

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

Very truly yours,

[Signature]

Kent K. Inouye

cc: William E. Waskett,
Office of Environmental Quality Control
July 7, 1986

Mr. Kent H. Keith, Director
Department of Planning and Economic Development
250 S. King Street
Honolulu, Hawaii 96813

Re: Village Park Expansion Draft EIS

Dear Mr. Keith:

Thank you for your comments of June 20, 1986 to the Waitelc Draft EIS. We respond as follows:

Comment 1

Section 2.1.6, Hazards, of the Final EIS will include the following discussion on the generation and disposal of industrial and hazardous wastes.

Existing Conditions

Agricultural Operations (Sugar Cultivation) pose a potential hazard to the environment due to the potential for accumulation of toxic substances found in agricultural chemicals (fertilizers, pesticides and herbicides) in the environment. This hazard may be from accidents or from long run accumulation of "safe" applications.

Impact

The suburban planned community being proposed will contain an industrial/commercial area which has the potential to generate industrial and hazardous wastes. At the present time the potential for such waste generation cannot be known because the mix of commercial and industrial users is unknown. The development will also contain a golf course which poses risks similar to the potential hazards from the existing agricultural operations.

Mitigation Measures

There are State and Federal laws dealing with the generation and disposal of industrial and hazardous wastes. The EPA and the State Health Department enforce these laws and regulations which mandate mitigating measures in industrial/commercial areas. Golf course operations do pose a threat similar to other agricultural operations, however, the risks should be lessened by the fact that the area involved is only one-fourth the size of the area currently involved in agricultural production and that chemical application on golf courses is done in a more controllable fashion than the aerial spraying method prevalent in sugar operations.

Comment 2

The grading plan and the drainage plan for the proposed development is being reviewed by the Department of Public Works, the City agency charged with enforcing City requirements in regards to these areas. Waitelc Stream erosion and pollution control will be accomplished through coordination of design with the Department of Public Works. Downstream impacts is a standard concern of drainage system design. These standard concerns will be met with appropriate technical responses.

Attached please find a copy of the response to the Department of the Navy which addresses the hazards of the Naval Magazine in Waitelc Gulch.

Comment 3

The Final EIS will contain a statement in section 2.3.1, Transportation, indicating the developer's commitment to assist the mitigation of downstream traffic impacts resulting from the proposed project. Currently under consideration is a Park and Ride facility and a carpool coordinator lobby.

Comment 4

See response to Comments 1 and 2.

Comment 5

The discussion on noise impacts has been expanded (see attached response to the Department of Health regarding their noise concerns). The Final EIS will include this expanded discussion.
A formal noise study is not necessary as noise standards and mitigating measures are included in existing State laws and City ordinances. A mixture of land uses is the norm rather than an extraordinary occurrence. The proposed development poses no extraordinary circumstances that would suggest a formal noise study is necessary.

Comment 6
Barry Root has been retained by the applicant to conduct the recommended study. The results of the study, including mitigating measures, will be included in the Final EIS.

Comment 7
A very careful reading of the Hawaii State Plan and the State Agriculture Functional Plan reveals that their thrust is to preserve the economic viability of plantation agriculture and to promote the growth of diversified agriculture. To accomplish this, an adequate supply of agriculturally suitable lands and water must be assured. When read in context, the thrust of these two plans is not to preserve prime agricultural lands for the sake of preservation—preservation is to occur only if there is a potential agricultural need for these lands.

Regarding Oahu Sugar Company, Ltd. (OSC), Amfac has concluded that over at least the next decade (to the end of the major leases), no combination of the major housing projects planned and proposed for the Ewa/Central-Oahu area, and resulting loss in sugarcane acreage, will adversely affect the economic viability of OSC or require layoffs of sugar workers. This is because of the expectation for relatively gradual reduction in sugarcane acreage, partial or complete compensation of this acreage loss by increasing yields, and rapid employment loss by attrition. In addition, Amfac is seriously exploring increased efficiencies through substantially reduced operations using just one rather than two processing lines. Reduced operations will free a very large amount of prime agricultural land—for more land than will be required for urbanization.

Regarding diversified agriculture, LESA projects a Statewide requirement of less than 9,000 additional acres for those crops which require prime agricultural lands. In contrast, the supply of prime agricultural lands consists of (1) a major portion of the 80,000 acres which have been freed from sugar and pineapple production since 1970—lands which are fallow or are in pasture or some other low-profit holding operation awaiting discovery of profitable crops; (2) lands which may be freed from sugar given that nine of the thirteen sugar plantations in Hawaii are unprofitable and the federal price support for sugar is scheduled to remain unchanged until at least 1991; and (3) vast acreages of sugarcane lands which are actually in a holding operation awaiting discovery of profitable replacement crops. In summary, the amount of prime agricultural land required to accommodate growth of diversified agriculture is very small compared to the huge supply that is available for profitable crops. The Village Park expansion combined with the other major projects planned and proposed for the Ewa/Central-Oahu area require too little land to materially affect this land demand/supply balance.

Regarding housing, the Village Park expansion is clearly in support of the Hawaii State Plan, particularly those policies, objectives, and priority directions which encourage development of reasonably priced, safe, sanitary, livable homes in suitable environments. Nevertheless, certain priority guidelines (but not objectives or policies) dealing with population growth and distribution (but not economic growth) do call for encouraging urban growth primarily to existing urban areas and marginal agricultural lands, and away from important agricultural lands. While this is desirable, it is unrealistic in terms of the supply of lands suitable for building reasonably priced housing, and unrealistic as to the agricultural market which could use the vast supply of prime agricultural lands profitably.

Since the Village Park expansion will not adversely affect the economic viability of OSC, will not limit the growth of diversified agriculture, but will contribute to a healthier housing market, the project is consistent with the major thrust of the Hawaii State Plan and the State Agriculture Functional Plan.

The applicant believes that agricultural concerns have been responded to in a satisfactory manner by the Agricultural Impact Study included as Appendix D in the Draft EIS. Additional responses have been made to the Department of Agriculture's Comments (see attached).

Comment 8
Conformance with State Land Use Regulations is a determination made by the State Land Use Commission. The application is currently being reviewed by that body.
At the local level the City Administration has gone on record as favoring a General Plan change and a Development Plan change supporting the project. In addition the City Council-approved a portion of the project under the existing City General Plan.

In contrast to DPED's assertion, the Village Park expansion does conform to the State Land Use District Regulations for determining Agricultural District boundaries—the project will not adversely affect agriculture, is needed to house Oahu's growing population, is contiguous with the existing Village Park, is near jobs and services and, in part, is consistent with the City and County Development Plan for Central Oahu.

Thank you for your comments.

Sincerely,

[Signature]

WILLIAM E. WALKER

cc: Dept. of Land Utilization

June 10, 1986

Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu
655 South King Street
Honolulu, Hawaii 96813

Dear Mr. Whalen:

EIS Review
Village Park Expansion
Koosu and Makaha, Wai, Oahu

The proposed development has been extensively coordinated with our agency and the majority of our concerns have been satisfactorily addressed in the project's Traffic Impact Analysis Report.

For your information, we have also corresponded with the State Department of Planning and Economic Development regarding the land use boundary amendment petition for this development. We have indicated that Koaia Road should be designed and the right-of-way set aside by the developer/landowner in full consideration of accommodating future traffic demands.

Please contact us if you have any questions.

Very truly yours,

[Signature]

STP 0.1383

June 10, 1986

Mr. William E. Walker
June 30, 1986

Mr. John Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Whalen:

The following comments are in addition to those submitted to you earlier by our responses dated June 20, 1986 (STP 8.1410):

1. Because of high traffic volumes, improvements should be planned for the ramp terminals for Kapiolani and Kuni, otherwise, Route H-1 will be adversely affected.

2. Adding a second lane to Kapiolani may create safety concerns due to the heavy volume of traffic expected. Therefore, alternative designs including extending ramp Kuni further south to Kamehameha Avenue should be considered.

3. Developer should consider an extension of Kunia Road's three northbound lanes across South Kupuna Loop intersection to allow the outside lane traffic to turn right or continue on northward.

4. It is suggested that there be a full three lanes for southbound Kunia Road traffic between North and South Kupuna Loop intersections.

5. Consideration should be given to prohibiting left turns into South Kupuna Loop and extending lanes through the intersection. The North Kupuna Loop intersection should then remain a 3-phase traffic signal system.

6. The section on impact to highways should reference the - Traffic Impact Report in the Appendix.

7. Plans and specifications for highway improvements and work within the State highway right-of-way should be coordinated with and subject to approval by the State Highways Division.

8. It is expected that all improvements costs will be borne by the developer.

We realize the lateness of these comments but hope the developer will give them serious consideration.

Very truly yours,

Wayne J. Yamazaki
Director of Transportation

cc: DEP-M, BWY, STP(DT)
Mr. William E. Wankat
July 7, 1986

Mr. Wayne J. Yamashiki, Director
State of Hawaii
Department of Transportation
589 Punchbowl Street
Honolulu, Hawaii 96813

Re: Comments to Draft EIS Waitec Development Proposal (Village Park Expansion) dated June 10, 1986 and June 30, 1986

Dear Mr. Yamashiki,

Thank you for your comments of June 10 and June 30, 1986. We respond as follows:

Comment 4/10/86:

Kunia Road has been designated and the right-of-way set aside by the developer in full consideration of accommodating future traffic demands.

Comment 4/30/86:

Comments 1-7: These comments will be addressed during the design of the final plans and specifications which will be coordinated and approved by the State Highways Division.

Comment 8: All improvement costs will be borne by the developer.

Thank you for the assistance of your staff in coordinating the traffic needs of the development with the existing and future conditions. Our staff will continue to coordinate the traffic impacts of the development as the design phase matures.

Sincerely,

William E. Wannet

cc: Dept. of Land Utilization

__________________________

University of Hawaii at Manoa
Environmental Center
Crawford 212 • 1680 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 956-7425

June 23, 1986

RE:0435

Mr. John Whalen, Director
Department of Land Utilization
City and County of Honolulu
680 South King Street
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Draft Environmental Impact Statement
Waitec Development Proposal
(Village Park Expansion)
Hosea and Waiakea, Ewa, Oahu

We appreciate the opportunity to review the Draft EIS for the Waitec Development Proposal in Ewa, Oahu. Due to faculty summer vacation and conference schedules, the Environmental Center has not been able to provide comments in all areas of possible concern. We have prepared the following comments with the assistance of Yu-Si Fok, Water Resources Research Center; and Scott Derrickson, Environmental Center.

The developer's proposed water supply plan and drainage plan appear to have adequately addressed our concerns regarding water related impacts. We would suggest, however, that the developer's arrangements with the Board of Water Supply and the County's Department of Public Works be disclosed in the Final EIS.

Yours truly,

Derek C. Cox
for Jacqueline H. Miller
Acting Associate Director

cc: William Wannet
Patrick Takahashi
GEQC
Yu-Si Fok
Scott Derrickson

JUN 27 655

AN EQUAL OPPORTUNITY EMPLOYER
July 7, 1986

Ms. Jacqueline N. Allier
Acting Associate Director
UH Environmental Center
2350 Campus Road, Crawford 317
Honolulu, Hawaii 96822

Re: Comments to Waltec Development Inc. Draft EIS
(Village Park Expansion)

Dear Ms. Allier,

Thank you for your comments of June 23, 1986. We respond as follows:

The final EIS will contain a clarification on the status of Waltec's request for water from the Board of Water Supply. See attached response to Board of Water Supply comments to the EIS.

The Waltec development proposal is in a relatively early stage of the planning process. At the present time there is no arrangement with either the Board of Water Supply or the Department of Public Works. Currently the relationship between these agencies and Waltec is one of "applicant" and approving agency. Plans at the appropriate level of detail have been submitted to both BWS and DPW. Final approvals cannot be expected from either agency until the planning process has reached much later stages. Waltec expects to be granted final approvals once the appropriate processing has been completed.

Again, thank you for your comments.

Sincerely,

[Signature]

William E. Wanket

cc: Dept. of Land Utilization

20 June 1986

Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Whalen:


We have reviewed the subject DEIS and offer the following comments. This site is in the recharge zone of the underlying potable aquifer. Consequently:

1. The 20.7 acres of commercial/industrial mix constitutes a potential hazard to the aquifer. Industrial use is the problem because even common cleaning solvents (such as those used by automotive repair shops) when spilled on the ground, can be leached into the water source.

2. Since impermeable pavement and buildings will reduce infiltration and recharge of the aquifer, while at the same time increase runoff, some provision for retaining runoff would be advantageous. Using the "roughs" of the golf course as ponding areas may be advantageous. While not all runoff can be retained in this manner, their use may also reduce peak flow while enhancing infiltration.

Thank you for the opportunity to comment. This material was reviewed by WREC personnel.

Sincerely,

[Signature]

Edwin T. Murabayashi
EIS Coordinator

ETM:jn

cc: W.E. Wanket

AN EQUAL OPPORTUNITY EMPLOYER
July 7, 1986

Mr. Edwin Y. Murobayashi
EIS Coordinator
University of Hawaii at Manoa
Water Resources Research Center
2340 Dole Street, Holmes 283
Honolulu, Hawaii 96822

Ret: Comments to Draft EIS Waitec Development Proposal (Village Park Expansion)

Dear Mr. Murobayashi:

Thank you for your comments of June 20, 1986. We respond as follows:

Comment 1

We concur that industrial areas present a potential hazard to the aquifer if located in a recharge zone. This would be the case in any area where an industrial development were located within a recharge area. Waitec Development, Inc. will work with the various State and County agencies charged with the protection of the environment during the planning and approval phases of the project to minimize the environmental risks. Commercial and industrial developments are an integral part of master planned communities and should be included unless there is a special hazard in the location of such areas on this particular site. The Final EIS will include reference to the potential hazard of commercial/industrial development to the aquifer, in the Hazard Section 2.1.4.

Comment 2

Your comments regarding the incorporation of the golf course design into the drainage plan for the development have been forwarded to our civil consultants. Awareness of your comments may suggest some alternatives which may be advantageous.

Again, thank you for your comments.

Sincerely,

William E. Wanket

WEW/coop

TO: JOHN P. WHALEN, DIRECTOR
DEPARTMENT OF LAND UTILIZATION

FROM: FRANK K. KASHIMOROCHI, FIRE CHIEF

SUBJECT: VILLAGE PARK EXPANSION, EIS

We have reviewed the subject EIS and comment as follows:

1. The Village Park area receives fire protection from the Waipahu Fire Station, housing an engine and ladder company. Secondary service is provided by an engine company at Pearl City Fire Station, and engine and ladder companies from the Wahiawa Fire Station.

2. Existing fire protection for the Village Park area is considered marginal in terms of distance and response time. Future development, mauka of Village Park, will require an additional fire station housing an engine company in the Kailua area.

Should you have any questions, please contact Battalion Chief Kenneth A. Word at 915-3030.

FRANK K. KASHIMOROCHI
Fire Chief

FKK/KW/so

cc: W. William F. Wanket, President
William E. Wanket, Inc.

JUN 24 1986
MEMORANDUM

TO: John P. Whalen, Director
Department of Land Utilization

FROM: Alvin K. H. Pang

SUBJECT: EIS - Vattec Development Proposal (Village Park Expansion)

The draft EIS report indicates that the developer has agreed to dedicate 30 acres of land to the City for the purpose of providing subsidized housing. It is estimated that approximately 450 units can be accommodated on the proposed two 15-acre sites.

If there are any questions, please call James Miyagi of our Department at 378-2345.

cc: Dept. of Land Utilization

June 12, 1986
Draft Environmental Impact Statement (EIS)  
Waikele Development Proposal  
Ho'opae and Makalea, Ewa, Oahu  
(Village Park Expansion)  
Tax Map Key 9-4-00, Parcels 30 and Portions of 01 and 17

We have reviewed the Draft EIS and have the following comments and questions:

A. Water
1. Is the 11 million gallons per day (mgd) already allocated by the Department of Land and Natural Resources (DLNR) to the Board of Water Supply (BWS) from the Pearl Harbor Groundwater Control Area (PHGCA) sufficient for the entire project or only the first 1000 units?
2. Will the additional 2 mgd requested by DLNR by BWS meet the projected demand for the entire project of 3438 units?
3. What is the current status of BWS's request for DLNR for the additional 2 mgd from the PHGCA?

B. Wastewater
1. We understand that there is no available capacity at both the Waiakulu Wastewater Pump Station (WWPS) and the Honolulu Wastewater Treatment Plant (WWTP) to serve the development. The EIS should be revised to reflect this situation.

C. Agricultural Lands
The EIS should indicate the acreage of agricultural land which will be lost by "Agricultural Lands of Importance in the State of Hawai'i" categories (e.g., "Prime Agricultural," "Other Important Agricultural," and "Other (not classified)."

D. Hazards
The EIS should show the location of the Naval Magazine Waikele Branch in relation to the project and describe its potential hazards.

E. Land Use Policies and Regulations
The EIS should be revised to indicate:
1. The current status of the boundary change request before the State Land Use Commission.
2. The current status of the General Plan in relation to the project.
3. Whether the Development Plan amendment has been rejected by the County Planning Officer; consideration in the 'AH - AY Annual Review.
4. The status of Development Plan Public Facilities Map with regard to improvements to the Waiakulu WWPS, the proposed trunk sewer from the project area to the Waiakulu WWPS, and the expansion of the Honolulu WWTP.

F. Appendix E, Impact on State and County Finances
The analysis should be revised to describe the funding situation for improvements to Waiakulu WWPS and Honolulu WWTP.
G. Other Comments

Replace partially obliterated copies:
1. Department of Agriculture letter
7. Your letter to Department of Planning and Economic Development
3. Page 53 of Market Study

If you have any questions regarding these comments, please call Bennett Mark of the Environmental Affairs Branch at 527-4038.

Very truly yours,

JOHN P. WHALEN
Director of Land Utilization

July 7, 1986

Mr. John Whalen, Director
Department of Land Utilization
650 South King Street
Honolulu, Hawaii 96813

Re: Comments to Draft EIS Wailea Development Proposal (Village Park Expansion)

Dear Mr. Whalen,

Thank you for your comments of June 20, 1986 to the Draft EIS. We respond as follows:

Comment A (Water)

1. The 11 million gallons per day allocation by DLNR does not include Village Park Expansion.

2. The 1.0 mgl requested for Kula WTP II will serve only part of the Village Park Expansion.

3. The BNS request to DLNR for 1.0 mgl is still under consideration.

Comment B (Wastewater)

1. Attached please find a copy of the memorandum from Department of Public Works to Department of Land Utilization dated 7/7/86 which clarifies DPU's 5/30/86 memorandum. The most recent memorandum states that sewer capacity is available for 1,000 units of the proposed development.

2. As discussed above there is an additional 1,000 unit capacity at both the Honolululi WTP and the Kapalua WTP. Approval of the Wailea Development in total would require the expansion of both the WTP and the WWTP. If Federal funds are not available for the expansion then the additional capacity would have to be funded through additional County and State appropriations. It is anticipated that these appropriations would be based on requests from the City administration based on recommendations made by the Department of Public Works. The Department of Public Works is currently monitoring the flows at its various pump stations and treatment plants as well as future development approvals in order to make funding requests of the City Council.

The above information will be included in the Final EIS.
Comment D

The U.S. Navy has not transmitted to the petitioner its final "Blast Zone" map of Naval Magazine Walloke Branch. (See response to Navy letter.)

Comment E (Land Use Policies and Regulations)

1. The boundary change for the Waltec Development, Inc. proposal is pending before the land use commission.

2. During the 1985-1986 Development Plan Review the Waltec Development proposal was granted partial approval. (Approximately 100 acres and 300 units were approved.) Development Plan changes can only be granted if they are in compliance with existing General Plan Requirements. Therefore, at least the portion of the project covered by the DP change is in compliance with the General Plan.

Further, the City's Chief Planning Officer recommended a General Plan change in 1986 and further recommended approval of the entire 691.3 acre contingent on the general plan change.

The General Plan five-year review will take place in 1987. It is the applicant's contention that the proposed development complies with the existing General Plan.

3. It is the applicant's understanding that a General Plan amendment is involved there may not be a 1986-1987 annual review. The next processing period would be the 1987 review. The Waltec Development Project has been submitted for processing during the 1987 review period and consists of 391.3 acres (the portion of the development not approved in the 1983-1984 review). The application has been filed and is under consideration by GSP for processing.

4. As stated above, since there is additional capacity at the Walump WWPS and Honolulu WWTP, no facilities maps have been prepared. Figure 3 of the facilities map for the proposed Village Park Development Projects show the trunk sewer alignment from the project to Walump WWPS.

Mr. John Whalen, Director
July 7, 1986
Page 9

Comment E (Other Comments)

Obliterated pages noted in comments 1, 2 and 3 above have been replaced.

Thank you for your comments.

Sincerely,

William E. Whalen

RE: ramp
April 9, 1986

Mr. Kenneth Nakamura
C/o Herbert E. Horita Realty, Inc.
Kailua Branch
2024 North King Street
Honolulu, Hawaii 96819

Dear Mr. Nakamura:

Subject: Parks in Village Park Expansion Area

This is to confirm our discussion with you and Mr. Clarence Imanaka of Park Engineering, Inc. regarding public parks in the Village Park Expansion Area.

We will recommend to the City Council the acceptance of two public parks. One park will be a 10.3-acre area adjacent to the low-density apartments, as shown on the attached map. The park will be developed and maintained privately.

In addition, a 5.2-acre park adjacent to the private recreation center, as shown on the map, will be developed and maintained privately.

I hope this is in accord with your understanding, as discussed at the meeting in our office on February 21, 1986.

Sincerely,

Tom T. Mekina
Director

Enclosure

cc: Department of Parks and Recreation

Mar 4, 1986
TO: JOAN M. MALIA, DIRECTOR  
DEPARTMENT OF LAND UTILIZATION  

FROM: TOM T. NUKOTA, DIRECTOR  

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT  
VILLAGE PARK EXPANSION - HOKUAC  

We have reviewed the Environmental Impact Statement for the proposed Village Park Expansion and make the following comments and recommendations:  

The land use plan for the locations of the proposed 21 acres of parks is conceptually acceptable. However, a recreational assessment was made with the applicant to determine the number and types of parks needed to serve the proposed project and also meet the park dedication requirements. It was concluded that two public parks and one private park will be developed, as shown on the attached map.  

As part of the planning process, it will be necessary for the applicant to coordinate with our department to adjust the configuration and topography of the proposed public parks to fit our basic park facilities.  

Please have the applicant contact Mr. Jason Yuen of our Advance Planning Section at 897-6315 to discuss the planning of the proposed parks.

Tom T. Nukota, Director

Tinelli  
Attach.
July 7, 1986

Mr. Tom Nekota, Director
Department of Parks & Recreation
609 S. King Street
Honolulu, Hawaii 96813

Re: Comments to Draft EIS Waitec Development Proposal
(Village Park Expansion)

Dear Mr. Nekota,

Thank you for your comments of June 6, 1986. We respond as follows:

The land use map included in the Draft EIS includes 21 acres of land for park use and 6.9 acres for a private recreation area. The 3.2 acre park adjacent to the private recreation center will be developed and maintained privately as outlined in your March 3, 1986 letter to Mr. Kenneth Nakamura of Waitec Development, Inc.

Waitec Development, Inc. will contact Mr. Jason Yuen of the Advance Planning Section to discuss the planning for the park, including adjustments in configuration and topography necessary to accommodate basic park facilities.

We appreciate your efforts as well as those of your staff in balancing the desires of the Parks Department with those of the Village Park residents.

Sincerely,

William E. Wankel

TO:   JOHN P. WHALEN, DIRECTOR
       DEPARTMENT OF LAND UTILIZATION

FROM: DOUGLAS G. GIBB, CHIEF OF POLICE
       HONOLULU POLICE DEPARTMENT

SUBJECT: WAITEC DEVELOPMENT (Village Park Expansion)

Thank you for providing us with a copy of the Environmental Impact Statement for the Waitec Development (Village Park Expansion). The Honolulu Police Department has no further comment in regard to this project.

Douglas G. Gibb
Chief of Police

cc: Mr. William E. Wankel, President
    William E. Wankel, Inc.
    Pacific Tower, Suite 1010
    1001 Bishop Street
    Honolulu, Hawaii 96813

NO RECEIVED REQUESTS
MEMORANDUM

TO: MR. JOHN P. WULEN, DIRECTOR
DEPARTMENT OF LAND UTILIZATION

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

SUBJECT: DRAFT EIS ON WAIWEI DEVELOPMENT PROPOSAL
VILLAGE PARK EXPANSION

This is to clarify our memorandum of May 30, 1986. The existing sewer system can accommodate approximately 1,600 units which were approved under the original master plan. The Waipahu Sewage Pump Station and the Honolulu Wastewater Treatment Plant will have to be expanded to service the entire development.

RUSSELL L. SMITH, JR.
Director and Chief Engineer

cc: William E. Winkel, Inc.

Park Engineering, Inc.

MEMORANDUM

TO: MR. JOHN P. WULEN, DIRECTOR
DEPARTMENT OF LAND UTILIZATION

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

SUBJECT: DRAFT EIS ON WAIWEI DEVELOPMENT PROPOSAL,
HOAIAE AND WAIWAI, 17A, 17B, 18A;
VILLAGE PARK EXPANSION. EXPANSION Tax Map Key: 7-4-21 30, PAR. 3,17

We have reviewed the subject Draft EIS and have the following comments:

1. The drainage master plan for the proposed project has been approved.

2. Presently, there are no additional capacities at the Waipahu WMPs and the Honolulu WMP to serve any portion of the proposed development. Although there are plans to expand the Honolulu WMP in 1993, funding for the expansion is uncertain because of the phasing out of construction grants program under Section 201 of the Clean Water Act.

There are no plans to expand the capacity of Waipahu WMPs. Funding for any expansion will be similarly affected by the Section 201 grants program.

RUSSELL L. SMITH, JR.
Director and Chief Engineer

cc: William E. Winkel, Inc.
July 7, 1986

Mr. Russ Smith, Director
Department of Public Works
650 South King Street
Honolulu, Hawaii 96813

Re: Comments to Draft EIS Waitec Development Proposal
(Village Park Expansion)

Dear Mr. Smith:

Thank you for your comments of May 30, 1986 and June 7, 1986. We respond as follows:

Comment 1

No response necessary.

Comment 2:

The information provided regarding the plans for expansion of the Honolulu WWTP and the Waipahu WWTP and the availability of Federal funding will be included in the final EIS.

Thank you for your letter of clarification of July 7, 1986, stating that there is availability of treatment capacity for 1,000 units of the proposed project.

Thank you again for your comments.

Sincerely,

William E. Wanket

cc: Dept. of Land Utilization

June 16, 1986

TO: JOHN P. KOALE, DIRECTOR
DEPARTMENT OF LAND UTILIZATION

FROM: JOHN E. RYHSA, DIRECTOR

SUBJECT: FINAL ENVIRONMENTAL IMPACT STATEMENT (EIS) WAITEC DEVELOPMENT PROPOSAL (VILLAGE PARK EXPANSION)

THK 9-6-85-30, Vols. 1 and 17

This is in response to the State Office of Environmental Quality Control's request of May 20, 1986, to review and comment on the subject EIS.

We have reviewed the EIS and have the following comments:

1. Collector road #1, #2, and #3 should be designed to have a 40-foot right-of-way in lieu of the 56-foot being proposed. This 40-foot right-of-way would provide a 44-foot curb-to-curb width with 8-foot sidewalks on both sides.

2. Collector road #4 should be designed to have a 44-foot right-of-way in lieu of the 60-foot being proposed. This would provide a 28-foot curb-to-curb width with 8-foot sidewalks on both sides.

3. The intersection of collector road #1 and Kulis Road should be designed similarly to the intersection of Northrup Road and Kulis Road. We recommend five lanes at this intersection. This will provide three outbound lanes (one right-turn and two left-turn lanes) and two inbound lanes.
July 7, 1986

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

Re: Comments to Draft EIS Waltec Development Proposal
(Village Park Expansion)

Dear Mr. Hirten:

Thank you for your comments of June 16, 1986. We respond as follows:

Comment 1: Collector roads #1, #2, and #3 will have a 72-foot right of way with 36 feet curb to curb.

Comment 2: Collector road #4 will have a 36-foot right of way with 60 feet curb to curb.

Comment 3: Intersection of collector road #1 and Kunia Road will have five lanes.

Comment 4: Kunia Road Improvements and intersection traffic signal modification plans will be submitted to DOT and DOTS for review and approval.

Our engineering consultant, Park Engineering, will continue to work with the State DOT and the City DTS to coordinate the traffic planning for the Village Park Expansion.

Sincerely,

William E. Wanket

NEW 1986

cc: Dept. of Land Utilization
July 7, 1986

Mr. Kazu Hayashida
Manager and Chief Engineer
Board of Water Supply
630 South Beretania Street
Honolulu, Hawaii 96813

Re: Comments to Draft EIS for Wailea Development Proposal
(Village Park Expansion)

Dear Mr. Hayashida,

We appreciate your review of and comments to the Draft EIS for the Village Park Expansion and respond as follows:

Comment 1

The following change will be made to the last paragraph relating to water on page 71. "The proposed improvements are in conformance with the Revised Board of Water Supply (BWS) Water System Standards. The Water Master Plan for the area, dated February 10, 1986, was approved by the BWS. The proposed Village Park Expansion refers only to Phase I of that plan."

Comment 2

Same as Comment 1 response.

Comment 3

Minor alterations have been made to the Village Park Expansion Land Use Plan during the planning phase of the proposal to accommodate the requests of reviewing agencies and community groups. Park Engineering, the water consultants for the Village Park development, will meet with your staff to review these changes and provide revised information as necessary. The information contained in the Draft EIS is correct.

Mr. Kazu Hayashida
July 7, 1986
Page 2

Comment 4

The booster pump data will be revised to be consistent with the BWS Water Master Plan.

Comment 5

The transmission main pipe sizes and lengths will be changed to conform with the BWS Water Master Plan.

Comment 6

See response to Comment 1.

Comment 7

The statement that sufficient water is available from the increased allocation will be deleted on pages vi and 47. The following will be substituted in its place: "The BWS has requested for additional permitted use for the Kula Wells. If the request is approved by the State Board of Land and Natural Resources, it would allow the full utilization of the Kula Wells and meet the future demands of the Village Park Expansion."

Sincerely,

William E. Wanket

WEW

cc: Dept. of Land Utilization
Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, HI 96813

June 3, 1986

Dear Mr. Whalen:

Subject: Draft EIS - Nisic Development Proposal, Hoala and Waikele
        Park Oahu (Village Park Expansion)

We reviewed the subject draft environmental impact statement and have no
comments to make.

Thank you for the opportunity to review the document.

Sincerely,

[Signature]

Richard N. Manley
State Conservationist

C C:
Mr. William H. Wackett, President
William H. Wackett, Inc.
Pacific Tower, Suite 1010
1401 Bishop Street
Honolulu, HI 96813

[Signature]

Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

June 13, 1986

Dear Mr. Whalen:

Thank you for the opportunity to review and comment on the EIS for Nisic Development Proposal (Village Park Expansion), Hoala and Waikele, Oahu. The following comments are offered:

1. The construction of any drainage improvements or
   subdivision drainage outlet structures in Waikele Stream
   will require a Department of the Army permit.

2. Flood hazards have been evaluated on page 49.
   The proposed development is in a Zone C designation which
   is an area of minimal flooding.

Sincerely,

[Signature]

Kikub Chang
Chief, Engineering Division

NO RESPONSE REQUIRED
July 7, 1986

Mr. Kiu-Kiu Cheung, Chief
Engineering Division
Department of the Army
U.S. Army Engineer District, Honolulu
P.O. Box 3135, Honolulu, Hawaii 96822

Re: Comments to Draft EIS Waitea Development Proposal
   (Village Park Expansion)

Dear Mr. Cheung:

Thank you for your comments of June 3, 1986. We respond as follows:

Comment A

The Department of the Army permit will be applied for if construction of any drainage improvements or subdivision drainage outlet structures are planned in Waitea Stream.

Comment B

No response required.

Thank you for your comments.

William E. Wanner

cc: Dept. of Land Utilization

June 20, 1986

Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, HI 96813

Dear Mr. Whalen:

SUBJECT: Draft Environmental Impact Statement (EIS) Waitea Development Proposal, Houses and Walkway, Ewa, Oahu

Our office has reviewed the EIS for the subject development that will provide for 2,000 single-family units, 480 multi-family units; commercial/industrial area; public and private park areas and a golf course on 601.5 acres. The project is located northeast and adjacent to the existing Village Park project that, when completed, will provide 1,746 housing units.

We find that the EIS addresses the environmental issues in a satisfactory manner and should be acceptable to HUD pending review comments on the Draft Statement.

Should the applicant request HUD assistance in this development, he should contact our office after all governmental agencies have approved the project.

If you have any questions on environmental matters you may call Frank Johnson at 548-5374. Any questions concerning HUD subdivision processing should be directed to Henry Liao at 548-3174.

Sincerely,

[Signature]

Calvin Lew
Director
Community Planning and Development Division, OIA

Jun 20 1986
Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Re: EIS, Wai-tec Development Proposal, Village Park Expansion, Waikiki and Waiakea, Honolulu, Hawaii

Dear Mr. Whalen:

We have reviewed the referenced material and find that due to its nature, the proposed project will have no significant deleterious impact on fish and wildlife resources. Please do not hesitate to call on us if we may be of further assistance.

We appreciate this opportunity to comment.

Sincerely yours,

[Signature]

Brenda Jones
Project Leader
Office of Environmental Services

cc: WNP - WPPO

NO RESPONSE REQUIRED

Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Whalen:

DRAFT ENVIRONMENTAL IMPACT STATEMENT
WAI-TEC DEVELOPMENT PROPOSAL, WAIKIKI AND WAIHELE, OAHU, HAWAII (VILLAGE PARK EXPANSION) MAY 1985

The subject Draft EIS forwarded by the State of Hawaii Office of Environmental Quality Control on May 20, 1986 has been reviewed.

We wish to reaffirm our position as stated in our enclosed letter to Mr. Vern Nequist of the Department of General Planning that the land bordering the Naval Magazine Waikiki Branch be left in agriculture.

Please provide us with a copy of the final EIS.

Sincerely,

[Signature]

P. O'Connor
Captain, U.S. Navy

Enclosure

(1) CORRAGE FILL PEARL INST SER 20 JUNE 1985

Copy to:

Mr. William E. Mahler, President
William E. Mahler Trust
Pacific Tower, Suite 1010
1410 Bishop Street
Honolulu, Hawaii 96813

JUN 21 1985

Save Energy and You Serve America!
HEADQUARTERS
NAVAL BASE PEARL HARBOR

Mr. Vern Wignall, Planner
Department of General Planning
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

2 October 1980
20 LAW 1225

Dear Mr. Wignall:

REQUEST FOR COMMENTS RELATING TO STATE LAND USE COMMISSION PETITION A6-620

Your letter of March 18, 1986 to Admiral Sylvester R. Foley has been referred to this command for reply. The delay in our receiving your letter was caused by the improper address and inadvertent forwarding to Admiral Foley in Maryland.

We have reviewed the petition for a State Land Use District boundary amendment from the Agricultural District to the Urban District for property located at Maili and Nanakuli, Oahu and recommend that the land bordering the Naval Magazine Waialua be left in agriculture.

In the future, please forward all correspondence to:

Commander
Naval Base Pearl Harbor
Box 110
Pearl Harbor, HI 96840-5020

Attn: Facilities Engineer

Sincerely,

William E. Winkiel

July 7, 1986

Captains P. O'Connor
Chief of Staff
Headquarters Naval Base Pearl Harbor
Box 110
Pearl Harbor, Hawaii 96840-5020

Re: Comments to Draft EIS Waihee Development Proposal (Village Park Expansion)

Dear Captain O'Connor:

We thank you for your comments of June 2, 1986 and respond as follows:

Safety is a primary concern of the applicant. Section 2.1.6 of the Final Environmental Impact Statements, Hazards, will include a section dealing with the blast zone of the Naval Magazine Waiheke Branch. The primary mitigating measure will be to make the following statement: "No residential development will take place in the area described by the Department of the Navy as being within the official blast zone for the Naval Magazine Waiheke Branch."

Thank you again for your comments.

Sincerely,

William E. Winkiel

NEWLAND

cc: Dept. of Land Utilization
In light of the serious failure to quantify the air quality impacts associated with development of this project, we strongly urge you not to accept this EIS as presently written. It should be revised to include a proper quantitative analysis of those impacts.

Sincerely yours,

James W. Morrow, M.S.
Director
Environmental Health

Mr. John D. Whalen
June 20, 1986
Page 2

Mr. John D. Whalen

June 20, 1986

Mr. John D. Whalen

June 20, 1986

Mr. Whalen:

Subject: Draft EIS for Kailua Development Proposal
(Village Park Expansion)

We have reviewed the subject EIS with particular attention to those sections addressing traffic and air quality impacts and have the following comments to offer.

The section on air quality (pp. 26-27) is inadequate because no effort has been made to quantify the project's impact on air quality. Only generalizations and qualitative assertions have been made by the EIS preparer. The magnitude of this project and the amount of additional motor vehicle activity it will generate clearly flag it as a significant "indirect" source of air pollution as defined in the federal Clean Air Act. The traffic analysis (pp. 43-47 and Appendix F) identifies numerous traffic congestion problems in the vicinity of intersections and freeway ramps in the project area. There will most certainly be air quality impacts associated with the accompanying vehicle queues at those intersections and ramps. Even though some mitigative measures are being proposed for the traffic problems, one cannot determine what effect they will have on the air quality problems since no before-and-after analysis of air quality impact has been conducted.

The final statement in the air quality section (p. 27) that "...change in air quality is not expected to exceed existing Federal or State air quality standards" is simply a guess since no data whatsoever were presented to support it. "Guessing" at environmental impacts when human health is involved is simply not acceptable.

Because of Oahu's growing human and automobile population, we are seeing more predictions of violations of both state and federal air quality standards, especially in the vicinity of congested intersections. In addition, the exposure of occupants of those queuing vehicles is substantially higher and may be presenting the greater health risk than that of people living near those same intersections.
July 7, 1986

Mr. James W. Morrow, Director
Environmental Health
American Lung Association
243 North Kuului Street
Honolulu, Hawaii 96817

Ref: Village Park Expansion Draft EIS

Dear Mr. Morrow:

We are in receipt of your June 20, 1986 comments on the Draft EIS and respond as follows:

Barry Koot, Air Quality Consultant, has been retained to conduct an air quality study. The results of the study will be included in the Final EIS including the recommended mitigating measures.

Thank you for your comments.

Sincerely,

William E. Wanket
WEB pamph

cc: Dept. of Land Utilization

---

Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, HI 96813

Dear Mr. Whalen:

Subject: Environmental Impact Statement for Waitak Development

We have reviewed the above subject EIS and have the following comments:

1. The developer must coordinate closely with HECO on the relocation of the existing lines on Kunia Road to ensure the integrity/reliability of the system is maintained.

2. Paragraph 2.3.6 to be found on Page 50 is much too broad. HECO owns a lot of 36kV 4800 square feet on Kunia Road to be called Kunia Substation. We will need to construct this substation initially with one 10 MVA transformer to service the additional load. This, in turn, will require the new construction of two 48kV feeders on Kunia Road from existing lines map to map or as shown on the attached KH 9-4-02 drawing. This total 48kV line construction of about three quarters of a mile length on Kunia Road will require prior approval from the State Department of Transportation.

Sincerely,

CC: Mr. William E. Wanket, President
William E. Wanket, Inc.

A Hawaiian Electric Industries Company

JUN 25 1986
July 7, 1986

Mr. Breuer Manger
Manager
Environmental Department
Hawaiian Electric Company
P.O. Box 2720
Honolulu, Hawaii 96810

Re: Village Park Expansion Draft EIS

Dear Mr. Mungers:

We thank you for your comments of June 23, 1986 to the Draft EIS and respond as follows:

Comment 1

The developer will coordinate closely with HECO on the relocation of the existing lines on Kailua Road to ensure the integrity/reliability of the system is maintained.

Comment 2

Paragraph 2.3.6 will be modified to reflect the information provided in your comment and included in the Final EIS.

Thank you for your comments.

Sincerely,

William E. Wanket
H.E.W.

cc: Dept. of Land Utilization
APPENDICES

A. Market Study (Chaney, Brooks, & Company)
B. Archaeological/Historic Impact (Chiniago)
C. Socio-economic Study (Community Resources)
D. Agricultural Impact (Decision Analysts Hawaii)
E. Preliminary Engineering Study (Park Engineering)
F. Traffic Impact Report (Park Engineering)
G. Fiscal Impact Study (Decision Analysts Hawaii)
H. Benefit-Cost Analysis (Decision Analysts Hawaii)
I. Letters from Agencies (Prior to Prep Notice)

J. State of Hawaii Department of Transportation Design Branch, Effects of Central and Leeward Oahu Developments upon the State Highway System, Summary and Recommendations, March 1986

K. Air Quality Study for the Proposed Village Park Expansion, Oahu, Hawaii (Barry D. Root)
APPENDIX A

MARKET ANALYSIS FOR THE PROPOSED VILLAGE PARK EXPANSION

Chaney, Brooks, & Co.
October 1985
MARKET ANALYSIS FOR
THE PROPOSED VILLAGE PARK EXPANSION

June 1, 1985
Revised October 31, 1986
Prepared by Real Estate Consultants
Nandell Brooks, Jr.
John Zapotocky

TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>SECTION</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. INTRODUCTION</td>
<td>2</td>
</tr>
<tr>
<td>II. METHODOLOGY</td>
<td>9</td>
</tr>
<tr>
<td>III. THE NEED FOR HOUSING</td>
<td>11</td>
</tr>
<tr>
<td>Population Trends - Oahu 1950 - 1984</td>
<td>11</td>
</tr>
<tr>
<td>Analysis of Population Trends</td>
<td>13</td>
</tr>
<tr>
<td>Forecasted Population Trends - Oahu 1985 - 2005</td>
<td>14</td>
</tr>
<tr>
<td>IV. HOUSING INVENTORY - ISLAND OF OAHU</td>
<td>16</td>
</tr>
<tr>
<td>V. HOUSING TRENDS AND CHARACTERISTICS</td>
<td>29</td>
</tr>
<tr>
<td>VI. DISTRIBUTION OF HOUSING &amp; ALTERNATE LOCATIONS TO MEET HOUSING NEEDS</td>
<td>44</td>
</tr>
<tr>
<td>VII. ECONOMIC ENVIRONMENT</td>
<td>55</td>
</tr>
<tr>
<td>VIII. MARKET FOR HOUSING AT THE VILLAGE PARK EXPANSION IS PROPOSED</td>
<td>62</td>
</tr>
<tr>
<td>IX. DISTINGUISHING CHARACTERISTICS OF VILLAGE PARK EXPANSION</td>
<td>66</td>
</tr>
<tr>
<td>X. COMMERCIAL DEVELOPMENT AND BUSINESS PARK</td>
<td>69</td>
</tr>
<tr>
<td>XI. COMPLIANCE WITH LAND USE COMMISSION RULES AND REGULATIONS</td>
<td>76</td>
</tr>
<tr>
<td>XII. SUMMARY &amp; CONCLUSIONS</td>
<td>79</td>
</tr>
<tr>
<td>XIII. EXHIBITS</td>
<td>85</td>
</tr>
</tbody>
</table>
MARKET ANALYSIS FOR THE PROPOSED VILLAGE PARK EXPANSION

SECTION I. INTRODUCTION

Waitec Development, Inc., the developer of the existing Village Park Residential Community, proposes to extend the present 300-plus acre Village Park development by 691.5 acres and approximately 3,000 market units. It is estimated that the City will develop 450+/- rental units on the 30 acres to be dedicated for that purpose. It is estimated that upon completion, the Waitec proposal will provide housing for approximately 10,000 people.

Chaney, Brooks & Company (CBC), prepared a market analysis dated June 1, 1985 based on the assumption of a product mix similar to the existing household Village Park, with the exception that the expansion area will be sold in fee simple. It should be noted that this change is in keeping with, and responsive to, public pressures for fee simple land ownership.

After reviewing the market analysis, competitive factors, and the apparent gap in production of housing between 1985 and 1991, Waitec Development, Inc. asked Chaney, Brooks & Company to examine alternative strategies that might better fit market conditions. Waitec Development, Inc. authorized CBC to consider expanding the product line to meet the broader housing needs of the community, and concurrently widening the social and economic mix of Village Park by offering products in both a higher and lower price range.

Waitec Development, Inc. also asked Chaney, Brooks & Company to expand the study to provide information necessary for a State Land Use Boundary Change, as identified in the Land Use Commission Rules and Regulations Part II Amendments to District Boundaries. Further, Waitec Development, Inc. has asked Chaney, Brooks & Company to update its report in view of discussions between Waitec Development, Inc. and the City and County of Honolulu, Department of Housing and Community Development, which have led to an agreement in principle between Waitec and the City, that Waitec's commitment to provide low-income housing be satisfied by dedication of land to the City for rental housing. This report includes information developed in the June 1 report as well as alternate information and assumptions through October 30, 1985.

Specifically, the revised development plan (Figure 1) shows how the project is to be developed, and the time (Figure 2) needed to accomplish that development.

Further, this report is to provide the information required by the Land Use Commission, and to assess the impact of the above on the conclusions reached in the initial marketing analysis.

Summary of Previous Report

In April of 1985, Waitec Development Company contracted with Chaney, Brooks & Company to prepare a Market Analysis for the Proposed Village Park Expansion including information received by the City and County of Honolulu, Department of General Planning, to make a Development Plan Amendment. The report was submitted as part of Waitec's application to the City for a Development Plan Amendment, the June 1, 1985 report as revised and updated to October 30, 1985 is included in this report commencing at Section II. A summary of the major conclusions of the report are as follows:

1. The demand for housing units on Oahu would exceed supply by a total of 48,655 units by the year 2005, if the full development capacity of the Development Plans as estimated by the Department of General Planning were achieved.

2. That the development potential of the Primary Urban Center within the planning horizon is overestimated by 10,000 units.

3. That a total shortfall of 63,315 units or 2,052 units annually could be expected by 2005 unless the supply of suitably located zoned land was increased.

4. That the Village Park Expansion and other major projects proposed for the Central Oahu and Ewa areas are necessary to meet the existing and projected demand for housing units.

5. That the Village Park Expansion is the best choice for approval among all of the proposed developments because:

(a) Infrastructure exists which allow the developer to continue with the development of housing units while other proposed developments may develop basic services such as water, sewer and access.

(b) Waitec Development Company has a track record of developing the majority of its product for the first-time home buyer, the market segment which public policy seeks to serve.

(c) Village Park has important in terms of market acceptance and a delivery system. It has demonstrated the capacity to market and produce substantial numbers of units and it already mobilized to continue 350 units will be delivered in 1985.

Based on OEP publication published in August and October of 1984. At the time of the original report 1985 publications were not available.

The Village Development containing an estimated 3,000 units was added to the Development Plan in May of 1985.
Low/Moderate Housing at the Village Park Expansion

Since initiating its program to expand the Village Park Project, Wai-tec Development, Inc., has worked closely with the City and County of Honolulu, Department of Housing and Community Development, to determine how Wai-tec could meet its commitment to provide low/moderate housing on-site in a manner compatible with the City's plans for such housing. Based on these discussions Wai-tec Development, Inc. submitted a proposal to the Department of Housing and Community Development on June 3, 1985 in which it proposed to dedicate twenty-four (24) acres (subsequently increased to 30 acres) of the same land to the City to satisfy this commitment.

A formal agreement was reached. In light of this information the following marketing related assumptions have been incorporated into this report.

1. The developer will not be marketing or building the units earmarked for the low/moderate housing. Therefore, these units will no longer be considered within Wai-tec's production timetable.

2. The units to be constructed will, in all likelihood, be rental units and therefore noncompetitive with other products being offered in the Village Park Expansion or other "for sale" products on Oahu.

However, even if the units are built for sale, they would not be competitive with "at market" products because of income qualifications and other restrictions placed on prospective buyers.

Expanded Product Line & Market Segmentation

The initial market study prepared by CBC for Wai-tec Development, Inc. was based on the assumption that the developer would continue to develop only the existing Village Park product type, and would additionally develop a small number of attached residential dwellings. Based on this assumption, the CBC study concluded that the absorption rate for these units would be limited to 350 per year and require 9.07 years to complete.

In light of the conclusions reached in the CBC study, and upon reevaluation of the plan, the developer has elected to expand the product line in order to appeal to other segments of the Oahu housing market. The use of market segmentation has been a fundamental marketing technique, used to increase volume in a wide range products from automobiles to electronic equipment and prepared foods. Simply stated, the concept is to offer the same product, in this case housing, but differentiating the product in terms of design, quality and price so that it will appeal to a wider spectrum of potential buyers. That is, offering the low cost unit and the higher priced unit with a number of optional features, as well as a number of products in between. With careful site planning the result can be visually attractive and socially sound.

In this revised marketing study CBC has prepared the recommended product mix as well as the estimated absorption rate for each unit type for each specific year. The marketing update is therefore based on new assumptions and on the concept of market segmentation. The following concerns have been incorporated into the revised development mix and schedule.

Product Mix

The product mix has been expanded from two products to five products. The additional products were chosen so that there would be a range of products from the low and attached units to the custom lot/home package. Two of the new products bracket the traditional Village Park unit, one a starter version of the home and the other an upgraded model.

Physical Constraints

In developing the actual product mix and timetable, CBC worked closely with planners and engineers to make sure that physical constraints such as topography, water, sewer and fire would not preclude the achievement of the timetable. The project's prime contractor Pacific Construction an affiliate of the developer, will deliver 350 "traditional" Village Park units this year (1985) to Wai-tec. Pacific has reviewed the development schedule and feels that it is realistic from a construction standpoint even if Pacific were the sole contractor. However, the developer (Wai-tec) will remain flexible and consider the use of other contractors to meet near term demand, if appropriate. The ability to consider other contractors, primarily in the upper-middle income units which require different building techniques than the production-oriented units, will permit parallel development. Ample production capacity exists on Oahu to implement this plan.

Oahu Real Estate Market

The Oahu real estate market is comprised of a number of segments. Certain areas such as the Kahala/Kailua and Diamond Head areas offer high priced properties for the upper end of the market. The Waialae area offers a wide range of product in the upper-middle income price range while the Pearl City area generally offers product in the middle income range.

The Ewa area offers product toward the lower-middle income range and the Kiawunaua area offers a product generally lower priced than the rest of the Island. In all of the areas mentioned, however, there is generally a wide range of product with sales prices substantially above and below the average price for the area. Thus, at any given time there is product available in most areas which meets the variety of housing needs.

It is not difficult to point to examples of the market segmentation concept. In the case of Millikan Town, Gentry Waipio, or Kukuiola, experience demonstrates that the largest number of sales in any given year are achieved when there is a wide variety of product available from which to choose. At the Village Park Expansion this same concept will also apply.
The exact product mix and exact timing of the development of the various products will depend on market acceptance of the product and on prevailing economic conditions. By offering a wider range of products, the developer is able to segment the market into a number of different categories and, therefore, more closely tailor his product to individual buyers’ desires and economic capabilities. The broadening of the market will allow the developer to increase and stabilize annual unit sales.

Maitec's primary commitment will remain to the first-time home buyer of moderate means as the product mix clearly shows (see Figures 1, 2 and 3). Maitec has projected over 15% of the proposed product mix in the average $145,000 price range and below. A description of the product types being proposed, estimated absorption rates and the price ranges are as follows:

1. Prime Building Sites - The existence of golf course frontage in the proposed Village Park Expansion will give the developer an opportunity to provide a limited number of prime building sites for the Oahu market. The product to be developed will be custom semi-custom built single family upper/middle income type homes on lots (pad area) of approximately 5,000 square feet with homes of 1,800 to 2,200 square feet. These units are expected to have an average absorption rate of four to six per month during a five year period and have package sales prices from $200,000 to $245,000 with an average price of $215,000. These units will have golf course frontages of 50 to 60 feet. Two hundred seventy units, nine percent (9%) of the Village Park Expansion’s 3,000 market units will be prime sites.

2. Upgraded Single Family Housing - The availability of lands which are in close proximity to the golf course, or have "better views", provides the developer with choice building sites which will be developed into upgraded production of single-family housing. These homes would be on lots (pad area) averaging 4,750 square feet with homes ranging from 1,400 to 1,800 square feet and priced in the $185,000 to $195,000 range with an average price of $185,000. These units would have an absorption rate of 9.5 per month during a four year period. It is estimated that a total of 425 or 14% of the 3,000 market units planned for the Village Park Expansion would be developed for this market range as upgraded single-family units.

3. Traditional Single Family Housing - This type of housing is very similar to the product produced at the existing Village Park Development. It consists of products ranging in size from 1,000 to 1,400 square feet on lots (pad area) averaging 3,600 square feet. The price for this product is expected to be in the $120,000 to $145,000 range with an average price of $145,000. These units have experienced excellent market acceptance and are providing homes to first-time buyers. These units are expected to be marketed at an average rate of 12 per month for a total of 144 annually, however, production is expected to vary due to phasing of infrastructure. During the term of the project, 315 of these units are expected to be developed accounting for 34% of units in the Village Park Expansion.

4. Starter Single Family Housing - These units are expected to be developed on lots (pad area) with an average size of 3,000 square feet with homes sizes in the 800 to 1,200 square feet range. Sales prices are expected to be in the $120,000 to $145,000 range with an absorption rate of three to four per month during a four year period. Production is expected to average 24 units per year for the first three years. Eighty unit increments are deemed to be the proper size to achieve reasonable absorption rates.

5. Attached Units - The developer intends to develop approximately 240 units of this type of housing. Average selling price is expected to be in the $150,000 range. These units are to be tentatively planned for the townhouse type development such as the Gentry at Waipio Rainbow Townhouses. These units would be marketed for the Golf Course Frontage of 30 to 50 feet. Two hundred units, equal to 7% of the total 2,800 market units planned for the Village Park Expansion.

6. Low/Moderate Income Housing

As noted earlier, the current plan is to dedicate land in the City and County of Honolulu for low/moderate income housing. Four hundred eighty units are projected.

Opportunity for Increased Sales at Village Park in the Near Term

The Village Park Development can be expected to generate significant additional sales in the near term (1988 to 1990) because of two primary factors: First, economic factors which currently favor increased demand in the housing market namely very low interest rates and low inflation. Second, the completion of the Gentry Waipio Phase II and the completion of the development of the remaining parcels with significant potential for single family and low density residential units within the Pearl City/Aleia areas by the end of 1988. Sales at Village Park one of the few moderate priced projects in the market over the near term.

In reviewing the projects that will be able to fill the void in supply left by the completion of Gentry-Waipio and the Pearl City/Aleia developments, it is clear that Village Park and Waipio will be the closest projects in location to the Primary Urban Center. New projects such as Ewa Marinas, new Villages will be located several miles further from the PUD. The West Beach project does not...
plan to offer single family product. Projects which are pending such as the Nuthele and Nafawa developments will require planning and zoning approvals as well as major infrastructure improvements before making significant contributions to the housing inventory. The Village Park expansion will have the following marketing advantages: a maturing planned development; available infrastructure; and a community core.

It is the opinion of the Consultants, that the Village Park Development with its locational and timing advantage will be able to satisfy the housing need prior to 1991/92 when the Nuthele, Nafawa and Ewa projects may start to reach full production.

Development Schedule

Figure 1 shows the development plan for the expansion of Village Park. Figure 2 is a development schedule and Figure 3 demonstrates the product mix by year.

Conclusions and Summary

As indicated in the text of this report, there are several factors which lead the authors to make the following revisions to the conclusions reached in the Market Analysis prepared earlier this year:

Note: The Consultants have left unchanged their estimate of 10,000 population for the development. Their reasoning is that the change in product mix will have little impact on population, and that additional city units may reflect a shifting of units from the existing Village Park development.

The agreement with the City, to contribute land to the City will allow the developer to concentrate its efforts on market product. Although the low/moderate developments would have been noncompetitive to the market product, it would have required a certain amount of developer resources and attention which would have taken away from the concentration on market products. This is an unquantifiable “plus” in accelerating the development of the market product to meet demand.

The developer’s decision to expand the product line will have a positive impact on the appeal of the project to a wider market. The decision to create a starter version of the Village Park home on a small lot, will allow those buyers who cannot afford to purchase the current product to be served within the development.

The locational and timing advantage of Village Park in the short term will permit an acceleration of sales prior to 1991/92.

Based on the above, the Consultants believe that the Village Park Expansion can achieve sales of 340 to 500 units per year and average 450 units per year over the term of the project. Further, the 3,000 market units in the proposed development can be developed and sold in less than seven (7) years, absent any major unforeseen change in the economy.
SECTION II. METHODOLOGY

For over ten years, dozens of material have been written about Oahu's housing needs. Government planning agencies, housing and social agencies, as well as private interests, have undertaken and/or commissioned numerous studies to define the quality, quantity, location and need for additional housing.

Similarly, volumes have been gathered regarding the population of Oahu and its characteristics.

This analysis attempts to compile the significant findings of recognized authorities on the subject matter and to present this material as it relates to the subject application and to add appropriate comments based on the consultant's past experience and observation to place the data in perspective and to add additional information where such information is useful to understanding the justification for the applicant's request. In addition, this report will address the distinction between the Village Park Expansion and numerous other projects which have been proposed to meet the housing needs of Oahu.

Principal Resources

Principal resources used in this report are:

State of Hawaii, 1984 Data Book
Bank of Hawaii Construction in Hawaii, 1984
First Hawaiian Bank Economic Indicators
Day & Associates Affordable Housing Paper 1983
Land Supply Review, July 1, 1984 published by the City & County of Honolulu.
Mr. Art Asher and Ms. Elaine Scholz, Economics Dept., Bank of Hawaii (telephone interview), May, 1985
Ms. Sharon Hishi, Economics Dept. Staff, Department of Planning and Economic Development (telephone interview), May, 1985
Hawaii Population and Economic Projection and Simulation Model, Department of Planning and Economic Development, July, 1984

1/ Consultants: Kendall Brooks, Jr., and John Zapoticky (see Exhibit II for additional information).
SECTION III. THE NEED FOR HOUSING - ISLAND OF OAHU

The need for housing is a composite of many factors. In its simplest form, the need for housing is a function of the number of housing units available, the shortfall being the need for housing. However, beyond basic shelter, the need for more maintains the same basic relationship, namely, multi-family units, single-family units, and the like. The need for more maintains the same basic relationship, namely, multi-family units, single-family units, and the like. The need for more maintains the same basic relationship, namely, multi-family units, single-family units, and the like. The need for more maintains the same basic relationship, namely, multi-family units, single-family units, and the like. The need for more maintains the same basic relationship, namely, multi-family units, single-family units, and the like. The need for more maintains the same basic relationship, namely, multi-family units, single-family units, and the like. The need for more maintains the same basic relationship, namely, multi-family units, single-family units, and the like. The need for more maintains the same basic relationship, namely, multi-family units, single-family units, and the like. The need for more maintains the same basic relationship, namely, multi-family units, single-family units, and the like. The need for more maintains the same basic relationship, namely, multi-family units, single-family units, and the like. The need for more maintains the same basic relationship, namely, multi-family units, single-family units, and the like. The need for more maintains the same basic relationship, namely, multi-family units, single-family units, and the like.

This analysis will attempt to correlate the key factors into a forecast of future housing needs for Oahu and the Village Park Expansion. Further, this analysis will describe how the proposed project fits into Oahu’s forecasted growth pattern, thus demonstrating that there is both a need and a market for an expanded community at Village Park.

Population Trends - Oahu 1950 - 1984

Population trends provide one indication of future housing need.

The population has increased significantly since statehood (1959), an event generally recognized as a major turning point in the growth of post World War II Hawaii. Between 1970 and 1980, the population on Oahu grew from 602,565 persons to 803,050, an average per year increase of 1.4 percent. As of January, 1985 the estimated Oahu population was 815,750 persons, an 17.7 percent increase from 1970.

The January, 1985 population is estimated at 815,750 persons, an estimated 1.2% increase over 1984.

It appears that Oahu’s population has and is currently growing at an annual rate of 1.5 percent. This rate has declined from the rate of growth in the 1950’s and 1960’s, however, it appears to represent a stabilized order of magnitude when economic cycles are placed in perspective.

Predictions are that the migration to the islands will continue, with Texas, Florida and California being the three most densely populated states in the country.2/

2/ Move Trends, John Riesbitt.

SCHEDULE II

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>602,565</td>
<td></td>
</tr>
<tr>
<td>1960</td>
<td>700,000</td>
<td>4.7 percent (avg per yr)</td>
</tr>
<tr>
<td>1970</td>
<td>803,050</td>
<td>2.4 percent</td>
</tr>
<tr>
<td>1980</td>
<td>815,750</td>
<td>1.6 percent</td>
</tr>
<tr>
<td>1981</td>
<td>815,750</td>
<td>1.2 percent</td>
</tr>
<tr>
<td>1982</td>
<td>815,750</td>
<td>1.2 percent</td>
</tr>
<tr>
<td>1983</td>
<td>815,750</td>
<td>1.2 percent</td>
</tr>
<tr>
<td>1984</td>
<td>815,750</td>
<td>1.2 percent</td>
</tr>
<tr>
<td>1985</td>
<td>815,750</td>
<td>1.2 percent</td>
</tr>
</tbody>
</table>

(1) Provisional Estimates of the Population of Hawaii, 1900-1980
Department of Planning and Economic Development (Statistical Memorandum 85-3)

(2) Hawaii Population and Economic Simulation Model, DED, July 1984

It is reasonable to assume that Hawaii will continue to experience long-range population pressures both because of its growing importance in Pacific Rim relations and spillover of the western migration. Alien migration from the western and southern Pacific can also be expected to continue.

Civilian in-migration has traditionally been greater than out-migration, ranging from a high in 1970-71 of plus 37,300, to minus 600 in 1971. The general economic conditions, high cost of living and lack of available job opportunities at that time (1981) most likely contributed to this decline. The bulk of the out-migration consists of Armed Forces and economic conditions improve, particularly if tourism reaches the levels which have been projected.3/

The military population will continue to be fairly stable. (Dr. Thomas Hitch, First Hawaii Bank, 1984) unless the proposed home porting of a battleship group at Pearl Harbor takes place in which case, demand for City, and Waipahu areas.

Analysis of Population Trends

As shown in Schedule III, the population of the Island of Oahu increased from 500,409 residents in 1960 to 630,521 residents in 1970, reflecting an increase of about 26.0 percent. Between 1960 and 1970, the resident population in Ewa increased from 78,657 to 137,265, reflecting an increase of about 77.2 percent per year. Between April 1, 1970, and April 1, 1980, the resident population of Oahu increased from 630,521 to 762,545, reflecting an increase of about 20.9 percent over the 10-year period. During the same 10-year period, the resident population of the Ewa District increased from 137,265 to 191,053 or 48.6 percent per year, reflecting an increase of about 44.4 percent between 1970 and 1980.

The Ewa District had the greatest growth rates in population for both of the previous two decades of any area on the Island of Oahu (see Schedule III). Of the 762,545 total resident population of Oahu in 1980, 47.9 percent lived in the Ewa District (Tax Zones 1, 2, and 3), and 25 percent or 191,053 lived in Ewa (Tax Zone 3).

The decline of the percentage rate of growth in Ewa in the 1970's was due to the fact that the base had increased. However, in absolute terms, the total population growth in Ewa during the 1970's was actually larger than during the 1960's.

During the early 1980's growth in the Ewa District slowed considerably. This is understandable when one considers the condition of the national, and local economy. The first indication of a decline appeared in late 1979 when prices started increasing. Through 1980, 1981 and 1982, the recession devastated the real estate, construction and development industries. Interest rates soared, the rate of new construction dropped precipitously, and foreclosures hit levels never before experienced in Hawaii.

1983 and 1984 were years of national and local economic recovery. Housing and construction have followed, but at a modest pace. 1986 ended with a relatively high level of consumer confidence, and interest rates were trending down. Projects such as Nimitz Town and Village Park reported brisk single-family home sales. In May, 1985, interest rates again declined which should act as a stimulus to home sales.

It is therefore reasonable to assume that the 1980 - 1990 lag in the development of the Ewa District was a function of short term economic conditions and not a change or reversal of a long term trend. The westward movement to Ewa is likely to continue because of the overall shortage of housing, the high price of housing close to the urban core, and "supply pull" based on availability in Ewa.


The Department of Planning and Economic Development, State of Hawaii, is presently utilizing the R-SNRS projections as the official population projections for the State of Hawaii and the Island of Oahu. As shown on Schedule IV, the projected population for the Island of Oahu for the year 2005, the estimate is approximately 944,000 persons.

(1) Including visitors present, but excluding residents temporarily absent; the estimate of visitors present and residents absent are annual averages.

(2) Including armed forces stationed or stationed in Hawaii and their dependents living in Hawaii, but excluding visitors present. Fractional disparities are a result of rounding.

SCHEDULE IV
RESIDENT POPULATION BY STATE, OAHU AND DISTRICTS, 1960 TO 1980

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The State</td>
<td>632,772</td>
<td>769,913</td>
<td>964,601</td>
<td>21.7</td>
<td>25.3</td>
</tr>
<tr>
<td>Oahu</td>
<td>500,409</td>
<td>630,521</td>
<td>762,545</td>
<td>26.0</td>
<td>20.9</td>
</tr>
<tr>
<td>Honolulu</td>
<td>254,734</td>
<td>324,871</td>
<td>365,360</td>
<td>10.4</td>
<td>12.4</td>
</tr>
<tr>
<td>Koolaupoko</td>
<td>10,338</td>
<td>92,019</td>
<td>109,333</td>
<td>8.6</td>
<td>10.6</td>
</tr>
<tr>
<td>Koolauloa</td>
<td>8,043</td>
<td>10,562</td>
<td>14,395</td>
<td>11.6</td>
<td>34.9</td>
</tr>
<tr>
<td>Waialua</td>
<td>8,221</td>
<td>9,271</td>
<td>9,849</td>
<td>11.6</td>
<td>7.4</td>
</tr>
<tr>
<td>Wahiawa</td>
<td>34,395</td>
<td>37,429</td>
<td>41,562</td>
<td>9.7</td>
<td>11.3</td>
</tr>
<tr>
<td>Waikeha</td>
<td>16,452</td>
<td>24,037</td>
<td>31,682</td>
<td>66.3</td>
<td>20.8</td>
</tr>
<tr>
<td>Ewa</td>
<td>78,656</td>
<td>132,299</td>
<td>191,053</td>
<td>88.2</td>
<td>44.4</td>
</tr>
</tbody>
</table>

- 13 -

- 14 -
<table>
<thead>
<tr>
<th>Year</th>
<th>State Total</th>
<th>Oahu</th>
<th>Total</th>
<th>Oahu</th>
<th>Under 15</th>
<th>65 Tys.</th>
<th>Old &amp; Over</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>1,166.4</td>
<td>881.0</td>
<td>1,057.6</td>
<td>815.3</td>
<td>238.1</td>
<td>101.5</td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td>1,277.5</td>
<td>941.1</td>
<td>1,138.4</td>
<td>859.3</td>
<td>250.9</td>
<td>124.1</td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td>1,373.0</td>
<td>985.2</td>
<td>1,211.5</td>
<td>896.9</td>
<td>250.4</td>
<td>142.7</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>1,467.2</td>
<td>1,018.2</td>
<td>1,267.6</td>
<td>925.7</td>
<td>265.1</td>
<td>159.8</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>1,501.0</td>
<td>1,052.1</td>
<td>1,330.0</td>
<td>954.5</td>
<td>265.8</td>
<td>177.3</td>
<td></td>
</tr>
</tbody>
</table>

**SECTION IV. HOUSING INVENTORY - ISLAND OF OAHU**

**Current Housing Inventory**

The total housing stock on Oahu had increased from 125,795 dwelling units in 1960 to 252,039 by the end of 1980. The net increase over this period was 126,243 dwelling units, or an average of approximately 6,600 per year. This growth was due to an increasing population and a general economic recession. According to the Human Resources and Public Administration Review of the Hawaii Housing Authority, an estimated 250,574 housing units on Oahu at the end of 1980, representing an increase of only 1,236 or an average of only 5,332 units per year for 1981, 1982, and 1983.

**Housing Authorizations**

Schedule V shows the Building Permit Trends for Oahu for the period 1961 through 1983. According to this schedule, there has been a general decline in the number of single-family housing authorizations and a significant decline in the proportion of single-family housing authorizations expressed as a percentage of total housing authorizations. In 1981, slightly more than 50 percent of the dwelling units authorized on Oahu were single-family. Conversely, slightly less than 41 percent were multi-family units.

In 1983, 55 percent of the total dwelling units authorized on Oahu were single-family, whereas only 45 percent were multi-family units.

However, over the twenty-three-year period (1961 - 1983), slightly more than 30 percent of the units authorized were single-family dwellings, while approximately 65 percent were multi-family.

The long-term trend away from production of single family dwellings has been in part a function of land scarcity created by a government policy which placed the priority of preservation of agricultural lands above the need for more housing.

**Demolitions and Substandard Housing**

Schedule VI is the historic summary of Demolition Authorizations. The fifteen year average for the period 1970 through 1984 was 584 units per year.
Historically, demolitions have occurred most frequently in areas of sub-standard housing for reasons of highway construction and/or urban renewal. In the latter case, there is frequently a significant time lag between the time units are vacated and demolished and the time new replacement programs are realized. The re-development programs in the areas adjacent to the Central Business District and Chinatown exemplify this problem where programs conceptualized in the '60s and '70s were ten years being redeveloped. A few of these areas still remain to be redeveloped.

Condition of Housing Inventory

One must also look at the existing housing inventory in terms of the standard of living that it seeks to satisfy. There is a conflict between the age of these portions of the population which are most rapidly growing, in absolute numbers, i.e., the 25 to 44 age groups, and the age of the existing housing inventory, i.e., older units.

Many of the units in the older categories do not provide the standard of living that young people of today want in terms of ease of ownership and maintenance, amenities, and perhaps most important - ability to buy.

<table>
<thead>
<tr>
<th>Year</th>
<th>Single-Family Housing Units</th>
<th>Percent of Total</th>
<th>Multi-Family Units</th>
<th>Percent of Total</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1961</td>
<td>3,412</td>
<td>50</td>
<td>2,367</td>
<td>41</td>
<td>5,779</td>
</tr>
<tr>
<td>1962</td>
<td>3,454</td>
<td>50</td>
<td>2,342</td>
<td>40</td>
<td>5,796</td>
</tr>
<tr>
<td>1963</td>
<td>3,386</td>
<td>50</td>
<td>2,301</td>
<td>40</td>
<td>5,687</td>
</tr>
<tr>
<td>1964</td>
<td>3,671</td>
<td>65</td>
<td>2,858</td>
<td>65</td>
<td>6,529</td>
</tr>
<tr>
<td>1965</td>
<td>4,512</td>
<td>64</td>
<td>3,287</td>
<td>64</td>
<td>7,800</td>
</tr>
<tr>
<td>1966</td>
<td>2,943</td>
<td>62</td>
<td>2,623</td>
<td>62</td>
<td>5,566</td>
</tr>
<tr>
<td>1967</td>
<td>3,025</td>
<td>60</td>
<td>2,625</td>
<td>60</td>
<td>5,650</td>
</tr>
<tr>
<td>1968</td>
<td>3,683</td>
<td>60</td>
<td>2,623</td>
<td>60</td>
<td>10,556</td>
</tr>
<tr>
<td>1969</td>
<td>3,369</td>
<td>60</td>
<td>2,623</td>
<td>60</td>
<td>10,332</td>
</tr>
<tr>
<td>1970</td>
<td>3,409</td>
<td>60</td>
<td>2,623</td>
<td>60</td>
<td>10,032</td>
</tr>
<tr>
<td>1971</td>
<td>3,771</td>
<td>60</td>
<td>2,623</td>
<td>60</td>
<td>10,394</td>
</tr>
<tr>
<td>1972</td>
<td>3,953</td>
<td>60</td>
<td>2,623</td>
<td>60</td>
<td>10,576</td>
</tr>
<tr>
<td>1973</td>
<td>3,008</td>
<td>60</td>
<td>2,623</td>
<td>60</td>
<td>10,631</td>
</tr>
<tr>
<td>1974</td>
<td>1,450</td>
<td>12</td>
<td>1,257</td>
<td>12</td>
<td>3,707</td>
</tr>
<tr>
<td>1975</td>
<td>1,078</td>
<td>12</td>
<td>1,257</td>
<td>12</td>
<td>2,335</td>
</tr>
<tr>
<td>1976</td>
<td>1,310</td>
<td>12</td>
<td>1,257</td>
<td>12</td>
<td>2,567</td>
</tr>
<tr>
<td>1977</td>
<td>2,210</td>
<td>47</td>
<td>2,043</td>
<td>47</td>
<td>4,253</td>
</tr>
<tr>
<td>1978</td>
<td>2,075</td>
<td>47</td>
<td>2,043</td>
<td>47</td>
<td>4,118</td>
</tr>
<tr>
<td>1979</td>
<td>3,046</td>
<td>61</td>
<td>1,939</td>
<td>39</td>
<td>5,085</td>
</tr>
<tr>
<td>1980</td>
<td>1,650</td>
<td>46</td>
<td>1,939</td>
<td>39</td>
<td>3,589</td>
</tr>
<tr>
<td>1981</td>
<td>760</td>
<td>29</td>
<td>1,939</td>
<td>39</td>
<td>2,699</td>
</tr>
<tr>
<td>1982</td>
<td>691</td>
<td>26</td>
<td>2,585</td>
<td>74</td>
<td>3,276</td>
</tr>
<tr>
<td>1983</td>
<td>1,502</td>
<td>35</td>
<td>1,257</td>
<td>45</td>
<td>2,559</td>
</tr>
</tbody>
</table>

TOTALS: 12,976

Average/Year: 2,695

SCHEDULE 2/1
BUILDING PERMIT TRENDS FOR HONOLULU

NOTE: Data for all of 1984 not available; 3rd quarter 1984 trend indicates 3,673 single-family dwellings and 547 multi-family units for a total of 4,220 units or a 77-736 relative proportion. If this trend is extended for the full year, it would result in 3,226 units. However, there was a construction strike in the last part of 1984 which delayed both delivery of units under construction and new starts. Therefore, it is assumed that only 75% of the authorizations were completed or approximately 2,400 units.

- 17 -

Bank of Hawaii, Construction in Hawaii, 1984
City and County of Honolulu Building Department
### Schedule VI

**Private Residential Demolition**

**Authorized by Permit on Oahu, 1970-1984**

<table>
<thead>
<tr>
<th>Year</th>
<th>Demolition Units</th>
<th>Permits Authorized</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>642</td>
<td></td>
</tr>
<tr>
<td>1971</td>
<td>596</td>
<td></td>
</tr>
<tr>
<td>1972</td>
<td>669</td>
<td></td>
</tr>
<tr>
<td>1973</td>
<td>874</td>
<td></td>
</tr>
<tr>
<td>1974</td>
<td>703</td>
<td></td>
</tr>
<tr>
<td>1975</td>
<td>632</td>
<td></td>
</tr>
<tr>
<td>1976</td>
<td>613</td>
<td></td>
</tr>
<tr>
<td>1977</td>
<td>656</td>
<td></td>
</tr>
<tr>
<td>1978</td>
<td>558</td>
<td></td>
</tr>
<tr>
<td>1979</td>
<td>460</td>
<td></td>
</tr>
<tr>
<td>1980</td>
<td>665</td>
<td></td>
</tr>
<tr>
<td>1981</td>
<td>521</td>
<td></td>
</tr>
<tr>
<td>1982</td>
<td>443</td>
<td></td>
</tr>
<tr>
<td>1983</td>
<td>385</td>
<td></td>
</tr>
<tr>
<td>1984</td>
<td>337</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8,764</strong></td>
<td></td>
</tr>
<tr>
<td><strong>15 year average</strong></td>
<td><strong>584 per year</strong></td>
<td></td>
</tr>
</tbody>
</table>

Older, good homes have appreciated to the point where young persons cannot generally afford to purchase them. Older homes which are in poor condition do not meet mortgage lender criteria for low down payment, high loan to value ratio, long-term mortgages. A more exact count of the housing inventory is therefore only a partial measure of the ability to meet the housing needs and desires of the community.

There are still a large number of substandard housing units scattered throughout Oahu. Substandard is defined as units with more than 1.1 persons per room plumbing.8/ In 1970, the number of substandard units not counting overcrowding, amounted to 19,758 or 11.3 percent of the inventory. By 1984, only 8,764 units have been demolished.10/ Not all units that were demolished were necessarily substandard.

At least 11,000 of the 1970 estimate of substandard units remain in the 1984 housing inventory. A number of additional units became dilapidated each year and should be added to the total to be replaced. On the other hand, some units were no doubt upgraded.

The number of housing units needed statewide to replace dilapidated units and to eliminate overcrowding was estimated by Daly & Associates at over 56,000 units for the period 1981 through 1988, or an average of 7,000 units per year.11/

The 1980 Census identified approximately the same number of units as being substandard (see Housing Trends and Characteristics Section 9). It is difficult to calculate the exact number of substandard housing units except to say that it appears to be significant.

**Correlation of Authorizations and Net Inventory**

Schedule V demonstrates that an average of approximately 7,078 units have been authorized each year since 1961, and Schedule VI demonstrates that roughly 584 demolitions per year are authorized. It should be noted that the time frames for the two averages are different. The figures suggest that the net authorized additions to the housing inventory has been approximately 8,491 units per year.

---


10/ Daly & Associates Affordable Housing Paper 1981

11/ Daly & Associates Affordable Housing Paper 1981
However, it is recognized that building permit authorizations are not a totally accurate indication of the total increase of the housing stock. Permit data tends to overstate actual net growth in the housing inventory. Between 1960 and 1980, the official records of governmental agencies indicate an authorized increase of 146,185 units or 7,209 units per year, while the actual growth was approximately 120,246, approximately 86 percent of all authorizations, or a net increase of approximately 5,728 units per year after deducting demolitions of 854 units per year.

A partial explanation for the variance between authorizations and actual starts is as follows:

1. Failure to finalize financing is the largest single reason for projects not to commence construction.

2. Changing market conditions (lack of sales) frequently cause projects to be postponed. This occurs typically when an economic cycle has peaked before the project can be marketed successfully.

3. The marketplace can be quite selective and reject a product that is inappropriate as to location, design, amenities or pricing. Despite the overall housing shortage, the market will not absorb "any product at any price", a well learned lesson by both developers and lenders during the early 80's.

Many projects are designed without adequate market analysis. The result is the wrong product, in the wrong place at the wrong time.

Condominiums: A Majority Portion of the Inventory

Schedule VII is a breakdown of the State of Hawaii condominium inventory, by type, for the period 1962 through 1982.

Schedule VIII is a comparison of condominium inventory and new multi-family authorizations for the State of Hawaii and the Island of Oahu for the period 1962 through 1982.

The two schedules demonstrate that in the 20-year time frame, approximately 98,000 condominium units were added statewide. Approximately 80 percent were new authorizations, and 21 percent were conversions.

### Schedule VII 127

<table>
<thead>
<tr>
<th>Year</th>
<th>High-rise</th>
<th>Low-rise</th>
<th>Town-house</th>
<th>Single-family</th>
<th>Duplexes</th>
<th>Total</th>
<th>Cumulative Inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962</td>
<td>1,746</td>
<td>8</td>
<td>---</td>
<td>---</td>
<td>162</td>
<td>1,908</td>
<td>162</td>
</tr>
<tr>
<td>1963</td>
<td>41</td>
<td>18</td>
<td>---</td>
<td>---</td>
<td>42</td>
<td>59</td>
<td>59</td>
</tr>
<tr>
<td>1964</td>
<td>1,271</td>
<td>25</td>
<td>29</td>
<td>66</td>
<td>1,557</td>
<td>1,760</td>
<td>1,760</td>
</tr>
<tr>
<td>1965</td>
<td>425</td>
<td>245</td>
<td>147</td>
<td>73</td>
<td>1,091</td>
<td>1,516</td>
<td>1,516</td>
</tr>
<tr>
<td>1966</td>
<td>1,412</td>
<td>356</td>
<td>216</td>
<td>67</td>
<td>2,061</td>
<td>3,527</td>
<td>3,527</td>
</tr>
<tr>
<td>1967</td>
<td>1,264</td>
<td>284</td>
<td>---</td>
<td>---</td>
<td>1,548</td>
<td>2,888</td>
<td>2,888</td>
</tr>
<tr>
<td>1968</td>
<td>1,090</td>
<td>74</td>
<td>150</td>
<td>39</td>
<td>2,183</td>
<td>4,085</td>
<td>4,085</td>
</tr>
<tr>
<td>1969</td>
<td>1,117</td>
<td>453</td>
<td>152</td>
<td>32</td>
<td>1,754</td>
<td>3,871</td>
<td>3,871</td>
</tr>
<tr>
<td>1970</td>
<td>2,039</td>
<td>874</td>
<td>939</td>
<td>6</td>
<td>4,950</td>
<td>8,821</td>
<td>8,821</td>
</tr>
<tr>
<td>1971</td>
<td>2,874</td>
<td>382</td>
<td>1,092</td>
<td>---</td>
<td>4,316</td>
<td>6,296</td>
<td>6,296</td>
</tr>
<tr>
<td>1972</td>
<td>1,139</td>
<td>314</td>
<td>770</td>
<td>12</td>
<td>2,835</td>
<td>3,970</td>
<td>3,970</td>
</tr>
<tr>
<td>1973</td>
<td>1,420</td>
<td>1,018</td>
<td>1,256</td>
<td>36</td>
<td>6,741</td>
<td>23,214</td>
<td>23,214</td>
</tr>
<tr>
<td>1974</td>
<td>5,103</td>
<td>2,112</td>
<td>1,275</td>
<td>235</td>
<td>9,275</td>
<td>30,490</td>
<td>30,490</td>
</tr>
<tr>
<td>1975</td>
<td>4,046</td>
<td>2,922</td>
<td>1,270</td>
<td>268</td>
<td>10,710</td>
<td>45,207</td>
<td>45,207</td>
</tr>
<tr>
<td>1976</td>
<td>6,310</td>
<td>260</td>
<td>655</td>
<td>112</td>
<td>7,367</td>
<td>52,574</td>
<td>52,574</td>
</tr>
<tr>
<td>1977</td>
<td>7,456</td>
<td>883</td>
<td>942</td>
<td>40</td>
<td>3,221</td>
<td>55,805</td>
<td>55,805</td>
</tr>
<tr>
<td>1978</td>
<td>1,392</td>
<td>810</td>
<td>604</td>
<td>4</td>
<td>3,410</td>
<td>58,215</td>
<td>58,215</td>
</tr>
<tr>
<td>1979</td>
<td>4,116</td>
<td>1,447</td>
<td>1,156</td>
<td>97</td>
<td>6,816</td>
<td>65,031</td>
<td>65,031</td>
</tr>
<tr>
<td>1980</td>
<td>4,331</td>
<td>2,053</td>
<td>1,263</td>
<td>74</td>
<td>10,443</td>
<td>75,474</td>
<td>75,474</td>
</tr>
<tr>
<td>1981</td>
<td>2,067</td>
<td>4,825</td>
<td>2,745</td>
<td>67</td>
<td>9,704</td>
<td>95,178</td>
<td>95,178</td>
</tr>
<tr>
<td>1982</td>
<td>2,152</td>
<td>3,044</td>
<td>1,029</td>
<td>201</td>
<td>7,295</td>
<td>102,473</td>
<td>102,473</td>
</tr>
</tbody>
</table>

Totals 52,677 24,033 19,258 1,463 97,931

Note: Includes new and converted units. Conversions from 1963 thru 1981 totaled 10,547 units.


92,749 x .85 = 85,997 new condo authorizations
97,749 x .15 = 15,792 condo conversions
### Schedule VIII

**Comparison of Condo Inventory and New Multi-Family Authorizations**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Condo Units Authorized</th>
<th>State</th>
<th>Oahu</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962</td>
<td>182</td>
<td>4,244</td>
<td>4,246</td>
</tr>
<tr>
<td>1963</td>
<td>41</td>
<td>3,321</td>
<td>3,081</td>
</tr>
<tr>
<td>1964</td>
<td>1,597</td>
<td>3,029</td>
<td>2,958</td>
</tr>
<tr>
<td>1965</td>
<td>1,091</td>
<td>6,006</td>
<td>5,687</td>
</tr>
<tr>
<td>1966</td>
<td>3,061</td>
<td>6,029</td>
<td>6,373</td>
</tr>
<tr>
<td>1967</td>
<td>1,545</td>
<td>3,395</td>
<td>3,206</td>
</tr>
<tr>
<td>1968</td>
<td>2,181</td>
<td>7,022</td>
<td>6,723</td>
</tr>
<tr>
<td>1969</td>
<td>1,754</td>
<td>8,582</td>
<td>7,953</td>
</tr>
<tr>
<td>1970</td>
<td>4,000</td>
<td>5,241</td>
<td>4,172</td>
</tr>
<tr>
<td>1971</td>
<td>4,378</td>
<td>7,388</td>
<td>6,087</td>
</tr>
<tr>
<td>1972</td>
<td>4,375</td>
<td>9,255</td>
<td>7,245</td>
</tr>
<tr>
<td>1973</td>
<td>6,473</td>
<td>12,274</td>
<td>10,061</td>
</tr>
<tr>
<td>1974</td>
<td>9,275</td>
<td>15,474</td>
<td>11,254</td>
</tr>
<tr>
<td>1975</td>
<td>10,790</td>
<td>17,260</td>
<td>14,352</td>
</tr>
<tr>
<td>1976</td>
<td>7,157</td>
<td>15,540</td>
<td>13,208</td>
</tr>
<tr>
<td>1977</td>
<td>3,311</td>
<td>9,193</td>
<td>7,473</td>
</tr>
<tr>
<td>1978</td>
<td>5,210</td>
<td>4,637</td>
<td>2,371</td>
</tr>
<tr>
<td>1979</td>
<td>5,018</td>
<td>4,989</td>
<td>1,980</td>
</tr>
<tr>
<td>1980</td>
<td>10,441</td>
<td>6,758</td>
<td>3,411</td>
</tr>
<tr>
<td>1981</td>
<td>9,204</td>
<td>3,351</td>
<td>1,916</td>
</tr>
<tr>
<td>1982</td>
<td>7,275</td>
<td>4,594</td>
<td>4,109</td>
</tr>
</tbody>
</table>

**Totals:** 97,931 units of multi-family authorizations

**Average/Year (20 Years):** 4,896 units

**State of Hawaii, Data Book, 1983 (Includes new and converted units).**

Schedule VIII demonstrates a high level of market acceptance of medium and high density condominiums in the past in that 54 percent of the units are designated as high-rise buildings, 25 percent in low-rise buildings and 20 percent in a townhouse configuration.

Between 1979 and 1980, the statewide condominium inventory increased from 15,310 to 30,432 units. The total increase in condominium units over this 10-year period was 65,112 units, reflecting an average of 6,511 units per year.

There was an average of 4,459 new condominium units on Oahu annually during this time frame based on 42 percent of multi-family authorizations being designated for condominium use.

Schedule VIII indicates that approximately 75 percent of all new Oahu multi-family authorizations have been condominium units. The majority of the remaining 25 percent are rental units, however, some Cooperative (ownership) apartments may also be in this group.

This is not to say, however, that all new condominium units are owner occupied. To the contrary, there is ample evidence that a very substantial number of condominium units are owned by investors and offered as rentals. Many are not suited to long-term/primary-home occupancy by virtue of design, size, facilities and/or location.

In some cases condominiums planned for primary residences have been converted to use as visitor facilities, and in several other cases the condominium ownership plan was merely a vehicle for financing a transient accommodation (condo-hotel or time-share project).

Another observation from the various schedules is that housing unit authorizations and completions follow the cyclical nature of the economy. For instance, the declines during the recessions of 1961-62, 1973-75, and 1979-82 are clear from the statistics. Other effects, such as the enactment (and re-implementation lag) of the new Comprehensive Zoning Code in the late '60s brought about a surge of home and apartment building to "beat" the new regulations.

The swing in the relative proportion of single-family dwellings to a greater number of multi-family dwellings reflects changing housing characteristics. There are current market indications that there is an oversupply of condominium units in areas where condominium units were built for investment rather than for primary housing.

**Military and Government Housing**

Schedule IX provides an inventory of housing (other than barracks) owned by the various branches of the Federal Government.
Schedule X provides an inventory of housing owned by the State of Hawaii and various State and County agencies.

Military housing projects have, from time to time, added inventory to meet the need for housing. The majority of the new housing in these categories has been most effective in providing housing for those who would not otherwise be able to qualify for market priced housing.

New housing programs of the military have been relatively static for the last several years. Conversations with Dr. Upde of the Oahu Consolidated Family Housing Office (May, 1981) revealed no new major military housing projects underway or planned for at least three years. It appears that the current military policy is to make direct housing subsidies rather than provide housing units.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Armed Forces</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Force</td>
<td></td>
<td>2,935</td>
<td>2,957</td>
</tr>
<tr>
<td>Army</td>
<td>6,085</td>
<td>7,176</td>
<td>7,130</td>
</tr>
<tr>
<td>Coast Guard**</td>
<td></td>
<td>291</td>
<td>291</td>
</tr>
<tr>
<td>Navy &amp; Marines</td>
<td>7,350</td>
<td>9,834</td>
<td>9,760</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>13,442</td>
<td>19,284</td>
<td>19,146</td>
</tr>
<tr>
<td>Other Agencies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East-West Center</td>
<td>n/a</td>
<td>25</td>
<td>3</td>
</tr>
<tr>
<td>Fish &amp; Wildlife Service</td>
<td>n/a</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>National Weather Service</td>
<td>n/a</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>All others</td>
<td></td>
<td>27</td>
<td>10</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td>13,442</td>
<td>19,311</td>
<td>19,166</td>
</tr>
</tbody>
</table>

**Note:** On October 1, 1983, all Armed Forces housing came under the purview of the Oahu Consolidated Family Housing Office, administered by the U.S. Army (excepts Coast Guard and other Federal housing).

* Combined Air Force, Army and Coast Guard totals.

** Officially a branch of the Department of Transportation.

According to staff members, the City & County of Honolulu, Department of Community Development has developed or caused to be developed 5,592 units during its 34-year history since 1949, for an annual average of 165 units.

Recently re-elected Mayor Fasi has proposed aggressive new City housing programs starting in 1980.

The impact of the State and City & County of Honolulu programs are included in the housing inventory statistics contained in this analysis.

As of December 31, 1983, the total public housing inventory on Oahu consisted of 24,000 units. Public housing units on Oahu account for about 9.3 percent of the islandwide 1983 public and private inventory of 259,574. This figure is down from 10.1 percent in 1970.

The Hawaii Housing Authority, a State agency, concerns itself with Oahu and the neighbor islands. During the thirteen year period from 1971 to 1983, HHA has developed or accommodated development of over 8,700 new housing units.

HHA has also contributed to housing through its Hula Mee program. Under Hula Mee, HHA sells bonds using the State’s credit to attain a low interest rate. It then lends these funds at below market rates to qualified first-time homeowners. This program has helped to increase homeownership by nearly 2,000 units per year since its inception in 1980.

Other government agencies have made significant contributions to the housing inventory. The Hawaiian Homes Commission has embarked on a program to accelerate the development of its lands. A telephone interview in May, 1983, with Helen Luke of the department’s application information section, indicated that the department’s goal is to place 1,000 lots in the hands of applicants in 1985, approximately 250 are located on Oahu (200 in Kualoa and 50 in Waianae). The remainder of the lots are on the other Islands, the majority of them on Molokai and the Big Island. For Fiscal Year 1985, the location of the 1,000 lots is unknown at this time as the department must identify suitable lands and, in addition, is considering land swaps and other means of developing the department’s lands. Reportedly, these sites will not all have complete infrastructure. It is not known how effective this program will be.

Each of the government agencies has a waiting list for housing. Considerable overlap is believed to exist between each of these agencies as well as overlap with other rental and purchase programs. The cumulative total may not indicate the exact number of housing units needed, only that a substantial need exists.

Military families receive housing subsidies under a program called “Rent Plus.” Under this plan, members of the military qualify for generous supplemental housing allowances to be used to rent private housing. This has, in part, had the effect of causing rents to increase significantly and vacancies to decline in West Honolulu, Central Oahu, and the Ewa District due to the proximity to military bases.

Since military personnel occupy less than 8% of the rental units on Oahu, some analysts blame inflated rental rates on heavy total demand. They assume that more tenants have entered the market than new rental units have been built in recent years thereby causing a shortage which has increased rents.

Hearings were conducted during 1984 and it was concluded that a problem did exist. However, it was generally agreed that only a portion of the problem could be blamed on abuses of the “Rent Plus Program.”

There have been recent reports that the methods of providing these subsidies will be changing. It is not known at this time what the impact of these changes will be. It is assumed that the greatest impact will be on rental housing in West Honolulu.

\[15/\text{Hawaii Housing Authority Annual Report June 30, 1984}\]
SECTION V. HOUSING TRENDS AND CHARACTERISTICS

This section deals with the observed and statistically quantified trends in housing characteristics.

It is important to understand the unique market in Hawaii in which real estate has often continued to be in demand even though raw statistics would seem to contradict actual market conditions.

The unique nature of the Oahu housing environment has created market conditions and methods which have allowed some consumers to adapt.

1. Increase in the Number of Households and Decrease in Household Size

The number of households has increased because of a number of sociodemographic factors. These include changes in lifestyle, the decline in family size, extended life expectancies, increase in divorce rates, formation of nonconventional households, immigration, and a variety of other reasons.

Family sizes are decreasing. The Wall Street Journal published an article in its October 18, 1993 edition entitled, "Shrinking Families". It noted that household size (nationally) has declined steadily for as long as statistics have been kept. The first census, in 1790, put the average at 5.0 persons per household. In 1980, the figure was 2.7. In 1995, this figure reportedly had declined to 2.7 persons per unit nationally. The most recent statistics on household size for Hawaii in the State of Hawaii Data Book, 1993, indicate an average household size of 3.15 persons.

During the '70s and early '80s, the percent increase in the number of households in Hawaii was greater than the percentage increase in the total population. The average number of persons per dwelling unit dropped from 3.78 persons in 1970 to 3.15 persons per dwelling unit by 1990.

In the Hawaii State Census Statistical Areas Committee Report CTC-97 published on July 16, 1984, it was estimated the population per unit for the City and County of Honolulu fell from 3.0 to 3.0 persons per unit from 1960-1980. This was due in part to rapid household formation as well as "the pill", new abortion laws, planned smaller families and an increase in the number of women working outside the home. This trend was true both on Oahu and on a statewide basis. Oahu appears to be following the national and statewide trend.

As the declining household size trend continues, more dwelling units will need to be built even if there is little or no net increase in population.

2. Change in Age Composition

In Hawaii, the 25 to 44-year old age group is growing faster in absolute terms than the population as a whole. The elderly is the fastest growing group on a percentage basis. Elderly households typically consist of two person families, widows and widowers. These two trends have served to further increase the demand for new housing units, particularly, as the young "undoubles" from parental households and established new households.

3. Consumer Preferences

Many of the trends are also indicative of a change in consumer preferences for example, as more women seek employment outside of the home, either as a result of the need for additional family income or the desire to pursue a career. The efficient lifestyle afforded by apartment living becomes extremely attractive.

The elderly frequently choose a less vigorous life than maintaining a single-family dwelling.

However, a reverse trend may be evidenced as stated in the following observation:

"Since 1982, condominium sales have been running only about 20 to 25 percent higher than single family sales. In the late 1970's the ratio was more like 2 to 1. We take this as further evidence of the market's shift to the end-users owner-occupant".

(Michael A. Sklarz, Hawaii Real Estate Indicators, October 1984).

Mr. Sklarz's comments suggest less emphasis on multi-family development due to a decrease in the popularity of condominiums as an investment and an increased preference for single-family dwellings.

Ralph Cornuelle, Editor of the Monitor, a quarterly publication which tracks housing market activity, reports in the January 27, 1985 Star Bulletin/advertiser that:

"the new single-family home market was the single segment showing some strength".

Cornuelle attributed the single-family home strength to stabilized inflation and a downward trend in interest rates. He also went on to say,

"this (1985) should be a good year for the single-family home market. With lower rates, new home sales rates should be as good or better than the 1983 experience. Resale prices, except in rural areas should move upward during the year".

16/ Department of Planning and Economic Development, Data Book 1983

17/ State of Hawaii, Data Book, 1984
Cornuelle forecasted that, "the outlook for condominium sales activity is not as bright. However, the resale market is still well supplied with numerous listings at attractive prices. The level of prices for condominium apartments have not yet stabilized in most Oahu neighborhoods. New condominium housing projects, faced with tough competition from the resale market and healthy pre-sale quotas will be difficult to launch." 

Cornuelle has accurately identified a period of adjustment in the marketplace toward a better balance between single-family homes and multi-family apartments. This is particularly true in light of the current lack of interest by investors in speculative condominiums.

The pattern may not be clear for several years, however, the current over-supply of condominiums and the recent success of single-family projects on Oahu makes increased demand for single-family dwellings a strong and distinct possibility. It is likely that there will be a balance of say 80% multi-family to 20% single-family within one or two years. (Note: Cornuelle's data was accurate for 1974.)

4. Increased Land Costs

Land costs have increased rapidly over the last 25 years, reflecting overall inflation, a shortage of developable land with proper use and zoning designations. The case has been made from time to time by the OMAF that there is ample land designated for urban development on the Island of Oahu. Much of this land, however, is not appropriately located, lacks adequate facilities, or, for one reason or another, is not suitable for development.

This is not to say that the major landowners have held land off the market to drive prices up. To the contrary, most have directly or indirectly (through developers) attempted to re-zone large areas for development against substantial resistance.

One of the most significant factors affecting the housing supply has been the highly restrictive governmental regulation brought on by mandates to preserve agricultural land and the efforts of groups to curb environmental abuses. In 1976, the BISDD reported that "the chronic Hawaiian housing problem, so extensively documented over the past third of a century, has not abated." [19]

5. Residential Movement Pattern

The residential movement pattern has been dictated, in part, by the location of the housing supply. The trend has been toward the Ewa District and Central Oahu. The low vacancy rate (discussed below) indicates not only a shortage of available housing units, but also a lack of adequate choice of location and type of housing.

6. Agreement of Sale Financing

Owner financing (Agreement of Sale) has been used extensively in Hawaii. This technique has made it possible for families who are not qualified for a mortgage to purchase a home. The term of the Agreement of Sale typically runs from three to five years, depending upon the strength of the market. During the term of an Agreement of Sale, several factors have typically come into play:

a. The cost of the dwelling was fixed at time of purchase.

b. Inflation caused unearned equity to grow, in some cases, quite significantly.

c. Personal income rose during the term.

d. Income tax benefits (interest deductions) were realized.

e. The buyers made other sacrifices that enabled them to make their monthly payments.

As a result, the purchasers were able to refinance at the end of the Agreement of Sale term. Even if the purchaser could not qualify for a new loan at the end of the Agreement of Sale, he was always able to sell at a price above his cost. In either event, he was in a stronger position to compete for housing.

Use of the Agreement of Sale has changed in the last five to seven years due to changing lender policies, e.g., Non-On-Sale provisions. The changes in lender policies have reduced sales of the existing inventory less "liquid" and have tended to contribute to the stabilization of prices which, while perhaps not desirable from an individual homeowner's point of view, is better for the overall economy as there has clearly been less speculation.
7. Ground Leases

Until the mid-70's, leasehold home values were generally less than comparable fee-simple homes and allowed many people to enter the market at a reasonably high standard of living with relatively lower housing expenses. Approximately 31 percent of the owner-occupied homes on Oahu are on leasehold land. This was to an advantage in the past in the development of moderate or at least reasonably cost housing in a land-short environment. More recently, however, since the late '70's, leasehold premiuim and higher leasehold rents have tended to negate this advantage. In many desirable areas (e.g., Wai'anae-Oahu), leasehold homes have sold for prices almost equal to their fee simple value. Fee owners perceived that leases were receiving the benefit of prime locations and changed lease administration policy dramatically. Many homeowners were trapped after they had paid high premiuim for leases with short-term known rents only to find that the fee owner wanted to receive a market rate of return on land value.

8. Substandard Housing

Demolition and subsequent redevelopment of areas containing a substantial number of substandard and/or dilapidated houses has been thwarted by local resistance to change. This resistance can be attributed to a number of factors: many people living in substandard houses do not have the economic wherewithal to compete for adequate housing in the open market; albeit that some people maintain the lifestyle by preference.

To others, the suggestion of leaving a substandard neighborhood is charged with emotion. Some of the issues range from freedom of choice to a breakdown in their mini-society of friends, acquaintances, living patterns and employment opportunities (e.g., Chinatown).

According to the 1980 census, approximately 3 percent of all dwelling units or approximately 7,000 units were considered dilapidated and beyond repair and should be demolished and replaced. This represented approximately 67 percent of the 13,300 units estimated to be substandard, when overcrowding is included. Some should not be replaced in their present configuration or location as the configuration and/or location may no longer be appropriate; e.g., Kakaako plans for higher density development and Kaimuki trending to industrial use.

It must be recognized that there are people who choose to double up and that the goal of no units of this type is probably unattainable and perhaps undesirable.

9. Owner/Renter Ratio

Home ownership rates in Hawaii (State) are low when compared to the national average of 68.6 percent. In 1980, on an island-wide average 45 percent of the occupied dwelling units were owner-occupied according to census data. These figures are impacted to some degree by the number of military housing units counted in the census inventory.

There is no evidence to show that the State's unusually low percentage of home ownership has risen or will soon rise above the 45 percent level recorded in 1980 unless a change in policy takes place.

With a national average of close to 65 percent of all dwellings being owner-occupied, a ratio of 65 percent owner-occupied to 40 percent renter-occupied dwelling units should become a community goal. To achieve this, the relative cost of housing must be stabilized or reduced through increased supply.

10. Rents on Oahu Renter-Occupied Dwelling Units

In 1980, according to census data, 34 percent of the Oahu population paid under $500 a month for rent, 30 percent paid between $500 and $599 a month, 20 percent paid between $600 and $699 a month, 10 percent paid between $700 and $799 a month, and 10 percent paid $800 or more a month for rent, which was about the mean gross rent being $300 per month. The rental market of 1980/83 was very "tight"; it is estimated that rents have increased substantially since then.

On Oahu in 1970, there were 11,163 persons for which no contract rent was being charged, mostly military, some domestic help and some plantation workers. In 1980, that figure rose to 12,927. In addition, there were 2,701 persons paying under $60 per month. 2/ The majority of these units were known military areas where, for purposes of census data, the units quality as housing or a dwelling unit. The no-cash rent or under $60 figure represents a subsidy on the part of the Federal Government of military families who live in these units. The military represents the majority of dwelling units for which no contract rent or under $60 a month was noted. The hidden subsidies tend to underestimate the true level of rents. The military's "Rent Plus" program was mentioned in the preceding section. The pre-tax value of these types of hidden subsidies are not reflected as part of the income statistics for individuals or families.

2/ Bank of Hawaii, "Construction in Hawaii, 1984"
Historically, rents have been low compared to sales prices, and remained that way through 1984. During 1982, 1983 and 1984, however, rents did increase significantly in large part due to the decline in new housing starts. Rents increased twenty percent or more in some areas. In some cases, this rate of increase was due to an oversupply of high-rise condominiums in 1980 and '81 that were rented at low base rates. Rates escalated as the supply declined and demand increased. The rate of increase is also partly attributable in part to the "Rent Plus" program as landlords adjusted rents to the level of military allowances.

During the first five months of 1985, newspaper reports indicated that the "Rent Plus" program will be discontinued. There is an indication that existing recipients may be grandfathered or that some alternative program will be provided. New military families will have to receive some type of subsidy, however, the form has not been defined as of May 1985.

Hawaii's Land Use policies must be regarded as a major reason why more of Hawaii's population must resort to renting than does the rest of the nation. Not only does Hawaii have one of the highest rental markets in the nation (almost 99 percent occupancy), but it appears to have average rental rates that are at least 40 percent above the national average. According to the Bureau of Labor Statistics, Honolulu's rent for an average family in 1981 was slightly below that of only two other cities in the nation (San Francisco and Anchorage), but above all others by at least 33 percent.

11. Vacancy Factor

National housing studies have cited vacancy rates of three to five percent in dwellings for sale and five to eight percent in dwellings for rent as the levels necessary to permit households an adequate choice of housing. This would allow sufficient mobility in order to take advantage of job opportunities, promote price competition, and provide a choice of unit type and location without creating hardship for landlords and developers. Oahu vacancy rates in both public and private housing have been traditionally inadequate and well below these standards. In 1983, the actual rates for Oahu were 3.6 percent for single family residences and 8.1 percent for apartments creating a blended average of 3.3 percent (see Schedule XI).

Postal vacancy surveys show similar trends. For example, the postal vacancy survey of Oahu in 1982 showed a 1.7 percent vacancy factor for new and used units on Oahu.

Public housing is also classified as unavailable. The total placements for 1981-82 were 372 of 6,724 applications on file with the Hawaii Housing Authority.

Neither the increased production of new housing nor the economic recession of the past three years seem to have affected the vacancy rates appreciably, with the exception of high-rise condominium units which, during 1981/1982, appeared to be overbuilt. During 1983/1984, however, these units were absorbed by both purchasers and renters. This would tend to indicate that there is still a long-term need for additional housing in order to create a desirably vacancy factor.

Schedule XI is a seven year summary of housing vacancy rates on Oahu. Analysis of the data indicates that there has been a shortage of residential units on the Island that this condition persists.

The 1983 housing inventory is estimated to be roughly 260,000 dwelling units. In order to create a 3.3 percent increase in vacancy factor, from 1.7 percent to 5.0 percent, approximately 8,600 dwelling units would be required. Based on past averages, this is approximately equal to one and one half years average production. It should again be noted that this is (1) over and above housing requirements to meet the needs of the growing population; and (2) over and above units currently needed to reduce substandard housing, both previously discussed.

SCHEDULE XI

<table>
<thead>
<tr>
<th>Year and Month</th>
<th>Total Number</th>
<th>Used</th>
<th>New</th>
<th>Used</th>
<th>New</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977: April</td>
<td>22,521</td>
<td>2,521</td>
<td>3,399</td>
<td>2,073</td>
<td>2,278</td>
</tr>
<tr>
<td>1978: March</td>
<td>233,103</td>
<td>5,970</td>
<td>2,584</td>
<td>1,497</td>
<td>4,754</td>
</tr>
<tr>
<td>1978: May</td>
<td>233,026</td>
<td>5,104</td>
<td>2,055</td>
<td>2,055</td>
<td>3,530</td>
</tr>
<tr>
<td>1980: March</td>
<td>240,235</td>
<td>5,235</td>
<td>2,306</td>
<td>1,929</td>
<td>2,400</td>
</tr>
<tr>
<td>1982: March</td>
<td>244,277</td>
<td>4,350</td>
<td>2,665</td>
<td>1,440</td>
<td>1,200</td>
</tr>
<tr>
<td>1983: March</td>
<td>241,355</td>
<td>5,623</td>
<td>2,558</td>
<td>695</td>
<td>2,022</td>
</tr>
</tbody>
</table>


23/ Federal Housing Administration, Oahu, "Housing Vacancy Survey: Survey and Data Book, State of Hawaii 1983".

24/ Bank of Hawaii, "Construction in Hawaii, 1983".

27/ Bureau of Housing, "Housing Vacancy Survey: Survey and Data Book, State of Hawaii 1983".

12. Economic Cycles
Since statehood, Hawaii has gone through three major economic cycles. Each has had a slightly different set of characteristics. These major housing “boom” cycles occurred during this time frame. Housing was produced at an extremely high rate during each “boom” period, i.e., approximately 1-1/2 times the 1963 through 1962 average. The offsetting decline which followed the boom period resulted in production rates well below the average. Overall, even with housing “boom”, the quantity of housing has not increased to a satisfactory level to meet the needs of population growth and its changing characteristics.

13. Housing Amenities
Advances in household appliances and convenient foods have allowed many of the lifestyle changes to occur.

14. Use of Housing Units for Other Purposes
It was previously noted that some multi-family housing units are located in areas which permit them to be used as visitor facilities, either on an all-year or part-time basis. The latter, in part, accounts for the large number of units being held for rental but not available as primary housing. Not all units in this class are suitable as primary residences. In addition, some units classified as residential apartments are used as office space due to their proximity to business and commercial centers. The impact of these practices on the housing inventory is not known.

15. Filtering Down
The natural filtering down process which occurs in many metropolitan areas (i.e., older housing filters down to lower income families), has not occurred in Honolulu because of the high overall demand for housing.

16. Flexi Uppers
Some individuals make a living and/or supplement their income by buying run-down properties, reconditioning them, and then reselling them at a higher price. This reduces the opportunity for the filter down process to work as lower income families cannot compete with speculators.

17. Financing
One of the most dramatic new trends in housing during the last economic cycle (since 1979) has been the change in the fundamental structure of mortgage financing for single-family homes and condominiums.

During the last five years, with skyrocketing interest rates, it has been necessary for lending institutions to restructure their approach to long-term lending. This has resulted in numerous new lending vehicles such as the Adjustable Rate Mortgage, Variable Rate Mortgage, Negative Amortization, and other techniques. In addition, lenders have, to a large degree, disallowed assumption of mortgages (where the original rate was below the current market rate) and enforced Due-On-Sale provisions.

The impact of these and other changes in the lending industry has been to contribute to the stagnation of real estate sales. There has not been a sustained increase in sales and/or home ownership due to high interest rates. Sales, which started to improve in late 1983, declined again in mid-’84 in response to upward movement in interest rates. Rates have improved during 1984 and in early 1985 and have had a stimulating effect on real estate sales and construction.

18. Inflation
Investment in real estate has historically been one of the best methods of hedging against inflation. In a large degree, the buildup in condominium units in the ‘60s and ‘70s was the result of hedging and, to some degree, accounts for the lagged construction of multi-family units and owner/renter ratios. This was good for the construction industry in the short-run, but did not make as great a contribution to solving the housing problem as it might have. Design, price and location were more appropriate. As an investment vehicle, purchasers were willing to sustain negative cash flows for extended periods of time in order to realize capital gains at the time of sale. However, in 1982, inflation stabilized. Annual inflation amounted to approximately four percent according to the Consumer Price Index for 1981. Under these conditions, real estate is considered less desirable as a hedge against inflation.

It would appear that now (1985) is an excellent time to increase the inventory (supply) of housing as potential homebuyers would not be forced to compete with investors and speculators as they were in past years.

19. Foreclosures
Hawaii has historically maintained one of the best (lowest) foreclosure records in the nation; however, commencing with the downturn in late 1979, Hawaii has experienced an unprecedented rate of foreclosure. This activity has been directly related to the decline in the economy and the inability of highly leveraged purchasers to maintain their payment schedules, or, in the alternative, to sell the property to another purchaser even at or below cost. This was, in part, due to the inability to find suitable financing, high interest rates, Due-On-Sale enforcement, a lack of consumer confidence and an inability to qualify as credit underwriting criteria became more restrictive. The foreclosures, to a large degree, have focused on investment condominiums.
Lenders, and vendors under Agreements of Sale, here or will be placing
these units back on the market creating a moderate increase in availabil-
ity. In many cases, these units are not designed or located to serve as
primary homes. At the end of 1984, it appeared that foreclosures were
tending downward. It is assumed that many of the marginal property
owners have already been foreclosed upon, and that with a generally
improving economy, the overall rate of foreclosure will continue to
decline.

20. Price of Housing
In 1979, the average value of an owner-occupied dwelling unit on Oahu was
$44,665. Honolulu, (Tax Zones 1, 2, and 3), accounted for the highest
value per owner-occupied dwelling unit $47,490. The cost for new and
used single-family dwellings available for purchase had increased to over
$125,100 in 1980. The average sales price for condominiums available
for purchase was $100,000.23

For 1984, the Honolulu Board of Realtors' Multiple Listing Service
reported average condominium selling prices at $90,000 and average
single-family dwelling selling prices at $182,000. It should be noted
that foreclosures and private sales activity are not reported through
MLS. If these transactions were also reported, average prices may have
been substantially lower.

SCHEDULE XIII 27

PROPERTY VALUES PRIMARY URBAN CENTER VS SECONDARY URBAN CENTER

<table>
<thead>
<tr>
<th>PRIMARY URBAN CENTER</th>
<th>CENTRAL OAHU &amp; EWA</th>
<th>VARIANCE</th>
<th>% OF PVC</th>
</tr>
</thead>
<tbody>
<tr>
<td>$303,000 (1)</td>
<td>$162,000</td>
<td>$241,000</td>
<td>42%</td>
</tr>
<tr>
<td>$319,000 (2)</td>
<td>$162,000</td>
<td>$157,000</td>
<td>51%</td>
</tr>
<tr>
<td>$256,000 (3)</td>
<td>$162,000</td>
<td>$94,000</td>
<td>63%</td>
</tr>
</tbody>
</table>

23/ Bank of Hawaii, Construction in Hawaii, 1983
27/ Honolulu Board of Realtors Multiple Listing Service January, 1985

(1) Includes all 365 listings attributed to the PUC
(2) Deletes the Kahala area from the analysis - average of 410 listings.
(3) Deletes the Kahala and Diamond Head areas from analysis - average of 380

It should also be recognized that although the PUC has approximately four
times the population (400K) and presumably four times the number of
single-family housing units, the number of listings in the PUC is only
750 greater than the number of listings listed in Central Oahu and Ewa.
The tight supply in the PUC contributes to the higher prices in this
area. Units in the Central and Ewa areas tend to be lower priced and in
greater supply. Units built in this area tend to have the same
characteristics as existing units, lower prices and more availability.

SCHEDULE XIII 27

Average Listing Prices PUC vs Central Oahu and Ewa Condominiums

<table>
<thead>
<tr>
<th>PRIMARY URBAN CENTER</th>
<th>CENTRAL OAHU AND EWA</th>
<th>VARIANCE</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>$127,000 (1)</td>
<td>$102,000</td>
<td>$25,000</td>
<td>25</td>
</tr>
<tr>
<td>$117,000 (2)</td>
<td>$102,000</td>
<td>$15,000</td>
<td>15</td>
</tr>
</tbody>
</table>

(1) Includes all 3,149 listings in the PUC
(2) Deletes the Diamond Head area from the analysis total listings of 3,049.
Condominium units in the Central Oahu and Ewa areas sell for an average
of 35% less than condominiums in the PUC and 25% less if the luxury units
in the Diamond Head area are considered. This suggests that locational
factors permit lower priced units to be developed in the Central Oahu and
Ewa areas.

Schedule XIV shows the current range of activity at Village Park, a leasehold project.

21. Social Trends

Divorce rates, nationally and locally, have reached all-time historic highs. The result is a creation of one additional household for each divorce.25 Some recent news reports indicate that this trend may have peaked and perhaps may decline, however. It is too early to tell and the impact of a change may not be felt for many years.

There has been an increase in the number of non-traditional households—typically composed of two individuals.26

Birth control and abortion have had a significant impact on family size.27

22. Lead Time Requirements

As noted earlier, one of the major deterrents to meeting housing demand is the time required to bring housing on line. Belt Collins & Associates, a Honolulu planning firm, conducted studies of various community scale residential projects on Oahu, and determined that projects have experienced anywhere from four to six years in the permit process prior to building their first dwelling in an increment. See Schedule XIV.

28/ Source: Belt Collins Development Co., April 15, 1985 MLS Statistics

29/ Consultants' observations based on reported data
23. Ohana Zoning

In 1982, the City and County of Honolulu adopted an Ohana Zoning Ordinance. The concept of Ohana Zoning is to permit a family to construct a second dwelling on a single family lot when the lot size and city services are sufficient to accommodate the increased density.

The results from inception in 1982 through December 31, 1984 are that the Ohana Zoning Ordinance has resulted in the issuance of a total of 708 permits. Only 185, however, of those permits were for new housing units. The remaining 521 permits were for legalization of existing structures, or to bring an existing structure up to code.

The concept was intended to accommodate creation of an additional 5,226 dwelling units by the year 2000 for an average of 210 units per year. Since less than 100 new units have been produced per year through 1984, it can be concluded that Ohana Zoning has made only a minor contribution to the housing inventory.

In April of 1985, the City Land Utilization Director announced that the department was reassessing the Ohana Zoning Program in light of citizen complaints and re-evaluation of infrastructure adequacy.

Information provided at the zoning counter at the Department of Land Utilization on May 20, 1985, indicates that the department has eliminated most of the previously eligible areas for Ohana dwellings. When the Ohana program was initiated most of the developed areas on Oahu were eligible for Ohana units. Today, however, areas where Ohana units are permitted show up as small islands within the POC, Central Oahu, Kalihi and East Honolulu development plans. It is the opinion of the consultants that, given past performance and the increasing concern about the adequacy of infrastructure on Oahu, it is likely that Ohana dwellings will have a negligible impact on the housing inventory on Oahu.

24. Inclusionary Zoning

Inclusionary zoning is a concept under which developers are required to provide a portion of new housing product as "affordable housing." The concept singles out developers from the rest of the community to carry the burden of affordable housing on the theory that zoning approvals create value and that the requirement is a cost of creating that value. As of this writing (May, 1985), members of the City Council and a group of developers are struggling with the implementation of the concept and its inequities and vagaries.

25. Flexibility of Choice

Consumers want flexibility in the choice of housing. This applies not only to the type of housing (single-family, multi-family, townhouse, etc.) but also to price range and location.

Factors such as size of the household, age composition, the number of employed persons, distance to work and preferred recreational pursuits will affect the choice of housing.

26. Second Homes/Vacation Homes and Other Vacant Units

According to the 1980 Census more than three percent of all homes on the island of Oahu were vacation homes/second homes, or vacant for other personal reasons (not associated with either the rental or sales markets). Therefore, approximately 7,300 units owned by both local residents and absentee owners were unoccupied or occupied only a portion of the year and were not for sale or rent. New Federal tax legislation has been proposed by the Reagan administration which may eliminate most or all interest deductions on second home mortgages. If this change in the tax primary housing although the impact on the housing shortage may be small. Other impacts may be significant.

27/ Physical survey of permits by consultant
SECTION VI. DISTRIBUTION OF HOUSING & ALTERNATIVE LOCATIONS TO MEET HOUSING NEED

The Department of General Planning (DP) uses the State Department of Planning and Economic Development (DEED) population projections as the basis for housing demand for the General Plan (GP), and Development Plan (DP) population guides. The figures used in the original GP and DP (H-F Series) have been updated to reflect DEED's most current statistics (H-F Series). It should be noted DEED's H-F projections revised Oahu's population upward by 3,000 persons for the planning period. While statistically a small revision in the population, less than 1%, this translates into an increase in demand of between 2,500 to 3,000 housing units or an 8- to 9% increase. DEED has also prepared high and low forecasts which indicate population projections of 188 above and 124 below the H-F projections now being used by DP.

The population guidelines which drive the GP and the DP and the respective housing unit demands could be significantly different from actual conditions. Past experience suggests that there has been an unsuccessful effort to closely match land availability with need. Past forecasts have proven conservatively low. The result has been a continued housing shortage characterized by high prices. This suggests that land availability should be on the generous side if the housing need is to be met. This approach would also accommodate the need for a vacancy factor (approximately 5%) and its economic and social benefits of competitive pricing and flexible housing selection.

According to information provided in DP's Land Supply Review dated August, 1984, the development plan is expected to accommodate an increase in population of 175,000 persons between 1982 and 2005.

No summary was prepared of the number of units that will be required to service the projected increase in population. However, the figure can be determined by using information provided in DP's analysis.

SCHEDULE XV 33/
CITY AND COUNTY OF HONOLULU ISLAND WIDE YEAR 1985 - 2005
HOUSING UNIT INCREASE
PROJECTED BY DEPARTMENT OF GENERAL PLANNING

<table>
<thead>
<tr>
<th>Special Method</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Probable Units</td>
<td>4,577</td>
</tr>
<tr>
<td>Special Areas</td>
<td>20,329</td>
</tr>
<tr>
<td>Mixed Uses</td>
<td>5,500</td>
</tr>
<tr>
<td>Ohana</td>
<td>5,030</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35,555</td>
</tr>
<tr>
<td>Regular Method</td>
<td>14,269</td>
</tr>
<tr>
<td>TOTAL UNITS</td>
<td>53,824</td>
</tr>
</tbody>
</table>

More important, however, is to assess the assumptions of the methodology which the DP has used to arrive at DP capacity. There are two major concerns with this prior DP methodology in calculating population. First, the assumption for occupants per dwelling unit ( household size), and second, the assumptions used in determining the development capacity of existing zoned lands.

1. Household Size

DPG assumes that households are still declining but by only a conservative rate and without an analytical basis. The statistical trends of the past thirty years suggest a much lower household size should be adopted by DP in its DP Capacity Analysis. If for no other reason than to err in favor of more housing.

Household size in the State of Hawaii declined from 4.14 persons per household in 1950 to 3.15 persons per household in 1980. Oahu also had 3.15 persons per household in 1980. If this trend continues household sizes will decline at an average of .013 persons per year. However, it is likely that the rate of decline will slow and reach stability on or before the year 2005. Twenty years hence household sizes should decline to 2.7 persons per unit. 32/ If the projected population of 594,500 is divided by 2.7, one finds that the total housing inventory necessary by 2008 is 353,519.

2. Development and Redevelopment Potential of Existing Zoned Areas

Most of the population capacity projected for the PUC and to varying degrees, those projected in other areas come from redevelopment and from infilling of previously passed over sites. The projections for development in these areas are overly optimistic for the following reasons:

A. They ignore the public and special interest groups' awareness and propensity to use their ability through legal and political means, to stop or delay projects which have, or which they feel may have, a negative impact either economically or socially on their property or the community.

B. They ignore the immense number of factors which must all come together to make a redevelopment physically and economically attractive, and the human constraints on undeveloped and under-developed properties.

32/ Estimates provided by DPG
Social and Political Awareness

The following discussion provides three recent examples of citizen groups which to various degrees have stopped, slowed or raised the cost and the uncertainties of projects. When combined with numerous other examples, such as the Malama Initiative on Maui, the Waikoloa Village residents and the Admiral Thomas (condo- alium) litigation, one can see that the social impact of projects will play an increasingly important role in future redevelopment. Indications are that this role will be a negative one.

Date-Lau: Areas within the PUC currently estimated to provide certain future densities may not be able to be developed within the planning period as assumed by planners, because opposition groups may legally prohibit their development through the use of the initiative process to down-zone and/or down-designate properties providing the projected densities. In the case of the Date-Lau property, the five acres of property affected by the initiative initially provided an estimated future density of 450 units. This was later raised by council action to 700 units and then reduced by the initiative to 150 units. These changes, while changing the projected unit count within the PUC during the planning horizon, will not have a real impact due to the fact that long term leases on the properties to the existing unit owners do not expire until after 2000. Therefore, higher potential densities may be almost impossible to achieve within the planning period.

Hana Street - asking for the medium density development in the Hana area of Nampuapa. It was constructed on zoned land and met all requirements for development. However, it is physically located on what can best be described as a "flag lot". Residents along the "pole" (which provides ingress and egress for both residents and utilities) protested what they considered to be inappropriate development on the parcel. The residents were successful in causing delays and increasing costs to the developer. Their protests were finally overruled by the court and construction was able to proceed. At a minimum the adverse impact on sales of projects.

Ironworks: During 1984 a well organized and highly publicized campaign was conducted by the small business people given notice to vacate the "Ironworks" industrial area to make way for the $15 million development for that property. Through their efforts, they were able to acquire a pledge from the State government to provide alternate space for their businesses at the old Navy Warehouse, (next to Fort Armstrong) for a minimum of five years in order to give them more time to find a new business location. This important role in future development is one that can be expected by other developments in the area. One wonders where other businesses displaced by new developments will go when the readily available State property has been committed. It seems likely that Hana would not develop as fast as the Hana Community Development authority would hope.

The preceding examples underscore the difficulty of achieving the densities projected within the PUC on properties designated for more intensive use, and with attracting developers interested in developing with these risks.

The following are additional reasons why certain properties within the PUC may not be developed to their allowed potential because the owners do not desire or are unable to do so.

Small Lot Size: Many of the areas the PUC designated for higher densities are composed of several existing small lots, therefore any existing owner wishing to develop his property, or any prospective developer wishing to develop, initially has the problem of consolidating a number of small properties before the maximum density projections can be achieved. There is always the possibility that the developer may not be able to achieve the desired consolidation due to holdouts from key property owners.

The Hana plan permits a Floor Area Ratio (FAR) of 1.5 on small lots, but permits a 3.5 FAR on lots 5,000 square feet or larger. Efforts will be made to cause consolidation, however, it is projected to be a long and slow process.

Development Economics: Numerous areas scheduled for medium and high density development already have low to medium density improvements on them. Much of this development has occurred within the past 30 years and is of concrete and masonry construction. Many of the existing structures have useful lives beyond the Planning Horizon of the Development Plan. In essence, the land owners will be faced with the option of either giving up an income stream from properties in which they have a very low basis and carrying costs, and developing a larger but more costly new structure in the hopes of generating an even larger income in the future. Many owners may not be financially capable of taking on such a project. Many owners may have no desire to accept the risk even if they are financially capable.

35 Based on the 3 year average 1980-1983 vacancy factor of 1.75 (see Section V Schedule B),.

- 46 -
In addition, because of their low cost basis, it may be economically impractical for either of the above types of owner to sell their properties to a developer willing and capable of developing the property to its potential density, and achieve the same or greater income than they currently enjoy because the gain on the sale of the property would be subject to capital gains taxes, thus lessening what is realized from the sale of the property. This will induce people to retain their properties. Leasehold alternatives are becoming less attractive to landowners due to social pressures for the sale of land ownership of one's residence. Legislation applicable to conversion of leasehold condominium apartment property to single fee was introduced in the 1985 legislative session, and although it did not pass, it signaled land owners to be prepared for the future.

In developing the population potential of the PUC, the Department of General Planning makes several assumptions to account for the potential for increases in units within the UP area. The following discussion restated on more recent information, questions the validity of some of the assumptions and argues that the proposed developments and redevelopments in the existing PUC boundaries are likely to produce fewer units for residential occupancy than proposed in the DGP's "Land Supply Review: Population Implications of the Development Plans" dated August, 1984.

Kakaako: It is important that not one major residential development has taken place in the Kakaako area in recent years. Additionally, although numerous projects have been announced, none have yet reached the point of ground breaking. The residential portion of the Kakaako development on the old "Ironworks" site has been delayed indefinitely. The bulk of the Kakaako redevelopment plans rely on an infrastructure improvement program. HDCA proposes that 70% of the cost be paid by government, 22% by property owners and 8% by the utility companies. A public hearing on the renewal plans and assessment was held in May, 1985. It would seem that the 16,000 person increase in population for the Kakaako area is optimistic one for the time frame. It should also be noted that the new developments proposed for the Kakaako area, with the exception of mandated affordable housing requirements, will consist mostly of luxury, high-priced high-rise developments. The nature of high-rise construction cost and Kakaako improvement assessments support this contention.

Waikiki: The DGP projects the population growth in Waikiki to be 2,000 based on the redevelopment of 32 sites, assuming that consolidations occurred and that each site was developed into average 900 square foot units, and assuming densities permitted under the Waikiki Special Design District. The increase is really composed of two parts: (1) the demolition of 1,250 existing units to make way for recreation 2,000 new units. Thus DGP's analysis assumes that before this increase is achieved the occupants of the existing units (3,000 people) will have to be relocated so that the new units with capacity for 6,000 people can be constructed.

The most compelling argument against increases in resident population in Waikiki, however, lies not in the potential for new unit construction, but in the projected net demand for hotel rooms on Oahu during the planning period. Analysis prepared with the assistance of Hanell-Kerr, Fosster to determine the Future Demand for Transient Accommodations prepared in late 1983 and submitted to the State Land Use Commission in support of the proposed Harvest Beach Development's resort units, indicated that by the year 2000, Oahu would be faced with a hotel room shortage of between 4,000 to 7,000 units. This shortage includes the development of all of the 6,000 units allowed in the proposed development plans for areas outside of Waikiki. As noted earlier, such shortages if allowed to exist would encourage conversion of existing Waikiki units from residential to resort uses.

DGP's - Hawaii Population and Economic Projections and Simulation Model Updated State and County forecasts dated July, 1984 indicate a projected increase of 5.5% in visitor count over the figures used in the above cited report (Table 15).

As the attractiveness of placing a unit into a resort rental pool increases, buildings in the area devoted primarily to residential use would be under pressure to convert to resort uses because of the high potential income. Restrictive zoning could be changed or ignored. If one assumes that there will be a 6,000 hotel unit shortfall by the year 2000 and that half of this demand is supplied by conversion of units from residential to resort use in Waikiki, then it is conceivable that the resident population of Waikiki would be reduced by 6,000 people, well below that anticipated by DGP. In fact, if such a shortage develops, it is not unlikely that more than 10% of the shortfall would be made up by the conversion of existing Waikiki units.

DGP on page 27 of the Land Supply Review, dated August, 1984 states, "It is important to ensure that the units are occupied by residents. This is not always the case, as many units are actually used to accommodate visitors - a phenomenon most prevalent in Waikiki."

The provision has been made for the impact of increased visitor use of this portion of the residential inventory.

Probably the greatest impediment to redevelopment of the PUC, as stated elsewhere in this report, is the dislocation and inconvenience that redevelopment causes to area residents. This social upheaval is not limited to the individuals or business that may have to relocate because of redevelopment, but also those in the immediate vicinity that may be impacted by the construction and/or demolition work or by the rehabilitation of infrastructure that the redevelopment may require. The widening of Kahului Avenue is a current case in point.
Still another factor inhibiting redevelopment is that infrastructure improvements necessary to permit higher densities within certain areas may not be in sync with developers' and landowners' intentions.

Mr. George Ueuna, Chief of the City's Waste Water Management Division speaking of the McCully-Palolo District, was quoted in the January 23, 1985 Pacific Business News as saying

"We're coming to a point where most of the areas are at capacity and we can't honor zoning requirements... We're in this position because we have been falling back each year because of budgeting."

More recently, there have been newspaper and television news coverage about the poor condition of the major sewer lines in Honolulu and the urgent need for a new system. Recent testimony before the City Council by the City's Chief Engineer, Russel Smith, Jr., on the deterioration of the City's sewer system has led the City Council to propose increasing the budget for sewer improvements from $6 million in 1986 to $50 million. According to Smith, the main sewer line between Kahala and Makaha is unsafe and could cease to function at any time. Mr. Smith also indicated that the main sewer system design of 50 years ago never envisioned the development which it is currently serving. This recent development confirms the consultants' contention that increases in the development of the Primary Urban Center are much less certain than the Department of General Planning's estimates would indicate.

This is understandable because public officials must make decisions on infrastructure construction based on allocation of limited financial resources among specific projects. Generally, this requires long lead times which do not respond to shifts in potential development as they occur.

All of the above plus the history of redevelopment near downtown Honolulu (Vineyard area), suggest that in order for production of units to occur within the PUC, many unrelated events must fall into place. Unfortunately, most of the major sources of increased population growth projected for the PUC come from redevelopments in Kahuku, Kailua, and mixed use areas, all of which have little or no proven track record. It is the view of this report that much less should be expected of these sources than is projected. It is suggested that the PUC will not be able to provide less than one half of the development which GMD envisions for it during the current planning horizon. This would result in an annual 15,000 unit shortfall in GMD's projected 69,624 unit increase for Oahu during the period 1983-2005. It is the conclusion of the consultants that the plan presented by GMD could result in a short fall of 63,000 units by the year 2005. (See Schedule XVI).

---

**Schedule XVI**

**Summary of Housing Unit Shortfall 1983-2005**

<table>
<thead>
<tr>
<th>ISLAND OF OAHU</th>
<th>Alt. I</th>
<th>Alt. II</th>
<th>Alt. III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total housing units required by 2005</td>
<td>378,033</td>
<td>378,033</td>
<td>378,033</td>
</tr>
<tr>
<td>Existing housing units 1983</td>
<td>259,574</td>
<td>259,574</td>
<td>259,574</td>
</tr>
<tr>
<td>New housing units permitted by 2005</td>
<td>118,459</td>
<td>118,459</td>
<td>118,459</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Subtotal</strong></th>
<th><strong>Alt. I</strong></th>
<th><strong>Alt. II</strong></th>
<th><strong>Alt. III</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP's projection of additional units permitted by 2005 under the existing DP &amp; DPs</td>
<td>69,624</td>
<td>69,624</td>
<td>69,624</td>
</tr>
<tr>
<td>Subtotal</td>
<td>48,635</td>
<td>48,635</td>
<td>48,635</td>
</tr>
<tr>
<td>Add</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unreality of PUC to achieve GDP assumptions for redevelopment</td>
<td>-</td>
<td>15,000</td>
<td>15,000</td>
</tr>
<tr>
<td>Add</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance of projected net demand for new units not through conversion of existing housing units to visitor accommodations</td>
<td>-</td>
<td>-</td>
<td>4,500</td>
</tr>
</tbody>
</table>

| Total net housing demand | 64,135 | 64,135 | 64,135 |
| **ANNUAL SHORTFALL OF HOUSING UNITS 1983-2005** | 2,310 | 2,310 | 2,310 |

---

(1a) GDP's projections (1984, 1985) in the year 2005
(2) Average 2.7 persons per household = 353,519 units
b. Replacement of demolitions = 12,849 units
(replaced with 2,000 units)
c. DDSD's project = 69,624 units
(d) 5% vacancy factor = 11,646 units. Total 378,033 units
(2) 3,000 units already included in 15,000 above

---

Prepared by consultants
ALTERNATIVE LOCATIONS TO MEET THE HOUSING NEEDS

Several other projects have been proposed to meet the identified needs for housing in the central Oahu area. The following is a brief summary of each of these projects:

**Makakilo**

Makakilo is a development proposed by Maks on former Oahu sugar cane land. The DP was amended 9/20/83 to include Makakilo.

**West Beach**

West Beach is a residential development on 1,000 multi-family residential units proposed.

**Campbell Estate Land Use Plan**

Officially the Campbell Estate recently unveiled a master plan for all of Oahu. This plan includes proposed and existing development.

**Makaha**

Makaha is a development of Finance Realty which produces 150 to 300 units per year.

**Windward Oahu**

The United States Supreme Court in May of 1985 refused to hear the State of Hawaii's appeal of the Federal Appeals Court ruling that H-3 cannot proceed with its present routing. This effectively eliminates the Koolau and Koolau development plan areas from participating in any long-term growth in housing units within the time-frame of the existing city and county general and development plans.

**Other Developments**

A number of other projects are currently underway, such as Waioli by Gentry and New Town. It is estimated by consultants that these projects will be substantially completed before any of the other alternative locations come on stream.

Population Allocation to the Village Park Expansion

The proposed Village Park Expansion is one of projects which should be allowed to proceed to meet an annual shortfall of between 2,300 - 3,100 housing units per year.

In looking at the summary of alternatives proposed by the Department of General Planning after its review of the DP amendments proposed for 1985, it seems clear that the Department viewed the boundaries of the PUC, central Oahu and Ewa areas and the corresponding population ranges as guidelines in carrying out the policy statements embodied in the General Plan and Development Plans. The following is a review of the five alternatives suggested by DGP:

**Alternatives**

1. Expand the PUC
2. Expand the urban fringe
3. Add a second Secondary Urban Center
4. Relocate the Secondary Urban Center
5. Make no changes in the General Plan

The Village Park Expansion could be accommodated under variations of alternatives one, two, three and four. The proposal for the Village Park Expansion abuts the existing village Park development on its southern boundary and shares Makaha Gutch with the Makaha development on its eastern boundary. Therefore, any proposed which would accommodate the Makaha development, or changes the status of the existing Village Park development in relation to the General Plan or the Development Plans could be extended to the proposed Village Park Expansion simply by a boundary adjustment.

The most logical alternative to be adopted would be to include the Village Park Expansion within the Primary Urban Center. There is little distinction between the Waipahu and Pearl City areas or for that matter, between Waipahu and the Kailua area. They are characterized by commercial development along main thoroughfares and surrounded by residential development, primarily single-family. The Waipahu area is a contiguous continuation of urban Honolulu and could be included as such in the planning process.

Population guidelines would not be exceeded by the Village Park Expansion if the Department of General Planning accepts this report's contention that a more realistic household size for planning purposes by the year 2005 is 2.7 per unit. This assumption alone would require an additional 14,500 to 14,500
within the PUC (revised) to support the population range of 453,400 to 501,100 within the PUC boundaries. This assumes household size in the PUC maintains its current 3 persons per unit less than the Oahu average household size.

Further, this report concludes that the Department of General Planning's estimates for development within the PUC overstates the potential development within the PUC by 15,000 units and, therefore, even without a change in household size the Village Park Expansion could be accommodated.

As indicated in the Summary of Proposals prepared by DCC in October, 1983, there are three other major proposals being considered. Schedule VIII compares the projects.

All of the above possible changes and alternatives are consistent with options promulgated by the Department of General Planning. One possible interpretation of the future need on Oahu for accommodating additional population and housing, suggests that the Department of General Planning consider combining the Ewa and Central Oahu DP areas into one development region.

This alternative would recognize the area as the future home of most of Oahu's expanding population. It would encourage development and growth in the industrial centers and in the proposed residential and resort communities of Ewa. By utilizing an overall strategy for the entire region, a flexible environment for the gradual growth of this area is provided consistent with development history.

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>MILILANI 40/</th>
<th>WAIKA 39/</th>
<th>WAIHEE 40/</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>10,200</td>
<td>20,655</td>
<td>31,000</td>
</tr>
<tr>
<td>Acres</td>
<td>695</td>
<td>1,575</td>
<td>2,100</td>
</tr>
<tr>
<td>Units</td>
<td>3000 450/City</td>
<td>6,600</td>
<td>11,000</td>
</tr>
<tr>
<td>Estimated Units per year</td>
<td>345-500</td>
<td>450-500</td>
<td>400-500</td>
</tr>
<tr>
<td>Estimated Life of project</td>
<td>7 yrs.</td>
<td>13-15 yrs.</td>
<td>23-30 yrs.</td>
</tr>
<tr>
<td>Unit Distribution</td>
<td>Single-family 85%</td>
<td>66%</td>
<td>64%</td>
</tr>
<tr>
<td>Multi-family 15%</td>
<td>34%</td>
<td>36%</td>
<td>40%</td>
</tr>
</tbody>
</table>

39/ Prepared by consultants
39/ From DCC Summary of General Plan Amending Proposals November 1983

SECTION VII. ECONOMIC ENVIRONMENT

The Department of Planning and Economic Development (DPED), Research and Economic Analysis Division, has prepared an updated State and County forecast report dated July, 1984. The updated projections state as follows:

"Statewide Projections

Economic Projections

Except for the assumptions regarding productivity, earnings, fertility, mortality, and labor force participation, the assumptions leading to the updated set of projections remain generally unchanged since the forecasts made in 1979:

(i) Visitor arrivals are expected to grow at a declining annual rate:

<table>
<thead>
<tr>
<th>Year</th>
<th>Visitor Arrivals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>115 percent</td>
</tr>
<tr>
<td>1981</td>
<td>8 percent</td>
</tr>
<tr>
<td>1982</td>
<td>2 percent</td>
</tr>
<tr>
<td>1983</td>
<td>1 percent</td>
</tr>
<tr>
<td>1984</td>
<td>0 percent</td>
</tr>
</tbody>
</table>

In the short-run, actual experience and the projections do not match. Visitor arrivals for 1984 grew at a rate of approximately 15% over 1983 and 1983 grew 4% to 5% percent over 1982. Forecasts for 1985 are greater than the 4 to 5 percent forecast made in July of 1984. However, a United Airlines Pilots strike commenced in May 1985, adversely impacting tourism. These variations indicate the dynamic nature of the economy and the dependency of visitor arrivals on the overall economy as well as factors such as the availability and cost of jet fuel.

While the rate of growth is projected to decline, the absolute numbers should not decline proportionately as the base continues to increase.

The forecast may be valid for visitor industry planning, however, for housing planning purposes, one would have to conclude that the forecast is conservative. As noted elsewhere in this analysis, if the availability of housing is to be increased and if the cost of housing is to be reduced or stabilized, it would be better to provide flexibility through an optimistic forecast and err on the underside when evaluating the impact of the visitor industry (Hawaii's primary industry) on housing and the economic wherewithal for persons to purchase housing.

(ii) Federal defense expenditures in constant dollars will increase 2 percent per year."

It does not appear that the DPED is anticipating success in the solicitation of a larger portion of a battle group at Pearl Harbor. If this decision is made in favor of Hawaii, there could be a significant step up in the level of military expenditures to a higher, albeit probably stabilized, level.
"(3) The value of sugar and pineapple production is assumed to remain constant. However, because of technological improvements, employment in these industries is expected to decline by 40 percent between 1980 and 2005."

"(4) Other agricultural exports will grow at rates based on sales projections of the agricultural commodities. Total exports (including federal defense expenditures), measured in constant dollars, are expected to increase nearly 80 percent between 1980 and 2005. The annual growth rate for exports will average 2.4 percent over the next 25 years. However, because of the slowdown in visitor expenditures, growth will be faster in the earlier years than the later years."

Here again, we see a somewhat pessimistic forecast. It is recognized that the expenditure per visitor is declining; however, as previously noted, if the decline is not in fact as pessimistic as forecasted by the DPED, personal income will be higher and the ability to purchase a home improved.

"For example, between 1985 and 1990, the growth rate will average 1.1 percent per year, compared to 1.6 percent between 2000 and 2005. Of the $5.4 billion (1980 dollars) gain in exports, visitor expenditures will account for $3.1 billion, increasing its share of total exports from 62 percent in 1980 to 49 percent in 2005.

The increase in visitor expenditures will contribute to the creation of 17,400 jobs in eating and drinking places and 12,200 jobs in hotels and lodging, the two major sectors comprising the tourism industry. Although exports to the other sectors will also expand, increases in labor productivity will at least match the growth. Military employment is forecast to stay at its 1980 level of 88,000 jobs (assuming no change in the bases home ported on Oahu) throughout the forecast period. Agriculture and food processing are expected to lose 2,400 jobs, causing their share of total employment to drop from 4.6 percent in 1980 to 3.0 percent in 2005.

Taking into account the jobs supported by the export jobs through the economy's expanding (multiplier) process, Hawaii will add a total of 164,400 jobs during the 25-year period. The employment growth rate will average 1.1 percent per year, which will be down dramatically from the 3.0 percent rate that prevailed between 1960 and 1980. Nevertheless, State Jobs will grow at about the same pace as jobs in the U.S. economy, according to a long-term forecast by Data Resources, Inc.

Most of the new jobs will be found in trade and services, including eating and drinking establishments, and hotels, trade and services will add jobs, accounting for a substantial portion of the jobs created in the next 25 years. Federal, State, and local government will provide another major segment of new jobs; construction, finance, insurance, real estate, ZBO, miscellaneous manufacturing, transportation, communication, and utilities will round out job creation.

When adjusted for inflation, Hawaii's Gross State Product is projected to increase by 76 percent by 1980 and 2005, rising from $11.3 to $20.2 billion (in 1980 dollars). Personal income with a growth rate of 2.5 percent per year will grow by a similar amount—from $9.0 billion in 1980 to $16.3 billion in 2005. On a per capita basis, income will rise by 1.3 percent annually, which is considerably below the historical rate and somewhat less than the 1.7 percent national rate. The slower growth in per capita income reflects the relatively smaller gains in productivity, wage rates, and labor force participation forecast in the future."

The DPED Update fails to take into consideration the possibility that income is significantly underestimated. While the statement that income on a per capita basis will not keep pace with historic rates or national trends may be correct, the existence of other unquantified sources of income, particularly in the food service and hotel industries (e.g., unreported tips and gratuities), permits one to conclude that personal income may not be as low as projected. Here again, an optimistic projection as a planning tool would lead to the conclusion that more persons will have the wherewithal to purchase housing.

The following points are offered as a partial explanation of other sources of funds and perquisites that offset to some degree the lower levels of income compiled from published data:

1. Gifts and Loans:

   Parents will frequently give children a substantial tax-free cash gift or taxable loan to be used as a down payment on a home. These funds may come from savings, or may come from leveraging high equity investments, i.e., financing a home with a substantial equity.

2. Unreported Income:

   Numerous domestics (housekeepers, gardeners, etc.) and others have income but fail to report for income-tax purposes. Cash "kickbacks" are common place in some industries.

3. Illegal Income:

   Revenue from marijuana ($1.3 millions, "Green Harvest")—a more potent drug according to Police Chief Gibeon—was estimated in 1984, gaming, prostitution and fencing of stolen goods is not considered in the calculation of total income.

4. Inheritance:

   Tax-free inheritances are not included in total income.
5. Barter Transactions:
The exchanging of goods and/or services for other goods and/or services has been growing and may represent a high dollar volume.

6. Non-Reportable and/or Non-Reported Benefits:
Company cars and expense accounts could have an unreported value of three to five thousand dollars or more per year for some individuals. Rent free housing and near rent free housing, based on cost rather than value are not translated into gross income.

7. Co-Maker or Guarantor:
Many first time buyers are able to qualify for a loan based on the personal guarantees of parents, who may be in a higher income bracket, or due to the fact that they have owned their dwelling unit for a number of years they have monthly income, net worth, etc. qualify the buyer to do something that he is statistically not able to do alone.

8. Tips and Gratuitites:
Another category of revenue which is estimated to be substantial in Hawaii's resort oriented community are tips and other unreported gratuities earned by waiters, waitresses, porters, taxi drivers and others.

9. Savings:
Many purchasers are able to qualify to purchase a home because of the ability to make a substantial down payment after years of saving. Hawaii has a high per capita savings record.

10. Free Housing:
Free or low cost housing or lodging in lieu of higher pay can be a substantial unreported portion of compensation, e.g. the military, resident managers in an apartment building, and foreigners on assignment in Hawaii.

Legal and morality are not the subject of this analysis, nor is this a condemnation of society. However, the fact remains that substantially more money flows through the system than is accounted for in published statistics. This money creates buying power which, at least in part, explains the apparent disparity between the statistical inability to buy and what actually occurs in the marketplace.

Further, no published data was found that segments the population into existing homeowners and non-homeowners by income. Approximately 45% of the population currently enjoys homeownership. Statistics seem to imply that many who own a home could not qualify to buy that home today. This is not the case given the fact that many people have owned their home for many years and have a very low acquisition cost as compared to today's market value. Many long-term homeowners are paying mortgages with interest rates well below 5% as compared to rates above 10% ten years ago. These people are not in the market and, therefore, their inability to qualify is irrelevant.

The Bank of Hawaii Annual Economic Report for 1964 reports as follows:

Income and Employment
Hawaii's economy registered a fairly healthy recovery in 1963 after a lengthy recession. Growth in total personal income (to $12.4 billion) was an estimated 2.8 percent in real (inflation adjusted) terms versus no real increase over the preceding two years. The nation's recovery in total personal income growth was slightly higher at 3.1 percent. However, on a per capita basis the difference was even greater, with the state's personal income level remaining almost unchanged (up 0.7 percent) in real terms versus a rise of 3.0 percent for the nation.

Slower growth in the state's personal income than in the nation has been occurring since 1960. Most surprisingly, on a per capita basis the state's real personal income in 1963 was only one percent above where it had been ten years ago. This contrasts with earlier years of statehood when the opposite pattern of faster state growth had generally held true. The prospect are that this slower growth may endure for some time to come.

The forecasts of the State and Bank of Hawaii may be correct as to general trend and fairly pessimistic absent any positive influence on which to base a more optimistic projection.

However, what the two forecasts failed to do is to analyze the mix of jobs, age groups and household income to distill out the economic capacity of various segments of the economy. Blended averages conceal the fact that there may be many different market segments not detected in gross statistics.

For example, we note that the elderly, which is the fastest growing portion of the population on a percentage basis (see Section V), may already own their home and may no longer have a mortgage, or, in the alternative may have a very small mortgage with a below market interest rate negotiated many years ago.
Therefore, while these people may be living on fixed incomes, pensions, social security and investment income which may not be keeping pace with other segments of the economy, their needs and cost of living may be less. However, due to the fact that they are included in the overall population mix, they may tend to drag the per capita earnings down, leading to the conclusion that the economy as a whole is on a lower economic strata.

One might also find that while per capita income is low (see Schedule XVIII), some household income may be increasing as more and more families have two or more primary wage earners which collectively permit a relatively high standard of living.

It would appear there is reason to be concerned of the future of Hawaii’s economy due to its substantial dependence on tourism, which some have identified as a fragile industry. The nature of employment in the tourist industry will tend to hold down the apparent average income per capita. However, if adjustments are made for the difference between reported income and total actual income and if segmentation of the population into various groups were to be undertaken, it is reasonable to conclude that the result would show that a larger segment of the population will have or will be able to find the means to acquire new housing than is currently believed to exist.

### Personal Income, Per Capita: 41/2 Actual and Projected 1982-2000

<table>
<thead>
<tr>
<th>Year</th>
<th>State Total</th>
<th>City &amp; County of Honolulu</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982</td>
<td>$11,033(2)</td>
<td>$12,068(6)</td>
</tr>
<tr>
<td>1983</td>
<td>$11,101(4)</td>
<td>$12,145(5)</td>
</tr>
<tr>
<td>1984</td>
<td>$12,650(5)</td>
<td>$13,601(6)</td>
</tr>
</tbody>
</table>

### Income Projections 1985-2005

<table>
<thead>
<tr>
<th>Year</th>
<th>Income Total 1985 Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985(1)</td>
<td>$10,520</td>
</tr>
<tr>
<td>1990(1)</td>
<td>$10,917</td>
</tr>
<tr>
<td>1995(1)</td>
<td>$11,328</td>
</tr>
<tr>
<td>2000(1)</td>
<td>$11,781</td>
</tr>
<tr>
<td>2005(1)</td>
<td>$12,195</td>
</tr>
</tbody>
</table>

(1) In dollars
(4) 1990 Preliminary Total
(5) 1990 Estimated Total
(6) Based on average of 1977-1981 differential between State and City and County of Honolulu per capita incomes. The City and County of Honolulu per capita income was projected as 4 percent greater than the State totals for 1982, 1993 and 1994.

---

**State of Hawaii Data Book 1983**
SECTION VIII. MARKET FOR HIGH HOMES AT VILLAGE PARK EXPANSION IS PROPOSED

Village Park Expansion has been planned to offer a variety of housing both in type and in price. The bulk of Village Park Expansion's market is projected to be middle-income families who will be quite typical of the population of the Island of Oahu ranging from low-moderate-income families to high-middle-income families. It is not anticipated that the project will have appeal to those seeking luxury accommodations, nor will the project be able to accommodate persons at the very lowest end of the housing spectrum without government assistance.

The profile of homeowners and/or renters at Village Park Expansion will be similar to the social, economic and ethnic mix of the Island of Oahu and, in due course, will also include an age distribution similar to the Island as a whole.

It should be noted that necessary phasing precludes the instant attainment of a homogenous community. Two isolated examples of constraints which limit or control the pace of integration of a community are market conditions and engineering considerations.

Market conditions reflect economic and competitive factors which cause developers to pursue one type of product (e.g., multi-family or single-family) or price range at a given point in time. Frequently, it is not possible or economically feasible to be offering several product types in the market place simultaneously. The current (1965) supply of condominium units is a case in point.

The concept of planned community is very important to prospective purchasers. Therefore, while total integration of the new community may require several years, it is necessary to demonstrate the City and County's and the developer's commitment to a total plan.

Engineering constraints (be they physical or cost considerations), will also, to a large degree, dictate phasing. For example, it is likely that a developer will attempt to intensify development around infrastructure that is in place rather than attempt to develop new product types in areas where infrastructure has not been constructed. A review of the history of other community developments such as Kahaluu, Millikin Town and Waipio by Gentry will serve as cases in point.

Buyer Profile

The buyer profile for Village Park Expansion single-family dwellings will typically be existing or planned small families. The majority of the market will be first time buyers with small and medium size existing or planned families who have been renting or doubled up with other family members. These purchasers typically have saved diligently, living in modest rental accommodations, with family and/or inconvenient locations and have made other sacrifices in order to realize a dream of home ownership. This group also can be identified in existing Village Park.

A second but smaller segment of purchasers may have owned a previous residence which may have been a single-family dwelling in a less convenient location or a condominium apartment which is no longer suitable to the size and requirements of the family. Previous home ownership will have permitted them to build equity through mortgage amortization and depending upon the length of time of ownership and date of purchase, some appreciation. The combination of their initial down payment, paid in equity, and equity and appreciation from the previous residence, will permit them to make a down payment greater than the minimum required for financing. This pattern has consistently been observed in other new communities on Oahu.

A third group consisting of higher income families or families who have accumulated a significant amount of savings will also be attracted to the prime lots and the upgraded single-family units that will be offered in the Waitea proposal.

In the above cases, it is projected that there will be a high percentage of two incomes per family. It is estimated that 85% or more of the single-family dwelling households will have two sources of income. Some larger families may have three or more sources of income, the aggregate of which will range from $25,000 per year to $50,000 per year with an average of $44,000. The estimates are based on a projected price range from $120,000 to $125,000.

The age group for single-family purchasers will range from persons in their late 20's through persons in their mid to late 30's, the latter recapturing and assuming a continuation of the trend in which the decision to have children is deferred to a later age.

Based on income levels in the community, a large percentage of the single-family homes described above would be available to a large percentage of the population using 3.0 persons per dwelling unit times real per capita income.

The buyer profile for multi-family dwellings would also represent a wide spectrum of the community from an ethnic, social and economic point of view. However, family size would be predictably smaller, probably averaging closer to 2.0 persons per dwelling unit.

Persons in this buyer group would be less homogeneous than the single family purchasers. The group would consist of young marrieds without children who may or may not be planning to have children in the future. Conventional households (e.g., two singles or divorce with child), empty nesters, mature couples and single individuals. Each of these groups will have varying characteristics and resources. For example, young marrieds making a first purchase will be employed and may receive assistance from other members of the family in order to make a down payment and qualify for mortgage payments. This group would typically be in their mid to late twenties.
Empty nesters and/or more mature couples would, no doubt, have substantial equities derived from previous home ownership which can be transferred into a substantial down payment, minimizing the need for two wage earners or for that matter, any wage earners. This group may be in the fifty, sixty and above age groups.

Purchasers in the multi-family group will require incomes from $33,100 to $39,100 with an average income of approximately $35,600 in order to qualify for multi-family units ranging in price from $80,000 to $110,000 or an average of $100,000 with a minimum down payment.

Much of the information for this section is based on data received from Mr. George Nishida, Sales Manager for Village Park obtained in May, 1980. A copy of the data supplied by Mr. Nishida is enclosed as Exhibit IV.

SCHEDULE XII 42

VILLAGE PARK EXPANSION INCOME REQUIREMENTS

<table>
<thead>
<tr>
<th></th>
<th>LOW</th>
<th>AVERAGE</th>
<th>HIGH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-family dwelling (fee simple)(1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prices:</td>
<td>$120,000</td>
<td>$145,000</td>
<td>$195,000</td>
</tr>
<tr>
<td>80% Mortgage:</td>
<td>$ 96,000</td>
<td>$116,000</td>
<td>$156,000</td>
</tr>
<tr>
<td>Debt Service(2)</td>
<td>$ 987/mo.</td>
<td>$1,182/mo.</td>
<td>$1,604/mo.</td>
</tr>
<tr>
<td>CIF(3)</td>
<td>$ 100/mo.</td>
<td>$ 125/mo.</td>
<td>$ 165/mo.</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$1,097/mo.</td>
<td>$1,307/mo.</td>
<td>$1,795/mo.</td>
</tr>
<tr>
<td>Required Income (4):</td>
<td>$ 35,900</td>
<td>$ 44,600</td>
<td>$ 59,965</td>
</tr>
<tr>
<td>Multi-Family Dwelling (fee simple)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prices:</td>
<td>$ 90,000</td>
<td>$100,000</td>
<td>$110,000</td>
</tr>
<tr>
<td>80% Mortgage:</td>
<td>$ 68,000</td>
<td>$ 80,000</td>
<td>$ 99,000</td>
</tr>
<tr>
<td>Debt Service:</td>
<td>$ 933</td>
<td>$ 935</td>
<td>$ 1,023</td>
</tr>
<tr>
<td>CIF</td>
<td>$ 100</td>
<td>$ 125</td>
<td>$ 150</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$ 1,033</td>
<td>$ 1,065</td>
<td>$ 1,178</td>
</tr>
<tr>
<td>Required Income</td>
<td>$ 31,100</td>
<td>$35,000</td>
<td>$ 39,100</td>
</tr>
</tbody>
</table>

(1) Single-family product excluding prime sites
(2) 30 year 12% mortgage
(3) Customer Trust funds (insurance, real property taxes, etc.)
(4) 35% of debt free income for housing

42/ Prepared by Consultants
SECTION IV. DISTINGUISHING CHARACTERISTICS OF VILLAGE PARK EXPANSION

All of the developers of projects previously mentioned in this report, have to some degree or another identified the need for housing. Most have also shown that the central Oahu and east area areas are:
(a) Acceptable location for housing from the consumer's point of view.
(b) Permit development at reasonable costs.
(c) Have access to utility systems with existing and expandable capacity.
(d) Determine that their projects are viable based on other reasonable criteria.

Village Park Expansion as this report, and the reports of other Waitec Consultants demonstrate, has the distinguishing characteristic of momentum. As previously noted in Schedule IV, Section V, lead time for new development is often several years. Even after zoning has been obtained, time is required for infrastructure, design, additions to utility capacity and extension of services in new areas. Frequently, legal issues delay progress.

Village Park Expansion offers the opportunity to meet a portion of the identified housing needs by timely delivery of new units based on the following factors:

Momentum: Earlier in this report a study prepared by the City and County of Honolulu indicated that it took on the average 8 years from the time a project was proposed until the first units were delivered. In the case of the original Village Park the process took an incredible 13 years. Any large new development faces the problem of getting approvals and developing product for the target market as well as assembling the staff necessary to carry out the development. All of this takes time. In the case of the Village Park Expansion the development team is in existence in production and marketing. Expansion of the current Village Park has gelled through years of experience and deliver units sooner than alternate projects.

Infrastructure Constraints: Each of the other developments proposed for the Central Oahu area (Dunluce, Waialae and the Hillcrest Expansion) will require more water supply, sewage connections and public facilities. The details of these items will require negotiations between the developer and the respective government agency which will add to the time necessary for product to be delivered. In addition, it requires that the developer make significant capital investments prior to the development and sale of the initial product. This requirement may, in turn, pose further problems as the developer must obtain the financing to make these front-end improvements.

Infrastructure for the first 1,000 units of Village Park Expansion is readily available, including sewer and water which would allow almost three years of unit production prior to the required service date of new systems.

Track Record in Production and Sales to Target Market

As the Production and Delivery record of the existing Village Park development indicates, the developer (Waitec) has demonstrated its ability to provide housing for young (25 - 44 age group), first-time (G15), home buyers entering the housing market. By the end of 1985, almost 1,100 units will have been delivered, and during the extremely high interest rates of 1981 to 1983 and the construction industry strikes, sales and deliveries. Waitec has consistently delivered single-family housing at or near the lowest unit price offered for sale in the Central Oahu development plan area and proposes to continue this program into the Village Park Expansion.

Delivery of Quality Product

Village Park has demonstrated that it can produce a quality product and deliver value for the money. Waitec knows its costs and can speak authoritatively based on real life experience, not available to some of the other developers.

Mobilization

Village Park has already solved the problem of mobilization. It has reached the point of manufacturing housing, rather than just building houses. Construction is accomplished by one of Hawaii's best known, established builders, Pacific Construction Company.

In summary, the Village Park Expansion offers an opportunity to continue an existing project which has been providing moderately-priced housing to the central Oahu area for the past seven years and to maintain the momentum of an ongoing project with a successful development team and a proven product. Expansion of this development team and its product will be available on a continuous basis in the moderately-priced range for the next ten years. However, of greater importance, Village Park Expansion can deliver housing while others are still planning.
SECTION X. COMMERCIAL DEVELOPMENT AND BUSINESS PARK

Commercial Development

The master plan for the Village Park Expansion calls for the inclusion of 10 acres of commercial area within the development.

Valtec Development Inc., the developer of the existing Village Park and the applicant for the Village Park Expansion commissioned two appraisals for the project. One study was done by Raymond Lemer & Company (1980), and the other by Cowart & Associates (1984).

The first study was done in 1980 and the other in 1984. Copies of the highest and best use conclusion of each report are enclosed as Exhibits IV and V. The full reports are available upon request.

The conclusion of both appraisals was that the existing Village Park Subdivision would warrant the use of the entire 4.7 acre site for a neighborhood shopping center of 50,000 to 60,000 square feet. Both studies concluded that the development although some trade might develop from persons using Runa Road to commute between Ewa and Waialua. The consultants agree with the conclusions of the previous studies.

It is recommended that 10 acres of additional commercial area be provided for the Village Park Expansion.

This commercial acreage is expected to provide an additional 155,000 to 200,000 square feet of commercial space over the life time of the project. The goal of providing commercial space beyond the neighborhood shopping center requirement is that as the Village Park community grows, there will be additional demand for the point where additional activities can be accommodated. Many activities require a minimum size property to justify the minimum facility, i.e., fitness centers which require a large population base.

The two studies mentioned above site an existing need for commercial space in the Waipahu area. Other studies of the Waipahu area including Wailea development site identify an existing demand of about 600,000 square feet of commercial space. The studies of the Waipahu area also indicate an additional 10,000 persons projected for the Village Park Expansion.

The Village Park location does not lend itself to providing a community wide focal point for commercial activities for the following reasons:

First, while the proposed 10 acre site is proximate to the H-1 Freeway, via Runa Road, no access is permitted to the commercial site via Runa Road.

Second, the proposed site is at the extreme northeastern corner of the existing and proposed future development for the Waipahu area. It is too distant from existing and proposed population centers of Ewa and Waialua. Therefore, the commercial land has been limited to that which is necessary to meet the Village Park community needs at maturity with additional space to meet secondary commercial needs should that demand develop.

The space is necessary for commercial activities in the Village Park Expansion is a function of the population of the Village Park Expansion and the income for the expansion area with an estimated average income of $47,375 (see computation below).

| Single Family Product | 92% average income = $44,600 | $41,032 |
| Experiment Product | 85 average income = $35,000 | $2,800 |

Estimate average income $43,392 (1)

Median household income for Waipahu according to the State Data Book 1986 in 1979 dollars is $23,885 converted to 1984 dollars based on CPI (p. 45) 1984 State Data Book is $32,749. An additional $2 is added to convert the amount to 1985 dollars for an estimated median of $36,880. Thus, the average household is expected to have an income 24% greater than the estimated household income for the Waipahu area.

In order to determine the number of square feet of commercial space necessary to support the purchasing power represented by the projected residents of the Village Park Expansion, the following computations are made:

Square footage based on average shopping center square footage per capita. In 1983, 10 persons for 10,000 persons projected for the Village Park Expansion would require 164,000 sq. ft. of commercial space.

Another way to compute the square footage requirements for the Village Park Expansion is to work from income and then convert that to estimated sales. For example, the census data of sales per square foot for various types of businesses, compute the square footage. (All information is in 1982, 1982 is the most recent retail census). Based on information provided in the Retail Trade in Hawaii, (3), published by BPED 1985, per capita, retail sales in Honolulu were $4,719 per year. The retail sales for expenditures in Waipahu based on the report and by population information supplied by the BPED staff, indicates retail sales of $7,630 per capita.
This figure is simply the sales made by retail establishments in the Waipahu area divided by the population of the Waipahu area. Recognizing that people other than Waipahu residents shop in Waipahu and that Waipahu residents go to the commercial centers, this computation offers at least an indication of the demand for shopping facilities which would ordinarily be found in a neighborhood center.

If the $3,630 is increased by 25% to account for the higher incomes in Village Park, then we arrive at a figure of $4,500 per square foot or $45,000,000 of annual sales. If sales per square foot are $330 for food and drugs, and $150 per square foot for other types of retailing, then the amount of square footage required is:

Food and drugs x 306 = $45,600,000 = $15,500,000/$330 = 46,099 sq. ft.
Other products x 706 = $45,000,000 = $31,500,000/$150 = 210,099 sq. ft.

If it is assumed that Village Park residents will do 25% of their non-regional shopping outside of their neighborhood center, then the total demand for space will be approximately 388,000 square feet.

Note that either of the methodologies presented above have definite limitations simply because there is a lack of data available which would provide a basis for making more sophisticated projections. For instance, there is no published data on the amount of commercial space which is not "shopping center" space. There is no published data on the amount of commercial space in which retail sales are conducted. There are no published statistics, off-set by the fact that a portion of significant amount of space used for commercial purposes that is not accounted for in published statistics.

In addition, although neighborhood centers can be expected to provide for the day-to-day necessities of the residents of the Village Park Subdivision, there is no guarantee that residents will choose to shop at the center. As analysts, we do not have any data for the residential section of the households that the husband and wife are away from the home on weekends. This means that the residents may have developed a shopping habit on their way to or returning from work, which may be more convenient than shopping at the center. On the other hand, it is possible that a substantial number of these shoppers prefer to patronize the other commercial areas.

The area proposed for commercial development is approximately 10 acres, and if designated R-1, would permit buildings to have a floor area ratio of 2.5. This would allow a shopping center of approximately 1,089,000 square feet. (Note: The Land Use Ordinance on which hearings are being held, limits R-1 districts to a maximum of 1,089,000 square feet for this site.) However, customarily in the Honolulu area, neighborhood centers normally maintain a ratio of 0.5 to 0.6 square feet per square foot of retail space. The site would provide for a shopping facility of approximately 165,000 square feet. This compares favorably with the estimated demand of 104,000 square feet to 188,000 square feet as shown in the analysis.

Vitaec's intention to request the Industrial Mixed Use (IMU) designation discussed earlier in this report provides flexibility should demand be stronger than forecast at this time.

The absorption rate is expected to follow population growth in steps based on a total demand of 149,000 square feet.

### SCENIC PHASING SCHEDULE 12

<table>
<thead>
<tr>
<th>Population</th>
<th>Cumulative Population</th>
<th>Constr. Of Commercial</th>
<th>Comm. Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000</td>
<td>1,000</td>
<td>1,800</td>
<td>1,800</td>
</tr>
<tr>
<td>1,250</td>
<td>1,250</td>
<td>2,500</td>
<td>2,500</td>
</tr>
<tr>
<td>1,500</td>
<td>1,500</td>
<td>3,500</td>
<td>3,500</td>
</tr>
<tr>
<td>1,750</td>
<td>1,750</td>
<td>4,500</td>
<td>4,500</td>
</tr>
<tr>
<td>2,000</td>
<td>2,000</td>
<td>5,500</td>
<td>5,500</td>
</tr>
<tr>
<td>2,250</td>
<td>2,250</td>
<td>6,500</td>
<td>6,500</td>
</tr>
<tr>
<td>2,500</td>
<td>2,500</td>
<td>7,500</td>
<td>7,500</td>
</tr>
<tr>
<td>2,750</td>
<td>2,750</td>
<td>8,500</td>
<td>8,500</td>
</tr>
<tr>
<td>3,000</td>
<td>3,000</td>
<td>9,500</td>
<td>9,500</td>
</tr>
<tr>
<td>3,250</td>
<td>3,250</td>
<td>10,500</td>
<td>10,500</td>
</tr>
</tbody>
</table>

We sites and occupants of city housing have been n because purchasing power represented by the demand with no degree of certainty. The groups are nact.

Development received Development Plan approval, site is designated commercial, however, only 12 acres of the site are for commercial use. The balance of 43 acres is for residential use. Should more of this space be devoted to commercial use, the absorption rate may be more favorable. The analysis of the effects of this development on the local area is not complete. Given the distances involved, however, the potential impact would be moderate.
Commercial Summary

Demand for commercial space is population driven. The alteration in the product mix should not materially change the demand for commercial space estimated in the 104,000 to 183,000 square foot range. The development of the commercial space within the seven-year time-frame proposed for the development of the housing units is feasible. The 185,000 square feet of space proposed, and the additional development permitted under existing and proposed B-1 zoning, will allow for the development of adequate commercial facilities should the demand so warrant.

It is recommended that the commercial space be developed in increments. The first increment containing 50% of the space (72,500 square feet) by yeard four of the development (1991), and the second increment containing 50% of the space (72,500 square feet) by year seven of the development (1994).

Business Park

The developers of the Village Park Expansion are proposing a 10.7 acre business park/light industrial development as part of the overall development plan. The purpose of the business park is to provide opportunities to employ a number of persons in light industrial/commercial pursuits on site, as well as provide an opportunity to main businesses to locate in an area which has excellent access to the freeway and is approximately equal distance between the airport and the new deep-draft harbor.

It is the belief of the developer that the primary purpose of the Village Park Expansion is to provide housing for the Oahu market. Inclusion of some industrial space in the development is intended to attract tenants of the Village Park area to provide the demand for the proposed business park. This analysis takes a look at Island-wide demand for industrial space to determine the feasibility of the business park.

Exhibit V is a listing of industrial parks and provides an inventory of the major industrial development on Oahu. With the exception of approximately 50 acres in the Gymney Park and 50 acres in Campbell Industrial Park, almost all of the sites are fully developed.

Based on the Schedule XIII, approximately 2,000 acres of industrial land have been absorbed (developed and put to use) over the past 20 years. Based on this experience, it is concluded that the average long-term absorption rate for industrial land is 75 acres per year. In the opinion of the consultants that the demand for industrial land has been greater during the past twenty-seven years as large portions of the Kaimuki and Kalili areas have been converted from residential and other uses to industrial uses.

Based on the foregoing, it is assumed that there is a demand for approximately 75 acres of industrial land per year. While there is a major expansion of Campbell Industrial Park proposed and the development of major high tech park proposed by Oceanic Properties in central Oahu near Waikiki, the 10.7 acres of land proposed for business park/light industrial use in the Village Park Expansion should have no trouble achieving between 50% and 100% of the market for such property per year. There is a demand for industrial space in a wide variety of locations to meet the needs of the business community as demonstrated by the essentially full occupancy of all but the noted industrial parks. For purposes of this analysis, it is assumed that the Village Park Expansion Business Park/light industrial development would be able to achieve an average of 75% of the market in any given year, or 5 acres per year.

SCHEDULE XIII

DAM DEVELOPED INDUSTRIAL PARKS & AREAS

<table>
<thead>
<tr>
<th>Area</th>
<th>Year</th>
<th>Acres</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airport</td>
<td>1964</td>
<td>133</td>
<td>General</td>
</tr>
<tr>
<td>Honolulu</td>
<td>1970</td>
<td>25</td>
<td>Light</td>
</tr>
<tr>
<td>Campbell</td>
<td>1959</td>
<td>1,018</td>
<td>Heavy Industrial</td>
</tr>
<tr>
<td>Central</td>
<td>1970</td>
<td>33</td>
<td>General</td>
</tr>
<tr>
<td>Gentry</td>
<td>1970</td>
<td>170</td>
<td>Light</td>
</tr>
<tr>
<td>Pearl City</td>
<td>1974</td>
<td>100</td>
<td>Light</td>
</tr>
<tr>
<td>Punahoe/Pahoa</td>
<td>1959</td>
<td>60</td>
<td>General</td>
</tr>
<tr>
<td>Sand Island Access</td>
<td>1959</td>
<td>9</td>
<td>Light/Commercial</td>
</tr>
<tr>
<td>Shafter Plains</td>
<td>1960</td>
<td>19</td>
<td>Light</td>
</tr>
<tr>
<td>Waipahu</td>
<td>1963</td>
<td>103</td>
<td>General</td>
</tr>
<tr>
<td>Waipahu</td>
<td>1972</td>
<td>12</td>
<td>Light/Commercial</td>
</tr>
</tbody>
</table>

2,113

However, it would again be short-sighted to limit designators of commercial, industrial and business land use designators to those needs that can be identified at this time. As noted earlier in the discussion of residential needs, matching the demand for land use has been an underlying cause of shortage. The case is true for commercial and industrial zones properties. In a discussion with Mr. Geras of DPID 20 years ago he revealed frustration with his assignment to attract new industry to Hawaii when there were few suitable sites available. Development lead time is long and unpredictable. Those that were available were extremely expensive by mainland standards. The lack of sites has contributed to Hawaii's anti-business image.
As in the case of residential property, price will be lower or at least stable if supply is increased. There is yet another unquantifiable factor to consider. The nation has passed from an agrarian society through the industrial age to an information society. The impact of the computer is drastic by changing business procedure and practice. It is correctly said that we are in a dynamic stage of development.

Hawaii still clings to its agrarian base, but to many, the future change is clear due to international factors beyond Hawaii's control. It would appear wise to plan to accept change that appears both necessary and inevitable. Part of this plan should include a generous designation of land close to labor pools to accommodate new business when it is identified.

Development Schedule
The absorption rate is accommodated in the following schedule:

<table>
<thead>
<tr>
<th>PHASE I</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1989</td>
<td>5 acres</td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td>5 acres</td>
<td></td>
</tr>
<tr>
<td>1991</td>
<td>3.7 acres</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11.7 acres</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PHASE II</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>5 acres</td>
<td></td>
</tr>
<tr>
<td>1994</td>
<td>2.2 acres</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.2 acres</td>
<td></td>
</tr>
</tbody>
</table>

Based on this schedule, the industrial area would require five years to complete, starting in the second year of the Village Park Expansion and being completed at approximately the same time as the residential and commercial developments. However, if recent absorption rates and the current shortage of industrial lands are an indication of the future, this space may be absorbed much more quickly.

Waikiki Development
The recent approval of the Waikiki Development which abuts the Village Park Expansion on the east, should have little impact on the development of the Village Park Industrial/Business area. If Waikiki is developed as proposed, it will be targeting the office market versus the light industrial market that will be targeted by Village Park. If the Waikiki Development does not develop as projected, it may become a competitor to the Village Park Development.

However, this may actually benefit the Village Park Development, as the additional sales and promotion effort may actually heighten the awareness of industrial developments in the region with a synergistic rather than competitive impact. Village Park would also appear to have a timing advantage.

Industrial Summary
Demand for industrial space is estimated at 5 acres per year with development proposed in 1989 and 1993. Early interest received by Waikiki Development, Inc. indicates that there may be a pent-up demand for space in the area.

The Consultants do not believe that there is a need to alter the assumptions for industrial space based on the changes to the product mix.

COMMERCIAL & INDUSTRIAL DESIGNATION
As indicated in this report, a total of 10 acres is being proposed for commercial development and 24 acres being proposed for industrial development. Waikiki Development has elected to request that the entire 34 acre area proposed for the commercial/industrial development to be designated IMI Mixed Use Industrial, as outlined in the pending Land Use Ordinance (as of this date the ordinance is not adopted).

The rationale for using this designation is that it allows more development flexibility, and would permit the development of commercial or industrial emphasis in the future when market conditions could be re-evaluated, to provide for development which best suits the needs of the time. The Consultants concur with this decision.

The commercial and industrial developments at the Village Park Expansion should provide the residents of the Village Park Expansion with the opportunity to shop near their homes and will provide some job opportunities in the area offering residents a chance to work near their residences.

Both the commercial and industrial development will be compatible with the residential development, providing an attractive mix and balance of activities within the Village Park Community.
SECTION XI. COMPLIANCE WITH LAND USE COMMISSION RULES AND REGULATIONS

Part VI. AMENDMENTS TO DISTRICT BOUNDARIES of the State Land Use Commission Rules and Regulations provide as follows:

6-1 REQUIREMENTS FOR BOUNDARY AMENDMENTS. No amendment of a land use district boundary shall be approved unless the Commission finds, upon the clear preponderance of the evidence that the proposed boundary amendment is reasonable, consistent with the Interm Statewide Land Use Policies established pursuant to Chapter 235, HRS, or any State Plan hereafter enacted by the Legislature, which State Plan shall supersede the Interm Statewide Land Use Policies. Except when the Commission finds that an injustice or inequity will result, the Commission shall observe and comply with the Interm Statewide Land Use Guidance Policies set forth below:

(1) Land use amendments shall be approved only as reasonably necessary to accommodate growth and development, provided there are no significant adverse effects upon agricultural, natural, environmental, recreational, scenic, historic, or other resources of the area.

Compliance: The market report prepared June 1, 1985 and this supplemental report indicate that a Land Use Amendment is necessary to accommodate growth on the island of Oahu. Other consultants will address other requirements of this section.

(2) Lands to be reclassified as an urban district shall have adequate public services and facilities or as can be so provided at reasonable costs to the petitioner.

Compliance: Expansion of Village Park complies with this provision in view of the fact that a large degree the area to be reclassified can be serviced by facilities established in the initial phase of development of Village Park. Incremental additions to public services will be more efficient than creating new urban districts in isolated locations.

(3) Maximum use shall be made of existing services and facilities, and scattered urban development shall be avoided.

Compliance: As in the case of Paragraph 2 above, Village Park Expansion will make more efficient use of existing services and facilities. Further expansion of Village Park does not create scattered urban development.

(4) Urban districts shall be contiguous to an existing urban district or shall constitute all or a part of a self-contained urban center.

Compliance: Village Park Expansion will be contiguous to the existing Village Park urban district.

(5) Preference shall be given to amendment petitions which will provide permanent employment, or needed housing accessible to existing or proposed employment centers, or assist in providing a balanced housing supply for all economic and social groups.

Compliance: Village Park Expansion will provide some permanent employment. Further, Village Park Expansion will provide needed housing in West Oahu for persons potentially employed in Oahu's "Second City", a concept currently being studied by the City and County of Honolulu. Village Park Expansion will provide a balanced housing supply for most economic and social groups.

(6) In establishing the boundaries of the districts in each county, the Commission shall give consideration to the general plan of the county.

Compliance: The Village Park Expansion is compatible with the elements of the General Plan of the City and County of Honolulu and represents a boundary adjustment to a planning policy which permitted the establishment of the first phase of Village Park.

(7) Insofar as practicable conservation lands shall not be reclassified as urban lands.

Compliance: No conservation lands are affected by the proposed amendment.

(8) The Commission is encouraged to reclassify urban lands which are incompatible with the Interm Statewide Land Use Guidance Policy or are not developed in a timely manner.

Compliance: On balance the proposal is compatible with State Land Use policies. It is the developer's intention to develop the property in a timely manner in accordance with schedules provided earlier in this report.

6-2 INCREMENTAL DISTRICTING

All infrastructure development would be completed within the five year requirement. On-site work would last an estimated six years and total completion of the project is estimated to require seven years.

Incremental districting for Village Park Expansion would not appear to be practical in view of the relatively small size of the project. Incremental districting would be more costly to the developer, and in all likelihood result in higher sales prices thus defeating the goal of providing affordable homes to first-time buyers.
6-3 PERFORMANCE TIME

Village Park Expansion will be substantially completed within the five year time frame as it is the goal of the project to provide a timely supply of affordable housing to meet near-term critical housing demand.

SECTION III. SUMMARY AND CONCLUSIONS

In response to the requests from the Department of General Planning City and County of Honolulu regarding changes in the GP and DP this report has been prepared. It demonstrates that the population of the island of Oahu has grown consistently in the 25 years since statehood in 1959. Further, it shows that according to projections of the Department of Planning and Economic Development of the State of Hawaii and the Department of General Planning of the City and County of Honolulu, the population will likely continue to grow at an average annual rate of of at least 1.0% per year, from an estimated 856,000 at the end of 1984. The key time horizon is the year 2005 used by the Department of General Planning for its twenty year plan, at which time it is estimated that the population will be 918,000. The development time of the Village Park Expansion project with attendant of a population of 10,000 persons is estimated to be 1997/1998. The center of population of Oahu has been moving steadily towards Pearl City, and all indications are that it will continue to do so.

An evaluation of the housing inventory and housing characteristics of Oahu demonstrates that there is not now, nor has there been during the last 25 years, an adequate supply of housing to meet the needs of the growing population. This is particularly true if one considers the dynamics of housing characteristics. The number of persons per dwelling unit on Oahu has declined steadily since 1960 and reached an estimated 3.0 by the end of 1984. Further, the age of the population is shifting with the elderly being the fastest growing segment of the population on a percentage basis and the 25 to 44 unemployed the fastest growing the fastest in absolute terms. Therefore, this is, in part, attributable to increased need for two or more persons per household. There is also a large measure of change in traditional values. The status of women in society, abortion laws, birth control, increased rates of divorce and the trend towards more active lifestyles, health and fitness. All of this and many more changes have given rise to new housing requirements.

Concurrently the requirements of homemaking have been changing. Such things as frozen foods, microwave ovens and other appliances and new household products make housekeeping less demanding, thus permitting an increased time for recreational activity and careers for women.

Trends in persons per dwelling unit also reflects the increase in household formation, putting increased pressure on the housing inventory, maintaining a vacancy factor and placing limits on the choice of housing.

It is estimated that the demand for new housing units during the next 20 years will be 5400 units per year if Oahu is to accommodate population growth, the need for a 5% vacancy factor and the need to replace depleted and sub-standard housing. It is recommended that more than 5400 units per year be targeted for the planning period (e.g., 6000 - 6500 units per year) so that there is an existing backlog of housing need. These estimates and recommendations contrast sharply with the OGP's estimated need of 3,345 units per year to the year 2005. It would be better to err on the high side now and back
down at a later date than to continue past practices of conservative estimates which have perpetuated the shortage and kept land and housing prices at the highest levels in the nation.

The production of new housing has been delayed significantly by government policies and regulations. Stabilization of inflation may have created the opportunity to move ahead with increased inventory, to overcome the need for new housing at a time when interest rates appear to have stabilized at a relatively low level for the near term, and the Federal government appears to be coming to grips with those factors which could precipitate high inflation and high interest rates again in the future. Furthermore, the low level of inflation will avoid competition between speculators and owner occupants.

A re-evaluation of the Department of General Planning’s population distribution suggests a potential serious shortfall in housing requirements, thus perpetuating the shortages of the past. In view of the fact that the steady growth of the population is expected to continue, the boundary line of the Primary Urban Center may no longer be valid or even meaningful except for statistical purposes. This analysis points out, inclusion of the Waipahu/Village Park area in the PUC, is a logical extension of the planning district.

The Department of General Planning of the City and County of Honolulu continues to study the distribution of housing on Oahu. In 1983-84 the development plans for Oahu were adopted, however, because of the dynamics of the community, review, evaluation and modification is an ongoing process. Several major changes to the development plans have been proposed including projects in the Iwia District and Central Oahu.

An examination of the existing development plans reveals that the Primary Urban Center has been projected to house a population of 486,000 by the year 2005 or an increase of 65,600 or 15% from 1987. Two major factors bring this assumption into question as of the end of 1984.

First, land previously identified as underdeveloped have to a large degree already been developed and are therefore no longer available.

Second, and perhaps more significant, is the increased resistance to the redevelopment of existing neighborhoods. During the 70’s and 80’s there has been strong public resistance to both public and private efforts to develop and/or redevelop portions of Oahu. Urban renewal in Chinatown, private development in Waialae-Kahala, condominium development at Kapiolani Street and the Admiral Thomas Apartments and more recently the Date Lau Initiative demonstrate the political power of the people to resist change. These are not physical planning issues of design and density, rather these are social issues which appear to be deep seated and which will not easily fade away.

While Date Lau does not appear to be a dead issue, it has demonstrated to others what can be done and has alerted the community at large to the tools available to prevent or delay unwanted change. It is reasonable to expect that there will be more initiatives and more protests to prevent redevelopment.

Lastly, the economics of redevelopment have not been adequately considered. While the potential carrying capacity (density) of the Primary Urban Center is higher than is currently being utilized, redevelopment may not either be feasible or a motivation of existing property owners and lessees, particularly during the next several years as legislative action reshapes public policy with regard to leased land ownership.

The Primary Urban Center’s convenience to employment centers, recreational facilities and cultural facilities, coupled with the lack of alternative housing, has forced the price of housing in the Primary Urban Center to extremely high levels and is therefore generally the least affordable.

Continued expansion toward Pearl City, Waipahu and Central Oahu is the most probable solution to the housing need. Recent court rulings call into question the ability of the Windward side to make any meaningful contribution to the housing inventory during the planning period.

This report concludes that 15,000 units and the 30,000 persons projected to live in them, will not be accommodated in the Primary Urban Center as estimated by the City and County of Honolulu’s Department of General Planning by the year 2005. This alone represents almost 3 times the population of the Village Park Expansion.

Developments in other West and Central Oahu projects will probably also fall short of theoretical densities (due to market and engineering considerations). It is reasonable to assume that the Village Park Expansion can and will capture a market share of 9% of the 5,000 dwelling units required each year, or 455-550 units per year, producing 3,000 market units in 7 years.

This magnitude is consistent with the current Village Park development experience.

An evaluation of other locations to meet the housing needs of Oahu reveals that the proposed Village Park Expansion has many distinguishing characteristics.

1. The momentum of an ongoing project.
2. Infrastructure readily expandable.
3. A track record of delivery of product to the target market.
4. Financial arrangements in place.
5. An experienced Hawai‘i based contractor.

Village Park and Village Park Expansion represent opportunities to meet the housing needs now and in the near term while other projects are planning, engineering, and building off-sites. In this regard, Village Park Expansion is one of the best alternatives to meet the housing needs of Oahu.
The product mix for the market priced product has been projected at 92% single-family and 8% multi-family. This mix has been established based on an evaluation of trends in the housing inventory. There is a need to provide a better balance in the mix of multi-family and single-family housing based on trends in housing characteristics and past housing production. The Village Park Expansion represents a portion of the single-family segment of the mix, a portion of the balancing factor.

It should be noted that, to at least some degree, the 25-year shift in the relative percentages of multi-family and single-family construction has been fostered by the economic phenomenon known as "supply pull" and by investor speculation. The Village Park Expansion represents an opportunity to provide families with a true alternative in a convenient location at attractive prices. Seventy-five percent (75%) of single, single-family homes are projected to average $148,000 and multi-family dwellings are projected to average $100,000 (1985 dollars).

The economic environment of the State continues to be heavily dependent on tourism with 3.3 million tourist arrivals in Hawaii in 1984 (Hawaii Visitors Bureau 1985) representing a 15% increase over 1983. The Department of Planning and Economic Development of the State of Hawaii projects a potential 6 million tourists by the year 2000, an increase of over three million in 15 years.

It is anticipated that the neighbor islands will experience the highest percentage growth. However, growth will no doubt be significant on Oahu, particularly in light of major commitments at West Beach and Kailua.

Oahu's role as the principle distribution center, financial center and the political center of Hawaii suggests continued long-range stability in the economy.

Military expenditures are projected to remain a relatively stable element of the economy growing modestly from year to year. It is, however, possible that the military establishment could grow sufficiently if a significant number of personnel returns to station in Hawaii. Over the long run there may be changes in the military presence in Hawaii based on technology and changing priorities due to pressures on military expenditures.

Diversification efforts continue in a number of areas including diversified agricultural, diversified manufacturing and the introduction of high tech industry, limited local markets, "space age" communications, transportation costs, the high cost of living, an anti-business image and other factors have been road blocks to the relative success of many of these efforts. Research continues in the hope of finding a strong alternative business base for the economy, and an attitudinal change appears to have started.

In the short run, and perhaps long run, tourism will be the primary business of Hawaii. Political leaders appear to be more aware of the high dependency on tourism and are addressing the need to maintain and nurture the industry's vitality. The Governor's December, 1984 Tourism Conference is an indication of the level of awareness.

Growth in personal income has not kept pace with the national average, leading to a conclusion that it continues to be difficult to purchase housing. However, if all sources of income are recognized, the local short fall may not be as bad as it appears. If the population is segmented it will be shown that many groups will qualify for housing.

More important, if the supply of housing is increased and price competition reduces or stabilizes the cost of housing, there will be an opportunity for personal incomes to "catch up".

CONCLUSION REGARDING HOUSING MARKET

It is therefore concluded that for the reasons stated herein, the Village Park Expansion is a viable development that there is a predictable need for the number and type of units to be offered, that the product type will be well received in the market place and that the Village Park Expansion will be high on the consumer preference list due to price, location and environmental advantages.

COMMERCIAL/BUSINESS PARK/INDUSTRIAL

10 acres will be designated for commercial use. These uses will be primarily to serve the local community, although an incubation period will be needed. Commercial activities will be visible based on the projected order of magnitude of the population.

Providing these facilities within the community will reduce the need for travel outside the community and represent a convenience to local residents.

10.7 acres will be designated for industrial use. It is projected that the existing industrial areas west of the Primary Urban Center will be substantially absorbed during the next 5 to 10 years, particularly in the light of overall growth and proposed redevelopment of the Kakaako District.

Areas such as Sentry Business Park, Campbell Industrial Park and Oceana Properties, Inc's proposed high tech park will not compete for the same type of user, who will be much more sensitive to locational factors and transportation costs.

There is an underlying change taking place in the way business is being done.
The nation evolved from an agrarian economy to an industrial economy. It now appears to be shifting rapidly to what is called an information economy. Hawaii is struggling to maintain its agrarian based economy. Change seems inevitable. The results of the evolution are not yet clear but one thing seems certain - creative options are better than no action at all. Village Park Expansion commercial/business park contributes to these options.

S-0800/4235/4tr

SECTION XII. EXHIBITS
MEDELL BROS., JR., Managing Director, Chasey, Brooks & Company, Realtor, Certified Property Manager, Member Urban Land Institute, Real Estate Developer, Real Estate Consultant, former President of Millini Town, Inc., and former General Manager of Maui Development Company, qualified as expert witness - Land Use Commission Hearing 1984 regarding Housing and Population.

JOHN ZAPOTOCKY, Real Estate Consultant, MSA Degree from the University of Hawaii. Formerly a financial analyst for Kaiser Aina (Hawaiian Hall) and Maui Development Company. Served as Project Manager for the proposed Nokolea Homesteads Development on Oahu's North Shore and has performed consulting services for the proposed West Beach Development and Molokai Ranch (Hawaii Plantations).
EXHIBIT III

VILLAGE PARK QUESTIONNAIRE

The following information was obtained by interview with the Sales Manager for Village Park, Mr. George Higata, on May 15, 1965 re: Buyer profile - Village Park.

AGE GROUPS:

| Under 25 | 5% |
| 26 - 34 | 55% |
| 35 - 45 | 27% |
| 45 - 55 | 10% |
| Over 55 | 3% |

Comments by Consultants:

- Sixty-four percent of the buyers are under 35 years old.
- This indicates that Village Park is attractive to young people who have not achieved their maximum earning powers.

FAMILY SIZE:

| 1 | 0% |
| 2 | 42% |
| 3 | 24% |
| 4 | 7% |
| 5 and over | 3% |

Family size indicates the buyers of Village Park product to be family-oriented people.

PLACE OF EMPLOYMENT:

| Honolulu | 50% |
| Pearl City | 13% |
| Wahiawa | 12% |
| Central Oahu | 10% |
| Windward | 3% |
| Ewa | 3% |

Fifty percent of the buyers in Village Park were employed in Honolulu, indicating that Village Park product was sufficiently attractive to that 50% of the buyers opted to commute to Honolulu. Presumably, if there were other product available, equally attractive and closer to Honolulu, buyers would have elected to buy there - all other things being equal.

PERCENT MILITARY: 22%
PERCENT CIVILIAN: 78%

Twenty-two percent of buyers were military personnel, some of whom were local residents.

PREVIOUS RESIDENCE (Area):

| Honolulu | 42% |
| Pearl City | 21% |
| Wahiawa | 10% |
| Central Oahu | 7% |
| Windward | 7% |
| Ewa | 2% |

Ninety-eight percent of the buyers of the Village Park product previously lived in the PUC and Central Oahu DP areas. Sixty-eight percent of the buyers previously resided in the PUC. When combined with the employment question, it seems to indicate a lack of product available in the PUC which is of appropriate price or character to satisfy the needs of the buyers of units at Village Park. With 52% of the buyers of units being first time buyers Village Park represents a development making it possible for young families to get into the housing market.

FINANCIAL QUALIFICATIONS:

| Downpayment minimum | 23% |
| More than minimum | 21% |
| Substantially more than minimum | 10% |

The four questions relating to the financial qualifications of the buyers of the Village Park units indicate that the buyers are for the most part qualifying on their own incomes (only 23% received help from parents), are hard working (90% of buyers have two family members working); are not wealthy in that 7% of the buyers made only minimum downpayments, and only 23% of the buyers had professional or managerial jobs. In short, the buyers of Village Park units are young, hard working, family-oriented local residents.

TYPES OF JOBS:

| Professional/Managers | 10% |
| Traders | 7% |
| Clerical/Secretarial | 24% |
| Military | 6% |
| Other | 22% |

AUTOMOBILES:

| 1 | 17% |
| 3 | 13% |
| 3 or more | 2% |

The high proportion of two car families at Village Park is due to the fact that two people work in 90% of the families and there is currently no bus service available to the subdivision.

REASON FOR BUYING IN VILLAGE PARK:

| Price | 40% |
| Location | 32% |
| Design | 13% |
| Planned Community | 13% |
| Friends & Relatives | 7% |
| In the neighborhood | 7% |
| Amenities | 3% |

Forty percent of the buyers indicated that the price was the primary reason for purchasing at Village Park. The second most popular reason for purchasing at Village Park is location (32%) so that many people find the area very attractive due to physical characteristics.
B. Highest and Best Use

Although the subject site is presently zoned Ag-1, the adopted development plans for central Oahu indicate the site to be classified Commercial. A request for rezoning to B-1, Neighborhood Commercial, Park master plan also shows planned commercial utilization of the subject site.

There are presently approximately 650 families residing at Village Park. By the summer of 1969, about 1,750 residences will be completed and occupied. Assuming an average family size of 4, about 7,000 people will reside in Village Park. The need for convenient shopping facilities will increase as population increases. The nearest shopping facilities are now found in Waipahu, along Farrington Highway, a distance of approximately 1-1/2 to 3-1/2 miles.

The location of the subject site is physically separated from the remainder of Waipahu town by the H-1 Freeway which forms the northerly boundary for much of Waipahu town. It has only been in recent years that residential growth has occurred on the north side of the H-1 Freeway.

The subject site is of a size suitable for a neighborhood shopping center. Typically, a neighborhood shopping center ranges in size from gross leasable area is 52,000 square feet to 80,000 square feet of gross leasable area. The median size of the centers varies from a lower decile of 24,000 square feet to the upper decile of 101,000 square feet of gross leasable area. The neighborhood center provides for the sale of daily living needs such as foods, drugs, hardware and personal service. A supermarket is the principal tenant of this type of center.

We do not believe that at this time a market exists for a typical neighborhood center. The population in Village Park cannot support a range of merchants as typically found in neighborhood shopping centers. It is the appraiser’s opinion that there is no immediate need for a commercial complex utilizing the entire 4.7-acre site.

However, we believe that presently a convenience shopping facility such as a 7-Eleven store or a Pami convenience store would meet with good market acceptance at this location. Such a store could be combined with a gasoline sales facility. It is also possible that a separate automobile service station and gasoline sales facility would be suitable for location at the subject site. Other uses could include a steakhouse-type or specialty restaurant offering views over Pearl Harbor, a fast-food restaurant, a small commercial building containing space for a beauty shop, banking office and post office.

It is the appraiser's opinion that at this time an area of approximately 1 to 1-1/2 acres would be sufficient to accommodate currently needed commercial facilities. The balance of the site, approximately 3.7 acres, would be placed into utilization as the demand occurs. It is our opinion that it will be several years before the 4.7-acre site can be fully utilized.
### EXHIBIT VI
### OAHU DEVELOPED INDUSTRIAL PARKS AND AREAS

Prepared by consultants

<table>
<thead>
<tr>
<th>AIRPORT INDUSTRIAL PARK</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LOCATION:</strong> Honolulu, Oahu</td>
</tr>
<tr>
<td><strong>SIZE:</strong> 133 acres</td>
</tr>
<tr>
<td><strong>TYPE OF INDUSTRY:</strong> Light Industrial and Warehousing.</td>
</tr>
<tr>
<td><strong>FACILITIES:</strong> All utilities, paved streets, sewers, etc. Building constructed to suit tenants' requirements.</td>
</tr>
<tr>
<td><strong>APPROXIMATE PRICES:</strong> Lease only. Land - none presently available. All leases renegotiated 5-1-85 at the rate of 48 or $0.60 or $1.80 per square foot per year. Warehouse space - $0.90 to $0.90 per square foot per month rent.</td>
</tr>
<tr>
<td><strong>CURRENT STATUS:</strong> The area has stabilized after a mass exodus in the early 1980's With a low vacancy factor of approximately 5%. There is a tremendous increase in renovation today of existing buildings, and much better &quot;pride of ownership&quot; than in the past 10 years, due to the influx of owner-users versus investors of 10 years ago.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rouxville</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LOCATION:</strong> Honolulu, Oahu</td>
</tr>
<tr>
<td><strong>SIZE:</strong> 25 acres (approximately)</td>
</tr>
<tr>
<td><strong>STATUS:</strong> Bishop Estate and Queens Hospital fee owners. Donald C. G. Look master lessee.</td>
</tr>
<tr>
<td><strong>TYPE OF INDUSTRY:</strong> Light Industrial</td>
</tr>
<tr>
<td><strong>FACILITIES:</strong> Water, roads, sewer, underground electric, etc.</td>
</tr>
<tr>
<td><strong>APPROXIMATE PRICES:</strong> $10.00 to $21.00 per square foot (lease premium). Average lot prices: $25,000 per acre.</td>
</tr>
<tr>
<td><strong>CURRENT STATUS:</strong> Honolulu recently took a deed in lieu of foreclosure from Donald C. G. Look and will start marketing in mid 1985. 44 of the 47 lots are presently vacant. All lots are graded and ready to build.</td>
</tr>
</tbody>
</table>

---

### JAMES CAMPBELL INDUSTRIAL PARK

| **LOCATION:** Barbers Point, Oahu |
| **SIZE:** 1,314 acres. 46 acres still available. |
| **TYPE OF INDUSTRY:** Heavy, medium, and light. |
| **FACILITIES:** Complete industrial park facilities. Brochure available upon request. |
| **APPROXIMATE PRICES:** Lease only. Currently about $0.50 per square foot annually. ($0.50 fee simple per square foot x 85) with escalations on 50 year base. |
| **CURRENT STATUS:** Phase I is currently 90% leased. Phase II is currently in the planning stage with 120 acres. Some parcels have been sold on a fee simple basis through an exchange rather than leased. Out of the 90% leased parcels, the majority is to large users. The Dillingham site of 156 acres has been on the market for several years. |

### CENTRAL PARK

| **LOCATION:** Makaha Valley, Oahu |
| **SIZE:** 32.7 acres, 58 lots |
| **TYPE OF INDUSTRY:** Light Industrial |
| **FACILITIES:** Paved streets, utilities, sidewalks, streetlights, planting. Sold developed lots to purchasers who built compatible buildings, warehouses, etc. |
| **APPROXIMATE PRICES:** Land - leasehold. Premium of $15.00 - $17.00 per square foot to purchase the remaining portion of a 55 year lease. First 10 years of lease set at 1% of $4.00 per square foot. Warehouse subleases available $0.40 - $0.60 per square foot month rent. |
| **CURRENT STATUS:** 100% sold out with approximately 65% of the lots built out mostly to owner-users. |
GENTRY BUSINESS PARK

LOCATION: Gentry-Waipio, Oahu
SIZE: 120 acres, ocean-view
TYPE OF INDUSTRY: Light industrial and commercial
FACILITIES: Planned development with underground utilities, landscaping in a campus-like atmosphere. Variety of facilities: lease model space, purchase condominium warehouse/offices, request turn-key design/build-to-suit service.
APPROXIMATE PRICES: Fee simple. Prices average $16.00 - $18.00 per square foot. Loss sizes vary from small user need to several acres. Warehouse leases are $0.50 - $0.60 per square foot.
CURRENT STATUS: Phase 1 of 55 acres is currently for sale with approximately 90% sold at present. Phase II of 45 acres is currently being marketed, although roads have not been constructed. There is approximately 28% pre-sold mostly to two large users.

HEHOA LIGHT INDUSTRIAL AREA

LOCATION: Kahuhiwa Street, Kaneohe, Oahu
SIZE: 25 acres
TYPE OF INDUSTRY: Light industrial, commercial
FACILITIES: Paved streets, utilities, buildings built to users' specifications.
APPROXIMATE PRICES: Land - none available. Warehouse - leases held only, very limited: $0.40 - $0.60 per square foot per month net.
CURRENT STATUS: 100% sold out and built out. A "well seasoned" industrial park.

KAEALANI INDUSTRIAL AREA (BISHOP ESTATE)

LOCATION: Honolulu, Oahu
SIZE: 42 acres varied industrial; 14 acres commercial. All lots are taken, but subleases are available. Plans for future development involving 50+ acres of Bishop Estate lands will include some industrial sites along with commercial and residential areas.
TYPE OF INDUSTRY: General industrial and commercial.
FACILITIES: All utilities, paved streets, sewers. Master plan calls for street widening, new infrastructure (sewer, water, electric, phones, etc.).
APPROXIMATE PRICES: Subleases office/warehouse only. About $0.50 - $0.75 per square foot monthly, triple net (RRM). A recent sale brought $44.00 per square foot for fee land.
CURRENT STATUS: The area is in a state of transition from industrial use to proposed mixed use projects.

KAPALAMA INDUSTRIAL AREA

LOCATION: Honolulu, Oahu
SIZE: 32 acres light industrial; 7 acres commercial; 4 acres semi-industrial. All sites are taken, but subleases are available.
TYPE OF INDUSTRY: Light industrial and commercial.
FACILITIES: All utilities, paved streets.
APPROXIMATE PRICES: Subleases office/warehouse only. About $0.40 - $0.75 per square foot monthly, triple net.
CURRENT STATUS: 100% built out and leased. The area has recently undergone a revitalization with the development of two 50,000 sq. ft. warehouse complexes.
Maipalua/Maimanea Industrial Subdivision
LOCATION: Honolulu, Oahu
SIZE: 87 acres
TYPE OF INDUSTRY: Light and general
FACILITIES: All utilities, paved streets, cesspools.
APPROXIMATE PRICES:
- Land - leasehold only, very limited
- Warehouse - leasehold, very limited: $0.40 - $0.65 per square foot per month net
CURRENT STATUS: Stabilized now after a "mass" move out by tenants and lessees in the early 1980's. This was caused by rents increasing from 6% of $5.00 to 6% of $35.00 when the rents re-opened after 25 years of fixed rents.

Mountian Industrial Park
LOCATION: Waipahu, Oahu
SIZE: About 33 acres
TYPE OF INDUSTRY: Light Industrial
FACILITIES: Paved streets, utilities, buildings.
APPROXIMATE PRICES:
- Land - none available
- Warehouse - leasehold, very limited: $0.40 - $0.60 per square foot per month net
CURRENT STATUS: 100% built out and occupied. Well maintained park with good quality building.

Pearl City Industrial Park
LOCATION: Pearl City, Oahu
SIZE: 106 acres
TYPE OF INDUSTRY: Light Industrial
FACILITIES: All utilities, paved streets, sewers, etc.
APPROXIMATE PRICES:
- Land for sale - limited $11.00 - $15.00 per square foot
- Warehouse leases are $0.40 - $0.60 per square foot
CURRENT STATUS: 100% sold out with 75% built out. Mostly the larger parcels are vacant.

Punahou and Pauwai Area
LOCATION: Honolulu, Oahu
SIZE: 60 acres
TYPE OF INDUSTRY: Light and general
FACILITIES: All utilities, paved streets, sewers.
APPROXIMATE PRICES:
- Land - none available
- Warehouse - leasehold, very limited
- Warehouse leases: $0.50 - $0.65 per square foot per month net
CURRENT STATUS: 100% built out and all leased out. Good quality buildings.
SAND ISLAND ACCESS ROAD INDUSTRIAL AREA
LOCATION: Honolulu, Oahu
SIZE: 9 acres
TYPE OF INDUSTRY: Light industrial and commercial
FACILITIES: All utilities, paved roads, 170,000 square feet in buildings.
APPROXIMATE PRICES: $0.65 - $0.75 per square foot month net.
CURRENT STATUS: 100% built out and all leased out. Good properties with abundance of parking and yard space.

SHAFTER FLATS INDUSTRIAL PARK
LOCATION: Honolulu, Oahu
SIZE: About 19 acres. Lots from 10,000 to 46,000 square feet.
STATUS: State owned land; all leased by public auction.
TYPE OF INDUSTRY: Light Industrial
FACILITIES: All utilities available, paved streets, sidewalks; all improvements by and at expense of lessee. Portions of the land are in a flood zone.
APPROXIMATE PRICE: Lease for land only, Rent established in 1967.
RENEGOTIATE IN 1967.
CURRENT STATUS: 100% leased and built out. Rents are fairly inexpensive in comparison to Mapunapuna (Damen Estate).

WAIPAHU INDUSTRIAL PARK
LOCATION: Waipahu, Oahu
SIZE: 103 acres
TYPE OF INDUSTRY: General Industrial
FACILITIES: All utilities, paved streets, sewers, etc.
APPROXIMATE PRICES: Land fee simple, very limited: $15.00 per square foot.
WAREHOUSE LEASEHOLD, very limited: $0.40 - $0.55 per square foot month net.
CURRENT: Approximately 60% built out and 100% sold. Many larger parcels are undervalued. Many of the buildings that have been built are approximately 70-80% leased.
<table>
<thead>
<tr>
<th>Location</th>
<th>Hawai'i, Oahu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>12 acres</td>
</tr>
<tr>
<td>Type of industry</td>
<td>Light and commercial</td>
</tr>
<tr>
<td>Facilities</td>
<td>Paved streets, utilities, streetlights, sidewalks; buildings built to lessees' specifications.</td>
</tr>
<tr>
<td>Current status</td>
<td>100% leased and occupied. Strong area for industrial service</td>
</tr>
<tr>
<td>Status</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Sand Island Industrial**

<table>
<thead>
<tr>
<th>Location</th>
<th>Honolulu, Oahu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>60 acres (approximately - future)</td>
</tr>
<tr>
<td>Status</td>
<td>State owned land in planning stage</td>
</tr>
<tr>
<td>Type of industry</td>
<td>Light - for marine-related industry</td>
</tr>
<tr>
<td>Facilities</td>
<td>Water, electricity available</td>
</tr>
<tr>
<td>Approximate prices</td>
<td>Presently by month to month; tenancy (renewable permit)</td>
</tr>
<tr>
<td>Prices</td>
<td>$0.025 per square foot - open areas; $0.05 per square foot - covered areas; new permits not available.</td>
</tr>
<tr>
<td>Current status</td>
<td>Monthly-to-month leases at present. No infrastructure, i.e. paved roads, sewer lines, etc. as of January 1, 1985.</td>
</tr>
<tr>
<td>Status</td>
<td>N/A</td>
</tr>
</tbody>
</table>
APPENDIX B

VILLAGE PARK, WAIPAHU, OAHU: ARCHAEOLOGICAL RECONNAISSANCE

Chiniago, Inc.
July 1985
VILLAGE PARK, KAIPAHU, OAHU:
ARCHAEOLOGICAL RECONNAISSANCE

Prepared for:
MAIFEC DEVELOPMENT INC.
628 Fort Street
Honolulu, Hawaii 96813

Prepared by:
Diilina Barrera, Jr.

MAIFEC INC.
1000 8 Saltn Street
Honolulu, Hawaii 96817

JULY 1945

Table of Contents

1. Introduction ................................................. 1
2. Literature Search ........................................... 2
3. Field Inspection ............................................ 3
4. Recommendations .......................................... 4
Sources Consulted ........................................... 5

Illustrations

Figure
1. Location of Survey Area ................................. 1
I. Introduction

An archaeological reconnaissance survey was conducted on approximately 692 acres of land adjacent to Waialua Gulch, Kanu (Figure 1). The property is bounded on the west by Kunia Road, on the south by the Village Park Sub-division, on the east by Waialua Gulch, and on the north by sugarcane fields. No information could be found regarding the use of the land prior to the late 1920s when sugar production began. The state of production at the time of the present fieldwork ranged from unexplored to almost ready for harvest. The north and east three-quarters of the parcel was in the unplanted to recently-planted category, and could be negotiated on foot without difficulty. The south-west one-quarter was thickly vegetated and would have been impossible to traverse on foot were it not for the presence of irrigation channels that cut through the sugar fields.

II. Literature Search

The literature search included inspection of Handy's 1940 Hawaiian Planters, McHilister's Archaeology of Kaua'i (1935), Sterling and Simek's sites of Kaua'i (1978), Cox and Stagg's Hawaiian Petroglyphs (1970), maps on file at the State of Hawaii Survey Office, site maps on file at the State Historic Preservation Office, and reports and publications in the Hawaiian collection of the University of Hawaii.

Handy mentions terraces along Waialua Stream, immediately outside of the survey area on the east:

"In the flatland, where the Kamehameha Highway crosses the lower valley of Waialua Stream, there are the remains of terraces on both sides of the road, now planted to bananas, cane, and small gardens. For at least 2 miles upstream there were small terrace areas" (Handy 1940:122).

The present status of these terraces is not known, but extensive construction activities in the valley since the time of Handy's visit have probably resulted in their destruction.

McHilister discusses three sites to the south of the survey area, all of which have been destroyed:

"Site 17. Waialua Paliu, southwest of the main road in the village of Waialua.

"The paliu has been completely destroyed for building purposes of the neighborhood. The site is at the edge of a 30-foot elevation which projects out into the present rice fields and was once used as a sailing wharf for generations of more than 100 years old."
IV. Recommendations

Because no evidence of past utilization of the subject property was found in the form of structural or alien remains, and because there have been no archeological or historical records, we recommend that the property be allowed to proceed without any further archeological work. Should any archeological or historic remains be uncovered during the project, the construction should stop and notify the State Historic Preservation Office.

III. Field Inspection

Our field work consisted of a two-day pedestrian inspection of the property. Structural remains (platforms, terraces, mazes, etc.) would have been destroyed by sugar cane production long ago, and the only evidence of past human utilization was unearthed fragments of food remains (bones and shells) and artifacts in the unplanted and recently ly-planted northern and eastern one-third of the property. At times it was possible to walk anywhere and search for such items as it was possible to walk anywhere and search for such items

-9-
Sources Consulted

Handy, E. S. Craigfill

1940 The Hawaiian Planter, Volume I. Bernice P. Bishop

McAllister, J. Gilloot

1933 Archaeology of Oahu. Bernice P. Bishop Museum Bulletin
104. Honolulu.

[This report presents the results of a selective archaeological survey of the Island of Oahu.]

State of Hawaii, Department of Land and Natural Resources

USGS Quadrangle maps showing locations of archaeological and historical sites on Oahu.

Sterling, Elspeth P. and Catherine C. Summer


[This is a compilation of information from numerous sources concerning the archaeological sites, history, traditions, legends, place names and land descriptions from the Island of Oahu.]

Cox, J. Miley, and Edward Sietsema

APPENDIX C

A SOCIO-ECONOMIC ASSESSMENT
OF THE PROPOSED VILLAGE PARK EXPANSION

Community Resources, Inc.
January 1986
This report was written primarily in August 1985. Many of the conclusions pertaining to housing, population, and -- to a lesser extent -- employment were based on the original market report prepared by Brooks and Sapotocky (1985), as revised.

Subsequently, Waitec Development Co. adjusted its proposed product mix, and Brooks and Sapotocky subsequently revised their original market analysis (Brooks and Sapotocky, 1985).

The present report has consequently been revised in several major ways: (1) changes reflecting the supplemental market report; (2) changes reflecting alterations to the developer's original site plan, and (3) updating of the section on "Preliminary Social Impact Assessment," including an additional section on "Mitigations."

Anticipated future events may further affect particular conclusions in this revised report. These events would include, but not be limited to:

- Decisions by the City and County of Honolulu about other proposed residential developments in Central Oahu or Ewa;
- Input from local government and/or community groups about certain project characteristics -- particularly the size and nature of the City low-density apartment rental project.

Aug 1985
(Revised: November 1985)
(Final Revisions: January 1986)

Prepared for:
Waitec Development Company

Prepared by:
Community Resources, Inc.
EXECUTIVE SUMMARY

Population

1. The total population for the Village Park Expansion area is estimated at 10,000 persons. The overall Village Park area (including both the current development and the Expansion) would thus increase from an estimated 5,000 population around the year 2000 to a total population of some 15,000.

2. The demographic composition of the combined areas would shift — although not greatly — to include relatively more older, comparatively affluent, and/or childless households. Overall, however, the combined Village Park communities would still be comprised mostly of young, local, first-time homeowners.

3. By the turn of the century, communities auana of Waipahu Town (existing Village Park, Kaaawa, Waipio, and Makaha) will contain almost as much population as Waipahu itself. Approval of Village Park Expansion and/or Makaha will result in more population above the freeway than below.

4. The "Hauka Communities" differ from Waipahu residents on a number of demographic and socio-economic dimensions. Village Park Expansion residents will be more like people in the other "Hauka Communities" than the people below the freeway, where the population is growing older and increasingly influenced by immigrant settlement.

5. Addition of the estimated 10,000 population of the Village Park Expansion would represent a 50 percent increase over the likely year 2005 population for the Waipahu area (including the "Hauka Communities" other than Makaha, which has yet to be approved). For all the Central Oahu Development Plan Area (excluding other pending residential proposals), it would represent a seven percent increase.

6. Oahu's population is expected to increase by approximately 149,200 persons from 1984 to 2005. The Village Park Expansion project would account for about 6.7 percent of this increase and about 1.1 percent of total Oahu population.

Housing

1. The addition of 3,400 units in the Expansion to the total planned 3,800 in the existing Village Park area would nearly triple the ultimate number of units for the combined area.

2. There would be some slight shifts in the overall composition of units — slightly higher proportions of multi-family units and of relatively higher-priced homes on larger lots. Construction of a government-sponsored low-income central apartment project would also represent a new form of housing in the Village Park area.

3. The golf course and other amenities in the Village Park Expansion project should help maintain and improve property values in the existing Village Park development.

4. Because the Expansion would be a continuation of the current Village Park development — for which a development, sales, and construction team is already in place — it should move forward without delay and be able to meet Waipahu-area housing demand in a period of time after the Waipio project is completed but before Waikale units may be ready for the market.

5. The total Waipahu-area housing inventory (including approved projects over the freeway) is estimated at 15,000 units by the year 2000. The Expansion proposal would increase this figure by about 30 percent.

6. Census data indicate crowding is a serious problem in Waipahu Town households. By providing relatively affordable new housing, the Expansion project may ultimately allow the "undoubling" of crowded households where several families have "doubled up" in Waipahu.

Employment

1. The Expansion project would result in the continuation of the present 310 Village Park construction jobs (average annual figure) from 1988 through 1994.

2. When completed, the Expansion would provide on-site employment for 300 workers. Most of these jobs would be in the commercial sector (43 percent), followed by the industrial area (18 percent) and the golf course (40 percent).

3. There may also be some induced and indirect employment elsewhere in the Waipahu area, but it is difficult to estimate this.

4. Although it is impossible to predict for certain where the labor would come for the 1,121 on-site jobs, Waipahu's relatively high unemployment rate and the occupational characteristics of its labor force suggest a good match with the types of jobs which will be available at the Expansion.

Social Issues: Public Opinion Surveys

1. Hawaii State Plan surveys conducted during the 1980's show Oahu residents place a higher priority on affordable housing than on preserving agricultural land.

2. A 1982 Waipahu survey shows equal priority for housing and protecting Oahu Sugar Company. It also shows most Waipahu residents welcome growth so long as it is well-planned.
Social Issues: Key Informant Interviews and Community Positions

1. While the public hearing process will be the ultimate test for determining public attitudes and concerns, interviews with some 35 Village Park and Waipahu community leaders were conducted to provide a preliminary feel for issues and concerns. Organized community groups also provided input.

2. The overall attitude at this time was generally positive. All major Waipahu-area community organizations have taken positions favoring the project. Most informants assessed to expect and welcome residential growth in the Waipahu area.

3. Project components which seemed most responsible for this positive attitude were (for Waipahu) desired contributions to area growth and continued provision of housing affordable for first-time buyers and (for Village Park) the proposed golf course.

4. The most frequently raised concern (especially in Waipahu) involved public infrastructure capability — particularly traffic impacts. There was some frustration over perceived lack of government action to address the cumulative impact of all proposed developments. Usually, these concerns were expressed as questions about how the problems can be solved rather than as a basis for opposing development.

5. The issues which usually generated the strongest emotional response (especially below the freeway) had to do with whether Village Park and the expansion would become well-integrated into the larger Waipahu community or would become a distant, possibly even "competitor" community. For example, there was concern about possible deterioration of Waipahu schools if Village Park and Waiteka students are bussed elsewhere.

6. Specific project components producing some degree of concern included (a) the City apartment rental project (desire for compatible design and careful management); (b) the Department of Education's recommended location of a school site (with which Waipahu community groups disagreed); and (c) the original park acreage distribution (subsequently reallocated to meet some residents' desires for an expanded park site closer to the eastern portion of current Village Park).

7. Many Waipahu community leaders suggested that a development of this nature should "give back" something to the larger community. Initially, there was a desire to identify ways that the project itself could meet community-wide needs such as church sites.

However, the final focus of such discussions was on ways that the developer could help meet community needs outside the Village Park area. Following negotiations, the developer agreed to assist in a Koa Road beautification effort and several other community initiatives.
## CONTENTS (Continued)

<table>
<thead>
<tr>
<th>IV.</th>
<th>EMPLOYMENT ..................................................</th>
<th>52</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Existing Situation .........................................</td>
<td>52</td>
</tr>
<tr>
<td>B.</td>
<td>Impacts .....................................................</td>
<td>52</td>
</tr>
<tr>
<td>V.</td>
<td>PRELIMINARY SOCIAL ISSUE ASSESSMENT .......................</td>
<td>56</td>
</tr>
<tr>
<td>A.</td>
<td>Public Opinion Surveys .....................................</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>1. Islandwide Priorities: Housing vs. Preservation of Agricultural Land</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>2. Waipahu Community Needs and Values ....................</td>
<td>57</td>
</tr>
<tr>
<td>B.</td>
<td>Community Input and Issue Assessment Process ............</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>1. Initial Key Informant Interviews ......................</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>2. Subsequent Community Interaction ......................</td>
<td>64</td>
</tr>
<tr>
<td>C.</td>
<td>Housing Provision ..........................................</td>
<td>65</td>
</tr>
<tr>
<td>D.</td>
<td>Desired Growth, Political Strength, and Competition ...</td>
<td>66</td>
</tr>
<tr>
<td>E.</td>
<td>General Issues of Community Identity and Integration</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>1. Integration of Current Village Park and Expansion Area</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>2. Village Park Links with Waipahu Overview ..........</td>
<td>68</td>
</tr>
<tr>
<td>F.</td>
<td>Links with Waipahu School System .......................</td>
<td>71</td>
</tr>
<tr>
<td>G.</td>
<td>Need for Regional Recreational Facilities .............</td>
<td>72</td>
</tr>
<tr>
<td>H.</td>
<td>Crime and Delinquency Problems ..........................</td>
<td>73</td>
</tr>
<tr>
<td>I.</td>
<td>City Apartment Rental Project ...........................</td>
<td>75</td>
</tr>
<tr>
<td>J.</td>
<td>Other Village Park Issues and Concerns ..................</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>1. Provision and Timing of Amenities ....................</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>2. Nature of Business Park Activities ...................</td>
<td>76</td>
</tr>
<tr>
<td></td>
<td>3. Interaction with Current Internal Issues: Valves and Parks</td>
<td>77</td>
</tr>
<tr>
<td></td>
<td>4. Property Values ........................................</td>
<td>78</td>
</tr>
<tr>
<td></td>
<td>5. Lease-Fee Conversion ...................................</td>
<td>79</td>
</tr>
<tr>
<td></td>
<td>6. (Local) Traffic Impact ................................</td>
<td>79</td>
</tr>
</tbody>
</table>

| K. Other Waipahu Issues and Concerns ........................ | 79 |
| 1. (Regional) Traffic Impact and Infrastructure Capacity | 79 |
| 2. Lack of Information on Cumulative Development Impacts | 80 |
| 3. Competition with Existing Waipahu Businesses .......... | 81 |
| 4. Request for Job Guarantees ................................ | 81 |
| 5. Project Implications for Gahs Sugar Company and Waikiki | 82 |
| 6. Need for Expansion School Site .......................... | 83 |
| 7. Requests for Community "Givebacks"..................... | 84 |

| L. Positions Taken by Community Groups ..................... | 84 |

| VI. MITIGATIONS .............................................. | 85 |
| A. Measures Which Can Be Implemented by Developer ......... | 85 |
| 1. Initiate Discussions with the Community to Identify Mutually Agreeable Mitigation or "Giveback" Measures | 85 |
| 2. Use Design Measures to Physically Integrate the Expansion Area with the Existing Village Park | 86 |
| 3. Umbrella Community Association for Current Village Park and Expansion Area | 86 |
| 4. Keep Community Informed to Ensure Awareness of Proposed Plans and Any Changes | 87 |
| 5. Encourage Lease-Fee Conversion for the Existing Village Park | 87 |

| B. Measures Beyond the Developer's Full Control .......... | 87 |
| 1. Design and Management Control of City Apartment Project | 87 |
| 2. Park Space in the Southeastern Part of the Expansion | 87 |
| 3. Establishing a Joint Task Force to Address Cumulative Impacts of all the Major Proposals in Leeward Oahu | 88 |
| 4. Establishing a Public Elementary School in Village Park to Minimize Out-of-Area Busing | 88 |
| 5. Actual Use of Recreational and Commercial/Industrial Facilities by Larger Waipahu Community | 88 |
| 6. Involvement of Both Current Village Park and Expansion Residents in the Affairs and Activities of Larger Waipahu | 88 |

REFERENCES ....................................................... | 89 |
<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-a</td>
<td>Total Population and Demographic Breakdowns:</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>State, County, and Possible Affected Areas, 1970 and 1980</td>
<td></td>
</tr>
<tr>
<td>1-b</td>
<td>Family Characteristics and Income Levels:</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>State, County, and Possible Affected Areas, 1970 and 1980</td>
<td></td>
</tr>
<tr>
<td>1-c</td>
<td>Labor Force Size and Characteristics:</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>State, County, and Possible Affected Areas, 1970 and 1980</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Selected 1980 Census Data for Village Park and Creteview/Maipio</td>
<td>27</td>
</tr>
<tr>
<td>3</td>
<td>Recent Village Park Buyer Profile as of May 1985</td>
<td>31</td>
</tr>
<tr>
<td>4</td>
<td>Existing and Projected Future Populations:</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Waipahu and &quot;Neiha Communities&quot; Other Than Village Park Expansion</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Existing and Projected Future Populations:</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>Central Oahu Development Plan Area (excluding Village Park Expansion)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Existing and Projected Future Populations:</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Ewa Development Plan Area</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Existing and Projected Future Populations:</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Combined Central Oahu and Ewa Development Plan Areas</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Housing Stock and Characteristics:</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>State, County, and Possible Affected Areas, 1970 and 1980</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Selected 1980 Housing Data for Village Park and Creteview/Maipio</td>
<td>45</td>
</tr>
<tr>
<td>10</td>
<td>Composition of Planned and Proposed Village Park Housing Units</td>
<td>48</td>
</tr>
<tr>
<td>11</td>
<td>Estimated Total Waipahu-Area Housing Supply Without Village Park Expansion Project</td>
<td>50</td>
</tr>
<tr>
<td>12</td>
<td>Employment in the Completed Village Park Expansion</td>
<td>53</td>
</tr>
<tr>
<td>13</td>
<td>Estimated Job Need Among Village Park Expansion Residents</td>
<td>55</td>
</tr>
<tr>
<td>14</td>
<td>Waipahu Public Opinion Survey: Importance of Various Community Problems or Needs</td>
<td>59</td>
</tr>
<tr>
<td>15</td>
<td>List of Key Informants for Social Issue Assessment</td>
<td>62</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Location of Current Village Park and Proposed Expansion</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Preliminary Site Plan for Proposed Expansion</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Oahu Development Plan Areas and Project Area</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Waipahu Census Designated Place and Nearby &quot;Reaka Communities&quot;</td>
<td>13</td>
</tr>
<tr>
<td>5</td>
<td>Site Plan for Current Village Park Development</td>
<td>18</td>
</tr>
</tbody>
</table>

I. INTRODUCTION AND OVERVIEW

Purpose and Organization

This socio-economic assessment report is intended to provide resource materials for an Environmental Assessment and Environmental Impact Statement for the proposed Village Park Expansion project. The Environmental Assessment is required for the project developer's application to the Hawaii State Land Use Commission, for designation of the project's land use category from Agriculture to Urban. The Environmental Impact Statement would subsequently require for zoning approvals from the City and County of Honolulu.

The remainder of this introductory Section I will provide a project description and a general overview of the affected communities.

Thereafter, Sections II - IV will assess project impacts on three standard socio-economic variables: population (Section III), housing (Section IV), and employment (Section V). The format for each of these sections will include a description of the "Existing Situation," followed by a discussion of "Impacts." The usual method for assessing impacts involves a comparison of the expected future situation with the project vs. the expected future without the project. Impacts are thus defined not as changes from the present situation, but as changes from the likely future without the project.

Section V provides a "Preliminary Social Issue Assessment." This consists of evidence about the likely community issues, concerns, and values which could be produced or affected by the project proposal and implementation. The methods used here include review of public opinion surveys and a summary of issues which emerged in interviews with some 35 Village Park and Waipahu-area community leaders and in subsequent interactions with Waipahu-area civic organizations. (The term "preliminary" is used in the section title to emphasize the early nature of issue identification; the public hearing process will provide the final record of community concerns and issues.)

Where possible and appropriate in Section V, the issues are addressed with comment and analysis. However, many of these issues are qualitative in nature and do not lend themselves to firm and accurate forecasts. For purposes of this analysis, social issue assessment is regarded as an ongoing process of communication between the developer and the community (including government decision makers). Section V is intended to provide a starting point for this dialogue.

The final Section VI involves a discussion of "Mitigations." Since the population, housing, and employment impacts have few negative connotations, the mitigations will focus primarily on the less tangible community concerns presented in Section V.
B. Project Description

The proposed project involves an expansion of the existing “Village Park” subdivision north of Waipahu, immediately above the H-1 freeway. It has not yet been decided whether the proposed new project would share the name “Village Park” or would be given a separate name. Therefore, for purposes of this report, the existing area will be called “current Village Park” or “original Village Park.” The proposed new project will be referred to as “Village Park Expansion” or simply “the Expansion.”

The current Village Park community will be described in more detail in the “Community Overview” portion of this Section 1. Briefly, it is a 310.4-acre planned community which will ultimately consist of approximately 1,800 housing units — the great majority of which are single-family homes on lots averaging around 4,000 square feet and priced for first-time homebuyers. As of August 1985, 676 units had been occupied, and in 1986, Village Park also contains sites designed for commercial development, and an elementary school, but these are vacant. New park developments on the area’s 10-acre sites are being completed in early 1986. The community is bounded on the east by Wailea Gulch and Stream; on the south by the freeway; on the west by Kula Road; and on the north by sugarcane land proposed for development as the Expansion project.

The Expansion site is located on 691.5 acres immediately north of the current Village Park development (Tax Map Key 5-6-01 by Robinson Estate). The land is currently owned by Wailea Development Co. (also the developer of the current Village Park community). It is also bounded by Wailea on the east and Kula Road on the west. The northern portion of the approximately 692 acres (except for a few parcels) is leased to Kula Sugar Company and is in active use. The remaining parcels are currently “Agriculture.”

Figure 1 shows the location of both the current Village Park development and the proposed Expansion. Figure 2 contains a preliminary site plan for the Expansion. (However, it should be emphasized that final Expansion plans are still in the design stage and are subject to change.) The major land uses proposed for the Expansion are:

<table>
<thead>
<tr>
<th>Uses</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>424.6</td>
</tr>
<tr>
<td>Low-Density Apartment</td>
<td>35.0</td>
</tr>
<tr>
<td>Commercial/Industrial Mix</td>
<td>28.7</td>
</tr>
<tr>
<td>Golf Course (18-hole)</td>
<td>166.2</td>
</tr>
<tr>
<td>Public Park</td>
<td>6.9</td>
</tr>
<tr>
<td>Circulation (streets)</td>
<td>32.1</td>
</tr>
<tr>
<td>Total</td>
<td>691.5</td>
</tr>
</tbody>
</table>

Figure 1
LOCATION OF CURRENT VILLAGE PARK AND PROPOSED EXPANSION
Figure 2
VILLAGE PARK
PROPOSED EXPANSION
PRELIMINARY SITE PLAN

The original Expansion proposal also contained a site to be dedicated for public school purposes. However, State Department of Education facility planners requested the deletion of this site, saying that the yet-undeveloped Rosene School site in the current Village Park will adequately serve the needs of both developments.

The proposed number of market housing units is 3,000. Brooks and Espatchy (1985, pp. 5-7) report that these 3,000 units would be divided into five product types, as follows:

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Lot Size</th>
<th>Average Sale Price</th>
<th>Total No. of Units</th>
<th>Ext.</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Prime Sites&quot;</td>
<td>Golf course frontage - custom and semi-custom</td>
<td>5,500 ft²</td>
<td>$250,000</td>
<td>270</td>
<td>9.0%</td>
</tr>
<tr>
<td>&quot;Upgraded S.F.D. &quot;</td>
<td>Good views or locations</td>
<td>4,750 ft²</td>
<td>$185,000</td>
<td>445</td>
<td>14.8%</td>
</tr>
<tr>
<td>&quot;Traditional&quot; S.F.D.</td>
<td>Similar to current Village Park homes (oriented to first-time buyers)</td>
<td>3,600 ft²</td>
<td>$145,000</td>
<td>1,055</td>
<td>35.2%</td>
</tr>
<tr>
<td>&quot;Starter S.F.D. &quot;</td>
<td>Smaller homes (oriented to first-time buyers with small household)</td>
<td>3,000 ft²</td>
<td>$130,000</td>
<td>990</td>
<td>33.0%</td>
</tr>
<tr>
<td>&quot;Attached Units&quot;</td>
<td>Townhouse</td>
<td>N/A</td>
<td>$100,000</td>
<td>240</td>
<td>8.0%</td>
</tr>
</tbody>
</table>

TOTALS FOR 404.6 ACRES RESIDENTIAL: 3,000
("S.F.D." = single family dwellings)

Additionally, to satisfy government requirements for low/moderate income housing, the developer has agreed to dedicate 10 acres of land to the City and County, with the provision that the developer would have substantial input on design (to assure compatibility with both current Village Park and Expansion units) and that a strong management arrangement be created.

Thus, the total number of units in the Expansion, including the City's 480 low-density apartment units, would be about 3,480.

Following are additional comments regarding the various project components.
Golf Course: The 18-hole golf course would be perhaps the most obvious single characteristic differentiating the nature of the expansion from the original Village Park. It would provide a substantial amount of open space, and homes fronting the course could be expected to have a higher average value than most current Village Park homes. A clubhouse and restaurant would be part of the golf course development.

Residential: Expansion houses would be sold on a fee-simple basis, while current Village Park units have been sold as leasehold. Because of this, and because of the inclusion of "prime site" and "upgraded" products, single-family selling prices would average a little more than for units in the original Village Park. Recent prices in the current Village Park have ranged from about $115,000 for a three-bedroom single house to $145,000 for a four-bedroom house, with an overall average of about $135,000 (personal communication, Craig Champion, Wailea Development Co., June 27, 1985). For the new Expansion area, some 76 percent of the market units would still be in the average $145,000 price range and below. Such units would still be within the reach of many of the historical market for Village Park — i.e., young two-income families purchasing a first-home.

Apartments: As of this writing, no final agreements have been worked out between Wailea and the City Department of Housing and Community Development. Preliminary discussions indicate that the City's primary interest is in a rental project rather than a subsidized for-sale project. The exact amount of land to be dedicated is still under discussion.

Commercial/Industrial Mix: Two sites along Uluia Road — totaling slightly under 29 acres — are proposed for a "Commercial/Industrial Mix." This designation permits ultimate flexibility in emphasizing commercial vs. industrial development, but the tentative current plan is to devote 10 acres of the lower site to commercial uses and the remainder of both sites to light industrial activities.

The probable Expansion commercial area is slightly north of the yet-to-be-developed 4.7-acre commercial site in the current Village Park. The two commercial sites would be separated by Kupuna Loop, the principal current Village Park internal road, and by the City apartment project. The existing commercial site is marketed for development of up to 60,000 square feet of retail and office space when the current Village Park population reaches an adequate level by or before build-out. The Expansion commercial area would provide both more typical retail operations for the additional population and also additional activities — such as cinema theaters — which would be feasible only once the population for the combined areas (current Village Park and Expansion) reaches the level of a fairly large independent community.

The market consultants (Brooks and Taposoky, 1985, p. 71) estimate development of a total of 145,000 square feet of commercial space, in two equal increments.

For the light industrial area, the market consultants project an absorption rate of five acres per year, with the small northern seven-acre site to be developed last. Exact business uses for these sites cannot now be predicted, although typical current light industrial activities involve things such as warehousing and light manufacturing. Attempts to attract high-technology industries to Hawaii might eventually result in the expansion attracting information-processing industries.

Private Recreation: The private recreational facility for Expansion residents would be similar to that at New Town, probably including facilities for swimming and active sports such as tennis. Current Village Park residents could join for a monthly fee. The site may include other community facilities, such as a meeting place and child care.

Public Parks: Three potential sites are shown in Figure 2. The 5.5-acre site in the southeastern corner represents a recent change in the developer's plans (which originally had no park in this area) made in response to community concerns. This matter will be further discussed in Sections V and VI of this report.

Strata: As in the current Village Park, the major street would be a loop extending throughout much of the Expansion. The proposed plan shown in Figure 2 would also include two additional streets providing an internal connection between the Expansion and the original Village Park project.

Estimated Development Schedule: The Expansion market analysis anticipates that all market units can be built in seven years, which are tentatively targeted as 1988 through 1994 (Brooks and Taposoky, 1985, pp. 8 ff.). Because of current low inflation and interest rates, and because the number of competitor developments in the area is projected to drop in the late 1980's (although others will come on line around 1993), it is expected that sales and construction will be somewhat more brisk in the early years. Their projected schedule calls for development of 500 units the first year, gradually declining to 350 units in the seventh year.

Development during the first two years will be primarily in the less expensive three categories — "traditional single-family," "starter homes," and "attached." The bulk of the "prime" and "upgraded" homes would be developed in the next three years, with the emphasis again shifting back to less expensive units in the final two years.
**C. Community Overview**

The remainder of this Section I provides a general, qualitative overview of communities potentially affected by the expansion development. Detailed U.S. Census data and other quantitative information will follow in Sections II, III, and IV.

"Affected communities" exist at several levels: (1) Oahu as a whole; (2) the Central Oahu and Ewa Development Plan Areas; (3) Waipahu town (below the freeway); (4) newer Waipahu area communities existing or planned for south of the freeway and base referred to as the "Mauka Communities"; (5) existing Village Park (which is one of the "Mauka Communities," but is felt to merit separate attention in a socio-economic assessment of the proposed Village Park Expansion).

1. Oahu

Oahu is the state's third largest island in terms of land area (379,128 acres), but it is Hawaii's population and economic center. Honolulu, Oahu's largest city, is the state's capital. Nearly 80 percent of Hawaii's population resides on Oahu. According to the 1980 U.S. Census report, the island was home to 762,514 persons, including military personnel.

The island's economy has been growing increasingly dependent on tourism. The visitor industry is primarily concentrated in Waikiki, although rural resorts have also been started or approved for, the Turtle Bay (Kuilima) area on the North Shore, the Beach in the Ewa area, and Makaha on the Maukai Coast of Oahu. Military activities represent a second and fairly stable economic base, while a third -- pineapple agriculture -- has been undergoing decline. There are now only two sugar and two pineapple plantations operating on the island, and both sugar operations are cutting back workforces and land under cultivation.

Oahu's average income is only slightly above the national norm, but its cost of living is much higher. As of 1981, an "intermediate" budget for a four-person Oahu family was the highest of 35 urban areas surveyed, and 26 percent greater than the corresponding average for all urban American communities (Hawaii State Department of Planning and Economic Development, 1985a, p. 421). Housing costs are among the highest in the nation. The average price of a single-family home on Oahu in 1983 was $169,000 (ibid., p. 610).

A single countywide government -- the City and County of Honolulu -- governs both Oahu and the tiny Northwestern Hawaiian Islands (1980 population of 31, mostly military). Although Oahu was historically subdivided for statistical purposes into three districts (which formed the basis for the U.S. Census divisions), the City and County has recently divided the island into eight "development planning areas" for purposes of land use control. In an attempt to exercise control over the future direction of growth, the City's General Plan and supporting area-specific Development Plans stipulate population guidelines for each Development Plan Area. These represent specified approximate percentages of the estimated population for the years 2000 and 2005.

2. Central Oahu and Ewa Development Plan Areas

The broad regional level of analysis for this report will be Development Plan Areas rather than judicial districts. This is because the judicial districts within which the project is located (Ewa District) do not contain such a diversity of communities and economic activities that a somewhat finer focus seems appropriate.

The existing Village Park and the proposed expansion are located in the southwestern portion of the Central Oahu Development Plan (D.P.) Area, on the boundary between Central Oahu and the Ewa D.P. Area (see Figure 1). Therefore, while the Central Oahu area will receive primary attention in this report during discussion of regional impact, some attention will also be given the Ewa area.

Central Oahu, as the name suggests, encompasses the island's central plain, between the Ko'olau and Koolau mountain ranges. Its northern boundary falls in the agricultural area between the towns of Waialua (in Central Oahu) and Makaha (on the west side of the Island) with the town of Waialua (in Central Oahu) and Makaha (by the coast of the North Shore D.P. Area). The Central Oahu area extends to Pearl Harbor at its southern boundary.

The population growth rate for Central Oahu was the highest on the Island from 1970 to 1980, as the population grew 52.4 percent over ten years to its 1980 level of 100,953 (about 13 percent of the islandwide population). Five major communities in Central Oahu, moving north to south, are:

- Waialua (1980 population 16,911), with an economy based on the nearby pineapple fields and on several surrounding military installations -- the largest of which is the Army's Schofield Barracks (with a separate 1980 population of 16,035).
- Wahiawa (1980 population 21,365), now primarily a bedroom community with a rapidly-growing population, but also slated to become an employment center with the future development of the DOE technology Industrial Park.
- Waipahu (1980 population 29,139), historically a sugar plantation community but increasingly a bedroom community for workers employed at Pearl Harbor and in the Honolulu area. Waipahu will be described in more detail shortly.

Much of Central Oahu's land is in agricultural use -- pineapple to the north and a smaller expanse of sugar land in the south.
The remaining and larger portion of the Oahu Sugar Company plantation is in the Ewa O.P. area to the west. Ewa historically has been among the island's most productive agricultural areas, and its economy in this century has centered primarily on sugar and military activities (particularly at Pearl Harbor and the Barber Point Naval Air Station).

Ewa's population also grew at a rapid rate (50.4 percent) from 1970 to 1980, although its 1980 population was still comparatively light at 65,238 -- slightly more than one-third the population of Central Oahu.

Existing Ewa population centers include (1) Ewa Beach (1980 population 14,369), which is beside Pearl Harbor and is largely military-oriented in its economy, and (2) Makakilo (1980 population 7,492) to the west, which -- like Mililani in Central Oahu -- is a still-developing residential community. The Camp-Bell Industrial Park in the area's southwestern corner is Oahu's principal industrial site outside Honolulu and the site of several refineries.

However, substantial new population and economic growth is slated for Ewa, which is designated in the City's General Plan as Oahu's 'secondary urban center.' The Estate of James Campbell -- the area's principal landowner -- has submitted a proposed master plan for governmental approval which envisions:

- a resort development at Maili Beach (already approved at the Development Plan and State Land Use level);
- a commercial/residential "City Center" below Makakilo (still in the proposal stage);
- an expanded industrial area (mostly still) in the proposal stage near the current industrial park and also near Barber Point Harbor, which the State is now constructing to serve as Oahu's second major civilian harbor;
- several expanded residential areas north of the freeway and on either side of Makakilo (proposed stage);
- two new residential communities to the west and northwest of Ewa Beach -- Ewa Marina and the "Ewa Plantaion" development (approved);
- various other (proposed) residential infill areas -- e.g., between Ewa Marina and "Ewa Plantation," between "Ewa Plantation" and the City Center, and an expansion of Waipahu into Ewa in the Honolulu area.

3. Waipahu Town

Waipahu -- approximately 14 miles west of Honolulu -- is the closest major community to the project site. Waipahu town is
just below the freeway from the current Village Park. Several
other Waipahu-area developments exist or are being planned above
the freeway, and in the perception of some residents these are
also "part of Waipahu." However, they are not included in the
U.S. Census Bureau's definition of Waipahu (Figure 4) and they
have or are likely to have some socio-economic characteristics
distinguishing them from Waipahu. Therefore, they will be dis-
cussed separately in the following sub-section.

In early Hawaiian times, the name "Waipahu" (or "gushing
water") applied only to a famous spring in the area, but in the
mid-1800's the name was given to three small parcels of land and
gradually was extended to a general area and then to the town
which developed. Modern Waipahu is located in the lower portions
of three old Hawaiian ahupua'a — Waipo, Wailea, and Noanu
(the westernmost area, in which Village Park is located). It is
believed that several fishing villages and numerous fishponds
were once located in the area, which was also well-suited for
wet-land farming of such Hawaiian staples as taro (Beecher,
1974, pp. 1-2).

In the late 1800's, the Waipahu area was a thriving
agricultural community of small independent farmers, both
Hawaiians growing taro and Chinese immigrants growing rice for
several local rice mills. However, the region was dramatically
transformed when three Hawaii business pioneers — Benjamin Dil-
lingham, James Campbell, and Paul Issenberg — made unique
contributions leading to the creation of the Oahu Sugar Company
in 1897 (Nedmak, 1984, pp. 8-14).

Campbell had purchased 40,000 acres of arable land in the Ewa
plain, and his successful experiments with artesian well
production took large-scale sugar production a possibility in
both Ewa and the Waipahu area. Dillingham established a railroad
from Honolulu to Ewa and Oahu in order to facilitate shipment of
agricultural products, and he subsequently worked with Campbell
to consolidate sufficiently large parcels of land to create the
Oahu Sugar Company. Issenberg, head of B. Mackeld and Company
(predecessor to Amfac), provided much of the capital through
Mackeld and Company, and he became Oahu Sugar Company's first
president.

The company's mill site and office headquarters were
officially designated "Waipahu," and this became the name of the
town which gradually grew up around the mill. For much of the
20th Century, Waipahu's economic and social structures were
linked almost exclusively with the plantation and its function-
log. Waipahu schools and community facilities were owned by
plantation managers such as August Abreu and Peter L'Orange.
Major commercial operations were started by former plantation
workers, such as Teruha Ariake, and relied on other plantation
workers as customers. Oahu Sugar Company provided housing, day
cares, and other social services under the paternalistic system of
the day.
The socio-economic changes occurring in Hawaii after World War II particularly affected sugar communities such as Waipahu. Union influence expanded greatly. Oahu Sugar Company entered a period of housing development for sale to employees which began in the 1940's and extended into the 1970's, allowing workers to purchase houses for less than ten cents a square foot (Masao "Cranky" Watashie, Interviewed by Tanji, 1984, p. 150).

Private developers and government agencies also created housing subdivisions in Waipahu, and the population spurted, particularly in the 1960's. Waipahu residents numbered 7,169 in 1950, 8,353 in 1960, and 22,798 in 1970.

In the 1970's, Hawaii's sugar industry entered a period of serious economic struggle, and Oahu Sugar Company has been gradually cutting back its workforce and taking marginal lands out of production. Much of the new population has had no direct job link with the plantation. Small commercial activities -- mostly strip development along Farrington Highway -- now provide a substantial portion of Waipahu jobs.

As previously noted, Waipahu's population increased to 29,139 in 1980. The population increase of the 1970's was accompanied by several socio-economic transformations. These will be discussed in greater quantitive detail in section II. Briefly, however, both Census information and resident interviews conducted for this report indicate that grown children of "old-time" Oriental, Hawaiian, and Filipino families (who are likely to have links with Waipahu's sugar-dominated past) have tended to move away from the community, as have some of the more successful older business leaders. The new population, particularly in the younger age brackets, is proportionately more lower-income and/or recent immigrant in character.

Dominant immigrant groups are Samoan and, particularly, Filipino. More than 40 percent of Waipahu's population is now Filipino, and approximately ten percent of Waipahu's public school students are "limited English speakers" (unpublished Hawaii State Department of Education data, provided by Consuelo Pablo, Title VII Bilingual Education Technical Assistance Coordinator, personal communication, July 22, 1984).

According to community leaders interviewed for this report, as well as scholarly studies of recent Filipino immigrant (Binggeli and Eckenwalder, 1977; Cass, 1985), housing costs represent one of the most serious problems faced by immigrant families. The solution frequently is to buy an older home on a large lot; add to the house and divide the expanded house into several units; and either rent part of the house or share the mortgage costs with other members of an extended family. While some of Waipahu's earlier residents are now "moving up" to new housing outside Waipahu, recent immigrant Filipinos are "moving up" from rental housing in urban Honolulu to fee-simple homes in Waipahu. A recent survey of Ilocano immigrants found that homeownership is much higher in Waipahu (60 percent) than in lower Kalani (33 percent) or upper Kalani (23 percent) (East-West Population Institute and Operation Manoa, 1985, p. 51).

Although their memberships are still primarily composed of longtime residents rather than a mix of older and newer residents, Waipahu community organizations are among the most dedicated and active on the island. Two issues which have consumed much of Waipahu's community planning energy in recent years have been (1) preservation of Waipahu's historical plantation legacy, and (2) revitalization of the somewhat deteriorating commercial areas of the town.

A planned 50-acre cultural park -- "Plantation Village" -- in the heart of Waipahu will hopefully preserve the town's plantation heritage through construction of plantation homes, upfitting the various ahau "camps," a museum, an amphitheater, a Japanese shrine transported from Molokai, and other historic attractions. The long-term plan envisions a "living museum" in which plantation worker descendants will serve as guides for those who pay admission to see the park. The nonprofit Friends of Waipahu Cultural Garden Park have been working with the City and County Parks Department since 1973, and a few of the planned elements are now in place.

The "Waipahu 2000" (i.e., year 2000) Community Master Plan is a more recent and even more comprehensive planning effort to combine historical preservation and revitalization of the business areas. Hafac provided consultant resources to a citizens committee in conjunction with the company's planning and community involvement program for its own Waikiki development above Waipahu. The final plan (Haber, Haestert, Van Horn, and Simur, 1984) proposes a number of steps, many of which will require government funding to become reality. These include visual improvements to business areas, alternate sites for a new Waipahu Civic Center/Library, traffic circulation improvements, and the downtown "heritage district" encompassing the Cultural Garden Park, the Oahu Sugar Company mill, Hana L'Orange Park, and the old town core facing on Waipahu Street and Depot Road.

In some respects, Waipahu today is a community facing the prospect of a new retail decline and deterioration. This has prompted some longtime residents to move away for to encourage their children to leave while it has challenged others to plan ways to reverse the apparent trend. Waipahu's future will be determined in part by the community's success in finding public and private resources to implement these plans.

4. "Mauka Communities" (Creaview, Waipio, Waitele, and Mailia)

Figure 4 shows the location of various new existing or contemplated residential areas mauna of the H-1 Freeway. These will be collectively referred to as the "Mauka Communities" for purposes of this report. Moving from east to west, these include Mailia, Creaview, Waipio, Waitele, and Village Park. The existing Village Park community will be described separately in the immediately following sub-section, and so this discussion will focus only on the first four areas.
Crestrview is the only existing and completed "Mauna Community." Developed about 20 years ago, it actually consists of two subdivisions, Belair (immediately above the highway) and Crestview (above Belair). However, Waipahu-area residents often refer to the combined area as "Crestrview," and this simpler designation will be used throughout the remainder of the report. No official number of Crestrview housing units could be located, landowner-estimated 500 units (personal communication, Mildred Centeno, August 19, 1985). The character of the neighborhood resembles that of many areas below the freeway in Waipahu itself — one to moderate income, "local" community, and family-oriented social environment. Of all the "Mauna Communities," Crestrview is most often considered "part of Waipahu."

Walipio is an existing but still-developing community immediately above Crestrview. Like Crestrview, it is sandwiched between the H-2 Freeway and the older Kapolei Highway. Walipio has been developed by the Gentry Companies and is often referred to as "Gentry-Walipio" or "Walipio-Gentry." Begun in 1978 and scheduled for completion by 1987, the community now features 1,419 single-family units (with 75 more to be constructed); 384 multi-family units (with 315 more to be constructed by Gentry and 132 more by another developer); a neighborhood commercial area; and approximately 40 acres of light industrial (to be built out to its 120-acre capacity in an estimated five-year time). (Information provided by developer representative Yosh Nomoto, personal communication, August 6, 1985.) Many of the single-family homes are "patio units" — high-quality houses with very small yards. These currently range from $30,000 to $165,000, above the Village Park units on average. Residents tend to have higher incomes than Waipahu residents and differ on other socioeconomic dimensions as well. While neighborhood Walipio is "part of Waipahu," the Waipahu residents interviewed for this report tended to see Waipio as having ties with Waipahu.

Waikalea is a proposed and approved (at least at the Development Plan level) future community. It is an Ahaac project on former Oahu Sugar Company lands judged marginally productive and withdrawn from sugar cane use. The Waikalea proposal has enjoyed wide community support in Waipahu, at least in some part due to Ahaac's statements that revenues from the development will help subsidize the Oahu Sugar Company. A commercial center and "office park" will be at the lower base of the project, along the H-1 freeway. This would be surrounded by a 16-hole golf course, with residential development (810 single-family and 1,250 multi-family units) located primarily along the northeastern and northwestern boundaries of the rough area. The estimated final residential population of 6,100 will, according to Ahaac market projections, all be in place eight years after construction begins in the late 1980's. The commercial center and office park are estimated to be used by 2,500 jobs. The per cent of the housing units are to be affordable to the middle-income market, and another ten percent would be subsidized housing. Waipahu residents expect Waikalea will be "part of Waipahu," in part because of their input. In part because of the time with Ahaac and Oahu Sugar Company, and in part because the Waikane master plan calls for a road connection over the freeway into Waipahu. Waikalea would also have road connections over Kapolei Highway into Crestrview, but it would remain separated from both the existing Village Park and the proposed expansion by Waikala Gulch.

Vailawa is a proposal only as of this time. It is located on Hinsap Estate lands above the eastern end of Waipahu and on the eastern side of the H-2 Freeway. If approved in its entirety, it would be the largest of the "Mauna Communities." Its 2.282 acres would require 20 to 30 years for build-out, at which time it would have an estimated population of 31,400 people and provide 6,000 jobs in its proposed commercial and business park areas, to be located at the foot of the project just northeast of the H-1/H-2 interchange. The residential component would consist of about 4,000 multi-family and 7,000 single-family units; the latter would average $150,000 selling price, suggesting a quality and character comparable to the Waipio development. The proposed project had not been widely discussed among persons interviewed for this report, and it is difficult to say whether it will be regarded as "part of Waipahu." The Vailawa area is outside the current boundaries for the Waipahu Neighborhood Board (falling instead in the Pearl City Neighborhood Board area), but it is still physically closer to Waipahu than to Pearl City.

3. Existing Village Park

Waikiki Development Company's current Village Park development was originally conceived to be primarily a townhouse community, with a mix of townhouses and condominiums. The plan was revised to market the development on a single-family housing base. The revised plan was approved in 1983, and the development is now under construction. The site consists of 310 acres of rolling farmland, and in addition to the residential development, there are commercial and office space to be added at a later date. The population is estimated to be 3,300 people, with a total of 1,200 units (including 120 townhouses) having been completed and occupied. The project has seen moderate sales success, and the price range is expected to increase significantly over the next few years. The Village Park community is located adjacent to the Hawaii State University campus, providing easy access to educational and cultural facilities. The community is well-served by public transportation, with buses running directly to the university and other major urban centers. The Village Park community is a popular destination for students and young professionals, offering a convenient and affordable living option in a vibrant and dynamic urban environment. The project is managed by Waikiki Development Company, a well-established and experienced developer in the Hawaii real estate market. The company has a proven track record of successful development and has demonstrated a commitment to maintaining high-quality standards in their projects. The Village Park community is a testament to the company's dedication to creating attractive and functional living spaces that meet the needs of its residents. The community is well-equipped with amenities, including a community center, swimming pool, and playgrounds. The surrounding area is rich in natural beauty, with parks and recreation areas providing opportunities for outdoor activities. Overall, Village Park is a thriving and vibrant community that offers an excellent quality of life for its residents.
the budgetary resources to develop the park, Wai-te Development is funding the facility construction itself, in exchange for permission to develop the 5.2-acre site originally marked for a second park. (The City agreed to delete the second park-site requirement because the final Village Park density was lower than first planned, resulting in a lower population and less need for park space.)

Recent single-family unit selling prices in Village Park have averaged about $113,000, lower than in Waipio and most other developments in the area. Village Park units are thus oriented to the lower-to-middle portions of the market. Buyers have tended to be young local families, usually first-time home purchasers.

Each homebuyer becomes a member of the Village Park Community Association, which is governed by a Board of Directors elected by the membership. The Board to date has directed much of its energy into efforts to forge a sense of community identity through social events and a periodic newsletter.

Waipahu residents interviewed for this report had mixed perceptions as to whether Village Park is currently a "part of Waipahu," as did the Village Park residents themselves. Village Park public school students are currently bussed to Crestview or Pearl City, and several informants said shopping is more convenient in Pearl City or Honolulu. Few Village Park residents are employed by Oahu Sugar Company.
II. POPULATION

This section examines current and projected future situations pertaining to the population level and composition in areas affected by the proposed Village Park Expansion. The first part of the section addresses present trends and levels, while the second major sub-section describes likely impacts related to the expansion -- particularly on growth percentage and on the demographic characteristics of affected areas.

The "Nanakula Communities" (other than Village Park itself) will be discussed in this section in conjunction with the larger neighbor community of Waikele. However, planned future aspects of these communities must also be considered in analysis of regional and islandwide population levels.

A. Existing Situation

Table 1 indicates selected 1970 and 1980 U.S. Census data for the State of Hawaii, the City and County of Honolulu, the Kaa and Central Development Plan Areas, and Waikele town. The Census Bureau, which means that Village Park and the Kaa and Central Development Plan Areas are excluded.

For the two Development Plan Areas (Kaa and Central Oahu), total population figures may differ slightly from those available from the City and County's Department of Planning. The small geographical area is because the small pineapple plantation town of Waimanalo (1980 population of 2,926) is not included.

1. City and County of Honolulu (Oahu)

State researchers have estimated the City and County's population at 805,264 as of July 1, 1984 (Hawaii State Department of Planning and Economic Development, 1985b, Table 11).

As shown in Table 1, actual U.S. Census counts totaled 630,928 in 1970 and 762,565 in 1980. (Of the latter figure, 31 percent were military-related personnel on the Northeastern Hawaiian Islands, and all the remainder were Oahu residents.)

Oahu's share of the statewide population declined from 81 percent in 1950 to 79 percent in 1980, making the 1970s the first decade in the Twentieth Century to witness a slower growth rate on Oahu than the collective Neighbor Islands.

More than half of Oahu's 1980 population lived in the Primary Urban Center D.P. Area extending from Kahaluu to Pearl City.
About 12 percent lived in the Central Oahu D.P. Area, and five percent in the Ewa D.P. Area.

The following paragraphs discuss some of the highlights of Tables 1-a to 1-c in terms of Oahu's demographic composition:

Ethnicity, Age, Mobility, and Education: Oahu's two largest ethnic groups -- Caucasians and Japanese -- are found in the same proportions as they may be observed on a statewide basis. The population of both these groups has been growing more slowly than that of other groups, resulting in diminished percentages of overall population from 1970 to 1980. (It should be noted that Census ethnicity reporting procedures changed from 1970 to 1980, accounting for some of the apparent sharp decline in the Caucasian percentage seen in Table 1-a.) The three next largest groups -- Filipinos, Hawaiians/part-Hawaiians, and mixed or "Other" -- now comprise the fastest growing sub-populations.

Oahu's population has been growing older on average (median age in 1980 vs. 24.6 years in 1970), but still remains younger than the state's population.

About 55 percent of Oahu's population was Hawaiian-born as of 1980; of the remainder, two-thirds were born elsewhere in the United States, and one-third were born in a foreign country. One-fourth of the population had been living elsewhere (primarily on the Mainland) five years previously.

As is the case statewide, Oahu's population has been growing much more educated on average. More than one out of five persons was a college graduate in 1980.

Family Composition and Income Levels: About 66 percent of Oahu's population lived in family-household situations in 1980. Of these, 15 percent were headed by a single parent (up from 13.5 percent in 1970), and 59 percent of children under 18 (down from 63.5 percent in 1970). The median family income was a little over $27,000, and 7.5 percent of Oahu's families fell below the poverty line. This profile closely matched statewide figures, although Oahu had a slightly higher proportion of single persons in 1980.

Labor Force Characteristics: As is the case statewide, Oahu's labor force participation rate has been increasing. (Including military, it was 66 percent in 1980, vs. 63 percent in 1970.) The 1980 Census unemployment figure was 4.6 percent, while unpublished estimates of the State Department of Labor and 29, 1985) peg the average statewide unemployment rate at 5.3 percent for 1984 and 5.2 percent for June 1985, the most recent month for which figures were available. Table 1-a shows a marked shift from 1970 to 1980 toward service-related occupations and industries (and away from manufacturing and agriculture), a trend which has contributed to concern on the part of some economists that there is inadequate growth in better-paying jobs and that unemployment figures may not include out-migration due to poor job opportunities (e.g., Bank of Hawaii, 1985).

2. Region (Central Oahu and Ewa D.P. Areas)

The Ewa and Central Oahu Development Plan Areas were the fastest growing parts of Oahu during the 1970's. As shown in Table 1-a, total population increased by about 50 percent in each area. For average annualized growth rates, Table 1-b shows rates of 4.17 percent in Ewa and 4.31 percent in Central Oahu.

According to the City Department of General Planning's unpublished estimates (personal communication, B. Miller, August 1985), population as of June 30, 1986 was 56,046 for the Ewa Development Plan Area and 114,826 for Central Oahu. This implies a slight drop in Central Oahu's average annualized growth rate (to 3.17 percent for the 1980 - 1984 period) and an essential halt to new construction in Ewa during the first part of the 1980's. Both reflect Oahu's overall construction slowdown in the early 1980's.

In regard to demographic characteristics of the population, the following paragraphs point out highlights of Tables 1-a to 1-c:

Ethnicity, Age, Mobility, and Education: Compared to Oahu as a whole, Ewa's population was proportionately more Caucasian and Filipino, less Japanese and Chinese. Central Oahu's population was a somewhat closer match to the islandwide figures, although still with more Filipinos and also with proportionately fewer Hawaiians and Chinese.

Both areas grew older on average from 1970 to 1980, but both still feature a much higher proportion of children and a smaller proportion of senior citizens than Oahu as a whole. This is borne out by the higher proportion of Ewa and Central Oahu residents living in family situations (see following discussion on "Family Composition and Income Levels").

Compared to the island as a whole, Ewa and Central Oahu residents in 1980 were much more likely to have been Mainland-born and/or to have moved from the Mainland in the past five years. The influence of the military population is particularly visible in these figures.

Residents of Central Oahu and, particularly, Ewa were less likely than other Oahu residents to have graduated from college.

Family Composition and Income Levels: Residents of Central Oahu and, particularly, Ewa were more likely than other Oahu residents to be living in family-household situations, and these families were more likely to include children at home under age 18. These families were also more likely than other Oahu
families to have both a husband and wife present, although there was a substantial increase in the percentage of Okinawa families (with or without children) to be headed by a single female. In both areas, median 1980 family income lagged behind the islandwide median.

Labor Force Characteristics. The 1980 civilian labor force unemployment rate was substantially higher in Okinawa (6.0 percent), and Okinawa (8.0 percent) than in islandwide (6.6 percent). The Okinawa civilian labor force participation rate was lower in both Okinawa (62.1 percent) and Okinawa (65.7 percent) than islandwide (66.9 percent). Okinawa residents were less likely than other job seekers, although they were more likely to report working in the agricultural (particularly in mainland), construction, or manufacturing industries.

3. Waipahu and "Mauna Communities"

In addition to the figures for Waipahu in Tables 1 and 2, Table 2 on the following pages contains a more detailed set of data for the combined Waipahu-Gentry developments (along with similar data for Village Park as of 1980). It should be noted that the value of these data are somewhat limited because (1) the available data sources include a few rural houses outside either Waipahu or Gentry, and (2) the data do not permit separate analysis of Waipahu and Gentry, even though these two very distinct and different communities. (Based on available information from the City's Department of General Planning about the number of occupied houses in Waipahu as of 1980, it would appear that 51.1 percent of the 3,872 "Waipahu Village/Waipahu" residents analyzed in Table 2 were actually Waipahu residents; 43.3 percent, Gentry residents; and 6.6 percent, other area residents.)

The other two "Mauna Communities" -- Waiale and Waialua -- are not considered here, since no development has yet occurred in these areas.

Waipahu's population grew from 24,150 in 1970 to 29,143 in 1980 -- a 20.6 percent increase, closely matching the islandwide ten-year population increase of 22.6 percent. The Department of General Planning's estimated 1984 Waipahu population (as of 1980) was just 29,200, implying no growth since 1980. (It should be noted that the number of occupied houses in Waipahu, rather than building new ones. The resulting population change was 9,890 (including a few rural houses outside either community). Since the Waipahu

Table 2

Selected 1980 Census Data for Village Park and Gentry/Waipahu

<table>
<thead>
<tr>
<th></th>
<th>VILLAGE PARK</th>
<th>CRESTVIEW/WAIPU</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL POPULATION</td>
<td>418</td>
<td>3,872</td>
</tr>
<tr>
<td>ETHNICITY  (selected)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>11.7</td>
<td>30.0</td>
</tr>
<tr>
<td>Japanese</td>
<td>9.4</td>
<td>27.2</td>
</tr>
<tr>
<td>Filipino</td>
<td>24.4</td>
<td>15.1</td>
</tr>
<tr>
<td>Hawaiian</td>
<td>24.4</td>
<td>9.1</td>
</tr>
<tr>
<td>AGE  (selected)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 17</td>
<td>37.3</td>
<td>33.9</td>
</tr>
<tr>
<td>18 or over</td>
<td>62.7</td>
<td>66.1</td>
</tr>
<tr>
<td>PLACE OF BIRTH  (selected)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hawaii</td>
<td>80.7</td>
<td>65.3</td>
</tr>
<tr>
<td>Foreign Country</td>
<td>19.3</td>
<td>34.7</td>
</tr>
<tr>
<td>RESIDENCE 5 YRS PREVIOUS (selected)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Same house</td>
<td>18.6</td>
<td>33.9</td>
</tr>
<tr>
<td>Same State</td>
<td>53.0</td>
<td>31.0</td>
</tr>
<tr>
<td>Different State</td>
<td>6.0</td>
<td>12.0</td>
</tr>
<tr>
<td>Different Country</td>
<td>0.0</td>
<td>27</td>
</tr>
<tr>
<td>EDUCATION  (selected)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 8</td>
<td>8.7</td>
<td>9.2</td>
</tr>
<tr>
<td>8 or over</td>
<td>91.3</td>
<td>90.8</td>
</tr>
<tr>
<td>POPULATION  IN FAMILIES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,000 or more</td>
<td>98.1%</td>
<td>95.9%</td>
</tr>
<tr>
<td>NUMBER OF FAMILIES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,000 or more</td>
<td>242</td>
<td>961</td>
</tr>
<tr>
<td>HEADS, Husband/Wife</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single or None</td>
<td>92.9</td>
<td>93.6</td>
</tr>
<tr>
<td>With Own Children Under 18</td>
<td>74.3</td>
<td>64.5</td>
</tr>
<tr>
<td>Below Poverty Level</td>
<td>4.2</td>
<td>0.9</td>
</tr>
<tr>
<td>POTENTIAL CIVILIAN LABOR FORCE (aged 16 and over, excludes military)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In Civilian Labor Force</td>
<td>93.4</td>
<td>77.7</td>
</tr>
<tr>
<td>Civilian Unemployed</td>
<td>1.6</td>
<td>3.4</td>
</tr>
</tbody>
</table>

Notes: Some figures based on 10% sample and are estimates. Data may include a few rural houses outside labeled areas. Sources: U.S. Bureau of the Census, 1980 Summary Tape Files.
population may be assumed to be still approximately what it was in 1980 -- about 1,600 -- this means that the rapidly expanding Waipahu Gentry area has become home to approximately 8,000 residents as of 1984.

**Demographically, Tables 1-a to 1-c and Table 2 lead to the following conclusions:**

**Ethnicity, Age, Mobility, and Education:** With the pattern of Filipino immigration and household expansion discussed in section I, Waipahu's Filipino plurality grew from 33 percent of its 1970 population to 41 percent of its 1980 population. The Cretview/Waipio area was much less heavily Filipino (15 percent) in 1980 and much more Caucasian and Japanese (combined 57 percent) compared to Waipahu's combined 35 percent. The latter two groups' proportionate share of the Waipahu population dropped sharply from 1970 to 1980.

The Waipahu median age (24.5 years) was more than 1.5 years less than the Oahu median in 1980, largely due to the high proportion of children in the population. In both Waipahu and Cretview/Waipio, 36 percent of the population consisted of children under 18, compared to 28 percent islandwide.

Reflecting the pattern of Filipino immigration, both Waipahu and Cretview/Waipio residents were much more likely to have been born in a foreign country. However, Cretview/Waipio residents were generally more likely to have been raised in the United States and more likely to have been raised in the United States as a whole. This reflects the proportionately low Caucasian population, residents of these communities were less likely to have been U.S.-born and more likely to have been born in a foreign country. (However, Cretview/Waipio residents were the most likely to have been born in a foreign country.)

Cretview/Waipio residents were also less likely to have been born in another state or country than in any other state or country.

Waipahu residents on average had much less formal education than other Oahu residents, but Cretview/Waipio residents' educational levels appeared slightly higher than islandwide averages as of 1980.

**Family Composition and Income:** Waipahu's family composition and income profiles differ sharply from those of Cretview/Waipio, Central Oahu as a whole, or the island in general. Proportionately more of Waipahu's population is in families, but proportionately fewer of these families include children under 18. Given the large percentage of Waipahu's population under 18, this suggests that Waipahu's families tend to be divided into older “empty-nest” couples vs. younger families with many children. Interviews with community informants led to the same conclusion, and also to reports that the older families tend to be Oriental and the younger, larger families tend to be Filipino or Poly-nesian.

Waipahu has a particularly high proportion of families headed by females only and with children under 18 at home -- 14.4 percent (vs. 7.7 percent in Central Oahu as a whole and 8.9 percent islandwide). A similar 14.4 percent of Waipahu's families fell below the poverty line in 1980, greatly increased from the 1970 mark of 7.5 percent. According to the U.S. Census Bureau's Neighborhood Statistics Program (1983) analysis of data for Oahu's 33 Neighborhood Board areas, the Waipahu Neighborhood Board area (including Village Park and Cretview/Waipio) had the third highest mean public assistance income figure on Oahu -- $4,010. And according to a researcher for the State Department of Social Services and Housing (personal communication, R. Yang, July 25, 1985), most state welfare payments in Waipahu are under the aid to families with dependent children program. This suggests that Waipahu's family poverty problems are closely linked with the number of families in smaller families there.

Income figures for Cretview/Waipio have not been reproduced in Table 2 because it would be particularly misleading to present combined income figures for these two areas. Given the quality of the houses and the impressions of community informants, however, it is safe to speculate that Waipahu-Gentry residents probably have the highest average income in the Waipahu area.

**Labor Force Characteristics:** When military population is disregarded, Waipahu had a civilian labor force participation rate slightly lower (64.5 percent) than the islandwide rate (65.7 percent), while Cretview/Waipio had a much higher rate (77.7 percent). Also illustrating an employment disparity between Waipahu and its neighboring West Oahu communities were their respective unemployment rates -- 6.4 percent for Waipahu (higher than the islandwide rate) and 3.4 percent for Cretview/Waipio (lower than the islandwide average of 4.6 percent). Waipahu's occupation and industry worker profile was heavily blue-collar, generally matching the area's area profile more closely than that of Waipahu as a whole.

**Place of Work:** Unpublished 1980 Census printouts available at the Hawaii State Department of Transportation (Urban Transportation Planning Package, 1982) list 12,373 Waipahu workers (including military and self-employed) employed on the island of Oahu. Employment destinations for these workers were as follows:

| Honolulu area | 52.0% |
| Pearl Harbor/Ala Moana | 16.3% |
| Waipahu | 10.5% |
| Central Oahu | 7.3% |
| Ewa | 5.6% |
| Waianae | 0.9% |
| Windward | 0.7% |
| North Shore | 0.0% |
4. Village Park

As of early August 1985, 636 Village Park units were occupied, according to the property management firm for the project (personal communication, C. Reinecke, Chaney Brooks and Company, August 6, 1985).

As of the 1980 Census, the average number of persons per household in Village Park was 3.60. Assuming this average still holds for 1985, the estimated Village Park population at this time would be 3,010 persons.

Table 2 on the preceding pages provides selected 1980 Census data for Village Park, as well as Creative/Waipio. It should be noted that the population at that time was only 116 persons in 31 units, or 4% percent of the current figure. Thus, these 1980 percentages may be even more outdated than those for other study area communities.

Table 2 on the following pages provides selected data (most of which are not strictly compatible with Census categories) on recent Village Park housing units (i.e., in the period from March 1984 through March 1985). This information differs from a prior file of all residents not only in time frame but also in that (1) only buyers are described, not entire families or households; (2) for rental units only the percent of total 1980 units, but not entire ownership; and (3) data apply to original purchasers, and Chaney Brooks and Co., reports an average of about five units for each month (personal communication, C. Reinecke, August 7, 1985).

Thus, it is difficult to describe with confidence the current demographic features of the Village Park population. However, given the available evidence the following comments may be made:

Ethnicity: Age, Mobility, and Education: Ethnically, the early (1980) Village Park population more closely matched the Waipahu profile (Table 1a) than the Creative/Waipio profile (Table 2). The dominant ethnic group at that time were Japanese and Filipinos (31.4 percent each), with smaller proportions of Caucasians (11.7 percent) and Hawaiians or part-Hawaiians (6.3 percent).

More like Creative/Waipio, the 1980 Village Park population had a high proportion of children (37 percent—see Table 2). Nearly two-thirds of recent buyers have been under 35 years of age, and the great majority have children (Table 2).

Village Park residents are extremely "local"—i.e., very high proportions are Hawaii-born and/or were living on the islands five years previously as of 1980. More than 80 percent of recent buyers had come from either the Honolulu or the Waipahu-Pearl City area.

---

**Table 3**

<table>
<thead>
<tr>
<th>Residence at Time</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Of Purchase</td>
<td>Under 26</td>
</tr>
<tr>
<td></td>
<td>26-34</td>
</tr>
<tr>
<td></td>
<td>35-44</td>
</tr>
<tr>
<td></td>
<td>45-55</td>
</tr>
<tr>
<td></td>
<td>Over 55</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Family Size</th>
<th>Number Family Incomes</th>
<th>Previous Residence</th>
<th>Previous Housing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional</td>
<td>1 Person</td>
<td>104</td>
<td>Honolulu</td>
<td>First-time home</td>
</tr>
<tr>
<td>Managerial</td>
<td>2 Persons</td>
<td>24</td>
<td>Airport</td>
<td>Buyers</td>
</tr>
<tr>
<td>Trader</td>
<td>3 Persons</td>
<td>22</td>
<td>Pearl City</td>
<td>Formerly owned</td>
</tr>
<tr>
<td>Clerical</td>
<td>4 Persons</td>
<td>42</td>
<td>Waipahu</td>
<td></td>
</tr>
<tr>
<td>Secretary</td>
<td>5 or More persons</td>
<td>12</td>
<td>Central Oahu</td>
<td></td>
</tr>
<tr>
<td>Military</td>
<td>6 or More persons</td>
<td>24</td>
<td>Windward</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>6 or More persons</td>
<td>6</td>
<td>Waianae Coast</td>
<td></td>
</tr>
</tbody>
</table>

**Reasons for Buying in Village Park**

Price 40%
Location 32%
Design 12%
Planned Community 12%
The 1980 Village Park population featured a relatively high proportion (32 percent) of college-educated people. This is probably due to the high proportion of young adults, who tend to be better educated than older adults.

**Family Composition and Income Levels:** As previously noted, recent homebuyer data suggest most Village Park households consist of young families with children. In the 1980 Census, almost 100 percent of the early Village Park residents lived in family situations, and more than nine out of ten were in conventional households with two spouses. Three-quarters of the families had children under 18 living at home.

The 1980 mean family income in Village Park was $33,724—a substantially higher than that for Waipahu, Central Oahu in general, or even the island as a whole (Table 1-9). However, the homebuyer profile of Table 2 shows that this “high” income has generally been based on two or more family incomes for the great majority of Village Park residents. Therefore, Village Park economic status was not necessarily accorded a “higher” socio-economic status.

**Labor Force Characteristics:** The recent homebuyer profile (Table 3) shows that two-thirds were employed in the military. When included in the table, sales and administrative workers are more than one-half the employed civilian labor force engaged in technical, sales, and administrative occupations, and one-third are in managerial/occupational occupations. Industry figures show that construction and the financial services component are the overall picture is of a skilled blue-collar and middle-class labor force.

**Place of Work:** The recent homebuyer profile suggests that about half the Village Park household heads travel to Honolulu (past the Airport area) to work, while most of the rest are employed in the area from the Airport through Central Oahu. It is probable that secondary household wage earners (e.g., spouses) are even more likely to be employed close to Village Park itself.

5. **Homebuyers: Village Park vs. Other Central Oahu Communities**

Other than the sort of Census data given in Table 2—with all its previously discussed shortcomings—no publicly available information exists to provide a contrast between recent purchasers of homes in Village Park and those in the other major Central Oahu developments now selling units (e.g., Mililani). Data sources such as market surveys and sales records are confidential.

However, in the opinion of the developer, Village Park homebuyers represent a somewhat different market from purchasers at Waipahu or Mililani. Village Park homebuyers are more likely to be joint family people with small children; to be Hawaii-born, often with roots in the Waipahu area; to be first-time home purchasers; and to have somewhat lower incomes.

Sales prices are higher on average in Mililani and Waipahu than in Village Park. And it may be noted in Table 3 that the single most important reason for buying in Village Park has been “Price.”

**B. Impacts**

Population impacts will be addressed in the reverse order from the previous discussion of “present situation” — i.e., the Central Oahu and Zoning Development Plans areas third, and Islandwide first.

1. **Village Park**

The existing Village Park community is tentatively scheduled to be built out by the end of 1983, at which time it will consist of approximately 1,800 townhouses and (primarily) single-family units.

Over time, the average Village Park household size may be expected to decline from its 1980 figure of 3.4 persons per unit (e.g., 3.3 Islandwide). This expectation is based both upon children growing up and leaving, and the actual shrinkage in family size as children grow up and leave, starting in the 1980’s. The existing analysis for the proposed new development (Brooks and Zapotocky, 1975, 421) projects that average household size for Oahu will decline to 2.7 persons per unit by the beginning of the 21st Century. If the Village Park average household size remains at 3.4 persons greater than the Islandwide average, then it would be 3.0 persons per unit around the year 2005, resulting in an estimated final Village Park population of 5,400 people.

Brooks and Zapotocky (ibid., p. 21) estimate that the expansion population would be approximately 10,000 persons, implying an average 8.7 persons per unit for all 3,848 units.

Thus, the major population impact for the Village Park area would be a 279 percent increase in size over a seven-year period. The current Village Park area (including the units yet to be occupied) would comprise 26 percent of the total for the two areas combined.

---

**1984 Population**

<table>
<thead>
<tr>
<th>Current Village Park</th>
<th>Proposed New Area</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,600 persons</td>
<td>10,000 persons</td>
<td>15,600 persons</td>
</tr>
</tbody>
</table>
The desirability of such population growth for current Village Park residents is a matter for determination during the public hearing process. However, as will be discussed further in Section V, preliminary Village Park community contacts have yielded little in the way of negative concerns but several definite perceived benefits. There are important amenities which residents have been denied thus far due to an inadequate population base -- e.g., development of commercial facilities and a school -- and residents look forward to obtaining these. Community pride and identity could also be strengthened through the existence of a broader-based community.

Demographically, residents of the Expansion area would be, on average, slightly more affluent than most current residents at the time of their original purchase. However, this conclusion could be tempered by (1) increases in current Village Park residents' incomes due to inflation and increased earning power as residents age; (2) increases in overall average income of current Village Park residents due to appreciation of real estate values and consequent higher incomes among resale purchasers; and (3) the inclusion of government-sponsored low-income rentals in the Expansion project, which would further suggest a greater income spread in the proposed Expansion as compared to the current Village Park area.

Otherwise, single-family home purchasers would be much like present Village Park residents -- young local and/or military families with several incomes making an initial home purchase. Purchasers of townhouses or "starter" units would consist relatively more of older persons and/or childless households. On Oahu, such households are a bit more likely to consist of persons of Japanese or Caucasian background.

These differences are expected to be matters of slight degree. Overall, purchasers of Expansion area units would be basically similar to current Village Park residents -- younger families making first-time home purchases toward the lower/middle end of the market. They would continue to be primarily of "local" origin, many with roots in the Waipahu and Central Oahu area.

2. Waipahu and "Neuka Communities*

*(NOTE: Some of the analyses of population figures both for this discussion of the Waipahu area and for the following discussion of the region -- as well as similar analyses of housing unit numbers in Section III -- were originally conducted in August 1985 based on projects then proposed for Development Plan amendments. In the subsequent City regulatory process, some of these projects received initial denial, followed by complete or partial reinstatements. As of this writing, final City action on all these Oahu and Central Oahu projects is still pending. (Because of the current indeterminant status of the proposed projects, the population and housing analyses have been left unchanged in this revised report.)*

| Existing and Projected Future Populations: Waipahu and "Neuka Communities* Other Than Village Park Expansion |
|---------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|
| **Existing or Approved**                                      | **Calculated**                                                | **Potential**                                                 |
|                                                              | **(1984)**                                                   | **Additional**                                                | **Total Pop.**                                                |
|                                                              | **Capacity**                                                 |                                                              | **(Year 2005)**                                               |
| Waipahu                                                       | 29,300                                                       | 2,200                                                         | 31,500                                                       |
| Current Village Park                                          | 2,400                                                        | 3,200*                                                        | 5,600*                                                       |
| Crestrview/Waipao                                            | 9,800                                                        | 3,200                                                         | 13,000                                                       |
| Waikiki                                                       | 0                                                            | 8,100                                                         | 8,100                                                        |
| (Subtotal)                                                    | 41,500                                                       | 16,700*                                                       | 58,200*                                                      |
| **Additional Proposal**                                       |                                                              |                                                              |
| Waipawa                                                       | 0                                                            | 31,000                                                        | 10,300**                                                     |
| **(Total)**                                                   | 41,500                                                       | 47,700*                                                       | 68,500**                                                     |

* Current Village Park build-out population figures given here is that estimated in the preceding pages. City estimate was only 4,500. Thus, City subtotal and total population figures would also be 700 less than figures above.

** Year 2005 figures for Waipahu assume one-third of total potential population by that year.

Sources: Unpublished data, City Department of General Planning Land Use Files, plus assumptions by Community Resources.
Table 4 provides City Department of General Planning population data for Waipahu and all existing, planned, or proposed communities immediately west of the freeway (excluding the current Expansion proposal). According to these figures, build-out of approved urban-designated land in Waipahu and currently-approved “Haiku Communities” (including the present Village Park development) would lead to a population of 68,200 — presumably by or about the year 2005. The Expansion would increase the Waipahu-area population to 68,200. This would be equivalent to an average annualized growth rate for the 21-year period from 1994 to 2005 of just 1.62 percent without the Expansion or 2.39 percent with the Expansion. By contrast, the 20-year annualized growth rate from 1980 to 1980 for the Waipahu area (including the “Haiku Communities”) was 7.18 percent, and the ten-year annualized rate from 1970 to 1980 was approximately 3.10 percent.

If the proposed Waipawa Ridge development is approved, it would add substantially to the future population (31,000, for a total of 79,200). However, it should be noted that it is actually highly unlikely that this project would be built out by the year 2005. In fact, the estimated timeframe for project completion is currently 25 to 30 years, according to a consultant for the developer (personal communication, William B. Wagon, August 23, 1985). This compares to about ten years for Village Park. For the sake of illustration, Table 4 assumes that one-third the potential Waipawa population might be attained by the year 2005, for a total Waipawa-area population (without the Expansion) of 68,500 that year. With the Expansion, it would be 78,200. These figures would boost the average annualized Waipawa-area population growth rate to 2.42 percent without the Expansion and 3.10 percent with the Expansion — or still slightly under the actual rate for the 1970’s.

Other major implications of Table 4 include:

- By the turn of the century, the three currently approved “Haiku Communities” will contain almost as much population as Waipahu itself. The approval of Waipawa and/or Village Park Expansion will result in more population above the freeway than below.

- The addition of 10,000 people in the Village Park Expansion would represent a 17 percent increase over the population of 56,200 which would be projected for the year 2005 without Waipawa or the Expansion.

- Including the proposed Waipawa population with assumptions for the year 2005, the 10,000 Village Park Expansion residents would represent a 36.4 percent increase over the figure of 68,200 expected without the Expansion.

It should be noted that the population estimates are based on the City's method of calculating existing or potential units and multiplying by given assumed household sizes for various types of units. A major contention of the Brooks and Rapotocky market analysis is that the City's assumed household size averages should be lowered for the future. If this contention proves true, the "calculated additional capacity" figures in Table 4 would be too high.

Demographically, the proposed Village Park Expansion population would be more similar to that of the other "Haiku Communities" than of Waipahu. It is anticipated that Expansion sales prices would remain somewhat below those of the other areas, though, and so the overall Village Park area would probably continue to be a younger, more family-oriented, comparatively more working-class community.

3. Region (Central Oahu and Ewa D.P. Areas)

Tables 5 - 7 provide City Department of General Planning population data for existing, committed, and proposed residential communities in the two Development Plan Areas. Again, these are calculated, in part, according to a methodology about which questions have been raised in the Brooks and Rapotocky report. And, again, certain assumptions have been made about the extent to which proposed additional projects would actually be populated by the year 2005.

Major implications of these tables include the following:

- In Central Oahu, existing or approved projects alone would theoretically produce a population in the year 2005 of 142,400. Brooks and Rapotocky (1985) argue that the actual population for current or approved developments would be less than this because true average household size will not meet the City's assumptions.

- However, assuming the 142,400 population figure is correct, the proposed Village Park Expansion with its 10,000 residents would represent a 7.0 percent increase over the year 2005 population as based on current approvals and excluding the Expansion population.

- For Central Oahu and Ewa combined, the City's projected year 2005 population (existing and current approvals only) is 235,700. The proposed additional 10,000 people would represent a 4.4 percent increase over that number.

- If the other three Central Oahu proposed projects (Waipawa, Millenium Haiku, and Millenium Heights) are all approved, and if they develop to the level assumed in Table 5, then the 10,000-person Village Park Expansion would represent a 5.7 percent increase over the assumed cumulative population of 174,700 without the Expansion.

- For the two areas combined, if all proposed projects are approved and develop to the extent assumed in Tables 5 and 6, the Village Park Expansion would result in a 3.6 percent increase over the assumed cumulative population of 279,700 without the Expansion.
### Table 5

**Existing and Projected Future Populations: Central Oahu Development Plan Area (Excluding Village Park Expansion)**

<table>
<thead>
<tr>
<th>Existing or Approved</th>
<th>Calculated Additional Capacity</th>
<th>Potential Total Pop. (Year 2005)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existing (1984)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wai'ahu/Keaau Communities* (Table 4)</td>
<td>41,500</td>
<td>16,700*</td>
</tr>
<tr>
<td>Millani</td>
<td>23,700</td>
<td>5,900</td>
</tr>
<tr>
<td>Mekalani Woodlands</td>
<td>0</td>
<td>2,200</td>
</tr>
<tr>
<td>Whitemore</td>
<td>3,500</td>
<td>900</td>
</tr>
<tr>
<td>Whitmore Village Expansion</td>
<td>0</td>
<td>1,200</td>
</tr>
<tr>
<td>Wahiawa</td>
<td>17,200</td>
<td>700</td>
</tr>
<tr>
<td>Remainder</td>
<td>28,800</td>
<td>0</td>
</tr>
<tr>
<td><strong>Subtotals</strong></td>
<td>114,800</td>
<td>27,600*</td>
</tr>
</tbody>
</table>

| **Additional Proposals** |   |       |         |
| Wahiawa (Table 4)       | 0 | 31,600| 10,300**|
| Millani Keaau Expansion  | 0 | 20,700| 20,700**|
| Millani Mahai Expansion  | 0 | 1,300 | 1,300** |
| **Subtotals**            | 0 | 53,600| 32,300**|
| **(TOTALS)**             | 114,800| 80,600*| 174,700**|

---

**Notes:**
- * See first asterisked footnote, Table 4.
- ** Year 2005 figures assume one-third of total Wahiawa population and 100 percent of total Millani population by that year, based on a scenario projection made by the Keaau (1984) study.

**Sources:** Unpublished data, City Department of General Planning; Land Use Files, plus assumptions by Community Resources.

---

### Table 6

**Existing and Projected Future Populations: Ewa Development Plan Area**

<table>
<thead>
<tr>
<th>Existing or Approved</th>
<th>Calculated Additional Capacity</th>
<th>Potential Total Pop. (Year 2005)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existing (1984)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ewa Beach</td>
<td>14,400</td>
<td>200</td>
</tr>
<tr>
<td>Ewa Marina</td>
<td>0</td>
<td>13,000</td>
</tr>
<tr>
<td>Ewa Village</td>
<td>0</td>
<td>10,000</td>
</tr>
<tr>
<td>Makakilo</td>
<td>8,200</td>
<td>10,200</td>
</tr>
<tr>
<td>Makakilo Expansion</td>
<td>0</td>
<td>2,400</td>
</tr>
<tr>
<td>West Beach</td>
<td>0</td>
<td>10,400</td>
</tr>
<tr>
<td>Remainder</td>
<td>13,400</td>
<td>1,100</td>
</tr>
<tr>
<td><strong>Subtotals</strong></td>
<td>36,000</td>
<td>47,300</td>
</tr>
</tbody>
</table>

| **Additional Proposals** |   |       |         |
| West Beach Expansion    | 0 | 13,300| 13,300**|
| Ewa City Center         | 0 | 91,400| 91,400**|
| **Subtotals**            | 0 | 104,700| 21,700**|
| **(TOTALS)**             | 36,000| 152,000*| 188,000**|

**Notes:**
- * Year 2005 figures assume one-third of total Wahiawa population and 100 percent of total Millani population by that year, based on a scenario projection made by the Keaau (1984) study.

**Sources:** Unpublished data, City Department of General Planning; Land Use Files, plus assumptions by Community Resources.
### Table 7

**Existing and Projected Future Populations: Combined Central Oahu and Res Development Plan Area**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existing</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Cumulative This Category — Tables 5 and 6)</td>
<td>150,800</td>
<td>74,600*</td>
<td>225,700*</td>
</tr>
<tr>
<td><strong>Additional Proposals</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Cumulative This Category — Tables 5 and 6)</td>
<td>0</td>
<td>157,700</td>
<td>54,000**</td>
</tr>
<tr>
<td><strong>(TOTAL)</strong></td>
<td>150,800</td>
<td>232,600*</td>
<td>279,700**</td>
</tr>
</tbody>
</table>

---

* See first asterisked footnote, Table 4.
** See double-asterisked footnotes, Tables 5 and 6.

**Sources:** Unpublished data, City Department of General Planning and Land Use Files, plus assumptions by Community Resources.

---

4. **Oahu**

The Hawaii State Department of Planning and Economic Development (1984) projects by the year 2005 Oahu population as 954,500 persons. Given the State's estimated 1984 Oahu population of 805,000, this suggests a projected absolute growth of 149,500 net expansion population over 21 years. The estimated Village Park population of 10,000 persons would account for 6.7 percent of this anticipated islandwide growth. On a total population basis, the expansion population would represent 1.2 percent of the islandwide population of 954,500.

It would also, of course, result in the relocation to Central Oahu of population which might otherwise find housing elsewhere on the island as of 2005. The maximum relocation figures would be the full 10,000 population, although it is actually likely that many prospective Village Park buyers would choose to purchase in another Central Oahu location (e.g., Waikiki) if a supply were available.

From the figures and assumptions of Table 5, the following percentages may be calculated to determine the maximum impact of the Village Park Expansion on the proportion of future additional population which would be located in Central Oahu as of 2005:

<table>
<thead>
<tr>
<th></th>
<th><strong>ADDITIONAL</strong></th>
<th><strong>TOTAL</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>population as percent of est.</td>
<td>18.5%</td>
<td>14.9%</td>
</tr>
<tr>
<td>additional pop.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Islandwide</td>
<td>(149,500)</td>
<td>(954,500)</td>
</tr>
</tbody>
</table>

**Existing/Approved Projects Only:**

**Existing/Approved PLUS Village Park Expansion:**

**Existing/Approved PLUS Additional Proposals (EXCLUDING Expansion):**

**Existing/Approved PLUS Additional Proposals (INCLUDING Expansion):**

Thus, if Village Park Expansion and the other Central Oahu development proposals (Waikiki and Mililani) are denied, the figures indicate that 18.5 percent of the projected new Oahu population would be located in Central Oahu, raising Central Oahu's share of the islandwide population to 14.9 percent. If all three Central Oahu proposals are approved and develop at the rate assumed in Table 5, 46.8% of the new population would be directed to Central Oahu. However, the increase in Central Oahu's share of islandwide population would be to just 19.4 percent.
III. HOUSING

A. Existing Situation

Table 8 provides selected 1970 and 1980 U.S. Census housing data for the State of Hawaii, the City and County, the two island groups, and the Neighboring communities below the freeway.

1. Oahu

While Oahu's population increased 29.9 percent between 1970 and 1980, its inventory of total year-round housing units increased 44.1 percent. However, Census definitions of year-round locations account for the apparent increase in the total vacancy rate from 1970 to 1980.

Subsequent estimates of housing inventory (Hawaii State Department of Planning and Economic Development, 1985a, p. 635) reflect the high interest rates and lowered housing construction net growth in housing units average 0.1 percent per year. In the preceding four-year period, it had been 2.9 percent per year, and in the four-year period before that (1972 to 1976), it had been 5.1 percent. (However, the earlier figures are partially due to its book in condominium units, many not intended for residential occupancy.)

The ownership rate increased on Oahu during the 1970's, although at 49.9 percent it lagged behind the rate for the state as a whole. The proportion of substandard units decreased, but crowding (as measured by the population) since average household size decreased from 1970 to 1980 suggests a greater spread in the distribution of number of persons per unit, with an increase in the proportion of units occupied by only one or two persons.

Rental increases during the 1970's essentially kept pace with inflation, although recent reports from realtors suggest a sharper rise during the 1980's. A more dramatic 1970 - 1980 owner-occupied units, which increased 26 percent. Oahu housing prices are significantly higher than those on the Neighbor Islands.

More recently, the average selling price of single-family houses on Oahu during 1983 was $139,000 (Hawaii State Department of Planning and Economic Development, 1985a, p. 610).

---

Table: 8

<table>
<thead>
<tr>
<th>State of Hawaii</th>
<th>Oahu</th>
<th>Neighbor Islands</th>
<th>Other</th>
<th>Total Vacancy Rate 1970</th>
<th>Total Vacancy Rate 1980</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>327,659</td>
<td>333,213</td>
<td>164,743</td>
<td>228,243</td>
<td>9,197</td>
</tr>
<tr>
<td>1980</td>
<td>333,213</td>
<td>333,213</td>
<td>164,743</td>
<td>228,243</td>
<td>9,197</td>
</tr>
</tbody>
</table>

---

Table: 8

<table>
<thead>
<tr>
<th>State of Hawaii</th>
<th>City of Honolulu</th>
<th>County of Honolulu</th>
<th>Other</th>
<th>Total Vacancy Rate 1970</th>
<th>Total Vacancy Rate 1980</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>327,659</td>
<td>333,213</td>
<td>164,743</td>
<td>228,243</td>
<td>9,197</td>
</tr>
<tr>
<td>1980</td>
<td>333,213</td>
<td>333,213</td>
<td>164,743</td>
<td>228,243</td>
<td>9,197</td>
</tr>
</tbody>
</table>
2. Region (Central Oahu and Ewa D.P. Areas)

Both Development Plan Areas were sites of major housing construction efforts during the 1960's. In Central Oahu, much addition to the housing stock inventory have been continuing in the 1960's with ongoing build-out of communities such as Village Park, Waipio, and Waikiki. In Ewa, however, there has been little additional net gain to the housing inventory during the past five years, although preliminary approvals have recently been obtained for a number of major new projects (see Table 9, preceding section).

While Census vacancy figures are unreliable, the numbers in Table 8 suggest that the housing situation generally became tighter from 1970 to 1980 in both areas.

With most of the new housing developments aimed at the owner-occupant rather than the rental market, homeownership rates increased dramatically in both areas during the 1970's. They had been below the islandwide average in 1970 but were slightly greater than the islandwide average in 1980.

The incidence of substandard units dropped as new units comprised an increased proportion of the total, but pockets of crowding remained in the region, as was the case islandwide. The average household size in both areas (3.36 in Central Oahu, 3.86 in Ewa) not only exceeded the islandwide average (3.11 persons per unit), but the two-year decline in average household size was also less in both areas than it was islandwide. For Oahu as a whole, the average household size declined 14 percent from 1970 to 1980; in Central Oahu, the decline was only 11 percent, and, in Ewa, only 10 percent.

Median housing cost data can only be provided for these areas in terms of ranges. The figures in Table 8 suggest that 1980 rentals were fairly consistent with islandwide costs, but median value of owner-occupied units were generally lower than the islandwide median. Since the region's housing stock is relatively young, this would support the notion that developers in the study area aimed for the "middle" and "lower" ends of the ownership market during the 1970's.

3. Waipahu and "Hauke Communities"

The Census definition of "Waipahu" for Table 8 is limited to the town below the freeway. Additional selected 1980 Census data for the existing "Hauke Communities" above the freeway (Village Park and Creteview/Waipio combined) are given in Table 9, although discussion of Village Park is reserved for the next subsection.

The vacancy figures in Table 8 suggest a tighter housing availability situation in Waipahu than was the case islandwide in 1980. Other 1980 Census data show that housing types in Waipahu

<table>
<thead>
<tr>
<th>Table 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selected 1980 Housing Data for Village Park and Creteview/Waipio</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>TOTAL OCCUPIED HOUSING UNITS</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>TENURE</td>
</tr>
<tr>
<td>center-occupied</td>
</tr>
<tr>
<td>PERSONS PER HOUSEHOLD (based on occupied units)</td>
</tr>
<tr>
<td>MEDIAN CASH RENT (based on occupied units)</td>
</tr>
<tr>
<td>MEDIAN VALUE (based on occupied units)</td>
</tr>
</tbody>
</table>

--

were primarily single-family (in greater proportion than island-wide) but also contained a large number of multi-family units:

<table>
<thead>
<tr>
<th>Unit Type</th>
<th>WAIPUHO</th>
<th>OAHU</th>
</tr>
</thead>
<tbody>
<tr>
<td>single-unit, detached</td>
<td>51.9</td>
<td>43.2</td>
</tr>
<tr>
<td>single-unit, attached</td>
<td>2.0</td>
<td>4.9</td>
</tr>
<tr>
<td>two-unit structures</td>
<td>4.9</td>
<td>4.9</td>
</tr>
<tr>
<td>three or more units</td>
<td>40.4</td>
<td>46.0</td>
</tr>
</tbody>
</table>

Waipahu homeownership rates remained essentially static during the 1970's at slightly less than 50 percent, while the 1980 rate for the Crestview/Waipahu areas was at 91 percent.

Perhaps the most striking aspect of Waipahu's housing situation relates to crowding. Not only was Waipahu's average household size in 1980 (4.20) greatly in excess of the norm for either Oahu or the overall Central Oahu D.P. Area, but the ten-year decline in household size was also much less than for either Oahu or the entire Central Oahu D.P. Area. The proportion of units with severe crowding (1.51 or more persons per room) was particularly high — 13.6 percent — about double the figure for Oahu or the overall Central Oahu D.P. Area.

Because of the relatively high proportion of families with children in Waipahu/Crestview (Table 2, preceding section), the average household size there was higher than the 1980 island-wide norm. However, at 3.63 persons per unit, it was still lower than the 3.96 figure for the overall Central Oahu D.P. Area.

Waipahu housing values in 1980 were only about 86 percent of the island-wide norm, based on median value of owner-occupied units. Many of the houses in Waipahu, however, values have been considerably higher in the Crestview and, particularly, Waipio areas. Rents were slightly higher in Waipahu than island-wide in 1980.

4. Village Park

Although the 1980 Census data of Table 9 are based on only the first 118 occupied units in Village Park, they tend to confirm the general picture of a low-to-moderate cost housing development suited largely by owner-occupants. The median value of owner-occupied units at that time was just $255,305 — higher than for Waipahu but actually lower than the island-wide median.

The 1980 figures suggest about 13 percent of the units were being rented, although more recent estimates by the property manager (personal communication, G. Heinzech, Chase Banks and Company, August 6, 1985) place the current figure at less than seven percent. Rental values at Village Park were high as of 1980, reflecting the newness of the development.

Average household size in 1980 was 3.60, about the same as for the other "Hana Communities" of Crestview/Waipalu. The profile of recent Village Park buyers (Table 3, preceding section) showed 100 percent of buyers having a family size of at least two persons; 76 percent with three or more persons; and 54 percent with four or more persons.

B. Impacts

Impacts are again most usefully discussed in reverse order, beginning with Village Park first. Regional and island-wide impacts will be considered together.

1. Village Park

Table 10 provides a summary of unit numbers and types for the current Village Park development (upon build-out), the Expansion, and the combined totals.

The major impact of the proposal would be to approximately triple the total number of units in the combined areas.

A second impact would involve shifts in the composition of unit types — i.e., significantly greater variety. The overall proportion of "traditional" detached single-family homes would drop. Some relatively more expensive housing types would be introduced for the first time, balanced by less expensive "starter" units.

The low-density apartments in the Expansion area would be the government-built and operated low-income rental project. These would be the first units of this type in the Village Park area, although there are a number of such projects in Waipahu. (Additionally, Village Park's existing 120 townhouse units were sold at below-market prices to homeowners meeting government income guidelines.)

Other than these units, all Expansion housing would be sold in fee simple, as contrasted to the leasehold character of the current Village Park area. A probable impact of the Expansion would be stimulation of more interest among current Village Park residents in the fee-simple conversion process. (In fact, as of November 1985, the current Village Park community association's Board of Director has already begun arranging homeowner meetings to initiate these proceedings, which had been tried once before with little success.)

A final impact for existing Village Park housing owners — assuming successful conversion of leasehold to fee-simple ownership — should be an overall increase in value, due to the golf course and other amenities expected to accompany the Expansion. Current Village Park residents with homes near the proposed low-density apartment project have expressed concern about possible negative impacts on their property values, and the developer has pledged to take a strong negotiating stance with
### Table 10

**Composition of Planned and Proposed Village Park Housing Units**

<table>
<thead>
<tr>
<th>Unit Type</th>
<th>Current Village Park</th>
<th>Expansion</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>no. 151</td>
<td>no. 171</td>
<td>no. 181</td>
</tr>
<tr>
<td>Low Density Apartment</td>
<td>0 0</td>
<td>480 148</td>
<td>480 94</td>
</tr>
<tr>
<td>Townhouses/Attached</td>
<td>120 74</td>
<td>240 74</td>
<td>360 74</td>
</tr>
<tr>
<td>Single-Family (&quot;Starter&quot;)</td>
<td>0 0</td>
<td>390 20</td>
<td>390 19</td>
</tr>
<tr>
<td>Single-Family (&quot;Traditional&quot;)*</td>
<td>1,680 938</td>
<td>1,055 306</td>
<td>2,735 522</td>
</tr>
<tr>
<td>Single-Family (&quot;Upgrade&quot;)</td>
<td>0 0</td>
<td>445 137</td>
<td>445 86</td>
</tr>
<tr>
<td>Single-Family (&quot;Prime&quot;)</td>
<td>0 0</td>
<td>270 86</td>
<td>270 56</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>1,800</td>
<td>3,480</td>
<td>5,280</td>
</tr>
</tbody>
</table>

* "Traditional" refers to single-family housing on individual lots as typified by most existing Village Park developments.

---

the City to assure both adequate design controls and tight management of the rental project in order to protect nearby property values.

2. Waipahu and "Haiku Communities"

One of the project's more significant Waipahu-area housing impacts will be the assurance of a continued supply of new housing inventory during the late 1980's. Given the ongoing current Village Park development and the mobilization of an existing development, construction, and sales team, the proposed Expansion may be expected to proceed without delay. Meanwhile, construction of all housing units in the Waipahu development is expected to finish by 1987, according to a Gentle representative (personal communication, Gary Dol, August 15, 1985). Construction at Waipahu or Haiku could theoretically begin around this time, but the practical difficulties involved in obtaining final permits, mobilizing a construction team, and initiating major infrastructure improvements could easily delay sales until the early 1990's. The Village Park Expansion project would continue to provide new housing opportunities in the Waipahu area during this "window" of time.

Table 11 provides approximate numbers of housing units for the Waipahu development, or proposed Waipahu-area developments. Excluding the Waipahu proposal, there will be approximately 16,800 units in the area by the turn of the century. The Village Park Expansion proposal thus represents a 20 percent increase in the housing supply planned for the Waipahu area by the year 2000 or so.

The proposed Waipahu development would add approximately 7,000 more units (although most would not be developed until long after the year 2000). This would bring the "ultimate" Waipahu-area total — without the Village Park Expansion — to 23,800 sometime in the 21st Century. If the Village Park Expansion is permitted, this "ultimate" total would increase by 14 percent.

Other Waipahu-area housing impacts of the project would include:

- higher homeownership rate in the area;
- less crowding, as existing residents living in extended family situations "undableView" to take advantage of greater choices within the study area;
- slight increase in overall proportion of single-family units;
- values of the statistical whole will increase due to higher-priced Expansion units.
### Table 11

<table>
<thead>
<tr>
<th>Existing/Approved Communities</th>
<th>Eventual Number of Housing Units (rounded)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waipahu Town</td>
<td>7,500*</td>
</tr>
<tr>
<td>Current Village Park</td>
<td>1,800</td>
</tr>
<tr>
<td>Crestview</td>
<td>1,800</td>
</tr>
<tr>
<td>Maipio</td>
<td>3,200</td>
</tr>
<tr>
<td>Waikele</td>
<td>2,500</td>
</tr>
<tr>
<td>(Subtotal)</td>
<td>16,800</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional Proposal</th>
<th>Waiawa</th>
<th>7,000**</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Total)</td>
<td></td>
<td>23,800</td>
</tr>
</tbody>
</table>

* Waipahu's total 1980 housing inventory was 7,118. The future estimate of 7,500 is based on assumption of future replacement housing being of higher density than existing structures.

** Most Waiawa units would not be built until after the year 2000, while the other numbers in this table are assumed to be applicable by around the year 2000.

---

3. Regional and Islandwide Effects

As discussed in Section II, past Village Park buyers differ somewhat from residents of other competitive Central Oahu developments. They are younger, have lower incomes, are more "local," and generally have small, young families. They also come frequently from Waipahu and Central Oahu.

To some degree, village Park expansion buyers would otherwise buy in competitive Central Oahu or Ewa developments, since these are the principal areas where new single-family units will be developed. However, since price has been the principal Village Park selling point (Table 3, Section III), for many families the choice will be between the Village Park expansion, buying something in a comparable price range (perhaps farther from Waipahu), buying a multi-family rather than a single-family unit, or else continuing to rent and/or double up within a larger household.

Principal changes in residence patterns, then, would be:

- realignment within Central Oahu;
- some mobility from Honolulu to the Village Park area;
- some mobility from Ewa to Central Oahu.
IV. EMPLOYMENT

Because employment impacts will be primarily confined to the project site (with some slight indirect impacts on the surrounding Wai'alu area community), discussion in this section will not extend to the regional or islandwide levels.

A. Existing Situation

The current Village Park project supports an average of 310 full-time construction workers, plus a small sales staff. Because the Village Park population is not yet sufficiently large to attract anchor clients to the planned commercial area, there is not currently any retail-related employment in Village Park.

In the remainder of the Wai'alu area (including Wai'alu), special 1980 Census data compiled by the Hawaii State Department of Transportation (Hawaii Transportation Planning Commission, 1982) indicate a total of 5,983 jobs. The same data indicated only about 38 percent of these jobs were filled by area residents in 1980.

Labor force characteristics of both Village Park and other Wai'alu-area community residents were discussed in Section II. It was noted there that few recent Village Park homebuyers work in Wai'alu itself (seven percent — Table 3), but approximately one-third work in the area encompassing Pearl City, Wai'alu, and the rest of Central Oahu. About half work in Honolulu, and another 13 percent in the Airport area.

B. Impacts

Construction-related employment would involve the continuation of the current average 310 full-time construction jobs from 1982 through 1987. As of 1983, there were approximately 14,700 construction jobs on Oahu (Hawaii State Department of Planning and Economic Development, 1982a, p. 251). Village Park's figures of 310 would represent 2.1 percent of these. (Note: The accelerated development schedule for the expansion area could mean an increased construction workforce; this means the 310 job figure is a conservative one.)

Table 12 summarizes estimated permanent employment within the Village Park Expansion area when the project is completed. About 68 percent of the total estimated 710 total employment would be located within the commercial area, and another 26 percent would be in the industrial area. It will be recalled that the actual land use request is for "Commercial/Industrial Mix," and that the acreage and square footage assumptions in Table 12 reflect only current estimates. If actual development results in a greater emphasis on commercial, jobs will increase; if the emphasis is more on light industrial, which is less labor-intensive, jobs would decrease from the Table 12 estimate. If a public school is re-incorporated in Expansion plans, this would provide another 30 or so jobs.

Table 12

<table>
<thead>
<tr>
<th>Type</th>
<th>Employment in the Completed Village Park Expansion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial</td>
<td>483</td>
</tr>
<tr>
<td>Industrial</td>
<td>187</td>
</tr>
<tr>
<td>Golf Course</td>
<td>40</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>710</td>
</tr>
</tbody>
</table>

Notes: Golf course employment figures from Decision Analysis Hawaii, Inc. (1982a). Assumptions about commercial square footage and light industrial acreage are from market report (Brooks and Associates, 1982).
Table 13 provides an estimate of the total number of jobs required to support the Village Park Expansion population. The estimated 710 on-site jobs would account for approximately 12 percent of the estimated total jobs needed by occupants of the 3,480 units.

This is not, of course, intended to suggest that the jobs would all be filled by Village Park residents themselves — or even in Table 1-6 (Section III) that the Malibu Town workforce in 1980 had an above-average unemployment rate. In fact, workers employed disproportionately in service and trade occupations. These, however, are a good match between the existing Malibu workforce and future jobs from the Village Park Expansion.

The Expansion area would also create some indirect employment in the Malibu area, through expenditures of residents, employees, and businesses. This is less easily measured, primarily because of difficulties in making assumptions about (1) how much of the restaurant and retail demand generated by residents and employees would be met by the Expansion's own businesses, and (2) how many of the Expansion residents or businesses would still be located elsewhere in the Malibu area if the Expansion is not built.

Most of the indirect/induced employment would still be present somewhere in Malibu whether or not the project is approved. The true question concerns how many jobs would shift from elsewhere to serve the Village Park Expansion. Table 3 (Section II) indicated that about one-half the recent Village Park homebuyers had moved from areas east of Pearl City, and it may be assumed also shift to their new home area. However, lack of standard regionalized multipliers and the previously-mentioned uncertainty about the Expansion's commercial area prevents further quantitative estimates.

<table>
<thead>
<tr>
<th>Table 13</th>
<th>Estimated Job Need Among Village Park Expansion Residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number of Units</td>
<td>3,480</td>
</tr>
<tr>
<td>Total Occupied Units</td>
<td>3,410</td>
</tr>
<tr>
<td>Number of Work-Derived Incomes Per Unit</td>
<td>1.71</td>
</tr>
<tr>
<td>— assume 65% have at least two incomes*</td>
<td>— assume 50% have three incomes (85 x 5 = 90)</td>
</tr>
<tr>
<td>— assume 50% of all incomes are derived entirely from sources other than job (1.90 x .90 = 1.71)</td>
<td></td>
</tr>
<tr>
<td>Total Number of Jobs Required (3,410 x 1.71)</td>
<td>5,832</td>
</tr>
</tbody>
</table>

V. PRELIMINARY SOCIAL ISSUE ASSESSMENT

This section is an inventory of social issues and concerns relevant to the proposed expansion which have been discovered in surveys and in preliminary contacts with community leaders. Where possible and appropriate, the issues are analysed and commented upon. The word "preliminary" has been added to the title of this section to emphasize the tentative and changeable nature of such an analysis. Community perceptions and concerns can shift over time.

Much of this section is based on interviews held in July and August 1985 with approximately 35 "key informants" (primarily persons active in community organizations) in Village Park and Waipahu. Issues and concerns arising out of the developer's subsequent community interaction program have also been inserted in this revised report. However, other residents may choose to participate in the public hearing process for the expansion proposal, and new views or issues may be raised.

However, the following assessment is based on extensive community contact. It is intended to provide an introduction to the ongoing process of social impact assessment through public hearings and other forms of community input.

A. Public Opinion Surveys

Two types of available public opinion survey results are relevant to this assessment: (1) islandwide priorities on housing development, particularly in situations where there is a trade-off with preservation of agricultural land; (2) needs and values within the Waipahu-area community.

1. Islandwide Priorities: Housing vs. Preservation of Agricultural Land

Numerous public opinion surveys have determined that provision of more affordable housing is a major community issue on Oahu, along with other standard concerns such as crime, need for jobs, and need for improvement in the educational system.

However, the proposed Village Park Expansion would provide housing at the cost of withdrawing productive agricultural land, and preservation of such lands has also frequently emerged as a public concern. Therefore, it may be instructive to review public opinion research on the relative priorities given to housing of ag land preservation in such trade-off situations.

The only recent available surveys in which such a trade-off question was posed are the 1981 and 1984 "State Plan Surveys" commissioned by the Hawaiian State Department of Planning and Economic Development (HSDRD, 1981, 1984). In the 1981 survey, the question was one of several trade-off queries. It was posed in the following way and with the following results for the Oahu sample of 400 persons:

<table>
<thead>
<tr>
<th>Question</th>
<th>Agree</th>
<th>Disagree</th>
<th>Don't Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is hard for a community to get everything it wants. For each two things I mention, tell me which is more important to you.</td>
<td>59%</td>
<td>37%</td>
<td>4%</td>
</tr>
<tr>
<td>lower housing costs, or preserving agricultural land</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(don't know/won't choose)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Sources: HSDRD, 1981, p. 37)

In 1984, the question was posed in a different format, but with fairly similar results:

<table>
<thead>
<tr>
<th>Question</th>
<th>Agree</th>
<th>Disagree</th>
<th>Don't Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please tell me whether you agree or disagree with each of the following statements ...</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>We should have more affordable housing for residents even if we lose prime agricultural land.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td>50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>37%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don't Know</td>
<td>12%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Sources: HSDRD, 1984, p. 32)

2. Waipahu Community Needs and Values

A literature search for surveys taken during the 1980's on Waipahu community needs and values uncovered only one relevant study. This had been commissioned by Amfac Property Development Corp. (Amfac Research, 1982) in its early planning for the Waikiki development. Results are proprietary, but Amfac granted permission to quote data for several general questions on community values.
Table 14 contains results for a question on "possible problems or community needs." A list of 15 possible community concerns was read to each of 400 randomly-selected respondents from Waipahu town (below the freeway only). Eleven of these potential concerns were also read to a separate sample of 200 respondents from the rest of Central Oahu (including Village Park, Crestview, Wai'pio, Milliken, and Wahiawa).

Some of the major conclusions to be drawn from Table 14 would include:

- As of 1982, the "need to keep Oahu Sugar Company" in business and the need for more "housing that families making less than $10,000 can afford" were neck-and-neck top priorities, both in Waipahu and the rest of Central Oahu.

- The perceived need was clearly for such lower-to-middle-income housing, since there was a distinct lack of concern about more "high quality housing."

- While there was some concern at that time about population growth and traffic, large portions of both samples considered these issues "not a problem" in 1982.

A final question from this survey which deals with community values relevant to the proposed project was posed only to the Waipahu sample:

Which one of the following two statements is closest to your own feelings? (Note: Half the respondents heard one statement first, while the other half heard the other statement first.)

Many of Waipahu's important problems can be solved by
well-planned growth. 76%

Any growth, no matter how well-planned, will just add
to Waipahu's problems. 19%

(discorded with both statements) 4%

(don't know/refused/other reply) 9%

(Author: SMS Research, 1982, p. 22)

Table 16
Waipahu Public Opinion Survey:
Importance of Various Community Problems or Needs

(Question): "I'm going to read you a list of possible problems or community needs. For each one, please tell me if you think this is not a problem in your area, is an important problem, or is a very important problem."

<table>
<thead>
<tr>
<th>Waipahu Town</th>
<th>Very Important</th>
<th>Not a Problem</th>
<th>Very Important</th>
<th>Not a Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>need to keep Oahu Sugar Co. in business</td>
<td>49</td>
<td>11</td>
<td>49</td>
<td>11</td>
</tr>
<tr>
<td>not enough housing that families making less than $10,000 can afford</td>
<td>48</td>
<td>17</td>
<td>48</td>
<td>14</td>
</tr>
<tr>
<td>need to keep Dole Pineapple Co. in business</td>
<td>42</td>
<td>13</td>
<td>45</td>
<td>10</td>
</tr>
<tr>
<td>need to save agricultural land</td>
<td>31</td>
<td>23</td>
<td>32</td>
<td>22</td>
</tr>
<tr>
<td>not enough playgrounds for small children</td>
<td>29</td>
<td>38</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>hospitals and doctors are too far away</td>
<td>29</td>
<td>43</td>
<td>20</td>
<td>51</td>
</tr>
<tr>
<td>population of area growing too fast</td>
<td>25</td>
<td>37</td>
<td>21</td>
<td>45</td>
</tr>
<tr>
<td>jobs are too far away</td>
<td>25</td>
<td>43</td>
<td>25</td>
<td>45</td>
</tr>
<tr>
<td>streets and roads needing widening</td>
<td>23</td>
<td>49</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>not enough different kinds of housing to choose from</td>
<td>22</td>
<td>48</td>
<td>19</td>
<td>50</td>
</tr>
<tr>
<td>need to protect scenic or rural areas</td>
<td>21</td>
<td>32</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>too much traffic</td>
<td>21</td>
<td>51</td>
<td>22</td>
<td>50</td>
</tr>
</tbody>
</table>

(Continued next page)
### Table A4 (Continued)

<table>
<thead>
<tr>
<th>WAIHPU TOWN</th>
<th>REST OF CENTRAL GABU</th>
</tr>
</thead>
<tbody>
<tr>
<td>very</td>
<td>not important</td>
</tr>
<tr>
<td>not enough sports facilities and playing fields</td>
<td>19</td>
</tr>
<tr>
<td>lack of community facilities: elderly centers or halls for meetings and parties</td>
<td>19</td>
</tr>
<tr>
<td>air and noise pollution from sugar mill operations</td>
<td>27</td>
</tr>
<tr>
<td>need to save historic buildings or places</td>
<td>16</td>
</tr>
<tr>
<td>problems with sugar cane trucks</td>
<td>10</td>
</tr>
<tr>
<td>need for regional shopping center like Pearl Ridge</td>
<td>9</td>
</tr>
<tr>
<td>not enough high quality housing for business executives, professionals or other high income people</td>
<td>7</td>
</tr>
</tbody>
</table>

(Based on 400)  (Based on 200)

* These questions not asked of larger Central GABU sample.

Note: Other response categories omitted for sake of space. Included "important," "don't know," and "opposite view."

Source: SMS Research, 1982, pp. 19-20

---

### B. Community Input and Issues Assessment Process

The surveys discussed previously were conducted prior to the formulation of the Village Park Expansion proposal and thus did not deal with attitudes or issues which could be linked directly to this proposal.

To determine community concerns relevant to this project in particular, it was decided to interview several dozen "key informants" -- people who were particularly knowledgeable about the Village Park and/or Waipahu-area communities and/or people who were considered likely (because of their professional affiliations and their positions in community organizations) to become eventual participants in the public decision-making process.

As a result of these initial contacts in July and August 1985, the developer undertook a community dialogue process to permit more substantial interaction with organizations in both the current Village Park and the greater Waipahu area. The following brief overview summarizes the major issues emerging in each of these two phases.

1. Initial Key Informant Interviews

Informants were selected by a "chain" process. That is, initial informants were selected because they held highly visible community positions (e.g., chair of the Neighborhood Board), and these people were asked to recommend other key informants. Not all recommended informants could be contacted in the time before this report was written, but those who could be reached appear to form a good cross-section of Village Park and Waipahu community groups (see Table A5, which also includes a few individuals contacted since the initial July/August discussions).

Following is a brief overview of the results of these discussions. A more detailed discussion is provided in following pages.

**General Results of Initial Key Informant Interviews:**

- The overall attitude at this time was generally positive toward the project as a whole (although there was little awareness of, and some surprise over, the project's magnitude). Most informants seemed to expect and welcome more residential growth in the Waipahu area.

- Project components which seemed most responsible for this positive attitude were (for Waipahu) the continued provision of housing which can be afforded by young people and (for Village Park) the proposed golf course.

Additionally, both Village Park and Waipahu-area community leaders feel that the additional population would provide them with more political strength in competing for government facilities and services.

61
Table 15
List of Key Informants for Social Issues Assessment

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation/Organization(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Village Park</strong></td>
<td></td>
</tr>
<tr>
<td>Randy Bonda</td>
<td>Resident, Board of Directors of Village Park Community Association, Treasurer</td>
</tr>
<tr>
<td>Rex Brighton</td>
<td>Board of Directors, Village Park Community Association, Treasurer</td>
</tr>
<tr>
<td>Christine Franklin</td>
<td>Board of Directors, President, Village Park Community Association, Treasurer</td>
</tr>
<tr>
<td>Alice Ito</td>
<td>Board of Directors, Village Park Community Association, Treasurer</td>
</tr>
<tr>
<td>Leonard Leong</td>
<td>Board of Directors, Village Park Community Association, Treasurer</td>
</tr>
<tr>
<td>Ken Lindesbach</td>
<td>Board of Directors, Village Park Community Association, Treasurer</td>
</tr>
<tr>
<td>Allen McHughes</td>
<td>Board of Directors, Village Park Community Association, Treasurer</td>
</tr>
<tr>
<td>Harvey Robija</td>
<td>Board of Directors, Village Park Community Association, Treasurer</td>
</tr>
<tr>
<td>Chuck Page</td>
<td>Board of Directors, Village Park Community Association, Treasurer</td>
</tr>
<tr>
<td>Jennie Wolf</td>
<td>Board of Directors, Village Park Community Association, Treasurer</td>
</tr>
</tbody>
</table>

**Other Waipahu-Area Communities**

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation/Organization(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bill Belfour</td>
<td>Valley Sugar Company, Manager</td>
</tr>
<tr>
<td>Gary Doi</td>
<td>Waipahu-Country, Resident and Sales Manager</td>
</tr>
<tr>
<td>Ruth Endo</td>
<td>United Church of Christ</td>
</tr>
<tr>
<td>Guy Fujimura</td>
<td>ILMU, Waipahu Community Association, President</td>
</tr>
<tr>
<td>Lee Hill</td>
<td>Waipahu Business Association, Rotary</td>
</tr>
<tr>
<td>Richard Hirota</td>
<td>Waipahu Community Association, Waipahu 2000 Community Council</td>
</tr>
<tr>
<td>Rob Hirayama</td>
<td>Waipahu Community Association, Waipahu 2000 Community Council</td>
</tr>
<tr>
<td>Leonard Horiyama</td>
<td>Waipahu Metropolitan Planning Organization</td>
</tr>
<tr>
<td>Cal Kawamoto</td>
<td>Waipahu Business Association, Waipahu Neighborhood Board, Chair</td>
</tr>
<tr>
<td>Shari Matsumura</td>
<td>Waipahu Community Association, Waipahu 2000 Community Council</td>
</tr>
<tr>
<td>Jason Mihalicka</td>
<td>Waipahu Business Association, Waipahu 2000 Community Council, Co-Chair</td>
</tr>
</tbody>
</table>

(Continued next page)
2. Subsequent Community Interaction

The community dialogue program was carried out at two levels: Village Park and greater-Waipahu community organizations.

Within Village Park, the developer instituted a practice of keeping residents informed through occasional newsletters, two of which were mailed to all residents in the fall and early winter of 1985 (with a third scheduled for early 1986). In addition to project presentations to the community association's Board of Directors, discussions were also held with a separate group ("Village Park Affirmative Action") about various internal issues, a few of which have some implications for the Expansion.

In Waipahu, the developer met with the major community organizations concerned with land use and economic development -- the Waipahu Neighborhood Board (as well as the neighboring Pearl City Neighborhood Council), Waipahu Community Association, Waipahu 2000 Community Council, and Waipahu Business Association. Several of these groups asked questions about impacts and mitigations which required further study and repeat meetings before the groups took their final positions (presented in sub-section E at the end of this chapter).

Additionally, an ad hoc group of community leaders from all organizations met with the developer to negotiate ways the developer could provide "giveback" and establish closer links with the greater Waipahu community. Results of these meetings are reported in Section VI.A of this report.

As a result of these discussions, a few new issues arose, and there was also some evolution and clarification of the issues charted from the initial contacts.

**Highlights of Major Additional/Altered Issues**

- Waipahu organizations expressed substantial concern over the Department of Education's recommendation to eliminate the new elementary school site in the Expansion area. Also, the community of "mauka community" school children continued to grow during this period.

- There was some increase in attention to possible negative social impacts from the city rental apartment project. The concern was generally cautionary rather than active; that is, community groups urged the developer to maintain some level of control, but did not oppose the project completely.

- Concerns over infrastructure capability came to focus primarily on regional traffic impacts. However, the usual position was that government must act to solve the problem for the area as a whole, without particular reference to any one proposed development.

- Waipahu organizations felt that developers such as Waitec should provide some "givebacks" to the larger Waipahu area.

- Within Village Park, there was an intensification of internal debate over community association politics and the need for more park space. This resulted in some residents asking for a reconfiguration of planned Expansion park space so that a new park could border the eastern part of the existing Village Park development.

The following seven sub-sections (C to J) deal with specific issues raised among DHAL, Village Park and other Waipahu informants. The next two sub-sections (K and L) provide discussion of issues primarily encountered in Village Park alone or in Waipahu alone. The last sub-section (L) summarizes positions taken by community groups.

**C. Housing Provision**

The need for an ongoing supply of new housing units in the Waipahu area was a matter which usually seemed taken for granted in key informant discussions. Waipahu informants often noted the tendency of young adults in the town to wish to move out of Waipahu, and the development of housing projects along the freeway is seen as a way for such young people to "move up" to a new area while still remaining close to family and friends.

Because Village Park prices have been among the most competitive in central Oahu, the Expansion was generally viewed as the continuation of a project which is already serving an important function. A few people cautioned that community support would depend on the ongoing provision of housing within the price range of the young children of longtime Waipahu families.

Despite the abundance of other current (Waipio), approved (Maleka), or proposed (Kualoa) Waipahu-area developments, there was a marked absence of comments such as "We have enough already," or "Good, but not in our back yard." Rather, most of the community informants interviewed for this report seemed to accept Waipahu and Central Oahu as an appropriate (or, at least, inevitable) site for continued housing development.
Village Park informants expressed hope that the additional population which would be contained in the Expansion would increase the community's "clout" in obtaining both more commercial amenities and also more government public works expenditures.

Most Waipahu community leaders interviewed for this report also indicated their belief that a subdivision such as the Expansion would further their community planning goals, which include designation of the Waipahu area as a "growth center" on the City's General Plan.

Most major Waipahu community organizations (e.g., Waipahu Community Association, Waipahu 2000 Community Council, Waipahu Business Association) have a well-established pro-growth philosophy. Given the uncertain future of the Cane Sugar Co., there is a desire to perpetuate community vitality and to improve political "clout" in obtaining capital improvements through well-planned growth. This attitude would also appear to be shared by the general public, as indicated by the previously-cited 1993 survey finding that 76% of Waipahu residents agreed with the statement "Many of Waipahu's important problems can be solved by well-planned growth." However, a few Waipahu residents expressed concern that the various "Na'uka Communities" would successfully compete with Waipahu for government expenditures -- "they'll get the new streetlights, and we won't." The concern was based both on a recognition that new developments require substantial government revenue for initial creation of public facilities, and also on a feeling that the residents of these new subdivisions will be more articulate and have more political clout. For some people, this concern blended into the larger issue of overall links between Waipahu and Village Park or other "Na'uka Communities" (see following sub-section). For others, it was an issue in its own right. Even if Expansion residents feel "part of Waipahu," it was held, they might nevertheless siphon off government funds from the rest of Waipahu.

Comment and Analysis: The perception of increased political "clout" accompanying increasing population is a reasonable expectation. For example, years in which the Department of Education builts new schools in Waipahu, Village Park, or the Expansion will likely be years in which there are limited funds for improvements to existing schools elsewhere in the Leeward District.

Should new housing -- and consequent new needs for government-funded facilities -- be provided for many years simultaneously in Waipahu, Waikane, and the Village Park Expansion, Waipahu residents will doubtlessly need to lobby vigorously for funds to meet needs below the freeway. It is to be hoped that local government officials will note this unique situation and find ways to make sure that Waipahu is not neglected.

However, many of Waipahu's desired public works projects -- particularly highway improvements -- are regional in nature. For such objectives, increases in the overall regional population are clearly beneficial for purposes of attracting governmental attention.

B. General Issues of Community Identity and Integration

Questions were raised at two levels:

(1) Would the Expansion area and the existing Village Park comprise a single community or two separate communities?

(2) Would the expanded Village Park area (whether or not it is internally integrated) be linked with the larger Waipahu community, or would it be a separate -- perhaps even competitive -- community?

The latter question involved a number of inter-related issues. For some people, these issues merged to form the larger question posed as "(2)" above. For other people, some of the sub-issues were highly important in their own rights. Therefore, the second question above will be discussed below in a general overview fashion, while some of the more frequently mentioned sub-issues -- e.g., school linkages or business competition -- will receive further attention in following sub-sections.

1. Integration of Current Village Park and Expansion Area

Within Village Park, informants were generally more curious about the Expansion's relationship to existing Village Park than its relationship to Waipahu. Typical questions included: Will the Expansion have its own community association or be part of the present association? Will there be many streets connecting the two areas? Will the existing area get all its promised amenities before they are installed in the Expansion?

There were also mixed feelings about whether the existing homeowners association should be extended to include homes in the Expansion. On the one hand, there was some concern about the perpetuation of Waipahu's legal power to control decisions by the association, since the developer retains the voting rights of unbuilt/unsold homes and the number of such units would greatly increase during the Expansion's construction period. On the other hand, there was also a desire to have the new community integrated with the present one, rather than having it viewed as a totally separate area which might even compete with the present area for developer attention or governmental amenities.
Comment and Analysis: At the physical level, the tentative Expansion site plan calls for two internal road connections with the existing Village Park, one behind the commercial area close to the Kunia Road entrance and the other about halfway between the eastern and western boundaries. The commercial area in the Expansion is adjacent to the existing commercial area. The current plan is to develop the existing commercial area first, but neither site would effectively serve the current Village Park residents equally well.

In regard to homeowners associations and other social factors, Waitea has decided to form a separate association for the Expansion, meaning that this will formally function as a community separate from the current Village Park. However, the developer will also encourage formation of an umbrella community association based on residency rather than homeowner status, with no developer control encompassing both the current Village Park and the Expansion area.

Because the Expansion would be planned and constructed by the same developer, Waitea is responsible for the existing Village Park, and because both areas are designed for essentially the same market segment, it is highly likely that residents will perceive themselves as living in the same community. However, should the developer choose to market the Expansion under a different name, this would have some effect on what would otherwise be a natural tendency toward an integrated community identity.

2. Village Park Links with Waipahu: Overview

Many Waipahu community leaders expressed concern that all the future "Mauka Communities" -- Waitea and Waianae, as well as Village Park -- would take on their own separate identities rather than becoming part of Waipahu. (There was a feeling that the Waipahu-Gentry community already established itself as a community separate from Waipahu.)

For some people, this concern is primarily a matter of community pride and identity. There is some worry that the entire area may become a patchwork of small, unrelated residential enclaves. This could mean that even Waipahu below the freeway -- as a result of its population dynamics and/or share common links to the sugar company -- would lose its uniqueness identity as an easy-going "rural" plantation town, and there is a negative reaction to the possibility that people in the new areas above the freeway would "look down" on Waipahu.

Other people also (or instead) base their concern on the possibility of competition from the "Mauka Communities" -- political competition for government expenditures (particularly school facilities) and/or merchants. Some of these concerns will be separately discussed in more detail in later parts of this section.

Village Park residents interviewed for this report were far less concerned over the issue of community integration with Waipahu. Many of them indicated they have mixed feelings at present as to whether they are in fact "part of Waipahu," although Village Park residents originating from Waipahu seem to identify Village Park with Waipahu.

Comment and Analysis: A number of factors contribute to whether nearby residential areas feel they are part of the "same community."

(1) Physical Contiguity: Waipahu and Village Park (including the Expansion site) are separated by the H-1 freeway and connected only by the Kunia Road overpass. The new Waitea community is to be connected to Waipahu by a major road passing over the freeway from the middle (rather than the edge of the new development. However, Village Park residents will not have access to this route into Waipahu because the steep gulf between Waitea and Village Park will keep these two areas physically separate. Thus, physical factors affecting Village Park's linkages with Waipahu will be unchanged whether or not the Expansion area is built.

(2) Shared Employment Centers: Most Waipahu residents do not work in Waipahu itself, and neither do most Village Park residents. The situation is unlikely to change with construction of the Expansion community.

(3) Similar Socio-Economic Characteristics: As noted in Sections I and II, residents of the "Mauka Communities" (including Village Park) have many socio-economic similarities with Waipahu's older population. However, the younger population of Waipahu is more likely to consist of immigrants and/or lower-income people.

(4) Family Roots: "Mauka Community" residents who grew up in Waipahu and/or still have family there are more likely to regard themselves as part of Waipahu. Many Village Park buyers have had family roots in Waipahu. However, Central Oahu developments will be increasingly looked to by buyers from all over the island and so it is likely the proportion of future Expansion buyers with Waipahu roots will be a smaller one.

(5) Common Shopping Areas: Waipahu shopping centers are spread out along Farrington Highway. Village Park residents who work in Honolulu or Pearl Harbor often find it more convenient to shop at Ala Moana or Pearl Ridge, rather than doubling back from the freeway and shopping at several Waipahu locations. However, if the Waipahu plan is implemented, Waipahu's commercial areas could ultimately be more attractive to residents of all "Mauka Communities."
Schools and Youth Activities: As will be discussed further, all Village Park public school students are currently bused to Kamehameha for high school and to Pearl City for intermediate and high school. However, the Department of Education will soon begin considering whether to bus these students to Waipahu instead. Village Park youth are currently integrated with Waipahu Junior and High School.

Shared Recreational Facilities: As will also be discussed further, many Waipahu community leaders believe the region is ready for additional facilities, and they look to the Park sites in the proposed expansion for possible solutions. It is unlikely that the hopes for a major regional complex (e.g., with a municipal swimming pool) would be located within the expansion, but specific regional needs such as ballfields could be accommodated.

Common Church Sites: There is a lack of sites in Waipahu, and this was another need which some informants wondered if the expansion might fill. It should be noted that proposed changes to Honolulu's zoning code would restrict churches to light industrial areas. Conceivably part of the expansion's planned industrial or business park area could be used for church purposes, if economically feasible. A social cost for such a decision would involve some reduction in on-site employment for the expansion, since churches are generally not labor-intensive activities.

Participation in Community Organizations: For the past three years, the officers of Village Park's community association have opted not to participate in the Waipahu Community Association, which is the umbrella organization for various neighborhood organizations in the Waipahu area. There was little immediate interest within Village Park in the newly-formed Waipahu Neighborhood Board, and no Village Park residents now sit on that board. While the Village Park development team might itself contribute to or become involved in Waipahu community groups, Village Park residents would make their own choices.

Shared Local News Media: Waipahu High School's monthly newspaper, the Canoe Tappal, functions as a community newspaper and is distributed throughout the area (circulation 12,000).

Of all the foregoing factors, the only ones subject to influence by expansion planners or developers would be possible provision of regional recreation or church-site needs. Two other factors are subject to future action by other parties. These are the school linkage issue (action by the Department of Education) and the revitalization of Waipahu shopping areas (action by government, landowners, and businesses to implement the 'Waipahu 2000' plan).

As a result of the political concerns and hearing, Mr. Araki recommends that:
- The elementary school site in current Village Park should be developed and operating by 1989.
- Prior to this, since Samoanin in Crestview is nearing capacity, some Village Park children may be bused to elementary schools in Waipahu.
- By 1987, intermediate and high school students above the freeway will be bused to Waipahu instead of Pearl City.

Construction of the Expansion project will ultimately increase the number of people affected by these recommendations, if implemented. Should the attitudes of the Village Park residents contacted for this report be shared by many others in Village Park and the Expansion, the social controversy over this issue is likely to be stronger and more extended through time.

G. Need for Regional Recreational Facilities

Both Waipahu and Village Park informants feel there is a serious need for more regional recreational facilities in the Waipahu area. (By contrast, some Waipahu people questioned the need for another golf course.) The existence of present courses in Waipahu and Kunia, and the planned addition of another course in Waipio, is one of several possible outcomes.

Factors thought to be associated with Waipahu crime and youth problems included:
- Lack of parental supervision due to a high number of single-parent families and families with two working parents;
- Reduced availability of natural open space, inadequacy of Waipahu Recreational Centers, and lack of other youth activity centers; leading to congregations in arcades and other "street scene" settings;
- Cultural adjustment problems for some immigrants;
- Income disparities and consequent pressure on some lower-income people to resort to theft;
- Perceived oversupply in Waipahu of halfway houses dealing with alcoholism, marital problems, welfare, etc., with
consequent increase in “transient” population with no loyalty to the community; general shifts in social ethics from communal plantation-era values to individual advancement.

Comment and Analysis: In a survey of Waipahu businessmen the most frequently reported “problem with current business location” was crime, mentioned by nearly half the respondents (Smith Research, 1983, Table 1). Unfortunately, no comparable survey has been taken in other communities to provide a basis of comparison.

Because the Honolulu Police Department district and beat boundaries do not conform to census tract boundaries, it is difficult to estimate the resident population within any given beat. Therefore, crime rate figures are not available except on an islandwide basis, and it is not possible to say for sure whether Waipahu has an extremely high rate.

However, crime data for 1983 (the most recent available year) show high absolute numbers for the two beats encompassing Waipahu and the “Maaka Communities.” Beat 318 — including western Waipahu and Village Park — recorded 3,228 offenses in the Part I (i.e., serious crime) category, the second highest total number of reported Part I crimes for any police beat that year. More than 60 percent of these offenses were simple larcenies, a proportion in line with the islandwide breakdown of crime types (Honolulu Police Department, 1984, P. 43). Each police beat is usually staffed by a single patrol car. Thus, while it is uncertain whether Waipahu and Village Park residents cope with more crimes per person than other Oahu residents, it is clear that their police officers do.

But in informal discussions with both Waipahu police officers and Village Park residents, there was little feeling that Village Park is itself a particularly high crime area. The number of reported Beat 318 burglaries in 1983, while high in absolute terms, was proportionately less than the islandwide fraction of total reported Part I crimes (19.1 percent for Beat 318 vs. 21.6 percent islandwide). Thus, there is no reason to expect that the expansion project would generate crime out of proportion to its population.

In his response to the Notice of Preparation for this Environmental Assessment, Honolulu Police Chief Douglas O. Nakamura (July 11, 1983) wrote that a letter to Attorney Roy I. Takahara. That letter, dated July 13, 1983, stated that the police chief’s primary concern was the delivery of police services if the area were developed. Moreover, the chief’s primary concern was the traffic impact.

However, it should be noted that the extremely high labor force participation rate in both Village Park and other “Maaka Communities” (Table 2, Section II) — coupled with the high number of multiple incomes among recent Village Park buyers (Table 3, Section II) — strongly suggests potential youth problems having to do with lack of parental supervision. This is an islandwide problem for young families attempting to meet mortgage payments and would be expected in any new housing development aimed at the excess market as Village Park and the expansion. A part of the solution would lie in the recreational facilities previously discussed. However, it is likely that the need for organized Waipahu-area youth activities will continue to increase as more young two-income families move into all the Central Oahu housing developments.

1. City Apartment Rental Project

The dedication to the City of 30 acres (two adjacent 15-acre sites) for an apartment rental project has generated some concern in both Village Park and Waipahu community organizations. The project would be located adjacent to the western portion of the current Village Park development and at the “gateway” connecting existing Village Park and the expansion.

Concern has centered on the possibility of a “low-income” enclave, implications for property values of existing neighbors, and general appeal and attractiveness of the overall area.

Comment and Analysis: The City has asked for dedication of at least one of the 15-acre parcels early in 1986, raising the possibility of prompt development there -- essentially simultaneous with development of the market units. The developer thus also has a strong interest in ensuring that the City project is compatible with the surrounding community.

The developer and the City Department of Housing and Community Development have agreed in principle that Waipahu will have substantial input into the design of the area. The developer has also requested some input regarding the design of the neighborhood. The city has not yet set a time limit for the completion of the project; this matter is still under discussion.

2. Other Village Park Issues and Concerns

A number of other topics were brought up primarily by Village Park informants and not by other Waipahu-area people: (1) provision and timing of amenities; (2) nature of business; (3) the existence of Village Park activities; (4) certain issues and controversies internal to park activities; (5) certain issues and controversies internal to park activities; and (6) certain issues and controversies internal to park activities; (7) certain issues and controversies internal to park activities; (8) certain issues and controversies internal to park activities; and (9) certain issues and controversies internal to park activities.

1. Provision and Timing of Amenities

As earlier noted, Village Park residents interviewed to date were particularly pleased by the proposed golf course. Many were
golfers themselves, and others saw positive implications for open space and property values.

There was also positive reaction to the proposed Expansion commercial area, school site, and two park sites. However, these planned amenities also reminded people that similar amenities in the current Village Park community have yet to be developed. The commercial area was a particular focus of concern, because the commercial site in the current Village Park area has not been developed as rapidly as expected. Additionally, the vacant site had not been landscaped until recently and was once an aesthetic sore point for some residents. There was concern that the expansion's commercial area might for some reason be developed before the existing designated commercial area.

Questions were then raised about the timing of Expansion amenities and the use of such land prior to its actual development. Some people also noted that the pace of overall housing development in the existing Village Park community had lagged behind the original schedule, and they wondered whether sales would adequately justify the amenities in the Expansion.

Comment and Analysis: Commercial development in the existing Village Park has been delayed, according to the developer, because prospective anchor stores have not wished to locate there until Village Park has a larger population. The planned build-out of the current development by 1985 should provide an adequate market for such stores.

Slow housing sales in Village Park's first years were due to market conditions in general and high interest rates in particular. Sales are currently much more brisk. There is always the possibility that high interest rates or other negative market conditions may return someday, slowing the pace of development at Village Park and subdivisions throughout Oahu.

The developer responded to requests from the community association's board of directors to landscape the vacant commercial area until it is developed. This community concern was noted, and landscaping will be carried out at any Expansion sites which must remain vacant until an adequate population base (or government funding resources) permit construction of planned stores, parks, or schools.

2. Nature of Business Park Activities

Village Park informants reacted more neutrally to the proposed light industrial (business park) sites on Kula Road, perhaps because there are no similar sites in the existing community to provide residents with a point of reference.

Questions were raised about the exact nature of activities which would take place there. Many involved requests for desired types of service businesses, such as medical/dental facilities and branch offices of insurance companies. However, a few people expressed fears that "industries" would produce "pollution" of some sort.

Comment and Analysis: The exact nature of business park activities cannot be known for sure, but the intent is to seek zoning for light industrial activities (e.g., warehousing). The sort of heavy industry which could produce air or noise pollution would not be permitted under such zoning. Furthermore, the relatively small amount of land available on the site would deter most large industries from locating there.

3. Interaction with Current Internal Issues: Values and Parks

Several current (summer/fall of 1983) issues and controversies within the Village Park community may have some implications for the proposed Expansion. These involve (1) internal debates about the Village Park Community Association's Board of Directors and related value issues; and (2) reactions to the developer's recent agreement with the City about planned park sites within the current Village Park.

a. Values: Much of the controversy between the Board of Directors and certain other Village Park residents involves individual personalities and allegations of dishonest or illegal actions on both sides. These provoke high feelings but have little substantive relationship with the Expansion proposal.

However, one underlying aspect of the debate could extend to the new area. This has to do with a basic value difference as to whether the Community Association dues (theoretically used by all Village Park owners) should be spent primarily for social events or primarily to enforce Sales Agreement provisions regarding upkeep and maintenance. The current Board of Directors has emphasized social functions and internal communications, arguing the need to create a sense of community to provide activities for children. Some other residents (a number of whom have their properties to deteriorate significantly, and they feel priority should be given to maintaining communitywide standards, as specified in their Sales Agreement with Waitec.

Comment and Analysis: The value dispute is one which is most appropriately left to the community to resolve. However, it should be noted that the debate is basically over what sort of community Village Park will be as it begins to age. Clearly, the answer to this question will have much to do with what sort of community the adjacent Expansion area would eventually become.

The developer's decision to establish a separate community association and Board of Directors for the Expansion area could possibly confine much of the present dispute to the existing Village Park.
b. Parks: The second internal issue involves the two original park sites for the existing Village Park. In the original proposal for a 3,200-unit townhouse project, a ten-acre and a 5.6-acre lot were to meet requirements for parks and open space. However, the number of residential units was eventually reduced to 1,800 (mostly single-family), which resulted in lower density as well. Because of City budget constraints, neither park site has yet been developed. Furthermore, pressures to use the ten-acre vacant lot have been increasing, primarily because it is located in the middle of a relatively established part of the subdivision. Consequently, the developer recently made an agreement with the City to provide a second community park site in the current Village Park development, in exchange for which Waiteo (rather than the City) will fund construction of facilities at the one existing but now-vacant park site.

This second issue is related to the first primarily because some of the same factions are involved. The current Board of Directors approved the trade-off, favoring one immediate park with facilities rather than two large vacant lots. However, some other residents felt there had been inadequate community-wide discussion and/or notification of affected homeowners. They pointed out that the eastern portions of Village Park will now contain virtually no open space.

As of the time that initial interviews were being conducted, preliminary plans for the eastern part of the larger expansion area also contained little open space, intensifying the impacts of the elimination of the second park site in the original Village Park community.

Comment and Analysis: In response to the community concerns, the developer agreed to rearrange the park acreage for the expansion so as to provide a 5.6-acre site just north of the western portion of existing Village Park (see Figure 2 in Section II). Additionally, the developer will provide a temporary "look lot" on the old second park site in current Village Park until the new expansion park site has been completed and dedicated to the City for improvements and maintenance.

It should be noted that this agreement is contingent on government approvals. The City Department of Parks and Recreation has expressed a desire for the consolidation of all expansion park acreage into a single 21-acre parcel, primarily to reduce maintenance costs. The developer has expressed agreement with this particular City position.

4. Property Values

Most Village Park informants expressed at least passing curiosity about the expansion's effect on their own property values. However, the usual assumption was that this effect would be positive, other than the previously-mentioned concerns about the apartment rental project. Such assumptions were based on the planned golf course and the general increase in amenities and islandwide visibility which the new project would bring to Village Park.

5. Lease-Fee Conversion

Homes in the current Village Park development have been sold on a leasehold basis, while units in the expansion would be sold in fee simple. Some of the Village Park informants felt that the expansion would heighten current residents' awareness of the difference and could result in a renewed drive for negotiations to convert the leasehold land to free simple.

Comment and Analysis: The developer assisted the current Village Park Community Association Board of Directors in preliminary attempts to interest an adequate percentage of leasehold owners in initiating negotiations for a lease-to-fee conversion. That attempt failed to generate sufficient interest. However, given the likely heightened awareness of the lease-to-fee issue due to the expansion proposal, the developer has agreed to talk further with the Board of Directors about renewing the effort and has facilitated communication with qualified attorneys.

6. Local Traffic Impact

Village Park residents' traffic concerns were primarily focused on Kuna Road and on ferryway access and egress ramps. The basic question was simply one of capacity and adequacy.

Comment and Analysis: The expansion plan calls for widening Kuna Road along the development and improving the ferryway ramps to increase capacity. Informants were satisfied with the concept, although they will be seeking a detailed examination of the actual plans.

E. Other Waipahu Issues and Concerns

Questions raised primarily by Waipahu-area informants, and rarely by Village Park people, included: (1) traffic/infrastructure impacts (regional); (2) cumulative impacts of all proposed developments; (3) competition with Waipahu businesses; (4) desire for job guarantees; (5) implications for the future of Oahu Sugar Company; (6) need for a school site in the expansion; and (7) desirability of developer "givebacks."

1. (Regional) Traffic Impact and Infrastructure Capacity

Perhaps the most frequently-raised issue among Waipahu residents was the project's impact on highway, water, and sewage disposal infrastructure. However, the tone of these concerns was
usually not one of objecting to the project itself due to strains on the infrastructure, but rather just wanting to be assured that the potential problems would be dealt with in good planning fashion. Informants tended to suggest that infrastructure capacity will be a very major issue if answers are not forthcoming, but not so major if answers are available.

Traffic impacts were mentioned more prominently than other infrastructure concerns. In contrast with the Village Park emphasis on Kona Road and the freeway ramps, the Waipahu concerns were more with the regional effects on overall freeway capacity. The I-1 corridor into Honolulu, starting at the Waipahu interchange with the H-2 freeway, is one of the island's worst bottlenecks. There is a general concern about impacts from all of the future "Haua Communities," including Waiea and Waialua.

Water was the next most often-mentioned concern. The question was usually a simple "Where will you get your water?"

Comment and Analysis: Despite the brief attention given this issue in the present report, highway and other infrastructure capacity will clearly be a major factor in government approvals for all the various development requests for Central Oahu and Ewa. Traffic impacts from the Village Park expansion proposal itself will be the subject of a separate consultant analysis. Water will come from sources now on the property to which the current landowner (Robinson Estate) has retained rights; this, too, will be analyzed in a separate consultant report.

2. Lack of Information on Cumulative Development Impacts

Related to the foregoing issue is a sense of concern over the cumulative impacts of all the proposed and approved "Haua Community" developments. While most informants believed that the Village Park developer will address project-specific impacts as expected, some expressed apprehension that nobody seems to be addressing the combined regional impacts of all the projects.

These informants felt that Waipahu community groups have taken a position of supporting development, as in the case of Waiea. They would like to maintain this position with subsequent proposals such as Village Park, but they are concerned about the need to address cumulative infrastructure impacts.

The informants interviewed for this report stressed that they do not believe the solution to current problems lies with withholding approval until all existing problems are solved. In fact, some felt that any moratorium on development would result in a false sense of complacency and could actually encourage community and public apathy.

Comment and Analysis: Public agencies are the appropriate bodies to review regional impacts. This was recognized by the residents who expressed the concerns. They felt the public sector should form a joint "task force" of some type, which should include members of City and State agencies, private developer interests, and community organizations.

Such a solution is highly recommended. In the course of gathering information for this report, the present consultants found evidence of substantial discussion of cumulative impacts within and between government agencies, but not among government, developers, and community groups.

3. Competition with Existing Waipahu Businesses

Some Waipahu residents were concerned that the commercial areas in any or all the "Haua Communities" would provide competition that would weaken existing Waipahu businesses, which suffer the disadvantage of being located in aging and sometimes physically deteriorated downtown locations. This was essentially a fear that commercial areas north of the freeway would increase the trend toward deterioration of downtown Waipahu.

Comment and Analysis: The expansion commercial area is unlikely to have an extreme effect of this sort. It is located on a far corner of the Waipahu area; it will have no direct access from Kona Road; and it is unlikely to develop into the sort of large regional shopping center (such as Pearlridge) which would draw Waipahu residents away from closer stores. Two separate market studies (Raymond A. Leaber and Company, 1980; Cowell and Company, 1986) have concluded that the market for the existing Village Park commercial site would be primarily limited to Village Park residents, and the expansion market consultants (Hokio and Tappock, 1985a, pp. 66--67) drew a similar conclusion with regard to the proposed expansion shopping area.

The success of the Waipahu 2000 plan and the commercial developments in Waiea (with direct overpass road connection to downtown Waipahu) appear more significant factors in determining the future survival and revitalization of the downtown Waipahu business area.

4. Request for Job Guarantee

Some Waipahu informants were under the impression that the Waiea project has "guaranteed" 40 percent of the jobs created in that project will go to Waipahu residents. Request was made for a similar guarantee for the Village Park expansion. (Note: Anser's actual statement was that the number of jobs generated would be equivalent to 40 percent of those which would be required by adult workers among Waiea's expected population.)

Comment and Analysis: Such a guarantee is not legally possible, because federal law prohibits job discrimination on the
basis of factors such as religion, ethnicity, or place of residence. (Additionally, of course, Wai'ale would be the developer of the Expansion's commercial and industrial sites; but the business tenants and not Wai'ale would be the actual employers for permanent jobs.)

Wai'ale could, however, urge tenants to advertise job openings widely in the Wai'alea area. It could also provide tenants relocating from outside the area with information on how to make linkages with the local state Employment Service, Waipahu business organizations, and any other communication channels useful for the goal of trying to give Waipahu residents first opportunity for job openings.

5. Project Implications for Oahu Sugar Co. and Waikiki

Although Waipahu is both proud and protective of its identity as a sugar town, only a few of the community leaders interviewed raised any questions about the project's potential impact on Oahu Sugar Company operations. Nevertheless, the proposed withdrawal of hundreds of acres from currently-active sugarcane production represents a potential issue of concern in the Waipahu area. IMO representatives contacted for the project have indicated they are particularly concerned with guaranteeing that sugar jobs will not be affected.

Some community leaders did raise questions about competitive implications for Waikiki, which is supported by the community in large part because of feelings that it will help keep Oahu Sugar alive. The general feeling was that support for one development would logically suggest support for other developments -- unless the other developments harmed the first-proposed ones.

Comment and Analysis: Oahu Sugar Company president William D. Fairour, Jr., has written a letter to Wai'ale Development dated June 20, 1985 in which he says the company has no objection to the Expansion. The letter notes that the project would be developed in phases and that withdrawal of land from sugar cultivation would be gradual. "Finally," the letter states, "the proposed expansion will not adversely affect the operations of Oahu Sugar Company, Limited."

Additionally, the developer has contracted with another consultant to provide an independent evaluation of the project's impact on the economics of sugar operations in Central Oahu. The consultant's summary report states:

"...the Village Park Expansion, individually or in combination with other major projects planned and proposed for Ewa and Central Oahu, will not adversely affect the economic viability of Oahu Sugar Co., nor will it require layoffs of sugar workers. Part of the reason for this is that the cost for relocating cane-haul roads, irrigation ditches and pipes, an eastern reservoir, and power poles will be absorbed by the developer of Village Park. In addition, the reduction in sugarcane acreage is expected to be gradual and partially or completely compensated for by increasing yields. Also, reductions in employment will occur through retirement and voluntary movement to other jobs. In the long term, OECs could accommodate a major reduction in acreage and maintain economies of scale by operating just one mill, rather than two in parallel. [Decision Analysts Hawaii, Inc., 1985b, p. iv.]

Implications for Waikiki reflect uncertainty about the extent of the housing market. The Village Park market analysis (Brooks and Kepotzky, 1985, pp. 44 - 51) notes that the City Department of General Planning projects a need for 69,824 additional housing units islandwide by the year 2005, although the market consultants feel the actual need could be almost double that figure. In this context, the Expansion's 3,485 units represent only another small segment of proposed supply, as does Waikiki itself. A highly competitive situation could develop as a result of the cumulative impacts of all developments proposed for government approval this year (particularly the large tract in Ewa) or if a resumption of high interest rates limits effective demand. It should be noted that recent planning initiatives on the part of several government agencies have the express purpose of increasing competition among housing providers, in order to lower costs to the consumer.

6. Need for Expansion School Site

In presentations to Waipahu community groups, the developer noted that original Expansion project plans included an elementary school site, in addition to the currently-undeveloped site in the existing Village Park area. However, the State Department of Education recommended deletion of the Expansion site because the current Village Park site was considered to have sufficient potential capacity for both areas.

The Waipahu organizations repeatedly expressed concern over this recommendation, particularly in light of the large number of young families which have moved into the Village Park market. The Waipahu Neighborhood Board wrote a letter to the Department of Education objecting to the recommendation and asking for a more specific explanation of the rationale. (No reply had been received as of this writing.)

Comment and Analysis: In a January 16, 1986 letter to the DOE Facilities Branch, the developer voluntarily agreed to reserve a 6.0-acre site in the upper northeastern portion of the Expansion, near the planned recreation center/public park sites, for use as a potential future school site. Waikiki agreed to set aside this land for a period of three years after zoning is received for the project. If the DOE has not by that time determined the need for the land and acquired it, it would be developed in the otherwise intended residential use.
7. Requests for Community "Givebacks"

A number of members and leaders of Waipahu community groups expressed the feeling that any major developer should "give back" something to the larger community in which it is working. The rationale for this feeling included:

- possible impacts and disruptions;
- the example of Waikele, whose developer (Amfac) provided substantial technical assistance to community planning efforts, as well as commitments to Farrington Highway beautification efforts;
- the previously-cited concern about assuring some linkages between Waipahu and the "Mauna Communities."

Comment and Analysis: These requests led to a brief and successful series of negotiations between the community leaders and the developer. The negotiations and their results are described in Section VI.A.

1. Positions Taken by Community Groups

Most Waipahu-area community groups have taken positions in favor of the project, and none have opposed.

At a January 23, 1986 public hearing of the City Planning Commission, the following positions were stated in testimony:

Supporting the Project

Waipahu Neighborhood Board
Pearl City Neighborhood Board
Waipahu Community Association
Waipahu Business Association
Waipahu 2000 Community Council
Village Park Community Assn., Board of Directors

Supporting Need for These Parks in Expansion

Village Park Affirmative Action

The Millilani Neighborhood Board took a position of deferring all Central Oahu Development Plan amendment requests until traffic congestion problems are resolved.

VI. MITIGATIONS

This section identifies potential measures which could be implemented to mitigate potential social impacts previously addressed. For the most part, the mitigative actions address the (feasible) citizen concerns raised in Section V. The subjects addressed in previous sections — population, housing, and employment — generally require no mitigations. Some of the following suggested mitigations are repetitions of ideas put forth in Section V.

Potential mitigations fall under two separate categories:

1. Mitigation measures which can be implemented by the developer — These are primarily onsite efforts which could be initiated by the developer alone.

2. Mitigation measures beyond the developer’s full control — While the developer may be instrumental in, or suggestive of, certain mitigation efforts, the actual decision-making and/or implementation powers of these efforts lie in the hands of others, such as government agencies.

A. Measures Which Can Be Implemented by Developer

This subsection identifies actions which the developer can initiate either at the planning stage, in the detailed design stage, or upon completing portions of the proposed project.

1. Initiate Discussions with the Community to Identify Mutually Agreeable Mitigation or "Giveback" Measures

The developer has already begun discussions with two levels of the community to work out solutions. The first level involves the internal problems previously described. The organization which has expressed the most dissatisfaction with the current Board of Directors is called Village Park Affirmative Action. While the developer still believes that these internal problems should be handled by the residents themselves, a working relationship with Affirmative Action has proven valuable in working out problems specific to the Expansion. These discussions to date have centered primarily around the setting of Expansion parks to achieve better geographical distribution of parks.

The second level of community discussion involves the larger Waipahu-area community groups. In the fall of 1985, representatives from organizations such as the Waipahu Community Association, the Waipahu 2000 Community Council, and the Waipahu Business Association, as well as from the Waipahu Neighborhood Board, formed an ad hoc group to work with the Village Park developer. The group's basic objective was to identify ways in which the developer could participate in activities and projects
benefitting the larger Waipahu area. This participation would presumably alleviate some of the isolation which currently exists between the Village Park community and the larger Waipahu.

It was also felt that the developer's participation in, and contributions to, communitywide efforts would solidify a working relationship with Waipahu and would be a "giveback" to the community for such impacts or disruptions as may occur. In return for such contributions, the ad hoc group has indicated its willingness to support the proposed project, providing the project's impacts are addressed by the developer.

The ad hoc group identified a number of potential projects for the developer's consideration. Thus far, the developer has committed, in writing, to do the following:

1. Fund the materials and installation of a WELCOME TO WAIPAHU sign at the Kaulana Road and of Farrington Highway. Such a sign has also been planned for the Pearl City and Farrington Highway and will be funded by the Oahu Sugar Company.

2. Prepare a Master Plan for Kualoa Road beautification. These efforts will include phased funding.


4. Participate in a number of other community projects as a team member.

The ad hoc group has responded favorably to these commitments and the developer will continue to work with these people on the specific efforts.

4. Keep Community Informed to Ensure Awareness of Proposed Plans and Any Changes

The developer has made presentations to various community groups on the proposed expansion. Many of these groups have expressed interest in the developer continuing these efforts, so that the community can continue providing input. Ongoing dialogue is therefore planned and is in the process of being carried out.

5. Encourage Lease-Purchase Conversion for the Existing Village Park

The developer has initiated discussion with Village Park residents prior to the proposed expansion and intends to continue this effort, providing there is interest from the community.

5. Measures Beyond the Developer's Full Control

This section identifies certain mitigation measures which are recognized, but it is considered impractical and unrealistic to suggest that the developer could actually implement these alone. Many of these measures will rely on other federal or state activities for planning, funding, and implementation. Due to the scope of concerns heard from the community, however, it is felt that it is important to raise these for the purposes of this report.

1. Design and Management Control of City Apartment Project

The developer is currently seeking some degree of input on physical design and management of the proposed City rental project, to ensure both physical and social compatibility with surrounding residents. However, the extent and nature of developer controls are still a matter of negotiation with the City Department of Housing and Community Development.

2. Park Space in the Southeastern Part of the Expansion

As mentioned several times previously, the deletion of the originally planned second park in the current Village Park first park leaves the eastern part of the current development with limited open space. A park in the southeastern part of the expansion could alleviate this difficulty, and some Village Park residents have requested this. The developer is tentatively willing to oblige, and the most recent expansion site plan indicated a 5.5-acre park in the requested location. However, it will be necessary to obtain concurrence from the City Department of Parks and Recreation, as well as other permitting agencies.
3. Establishing a Joint Task Force to Address Cumulative Impacts of All of the Major Proposals in Waipahu

Currently, the responsibility of overseeing the regional impacts of Waipahu proposals lies with the public sector, as required by laws governing the planning process. Each developer is responsible for addressing the specific impacts which may be generated by the proposals. It has been suggested that a joint task force, comprising City and State representatives and those valuable in combining expertise and addressing the regional impacts, be established. The Waipahu Neighborhood Board has recently initiated such efforts on regional transportation issues, and these may prove to be the appropriate vehicle for achieving such objectives.

4. Establishing a Public Elementary School in Village Park to Minimize Out-of-Area Busing

The timing of the Village Park elementary school is totally dependent on the Department of Education population criteria and funding availability. Further, the Department of Education also controls the busing of intermediate and high school students to Pearl City facilities.

5. Actual Use of Recreational and Commercial/Industrial Facilities by Larger Waipahu Community

While such facilities will be available to the larger Waipahu community, the physical boundary of H-1 Freeway may prove too inconvenient for many Waipahu residents. This and other commercial and industrial facilities will be considered in the marketing strategy for the Village Park. It is highly possible that Waipahu residents will make use of these areas because of the current inadequate supply of recreational facilities in Waipahu.

6. Involvement of Both Current Village Park and Expansion Residents in the Affairs and Activities of Larger Waipahu

Again, while the developer may encourage a link between the Village Park residents and those of the larger Waipahu community, the Village Park residents may find the H-1 Freeway a psychological, as well as a physical, barrier. Many of the Village Park residents do not necessarily have strong family or cultural ties with the Waipahu community; simply because Village Park is a recent community. The initiative to establish such ties is in the hands of the Village Park residents themselves.

REFERENCES


APPENDIX D

PROPOSED VILLAGE PARK EXPANSION:
IMPACT ON AGRICULTURE AND AQUACULTURE

Decision Analysts Hawaii, Inc.
February 1986
APPENDICES

B. DIVERSIFIED AGRICULTURE AND AQUACULTURE ALTERNATIVES 8-1

- Crops for the Hawaii Market 8-1
  - Competitive Advantages of Kula 8-1
  - Fresh Produce 8-2
  - Feed Crops 8-3
- Crop Exports 8-11
  - Competitive Advantages of Hawaii 8-12
  - Papaya 8-12
  - Macadamia Nuts 8-13
  - Coffee 8-14
  - Seed Corn and Other Seed Research 8-15
  - Ginger Root 8-15
  - Guava Puree 8-15
  - Floral and Nursery Products 8-15
  - Sweet Corn 8-16
- Livestock Operations 8-16
  - Cattle and Grazing 8-16
  - Dairy 8-17
  - Poultry 8-17
  - Swine and Pork 8-17
- Aquaculture 8-18
  - Factors Affecting Aquaculture Development 8-18
  - Primary Aquaculture Lands 8-19
  - Freshwater Prawns 8-19
  - Other Species 8-20
- References 8-23

TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Major Housing Developments in the Ewa/Central-Oahu Area</td>
<td>4</td>
</tr>
<tr>
<td>B-1. Honolulu Consumption, and Actual and Potential Share Supplied by Hawaii of Produce Crops Feasible for Kula: 1983</td>
<td>B-3</td>
</tr>
<tr>
<td>B-5. Yields and Water Requirements of Produce Crops Feasible for Kula</td>
<td>B-8</td>
</tr>
</tbody>
</table>
EXECUTIVE SUMMARY

The Village Park Expansion will result in the urbanization of approximately 691.5 acres of sugarcane lands under cultivation by Oahu Sugar Company, Ltd. (OSCo). However, the Village Park Expansion, individually or in combination with other major projects planned and proposed for Ewa and Central Oahu, will not adversely affect the economic viability of OSCo, nor will it require layoffs of sugar workers. Part of the reason for this is that the cost for relocating cane haul roads, irrigation ditches and pipes, earthen reservoirs, and power poles will be absorbed by the developer of Village Park. In addition, the reduction in sugarcane acreage is expected to be gradual and partially compensated for by increasing yields. Also, reductions in employment will occur through retirement and voluntary movement to other jobs. In the long term, OSCo could accommodate a major reduction in acreage and maintain economies of scale by operating just one mill, rather than two in parallel.

If OSCo is forced to cease operations for whatever reason (most likely because of low sugar prices), a significant economic loss and social disruption will result. Over the long term, however, the number of jobs which will be generated by West Beach Resort, Campbell Industrial Park, and other new economic activities in Ewa and Central Oahu will greatly exceed the number of jobs lost due to the demise of sugar and, on average, will pay higher wages. Therefore, most, but possibly not all, sugar employees can be expected to find other employment if this should be required. However, unskilled sugar workers and those having non-transferable skills may receive reduced pay when and if they are forced to find non-sugar jobs.

The development of Village Park Expansion on sugarcane acreage will eliminate the possibility of using these lands for diversified agriculture and/or aquaculture. However, it is extremely doubtful that this will adversely affect the growth of diversified agriculture and aquaculture in Hawaii. There are three reasons for this assessment: (1) the extensive amount of prime-agricultural land and water that has been freed from sugar and pineapple production because of past mill closings and reductions in operations; (2) the very real possibility that additional land and water will be
PROPOSED VILLAGE PARK EXPANSION
IMPACT ON AGRICULTURE AND AQUACULTURE

INTRODUCTION

The proposed Village Park Expansion will involve the urbanization of 691.5 acres of sugarcane lands of Oahu Sugar Company, Ltd. (OSCo). The impact of this loss on OSCo operations is summarized in this report. The analysis covers background information on OSCo, urbanization pressures on OSCo, the Amfac Master Agriculture Plan, and the impacts of the Village Park Expansion combined with other major projects on the long-term operations of OSCo, including the impacts on diversified agriculture and aquaculture alternatives. Also included is an appendix which provides an overview of the sugar and sweetener market, and the outlook for sugar prices. A second appendix discusses diversified agriculture and aquaculture alternatives for OSCo's Kualoa lands.

BACKGROUND INFORMATION ON OSCo

Amfac's OSCo first milled sugar in 1899, and is now the fourth largest sugar operation in the State. It cultivates about 14,800 acres of sugarcane land, and produces about 92,000 to 95,000 tons of raw sugar, or nearly 10 percent of Hawaii's total sugar production. Its lands cover portions of Central Oahu on each side of Kualoa Road above Pearl Harbor, and portions of the Ewa Plain to the west of Pearl Harbor. The Ewa lands were taken over from Ewa Sugar Co. in 1970.

Another 4,800 acres of OSCo lands were in production in 1971, but are now fallow. These lands are mostly moku'a lands with high pumping costs, and lands close to the seashore where soils tend to be inferior, yields low, and hounding costs high because of the distance to the mill.

Nearly all of the land which OSCo cultivates is leased, principally from Campbell Estate with a lease expiration date of 1995, and Robinson Estate with a lease expiration date of 1919. The lease rents on these lands are the highest in the State.

Because of favorable growing conditions, good farming practices, and drip irrigation, sugar yields at OSCo are very high, about 15 to 18 tons per acre, versus a 1984 statewide average of 11.65 tons per acre (U.S. DOA, Dec. 1984, p. 58). In fact, OSCo holds the world record sugar yield at 19.83 tons per acre set in April 1985 (USDA, June 26, 1985). But even with high yields and very efficient operations, OSCo is, at best, only marginally profitable because of low sugar prices and high lease rents. The marginal profitability is measured before accounting for new capital investment needed to replace equipment.

URBANIZATION PRESSURES ON OSCo

The gradual growth westward of urban Honolulu has consumed a large amount of former sugarcane land as evidenced by the fact that the eastern boundary of OSCo lands has moved westward by 9 miles from Manoa Valley out past Waialua Stream. Since the 1960s, four ridges west of Waialua have been urbanized. But because of new plantings in the foothills of the Waianae Mountains and on former pasture lands, sufficient acreage was cultivated to maintain economies of scale. The westward urbanization pressures of Honolulu continues, but plantings of new lands to compensate for lost fields is no longer feasible.

Unless otherwise noted, the material in this section is from OSCo, Amfac, and/or Section B, Chapter VI of Hawaii Sugar Industry: Problems, Outlook, and Urban Growth Issues.
PROPOSED VILLAGE PARK EXPANSION:
IMPACT ON AGRICULTURE AND AQUACULTURE

The economic forces which create urbanisation pressures on OSCo include:
- Returns from urban land uses far in excess of those for agricultural uses.
- Proximity to the new or growing employment centers of West Beach, Barbers Point Harbor, Campbell Industrial Park, and downtown Honolulu.
- Reasonable travel times to these employment centers because of the H-1 Freeway.
- Availability of water if freed from sugar production.
- Proximity to the Honolulu waste-treatment facility.
- Low construction costs compared to areas that require extensive grading or removal of structures.

In contrast, redevelopment of downtown suffers from the high expense and displacement problems required to remove existing structures, the high expense and inconvenience of redeveloping inadequate infrastructure, less desirable high-rise housing compared to single-family homes, and strong community opposition on occasion. Hawai‘i Kai suffers from a lack of employment growth centers, relatively little land available for further single-family housing, severe transportation problems, and community opposition to further development. Similarly, the Windward side suffers from a lack of growing employment centers, transportation problems, and community opposition to further development.

In view of these factors, the City & County of Honolulu has designated the Ewa area as a "Secondary Urban Center" which will be developed to accommodate a major portion of Honolulu's future growth.

Major housing developments planned and proposed for the Ewa/Central-Oahu area are summarized in Table 1 including, for each development, the land owner, permit status with respect to State Urban Districting and County Development Plans, the number of housing units included in the project, and the affected sugarcane acreage of OSCo. The total number of housing units is very large, and very probably would require in excess of two decades to absorb all of the planned and proposed homes; during the 1970s, the increase in housing units for all of Oahu totaled 19,708 units (DPED, pp. 417 and 431). However, the more competition among landowners and developers, the better to home buyers in terms of price and selection. Currently, projects on Campbell Estate Land account for 74 percent of the major projects listed in Table 1 which have State Urban Districting. If competition is to exist, other land owners must be allowed to remain and/or enter the housing market.

<table>
<thead>
<tr>
<th>Project (Land Owner)</th>
<th>Permit Status</th>
<th>State Urban District</th>
<th>County Development Plan</th>
<th>Housing Units</th>
<th>Affected Sugarcane Acreage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ewa Master Plan (Campbell Estate)</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>27,000</td>
<td>0,000</td>
</tr>
<tr>
<td>Ewa Marina (Campbell Estate)</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>4,000</td>
<td>410 + Followed</td>
</tr>
<tr>
<td>Ewa Planation (Campbell Estate)</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>4,000</td>
<td>720</td>
</tr>
<tr>
<td>Makahilo (Campbell Estate)</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>4,243</td>
<td>None</td>
</tr>
<tr>
<td>Malemoo Woodlands (Walkalani Developers, Inc.)</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>1,182</td>
<td>None</td>
</tr>
<tr>
<td>Miliani Town (Castle and Cooke)</td>
<td>Approved</td>
<td>Yes</td>
<td>No</td>
<td>1,000</td>
<td>None</td>
</tr>
<tr>
<td>Proposed</td>
<td>No</td>
<td>No</td>
<td>6,800</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Village Park (Robinson Estates)</td>
<td>Approved</td>
<td>Yes</td>
<td>No</td>
<td>900</td>
<td>Followed</td>
</tr>
<tr>
<td>Proposed</td>
<td>Yes</td>
<td>No</td>
<td>3,333</td>
<td>690</td>
<td>Followed</td>
</tr>
<tr>
<td>Waialua Ridge (Bishop Estate)</td>
<td>No</td>
<td>No</td>
<td>11,000</td>
<td>Followed</td>
<td>Followed</td>
</tr>
<tr>
<td>Wailea (Amicell)</td>
<td>Yes</td>
<td>No</td>
<td>2,700</td>
<td>None</td>
<td>Followed</td>
</tr>
<tr>
<td>Waipahu Civic Center Complex (State of Hawaii)</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>300</td>
<td>None</td>
</tr>
<tr>
<td>Waipio Genti (Gentry)</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>910</td>
<td>None</td>
</tr>
<tr>
<td>Waterfront Manor (Ostara Trucking Co., Ltd.)</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>704</td>
<td>None</td>
</tr>
<tr>
<td>West Beach Resort (Campbell Estate)</td>
<td>Yes</td>
<td>No</td>
<td>5,000</td>
<td>Followed</td>
<td>Followed</td>
</tr>
<tr>
<td>Whitmore Village (Castle &amp; Cooke)</td>
<td>Yes</td>
<td>Yes</td>
<td>200</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>82,566</td>
<td>7,855</td>
<td></td>
</tr>
</tbody>
</table>
AMFAC MASTER AGRICULTURAL PLAN

In the long term, the survival of OSCo will depend primarily on the price of sugar, for which the outlook is pessimistic (see Appendix A). In the world market, the average price of sugar is expected to remain well below the production costs for all countries. This is because sugar is a product of various trade agreements that are in place, particularly by the European Economic Community (EEC) which, because of generous price supports to local sugar-beet growers and generous trade agreements with former colonies, is a major sugar producer, importer, and exporter, even though the EEC is one of the highest-cost sugar producers in the world, is self-sufficient in sugar and has no need to import it, and must sell its excess sugar on the world market at enormous losses. In the U.S., Federal legislation protects sugar from the low world prices by import quotas, tariffs, and import fees. However, U.S. sugar prices are managed so that they are fairly low in order to prevent accelerating the growth of high-fructose corn syrup (HFCS), which costs less to produce than normal sugar. In addition, the national sugar companies are capturing market share and putting additional downward pressure on U.S. sugar prices.

In view of the poor outlook for sugar prices, and combined with the fact that sugar plantations are in place with substantial infrastructure, but suitable replacement crops have yet to be identified, Amfac has developed a Master Agricultural Plan which includes a Survival Plan for OSCo. This plan amounts to a holding action to gain time to find as many replacement crops as possible before OSCo may be forced by outside economic factors to cease operations. Key components of the plan are:

- continue to improve the economic efficiency of OSCo by increasing sugar yields and reducing production costs (both of which have been improved substantially in the last few years);
- urbanize Wallata (the only land of OSCo owned by Amfac) in order to derive revenues to help support and justify continued sugar operations; and
- experiment with a variety of crops (papayas, sweet corn, potatoes, forage and feed crops, etc.) in order to find profitable replacements to sugar.

Success of this plan will depend on continued Federal price supports for sugar sufficiently high to justify continued operations, union support to reduce costs, and an adequate allocation of water from the Pearl Harbor aquifer. After the major leases expire with Campbell Estate and Robinson Estate in 1983 and 1985, respectively, continued sugar operations will also depend on success in negotiating favorable lease terms.

In support of continued sugar operations, the developers of Village Park will absorb the cost of relocating cane-haul roads, irrigation ditches, and power poles.

An important component of OSCo's cost reduction is a continued decline in the labor force. This is to be accomplished by attrition—that is, employees who retire or leave OSCo for other voluntary reasons generally will not be replaced. According to Amfac, over at least the next decade (to the end of the major leases), no combination of the major housing projects planned and approved for the Keaau/Central-Oahu area (see Table 1), and resulting loss in sugarcane acreage, will require layoffs of sugar workers. This is because of the expectation for relatively gradual reduction in sugarcane acreage, partial or complete compensation of this acreage loss by increasing yields, and rapid employment loss by attrition.

LONG-TERM OUTLOOK FOR OSCo

Assuming sufficiently high sugar prices to justify continued sugar operations, an important question is whether the Village Park Expansion, combined with the other projects listed in Table 1, would eventually reduce sugarcane acreage and economies of scale sufficiently to force the closure of OSCo.

OSCo runs two mills in parallel; with reduced operations, only one mill would be operated. Because of this, OSCo could reduce acreage and production substantially without losing economies of scale. Of significance, Amfac Keaau Sugar Company, Inc., which has climatic conditions similar to those of OSCo and a similar yield potential, is one of the most profitable sugar operations in the State. Yet this plantation has only about 8,000 acres under cultivation, and produces only about 15,000 tons of sugar per year versus 14,500 acres and 95,000 to 96,000 tons per year for OSCo. Assuming that OSCo could be reduced to a level similar to that of Keaau Sugar Company without losing its economies of scale, which is regarded by Amfac as possible, then about 6,500 acres could be freed (14,500 - 8,000). Therefore, nearly all of the major housing developments planned and approved for the Keaau/Central-Oahu area (see Table 1) can be safely accommodated without having OSCo lose its economies of scale and be forced to close.
If OSGs were to cease operations for whatever reason (most likely because of low sugar prices), the loss of jobs would be less than 550 direct jobs and 950 indirect jobs, with the actual number dependent upon the reduced employment made possible by continuing productivity increases. However, over the next few decades, only a portion of the vast amount of land and water freed from sugar production would be absorbed by housing and other urban developments, most of the land and water would remain available for diversified agriculture and other economic activities. Immediately following the mill closing, there would be a significant economic loss and social disruption. But over the long term, the economic loss would be absorbed easily by expanding economic opportunities in the Ewa/Central-Oahu area. For example, the new hotels at West Beach will be the equivalent of over seven OSGs in terms of direct plus indirect jobs and—when tip income and all indirect jobs are considered—will provide higher average wages (based on analysis with the State Economic Model). Other new jobs in the Ewa area will be provided by Barbers Point Harbor, expansion of Campbell Industrial Park, growth of diversified agriculture and aquaculture, and other economic activities which may be attracted to the area because of the availability of land and water, and home prices which should be less than that in most other areas on Oahu.

IMPACTS ON DIVERSIFIED AGRICULTURE AND AQUACULTURE

The development of Village Park Expansion is an irreversible commitment of agricultural land to urban use. This commitment raises the question of whether the Village Park Expansion will affect adversely the development of diversified agriculture and aquaculture, either immediately or in the long term. Before addressing this question, the supply of and demand for land for diversified agriculture and aquaculture should be clarified.

Land Supply

Regarding the supply of land, there is an enormous and growing supply of prime agricultural land which has been freed from sugar and pineapple production. On Oahu, OSGs freed about 4,300 acres of agricultural land from sugar production in 1982 and 1983, and Waialua Sugar Co. on the north shore of Oahu recently released about 1,600 acres from sugar. On Kauai, Lilikoi Plantation Co. recently released 1,700 acres from sugar production. On the Big Island, 15,000 acres were released by the closing of Punahou Co. Considerable land also was made available to diversified agriculture as a result of previous reductions in sugar acreage: 3,000 acres released on Oahu in 1971 with the closing of Kohala Plantation Co.; 15,000 acres released on Kauai in 1971 with the closing of Kiluaea Sugar Co.; 6,000 acres released in 1975 with the closing of Kahuku Sugar Co. (Plantation, Hawaii Sugar Industry, HSRA, Hawaii Agricultural Reporting Service).

Also, at least 23,400 acres of land have been freed from pineapple production over the last two decades: 11,400 on Oahu, 7,000 on Kauai, and over 5,000 on Molokai and Lanai (Hawaii Agricultural Reporting Service).

Some of the land freed from sugar and pineapple production has or will be converted to urban, diversified-agriculture, and aquaculture uses. Also, some of the land freed from pineapple use on Oahu was converted to sugar production. Making allowances for the various conversions, unsold or bushed acreage which remains available to diversified agriculture and aquaculture amounts to many tens of thousands of acres, with a large share of this on Oahu. Furthermore, this supply probably will increase given the favorable outlook for sugar prices. Many of the lands freed or to be freed from sugar and pineapple production have excellent agricultural qualities and climatic conditions, and are well suited for crop and aquaculture production. Also, water is available for most of these lands, especially lands freed from sugar production. However, many of the lands freed from sugar production are at high elevations where pumping costs are relatively high.

Further, some additional land has been made available to diversified agriculture in government-sponsored agricultural parks throughout the State.

Even though considerable agricultural land is available, it should be noted that the supply of parcels for small-scale farmers is limited. This is partially because of County regulations which require electrical power, paved rather than gravel roads, and buried rather than surface water lines. These requirements are appropriate for rural estates, but are unnecessary for agricultural use of the lands. The added expense for these items makes it uneconomical for large land owners to subdivide their land into small agricultural lots.

Of interest, there is a large supply of fallow agricultural land on the mainland. And this supply is expected to increase given genetic engineering advances which give promise of developing crops having higher yields, increased resistance to diseases and pests, and increased tolerance to climatic variations. Thus, increasing demand for agricultural land in Hawaii as a result of land shortages on the mainland should not be expected since such mainland land shortages are not expected.
Land Demand

In order to accommodate all diversified agriculture and aquaculture activities that are agriculturally suitable for Kula and to provide the hope (but not the expectation) of profitable operations, the amount of land required is relatively small (see Appendix B). As discussed below and in the following section, little of the increase in diversified agriculture and aquaculture production can be expected to occur in Kula, given the current ground rents in the area, and the greater suitability of the land for sugarcane and housing.

For the Hawaii market, fruits and vegetables which are judged to be agronomically and possibly commercially feasible for Kula, based largely upon those crops which are already grown commercially in Hawaii in areas having a climate similar to that of Kula, includes:

- Import substitution potential, increasing production trend (an indicator of profitability): Chinese bananas, broccoli, sweet corn, sweet peppers, pineapple, watermelon.
- Import substitution potential, flat or decreasing production trend (an indicator of marginal profitability): snap beans, cucumbers, pumpkins, zucchini, round eggplant, melons, Chinese peppers, toga squash, leeks, tomatoes.
- Unlikely import substitutes: avocados, blueberries, red cabbage, dahlia, radishes, long eggplant, ginger root, semi-head lettuce, dry onions, green onions, pumpkins, radishes, sweet potatoes.

Produce grown elsewhere in Hawaii, but not suitable for Kula, includes:

- citrus other than lime, Chinese head cabbage, head cabbage, carrots, cauliflower, celery, head lettuce, romaine lettuce require cool temperatures or other climatic conditions not found in Kula.
- long- and medium-day onions require longer days for proper growth and curing, and prices are too low for profitability.
- mangoes: a subsistence crop priced too low to justify commercial farming.
- papaya: treated as an export crop (see below).
- potatoes: Hawaii's major food import (nearly 28 million pounds in 1982), but repeatedly proven unprofitable in Hawaii requires cool temperatures.

The potential produce market for potential Kula growers is derived from three sources: displacing production from other areas in the State, displacing imports, and resident-plus-visitor population growth. The most promising produce crops for Kula would be those which have substantial import substitution potential, and show trends of increasing production in Hawaii (an indicator of profitability). Crops with no recent history of profitable production in Hawaii offer additional potential. However, the risk of failure in new activities is high, and most farmers will be unable to provide or will be unwilling to risk the financial resources required to develop appropriate varieties, technology, and farming techniques.

For all fresh produce that has the potential of being profitable in Kula, only about 1,500 additional acres would be required to (1) displace all but the low-cost summer imports and achieve realistic levels of self-sufficiency, and (2) accommodate projected resident-plus-visitor population growth to the year 2000. This estimate is high, however, in that it assumes market success and profitability for a number of crops for which declining production trends indicate otherwise. On the otherhand, the potential would be much greater if potatoes—where Amfac has experimented near Kula—were proven to be profitable. Displacing produce production on the Neighbor islands and elsewhere on Oahu would also increase potential land requirements for produce production in Kula. But in order to have a significant amount of produce production occur in Kula, agricultural ground rents would have to be reduced significantly so that they are similar to other agricultural areas in the State.

A strong market exists for feed crops, but most of these crops are not commercially feasible for Hawaii. A possible exception is corn silage to feed cattle in feedlots. However, at most 3,000 acres would be needed statewide to feed all cattle in feedlots, even with an increase in cattle operations. Amfac has experimented with corn silage and other feed crops in the Barbers Point area, but returns per acre were low.

Regarding crop exports, papaya is a possibility being explored by Amfac, although the land requirement for increased production is relatively small; total statewide plantings are a little over 2,000 acres, primarily on the Big Island. However, note the potential of achieving a significant amount of agricultural land, but increasing competition indicates that this is a high-risk venture unable to compete in those areas where other activities offer higher land rents. Other existing export crops are not agriculturally suited for the Kula area and/or require very little land. Finally, efforts over a century indicate that it is extremely difficult to identify new export crops and develop them into new and profitable industries. Nevertheless, Amfac has experimented with a new tropical sweet corn for export to the mainland during the winter.
Livestock operations are another possibility, but the returns are low from cattle grazing; the trends are not favorable for increased dairy, egg, and swine and pork operations; and little land is required for poultry operations. Furthermore, livestock operations should not be located near the existing homes of Village Park because of odor, dust, and fly problems.

PROPOSED VILLAGE PARK EXPANSION: IMPACT ON AGRICULTURE AND AQUACULTURE

Problems with freshwater prawns include low profitability, a local market that is saturated, and an export market of doubtful potential. Other potential freshwater aquaculture activities suffer from low prices, stiff competition from the mainland, a small local market, unsuitable climate, and/or other problems. Brackish or saltwater aquaculture would be unsuitable for Kula because of elevation and location over the Pearl Harbor basin water lens; it is extremely important that this freshwater supply not be contaminated by seepage of brackish or saltwater.

Many of the diversified agricultural and aquaculture activities which will generate demand for agricultural land are likely to be small, family operations which do not pay full competitive wages, overtime, benefits, and overhead expenses typical of larger operations. Under a corporate structure, many diversified agriculture and aquaculture operations would be unprofitable and unable to pay rents competitive with sugar, particularly in the Ewa area.

Outlook for Diversified Agriculture and Aquaculture

It is extremely doubtful that the Village Park Expansion combined with other major housing developments in the Ewa/Central-Oahu area (see Table 1) will affect adversely the growth of diversified agriculture or aquaculture. This conclusion derives from the fact that there is a very large amount of prime agricultural land and water that has been freed from sugar and pineapple production in recent years, the very real possibility that additional sugarcane acreage and water will be freed given the outlook for low sugar prices, and the modest land requirements for diversified agriculture and aquaculture, particularly in the Kula area given its particular conditions. Sufficient land and water are available to accommodate development of housing, diversified agriculture and aquaculture, and continued but possibly reduced sugar operations.

A considerable amount of the farmed land is in the Ewa/Central-Oahu area. However, many fields are at high elevation, so would require high pumping costs. However, diversified agriculture and/or aquaculture would not be a reasonable use of the lands proposed for the Village Park Expansion. If these lands should not be
developed to help meet Oahu's housing needs, then it would be best to leave these lands in sugar given their proximity to the mill.

Many diversified agriculture and aquaculture activities would not generate returns per acre to pay rents typical in the Ewa/Central-Oahu area. However, these rents are based on sugar being the highest and best (i.e., the most profitable) use when sugar was in fact profitable. But sugar is now marginally profitable at best. When the major leases of OSCo expire in the mid 1990s, continued sugar operations may require a reduction in lease rents. When this occurs, some diversified agriculture and aquaculture operations may be able to outbid sugar and afford the new rents. However, the land requirements for diversified agriculture and aquaculture will probably be modest, with sugar still providing the highest return per acre for most of the lands.

When and if OSCo should cease operations, then an enormous amount of land and water will be freed from sugar production—for more land and water than could be absorbed by urban development. At this time, land rents should drop considerably in order to accommodate what will then become the highest and best use for these lands. Low rents and proximity to Honolulu could result in rapid development of diversified agriculture and aquaculture in the Ewa/Central-Oahu area-development which probably will be at the expense of Neighbor Island farmers.
REFERENCES


Hawaiian Sugar Planters' Association (HSPA), Hawaii Sugar News, Honolulu, Hawaii.


APPENDICES
APPENDIX A

OVERVIEW OF THE SUGAR AND SWEETENER MARKET AND OUTLOOK FOR PRICES

The profitability of Cuba Sugar Company (USC) over the next decade and beyond will depend to a far greater degree on the price of sugar than it will on acreage withdrawn for urbanization. However, the price of sugar fluctuates greatly, resulting in considerable uncertainty over what future prices will be. In view of this, the outlook for sugar prices is reviewed below. This material is a selective update of that analyzed by the author and published in Hawaii Sugar Industry: Problems, Outlook, and Urban Growth Issues (State of Hawaii Department of Planning and Economic Development, April 1981).

THE WORLD SUGAR MARKET

Nature of the World Sugar Market

Sugar is one of the most universally produced and consumed agricultural commodities in the world, with some 125 nations producing it. About five-sixths of world sugar production is traded in controlled markets which comprise such government involvement as government ownership of all or portions of a sugar industry; quotas; price controls; subsidies; import restrictions; and long-term politically motivated trade agreements which price sugar well above world sugar prices. Most countries have used these devices to isolate themselves from the "free" international sugar market, commonly referred to as the "world market." Consequently, the internal prices of sugar in most countries do not reflect the price of sugar in the world market or the average cost of production. For example, the Soviet Union pays Cuba the equivalent of an estimated 30 to 50 cents per pound for raw sugar versus the European price of about 30 cents, the U.S. price of 21.99 cents (New York price, May 1983), and the world price of 27.77 cents (F.O.B. Caribbean, May 1983). This is in contrast to average per-pound-of-raw-sugar production costs of leading sugar producers and exporters which are believed to fall in a range from the mid to high teens to the mid 20s (with Hawaii and most other U.S. sugar producers placed in the...
middle of this range. As a result of government controls, sugar plants continue to be constructed even though the per-ton cost of the sugar being produced in all of these plants will greatly exceed the price of sugar on the world market.

The so-called "free world market" for sugar is a very "thin" market that includes only about one-sixth of the world's sugar. When sugar is abundant, the free world market becomes a "distress" or "dumping" market for selling surplus sugar which is produced under subsidies and in excess of controlled market needs. Consequently, the price of sugar in this "free world market" often falls below the cost of production.

**International Sugar Agreement**

For over a century, unsuccessful attempts have been made by world producers and users of sugar to keep the free world market from becoming a distress market for that part of their output which cannot be sold in controlled markets. The latest mechanism used in an attempt to stabilize the world sugar market is an International Sugar Agreement (ISA) negotiated in 1977. This Agreement seeks to establish free-market prices within the range of 13 to 22 cents per pound. Price stabilization is to be achieved through this Agreement by establishing quotas on world exports and imports, and accumulating buffer stocks when prices are low and releasing them when prices rise. Most countries have signed the ISA, including the United States (Flasch, pp. 84-86).

As with nearly all international commodity agreements for all types of commodities over the last 50 years, the ISA has been unsuccessful in materially improving prices. In fact, many believe that the ISA is contributing to low sugar prices; countries which would normally cut production are instead selling at their quota limits in order to keep from having their quota reduced.

**European Economic Community (EEC)**

The major sugar producer which affects the world market adversely, and the major non-participant in the ISA, is the European Economic Community (EEC). The EEC is the world's leading sugar producer and exporter, with its 1984/85 production level exceeding consumption by 2.7 million metric tons (37 percent of consumption). At the same time, the EEC is a major importer of sugar (3.33 million metric tons), importing sugar which it does not need and must therefore export. This situation results from the politically motivated Low Agreement with former colonies (Flasch, p. 85; U.S. ITG, pp. 8, A-9, A-24; U.S. DOA, Dec. 1984, p. 18).

**World Sugar Prices**

For most of the years since 1950, the average annual world sugar price has, for most exporting countries, stayed below the cost of producing sugar (Flasch, p. 85). This is because the free market for sugar is a distress, or dumping, market for the subsidized sugar which is produced in excess of demands, as previously mentioned.

Dramatic price increases have occurred, however, with a 5- to 9-year cycle. The average world price for raw sugar was 0.66 cents per pound in 1976, but 41.09 cents in October 1982. By September 1982, the price had fallen to 5.9 cents (U.S. DOA, July 1982, p. 31). By May 1985, the world price had fallen still further to 8.55 cents per pound, the lowest price in 16 years. The occasional high world sugar prices follow a series of years when consumption exceeds production, and world sugar stocks fall well below the 25- to 30-percent of consumption regarded as normal. The estimate of the 1984/85 stocks as a percent of world consumption is 45 percent (U.S. DOA, July 1984, p. 30). The cycle reflects the built-in delays in expanding sugar capacity in response to high sugar prices. The magnitude of the sharp price increase is a consequence of the thinness of the free market for sugar; sharp price increases are needed to balance the world demand and supply of sugar. The last peak in sugar prices occurred in 1980. However, it is probable that the historical 5- to 9-year price cycle has been interrupted by the generous sugar price supports in the EEC, and by competing sweeteners, such as high-fructose corn syrup and aspartame (discussed below).
U.S. SUGAR AND SWEETENER MARKET

Overview of the Sugar and Sweetener Market

2. Sugar and Sweetener Market

Types of Sweeteners

The U.S. sugar and sweetener market consists of a variety of sweeteners which in 1984 had the following distribution in the market: sucrose sugar—58.1 percent; high-fructose corn syrup (HFCS)—35.9 percent; dextrose and glucose corn syrup—15.3 percent; saccharin—7.1 percent; the commercial new aspartame—3.5 percent; and honey and edible syrup—1.3 percent (U.S. DOA, July 1985, p. 23).

Sugar suppliers include sugarcane growers in Hawaii and three mainland states (about 23.3 percent of the market), sugar beet growers in 12 mainland states (about 20.1 percent of the market), and importers of sugar refined mainly in the Northeastern states (about 57.8 percent of the market). Approximately half of the mainland sugarcane and beet growers' experience production costs higher than Hawaii's average production cost (U.S. DOA, March 1983, pp. 17, 19; Flasch, p. 114).

The various sweeteners can be substituted for sucrose sugar, but in most cases, the substitution is imperfect and therefore limited. But HFCS and aspartame (discussed below) are different. Because of market expansion in these two sweeteners, U.S. consumption of regular sugar is expected to drop by about 0.5 million tons raw value (5 percent) in 1985 (DOA, July 1985, p. 4). This amount is approximately half of Hawaii's sugar production.

High-Fructose Corn Syrup (HFCS)

HFCS is a relatively new substitute for sucrose sugar. It is as sweet or sweeter than regular sugar, costs less to produce, is more profitable, is very similar to liquid sugar, and can be substituted readily in many applications. It has experienced rapid growth in sales at the expense of regular sugar sales. New second-generation HFCS allows a reduction in calories for the same amount of sweetness as provided by sucrose sugar. Furthermore, HFCS sells at a price significantly lower than the price of regular sugar (a price which is set by Federal action to be approximately equal to the average production costs of efficient producers). For April 1985, 55 percent concentrate HFCS sold for $2.15 cents per pound on the West Coast versus 31.0 cents for refined sugar (U.S. DOA, July 1985, pp. 14, 19).

Although HFCS is similar to sucrose, it is not identical. The most serious limitation to its widespread use is that it is commercially available only in liquid form. This effectively limits its use to industrial applications. In fact, most markets are either at, or are quickly approaching, their theoretical HFCS penetration levels.

Overview of the Sugar and Sweetener Market

3. Overview of the Sugar and Sweetener Market

The major and most important exception is the soft-drink industry where additional growth is possible. In early November 1984, both Coca-Cola and Pepsi-Cola raised their HFCS in their cola, which forecasts a continuing drop in sucrose sugar consumption (Flasch). The U.S. Department of Agriculture anticipates that 1985 consumption of HFCS will increase by 0.6 million tons, refined sugar equivalent (DOA, July 1985, p. 4). Most of this increase will displace regular sugar in beverages, dropping use of refined sugar in beverages from 0.9 million tons in 1984 to an estimated 0.5 million tons in 1985, compared to 2.5 million tons used in beverages as recently as 1978.

If HFCS were to achieve maximum theoretical market penetration, which could be approached sometime during the latter half of the 1980s, the result would be about a 25-percent reduction in U.S. sugar consumption (over 2.1 million short tons of raw sugar). This would leave approximately equal market shares for sugar and HFCS. Because of the price-support program for sugar under the U.S. Farm Bill, most of the reduction in sugar consumption probably would occur with imports (0.164 million short tons, net imports in 1984) rather than with domestic production (0.808 million short tons in 1984) (U.S. DOA, July 1985, p. 4). Market penetration would be even greater if a low-cost crystalline form of HFCS were developed. Although this is being researched, experts within the industry do not foresee success within the next decade. The Citrus Corporation of Berkeley, California announced in 1969 that they had developed a new low-cost process for producing crystalline HFCS and had fictional backing from Standard Oil of California to develop the process and build a pilot plant. The project has since been abandoned, however, partially because of low sugar prices.

A second approach which the industry has pursued is an attempt to circumvent the problem that HFCS is commercially available only in liquid form to its campaign to educate the public to use liquid HFCS in the home. However, a drawback of home use is that HFCS must be stored at 80 to 100°F. Otherwise, it may become brownish, and crystallization or fermentation will occur.

Aspartame

Aspartame is a new sweetener which is beginning to provide substantial competition to sucrose sugar, HFCS, and saccharin. This sweetener, which is produced by the pharmaceutical company G.D. Searle, is a combination of two amino acids which occur in many foods (Blymeyer, pp. 20-21).
Aspartame went on sale in 1983 for tabletop use under the name "Equal." Also, it is sold under the name "Nutrasweet" as a sweetener for drink mixes (powdered tea, Kool-Aid, etc.), dry cereals, puddings, gelatins, whipped toppings, and chewing gum. In June 1989, aspartame was approved for use in diet drinks by the Food and Drug Administration (FDA). Within a few months, Coca-Cola, Pepsi-Cola, and Royal Crown Cola announced that they would use aspartame in their diet colas.

It has been projected that aspartame and other new, low-calorie sweeteners will push diet drinks from 21 percent of the soda market in 1983 to 50 percent by 1990 (Businessweek, p. 61).

The advantages of aspartame are: It tastes about as good as sucrose sugar, and much better than saccharin which many people believe leaves an unpleasant and lingering aftertaste; it has been declared safe by the FDA, which is not the case for saccharin; it has about 200 times sweeter than sugar, so provides far fewer calories than sucrose or HFC8; it is a natural flavoring agent which improves the flavor of the food to which it is added; it is easier and less expensive to handle than sugar or HFC8; and it is free of the nutrients which encourage the bacteria that can cause dental cavities.

A disadvantage of aspartame is that it loses its sweetness after about six months in a can. Also, it breaks down when subjected to heat, so is unsuitable for use in baking. However, a new version of aspartame which can withstand heat is now being tested. A third problem with aspartame is that it lacks bulk. But this problem may be solved by adding a low-calorie bulking agent.

When aspartame was commercially introduced in 1981, it sold for about 45 cents per equivalent pound of refined sugar. It is expected, however, that this price will drop eventually to a level near that of HFC8, and below that of the wholesale price of refined sugar (Bloomberg, p. 28-30). Searle is working on technology to reduce the costs of production, and several companies are exploring how to produce aspartame more cheaply using genetic engineering (The Economist, p. 61).

A mixture of aspartame and saccharin, which is used in Diet Coke, tastes sweeter than either product alone, tastes better than saccharin, and is cheaper than using aspartame by itself (The Economist, p. 81). The combination with aspartame has significantly increased consumption of aspartame, from 7.7 pounds per person in 1985, refined sugar equivalent, to 19.0 pounds in 1990 (CDC, July 1985, p. 91).

Other Sweeteners

Another new sweetener is Hoehn's acesulfame, which has been approved for use in Britain. Acesulfame is reported to be similar to aspartame and taste just like sugar, cost one-third as much as aspartame, and does not deteriorate (The Economist, p. 81).

Also similar to aspartame is RTI-001 (DL-aminomalonyl-D-galactose isopropyl ester), developed by Research Triangle Institute (Science News, p. 263). The major advantage of this sweetener is its stability in liquids.

U.S. Sugar Legislation

When Congress allowed the 40-year-old U.S. Sugar Act to expire at the end of 1974, U.S. sugar producers were exposed to the "dumping" prices which occur in the free world market. The United States was one of the few major sugar producing, and also sugar importing, countries that had no effective government regulation of the production and importation of sugar (Flasch, pp. 119-119).

Low world and U.S. sugar prices after 1978 prompted passage of various administrative and legislative measures designed to help the U.S. sugar industry. All of these measures were temporary and only marginally successful. Consequently, attempts were made to pass a new Sugar Act that could maintain an economically healthy domestic sugar industry. However, these attempts were unsuccessful, partly because the decision by the corn lobbyists to support the Act was communicated too late to key legislators. Efforts to include sugar in the U.S. Farm Act of 1981 were unsuccessful, however. Price supports are provided through a loan/purchase program, high import fees, and import quotas. However, the price-support level was set relatively low in order to gain needed votes, limit the impact on inflation, and limit the profits of HFC8 producers thereby avoiding excessive growth stimulation of the HFC8 industry. The market stabilization price for the 1984/85 crop year was set at $1.57 cents, raw sugar value, although actual prices have been less.

The U.S. Farm Act is currently up for renewal, and sugar is again to be included in the Act. Both the House and Senate agricultural committees have approved legislation that would set the sugar loan rate at 11 cents per pound, raw sugar (HSPA, July 28, 1985). No explicit provision is made for inflation, but the draft legislation includes authority to allow discretionary increases in the loan rate.

Regarding the long-term outlook for sugar legislation, it should be noted that many corn states have joined the sugar coalition, making it larger and stronger than...
It was before, even though a number of sugar companies have closed in recent years. Also, the Farm Act is generally supported by these countries which receive a sugar quota, since they benefit from a high price for a major portion of their sugar. The considered expectation among sugar experts and lobbyists is that sugar will continue to be included in the U.S. Farm Act, but that the price-support level may be relatively low and may increase at a rate that is somewhat slower than inflation. Even though this is expected, there is a risk that efforts by sugar users and consumer groups to exclude sugar from the Farm Act or to reduce the support price will be successful.

Outlook for the U.S. Sugar Price

It is anticipated that the prices of sugar on the world market will continue to be very low for a number of years until world consumption outpaces production, and the large stocks of sugar are drawn down. During this period, the prices for sugar within the United States will reflect the relatively low price support provided in the U.S. Farm Act—a price of about $340 per ton (17 cents per pound) to growers in August 1983. After a slight adjustment with the new U.S. Sugar Act, it is expected that this price will remain relatively level, or increase only modestly at a rate considerably less than inflation.

If the 6- to 8-year cycle for world sugar prices should continue, then a sharp and substantial upswing in the world and U.S. sugar prices can be expected before the end of the decade, followed by sugar prices falling below production costs during the first half of the 1990s. However, continuation of the world sugar-price cycle is in doubt given disruption of the world sugar market by the EEC.

Also, it is expected by the end of the decade that HFCS will have captured nearly all of the liquid sugar market, with fairly limited market penetration thereafter. At this time, sugar prices can move somewhat independently of HFCS prices and, theoretically, sugar price supports can be relatively high with respect to the production cost of HFCS without fear of greatly stimulating growth in the HFCS industry. However, it is doubtful that a sufficiently large political coalition can be assembled to achieve higher price supports for sugar only. And by this time, the sugar industry could be threatened with substantial market penetration by aspartame and other new sweeteners. Thus, considerable uncertainty exists over the U.S. price of sugar during the 1990s and beyond.
APPENDIX B

Diversified Agriculture and Aquaculture Alternatives

Alternative uses for the Kunia lands proposed for the Village Park Expansion are diversified agriculture and/or fresh-water aquaculture. The economic feasibility of these uses and potential land requirements are addressed in this Appendix.

CROPS FOR THE HAWAII MARKET

Competitive Advantages of Kunia

Prospective farmers who would locate in Kunia would have to compete with other farmers on Oahu and the Neighbor Islands in supplying the Hawaii market. However, Kunia provides year-round subtropical climatic conditions excellent for growing a great many crops. On the other hand, the area is unsuited climatically for crops which require cool and/or moist conditions commonly found at higher elevations or on the wet windward side of an island.

Farmers in Kunia would have major economic advantages because of their location. These farmers could easily truck at their convenience produce to the large Honolulu market where about 85 percent of the State's population resides. In addition, most supplies and equipment are readily available from a large selection of suppliers, and usually at lower costs than on the Neighbor Islands. In contrast, growers located on the Neighbor Islands who wish to sell or buy goods in the Honolulu market must absorb inter-island transportation costs. Also, farmers in most other areas on Oahu have longer trucking costs.

Disadvantages for all farmers in Hawaii are the small and easily glutted local market, and high costs for labor and imported supplies. A specific disadvantage to Kunia farmers would be the high rent in the Ewa/Central-Oahu area—rent which has been based on growing sugar.

1Unless otherwise noted, data in this Appendix are from Statistics of Hawaiian Agriculture 1983.

B-1
Fresh Produce

Fruits and vegetables which are judged to be agronomically possible commercially feasible for Kuna are listed in Table B-1. The judgment is based largely upon those crops which are already grown commercially in Hawaii in areas having a climate similar to that of Kuna. The crops are categorized by those which have (1) significant import-substitution potential, and the production trends are increasing (an indicator of profitability), (2) significant import-substitution potential, but the production trends are flat or decreasing (an indicator of marginal profitability), and (3) little or no import-substitution potential.

Crops excluded from Table B-1 and the reasons for the exclusion include:
- Citrus other than lemons, Chinese head cabbage, head cabbage, carrots, cauliflower, celery, head lettuce, romaine lettuce: require cool temperatures or other climate conditions not found in Kuna.
- Long- and medium-day onions: require longer days for proper growth and curing, and prices are too low for profitability.
- Mangoes: a subsistence crop priced too low to justify commercial farming.
- Papayas: treated as an export crop in the following section.
- Potatoes: Hawaii's major food import (nearly 38 million pounds in 1983), but repeatedly proven unprofitable in Hawaii requires cool temperatures.
- Summer squash other than zucchini, and melon other than watermelon: insect and disease infestations.

The first column of Table B-1 shows the 1983 Honolulu wholesale supply for the crops listed, based on the amount sold in the wholesale market. These quantities provide a crude estimate of the current demand for these products. The estimate is crude because the data for Honolulu are for aggregates of similar products. For example, all types of bulbs onions are listed as “dry onions,” and both oriental and American types of cucumbers are listed as “cucumbers.” Also, for some instances, imports and locally produced products may be imperfect substitutes. An example could be sweet peppers; although similar in appearance, the flavor on the imported peppers is thinner than on the locally grown peppers. These quantities will therefore reflect an overestimate of the demand for local products, since local products are not all identical to imports.

The second column of Table B-1 gives the amount of Honolulu consumption which is produced in Hawaii, including amounts from the islands of Hawaii, Kauai, Maui, Molokai, and Oahu. The percentage ratio between local production and Honolulu consumption gives the market shares shown in Column 3.

<table>
<thead>
<tr>
<th>Crop</th>
<th>Honolulu Wholesale Supply (1,000 lbs)</th>
<th>Hawaii Production for the Honolulu Market (1,000 lbs)</th>
<th>Actual Market Share (percent)</th>
<th>Estimated Potential Market Share (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,152</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table B-1.—HONOLULU CONSUMPTION, AND ACTUAL AND POTENTIAL SHARE SUPPLIED BY HAWAIIAN CROPS FEASIBLE FOR KUNA: 1983

The last column of Table B-1 presents the estimated potential market share based on import substitution. Factors included when developing the estimates were:

- The mix of products contained within each product group.

As mentioned, dry onions include all types of bulb onions, and cucumbers include both oriental and American types. Also local sweet peppers have thicker skins than mainland ones. For these cases, local varieties are imperfect substitutes for certain mainland varieties.

- The extent of overseas competition.

For certain crops, Hawaii can supply all or nearly all of local demand because of weak or nonexistent mainland competition. For other crops, Hawaii's market share can approach or reach 100 percent. But for those crops which face competition from the mainland, the rule of thumb is that prices will start to be depressed when local production increases the market share beyond about 70 percent. With lower prices, growing of the particular crop becomes less profitable, and some farmers begin to switch to alternative crops.

- Seasonal variation of overseas competition, and local demand and production.

Summer crops from California and elsewhere supply the Honolulu market with many fruits and vegetables at very low prices—prices too low for profitable operations by Hawaii farmers. When this occurs, Hawaii market share approaches or reaches zero percent. But even though prices are stronger in the winter, the quality and yield of Hawaii's winter crops may be less than that of summer harvests (i.e., tomatoes).

The potential produce market for potential Kona growers is derived from three sources: displacing production from other areas in the state; displacing imports; and resident-plus-visitor population growth. Estimates of the potential market size due to these three sources for those crops feasible for Kona are shown in Table B-2. Corresponding land and water requirements are shown in Tables B-3 and 4, based on the yield and water assumptions given in Table B-3.

The most promising produce crops for Kona would be those which have substantial import substitution potential, and show trends of increasing production in Hawaii (an indicator of profitability). These crops include Chinese bananas, broccoli, sweet corn, sweet peppers, Italian squash, and watermelons. Crops with no recent history of profitable production in Hawaii offer additional potential. However, the risk of failure in new activities is high, and most farmers will be unable to provide or sell all of the crops they will grow. The potential market size for these crops is shown in Table B-2.

DIVERSIFIED AGRICULTURE AND AQUACULTURE ALTERNATIVES

| Crop                | Actual Production, 1983 | Import Substitution Potential Production Increase Due to Population Growth, 1983- | Potential Production, 1983-...
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Produce</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bananas, Chinese</td>
<td>1,858</td>
<td>7,055</td>
<td>1,055</td>
</tr>
<tr>
<td>Broccoli</td>
<td>114</td>
<td>255</td>
<td>68</td>
</tr>
<tr>
<td>Corn, Sweet</td>
<td>178</td>
<td>378</td>
<td>60</td>
</tr>
<tr>
<td>Peppers, Sweet</td>
<td>455</td>
<td>918</td>
<td>307</td>
</tr>
<tr>
<td>Squash, Italian</td>
<td>455</td>
<td>918</td>
<td>185</td>
</tr>
<tr>
<td>Watermelon</td>
<td>5,185</td>
<td>1,834</td>
<td>1,055</td>
</tr>
<tr>
<td>Produce</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bananas, Chinese</td>
<td>1,858</td>
<td>7,055</td>
<td>1,055</td>
</tr>
<tr>
<td>Broccoli</td>
<td>114</td>
<td>255</td>
<td>68</td>
</tr>
<tr>
<td>Corn, Sweet</td>
<td>178</td>
<td>378</td>
<td>60</td>
</tr>
<tr>
<td>Peppers, Sweet</td>
<td>455</td>
<td>918</td>
<td>307</td>
</tr>
<tr>
<td>Squash, Italian</td>
<td>455</td>
<td>918</td>
<td>185</td>
</tr>
<tr>
<td>Watermelon</td>
<td>5,185</td>
<td>1,834</td>
<td>1,055</td>
</tr>
<tr>
<td>Produce</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bananas, Chinese</td>
<td>1,858</td>
<td>7,055</td>
<td>1,055</td>
</tr>
<tr>
<td>Broccoli</td>
<td>114</td>
<td>255</td>
<td>68</td>
</tr>
<tr>
<td>Corn, Sweet</td>
<td>178</td>
<td>378</td>
<td>60</td>
</tr>
<tr>
<td>Peppers, Sweet</td>
<td>455</td>
<td>918</td>
<td>307</td>
</tr>
<tr>
<td>Squash, Italian</td>
<td>455</td>
<td>918</td>
<td>185</td>
</tr>
<tr>
<td>Watermelon</td>
<td>5,185</td>
<td>1,834</td>
<td>1,055</td>
</tr>
<tr>
<td>Produce</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bananas, Chinese</td>
<td>1,858</td>
<td>7,055</td>
<td>1,055</td>
</tr>
<tr>
<td>Broccoli</td>
<td>114</td>
<td>255</td>
<td>68</td>
</tr>
<tr>
<td>Corn, Sweet</td>
<td>178</td>
<td>378</td>
<td>60</td>
</tr>
<tr>
<td>Peppers, Sweet</td>
<td>455</td>
<td>918</td>
<td>307</td>
</tr>
<tr>
<td>Squash, Italian</td>
<td>455</td>
<td>918</td>
<td>185</td>
</tr>
<tr>
<td>Watermelon</td>
<td>5,185</td>
<td>1,834</td>
<td>1,055</td>
</tr>
</tbody>
</table>

1 Hoolulu Consumption & Potential Market Share = 1983 Production.  
2 Potential Production Increase Due to Import Substitution.
### Table D-3: Potential Land Required to Supply the Honolulu Market with Produce Crops Feasible for Kauai: 1983 and 1998 (acres)

<table>
<thead>
<tr>
<th>Crop</th>
<th>Potential Acreage Increase Due to</th>
<th>Potential Land Substitution Required, 1998</th>
<th>Potential Land Required, 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Increase Due to Substitution</td>
<td>1998</td>
<td>2000</td>
</tr>
<tr>
<td></td>
<td>Population Growth</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Import Substitution Potentials Increasing Production Trend</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bananas, Chinese</td>
<td>68</td>
<td>360</td>
<td>873</td>
</tr>
<tr>
<td>Broccoli</td>
<td>3</td>
<td>6</td>
<td>31</td>
</tr>
<tr>
<td>Corn, Sweet</td>
<td>12</td>
<td>24</td>
<td>20</td>
</tr>
<tr>
<td>Peppers, Sweet</td>
<td>22</td>
<td>31</td>
<td>61</td>
</tr>
<tr>
<td>Squash, Italian</td>
<td>14</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Watermelon</td>
<td>150</td>
<td>197</td>
<td>415</td>
</tr>
</tbody>
</table>

| Import Substitution Potentials Flat or Decreasing Production Trend |
| Fruits, Berries       | 50                               | 10                                       | 26                            |
| Cucumbers             | 67                               | 31                                       | 104                           |
| Eggplants, Round      | 6                                | 4                                        | 8                             |
| Limes                 | 5                                | 20                                       | 55                            |
| Peaches, Chinese      | 12                               | 12                                       | 24                            |
| Squash, Togon         | 4                                | 2                                        | 2                             |
| Taro                  | 14                               | 31                                       | 55                            |
| Tomatoes              | 72                               | 31                                       | 212                           |

| Unlikely Import Substitution |
| Avocados              | 152                              | 3                                        | 27                            |
| Bell peppers          | 12                               | 2                                        | 12                            |
| Cabbage, Chinese      | 12                               | 4                                        | 18                            |
| Cabbage, Napa         | 12                               | 2                                        | 3                             |
| Eggplants, Long       | 12                               | 2                                        | 3                             |
| Gingers               | 60                               | 1                                        | 60                            |
| Leucanth, Semi-head   | 12                               | 3                                        | 12                            |
| Okra, Dry             | 73                               | 23                                       | 200                           |
| Okra, Green           | 50                               | 6                                        | 50                            |
| Pumpkins              | 8                                | 2                                        | 4                             |
| Radishes              | 1                                | 2                                        | 8                             |
| Sweet potatoes        | 61                               | 11                                       | 65                            |

**TOTAL:** 654 852 1190 2000

Sources: Derived from Tables D-2 and 3.

---

### Table D-4: Potential Water Required to Supply the Honolulu Market for Produce Crops Feasible for Kauai: 1983 and 1998 (million gallons per day)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Increase Due to Substitution</td>
<td>1998</td>
<td>2000</td>
</tr>
<tr>
<td></td>
<td>Population Growth</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Import Substitution Potentials Increasing Production Trend</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bananas, Chinese</td>
<td>0.44</td>
<td>1.10</td>
<td>2.11</td>
</tr>
<tr>
<td>Broccoli</td>
<td>0.32</td>
<td>0.06</td>
<td>0.05</td>
</tr>
<tr>
<td>Corn, Sweet</td>
<td>0.65</td>
<td>0.06</td>
<td>0.08</td>
</tr>
<tr>
<td>Peppers, Sweet</td>
<td>0.10</td>
<td>0.06</td>
<td>0.05</td>
</tr>
<tr>
<td>Squash, Italian</td>
<td>0.06</td>
<td>0.06</td>
<td>0.07</td>
</tr>
<tr>
<td>Watermelon</td>
<td>0.32</td>
<td>0.44</td>
<td>0.55</td>
</tr>
</tbody>
</table>

| Import Substitution Potentials Flat or Decreasing Production Trend |
| Fruits, Berries       | 0.13                             | 0.01                                     | 0.02                          |
| Cucumbers             | 0.13                             | 0.01                                     | 0.02                          |
| Eggplants, Round      | 0.09                             | 0.02                                     | 0.03                          |
| Limes                 | 0.04                             | 0.01                                     | 0.05                          |
| Peaches, Chinese      | 0.04                             | 0.01                                     | 0.05                          |
| Squash, Togon         | 0.04                             | 0.04                                     | 0.05                          |
| Taro                  | 0.11                             | 0.14                                     | 0.19                          |
| Tomatoes              | 0.22                             | 0.14                                     | 0.23                          |

| Unlikely Import Substitution |
| Avocados              | 0.52                             | 0.01                                     | 0.13                          |
| Bell peppers          | 0.03                             | 0.01                                     | 0.04                          |
| Cabbage, Chinese      | 0.32                             | 0.01                                     | 0.04                          |
| Cabbage, Napa         | 0.04                             | 0.01                                     | 0.05                          |
| Eggplants, Long       | 0.06                             | 0.01                                     | 0.08                          |
| Gingers               | 0.16                             | 0.03                                     | 0.20                          |
| Leucanth, Semi-head   | 0.12                             | 0.03                                     | 0.25                          |
| Okra, Dry             | 0.10                             | 0.01                                     | 0.05                          |
| Okra, Green           | 0.09                             | 0.01                                     | 0.05                          |
| Pumpkins              | 0.03                             | 0.01                                     | 0.05                          |
| Radishes              | 0.02                             | 0.01                                     | 0.02                          |
| Sweet potatoes        | 0.33                             | 0.03                                     | 0.07                          |

**TOTAL:** 2.51 3.24 3.11 4.55 8.39

Sources: Derived from Tables D-2 and 3, using 1 acre-foot per year = 0.000977 MGD.
Table B-5. YIELD AND WATER REQUIREMENTS OF PRODUCE CROPS FEASIBLE FOR KUNIA

<table>
<thead>
<tr>
<th>Crop</th>
<th>Yield per Crop (lb/acre)</th>
<th>Yield per Year (lb/acre)</th>
<th>Water (ft/crop)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banana, Chinese</td>
<td>20,000</td>
<td>40,000</td>
<td>5</td>
</tr>
<tr>
<td>Broccoli</td>
<td>15,000</td>
<td>30,000</td>
<td>2</td>
</tr>
<tr>
<td>Corn, Sweet</td>
<td>20,000</td>
<td>40,000</td>
<td>1.67</td>
</tr>
<tr>
<td>Peppers, Sweet</td>
<td>15,000</td>
<td>30,000</td>
<td>2.5</td>
</tr>
<tr>
<td>Squash, Hollow</td>
<td>11,000</td>
<td>22,000</td>
<td>1.5</td>
</tr>
<tr>
<td>Watermelon</td>
<td>15,000</td>
<td>30,000</td>
<td>1.2</td>
</tr>
</tbody>
</table>

Import Substitution Potential: Increasing Production Trend

<table>
<thead>
<tr>
<th>Crop</th>
<th>Yield per Crop (lb/acre)</th>
<th>Yield per Year (lb/acre)</th>
<th>Water (ft/crop)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beans, Snap</td>
<td>9,000</td>
<td>18,000</td>
<td>1.97</td>
</tr>
<tr>
<td>Cucumbers</td>
<td>15,000</td>
<td>30,000</td>
<td>1.5</td>
</tr>
<tr>
<td>Eggplant, Round</td>
<td>17,000</td>
<td>34,000</td>
<td>1.5</td>
</tr>
<tr>
<td>Lima</td>
<td>8,000</td>
<td>16,000</td>
<td>1.5</td>
</tr>
<tr>
<td>Peas, Chinese</td>
<td>6,000</td>
<td>12,000</td>
<td>0</td>
</tr>
<tr>
<td>Squash, Togas</td>
<td>15,000</td>
<td>30,000</td>
<td>1.97</td>
</tr>
<tr>
<td>Taro</td>
<td>35,000</td>
<td>70,000</td>
<td>1.5</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>30,000</td>
<td>60,000</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Import Substitution Potential: Flat or Decreasing Production Trend

Unlikely Import Substitution

<table>
<thead>
<tr>
<th>Crop</th>
<th>Yield per Crop (lb/acre)</th>
<th>Yield per Year (lb/acre)</th>
<th>Water (ft/crop)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avocados</td>
<td>7,000</td>
<td>14,000</td>
<td>5</td>
</tr>
<tr>
<td>Bitter melon</td>
<td>13,000</td>
<td>26,000</td>
<td>2.5</td>
</tr>
<tr>
<td>Cabbage, Cal Choy</td>
<td>15,000</td>
<td>30,000</td>
<td>1.67</td>
</tr>
<tr>
<td>Dalsak</td>
<td>15,000</td>
<td>30,000</td>
<td>1.5</td>
</tr>
<tr>
<td>Daikon</td>
<td>15,000</td>
<td>30,000</td>
<td>1.5</td>
</tr>
<tr>
<td>Eggplant, Long</td>
<td>20,000</td>
<td>40,000</td>
<td>4.25</td>
</tr>
<tr>
<td>Ginger Root</td>
<td>20,000</td>
<td>40,000</td>
<td>2.5</td>
</tr>
<tr>
<td>Lettuce, Semi-bald</td>
<td>15,000</td>
<td>30,000</td>
<td>1.67</td>
</tr>
<tr>
<td>Onions, Green</td>
<td>10,000</td>
<td>20,000</td>
<td>3.5</td>
</tr>
<tr>
<td>Onions, Dry</td>
<td>15,000</td>
<td>30,000</td>
<td>3.5</td>
</tr>
<tr>
<td>Pumkis</td>
<td>15,000</td>
<td>30,000</td>
<td>3.5</td>
</tr>
<tr>
<td>Radishes</td>
<td>11,000</td>
<td>22,000</td>
<td>2.5</td>
</tr>
<tr>
<td>Sweet Potatoes</td>
<td>13,000</td>
<td>26,000</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Note: Excludes production during the season when consumption is supplied primarily by cheaper mainland imports.

Diversified Agriculture and Aquaculture Alternatives

The market would be even larger if local production of feed were to stimulate livestock production in Hawaii. Currently, Hawaii is 20-percent self-sufficient in beef and veal, 25-percent self-sufficient in pork and chickens, 75-percent self-sufficient in eggs, and nearly 100-percent self-sufficient in milk. However, feed grains have yet to be proven as a serious alternative for Hawaii. Unsuccessful results with past commercial attempts to grow grain crops were encountered for a number of reasons.
DIVERSIFIED AGRICULTURE AND AQUACULTURE ALTERNATIVES  B-11

Various pests have presented a major problem—particularly birds which have eaten major portions of crops before harvesting.

For most feed crops, Hawaii's humidity is too high (less than 18 percent is required) to allow proper drying before harvest.

Most feed crops are hybrids which have been developed over many decades to adapt to mainland conditions and, although a number of tropical corn-grain hybrids are under development at the University of Hawaii's College of Tropical Agriculture and Human Resources, species suited to Hawaii's particular environmental conditions are yet to be perfected.

Hawaii's year-round warm weather allows the build-up of pathogens in the soil (on the mainland, pathogens are killed during cold winter periods).

The length of Hawaii's summer day is too short for proper growth of some crops, in particular soybeans.

The high cost of land, labor, and imported fertilizers and other supplies makes it difficult to compete with imported feeds.

The production of alfalfa, however, has shown some promise, with Hawaii's only alfalfa farm being a 150-acre operation on Molokai. But large-scale commercial success has yet to be proven.

Another alternative for displacing feed imports is to grow corn silage to feed cattle in feedlots. Until recently, corn silage was grown on the North Shore of Oahu and fed to dairy cows, and there were some small-scale operations on the Ewa plains of Oahu. In 1981, 54,000 cattle were slaughtered in Hawaii, of which 19,600 (36 percent) were fattened in feedlots. Since cattle spend about 4.5 months in a feedlot, the average population within Hawaii's feedlots during 1981 was 11,600 cattle (19,600 x 4.5/12). Assuming that increased production of corn silage and its use in feedlots induces all 54,000 slaughtered cattle to be fattened in feedlots, then the average population in feedlots would increase to about 30,300 cattle (11,600 x 54,000/19,600).

Fattening more cattle in feedlots would free pasture land for other cattle (a limiting factor to beef production), and would allow an increase in the herd size by about 12 percent. Thus, the feedlot population can increase to about 32,800 cattle (19,600 + 1960). Since an acre of silage yields about 57 tons per year and feeds about ten cattle, only 2,000 additional acres of corn silage would be needed to supply all of Hawaii's feedlots at the increased level of production plus the 2,500 dairy cattle on the Neighbor Islands (19,600 x 3,500/10).

Expanded corn silage operations would likely focus on Oahu because the State's major feedlot and dairies are located here, and because corn silage, which has a high moisture content, is heavy and can be transported economically only over relatively short distances.

Amano has in fact experimented with feed and forage crops on its OSGO lands. Although yields were favorable, returns per acre were not.

CROP EXPORTS

Competitive Advantages of Hawaii

Because of the huge size of overseas markets compared to Hawaii's market, the financial rewards of successful export crops are far greater than those of crops grown for local consumption. The competitive advantages which Hawaii offers in developing export crops include a subtropical climate which allows year-round growing conditions and very high yields for some crops. Also, Hawaii is politically stable and has duty-free access to the U.S. mainland market. Frequent and reliable air and shipping service is available to the U.S. mainland and elsewhere. The University of Hawaii College of Tropical Agriculture and Human Resources and the Hawaiian Sugar Planters' Association are recognized worldwide as leaders in tropical agriculture research. Finally, the State and County governments provide strong political support for agriculture.

Repeated attempts have been made for over a century to develop export markets for a great many commodities. Some of the more notable attempts have included silk, cotton, white potatoes, wheat, rice, bananas, rubber, sisal, tea, tobacco, and corn (Hawso, Hawaii's Sugar Industry, p. 218). In addition, there have been numerous studies over the last 100 years. The limited success with these many attempts illustrate that it is extremely difficult to identify an export crop which has a competitive advantage over other areas, and then to develop that crop into a successful industry.

Reasons for the difficulty in developing export crops are many, and include:

- Many of the tropical and subtropical crops which grow well in Hawaii also grow well in similar areas of the Caribbean, Central and South America, Africa, and Asia, and many of these areas have cheaper labor, land, and water costs.

- Overseas transportation costs for both exports and imports of equipment and supplies are often higher than the corresponding costs for other tropical and subtropical countries which may be closer to major markets, and are not restricted to using expensive American shipping lines.

- Hawaii has tropical fruit plants which causes certain foods to be banned
from the U.S. mainland and Japan, or require expensive treatment and inspection of the fruit.
- Many temperate-climate crops do not grow well in Hawaii.
- Chemical costs in Hawaii are relatively high because Hawaii soils are deficient in nutrients, and there is no cold winter to kill pests as is the case on the U.S. mainland.

In the past, sugar was able to overcome the above and other problems, and compete in an established market partly because yields in Hawaii have been the highest in the world. However, most other crops follow the development strategy of pineapple where the market is developed virtually from scratch at considerable cost and risk of failure. After the technology has been perfected and the market developed, growers in countries having lower production and/or delivery costs typically enter the market to the detriment of Hawaii growers. The export crops which are currently following this strategy with success are papaya, macadamia nuts, and cut flowers (principally anthuriums). For each of these crops, overseas competition is developing. Other diversified agricultural exports from Hawaii include coffee, seed corn, ginger root, green stock, and guava puree. Other crops may be possible for export, but they have yet to be identified and/or their overseas market developed.

**Competitive Advantages of Kula**

Regarding exports, growers on Oahu, including those who may locate in the Kula area, are favored by better transportation service than that provided to Neighbor Island farmers. Air service is cheaper and more frequent, with direct flights to many cities; similarly, shipping service is more frequent. With frequent airlines and shipping services, storage costs are lower, rush deliveries of needed supplies and equipment are faster, and overseas delivery dates are more easily met before spoilage occurs. Also, the many wide-bodied jets which fly in and out of Honolulu Airport allow a reduction in packing and handling costs because of the LD-3 containers used in these aircraft. For Oahu farmers supplying the export market, Honolulu also provides a large and convenient standby market whenever production exceeds overseas demand.

A disadvantage of Kula, however, is the relatively high land rent.

**Papaya**

Papaya exports have grown from 4.8 million pounds in 1985 to 46.1 million pounds in 1991, experiencing an average annual growth rate of about 15 percent.

**Macadamia Nuts**

Production of macadamia nuts has grown from 0.5 million pounds in 1985 to 38.4 million pounds in 1991. In terms of acres in crops, macadamia nuts are Hawaii’s largest diversified agriculture industry (15,600 acres in 1991), with practically all production located on Hawaii Island. However, some new orchards have been planted by the C. Brewer & Co., Ltd. on about 3,000 acres of former lands of Wallikau Sugar Co. on Maui.

Macadamia nut farms provide a relatively high return once the orchards mature. However, the orchards require a very large financial investment, and do not bear fruit for 7 years, and reach full productivity even later. As a result, the return on the investment is marginally attractive. Given growing competition from other areas in Hawaii (C. Brewer & Co., Ltd. is also planting 8,000 acres in macadamia nuts on the Big Island and from other countries (Brazil, Guatemala, Malaysia, Australia, and possibly Egypt), macadamia nut orchards represent a high-risk investment. This is particularly true for firms which are new to the industry and which may lack the proprietary information on optimal varieties for a given area (assuming they even have access to a supply of cuttings of the proper variety), and on optimum farming practices. If the wrong variety of tree is planted or improper farm practices followed, yields will be low and substantial losses will be suffered.

A further difficulty is that substantial acreage must be planted in order to support the necessary processing facilities; otherwise, nuts would have to be shipped off-island for processing. Macadamia nuts also require considerable water—over 7 feet per year.

In view of the high risk and high land rents at Kula, macadamia nuts do not appear to be an appropriate crop for this area.

**Coffee**

Hawaii’s coffee industry is, for most years, marginally profitable, and has experienced declines in production in the past, although the industry has been
DIVERSIFIED AGRICULTURE AND AQUACULTURE ALTERNATIVES

relatively stable in recent years. For the 1983/84 season, production was 2.5 million pounds on 1,800 acres of land centered at higher elevations in Kona on the Big Island. Kunia has climatic conditions unsuitable for coffee production.

Seed Corn and Other Seed Research

The seed corn industry is research-oriented, and exports new and improved seeds by air to seed companies, universities, and private and government research organizations located in the U.S., France, Canada, South Korea, Germany, Italy, Holland, Yugoslavia, Bulgaria, Japan, and other nations. The research and seeds are provided under proprietary contract arrangements.

The amount of land used for nursery, observation, and seed production has gradually increased since its introduction to Hawaii in the late 1950s, reaching 600 acres in 1983; these lands are distributed among Kula, Central Maui, Molokai, and Oahu. However, over half of the State's seed corn industry is located in Molokai where seven companies carry out research or produce seed corn on a permanent basis. During the winter, other seed companies produce seed corn in Hawaii on an intermittent basis.

In addition to seed corn, considerable activity also focuses on the production of genetic material for soybeans, soybeans, and sunflowers. Lesser activity focuses on millet, flax, fava beans, sesame, barley, wheat, cotton, kidney beans, black edible beans, tomatoes, cucumbers, and other vegetables. But the major focus is on seed corn, both grain and forage, for two reasons. First, it is the major crop of the United States, with far greater demand for it than exists for other seeds. Second, corn is a hybrid for which new varieties are continually under development. The other non-hybrid seeds breed true, and thus do not lend themselves to extensive development efforts.

Seed corn and other seed research is a unique industry which has a clear comparative advantage in its Hawaii site, enabling it to produce during winter months, and to be insulated from diseases that could affect the large production areas on the mainland. Nine to twelve generations of new hybrids can be produced in 3 to 4 years in Hawaii versus the 9 to 12 years on the mainland. Areas in competition with Hawaii include Mexico (which presents language and political problems), Florida (which has occasional freezes), and Puerto Rico. However, Hawaii dominates the industry, approximately 75 percent of all the corn produced in the United States can trace its development to Hawaii, and over half of it to Molokai.

DIVERSIFIED AGRICULTURE AND AQUACULTURE ALTERNATIVES

As increased effort is directed to the needs of tropical areas, gradual growth in the seed corn industry is anticipated. However, the growth potential amounts to only a few hundred acres, and most of the growth is expected to occur near Kona. In Molokai where climatic conditions are regarded as the best in the world for conducting seed corn research, and where agricultural land rents are generally much lower than elsewhere in Hawaii.

Ginger Root

Ginger root production for export is a new industry with a promising, but still uncertain, future. Although production is relatively small, it has grown rapidly from 1.2 million pounds in 1979 to 5.1 million pounds in 1983; this production was harvested from 180 acres. However, ginger root is not a major commodity, and as has a limited overseas market. In fact, the market was glutted in 1982, which led to a major price drop.

The growing of ginger root is labor-intensive, and generally occurs in backyard farms rather than commercial operations. Also, other areas are competing for the U.S. market, including California and Fiji. As far as Kula is concerned, it offers no locational advantage for ginger root production compared to other areas in the State.

Guava Pulp

Guava pulp is a small and, at best, marginally profitable industry with exports of less than $100,000 (Hawaii DPED, Hawaii Guava Industry University of Hawaii GTS & HR, Guava Industry Analysis, 1983). Production is mostly in backyard operations of the Big Island, with processing performed only occasionally in expensive plants which mostly process papaya. Without sizable papaya operations and a papaya processing plant, a guava pulp export industry is unlikely to develop in the Kula area.

Floral and Nursery Products

Hawaii's floral and nursery industry has expanded rapidly in recent years, with most growth occurring in the sales of potted foliage plants. Because expensive heating is not required in Hawaii as it is on the mainland, it is possible for local producers of floral and nursery products to absorb the transportation cost and compete in the mainland markets. However, this is also true for the competing areas of Puerto Rico, the Caribbean, and Central America.
The outlook for continued growth exports of floral and nursery products is favorable. Expansion will be paced primarily by market development and management expertise. However, relatively little land will be required, the average size of all floral and nursery operations in the State is under 3 acres. Also, since several of the agricultural parks under development in the State may have specific provisions for nurseries, adequate land is available. One of the larger nurseries in the State was started by Amfac on former sugarcane land at Waipahu.

**Sweet Corn**

New hybrids of sweet corn have been developed recently which are specially suited for Hawaii's climate, and provide promise of exports to the mainland during the winter. Developed by the University of Hawaii College of Tropical Agriculture and Human Resources, SuperSweet 810 is a year-round variety which grows rapidly, stores well, is resistant to mosaic and blight diseases, and is tightly banded to help reduce damage caused by earworms. The major question is whether a large number of mainland consumers will be willing to buy high-priced fresh Hawaii corn during the winter versus low-priced frozen and canned mainland corn. Hawaii corn will have to be priced high because of shipping costs. Amfac has 50 acres in corn production at Kula, and is exploring the export potential.

**LIVESTOCK OPERATIONS**

**Cattle and Grazing**

Cattle ranching in Hawaii continues to be an important agricultural activity, with 1982 sales of $23.5 million. With the reduction in sugar and pineapple operations, some of the land freed has been converted to grazing, which, however, provides a low return and low employment per acre. Nevertheless, this is regarded as the best use of this land until a more profitable use can be identified and developed.

The production of beef could be greatly expanded without flooding the market since about 70 percent of the beef consumed in Hawaii is imported. In order to increase beef production, cow grazing (e.g., the Savoy system) has been recommended to ranchers by researchers and extension agents from the University of Hawaii, College of Tropical Agriculture and Human Resources. With this approach, which has been used successfully on the Big Island and elsewhere, the land is partitioned like a wagon wheel, with large wedges of land separated by fences. Periodically, cattle are moved from one wedge (cell) to the next, thereby giving the land in the empty wedges ample time to recover. Depending upon rainfall and irrigation practices, a two- to four-fold increase in cattle production is possible. To be profitable, about 150 head of feeder cattle and about 450 acres of grazing land are needed. The preferred size is about 250 to 600 cattle per cell which can be managed by a single employee.

Raising cattle in the Ewa/Central Oahu area would be attractive in terms of the proximity to the State's largest feedlot at Barber's Point. However, returns per acre are low, as previously mentioned, and intensive livestock operations would be inappropriate if located adjacent to the existing housing area of Village Park because of odor, dust, and fly problems associated with livestock.

**Dairy**

Until recently, Hawaii was self-sufficient in milk production because of protective State legislation. However, this legislation has been successfully challenged on grounds of restraint of interstate trade, leaving local dairies exposed to competition from imported milk from the mainland West Coast. Consequently, dairy operations are likely to experience little, if any, growth, and may decline. But even if substantial growth were to occur, a dairy operation should not be located near the existing homes of Village Park because of odor, dust, and fly problems.

**Poultry**

Because of transportation and other advantages, egg and chicken operations serving the Honolulu market are centered on Oahu, and this is expected to continue. In recent years, Hawaii layers have supplied between 75 and 85 percent of the State's fresh egg requirements. However, production and market-share trends are downward, with increasing market penetration from the mainland.

The potential for increased broiler production is large since less than 10 percent of the broilers consumed in Hawaii are produced locally. Production trends are up, but market-share trends are flat. However, relatively little land is required for the intensive chicken operations common in the industry.

**Beef and Pork**

Similar to broilers, the potential for increased swine and pork production is large since less than 25 percent of the pork consumed in Hawaii is produced locally. Oahu is favored for expansion because imported feed and marketing are cheapest here, and processing is available. However, production trends are flat, and market-share trends are down. Also, expansion on Oahu is limited by the difficulties encountered in meeting waste disposal regulations of the U.S. Environmental Protection
A major factor limiting aquaculture development is that the local industry is still in the research and development stage. Because of this, most areas have few support services (such as training programs and experienced extension agents with specialized aquaculture skills) and few experienced entrepreneurs skilled in aquaculture and business. Furthermore, investment capital is difficult to obtain since aquaculture is regarded as a developing technology with a high risk of failure than activities which have established technology and experienced managers (Ota, p. 2).

**Primary Aquaculture Lands**

The State has categorized lands in Hawaii as being physically suited for aquaculture (State of Hawaii Department of Planning and Economic Development, Aquaculture Development for Hawaii, 1978). This classification was based on elevation (less than 2,000 feet), slope (less than 5 percent), soil type (clay, clay-loam, or loam), and State districting (other than urban). Most sugarcane lands were classified as primary lands suitable for aquaculture.

Water availability was not considered in the land classification for aquaculture. This is a major oversight in view of the limited availability of fresh water in most areas and the fact that aquaculture requires enormous amounts of water. For freshwater prawn, the requirement is about 40 feet of water per year applied to the pond area, compared to 4.5 feet for most crops. However, multiple-water use operations—that is, where water is first used for aquaculture, then used to irrigate crops—may be appropriate in water-short areas.

**Freshwater Prawn**

Following investigations in the late 1960s into techniques for farming freshwater prawns, the State's Anuenue Fisheries Research Center developed a successful Cooperative Agreement Program in the early 1970s to encourage people to try prawn farming. This activity experienced steady growth until 1980, and became the dominant aquaculture activity in the State. Since 1980, however, setbacks have occurred.

In 1978, Kiluea Agronomics, a subsidiary of C. Brewer and Company, planted 100 acres in freshwater prawns at Kiluea, Kauai, and had plans to expand to 200 acres. However, yields were lower than expected because of low water temperatures caused by prolonged periods of cloud cover at its north shore location. The decision was made to close operations in 1980 (Governor's Aquaculture Industry Development Council).
DIVERSIFIED AGRICULTURE AND AQUACULTURE ALTERNATIVES

In spite of the experiences of Kilaua Agroomics, Anfae Aquatech, a subsidiary of Anfae, Inc., placed 35 acres in freshwater prawns in 1980, with plans to expand to 550 acres. The operation also was located on Kauai, but at Keahoa on the north shore, which is considerably smaller and better than on north shore. Although yields were above industry averages, operations were closed in 1988 because the U.S. mainland market was thought to be insufficient to justify major corporate investment, and questionable product acceptance.

Additional closures were experienced by six small prawn farms in 1980 and 1981. Reasons given included a loss of interest, lack of post-larvae, poor site for the pond, and inability to negotiate a long-term lease. Some of these problems reflect the fact that freshwater prawns may be only marginally profitable in Hawaii.

Most of Hawaii's prawn production is sold locally, but some is exported to the mainland. The local prawn market is currently saturated and any increase in production will result in declining prices and decreased returns. Currently the export potential of the prawn industry appears uncertain.

Other Species

Research has been carried out on a number of other aquaculture species for commercial production, and some have progressed to commercial attempts. However, success for these other aquaculture species has been negative or limited by low prices, stiff competition from the mainland, small Hawaii market, unsuitable climate, and other reasons. Problems with these other species are:

—Catfish
  Local production faces very stiff competition from low-cost imports from the mainland.

—Trout
  Small Hawaii market. Also, trout grows better in cold water as found in some streams on Hawaii, Kauai and Maui.

—Tilapia
  Small market and low price of about $1 per pound, wholesale. Some pond operators on Oahu have found it cheaper to treat tilapia as trash and bury it rather than try to sell it. However, red or golden hybrids command higher prices (about $5.00 per pound), but the market is small.

—Bullfrog
  A favorable price of $4 to $6 per pound, but a small market.
REFERENCES


Garrod, et al., Transportation Costs of Agricultural Products in Hawaii, April 1969.


Hawaii Department of Planning and Economic Development, Hawaii Sheep Industry.


Planch, et al., Agricultural, Municipal, and Industrial Water Demand and Benefit Parameters on Oahu, Honolulu, Hawaii, August 1983.


University of Hawaii College of Tropical Agriculture and Human Resources, Diverse Industry Analysis, 1982.
APPENDIX E

ENGINEERING ANALYSIS FOR VILLAGE PARK DEVELOPMENT

Park Engineering, Inc.
January 1986
ENGINEERING ANALYSIS
FOR
VILLAGE PARK DEVELOPMENT
HOAAE, ENA, OAHU, HAWAII

PREPARED FOR:
WAIHEE DEVELOPMENT, INC.
828 FORT STREET HALL, 6TH FLOOR
HONOLULU, HAWAII 96813

PREPARED BY:
PARK ENGINEERING, INC.
567 SOUTH KING STREET, SUITE 300
HONOLULU, HAWAII 96813

JANUARY 1986

TABLE OF CONTENTS

SECTION 1 - PHYSICAL CHARACTERISTIC OF PROJECT SITE
1.1 SITE LOCATION ..................................... 1
1.2 SITE SIZE ......................................... 1
1.3 CONFIGURATION ................................. 1
1.4 TOPOGRAPHY ..................................... 1

SECTION 2 - TRAFFIC
2.1 EXISTING STREETS AND HIGHWAYS .................. 2
2.2 PROPOSED MAJOR STREETS ......................... 3
2.3 TRAFFIC IMPACT REPORT ........................... 3

SECTION 3 - WATER SYSTEM
3.1 EXISTING FACILITIES ............................... 4
3.2 WATER REQUIREMENTS ............................. 4
3.3 NEW FACILITIES .................................. 5

SECTION 4 - WASTEWATER SYSTEM
4.1 EXISTING SYSTEM .................................. 6
4.2 WASTEWATER FLOW REQUIREMENT ................ 6
4.3 NEW SYSTEM ..................................... 7

SECTION 5 - SOLID WASTE COLLECTION AND DISPOSAL
5.1 EXISTING CONDITIONS ............................... 8
5.2 SOLID WASTE GENERATION ......................... 9
5.3 COLLECTION AND DISPOSAL ....................... 9

SECTION 6 - DRAINAGE AND GRADING
6.1 EXISTING CONDITIONS ............................. 10
6.2 PROPOSED IMPROVEMENTS ......................... 10
6.3 GRADING ....................................... 11
# Table of Contents (Cont'd.)

## Section 7 - Electric and Telephone Systems
- 7.1 Existing Systems ........................................... 12
- 7.2 Power and Telephone Service Requirements ................. 12
- 7.3 Proposal Improvements ...................................... 12

## Section 8 - Air Quality
- 8.1 Existing Conditions ......................................... 13
- 8.2 Impact ...................................................... 13
- 8.3 Mitigative Measures ......................................... 14

## Section 9 - Project Development Costs
- 9.1 Off Site Costs ................................................ 16
- 9.2 On Site Costs ................................................ 18

# List of Figures

- **Figure 1**
  Project Site Showing Adjacent Urban Areas

- **Figure 2**
  Facilities Map - Project Site

- **Figure 3**
  Facilities Map - Off-site Wastewater System and Portion of Off-site Water Facilities

- **Figure 4**
  Facilities Map - Off-site Water Facilities
SECTION 1. PHYSICAL CHARACTERISTICS OF PROJECT SITE

1.1 SITE LOCATION
The proposed development site is located at Waikele and Hoaalea, Ewa, Oahu, tax map key: 9-4-02: 30, Par. of 01 & 17. The parcel is located approximately 1900 feet north of the H-1 overpass on Kunia Road. The site is bounded on the south by the existing Village Park residential subdivision; on the west by Kunia Road; on the east by Waikele gulch and on the north by sugar cane crop land, currently leased by Oahu Sugar. Limits of the project site are delineated in Figure 1.

1.2 SITE SIZE
The proposed development site is approximately 691.5 acres, of which 30.0 acres will be zoned Apartment, 168.2 acres Golf Course, 28.7 acres Commercial/Industrial Mix, 21.0 acres Public Park, 6.9 acres Private Park and 460.6 acres residential.

1.3 CONFIGURATION
The proposed project site is rectangularly shaped, running lengthwise along the northwestern boundary of the existing Village Park Subdivision between Kunia Road and Waikele Gulch. The area is approximately 3000 feet wide and 7000 feet long.

1.4 TOPOGRAPHY
Aerial photo contour maps of the area indicate that the site slopes downward from the northwest to the southeast at a gradient of 4 to 7 percent. Two (2) drainages traverse the middle section of the site. The ground elevations range from approximately 210 to 470 feet mean sea level.

SECTION 2. TRAFFIC

2.1 EXISTING STREETS AND HIGHWAYS
The proposed development is located adjacent to existing Kunia Road on its eastern boundary approximately 1900 feet north of Kunia Interchange of Interstate Route H-1, as shown on Figure 1. Between the interchange and the development, two intersections on Kunia Road give access to the existing Village Park Subdivision. The internal roads in this subdivision will make two connections to the proposed development.

The interchange has been improved to increase the capacities of the ramps and Kunia Road which serve the existing project in the two major destinations, namely Honolulu including Pearl Harbor and the airport; and Waianae including Campbell Industrial Park and the proposed West Beach resort development.

Further to the south, Kunia Road intersects Farrington Highway and connects directly to the realigned Fort Weaver Road. It also partially intersects Honowai Street and Waikele Street. This network serves the project with interconnections with Waipahu and Ewa.

To the north, Kunia Road provides direct access to Schofield Barracks, Wheeler Field, Waianae and the north shore.

While existing Kunia Road is a two-lane road, conditions at the project site make it feasible to widen the roadway to provide access to the abutting land. The proposed development will have 5000 feet of frontage on Kunia Road.

2.2 PROPOSED MAJOR STREETS
The primary access to the development will be via an intersection at Kunia Road, to be located approximately two-thirds of a mile north of the existing northern intersection of Kupuna Loop and Kunia Road.
Collector Street #1 is the main road for the development. Two lanes in each direction will provide the capacity required for the projected 1600 vehicles per hour one way during peak hours.

Collector Street #2, a secondary road, intersects Collector Street #1 at two points, and provides a loop road for circulation. Two lanes in each direction will provide for the projected 600 vehicles per hour one way during peak hours. A school and park complex is planned at one of the intersections.

Collector Street #3 provides a secondary access to Kunia Road through the northern intersection of Kupuna Loop while providing access to business and commercial areas. Two lanes in each direction will carry the projected 200 vehicles per hour one way during peak hours.

Collector Street #4 will provide circulation for the remote areas. One lane in each direction will carry the projected 100 vehicles per hour one way during peak hours.

2.3 TRAFFIC IMPACT REPORT
A detailed Traffic Impact Report for the Village Park Expansion is bound separately.

SECTION 3. WATER SYSTEM

3.1 EXISTING FACILITIES
Water for the existing Harbor View Subdivision and Village Park Subdivision is provided by Kunia Well II. Source and storage facilities at the Kunia Well II site, located about 0.8 miles above Village Park along Kunia Road, includes a 1.5 mg "440" reservoir and two deep wells. Contracts have been awarded to install an activated carbon water treatment system at the Kunia Well II site for contaminant removal and will be completed by October 1985.

3.2 WATER REQUIREMENTS
The development of the project site will require approximately 2,764 MGD (average flow) of water. The flow requirement was computed according to the Board of Water Supply Standards as follows:

- Residential .................. 500 gallons per unit per day
- Apartment ................. 400 gallons per unit per day
- Commercial ................. 3,000 gallons per acre per day
- Business Park ............... 3,000 gallons per acre per day
- Golf Course ................... 4,000 gallons per acre per day
- Parks & School ............... 4,000 gallons per acre per day

The developer has submitted a request to the Board of Water Supply and Department of Land and Natural Resources to increase the preserved use allocation from 960,000 gallons per day to 2,000,000 gallons per day for the development of the proposed project.
3.3 NEW FACILITIES
The first phase improvements will consist of installing an additional 1.0 MG concrete reservoir, an additional well and additional water treatment facilities at the existing Kuuia Wall II site so that approximately 1000 units within the 340 foot elevation can be developed.

The second phase improvements will consist of the following:

1) Construct a booster pump station at the existing Kuuia "228" Reservoir & Kuuia Wall I site. Approximately 1.724 MGD (average flow) of water will be boosted to the Kuuia "440" Reservoir.

2) Construct a booster pump station at the Kuuia Wall II site. Approximately 2.076 MGD (average flow) of water will be boosted to the new Kuuia "675" Reservoir.

3) Install approximately 9000 linear feet of 20" transmission main from the existing Kuuia "440" Reservoir to the new Kuuia "675" Reservoir.

4) Construct a 3.0 MGD Kuuia "675" Concrete Reservoir.

The proposed improvements are in conformance with the Revised Board of Water Supply's master plan for the area and Department of Land and Natural Resources Pearl Harbor Groundwater Control area.

Additional onsite distribution systems will be designed to Board of Water Supply Design Standards.

SECTION 4. WASTEWATER SYSTEM

4.1 EXISTING SYSTEM
Wastewater from the existing Village Park Subdivision is collected by a network of pipes, flowing below the H-1 Highway through a 12" and 16" trunk line towards Pearl Harbor, crossing Vaipahu Street and Farrington Highway and into the Kuuia Pump Station, Vaipahu Pump Station and finally into the Honolulu Wastewater Treatment Plant.

Approximately 1000 units of the new development can be served by existing facilities which were installed in accordance with the sewer master plan for the existing Village Park Subdivision approved by the City Department of Public Works on October 6, 1978.

4.2 WASTEWATER FLOW REQUIREMENT
Average daily wastewater flow generated by the development of the project site will be approximately 1.4 MGD. The flow requirement was computed according to the City and County Wastewater Standards as follows:

Residential .................. 320 gallons per unit per day
Apartment .................... 224 gallons per unit per day
Commercial .................. 3,200 gallons per acre per day
Business Park ................. 11,200 gallons per acre per day
School ........................ 12,500 gallons per school per day
4.3 NEW SYSTEM

A new trunk sewer main as shown on Figure 3 will have to be constructed from the project site to the existing Walapau Sewage Pump Station. The new trunk sewer main will be capable of handling 2.7 MGD of average daily wastewater flow, providing 1.3 MGD of capacity for future developments.

Onsite wastewater flows will be handled by onsite improvements that will be designed to current City and County Wastewater Design Standards.

SECTION 5. SOLID WASTE AND DISPOSAL

5.1 EXISTING CONDITIONS

The City and County of Honolulu is providing refuse collection service for the existing Village Park Subdivision. Within the Ewa area, the City and County operates the Walapau Incinerator while the Palatial Sanitary Landfill (SLF) is operated by Lone Star Industries.

5.2 SOLID WASTE GENERATION

Fully developed, the proposed project would generate approximately 30 tons of mixed commercial, institutional, and residential solid waste per day. This quantity represents about one percent of the total solid waste generated on Oahu each day at the present time.

In the absence of the industrial activity, the proposed project would not generate any industrial or otherwise hazardous wastes.

5.3 COLLECTION & DISPOSAL

After the project is fully developed, it is expected that collection will be provided by both government and private work forces. Infrastructure planning will permit City and County of Honolulu refuse collection for single family residences, while commercial and business establishments will be served by private collectors. Apartment units can be served by either the City and County or private collectors.

While the Palatial SLF is expected to be closed within two to three years, the Walapau Incinerator will be kept in service indefinitely. Furthermore, the City and County and private industry are both pursuing government approvals to establish sanitary landfills at Waimanalo Gulch and Makaha Gulch, respectively.
SECTION 6. DRAINAGE AND GRADING

6.1 EXISTING CONDITIONS

Approximately 60% of the new development, the westerly portion along Kauia Road, slopes toward the existing Village Park Subdivision. The remaining 30% of the new development, the easterly portion, slopes toward Waikae Stream.

There is an existing ponding earth reservoir within the proposed development site that is being utilized for agricultural purposes. The incoming and outgoing flows are controlled by Kahu Sugar Co. and there are no danger concerning overflows. The reservoir will be filled and used as part of the Golf Course.

The flood insurance hazard rating for this area is Zone C, areas of minimal flooding.

6.2 PROPOSED IMPROVEMENTS

A drainage master plan has been approved by the Department of Public Works for this area.

Approximately 60% of the storm runoff (1900 cfs) generated by the new development will discharge through the existing Village Park Subdivision. The drainage improvements within the existing Village Park Subdivision have been installed to handle this additional storm runoff. The runoff then flows into improved drainage facilities that are maintained by the City and County of Honolulu and discharges into Pearl Harbor.

Approximately 40% of the storm runoff (1275 cfs) generated by the new development will be discharged to Waikae Stream.
Development of the project site is not expected to have any noticeable impact upon the configuration of Waikale Stream. Flow levels and water quality of Waikale Stream are not expected to be altered or changed to any noticeable or measurable degree. This conclusion is based on the relatively small area of that portion of the project site that presently drains directly into Waikale Gulch as compared to the large area of the Waikale Stream hydrological basin (275 acres and 28,000 acres, respectively).

Storm runoff will be handled by onsite improvements that will be designed to current City and County Drainage Design Standards.

6.3 GRADING

Grading will be performed in accordance with Chapter 23, Grading, Soil Erosion and Sediment Control, of the revised Ordinances of Honolulu, 1978 as amended. Grading is expected to encompass the entire project site. Erosion control measures will be implemented as outlined in the City and County Grading Ordinance. Strict compliance to City ordinances should minimize any potential environmental impact.

Erosion and dust control measures that can be implemented are as follows:

1. Temporary and permanent interceptor ditches, sediment traps and sediment basins.
2. Temporary and permanent vegetative cover.
3. Mulching.
4. Spraying of Chemicals or Liquid Asphalts.
5. Temporary wind barriers.

SECTION 7. ELECTRIC AND TELEPHONE SYSTEMS

7.1 EXISTING SYSTEMS

The electric and telephone services for the existing Village Park Subdivision are available from HECO and HTCO facilities on Kunia Road.

7.2 POWER AND TELEPHONE SERVICE REQUIREMENTS

The existing HECO House substation which is servicing the existing Village Park substation will not be able to service the Village Park Expansion. HTCO facility is also inadequate to service the proposed expansion.

7.3 PROPOSED IMPROVEMENTS

A new HECO substation is proposed to be located within the project site adjacent to Kunia Road. A low profile substation will be considered (approximate land area required is 120' x 180'). A primary overhead 46 KV feeder is proposed along Kunia Road to service the substation.

HTCO is proposing to install a remote switching unit within the new site. This facility will be housed in a small building. Total land area is estimated at less than 5000 square feet.

As Kunia Road is widened, both HECO and HTCO facilities are proposed to be relocated underground. HECO has a 12 KV feeder that needs to be placed underground and HTCO has the responsibility to underground the existing WAIKE cable. Work for all HECO and HTCO facilities will be planned to coincide with the needs of the proposed expansion.
SECTION B. EXISTING AIR QUALITY

8.1 EXISTING CONDITIONS

The air quality of the region within which the proposed project is located is generally clean and low in pollutants. However, in certain urbanized areas, such as Waipahu Town, and during certain periods associated with sugar cane cultivation, such as harvesting and pre-planting field preparation, deterioration in air quality may be of concern. The principal pollutants of concern are carbon monoxide from vehicular engine exhaust, and particulates emitted during the burning of cane, as well as windblown particulates from exposed soil surfaces prior to substantial cane growth.

8.2 IMPACT

With the completion of the proposed project, three impacts are readily identifiable:

1. Displacement of sugar cane cultivation within the 691.5 acre site by urban development will eliminate the particulate emissions that are presently discharged during harvesting and field preparation operations. This impact is considered long-term.

2. Site development required for project implementation will generate fugitive dust and exhaust from heavy construction equipment. This impact is considered short-term.

3. Completion of the proposed project will increase vehicular traffic within the area, resulting in an expected increase in vehicular exhaust emissions, principally carbon monoxide.

Inasmuch as air emission screening and dispersion modeling were not performed in this assessment, the magnitude of these impacts have not been quantified and this evaluation remains qualitative. Notwithstanding this limitation, for purposes of this assessment, it can be concluded that 1) the long-term air quality impact may be a net reduction in particulates, and a net increase in carbon monoxide and other vehicular exhaust emissions, and 2) the short-term air quality impact will be an increase in construction-derived fugitive dust. In the absence of any major point source of air pollution, i.e., refinery, incinerator, etc., associated with the proposed project, the change in air quality is not expected to cause any existing air quality standards, Federal or State, to be exceeded.

8.3 MITIGATIVE MEASURES

The short-term construction-related impacts that have been identified can be mitigated through adherence to established construction standards, guidelines, and practices. This includes minimizing, to the extent possible, massive grading which exposes large areas of soil; timely paving and re-vegetation of exposed areas; and suppressing dust formation through the conscientious application of water or other dust suppressants. Experience has shown that construction-generated dust can be effectively controlled to levels that are not adverse or that create nuisance conditions.

With respect to the long-term traffic-related impacts, mitigative measures are limited to Federal regulations requiring engine controls to reduce carbon monoxide and oxides of nitrogen, as well as the required use of unleaded gasoline in new vehicles. Absent a relaxation in these Federal regulations, vehicular emissions are expected to decrease significantly by the year 2000 as older, unregulated models are removed from the total vehicle fleet. However, even if a relaxation in regulations occurs, it is not unreasonable to expect a decrease in
vehicle emissions because of the production of more fuel-efficient vehicles. Clearly, the mere fact that the new models tend to burn less fuel per mile traveled will result in a decrease in vehicular emissions for a given fleet size.

SECTION 9. PROJECT DEVELOPMENT COSTS

9.1 OFFSITE COSTS (OVERALL COSTS)

1) Major Roads $3,200,000
2) Utility Road Improvements 1,400,000
3) Water Facilities 7,600,000
4) Wastewater Facilities 6,000,000
5) Drainage Systems 8,000,000

TOTAL $24,200,000

9.2 ONSITE COSTS

1) Residential Areas $41,000,000
2) Commercial Areas 1,000,000
APPENDIX F

TRAFFIC IMPACT REPORT FOR THE PROPOSED VILLAGE PARK EXPANSION

Park Engineering, Inc.
February 1986
TRAFFIC IMPACT REPORT
FOR
THE PROPOSED VILLAGE PARK EXPANSION
HOEA, EWA, GEAR, HAWAII

PREPARED BY:
PARK ENGINEERING, INC.
557 SOUTH KING STREET, SUITE 300
HONOLULU, HAWAII 96813

FEBRUARY 1986

TABLE OF CONTENTS

I. INTRODUCTION .............................................. 1
II. THE DEVELOPMENT ......................................... 1
III. LAND USE .................................................. 3
IV. THE EXISTING ROAD SYSTEM ............................... 4
V. TRAFFIC DATA ............................................. 5
VI. TRAFFIC IMPACTS .......................................... 7
VII. PROPOSED IMPROVEMENTS ................................. 12
VIII. ALTERNATIVES ........................................... 17
IX. PUBLIC TRANSPORTATION .................................. 18
X. REGIONAL TRAFFIC PROBLEMS ............................. 20
REFERENCES .................................................... 22

LIST OF FIGURES

FIGURE 1 LOCATION MAP ....................................... 2
FIGURE 2 PROPOSED KUNIA ROAD .............................. 9

LIST OF TABLES

TABLE 1 CONSTRUCTION SCHEDULE ........................... 3
TABLE 2 1997 PEAK HOUR VILLAGE PARK TRAFFIC .......... 6

APPENDIX

LEVEL OF SERVICE AND MAXIMUM SERVICE FLOW RATE A-1
INTERSECTION LEVEL OF SERVICE RANGES A-1
KUNIA ROAD TRAFFIC PROJECTION A-2

1
I. INTRODUCTION

Wattc Development, Inc. proposes to expand its existing 300-acre plus Village Park Residential Community by 691.5 acres and approximately 3,400 housing units including 400 rental units to be developed by the City and County of Honolulu. This expansion would have a dominating traffic impact on existing Kunia Road in the vicinity, a substantial impact on the existing Kunia Interchange and on Interstate Route H-1.

A. Purpose

The purpose of this report is to estimate and assess the traffic impact on these existing transportation facilities. Specific mitigating measures are recommended for each problem area up to but not including the regional problems.

B. Scope

Traffic impact is estimated from: 1) Historical traffic data obtained from the State Highways Division, 2) Methods and criteria developed in Highway Capacity Manual, Special Report 209 (1985) by the Transportation Research Board of the National Research Council.

Evaluations are made on the existing conditions and on improved conditions and also include the quality of service provided by the facilities.

II. THE DEVELOPMENT

The proposed development (expansion) is on 691.5 acres situated on the east side of Kunia Road and north of an on-going development which is adjacent to the north boundary of Interstate Route H-1 (see Figure 1). The present development is scheduled to be completed by 1987.

The expansion will include 2,760 single residential units, 400 low income units and 240 attached units for a total of 3,400 units. Also included are business and commercial sites, a school and open space for parks and a golf course.
The following is the time schedule of the incremental development:

<table>
<thead>
<tr>
<th></th>
<th>Units</th>
<th>Cumulative Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td>980</td>
<td>980</td>
</tr>
<tr>
<td>1989</td>
<td>487</td>
<td>1467</td>
</tr>
<tr>
<td>1990</td>
<td>400</td>
<td>1867</td>
</tr>
<tr>
<td>1991</td>
<td>410</td>
<td>2277</td>
</tr>
<tr>
<td>1992</td>
<td>395</td>
<td>2672</td>
</tr>
<tr>
<td>1993</td>
<td>383</td>
<td>3055</td>
</tr>
<tr>
<td>1994</td>
<td>345</td>
<td>3400</td>
</tr>
</tbody>
</table>

*Including 480 rental units by the City.

The design year used for traffic volume projections is 1995.

IV. THE EXISTING ROAD SYSTEM

As shown on Figure 1, existing Kunia Road runs along the frontage of the development. It varies in width from two lanes along the frontage and widens to five lanes at the southern end of existing Village Park. Two intersections provide access to this existing residential area. All Kunia Road widening from the original two lanes up to five lanes and intersections were constructed by the developer in conjunction with its existing Village Park development.

Kunia Road forms the Kunia Interchange with the Interstate Route H-1 at the southern end of the existing residential area. This Interchange provides all required movements to and from the freeway with ramps which provide connections to Pearl Harbor, the international airport, Honolulu, Barbers Point Naval Air Station, Campbell Industrial Park and Waianae. Three of the eight ramp movements require left turns across the Kunia Road through movements. Two of these left turns are controlled by traffic signals.

Kunia Interchange was also improved by the developer in conjunction with its existing Village Park. Kunia Road was widened one lane in each direction and Ramps KA-I and KI-A (see Figure 2) were widened from one to two lanes.

Kunia Road continues past H-1 and is connected to Fort Weaver Road with an overpass over Farrington Highway. It also makes connection with Farrington Highway and partial connections (right turns only) with Hoakuli and Waipahu Streets. This leg of Kunia Road provides the development with circulation with Waipahu and Ewa.

III. LAND USE

A. General Area

The predominant land use of the general area is agricultural, specifically for raising sugar cane. This use is expected to continue in the areas within several miles to the north and west of the development for the next ten to fifteen years.

Waialua Gulch is on the eastern boundary and is an ammunition storage area for the U.S. Navy. The Oahu General Plan designates the gulch for continued military use.
V. TRAFFIC DATA

A. Trip Generation During Peak Hours

The number of trips generated from the development was calculated from a factor of 0.8 vehicles per unit during the peak hours. This factor is deemed conservative, considering that an elementary school, commercial and recreational facilities are planned on the site.

The total number of units in the combined new and existing developments is 5,220 including the City’s rental units.

B. Trip Distribution During Peak Hours

The civilian population is estimated by market analysis to be 75% and the number of trips is distributed to work centers in proportion to the densities as listed in Table 2. These proportions have been adjusted to the anticipated shift in densities towards Waimanalo. The military population is estimated to be 25% and the work trips are distributed to the military bases as shown in Table 2. Directional distribution is 80% outbound and 20% inbound for the morning peak hour and vice-versa for the afternoon peak hour.

C. Traffic Projection

The through traffic on Kamehameha Avenue in the design year of 1995 is projected from traffic counts made by the State Highways Division. The traffic counts of 1980 through 1984 made at Station C-9-D, 2.8 miles northwest of H-1 Freeway were averaged out to determine a credible growth rate.

The 1980 count is the first count made after the opening of H-2 Freeway in 1977. The volume on Kamehameha Avenue dropped to less than half of what it was before H-2 was opened.

The calculations for the 1995 projections and peak hour proportions are shown in Appendix (A-2).
D. Traffic Assignment

1. Traffic Generated by the Development

   Major adjustment are made in the route out of and into the development. Because of the proximity of intersections and street pattern of the development, it is expected that the motorists will select their routes according to the congestion and convenience at each of the intersections; namely, the new Collector Street No. 1 and the existing North Kupuna Loop.

   Based on this principle, the assignments are approximately equally divided between the two intersections. Modifications are proposed for the North Kupuna Loop intersection which make it possible to pass through the assignments. These modifications are described under "Proposed Improvements".

2. Through Traffic on Kuna Interchange

   The 1995 projected through traffic on Kuna Road was assigned to the ramps of the interchange in the same proportion used in the Fort Weaver Road Realignment and Widening project.

VI. TRAFFIC IMPACTS

   Level of service is defined in the Highway Capacity Manual, as a qualitative measure of the effect of a number of factors which include speed and travel time, traffic interruptions, freedom to maneuver, safety, driving comfort, and convenience. This term is used hereafter to indicate the degree of traffic congestion on a segment of road, at an intersection, on a weaving section or on a merging section.

   Levels of service are classified A, B, C, D, E or F where level A is a condition of low traffic volume and higher speeds. The degree of congestion and the volume accommodated increases progressively in levels B through E. Level E, although highly congested yields the greatest volume which can be accommodated by the roadway; it represents capacity. Level F is a condition of extreme congestion in which the volume is below capacity because of very low speeds and stoppages of more than momentary durations. A more detailed classification is given in the Highway Capacity Manual.

   Service Flow Rate is the maximum number of vehicles that can pass over a given section of a lane in one direction on multilane highways (or in both directions on a two- or three-lane highway) during a specified period of time (usually one hour) while operating conditions are maintained corresponding to the selected or specified level of service. The service flow rate for each level of service in two and four lane highways is given in Appendix A-1.

   The levels of service for signalized intersections are defined in terms of delay. A table of levels of service excerpted from the Highway Capacity Manual is given in Appendix A-1(Cont'd).

   A level of service C is the desirable minimum for the design year; however, a level D is acceptable if further improvements are costly and not cost effective.

   A. Kuna Road

   Kuna Road is shown schematically in Figure 2 by traffic flow diagram with estimated 1995 peak hour volumes.

   1. Proposed Intersection with Collector Street No. 1

   By 1995, the increased traffic generated by the development and the normal growth of the through traffic on Kuna Road would overload the existing two lanes of Kuna Road and a proposed intersection with Collector Street No. 1 resulting in a level of service F. The major impact is during the morning peak hour when the heavy left turn movement from the development into Kuna Road (home to work travel) conflicts with the substantial northbound movement as indicated in Figure 2. The afternoon peak hour would also overload the
existing two-lane road due to the conflict between substantial volume of left turns from the Schofield work to home travel and the heavy volume of Kuna Road work to home travel from H-1. The latter movement, albeit a right turn at the intersections, in combination with the through movement, exceeds the capacity of the one lane approach. Also, without a separate left turn lane, the southbound lane would be restricted severely.

The estimated average delay would be more than 60 seconds per vehicle and the peak traffic period would be extended to more than three hours in the morning.

2. Existing Intersections with North Kupuna Loop
A substantial portion of the traffic generated by the development will be diverted to the existing North Kupuna Loop because of the congestion at the proposed intersection with Collector Street No. 1 during the morning peak. This diverted traffic and the increased traffic would add 120% more to the existing and exceed the capacity of this existing intersection in the morning. The delays are estimated to be more than 60 seconds per vehicle and the peak traffic period would extend to three hours.

3. Existing Intersection with South Kupuna Loop
At this intersection, the 1995 traffic volume would be increased by 60% over the volume of the design year (1990) for the existing Kuna Road improvements during the morning peak by traffic generated by the development. The capacity of the existing southbound lane of Kuna Road would be exceeded for more than a four hour period. There would be long delays and long traffic backups.

B. Kuna Interchange (See Figure 2 for schematic drawing)

1. Intersection of Ramps and Kuna Road
The projected 1995 traffic is estimated to increase by 65% over the projected volume of the design year (1990) for the existing Kuna Interchange improvements. This increase will cause congestion in the existing Kuna Interchange at intersections "KI", "KO" and "KE" shown in Figure 2. The congestion would result in level of service "I" during the morning peak hour at intersection "KI" which is a signalized intersection. Intersections "KO", which is unsignalized, would be interfered by traffic backups. The existing "yield" movements of Ramp "KD" will operate at a level of service "F". Intersection "KA", a signalized intersection, which is already widened for the future increase in traffic, will operate satisfactorily at a level of service "B" during the morning peak and at "C" during the afternoon peak. The peak traffic period is not expected to last longer than one hour.

2. Ramp Terminals at H-1
a. Ramp KI-A, the on-ramp to Interstate Route H-1 in the eastbound direction is two lanes wide throughout its length including the ramp terminal at (connection to) the through lanes. The right lane connects directly to an added lane of the four eastbound lanes of H-1. The 1995 morning peak hour traffic is estimated to increase by 120% over the projected volume for the design year (1990) of the existing improvements. The ramp would operate near capacity at the terminal, where the ramp traffic merges with the H-1 freeway traffic. At near capacity, merge movements create significant turbulence, but continue without noticeable freeway queues. On-ramp queues, however, may be significant. (Description of operation near capacity from the Highway Capacity Manual.) (See calculations in Appendix A-24 for the morning peak.)
The afternoon peak traffic would be light.

b. Ramp KO. the ramp from H-1 westbound, is one lane wide and a through lane is dropped at this ramp terminal. The afternoon peak hour traffic at this terminal would be over capacity and turbulence would be created as vehicles attempt to change lanes to avoid diverge areas. Considerable delay is encountered in the vicinity ............ (Description of condition from the Highway Capacity Manual.) (See calculations on Appendix A-25.)

VII. PROPOSED IMPROVEMENTS

It is proposed that the improvements on Kuuia Road and Interchange described below be constructed to alleviate the traffic impact estimated under Section VI above. These improvements would upgrade the traffic conditions during the 1995 peak hour to a level of service C or D at the intersections which are the critical segments of the road system. However, although the ramp terminals at the H-1 Freeway will become congested, no improvement is proposed for these terminals at the H-1 Freeway because regional problems are involved. (See last paragraph of this section).

At level of service C, the range of stopped delay per vehicle is 15 to 25 seconds at the intersection and 25 to 60 seconds at level of service D. As stated in Section VI above, level C is the desirable minimum for the design year, but a level D may be acceptable if further improvements are costly.

The proposed improvements of the intersections north of the Kuuia Interchange would also meet the capacity requirements of the projected traffic volumes.

A. Kuuia Road (See Figure 2 for schematic drawing)

Kuuia Road needs the following improvements:

1. The northbound lane needs to be widened to two lanes from North Kupuna Loop to the proposed Collector Street No. 1 intersection. From hence the widening transitions back to the existing roadway.

2. For the southbound lane, beginning from the end of the northbound taper, flare out to effect a widening to two lanes at the proposed Collector Street No. 1 intersection. Of these two lanes, one is to be designated for left turns only and the other for southbound through traffic. The widening is to continue through North Kupuna Loop, South Kupuna Loop and to Ramp KC of the Kuuia Interchange.

3. The South Kupuna Loop intersection is proposed to be improved as follows:

   a. An additional southbound lane as covered in paragraph A.2 above.

   b. The traffic signal system is to be converted to a two-phase system from the existing three-phase system. One phase will be for the movements on Kuuia Road and the other for the movement out of South Kupuna Loop. The left-turn traffic from Kuuia southbound to South Kupuna will make the turns through the gaps in the opposing traffic or during the amber light. This should limit the number of left turns to be made at this intersection to one or two per cycle. It would encourage the left turns to be made at the Collector Road No. 1 intersection where the left turns will have a separate phase in a three-phase system. Also, the congestion would be less at that intersection.
4. North Kupuna Loop Intersection is to be improved by the following:
   a. An additional southbound lane on Kupuna Road.
   b. The right lane on North Kupuna Loop coming out of the development to be converted to an optional right-turn/ left-turn lane. This improvement will provide double left-turns out of North Kupuna Loop.
   c. The signal system is proposed to be converted to a two phase system from the existing three-phase for the same reasons and results given above in paragraph 3 for the South Kupuna Loop Intersection.

These improvements are proposed at this intersection in order that a substantial portion of the traffic generated by the new development can be accommodated at this intersection as alluded to under Section V.D. above. The intersection would then be able to operate at a level of service C during the 1995 peak hour traffic. (See calculations in Appendices A-5 to A-8).

5. Collector Street No. 1 Intersection is to be constructed as follows:
   a. Collector Street No. 1, 56 feet wide, curb to curb:
      (1) Westbound: Two inside lanes for left turns only. One outside lane for right turns only.
      (2) Eastbound: One inside lane for left turn from Kupuna southbound. One outside lane for right turn from Kupuna northbound.
   b. Kupuna Road
      (1) Northbound: Two through lanes.
      (2) Southbound: One through lane and one left-turn lane.

With substantial traffic diverted to the North Kupuna Loop intersection and with improvements as described above, the Collector Street No. 3 intersection would operate at level of service C during the 1995 peak and PM peak in 1995. (See calculations in Appendices A-3 to A-4).

B. Kupuna Interchange

As discussed under Section VI, the ramp intersections "KI", "KQ" and "KC" without improvements will become congested during the 1995 peak hours. The following are the proposed improvements to alleviate the congestion:

1. Intersection "KI"

Add another lane to Kupuna northbound lanes for the left-turns into Ramp KC and another lane to the right turn lane into Ramp KI-A. These additional lanes will improve the intersection operation from a level of service F to D during the 1995 AM peak hour. (See calculations in Appendices A-13 to A-16.) Adding another lane to Kupuna northbound lanes would improve the operation to level C; however, doing this would necessitate adding two lanes at intersection "KQ" (see below), which would affect the Board of Water Supply
well adjacent to Kuna Road. Drilling a replacement well would be costly; therefore, a one-lane addition is recommended.

2. Intersection "KO"
Add another lane to Kuna northbound lanes on the right side to increase the number of weaving lanes to three from Ramp KO to South Kapuni Loop. This addition will improve the traffic movements so that the weaving can be done at a minimum average speed of 30 mph and the non-weaving speed can be 45 mph. The improvement is satisfactory for the 1995 afternoon peak hour. The morning peak is not critical. (See calculations in Appendices A-21 to A-23).

3. Intersection "KC"
This intersection needs signalization in order to insure a level of service commensurate with the adjoining intersections.

It is the developer's intention to construct and fund the above-mentioned improvements. The estimated time table based on the development time table would be completion by the end of 1980. (See calculations in Appendix A-17 to A-30.) Plans and specifications for the proposed improvements will be coordinated with and subject to approval by the State Highways Division.

The ramps proposed (the segment between the intersection at Kuna Road and the connection to H-1) are estimated to be adequate for the 1995 peak hour traffic. Ramps KI-A and KI-A-1 are two lanes wide and Ramps KO, KC and KB are all one lane wide. However, the ramp terminals of KI-A and KO at the H-1 Freeway would not be up to the minimum requirements for the 1995 traffic (See paragraph VI.B.2.a. & b.).

This freeway section will become inadequate not only with the increased traffic from the Village Park expansion as indicated here, but also from the traffic volume increase caused by other major developments proposed in Ewa, West Beach and Makaha.

VIII. ALTERNATIVES

A. Minor or No Roadway Improvements
The 1960 Study (See Reference 4) states that expanded public transit services, regardless of transit mode, would not attract a sufficiently large increase in transit use to offset the substantial increase in travel from the Ewa and Central Oahu areas. It goes on to point out that in order to improve highway conditions on the Pearl City-Ala and Waikele-Downtown area roadways, increased public transit service should be supplemented with roadway widenings, traffic operations modifications (HOV facilities or reversible lanes), etc.

The planning of Village Park for the immediate future must accommodate substantial automobile use increases and therefore it must include access roadway improvements.

B. Alternate Routes
An alternate route for access requires a new right-of-way and a new interchange with H-1. Both items are costly in terms of change in land use and construction. It is obvious that the improvement of existing Kuna Road and Kuna Interchange is the more feasible alternative. The construction of a local road such as a connector to the Anahulu Valley development would conflict with the existing Navy ammunition storage area and also, it would be very costly.
IX. PUBLIC TRANSPORTATION

As mentioned above in paragraph VIII A., an expanded public transit service, regardless of transit mode, would not offset the substantial increase in travel from the Ewa area. Nonetheless, public transit service has an impact on traffic operations; also, development has impact on existing transit service. It is to cover these impacts and to present on-going transit studies that this section is included.

A. Existing Service

At present, Village Park is served by two (2) express buses in conjunction with service to Wahiawa. There are two (2) runs to Honolulu starting at 5:35 A.M. and 6:05 A.M., respectively from Wahiawa and arriving for pick up at Village Park at 6:02 and 6:32. The destination is the intersection of Ala Moana and Hotel Streets at 6:47 and 7:20. The afternoon runs leave at 4:15 p.m. and 4:45 p.m., respectively and arrive at Village Park at 4:51 and 5:31 P.M.

The ridership as of July 1985 is approximately 25 persons from Village Park per run, which is about one-third of the seating capacity and one-third of the total capacity of a standard bus.

B. Impact of Development on Existing Bus Service

Present Village Park has approximately 850 occupied units and the proposed development will raise the total to 5,220 dwelling units including the unfinished units of the present development. The increase would be six fold.

The route would be extended 0.6 mile north on Kunia Road from Kupuna Loop (mauka). The collector street network extends one mile east of Kunia Road.

C. Ongoing Studies

Presently, the Hali 2000 Study (See Reference 4) is addressing the feasibility and effectiveness of the following public transportation alternatives: (1) bus system expansion emphasis, (2) at-grade light rail system, or (3) partially grade-separated light rail and (4) fully grade-separated rapid transit.

1. The bus system expansion alternative provides for major expansion in bus fleet size, services, and reserved bus lanes on the H-1 Freeway. Village Park, already being serviced, will benefit from the expansion. In conjunction, a marine ferry service between Ewa Beach Marinas and downtown is a part of this alternative. This would also benefit Village Park.

2. The at-grade light rail system and partially grade-separated

A & 3. Light rail system use street car sized vehicles which can be operated as single units or coupled into trains. Operating speeds can vary from those typical of local buses to speeds similar to rapid transit trains, depending upon the degree of separation from traffic conflicts and the spacing between station stops.

The light rail line being considered would run between West Beach and the University of Hawaii-Manoa area, with a branch line extending through Waikiki. The line between Pearl Harbor and West Beach would run on the former Oahu Railway and Land (OR&L) alignment which runs near the intersection of Fort Weaver Road and Farrington Highway. The public bus system would be modified to provide "feeder" service to the rail line while existing parallel bus line service would be reduced or eliminated. Village Park can be served quite effectively by this system.
4. The fully grade-separated rapid transit operates on a guideway which avoids all vehicular and pedestrian conflicts through the use of elevated and subway alignments, and location within freeway rights-of-way. Stations would be spaced far apart to reduce the frequency of stops and permit higher travel speeds. The guideway would run from Kahala to Aloha Stadium, with a possible four (4) mile extension to Pearl City.

"Feeder" buses would service the outlying residential areas to make connections to stations on the guideway line. Village Park would benefit from this "Feeder" bus-rapid transit system.

D. Status of Public Transit Planning
The Hali'imaile Study is still in the process of alternative(s) selection. At this time, this step is not expected to be completed in time for this report.

E. Impact of Public Transit
For Leeward Oahu, the Hali'imaile study shows that the percent trips by transit in major corridors range from 9.1% to 10.5% for the four (4) alternative public transit systems. Even for the best case of 10.5%, the diversion of trips away from the highway is not sufficient to make a difference in the Kahala Road or the interchange improvements needs. However, increased public transit use would make the traffic operation of the improvements significantly better by reducing the congestion.

X. REGIONAL TRAFFIC PROBLEMS
The developer has been advised of the projected regional traffic problems presented in the Hali'imaile study. The projected problems are substantiated by the proposed large developments in Ewa, West Beach and Makakilo as well as the Village Park expansion.

As pointed out at the end of Section VII, the existing Interstate Route H-1 at Kunia Road will be inadequate to convey the anticipated additional traffic generated by the proposed developments in the region. This report is prepared to present the Village Park expansion's effect on the problem.

The State Highway's Division has the following projects under design:

1. Widen H-1 Freeway from four lanes to six lanes, Kunia Interchange to Palailai Interchange (Campbell Industrial Park access road).

2. Widen and/or restripe H-1 Freeway for an additional lane in each direction as follows:
   a. In the eastbound direction, from Waiawa Interchange to Halawa Interchange, except through Waiawa Interchange.
   b. In the westbound direction, Halawa Interchange to the Pearl City off-ramp.

The State is also developing conceptual plans of other highway improvements.

Also, the developer has been apprised of measures being considered which will require his participation, such as "park and ride" systems for carpooling and mass transit systems.
REFERENCES


2. TRAFFIC COUNTS, Stations No. TS 82-2 (July 14-20, 1982), TS 84-1 (March 13-14, 1984), and C-8-0 (January 21-26, 1983 and April 9-10, 1984), Highways Division, Department of Transportation, State of Hawaii.

3. TRAFFIC STUDY REPORT FOR VILLAGE PARK, December 1976, Park Engineering, Inc.


APPENDICES

22
<table>
<thead>
<tr>
<th>LEVEL OF SERVICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: Free Flow</td>
</tr>
<tr>
<td>B: Stable Flow</td>
</tr>
<tr>
<td>C: Approaching</td>
</tr>
<tr>
<td>D: Unstable Flow</td>
</tr>
<tr>
<td>E: Force Flow</td>
</tr>
</tbody>
</table>

*In reporting traffic, use no passing zones.*

<table>
<thead>
<tr>
<th>STOPPED DELAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEVEL OF SERVICE</td>
</tr>
<tr>
<td>A</td>
</tr>
<tr>
<td>B</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>D</td>
</tr>
<tr>
<td>E</td>
</tr>
</tbody>
</table>

*(Excerpted from the Highway Capacity Manual)*

(Continued)
KUNIA ROAD TRAFFIC PROJECTION

STATE HIGHWAYS DIVISION
24-HOUR ACCUMULATED TRAFFIC COUNT
AT STATION C-9-D
KUNIA ROAD 2.5 MILES NORTHWEST OF H-1
(EPF NAIHANE RESERVOIR)

<table>
<thead>
<tr>
<th>TOTAL-2 WAY AVERAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LULU 1990</td>
</tr>
<tr>
<td>5,272</td>
</tr>
<tr>
<td>JUN 1992</td>
</tr>
<tr>
<td>6,077</td>
</tr>
<tr>
<td>JAN 1993</td>
</tr>
<tr>
<td>5,642</td>
</tr>
<tr>
<td>APR 1994</td>
</tr>
<tr>
<td>6,590</td>
</tr>
</tbody>
</table>

GROWTH:

2\(\times\)5744 = 0.3% PER YEAR
2\(\times\)5744 = 5794

PROJECTED 1995 TRAFFIC:

14\(\times\)583\times5744 = 8,400 VPD

JAN 25-26, 1985 VTC COUNT:

SOUTH BOUND: A.M. PEAK = 9.2%  NORTHERN BOUND: A.M. PEAK = 6.5%
P.M. PEAK = 6.6%  P.M. PEAK = 9.4%

1985 PEAK:

SOUTH BOUND: A.M. = 8,600 x .432 = 270 VPH
P.M. = 8,400 x .432 = 360 VPH

NORTH BOUND: A.M. = 8,400 x .453 = 530 VPH
P.M. = 8,400 x .453 = 390 VPH

PLANNING APPLICATION WORKSHEET

Intersection: COLLECTOR STREET #1  Date: 12/12/95
Analysis: YEARN  Time Period Analyzed: AM PEAK HOUR
Project No.: VILLAGE PARK  City/State:

<table>
<thead>
<tr>
<th>MAXIMUM SUM OF CRITICAL VOLUMES</th>
<th>CAPACITY LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 TO 1,200</td>
<td>UNDER</td>
</tr>
<tr>
<td>1,201 TO 1,600</td>
<td>NEAR</td>
</tr>
<tr>
<td>&gt; 1,600</td>
<td>OVER</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>R-W CRITICAL</th>
<th>N-W CRITICAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1214</td>
<td>1214</td>
</tr>
</tbody>
</table>

VOLUME (VPD) 493  610  810

DEGA.

PARK ENGINEERING INC.

KUNIA RD. TRAFFIC STUDY
### VOLUME AND GEOMETRICS

**Lynia Rd. @ S. Kupuna St.**

- **Type:** N/S Street
- **Total:** N/W Total
- **WB Total:**

### IDENTIFY IN DIAGRAM:

1. Volumes
2. Lane, lane widths
3. Movements by lane
4. Parking (P) areas
5. Any storage lengths
6. Alinement (aligned or parallel)
7. Bike lanes

### TRAFFIC AND ROADWAY CONDITIONS

**Approach**

<table>
<thead>
<tr>
<th>Lane Type</th>
<th>Lane Type</th>
<th>Arr. Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED</td>
<td>WB</td>
<td></td>
</tr>
<tr>
<td>WB</td>
<td>NB</td>
<td></td>
</tr>
<tr>
<td>NB</td>
<td>SB</td>
<td></td>
</tr>
</tbody>
</table>

**Traffic Flow**

<table>
<thead>
<tr>
<th>Lane Type</th>
<th>Flow (veh/h)</th>
<th>Veh/Ln</th>
<th>PHF</th>
<th>Cont. Peds. (Ped/Ph)</th>
<th>Pedestrian Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED</td>
<td>5</td>
<td>5</td>
<td>0.25</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>WB</td>
<td>5</td>
<td>5</td>
<td>0.25</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>NB</td>
<td>5</td>
<td>5</td>
<td>0.25</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>SB</td>
<td>5</td>
<td>5</td>
<td>0.25</td>
<td>0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

**Grade:** 0% (No grade)

### OTHER CONDITIONS

- **Pedestrian volume:**
- **Traffic volume:**
- **Pedestrian crossing:**

### DEPARTMENTS

- **Yield:**
- **Yield-B:**
- **Y-**:
- **Y-R:**
- **Y+B:**
- **Y+B-R:**
- **Y+B-R:**

### CIRCLE LENGTH

- **A-11**
### LEVEL-OF-SERVICE WORKSHEET

<table>
<thead>
<tr>
<th>Lane Group</th>
<th>First Term Delay</th>
<th>Second Term Delay</th>
<th>Total Delay &amp; LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### INPUT WORKSHEET

**Intersections:**

- KUHIA HOUSEFARM, INTERS 2
- KE AVE
- KE AVE
- NEV 86

**Analyst:**

- DE 1-NY

**Time Periods Analyzed:**

- AM-PE

**Area Type:**

- VILLAGE PARK

**City/State:**

- KUHIA, HAWAII

### VOLUME AND GEOMETRICS

- **N/S STREET**
  - SB TOTAL
  - NB TOTAL

### IDENTIFY IN DIAGRAM:

- EB
  - EW TOTAL

### TRAFFIC AND ROADWAY CONDITIONS

<table>
<thead>
<tr>
<th>Approach</th>
<th>Grade (%)</th>
<th>NHV</th>
<th>PS</th>
<th>PSN</th>
<th>NOV</th>
<th>DVL</th>
</tr>
</thead>
<tbody>
<tr>
<td>EB</td>
<td>-4</td>
<td>5</td>
<td>N</td>
<td>-</td>
<td>-</td>
<td>-0%</td>
</tr>
<tr>
<td>WB</td>
<td>14</td>
<td>5</td>
<td>N</td>
<td>-</td>
<td>-</td>
<td>-0%</td>
</tr>
</tbody>
</table>

- Grade: 1 up, - down
- NHV: vehs, each more than 8 wheels
- PS: passenger factor
- PSN: single passenger factor
- NOV: Nmus-bus avg
- DVL: design veh.

### PHASING

- Traffic Phasing
- Phasing Phases
- Phasing Phases
- Phasing Phases

**DIA**

- A-11A
- A-16
- A-16

**ED**

- B-8
- B-8
- B-8

**C**

- C-1
- C-1
- C-1
### LEVEL-OF-SERVICE WORKSHEET

<table>
<thead>
<tr>
<th>Lane Group</th>
<th>First Term Delay</th>
<th>Second Term Delay</th>
<th>Total Delay &amp; LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EB</td>
<td>0.90 0.05 120</td>
<td>593 3.85 93.6</td>
<td>D</td>
</tr>
<tr>
<td>WB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NB</td>
<td>0.85 0.05 120</td>
<td>517 3.65 36.0</td>
<td>D</td>
</tr>
<tr>
<td>SB</td>
<td>1.00 0.05 120</td>
<td>170 4.35 40.1</td>
<td>E</td>
</tr>
</tbody>
</table>

Intersection Delay: **36.2** sec/veh  
Intersection LOS: **D**  

\[ A = 13 + 15 \text{ b } 13 \text{ c emitted from report} \]

\[ A = 14 \]

### VOLUME AND GEOMETRICS

- **NORTH**
  - Northbound:
    - Lane Total:
    - WB Total:
    - N/S Street:
    - N/W Street:

### TRAFFIC AND ROADWAY CONDITIONS

<table>
<thead>
<tr>
<th>Approach</th>
<th>Veh/h</th>
<th>% HV</th>
<th>Peak Hour Factor</th>
<th>PHF</th>
<th>Conf. Peds/Conf. peds/hr</th>
<th>Pedestrian Right</th>
<th>Area Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>EB</td>
<td>-4</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>J</td>
<td>Type 10</td>
</tr>
<tr>
<td>WB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NB</td>
<td>4</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SB</td>
<td>-4</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Grade:**
- + up = down
- + down = up

**HV veh, with more than 4 wheels:**
- N, busses stopping/hr
- N, peak hour factor
- PHF, peak hour factor
- Conf. Peds, Conflicting peds/hr
- Conf. Peds, Conflicting peds/hr
- Pedestrian Right
- Area Type: Type 1-2

### PHASING

- Y = Red
- R = Yellow
- G = Green

**Area Type:**
- 1-2

**Link:**
- Y = Red
- R = Yellow
- G = Green
### LEVEL-OF-SERVICE WORKSHEET

<table>
<thead>
<tr>
<th>Lane Group</th>
<th>First Stem Delay (s/veh)</th>
<th>Second Stem Delay (s/veh)</th>
<th>Total Delay &amp; LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EB</td>
<td>1.19 0.30 0.70</td>
<td>1.01 0.76 0.35 0.71 E</td>
<td></td>
</tr>
<tr>
<td>WB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NB</td>
<td>0.01 0.00 0.10</td>
<td>0.03 0.02 0.11</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- Intersection Delay: 2.2 s/veh
- Intersection LOS: E (Table 9-1)

### INPUT WORKSHEET

**Intersection:** #888 E/W 888 S/N

<table>
<thead>
<tr>
<th>Approach</th>
<th>Grade (ft)</th>
<th>Adj. Proj. Lane</th>
<th>Adj. Proj. Lane</th>
<th>Reduction Factor</th>
<th>PHF</th>
<th>Conf. Peds. (veh/ft)</th>
<th>Assoc. Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>EB</td>
<td>0</td>
<td>E</td>
<td>S</td>
<td>-</td>
<td>-</td>
<td>-12</td>
<td>Type 1-3</td>
</tr>
<tr>
<td>WB</td>
<td>-10</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-9</td>
<td></td>
</tr>
<tr>
<td>NB</td>
<td>0</td>
<td>S</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-7</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- E/W: 888 S/N
- Adj. Proj. Lane: E, S
- Reduction Factor: -
- PHF: -
- Conf. Peds. (veh/ft): -12, -9, -7
- Assoc. Type: Type 1-3

---

(A-17A, 17B, 17C omitted from report)

A-18
**LEVEL-OF-SERVICE WORKSHEET**

<table>
<thead>
<tr>
<th>Lane Group</th>
<th>First Term Delay</th>
<th>Second Term Delay</th>
<th>Total Delay &amp; LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA</td>
<td>540</td>
<td>0.83</td>
<td>0.43</td>
</tr>
<tr>
<td>WB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SB</td>
<td>12</td>
<td>0.84</td>
<td>0.55</td>
</tr>
</tbody>
</table>

Intersection LOS: C (Table 9-1)

**INTERSECTION “KO”**

*Ref. Highway capacity manual, Chap. 4*

**A) Speed for U-turn maneuver**

\[ V_{u} = \frac{V_{IF}}{1 + 0.25} \]

\[ V_{u} = \frac{611}{1 + 0.25} = 485 \text{ pphp} \]

\[ V_{u} = \frac{485}{1 + 0.25} = 485 \text{ pphp} \]

\[ V_{u} = 704 \text{ pphp} \]

\[ V_{u} = 485 \text{ pphp} \]

\[ V_{u} = \frac{704 + 485}{1 + 0.25} = 1182 \text{ pphp} \]

\[ V_{u} = 704 + 487 = 1221 \text{ pphp} \]

\[ V_{u} = 511 + 1073 + 1221 = 2805 \text{ pphp} \]

\[ V_{u} = 485 \text{ pphp} \]

\[ V_{u} = 0.34 \]

**PROJECT: VILLAGE PARK**

**INTERSECTION “KO” PA, PEN**

**PARK Engineering, Inc. (A-21)**

515 SOUTH KING STREET, SUITE 100, HOLLAND, PA 19871
\[ V_K = \frac{1.271}{2.500} = 0.44 \]

\[ L = 800', \]

\[ N = 3 \text{ lanes} \]

\[ S_w = 15 + \frac{60}{1 + 0.02(1 + VR)^{-1.7} (V/N)^{0.7}} \]

\[ S_w = 15 + \frac{60}{1 + 0.02(1 + 85)^{-1.7} (800/8)^{0.7}} \approx 363 \text{ mph} \]

\[ S_{sw} = 15 + \frac{60}{1 + 0.02(1 + VR)^{-1.7} (V/N)^{0.7}} \]

\[ S_{sw} = 15 + \frac{60}{1 + 0.02(1 + 85)^{-1.7} (800/8)^{0.7}} \approx 43.1 \text{ mph} \]

\[ N_w = \frac{2.19\sqrt{VR}}{L_{w}} \sqrt{S_{sw}} \]

\[ N_w = \frac{2.19\sqrt{85}}{8} \sqrt{43.1} \approx 136 \]

\[ N_w = 136 \text{ lanes} < 14 \text{ lanes} \Rightarrow \text{the section will operate in the unconstrained mode.} \]
1) Find % for PM Pk kj-a during am pk.

Eff: Huy, par. manual, Sp. no. 207 (p. 2-7)

Assume: LOS E (TMC 5-1)

\[ V_0 = 2000 - 0.75(1900) \times 96 = 1462 \]
\[ V_1 = 2688 - 1900 \times 76 = 1153 - 1462 = 94 \]
\[ V_2 = 1060 (PM 9-1) \]
\[ V_{pa} = 1060 + 76 + 172 \times 0.84 \times (1060 + 76 + 172) \times 0.84 \]

<table>
<thead>
<tr>
<th>Lane</th>
<th>V_0</th>
<th>V_1</th>
<th>V_2</th>
<th>V_{pa}</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1462</td>
<td>1153</td>
<td>94</td>
<td>917</td>
</tr>
<tr>
<td>2</td>
<td>1462</td>
<td>1153</td>
<td>94</td>
<td>917</td>
</tr>
<tr>
<td>3</td>
<td>1462</td>
<td>1153</td>
<td>94</td>
<td>917</td>
</tr>
<tr>
<td>4</td>
<td>1462</td>
<td>1153</td>
<td>94</td>
<td>917</td>
</tr>
</tbody>
</table>

\[ V_4 = 1060, \text{ LOS E} \]

LANE V OPERATES OVER CAPACITY.
DIVERGING TRAFFIC ON RAMP KO OPERATES BELOW CAPACITY.

The merging traffic from RAMP Kj-I and LANE 1 WILL OPERATE NEAR CAPACITY.
PERCENTAGE OF TRAFFIC VOLUME ON H-1 GENERATED BY VILLAGE PARK (1999):

d. EAST OF KUNIA ROAD:
RAMP K-1 A VOL (AM) 1,608
THRU TRAFFIC (T.T.) 1,588
FROM VILLAGE PARK (V.P.):

% GENERATED BY V.P. = \( \frac{1,588}{1,608} \times 100 \) = 98.7%

RAMP K-1 VOL (PM) 1,608
T.T. 1,588
V.P. 1,588

% GENERATED BY V.P. = \( \frac{1,588}{1,608} \times 100 \) = 98.7%

WEST OF KUNIA ROAD:

RAMP K-1 VOL (AM) 1,588
T.T. 1,568
V.P. 1,548

% GENERATED BY V.P. = \( \frac{1,548}{1,588} \times 100 \) = 98.7%

RAMP K-1 VOL (PM) 1,608
T.T. 1,568
V.P. 1,548

% GENERATED BY V.P. = \( \frac{1,548}{1,588} \times 100 \) = 98.7%

V.P. = Village Park Traffic
T.T. = Thru Traffic

[@* See Workload (\( \frac{V_p}{V_t} \)) *** (\( \frac{V_p}{V_t} \))
K_P = 0.6 during AM
K_T = 0.4 during PM

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>VILLAGE PARK</th>
</tr>
</thead>
<tbody>
<tr>
<td>JOB NO.</td>
<td>540-04-01-02</td>
</tr>
<tr>
<td>CHECK DATE</td>
<td>7/2/91</td>
</tr>
<tr>
<td>PRINTED DATE</td>
<td>7/10/91</td>
</tr>
</tbody>
</table>

PARK Engineering, Inc. (A-26) 1341 SOUTH KAHILU STREET, SUITE 204, KOKOHELI, HONOLULU, HI 96813
### WORKSHEET FOR ANALYSIS OF T-INTERSECTIONS

#### KUHAＨA INTERSECTION

**LOCATION:** KUHAＨA INTERSECTION

**NAME:** KUHAＨA INTERSECTION

### HOURS VOLUMES (1981)

- **Major Street:** KUHAＨA ROAD
- **VOLUMES IN CPY:**

<table>
<thead>
<tr>
<th>Hour</th>
<th>Volume CPY</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>814</td>
</tr>
<tr>
<td>4-8</td>
<td>0</td>
</tr>
<tr>
<td>8-12</td>
<td>0</td>
</tr>
<tr>
<td>12-16</td>
<td>0</td>
</tr>
<tr>
<td>16-20</td>
<td>559</td>
</tr>
</tbody>
</table>

### VOLUME ADJUSTMENTS

<table>
<thead>
<tr>
<th>Movement No.</th>
<th>Volume (CPY)</th>
<th>Adj. Volume (CPY)</th>
<th>Capacity (CPY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>814</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>559</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Explanation:**

- **Conflicting Flow:** $V_c = \frac{1}{2} (V_1 + V_2)$
- **Critical Gap, $T_c$:** $T_c = \text{min}(T, 2.0)$
- **Potential Capacity, $C_p$:** $C_p = \left( \frac{3600}{T_c} \right) \cdot \text{F}$
- **Actual Capacity, $C_a$:** $C_a = \min(C_p, V_1 + V_2)$

### IDENTIFY IN DIAGRAM:

- **VOLUME AND GEOMETRIES:**
  - **KUHAＨA RD:**
  - **NORTH:**
  - **SB TOTAL:** 290
  - **WB TOTAL:**

### TRAFFIC AND ROADWAY CONDITIONS

- **Approach:**
  - EB: 4, WB: 5, NB: 4
  - PHF: 1.0, 1.0, 1.0
  - Pedestrian refuge: 50 ft
  - Minimum headway for pedestrians: 5 sec
- **Conflicting flows:**
  - EB: 4, WB: 5, NB: 4
  - PHF: 1.0, 1.0, 1.0
- **Number of lanes:**
  - EB: 3, WB: 2, NB: 2
- **Pedestrian crossing:**
  - EB: 4, WB: 5, NB: 4
  - Minimum headway: 5 sec
- **Phasing:**
  - EB: 4, WB: 5, NB: 4
  - Minimum headway: 5 sec

### PHASING

- **Protected phases:**
- **Permitted turns:**
- **Pedestrian crossing:**
- **Cycle Length:** 20 sec
### Level-of-Service Worksheet

<table>
<thead>
<tr>
<th>Lane Group</th>
<th>First Term Delay (sec/veh)</th>
<th>Second Term Delay (sec/veh)</th>
<th>Total Delay &amp; LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EB</td>
<td>2.61</td>
<td>1.35</td>
<td>3.96 D</td>
</tr>
<tr>
<td>WB</td>
<td>1.25</td>
<td>0.75</td>
<td>1.9 E</td>
</tr>
<tr>
<td>NB</td>
<td>1.16</td>
<td>0.49</td>
<td>1.65 B</td>
</tr>
<tr>
<td>PB</td>
<td>1.75</td>
<td>0.75</td>
<td>2.5 B</td>
</tr>
</tbody>
</table>

**Intersection Delay** = 2.1 sec/veh

**Intersection LOS** = C (Table 9-1)

### Ramp Data

<table>
<thead>
<tr>
<th>Ramp I.D.</th>
<th>#</th>
<th>Description</th>
<th>Survey Date</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>HI-EB-5</td>
<td>#5680</td>
<td>EB H-1 Frey Off Ramp to Kunia Rd</td>
<td>03/13/16</td>
<td>3252</td>
</tr>
<tr>
<td>7600-SB-6P</td>
<td>#5658</td>
<td>EB H-1 Frey On Ramp from Kunia Rd</td>
<td>03/13/16</td>
<td>12306</td>
</tr>
<tr>
<td>HI-WB-5B</td>
<td>#5689</td>
<td>WB H-1 Frey Off Ramp to NB Kunia Rd</td>
<td>03/13/16</td>
<td>1609</td>
</tr>
<tr>
<td>HI-WB-5A</td>
<td>#5694</td>
<td>WB H-1 Frey Off Ramp to SB Kunia Rd</td>
<td>03/13/16</td>
<td>6736</td>
</tr>
<tr>
<td>750-SB-1</td>
<td>#5659</td>
<td>WB H-1 Frey On Ramp from Kunia Rd</td>
<td>03/13/16</td>
<td>4433</td>
</tr>
<tr>
<td>H-1 Frey (E)</td>
<td>#5628</td>
<td>EB H-1 Frey to Honolulu</td>
<td>03/13/16</td>
<td>15125</td>
</tr>
<tr>
<td>H-1 Frey (W)</td>
<td>#4963</td>
<td>WB H-1 Frey to Waianae</td>
<td>03/13/16</td>
<td>22579</td>
</tr>
</tbody>
</table>

---

**Kunia Interchange**

A - 31

1/10/16
APPENDIX G

PROPOSED VILLAGE PARK EXPANSION:
IMPACT ON STATE AND COUNTY FINANCES

Decision Analysts Hawaii, Inc.
February 1986
The Village Park Expansion involves single-family and attached homes, land donated for low- to moderate-income rental housing, commercial and industrial areas, a golf course, a recreation area, and three park areas. State and County revenues derived from this project are expected to be significant, and sufficient to allow government to easily afford the capital improvements and services needed to accommodate the Village Park Expansion. The revenues are expected to be sufficient to (1) finance park and school improvements; (2) provide the same level of per-unit services as are currently provided; and (3) serve other community needs with the remaining net revenues. Furthermore, government is expected to be exposed to little, if any, risk since major government investment need not be made until the success of the project is proven, and increased tax revenues are already being derived.

In terms of 1980 dollars and at project completion, County revenues derived from the Village Park Expansion are estimated to be about $6.6 million per year, and expenditures to support the project are estimated to be about $3.1 million per year, for an estimated net income of about $1.5 million per year.

For the State, revenues during construction are estimated to average $4.3 million per year over the 7-year construction period, resulting in total construction-generated revenues of $39.9 million. This sum greatly exceeds the estimated $1.7 million for State-financed school improvements. Upon completion of the project, State revenues derived from the Village Park Expansion are estimated to be about $6.8 million per year, and expenditures to support the project are estimated to be about $5.7 million per year (including debt service on school improvements), for a net income of about $1.1 million per year.

The resulting combined fiscal impact on the State and County is that revenues are expected to exceed expenditures by an estimated $2.6 million per year upon completion of the Village Park Expansion.
PROPOSED VILLAGE PARK EXPANSION
IMPACT ON STATE AND COUNTY FINANCES

INTRODUCTION

The impact of the proposed Village Park Expansion on the State of Hawaii and the City & County of Honolulu finances are summarized in this report, with all values expressed in 1985 dollars. The analysis covers growth assumptions, revenues, expenditures, and a summary of net impacts.

As discussed in greater detail in the following section, the Village Park Expansion involves single-family and attached homes, land donated for low- to moderate-income rental housing, commercial and industrial areas, a golf course, a recreation area, and three park areas. However, the financial impact analysis is restricted to the fiscal impacts associated with the improvements provided by the developer and, except where noted, exclude the impacts of the rental housing which may be provided by the County.

The on-site economic activities are expected to service the needs of Village Park residents and nearby residents and businesses. As such, the commercial and industrial activities are expected to depend on but are not—"primary"—economic activities which drive Hawaii's economy, such as tourism, defense expenditures, and agriculture and other exports. Because of this, the financial impact analysis addresses only the direct impacts on State and County revenues and expenditures, since the indirect impacts are correctly assigned to the driving primary economic activities.

The revenue estimates include all sources of government revenues including taxes (property, excise, income, and other taxes), user charges and fees, earnings, etc. The revenue estimates are therefore larger than those which would be based simply on tax revenues. Similarly, the analysis covers capital improvements, operations and maintenance, and services required to directly support the Village Park Expansion.

GROWTH ASSUMPTIONS

Details of the Village Park Expansion and corresponding growth assumptions are summarized in Table 1. The development includes:

- 3,000 single-family and attached homes,
REVENUES

The translation of the growth assumptions to State and County revenues is shown in Table 2. Construction activity is estimated to generate a total of $15.5 million in tax revenues to the State, or about $4.5 million per year during the 7-year construction period. This estimate includes 4 percent excise tax on finished development, excise taxes on building materials, 0.05 percent conveyance tax, and State income taxes.

During full operations, the estimated for the added County revenues is $4.6 million per year, with $2.9 million per year derived from property taxes assessed at $4.75 and $4 per $1,000 value for residential and commercial/industrial property, respectively. The remaining $1.7 million per year derives from a variety of sources directly related to population. These revenues, which are estimated at $115 per resident based on analysis of City & County finances, include non-business licenses and fees for motor vehicles, bicycles, animals, sanitation, highways, bikeways, sewers, water, and public transportation. Federal and State transfers to the County based on population formulas are not included in the estimate of County tax revenues.

The increase in State tax revenues is estimated to be $8.6 million per year, with the largest revenues coming from income taxes of $4.0 million per year (based on the average State income-tax rate of 3.1 percent applied to household income). This estimate of income-tax revenues is conservative since residents of Village Park expansion are expected to have higher than average incomes and, therefore, higher than average income-tax rates. Other State taxes include $1.1 million per year from the 4 percent excise tax on retail sales, and $9.1 million per year from the 0.3 percent tax on sales by wholesalers. The remaining $1.5 million per year derives from a variety of sources directly related to population. These revenues, which are estimated at $277 per resident based on analysis of State finances, include inheritance and estate taxes; conveyance taxes; licenses and permit fees; fines, forfeits and penalties; charges for services; and other revenues. The estimated State revenues are also low in that they do not include corporate income taxes to be paid by on-site businesses. Also not included in the estimate of State revenues are income taxes from on-site employees since this would amount to double counting, and Federal-to-State transfers based on population formulas.

The combined State and County revenues during full operations is expected to total $11.4 million per year.

EXPENDITURES

Estimates for State and County expenditures required to accommodate and support the Village Park Expansion are given in Table 3.

Capital Improvements

Most of the major capital improvements for Village Park are to be provided by the developer, including four collector streets within the project, widening of Kula Road from two to four lanes between the project and the H-1 Freeway, improvements to the Kula/H-1 Freeway on- and off-ramps, six wastewater mains, two deepwell water sources, a water booster station, a 5.0 million-gallon reservoir, a water treatment facility, five water mains, and land for two parks.

The only major capital improvements required by the County to support the project are park improvements on land that is to be donated by the developer. Such improvements may include a recreation center, basketball courts, tennis courts, etc. The estimated cost for these improvements is $1 million the debt service is about $0.1 million per year, assuming financing with a 6.5 percent, 20-year bond.

For the State, the only major capital improvements required to support the project are school improvements. Such improvements may include the building of an elementary school on land donated by the developer, including elementary, intermediate, and high schools, at least eleven classrooms are expected to be needed (see Proposed Village Park Expansion: Public Benefits and Costs, pp. 4-8). The cost for these classrooms and associated improvements is estimated at $100,000 per classroom, for a total of $1.7 million for all eleven; the debt service on this sum is about $0.1 million per year.

Operations and Maintenance (O&M) and Services

An approximate estimate for O&M and service expenditures needed to support the residents at the Village Park Expansion at full development is $8.5 million per year, with $3.5 million of this allocated to the County and $5.0 million to the State. These expenditures are estimated at $333 and $415 per resident for the County and State, respectively, and are based on analysis of County and State finances, with appropriate adjustments for Federal and State grants and transfers. These expenditure rates are expected to provide approximately the same level of per-unit services to residents as is currently the case with locally generated revenues, or possibly more given economic of scale (e.g., a 10 percent increase in population is likely to require an increase in general government of much less than 10 percent). The expenditures cover general government, public safety, health, sanitation, education, culture and recreation, water, highways and streets, and public transportation.
SUMMARY

The net impact on statewide and county finances of the Village Park Expansion is summarized in Table 4. For the county, revenues are expected to exceed expenditures by about $1.5 million per year upon project completion.

For the state, revenues during construction are estimated to average $0.2 million per year over the 7-year construction period, resulting in total construction-generated revenues of $2.8 million. This sum greatly exceeds the estimated $1.7 million for state-financed school improvements. Upon completion of the project, state revenues are expected to exceed expenditures by about $1.1 million per year if debt service on the school is included, or $1.3 million per year if it is not.

The resulting combined fiscal impact on the state and county is that revenues are expected to exceed expenditures by an estimated $2.6 million per year upon completion of the Village Park Expansion if debt service is included.

To summarize the previous discussion and the results of Tables 2 through 4, state and county revenues derived from the proposed Village Park Expansion are expected to be significant, and sufficient to allow government to easily afford capital improvements and services needed to accommodate the project. The revenues are expected to be sufficient to (1) finance park and school improvements (2) provide the same level of per-capita services as are currently provided and (3) serve other community needs with the remaining net revenues. Furthermore, government is expected to be exposed to littler, if any, risk since major government investment need not be made until the success of the project is proven, and increased tax revenues are already being derived.

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROPOSED DEVELOPMENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single-family and Attached Homes</td>
<td>2,000</td>
<td>homes</td>
</tr>
<tr>
<td>Land Donated to the County for Rental Housing</td>
<td>30.0</td>
<td>acres</td>
</tr>
<tr>
<td>Commercial Area</td>
<td>145.0</td>
<td>1,000 sq. ft.</td>
</tr>
<tr>
<td>Industrial Areas</td>
<td>18.7</td>
<td>acres</td>
</tr>
<tr>
<td>Golf Course</td>
<td>168.2</td>
<td>acres</td>
</tr>
<tr>
<td>Recreation Area</td>
<td>6.9</td>
<td>acres</td>
</tr>
<tr>
<td>Parks</td>
<td>31.0</td>
<td>acres</td>
</tr>
<tr>
<td>CONSTRUCTION PHASE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duration of Construction</td>
<td>7</td>
<td>years</td>
</tr>
<tr>
<td>Average Employment</td>
<td>310</td>
<td>jobs</td>
</tr>
<tr>
<td>Average Payroll ($4,400 per job, 1985 $)</td>
<td>$10.7</td>
<td>million per year</td>
</tr>
<tr>
<td>FULL DEVELOPMENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population Hues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single-family and Attached Homes (3 people per home)</td>
<td>9,000</td>
<td>people</td>
</tr>
<tr>
<td>Rental Housing (16 units/acre, 2 people per home)</td>
<td>400</td>
<td>people</td>
</tr>
<tr>
<td>Total Homes</td>
<td>9,400</td>
<td>people</td>
</tr>
<tr>
<td>On-site Employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial Area (1 job per 300 sq. ft.)</td>
<td>400</td>
<td>jobs</td>
</tr>
<tr>
<td>Industrial Area (10 jobs per acre)</td>
<td>190</td>
<td>jobs</td>
</tr>
<tr>
<td>Golf Course</td>
<td>40</td>
<td>jobs</td>
</tr>
<tr>
<td>Total Jobs</td>
<td>710</td>
<td>jobs</td>
</tr>
</tbody>
</table>

3. Wallek Development, Inc.
### Table 1: Village Park Expansion, Impact on State and County Finances (continued)

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property Tax Base (1985 $)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single-family and Attached Homes ($120,000 per home)*</td>
<td>$389.9</td>
<td>million</td>
</tr>
<tr>
<td>Commercial Area ($100 per sq. ft.)</td>
<td>14.5</td>
<td>million</td>
</tr>
<tr>
<td>Industrial Area ($10 per sq. ft., or $0.87 million per acre)</td>
<td>18.3</td>
<td>million</td>
</tr>
<tr>
<td>Golf Course and Recreation Area</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td>Total Property Tax Base</td>
<td>$423.8</td>
<td>million</td>
</tr>
<tr>
<td>Sales, Retail (1985 $)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial Area ($100 per sq. ft.)</td>
<td>$28.1</td>
<td>million per year</td>
</tr>
<tr>
<td>Golf Course Area (150 customers per day, and $25 per customer for greens fees, golf carts, and food, etc.)</td>
<td>1.8</td>
<td>million per year</td>
</tr>
<tr>
<td>Total Sales, Retail</td>
<td>$29.9</td>
<td>million per year</td>
</tr>
<tr>
<td>Sales, Wholesale (1985 $)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>81 million per acre of industrial land</td>
<td>$19.7</td>
<td>million per year</td>
</tr>
<tr>
<td>Payroll ($17,550 per job, 1985 $)</td>
<td>$12.5</td>
<td>million per year</td>
</tr>
<tr>
<td>Household Income (1985 $)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single-family and Attached Homes ($55,000 per home)*</td>
<td>$158.7</td>
<td>million per year</td>
</tr>
<tr>
<td>Rental Housing</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td>Total Household Income</td>
<td>$158.7</td>
<td>million per year</td>
</tr>
</tbody>
</table>

n.a. not estimated.


**All homes are assumed to be owner occupied, which provides a $20,000 exemption. Thus, the average value for homes will be $120,000 more than that shown.


**Weighted average of $43,500 per year income for the families of 2,749 single-family homes, and $28,000 per year income for the families of 160 attached homes.
Table 2.— Village Park Expansion, Impact on State and County Finances

(continued)

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAJOR CAPITAL IMPROVEMENTS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>County</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Park Improvements</td>
<td>1.0</td>
<td>million</td>
</tr>
<tr>
<td>Annual Debt Service (8.5% interest, 30-year bond)</td>
<td>0.1</td>
<td>million per year</td>
</tr>
<tr>
<td>States</td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Improvements</td>
<td>1.7</td>
<td>million</td>
</tr>
<tr>
<td>Annual Debt Service (8.5% interest, 30-year bond)</td>
<td>0.2</td>
<td>million per year</td>
</tr>
<tr>
<td>Total State and County Annual Debt Service</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>OPERATIONS AND MAINTENANCE (O&amp;M), AND SERVICES, FULL OPERATIONS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>County ($333 per resident)</td>
<td>3.0</td>
<td>million per year</td>
</tr>
<tr>
<td>State ($415 per resident)</td>
<td>2.5</td>
<td>million per year</td>
</tr>
<tr>
<td>Total State and County</td>
<td>5.5</td>
<td>million per year</td>
</tr>
</tbody>
</table>

1. Includes tax and non-tax revenues.
2. Includes 5% for excise tax on finished development, 0.0125% for excise tax on building materials, 0.035% for conveyance tax, and 2.5% for income tax. CAC of Honolulu, "Impact of Construction on Employment and Tax Revenues," April 1974, and Table 1 for property tax base.
3. Includes 5% for excise tax on finished development, 0.13125% for excise tax on building materials, 0.035% for conveyance tax, and 2.5% for income tax. CAC of Honolulu, "Impact of Construction on Employment and Tax Revenues," April 1974, and Table 1 for property tax base.
5. Excludes Federal and State transfer payments.
6. Excludes residents of rental housing.

1. Eleven classrooms and associated improvements at $150,000 per classroom (see Proposed Village Park Expansion: Public Benefits and Costs, pp. 4 and 5.)
<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>COUNTY, Full Operations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenues</td>
<td>$4.6 million per year</td>
<td></td>
</tr>
<tr>
<td>Expenditures</td>
<td>$0.1 million per year</td>
<td></td>
</tr>
<tr>
<td>Debt Service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>O&amp;M, and Services</td>
<td>$3.0 million per year</td>
<td></td>
</tr>
<tr>
<td>Total County Expenditures</td>
<td>$3.1 million per year</td>
<td></td>
</tr>
<tr>
<td>Net County Revenues</td>
<td>$1.5 million per year</td>
<td></td>
</tr>
<tr>
<td>STATE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction Phase, Average Revenues</td>
<td>$4.3 million per year</td>
<td></td>
</tr>
<tr>
<td>Full Operations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenues</td>
<td>$6.8 million per year</td>
<td></td>
</tr>
<tr>
<td>Expenditures</td>
<td>$0.3 million per year</td>
<td></td>
</tr>
<tr>
<td>Debt Service</td>
<td>$5.5 million per year</td>
<td></td>
</tr>
<tr>
<td>O&amp;M, and Services</td>
<td>$5.7 million per year</td>
<td></td>
</tr>
<tr>
<td>Total State Expenditures</td>
<td>$11.4 million per year</td>
<td></td>
</tr>
<tr>
<td>Net State Revenues</td>
<td>$6.6 million per year</td>
<td></td>
</tr>
<tr>
<td>STATE AND COUNTY, Full Operations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenues</td>
<td>$11.4 million per year</td>
<td></td>
</tr>
<tr>
<td>Expenditures</td>
<td>$6.6 million per year</td>
<td></td>
</tr>
<tr>
<td>Net State and County Revenues</td>
<td>$4.8 million per year</td>
<td></td>
</tr>
</tbody>
</table>

1 Excludes State and Federal transfers to the County, and Federal transfers to the State.
2 Assumes the same level of per-capita government service as currently.

REFERENCES
City & County of Honolulu, "A Guide to the Budget of the City and County of Honolulu Fiscal Year 1984-85," Honolulu, Hawaii.
APPENDIX H

PROPOSED VILLAGE PARK EXPANSION:
PUBLIC BENEFITS AND COSTS

Decision Analysts Hawaii, Inc.
February 1986
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive Summary</td>
<td>11</td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Housing</td>
<td>1</td>
</tr>
<tr>
<td>Parks and Recreation</td>
<td>4</td>
</tr>
<tr>
<td>Government Services</td>
<td>4</td>
</tr>
<tr>
<td>School</td>
<td>4</td>
</tr>
<tr>
<td>Police</td>
<td>5</td>
</tr>
<tr>
<td>Fire</td>
<td>5</td>
</tr>
<tr>
<td>Neighborhood Convenience</td>
<td>6</td>
</tr>
<tr>
<td>Employment</td>
<td>6</td>
</tr>
<tr>
<td>Construction</td>
<td>6</td>
</tr>
<tr>
<td>Operations</td>
<td>6</td>
</tr>
<tr>
<td>Sugar</td>
<td>6</td>
</tr>
<tr>
<td>Diversified Agriculture and Aquaculture</td>
<td>6</td>
</tr>
<tr>
<td>Greenery</td>
<td>6</td>
</tr>
<tr>
<td>Traffic</td>
<td>6</td>
</tr>
<tr>
<td>References</td>
<td>11</td>
</tr>
</tbody>
</table>

---

Decision Analysts Hawaii, Inc.

February 1986
EXECUTIVE SUMMARY

The Village Park Expansion will provide a number of benefits and will impose certain non-economic costs to residents of Oahu. The principal benefit of the project will be its contribution to an improved housing market on Oahu—an increased supply of homes, increased competition with other land owners and housing developers, a variety of homes at prices which range from affordable to moderately expensive, land to be provided to the City and County of Honolulu for low- to moderate-income rental housing, conveniently located homes, and timely development. Beneficiaries would be home buyers throughout Oahu, but particularly those in Ewa and Central Oahu. Competing land owners and developers will be impacted negatively in terms of decreased profits.

Recreational benefits will include the addition of three parks, a recreational area, and a golf course. Residents of Village Park will be predominant (but not exclusive) users of these parks and golf course. Nevertheless, other Oahu residents will benefit indirectly in terms of reduced congestion at other parks and golf courses.

The increased population in the area will justify expanded government services (schools, police and fire), with Village Park residents paying their fair share for these services through State and County taxes. If the Village Park Expansion should increase the elementary-school population sufficiently to justify the building of a neighborhood school, then this will have safety and convenience benefits in terms of eliminating the need to bus the younger neighborhood children to more distant schools.

The increased population will also support the planned commercial area, which will provide neighborhood conveniences.

An additional benefit will be increased employment at the commercial, business, and recreational areas to be developed, as well as construction employment during development.

The Village Park Expansion, individually or in combination with major projects planned and proposed for Ewa and Central Oahu, will not adversely affect the economic viability of Oahu Sugar Company, Ltd., nor will it require layoffs of sugar workers. Similarly, it is extremely doubtful that the Village Park Expansion will adversely affect growth of diversified agriculture and aquaculture in Hawaii.

Also, the greenery of sugarcane will be replaced in large part by the lawns, trees, and shrubbery typical of suburban neighborhoods.

However, the Village Park Expansion will contribute to traffic congestion, particularly going to and from downtown. But this congestion will be equal to or, in most cases, much less than the traffic congestion caused by housing developments elsewhere on Oahu.
PROPOSED VILLAGE PARK EXPANSION: PUBLIC BENEFITS AND COSTS

INTRODUCTION

The Village Park Expansion will provide a number of benefits and impose certain non-economic costs to residents of Oahu. These benefits and costs are summarized below. Subjects discussed include housing, parks and recreation, government services, neighborhood conveniences, employment, diversified agriculture and aquaculture, greenery, and traffic.

HOUSING

The principal benefit to be provided by the Proposed Village Park expansion is its contribution to an improved housing market on Oahu. This contribution will be in the form of an increased supply of homes, increased competition with other landowners and housing developers, a variety of homes at prices which range from affordable to moderately expensive, land to be provided to the City and County of Honolulu for low- to moderate-income rental housing, conveniently located homes, and timely development. Beneficiaries would be home buyers throughout Oahu, but especially those in Ewa and Central Oahu. Competing land owners and developers will be impacted negatively in terms of decreased profit.

As argued in the Market Analysis for the Proposed Village Park Expansion and the Supplemental Report, there is a need for a substantial increase in the supply of housing on Oahu, with a recommendation that the City and County plan for over 5,000 homes per year to be developed. This reflects the finding that there is not now, nor has there been during the past 13 years, an adequate supply of housing to meet the needs of Oahu's growing population—particularly in view of economic and social trends which favor smaller households. A principal cause of the housing shortage has been the one hand successful implementation of government policy to prevent urban development of prime agricultural lands, but on the other hand failure to implement land-use and transportation plans of the 1960s which were designed to direct growth to the Windward side, Wailua, and the North Shore; and plans of the

1970s for greatly increasing housing densities for Honolulu (Plach, court testimony and exhibits regarding Hawaii's Land Reform Act). The result of the restricted housing supply are home prices which are among the highest in the world.

In order to meet the projected housing demand, a very large portion of the housing development must occur in the Ewa/Central Oahu area. Reasons for this assessment are:

- infill of Honolulu is limited by the small number of vacant parcels with affordable development costs;
- redevelopment of Honolulu to higher densities is a slow process characterized by strong local opposition, and which generally requires expensive and disruptive infrastructure improvements;
- construction of single-family homes in the Hawaii Kali area is nearing completion, and political opposition to development is growing because of the traffic congestion on Kalanianaole Highway;
- substantial development on the windward side is limited by highway capacity, legal opposition to developing the H-3 Freeway, and community opposition;
- developments in the rural areas of Waimanalo, Waimalu, and the North Shore are limited primarily by the relatively long commutes;
- both private and public development costs are relatively low in Ewa and Central Oahu given gradual grades, access to the H-1 Freeway, and proximity to Honolulu Sewer System;
- Honolulu's urbanization trend is westward and current City and County policy is to direct urban development to Ewa.

The Village Park Expansion will contribute about 450 homes per year over 7 years to Oahu's housing supply, for an eventual total of 3,000 new homes, all for sale. The homes will be segmented into five markets, as follows:

<table>
<thead>
<tr>
<th>Market</th>
<th>Number</th>
<th>Price 1980</th>
</tr>
</thead>
<tbody>
<tr>
<td>Custom and semi-custom single-family homes</td>
<td>270</td>
<td>$10,000 to $15,000</td>
</tr>
<tr>
<td>Upgraded single-family homes</td>
<td>465</td>
<td>$15,000 to $20,000</td>
</tr>
<tr>
<td>Traditional single-family homes</td>
<td>1,055</td>
<td>$20,000 to $25,000</td>
</tr>
<tr>
<td>Starter single-family homes</td>
<td>90</td>
<td>$20,000 to $25,000</td>
</tr>
<tr>
<td>Attached homes</td>
<td>30</td>
<td>$100,000</td>
</tr>
</tbody>
</table>
The actual size of homes and when they are built will depend on their market acceptance and on the economic conditions at the time of sale. By offering a range of homes, the developer is able to match the homes more closely to individual buyers' desires and budgets. Similarly, prices will be based on market conditions at the time of sale. However, in terms of 1985 costs, prices will range from $100,000 to $250,000 per home, with an average price of $150,000.

Most purchasers of single-family homes will be first-time buyers, with a smaller number having previously owned either a condominium residence or single-family home. Also, most will be small families (about three people per home) with the husband and wife in their late 20s to late 30s, and both working. For the attached units, typical buyers will include young marrieds where both the husband and wife work, singles living alone or in pairs, divorcees with children, and mature couples.

In addition to the above homes to be offered by the developer, 20 acres of improved land will be provided to the City and County of Honolulu for affordable rental housing. The land will be graded and ready for construction, with connections to sewer, water, electrical lines, and fronted with improved roadways and sidewalks. It is projected that 400 low-to-moderate-income homes will be built on this land.

The Village Park Expansion will compete with other housing projects in the Ewa/Central-Oahu area. Projects which are in various stages of planning and development include Ewa Marina, Ewa Plantation, Makatilo, Mamelani Woodlands, Millilani Town, Waiawa Ridge, Wai'alea, Wai'alea Civic Center Complex, Wai'alea Gentry, Waterfront Manor, West Beach Resort, and Waimanalo Villages. In addition, Campbell Estate recently released an updated land-use plan which proposes eventual urbanization of most of the Ewa Plain. The amount of proposed and planned development in the Ewa/Central-Oahu area is substantial, with the potential that some projects may not be approved and/or developed, and less urbanization of agricultural lands may occur over the next decade than the total of the projects would otherwise indicate. Nevertheless, the more housing developments which are granted development approvals, the better it will be for home buyers with respect to the increased supply and competition among land owners and housing developers, and theresulting contribution to lower prices and a wider selection of homes than would otherwise be the case. In the past, such competition has been restricted significantly by government.

As a development, the Village Park Expansion offers a number of advantages which will make it very competitive compared to other projects. The project is in an acceptable location, being within commuting distance to jobs in downtown Honolulu, Pearl Harbor and Hickam Air Force Base, Waipahu, Schofield Barracks, and Waikane, Ewa Beach and the planned Ewa Marine, Barber's Point Naval Air Station, Campbell Industrial Park, Barber's Point Harbor, and the planned West Beach Resort; many homes will have views of Pearl Harbor and the Pacific Ocean. The development has the momentum of an ongoing project with a proven team able to deliver quality homes at moderate prices and without delay financial arrangements are in place and infrastructure improvements (including water and sewer) are already in place for the first 1,000 homes, and can be expanded readily for the remaining units.

PARKS AND RECREATION

The Village Park Expansion will also benefit Oahu residents through its contribution to the park and recreational resources of the island. Land will be provided for three parks of 10.5, 5.5, and 5.5 acres, with all homes being within walking distance of at least one of the parks. A private recreation area of 5.5 acres, and an 18-hole golf course will also be included. Residents of Village Park will be predominately (but not exclusive) users of the parks and golf course. Nevertheless, other Oahu residents will benefit indirectly in terms of reduced congestion at other parks and golf courses.

GOVERNMENT SERVICES

Schools

According to the State of Hawaii Department of Education (September 10, 1985 letter from Vernon Honda, Assistant Superintendent to William S. Wankel), the existing Village Park subdivision and the proposed Village Park Expansion will generate the following student enrollments:

<table>
<thead>
<tr>
<th>School</th>
<th>Grade</th>
<th>Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kapolei/Keaau</td>
<td>K-6</td>
<td>600 to 600</td>
</tr>
<tr>
<td>Waipahu Intermediate</td>
<td>7-8</td>
<td>150 to 300</td>
</tr>
<tr>
<td>Waipahu High</td>
<td>9-12</td>
<td>250 to 600</td>
</tr>
</tbody>
</table>

Further, the Village Park Expansion will not require an additional school site since the Department already has the Keaau Elementary School site in the existing Village Park Subdivision. This site is sufficient to accommodate the projected elementary enrollment from the entire Village Park development.* Nevertheless, the developer has agreed to set aside land for a 3-year period in case the State decides to build an elementary school within the Village Park Expansion.
Assuming an average of 30 students per class, four classes per day for elementary school, five classes per day for intermediate and high school, and 60 percent of the students from the Village Park Expansion (with the remainder 40 percent the existing subdivision), then the number of classrooms and teachers required to accommodate the proposed Village Park Expansion is as follows:

- **Proposed Village Park Expansion**:
  - **Public Benefits and Costs**:
    - All residents in and near Village Park should benefit by having faster response times in case of fire. As discussed in "Proposed Village Park Expansion: Impact on State and County Finances," County tax revenues from Village Park residents should be more than adequate to pay for their share of the required expansion in school services.

**Neighborhood Conveniences**

Also to be provided in the Village Park Expansion is a commercial area of 10 acres sufficient for 140,000 square feet of floor space. The commercial center will be anchored by a supermarket and/or drug store, with other tenants included variety stores, regular and fast-food restaurants, personal-service establishments, hardware and garden shops, medical and dental offices, etc. Some of these activities will be economical only with the larger population provided by the Village Park Expansion.

The commercial activities primarily will benefit residents of Village Park, including existing and future residents. The benefit will be in terms of increased convenience to the resident, with less travel required to outside areas.

**Employment**

**Construction**

Employment will be another benefit provided by the Village Park Expansion. During development, construction and related employment, average approximately 100 direct jobs plus 100 indirect jobs. However, these numbers will fluctuate greatly over time, reflecting the demand for housing, retail, etc.

**Operations**

Upon completion of the project, it is estimated that on-site employment at the commercial area and two business parks will be approximately 710 jobs. It should be noted that Village Park is not a primary generator of jobs, rather, the jobs at Village Park will be indirect jobs generated by the primary economic activities which drive Hawaii's economy (tourism, defense and other Federal expenditures, and agricultural and other export).

**Sugar**

The Village Park Expansion will result in the urbanization of approximately 691.5 acres of sugarcane lands under cultivation by Dole Sugar Company, Limited (OSC), a subsidiary of Amfac. This amount of land is about 5 percent of the 14,100 acres of sugarcane under cultivation by OSC.
A major question is whether the Village Park Expansion—combined with other
developments such as Ewa Marina, Ewa Plantation, expansion of Campbell Industrial
Park, and development of most of the Ewa Plain as proposed by Campbell Estate—
will reduce OSCo’s sugarcane acreage and economics-of-scale sufficiently to cause
the closing of OSCo. However, OSCo has concluded that the Village Park Expansion
will not adversely affect operations of OSCo. Part of the reason for this is that the
cost for relocating canals, roads, irrigation ditches and pipes, an earthen reservoir,
and power poles will be absorbed by the developer of Village Park.

Over the long term, the survival of OSCo will depend primarily on the price of
sugar, for which the outlook is pessimistic. In the world market, the average price of
sugar is expected to remain well below the production costs for all countries. This
is because sugar in excess of various trade agreements is dumped on the world market,
particularly by the European Economic Community (EEC) which, because of generous
price supports to local sugar-beet growers and generous trade agreements with
former colonies, is a major sugar producer, exporter, and importer, even though the
EEC is one of the highest-cost sugar producers in the world, is self-sufficient in sugar
and has no need to import it, and must sell its excess sugar on the world market at
enormous losses. In the U.S., Federal legislation protects sugar from the low world
prices by import quotas, tariffs, and import fees. However, U.S. sugar prices are
managed so that they are fairly low in order to prevent accelerating the growth of
high-fructose corn syrup (HFCS), which costs less to produce than normal sugar.
In addition, the new sweetener aspartame is capturing market share and putting ad-
tional downward pressure on U.S. sugar prices.

In view of the poor outlook for sugar prices, Amfac has developed a strategy for
the survival of OSCo which amounts to a holding action to gain time to find as many
replacement crops as possible before OSCo must cease operations. Key components of
the strategy are to urbanize Amfac-owned sugarcane lands in order to derive re-
venues to help support sugar operations, and to experiment with a variety of crops,
including papaya, sweet corn, potatoes, forage and feed crops, etc. Other compo-
nents include efforts to increase sugar yields and reduce production costs.

An important component of OSCo’s cost reduction is a continued decline in the
labor force. This is to be accomplished by attrition—that is, employees who retire or
leave OSCo for other voluntary reasons generally will not be replaced. According to
Amfac, over at least the next decade (to the end of the major leases), no combination
of the major projects planned and proposed for the Ewa/Central-Oahu area, and
resulting loss in sugarcane acreage, will require layoffs of sugar workers. This is
because of the expectation for relatively gradual reduction in sugarcane acreage,
partial or complete compensation of this acreage loss by increasing yields, and rapid
employment loss by attrition.

For the longer term, it should be noted that OSCo runs two mills in parallel
with greatly reduced acreage and operations, only one mill would need to be
operated. Because of this, nearly all of the major developments planned and proposed
for the Ewa/Central-Oahu area can be accommodated safely without OSCo losing its
economics of scale and being forced to close.

When and if OSCo is forced to cease operations for whatever reason (most
likely because of low sugar prices), the loss of jobs would be less than 200 direct jobs
and 400 indirect jobs, with the actual number depending upon the reduced employ-
ment made possible by continuing productivity increases. However, most of the vast
amount of land and water freed from sugar production will remain available for
diversified agriculture and other economic activities, with only a portion absorbed by
housing and other urban development. Immediately following the mill closing, there
would be a significant economic loss and social disruption. But over the long term,
the number of jobs which will be generated by these new activities will greatly
exceed the number of jobs lost due to the demise of sugar. For example, the new
holds at West Beach will be the equivalent of over seven OSCos in terms of direct
plus indirect jobs and—when income and all indirect jobs are considered—will
provide higher average wages based on analysis using the State Economic Model.
Other new jobs in the Ewa area will be provided by Barnes Point Harbor expansion
of the Campbell Industrial Park; the growth of diversified agriculture and aquacul-
ture; and other economic activities which may be attracted to the area because of
the availability of land and water, and home prices which should be lower than most
other areas on Oahu. Thus most, but possibly not all, sugar employees can be
expected to find other employment. However, unskilled sugar workers and those
having non-transferable skills may receive reduced pay when and if they should be
forced to find non-sugar jobs.

DIVERSIFIED AGRICULTURE AND AQUACULTURE

The development of Village Park Expansion on sugarcane acreage will also
eliminate the possibility of using these lands for diversified agriculture and/or aquacul-
ture. However, it is extremely doubtful that this will adversely affect growth of
diversified agriculture and aquaculture in Hawaii. There are two reasons for this
assumptions: (1) the very large amount of sugar and pineapple acreage which has gone
fallow throughout the State in recent years due to mill closings and reductions in operations, and the very real possibility of additional fallow of sugarcane acreage given the outlook for low sugar prices and (2) the comparatively small amount of acreage required to achieve a realistic level of food self-sufficiency (on the order of a few thousand acres), and to grow proven and promising feed and export crops.

GROWTH
An additional impact of urbanizing sugarcane land will be a loss of greenery. Lawns, trees, shrubbery and other greenery to be planted throughout the Village Park Expansion will compensate for this loss on a large extent.

TRAFFIC
At full development, the Village Park Expansion will house approximately 10,000 people, and nearly 4,000 workers (assuming the Oahu average of 1.4 workers per household). Some of these people will work within Village Park at the commercial area, the business parks, and the golf course. But most will work outside the area and commute by automobile, thereby contributing to traffic congestion. To minimize congestion, traffic will be routed inside the development to the maximum extent possible, and Kunia Road will be expanded from two to four lanes between the project and the H-1 Freeway. In addition, improvements will be made by the developer to the Kunia Road/Hi Freeway on- and off-ramps since they have insufficient capacity to accommodate the increased traffic.

Nevertheless, traffic congestion on the H-1 Freeway is likely to become an issue of increasing importance to all H-1 commuters given continued urban development in the Ewa/Central-Oahu area, with the Village Park Expansion projected to add an estimated 880 vehicles to the peak-hour traffic congestion to the west on the H-1 Freeway (Park Engineering, Inc.). This is because the current transportation capacity is inadequate to accommodate proposed development given current commuting patterns, and expanding the capacity will be very expensive and disruptive. But all other existing and potential residential areas have similar problems—high-density development downtown causes severe local traffic congestion, streets generally designed for lower densities; development in West Oahu will further congest Kailua-Kona Highway; development on the Windward side will further congest the Pali and Lilikoi highways; and development in Waimanalo and the North Shore will further congest the H-1 Freeway and Manoa Road. The problem is potentially less burdensome, however, for Ewa/Central-Oahu because of increasing employment opportunities at Barbers Point Harbor, the West Beach resort, Campbell Industrial Park, and developing urban areas throughout the Ewa/Central-Oahu area. With increased employment, less commuting to downtown is required. In addition, new improvements to the H-1 Freeway and Manoa Road, and possibly a mass transit system along the old railroad right-of-way of the Oahu Railway Company, will increase the capacity of these transportation arteries, and make it more time-consuming to accommodate more growth in Ewa/Central-Oahu area than in the case for other areas of Oahu.

The transportation situation between the Ewa/Central-Oahu area and downtown Honolulu is very analogous to the development of many cities which started on one side of a river. As land becomes scarce on the town side of the river, a bridge or tunnel may be built to open up new lands which, generally, are developed to house commuters. Soon, however, the bridge or tunnel capacity is reached, requiring additional transportation capacity which, in turn, allows additional commuting and housing development, and so on. Eventually, it becomes too expensive to continue expanding the transportation capacity, and congestion builds up to increase peak-hour commute times. The scarce land on the town side of the river will command higher and higher rents and prices compared to land on the other side of the river. Eventually, many businesses which do not need to be on the town side will locate or relocate to the other side of the river to gain the advantages of the cheaper land, and, in return, to realize the gains from selling expensive land on the town side. Thus, jobs are moved to the side of the river where land is more plentiful and cheaper. This results in less commuting, and two separate housing and land markets—one tending towards expensive land and high-rise development, the other towards cheaper land and greater urban sprawl. Those who pay the very expensive time toll to travel between the two zones do so only when there is a strong reason to do so. Such is the development expected for the Ewa/Central-Oahu area in relationship to downtown Honolulu, increasing traffic congestion to downtown helps divert economic growth to the Ewa/Central-Oahu area, thereby moderating the increase in traffic congestion.
REFERENCES


APPENDIX I

LETTERS FROM AGENCIES AND ORGANIZATIONS:

1. State of Hawaii, Department of Transportation
2. State of Hawaii, Department of Education
   a. July 31, 1985
   b. September 10, 1985
   c. January 16, 1986
3. City & County of Honolulu, Department of Housing and Community Development
4. City & County of Honolulu, Police Department
5. City & County of Honolulu, Fire Department
6. Waipahu Neighborhood No. 22
7. Oahu Sugar Co., Ltd.
Mr. Clarence K. Tanaka
Vice President/Treasurer
Park Engineering, Inc.
Kavaiho Plaza, Suite 300
567 South King Street
Honolulu, Hawaii 96813

Dear Mr. Tanaka:

Village Park Expansion
Traffic Impact Report

We have reviewed the revised Traffic Impact Report which was submitted with your letter of January 28, 1985.

Our only comment refers to page 16, first sentence of the first paragraph, after item 3. We suggest that the sentence be changed to read: "It is the developer's intention to construct and fund the above-mentioned improvements." We feel this modification will more clearly state the developer's total responsibility for providing the proposed improvements. Otherwise, we found the report satisfactory addressed our concerns and it should be included or referenced in the project's EIS.

Thank you for this opportunity to provide comments.

Very truly yours,

Wayne J. Tamaki
Director of Transportation

Mr. Roy T. Takayama
1168 Bishop Street, Suite 3404
Honolulu, Hawaii 96813

Dear Mr. Takayama:

SUBJECT: Environmental Assessment for Village Park
Expansion, Honolulu, Oahu, Hawaii

In response to your inquiry on various aspects of the impact of the planned Village Park Expansion on our future plans for the Waipahu area, we offer the following:

1. Elementary School - The impact of the Village Park Expansion with its projected 3,333 housing units will generate sufficient students to justify the opening of a new elementary school on the Kamehameha Elementary School site.

Elementary students from Village Park will continue to attend Kamehameha Elementary School until sufficient students have been generated to justify opening the new school. Students from the new Kamehameha Elementary School will attend Waipahu Intermediate and Waipahu High schools.

2. Replacement of the old classrooms at Waipahu Intermediate is an ongoing program. An 11-classroom building will be completed in November, 1985 and a 10-classroom building is scheduled for completion in 1987.

The construction timetable will depend on the DOE's priority within budget ceilings.

AN EQUAL OPPORTUNITY EMPLOYER
Mr. Roy T. Takeyama  
-2-  
July 31, 1985

The capital improvements program is based on student enrollment in the service area served by the school. Because of limited CIP funds, the many proposed housing projects are closely monitored for activity before actual commitment of school construction is made.

We hope that this information will be helpful in the Environmental Assessment for Village Park.

Sincerely,

Veron Honda  
Assistant Superintendent  
Office of Business Services

Mr. William E. Wakata  
1001 Bishop Street, Suite 1010  
Honolulu, Hawaii 96813

Dear Mr. Wakata:

SUBJECT: Village Park Development

Our review of the existing Village Park subdivision and the proposed Village Park Expansion indicates that the following student enrollment will be generated:

<table>
<thead>
<tr>
<th>SCHOOL</th>
<th>GRADE</th>
<th>APPROXIMATE ENROLLMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kamehameha/Heeia</td>
<td>K-6</td>
<td>600 - 800</td>
</tr>
<tr>
<td>Waipahu Intermediate</td>
<td>7-8</td>
<td>150 - 200</td>
</tr>
<tr>
<td>Waipahu High</td>
<td>9-12</td>
<td>250 - 400</td>
</tr>
</tbody>
</table>

The proposed elementary school site in the Village Park Expansion area is not required as the Department already has the Heeia Elementary School site in the existing Village Park subdivision. This site is sufficient to accommodate the projected elementary enrollment from the entire Village Park development.

We would appreciate being kept informed of the status of the Village Park development to gain sufficient lead time to provide the necessary school facilities for the expected student enrollment.

Sincerely,

Veron Honda  
Assistant Superintendent

cc: F. Katayama, Supt.  
W. Araki, Leonard Dist.

AN EQUAL OPPORTUNITY EMPLOYER
Mr. Cal Kawamoto

January 16, 1986

The low side of the projection of 600 students reflects the inevitable aging of communities and a factor of 0.12 was used. To illustrate the aging of communities, we have listed below the decline in enrollment of sample communities:

<table>
<thead>
<tr>
<th>Community</th>
<th>Percent Decline from Peak Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearl City</td>
<td>40%</td>
</tr>
<tr>
<td>Kahului</td>
<td>40%</td>
</tr>
<tr>
<td>Ewa Beach</td>
<td>60%</td>
</tr>
<tr>
<td>Aina Naia/Wallupe</td>
<td>50%</td>
</tr>
<tr>
<td>Palolo/Ahuone</td>
<td>70%</td>
</tr>
<tr>
<td>Paliaias</td>
<td>70%</td>
</tr>
<tr>
<td>Manina</td>
<td>56%</td>
</tr>
<tr>
<td>Mokulani</td>
<td>40%</td>
</tr>
<tr>
<td>Makahilo</td>
<td>30%</td>
</tr>
</tbody>
</table>

As further illustration of this aging of communities, we have attached a table showing the actual enrollment of the elementary schools servicing the Hawaii Kai area. Initially, five elementary schools were planned to service the Hawaii Kai area. Only three schools were built and the other two school sites have been deleted.

With respect to the Village Park development, the Hooper Elementary School in the existing Village Park Subdivision will be adequate to service the entire area. The expected peak or high of 600 students will be within the capacity of the school and as aging occurs, enrollment will decline and plateau at about 600 students.

We hope that this explanation of the basis upon which our projections are being made will allay your concern that educational facilities will be lacking in your area.

Thank you for your interest and continued support of our public schools.

Sincerely,

Francis M. Hatahaka
Superintendent
Mr. Craig S. Champion  
Executive Vice President  
Valtec Development, Inc.  
824 Fort Street Mall, Suite 604  
Honolulu, HI 96813  

Dear Mr. Champion:

Subject: 691.5-acre Development Above Village Park

The Department of Housing and Community Development (DHCD) has received your written proposal to provide 30 acres of fee simple land above Village Park to satisfy the following requirements:

1. Unilateral housing requirement for the proposed rezoning of 691.5-acres above Village Park.

2. Use of a 5.3-acre site in Village Park that had formerly been designated as a public park.

3. Remaining unilateral housing requirement for rezoning action taken earlier in connection with the present Village Park area.

It is our understanding that Valtec is prepared to deliver two 15-acre sites. Both sites will have offsite improvements to adequately support an apartment development. The offsite improvements shall include road, power, water, electric and cable TV service and be available at the property line. The sites shall be graded and ready for construction.

If required, Valtec agrees to take measurements of air and noise quality.

It is our understanding that the first 15-acre site will be delivered free and clear of all encumbrances on or about April 30, 1985. The second 15-acre site will be delivered at a later date, zoned A-1 and to be located in an area as mutually agreed upon. Throughout the planning and design stage, the City or its development entity will submit plans to Valtec for

Mr. Craig S. Champion  
Page 2  
December 11, 1985  

review and comment to achieve a harmonious design compatible to the Village Park Development.

Sincerely,

Alvio K. H. Pang  
Director

CONCUR:

Valtec Development, Inc.  
Craig S. Champion  
Executive Vice President

*This date is a target date, not a commitment date, as government approvals beyond our control must be prior obtained.*
Mr. Roy Y. Takeyama
Attorney
1888 Bishop Street, Suite 3404
Honolulu, Hawaii 96813

Dear Mr. Takeyama:

Subject: Environmental Assessment (EA) for Village Park Expansion, Ho'omaluhia, Oahu, Hawaii

We are reluctant to estimate the impact individual developments may have on the demand for police services especially in the Ewa and Central Oahu areas. The large number of planned and proposed developments in these areas, along with projected increases in the population, require that we address this concern in a more general framework.

Since the delivery of police services is based on the availability of sufficient personnel, equipment (primarily vehicles), and communications, we feel that adequate police service can be maintained in the Village Park area as long as these resources keep pace with population growth.

Our greatest concern over further development in the Ewa and Central Oahu areas is in relation to increased traffic and its impact on public safety. We believe that if new developments are allowed in Ewa and Central Oahu prior to an increase in road capacity and improved mass transportation between those areas and Honolulu proper, a serious traffic problem will result. As planning proceeds on the expansion of Village Park, we recommend that proper consideration be given to this matter.

Thank you for allowing us to comment on the environmental assessment for the Village Park expansion.

Sincerely,

*Signature*

Chief of Police

---

Mr. Roy Y. Takeyama
Attorney
A Law Corporation
Century Square, Suite 3404
1888 Bishop Street
Honolulu, Hawaii 96813

Re: Mr. Takeyama

ENVIRONMENTAL ASSESSMENT (EA) FOR VILLAGE PARK EXPANSION, HO'OMALUHIA, OAHU, HAWAII

The fire protection for the proposed development is adequate at the present time. Walipuna Fire Station is 3.5 miles to the furthest point of the development.

Pearl City and Makahilo Fire Stations are 5 and 6 miles from the proposed development site respectively. The proposed Waikoloa/Gentry/ Walipuna fire station would be about the same distance as Pearl City because of Waikoloa Gulch.

Further development in the surrounding area would require an additional fire station site in the upper Kona area.

Should you need additional information on this matter, please contact Captain James Akiona of the Administrative Services Bureau at 943-3016.

Sincerely,

*Signature*

FRANK E. SAKAYAHANANO
Fire Chief

FERISH

CC: Captain James Akiona
Mr. Donald Clegg,
Chief Planning Officer
Department of General Planning
550 S. King St., 4th Floor
Honolulu, HI 96813

SUBJECT: DP AMENDMENTS FOR THE EXPANSION OF VILLAGE PARK

January 7, 1986

Dear Mr. Clegg:

The Waipahu Neighborhood Board listened and read with much encouragement recent announcements from your department that Waipahu is being targeted as the site for major growth. The Waipahu community has long supported and been committed to having Waipahu become a planned growth center on Oahu. With this growth alongside Waipahu's colorful history, revitalization of Waipahu will take place which will enhance the quality of its environment and become a town of great potential and credibility.

In view of this growth, for the last four months the Waipahu Neighborhood Board has met and discussed the expansion of Village Park, subject amendments, with its developer, Waitec. On December 19, 1985, at our regularly scheduled meeting, the Waipahu Neighborhood Board No. 22 unanimously voted to endorse the Village Park expansion. The basis for this endorsement was: Developer's commitment to build and price homes for the most needed first-time home owners; developer will commit 30 acres of land designated for density apartments to use for low-income housing; developer will provide necessary land, as required, for elementary school education; developer will arrange for the entire project to have public sewerage and disposal services; a water master plan for the expansion has been submitted to the Board of Water Supply; developer proposes three park sites and just, but not least, this project has the potential to provide over 1,000 full-time jobs in an area where agriculture employment has declined.

Therefore, please be advised that the Waipahu Neighborhood Board does not support the DP Amendments for the expansion of Village Park. Representatives of this community and all other public forums would be most happy to express our support at any public forum.
June 20, 1985

Waite Development, Inc.
Suite 404
James Campbell Building
520 Fort Street
Honolulu, Hawaii 96813

Attention: Mr. Craig S. Champion,
Executive Vice President

Re: Proposed Expansion of the Village Park Project
Compiling Approximately 692 Acres

Gentlemen:

Based upon our discussions and agreements, we have no
objections to your proposed expansion of the existing Village
Park Project comprising approximately 692 acres, the general
location of which is shown on the map attached hereto as Ex-
hibit "A" and made a part hereto for all purposes.

We concur with your proposed phasing plan for the project
and the gradual withdrawal of the land from active sugar
cultivation.

Finally, the proposed expansion will not adversely affect
the operations of Oahu Sugar Company, Limited.

Sincerely,

OAHU SUGAR COMPANY, LIMITED

By: [Signature]

September 16, 1985

Walter T. Kanno
President

Mr. Hori Hoshinuma
Project Manager
Waite Development Company
2824 W. King Street
Honolulu, Hawaii 96817

Dear Mr. Hoshinuma:

Re: Village Park Industrial Development

Referring to our telephone conversation of August 19, 1985,
Hawaiian Dredging would appreciate being kept informed of the
progress of the development of industrial land in the Village Park
Development.

Hawaiian Dredging is aware of the growth that is taking place
in the Ewa and Central Oahu areas. The Village Park Development,
because of its central location, would be of interest to Hawaiian
Dredging in the future for relocation of existing facilities and/or
the development of satellite facilities to service the area.

Very truly yours,

Walter T. Kanno

[Signature]
August 20, 1985

Mr. Craig Champion
Executive Vice President
Wai'ale'ale Development, Inc.
820 Fort Street, 6th Floor
Honolulu, Hawaii 96813

Re: INDUSTRIAL PARK AT VILLAGE PARK

Dear Craig,

Please be advised that Pacific Construction Co., Ltd. would be interested in leasing approximately six to eight acres at your planned industrial park to facilitate housing operations as well as our equipment and storage yard. For your information, the lease expires at our Meapanapuna Yard in December of 1987.

We realize it might be three years before your plans materialize, but it is our hope that either your timing can be expedited or temporary arrangements can be made which would allow us to move in.

Very truly yours,

(Handwritten signature)

William E. Fairchild
President

cc:

Copy to: Pope J. D'Sayan
APPENDIX J

EFFECTS OF CENTRAL AND LEeward OAHU DEVELOPMENTS UPON THE STATE HIGHWAY SYSTEM

State of Hawaii Department of Transportation Design Branch

March 1986
<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
<th>Cost (in $1,000,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1</td>
<td>HOV LANE...H-1</td>
<td>5*</td>
</tr>
<tr>
<td></td>
<td>Waiawa to Halawa</td>
<td></td>
</tr>
<tr>
<td>Phase 2</td>
<td>HOV LANE...H-1</td>
<td>15*</td>
</tr>
<tr>
<td></td>
<td>Palailai to Kunia</td>
<td></td>
</tr>
<tr>
<td>Phase 3</td>
<td>HOV LANE...H-2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Mililani to Waiawa</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CONTRAFLOW LANE...H-1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Waiawa to Halawa</td>
<td></td>
</tr>
<tr>
<td>Phase 4</td>
<td>OR&amp;L BUS WAY</td>
<td>30</td>
</tr>
<tr>
<td>Phase 5</td>
<td>BUS LANES</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Mililani to Waiawa</td>
<td></td>
</tr>
<tr>
<td>Phase 6</td>
<td>OR&amp;L BUS WAY</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>West Beach to Pearl City</td>
<td></td>
</tr>
<tr>
<td>Phase 7</td>
<td>HIGH CAPACITY TRANSIT SYSTEM</td>
<td>?</td>
</tr>
<tr>
<td></td>
<td>Halawa to Pearl City</td>
<td></td>
</tr>
<tr>
<td>Phase 8</td>
<td>EXTEND SYSTEM TO EWA AND MILILANI</td>
<td>?</td>
</tr>
</tbody>
</table>

*Already Budgeted
CONCLUSIONS AND RECOMMENDATIONS

Although the Development Plan allows the development of many residential units in Central and Leeward Oahu, the actual rate of development of these has been the historical average over the past five years. Therefore, the Department of Transportation (DOT) recommends the implementation of a program of transportation improvements that can be incrementally upgraded to be responsive to the growing traffic demands and can be flexible enough to adjust to any changes in growth.

These improvements consist of a short range program of high occupancy vehicle (HOV) lanes, a medium range long range program of a higher capacity mass transit system.

This program will be flexible enough that incremental phases could be accelerated or delayed according to traffic demand.

The transportation improvements represent only one element of a total program to solve the transportation needs of Central and Leeward Oahu. The solution requires the cooperation and participation of government, private enterprise and the general public.

Government will provide the physical improvements such as HOV lanes, busways, better bus service and the initiation of incentive programs to encourage

Private enterprises must do its share in encouraging and participating in ridesharing programs for its employees, providing park and ride facilities, manpower and funds for a rideshare coordinator for their developments or for a ridesharing authority whose primary function is to promote and facilitate ridesharing and bus usage in the community.

Private enterprise can also help relieve traffic by developing job centers that will counteract the current trend of Central and Leeward Oahu residents commuting to their jobs in downtown Honolulu.

The general public must do its share by actually participating in ridesharing programs and by riding the buses.

The carrying capabilities of transportation facilities must be maximized by transporting more persons per hour than the present facilities are handling. Commuters now travelling by themselves in an automobile will have to carpool and others will have to begin riding the buses.

NEED FOR IMPROVEMENTS

The City and County’s Development Plans for Central and Leeward Oahu allow the construction of approximately 51,500 additional dwellings in Leeward and Central Oahu. The 1985-86 amendments propose another 65,000 dwelling units.

However, final review and approval of these proposals have not been completed and the number of projects and the number of dwelling units finally approved could be reduced significantly.

The increase in commuter travel expected from future developments will lengthen the peak period on the major highways leading into Honolulu. Already, the traffic that is funneled through the Pearl City corridor is characterized by lengthy traffic queues, and low travel speeds during AM peak periods. At full development the new residential developments will create traffic demands that will seriously worsen these driving conditions.

-2-
III. ALTERNATIVES

In the past 5 years, about 1,000 new homes per year were sold in Central and Leeward Oahu. If this rate continues, full development of the City's Development Plans would not occur for a long time.

Consequently, the DOT considered alternatives that could handle traffic from the new developments without worsening the existing driving conditions.

These alternatives were:

A. New Highways

New highways to relieve traffic on Interstate Route H-1 and Kamehameha Highway could be constructed. These include a direct crossing of Pearl Harbor or some other new corridor through Pearl City.

B. Wider Highways

Interstate Route H-1 is programmed to be widened between the Pearl City and Kula Interchanges and between the Waialua and Waiau Interchanges. Two additional inbound lanes would be needed between Waialua and Downtown Honolulu to accommodate future traffic.

C. High Occupancy Vehicle (HOV) Lanes

The median lanes or contraflow lanes on H-1 and H-2 could be dedicated for HOV use.

D. Exclusive Bus Lanes

Buses could be provided when the HOV lanes can no longer handle traffic demand. Between Waialua and Waiau, an exclusive bus lane could be built on a contraflow lane on H-1 or along the ORLT right-of-way.

In Central Oahu, bus lanes could be built within its own right-of-way along Kamehameha Highway.

In Leeward Oahu, they could be built within the ORLT right-of-way.

All bus facilities would be planned for eventual conversion to a higher capacity system.

E. High Capacity Mass Transit System

The busway would be capable of being upgraded and integrated with other forms of mass transit as required by policymakers at a later time.

IV. DETAILS OF RECOMMENDATION

The DOT, after studying the different alternatives, decided on a cost-effective, flexible, phased program that maximizes the use of existing facilities with the least impact on its surrounding environment. This program of transportation improvements (Figure 1) is described below.

SHORT RANGE (Figure 3)

Waiau-Waialua Phase 1 Widen H-1 and dedicate the median lane as an HOV lane.

Palialai-Waialua Phase 2 Widen H-1 and dedicate the median lane as an HOV lane from Palialai to Waialua.

Mileline-Waialua Phase 3 Dedicate the median lane of H-2 as an HOV lane.

Waialua-Haleiwa Phase 4 Provide a contraflow HOV lane and connect it to the existing H-1 HOV lanes.

MEDIUM RANGE (Figure 4)

Waialua-Haleiwa Phase 4 Provide an exclusive busway along the ORLT right-of-way.

The alignments for the exclusive bus lanes that would be converted to a higher capacity mass transit system are presented only for discussion purposes, since the final alignment would be dependent upon:

1. The transit technology selected for the grade-separated system in the Honolulu area.

2. Development plans and a more detailed assessment of capital costs.
3. Potential impacts of each alignment.

4. A more detailed assessment of construction requirements.

**Millani-Malawa Phase 5**
Construct separate bus lanes along Ramehamaha Highway and build ramps to connect it with the OMAL busway.

**West Beach-Malawa Phase 6**
Construct a busway along the existing OMAL right-of-way and connect it with the Malawa to Malawa busway. The busway facilities would be constructed to allow for future conversion to a higher capacity transit system.

**LONG RANGE**

**Malawa-Malawa Phase 7**
Upgrade the busway to a higher capacity transit system.

**West Beach-Malawa Phase 8**
Upgrade the remainder of the bus system into Ewa along the old OMAL right-of-way and to Millani along the Ramehamaha Highway busway.

The construction cost figures are presented in Table 1.

The attached map depicts this strategy.

Y. POLICY ISSUES

The DOT further recommends the following complementary measures:

1. A reduction in Honolulu bound travel by encouraging the development of major traffic attractors such as employment and commercial centers in Central and Leeward Oahu. This would include the Secondary Urban Center, the High Tech Park and the Cannery.

2. The introduction of legislation to study the concept of transportation improvement districts to accept private participation in funding the improvements required to mitigate the regional traffic impacts of new developments in Central and Leeward Oahu.

Comments on this proposal are invited and should be addressed to:

Mr. Wayne J. Yamashita
Director
Department of Transportation
865 Punchbowl Street
Honolulu, Hawaii 96813

-5-
INCREMENTAL IMPROVEMENTS

INTERSTATE ROUTE H-1

WAIAWA TO HALAWA

Figure 2
APPENDIX K

Air Quality Study
For The Proposed
Village Park Expansion

Barry D. Root
July 1986
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary</td>
<td>1</td>
</tr>
<tr>
<td>1. Project Description</td>
<td>1</td>
</tr>
<tr>
<td>2. Air Quality Standards</td>
<td>2</td>
</tr>
<tr>
<td>3. Present Air Quality</td>
<td>3</td>
</tr>
<tr>
<td>4. Direct Air Quality Impact of Project Construction</td>
<td>5</td>
</tr>
<tr>
<td>5. Air Quality Impact of Increased Energy Utilization</td>
<td>6</td>
</tr>
<tr>
<td>6. Indirect Air Quality Impact of Increased Traffic</td>
<td>7</td>
</tr>
<tr>
<td>7. Carbon Monoxide Diffusion Modeling</td>
<td>8</td>
</tr>
<tr>
<td>8. Mitigative Measures</td>
<td>11</td>
</tr>
<tr>
<td>References</td>
<td>13</td>
</tr>
</tbody>
</table>

## Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Village Park Development Proposal Adjacent Urban Areas</td>
<td>14</td>
</tr>
<tr>
<td>2. Proposed Haniu Road</td>
<td>15</td>
</tr>
</tbody>
</table>

## Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Summary of Hawaii and National Ambient Air Quality Standards</td>
<td>16</td>
</tr>
<tr>
<td>2. Summary of Air Pollutant Measurements at Nearest Monitoring</td>
<td>17</td>
</tr>
<tr>
<td>Stations</td>
<td></td>
</tr>
<tr>
<td>3. Results of Peak Hour Carbon Monoxide Analysis</td>
<td>18</td>
</tr>
</tbody>
</table>

Prepared by

Barry D. Root
Kamehame, Hawaii

July 13, 1986
SUMMARY

1. The proposed Village Park Extension involves site preparation and construction of 3,400 residential units and a small amount of unspecified commercial/industrial use on a 691.5 acre parcel of land in Wahiawa, Oahu. The project is expected to begin in 1983 and may be completed as early as 1984.

2. Judging from readings at nearest long term monitoring stations, air quality in the project area is presently well within allowable State and National Ambient Air Quality Standards. Existing air pollutants in the area include dust and smoke generated by sugar cane cultivation, and emissions from vehicles traveling on nearby roadways.

3. Except for dust emissions during the construction phase of the development, no significant short term direct air quality impacts are expected. Adequate control measures exist to limit the impact of wind-borne dust, but special care will have to be exercised to ensure that previously developed residential areas are not subjected to excessive levels of particulate pollution from construction activities.

4. Indirect air quality impacts are expected to result from new demands for electrical energy. This impact is most likely to occur in the vicinity of existing power plants such as the Kaua Plant on the Kauai coast where increased levels of particulates and sulfur dioxide can be expected. Maximum use of solar energy designs in project development can at least partially mitigate the magnitude of this impact. New methods of generating electrical power such as wind or ocean thermal energy conversion may eventually also play an alternative role in this regard.

5. Increased traffic generated by the Village Park Extension will increase emissions of carbon monoxide along Kamehameha V Highway and along the H-1 Freeway corridor. Modeling of current and projected peak hour worst case concentrations of carbon monoxide at three critical receptor sites in the project area indicates that levels will be well within allowable State and National ambient air quality standards with or without project development. For this reason no special air pollution abatement measures other than those roadway and intersection improvements already planned as an integral part of the development are proposed by this study.

1. PROJECT DESCRIPTION

The proposed Village Park Extension by Walter Development, Inc. involves site preparation and construction of 3,400 residential units (including 490 rental units developed by the City and County of Honolulu) on a 691.5 acre parcel of land in Wahiawa and Kaaawa, Oahu, as shown in Figure 1.

The parcel is situated immediately to the north of the existing Village Park residential development, and is presently used for sugar cane cultivation.

Land use is planned approximately as follows: 404.6 acres of residential use; 20.7 acres of commercial and mixed industrial use; 182.2 acres for a golf course, 31 acres of public parks, 6.3 acres for private recreation; and 82.1 acres for roadways and infrastructure.

Project development is expected to begin in 1983 with construction continuing until 1984.

Roadway access from the development to other urbanized parts of Oahu will be via Kamehameha V Highway, adjacent to the project site. The two major project intersections with Kamehameha V Highway will be at a new roadway interchange identified as Collector Street #1 and via internal project connection to the existing Village Park Intersection at North Kamehameha V Highway. As part of project development, additional lanes and signalization on Kamehameha V Highway have been proposed by the developer as indicated in Figure 2. Kamehameha V Highway runs north/south along the proposed project boundary providing direct access to Schofield Barracks to the north and to the Kaneohe Interchange on the H-1 Freeway or Farrington Highway to the south.

The purpose of this study is to describe existing ambient air quality in the project area and along the major access routes leading to and from the project; to estimate the magnitude of any increase in air pollutant concentrations resulting from actions related to the proposed project; and to suggest mitigative measures which could be employed to avoid or alleviate these impacts.
2. AIR QUALITY STANDARDS

State of Hawaii and National Ambient Air Quality Standards (NAAQS) have been established for six classes of pollutants as shown in Table 1. An NAAQS is a pollutant concentration not to be exceeded over a specified sampling period which varies for each pollutant depending upon the type of exposure necessary to cause adverse effects. Each of the regulated pollutants has the potential to cause some form of adverse health effect or to produce environmental degradation when present in sufficiently high concentration.

National NAAQS for particulates and sulfur dioxide have been divided into primary and secondary levels. Primary NAAQS are designed to prevent adverse health impacts while secondary NAAQS refer to welfare impacts such as decreased visibility, diminished comfort levels, damage to vegetation, animals or property, or a reduction in the overall aesthetic quality of the atmosphere. State of Hawaii NAAQS for all six pollutants have been set at a single level which is in some cases significantly more stringent than the lowest comparable national limit. In particular, the State of Hawaii one hour standard for carbon monoxide is four times more stringent than the national standard.

National NAAQS are based on 40 CFR Part 50, while State of Hawaii NAAQS are set in Chapter 11-50, Hawai'i Administrative Rules. This chapter was recently amended (March 25, 1988) to make Hawaii NAAQS for particulates and sulfur dioxide essentially the same as the most stringent national limits.

3. PRESENT AIR QUALITY

A summary of air pollutant measurements from State of Hawaii long term monitoring stations located nearest to the project is presented in Table 2. Data from several different sampling stations are included in the tabulation.

The sampling station for particulates and sulfur dioxide is located in Pearl City, about four miles east of the project area. The monitoring of sulfur dioxide in Pearl City was discontinued in 1984 and 1985 measurements are from the Barbers Point station located about seven miles southeast of the project.

Until September 1979, and after June 1983, carbon monoxide monitoring was conducted at the Department of Health building at Punchbowl and Beretania Streets in urban Honolulu. This site is about 10 miles southeast of the project. During 1981 carbon monoxide was measured at Fort DeRussy in Waikiki (19 miles southeast of the project), and in 1982 carbon monoxide was monitored at Leahi Hospital in Kaimuki, about 20 miles southeast of the project.

Ozone levels were also measured at the Department of Health building in urban Honolulu until December 1980, when the monitor was relocated to Sand Island (about 12 miles southeast of the project site). During 1983 nitrogen dioxide was also monitored at the Sand Island location, but all nitrogen dioxide monitoring has since been discontinued. Lead measurements are from Lilikoi Street in Kailua, about 15 miles southeast of the project site.

From the data presented in Table 2 it appears that State of Hawaii ambient air quality standards for particulates, sulfur dioxide, nitrogen dioxide, and lead are currently being met at nearest monitoring stations to the project area.

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

Concentrations of carbon monoxide are more directly related to vehicular emissions and tend to be highest during periods of rush hour traffic. Carbon monoxide would thus be the pollutant most likely to cause difficulty in meeting allowable State of Hawaii NAAQS as a result of new residential development on Oahu.
There are power plants and other potential sources of industrial pollutants along the central portion of the leeward coast in the vicinity of the project site, but the generally low readings of particulates and sulfur dioxide at the Pearl City monitoring station just to the east of the project indicate that these sources are not likely to cause any air pollution problems at Village Park. Likewise sugar cane cultivation to the north and west could generate some particulates and carbon monoxide when fields are burned at harvest (about once every two years for any given field), but the consistently low readings of particulates at Pearl City indicate that this source is not likely to present any significant air pollution problems either.

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

4. DIRECT AIR QUALITY IMPACT OF PROJECT CONSTRUCTION

During the site preparation and construction phases of this project it is inevitable that a certain amount of fugitive dust will be generated. Field measurements of such emissions from apartment and shopping center construction projects have yielded an estimated emission rate of 1.2 tons of dust per acre of construction per month of activity. This figure assumes medium level activity in a semi-arid climate with a moderate soil silt content. Actual emissions of fugitive dust from this project can be expected to vary daily depending upon the amount of activity and the moisture content of exposed soil in work areas.

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

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

As proposed, the Village Park Expansion would contain 3,450 residential units, as well as some commercial and mixed industrial development. Details for the commercial and industrial sites are not known at this time, but energy consumption rates at the power plant for single family residential units with all-electric kitchens and water heaters are about 55,000 BTU per square foot. Estimating about 1,400 square feet as the average residence size yields an energy requirement of about 360 billion BTU of energy per year at the power plant. This is the equivalent of about 48,000 barrels of oil if the demand were to be met totally by burning fuel oil.

The major impact of burning fuel oil to meet this increased energy demand will be increased levels of sulfur dioxide and particulates in the vicinity of existing power plants, primarily the Kaho Power Plant on the Wainana coast. This energy requirement could be reduced substantially by the installation of solar water heating on all new residential units. It is also possible that the new demand could be met by means other than burning fuel oil. Generation of electrical energy by wind power or by using ocean thermal energy conversion are two such possibilities.

6. INDIRECT AIR QUALITY IMPACT OF INCREASED TRAFFIC

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

Motor vehicles, especially those with gasoline-powered engines, are prodigious emitters of carbon monoxide. Motor vehicles also emit some nitrogen dioxide and those burning fuel which contains lead as an additive contribute some lead particles to the atmosphere as well. The major control measure designed to limit lead emissions is a Federal law requiring the use of unleaded fuel in most new automobiles. As older cars are removed from the vehicle fleet, lead emissions should continue to fall. In fact, effective January 1, 1980, the Federal Environmental Protection Agency has revised the allowable lead amount in gasoline to 0.1 gram per gallon. At the beginning of 1985 the standard will be 1.1 grams per gallon. The EPA is also advocating a total ban on lead in gasoline to take effect as early as 1988.

Federal control regulations also call for increased efficiency in removing carbon monoxide and nitrogen dioxide from vehicle exhausts. By 1995 carbon monoxide emissions from the vehicle fleet then operating are mandated to be about one third lower than the amounts now emitted.
7. CARBON MONOXIDE DIFFUSION MODELING

In order to evaluate the future air quality impact of projected increases in traffic associated with the proposed Village Park Expansion in view of the previously described government-mandated decreasing emission rates per vehicle, it was necessary to carry out a detailed carbon monoxide modeling study. The study was designed to yield carbon monoxide concentration values which could be compared directly to allowable State and National Ambient Air Quality Standards.

Three critical receptor sites were selected for analysis: site 1 on the northeast side of the proposed intersection of Collector Street #1 with Kunia Road; site 2 on the west side of Kunia Road near the intersection with South Kapunia Lane; and site 3 on the south side of the H-1 Freeway south of the existing Village Park residential area. The locations of these critical receptor sites are marked on Figures 1 and 2.

Site 1 is a critical receptor site because it is likely to show the maximum air pollution increase associated with constructing a new intersection on Kunia Road. Site 2 was selected to measure the impact of project-related traffic at that location where merging rush hour traffic heading for the H-1 Freeway from the new project would be most congested, while site 3 was selected to evaluate potential carbon monoxide levels along the H-1 Freeway downstream from the project.

Expected worst case peak hour carbon monoxide concentrations at each of the critical receptor sites were computed for study years 1988 and 1995. Computations were made for traffic conditions with and without the proposed Village Park Expansion.

Morning peak hour traffic volumes for study years were determined using the traffic impact study for the project. Morning peak hour traffic volumes were used for air pollution computations because the traffic impact study found these volumes to be higher than evening peak hour volumes.

The existing peak hour vehicle mix in the project area was evaluated to be 86% gasoline-powered automobiles, 12% light duty gasoline-powered trucks and vans, 18 heavy duty gasoline-powered trucks; 2% diesel-powered automobiles, 24 diesel-powered light duty trucks, 2% diesel-powered trucks and busses, and 1% motorcycles. The same vehicle mix was assumed for both study years.

The current and future highway configuration in the vicinity of each of the critical receptor sites is shown in Figure 2. For carbon monoxide computation purposes it was assumed that the added lanes and signals on Kunia Road will be constructed as proposed.

Were signal lighted control traffic flow, average vehicle speeds were assumed to be 5 mph upstream from red signal lights and 15 mph downstream from signals or turns. Traffic was assumed to move at 35 mph in unimpeded flow. In the case of site 2, the proximity of signal lights and added congestion associated with the traffic generated by the Village Park Expansion was assumed to slow vehicle speeds to 15 mph in the peak direction from 1995 even in unimpeded flow.

The H-1 is an eight lane divided freeway at the location of site 2. Even by 1995 it does not appear that the freeway will be operating beyond available capacity at this particular location and vehicle speeds in both directions were assumed to be 35 mph in relatively unimpeded flow. Beyond the Maili Interchange, however, severe traffic congestion is likely and previous traffic and air pollution studies indicate that peak hour levels of carbon monoxide for receptor sites near the H-1 Freeway corridor between Maili and Halawa may exceed allowable State of Hawaii AQS both presently and in future years.

Regional traffic mitigation measures such as ride-sharing, HOV lanes, road-widening and other strategies will be required to address these problems.

For all computations used in this study a temperature of 68 degrees F was assumed with 20 percent of vehicles operating in the 'cold start' mode on all roadways except for those vehicles exiting from Village Park where a 75% 'cold start' percentage was considered to be more representative.

Using the above assumptions, output from the EPA computer model MAGICS 2 was used to produce vehicular carbon monoxide emission estimates for each of the years studied. These values were then used as input for the EPA computer model RMK 2 to calculate carbon monoxide concentrations at each of the selected critical receptor sites for the various scenarios studied. This stability category represents the most stable (least favorable) atmospheric condition that is likely to exist in a suburban area such as this.

To simulate worst case wind conditions a uniform wind speed of one meter per second was assumed with the worst case wind direction for site 1 from the south and for sites 2 and 3 from the northeast. For each receptor site concentration were computed at a height of 1.5 meters to simulate levels that would exist within the normal human breathing zone.
Background contributions of carbon monoxide from sources or distant roadways not directly considered in the analysis were assumed to be one milligram per cubic meter for all sites.

Results of the peak hour carbon monoxide analysis are shown in Table 2. At all three sites estimated worst case carbon monoxide concentrations for both study years are within allowable State of Hawaii Ambient Air Quality Standards with or without the proposed Village Park Expansion.

The maximum increase in carbon monoxide levels occurs in the vicinity of Site 1, where construction of a major intersection and input of traffic onto Rumia Road is expected to occur at a location that is currently just a two lane road through the cane fields.

Maximum peak hour concentrations of carbon monoxide are projected to occur at Site 1, with virtually all leeward bound traffic from both the existing and proposed expansion of Village Park passing by the site. It is significant to note, however, that proposed improvements to the roadway at this location are projected to result in slightly lower carbon monoxide levels by 1995 than those that are currently estimated to prevail there even after the additional traffic from the Village Park Expansion is added to the computations.

The overall carbon monoxide impact in the vicinity of Site 3 is much smaller than at either of the other two locations because project-related traffic constitutes a much smaller percentage of the total on the H-1 Freeway than is the case on Rumia Road.

Average one hour traffic volumes during the peak eight hour period are about 80 percent of the peak hour level. Eight hour carbon monoxide levels are estimated by multiplying the peak hourly values by this traffic volume ratio and a 'meteorological persistence factor' of 0.6 which is recommended in EPA modeling guidelines to account for the fact that meteorological dispersion conditions are more variable (and hence more favorable) over an eight hour period than they are for a one hour period. Multiplying projected peak hour carbon monoxide levels by this combined factor of about 0.5 will yield values that are exactly one half those shown in Table 2. The State of Hawaii eight hour AGS for carbon monoxide is also one half the one hour standard. Thus the conclusions reached above regarding the State of Hawaii one hour standard will hold with respect to the eight hour standard as well.

All carbon monoxide concentrations calculated in the foregoing analysis are well within the less stringent National one and eight hour AGS whether the proposed project is undertaken or not.

8. MITIGATIVE MEASURES

A. SHORT TERM

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

B. LONG TERM

Once completed, the proposed Village Park Expansion is expected to have little direct impact on the air quality of the surrounding region. In fact, direct contributions of particulate pollutants to the air will be decreased somewhat since open field fires and fugitive dust from sugar cane growing activities will no longer be taking place. On the other hand, there are likely to be some emissions from commercial developments such as emissions from restaurant grills or emissions from light industrial activities within the proposed project. Most likely such emissions will be too small to fall under existing air pollution control regulations, but should any substantial new air pollution emission source be proposed for the site it would have to meet fairly stringent new source performance standards and prevention of significant deterioration requirements.

Indirect long term impacts in the form of increased air pollutant emissions from power plants serving new residences in the project area can be mitigated somewhat by planning and implementing solar energy design features to the maximum extent possible.

Other indirect long term air quality impacts are expected in those areas where traffic congestion can potentially be worsened by the addition of vehicles traveling to and from the proposed project. Project planners can do very little to reduce the emission levels of individual vehicles, but the traffic impact study for the project lists several major roadway improvements which should serve to decrease traffic congestion in the immediate project area since these improvements are scheduled to be an integral part of project development.
Carbon monoxide modeling conducted as a part of this report indicates that State of Hawaii Ambient Air Quality Standards are presently being met in the project area and that the additional traffic from the proposed project is not expected to change that situation since the construction of additional lanes on Iliahi Road should provide enough added capacity to decrease congestion while decreased emissions from individual vehicles in future years will almost exactly offset the growth in traffic in the area.

As stated earlier, previous air pollution modeling of conditions along the H-1 Freeway leading from the project to urban Honolulu indicates that severe peak hour congestion along the freeway segment between Halama and Kalama interchanges is likely to result in carbon monoxide values that exceed allowable State of Hawaii standards. Traffic from the proposed project can only serve to exacerbate that situation. Once again, however, this is a regional traffic problem which will require mitigative measures beyond those that a single project developer can be expected to provide. In the case of this particular project the developer has been apprised by transportation control authorities that construction of "park and ride" facilities for carpooling or mass transit systems may be required as a part of project development.

Because the stringent national vehicular emissions reduction program now being pursued in entirely the product of perpetually changing government regulations, it is always possible that economic conditions or other factors could lead to an early abandonment of the program. If that were to occur, then the projected pollutant levels presented in this study could be too optimistic. On the other hand, it is possible that technological innovations may lead to new vehicular power systems that produce few or none of the currently regulated atmospheric pollutants.

In any case, this study indicates that currently proposed mitigative measures for traffic congestion along Iliahi Road should be sufficient to meet air quality requirements in the immediate project area and no other major developer-initiated air pollution mitigation measures are proposed. It is noted, however, that tall, dense vegetation can provide some screening of residential areas from larger airborne particulates generated along roadways and near construction areas. It is thus recommended that wherever possible such vegetative cover be included in landscaping plans with plantings occurring as early in the development process as practicable.

REFERENCES

### Table 1

**Summary of Hawaii and National Ambient Air Quality Standards**

(Micrograms per Cubic Meter)

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Sampling Period</th>
<th>Primary</th>
<th>Secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulates</td>
<td>Annual Geometric Mean</td>
<td>75</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Maximum 24-Hour Average</td>
<td>260</td>
<td>160</td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td>Annual Arithmetic Mean</td>
<td>90</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>Maximum 24-Hour Average</td>
<td>265</td>
<td>305</td>
</tr>
<tr>
<td></td>
<td>Maximum 3-Hour Average</td>
<td>1200</td>
<td>1200</td>
</tr>
<tr>
<td>Nitrogen Dioxide</td>
<td>Annual Arithmetic Mean</td>
<td>100</td>
<td>70</td>
</tr>
<tr>
<td>Ozone</td>
<td>Maximum 1-Hour Average</td>
<td>240</td>
<td>100</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>Maximum 8-Hour Average</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Maximum 1-Hour Average</td>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>Lead</td>
<td>Calendar Quarter</td>
<td>1.5</td>
<td>1.5</td>
</tr>
</tbody>
</table>

### Table 2

**Summary of Air Pollutant Measurements at Nearest Monitoring Stations**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate Matter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Samples</td>
<td>68</td>
<td>60</td>
<td>59</td>
<td>60</td>
<td>53</td>
<td>55</td>
<td>56</td>
</tr>
<tr>
<td>Range of Values</td>
<td>20-40</td>
<td>22-33</td>
<td>19-31</td>
<td>19-54</td>
<td>17-57</td>
<td>18-45</td>
<td>18-45</td>
</tr>
<tr>
<td>Average Value</td>
<td>33</td>
<td>36</td>
<td>34</td>
<td>31</td>
<td>35</td>
<td>35</td>
<td>38</td>
</tr>
<tr>
<td>No. of Times</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State AQS Exceeded</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Samples</td>
<td>56</td>
<td>53</td>
<td>56</td>
<td>43</td>
<td>45</td>
<td>42</td>
<td>50</td>
</tr>
<tr>
<td>Range of Values</td>
<td>0-0.3</td>
<td>0-0.5</td>
<td>0-0.3</td>
<td>0-0.5</td>
<td>0-0.5</td>
<td>0-0.5</td>
<td>0-0.5</td>
</tr>
<tr>
<td>Average Value</td>
<td>10</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>No. of Times</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State AQS Exceeded</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Samples</td>
<td>207</td>
<td>296</td>
<td>311</td>
<td>313</td>
<td>318</td>
<td>342</td>
<td>342</td>
</tr>
<tr>
<td>Range of Values</td>
<td>0.7-1.5</td>
<td>1.2-1.8</td>
<td>0.4-0.6</td>
<td>0.6-1.0</td>
<td>0.6-1.6</td>
<td>0.6-1.6</td>
<td>0.6-1.6</td>
</tr>
<tr>
<td>Average Value</td>
<td>5.1</td>
<td>1.2</td>
<td>2.3</td>
<td>2.4</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>No. of Times</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State AQS Exceeded</td>
<td>10</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Oxidant (Ozone)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Samples</td>
<td>238</td>
<td>298</td>
<td>314</td>
<td>325</td>
<td>349</td>
<td>296</td>
<td>341</td>
</tr>
<tr>
<td>Range of Values</td>
<td>10-30</td>
<td>10-34</td>
<td>10-104</td>
<td>0-151</td>
<td>0-123</td>
<td>0-104</td>
<td>0-108</td>
</tr>
<tr>
<td>Average Value</td>
<td>59</td>
<td>48</td>
<td>37</td>
<td>32</td>
<td>46</td>
<td>44</td>
<td>43</td>
</tr>
<tr>
<td>No. of Times</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State AQS Exceeded</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

**Others:**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen Dioxide</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Samples</td>
<td>66</td>
<td>52</td>
<td>58</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range of Values</td>
<td>6.77</td>
<td>6.6</td>
<td>6.6</td>
<td>6.6</td>
<td>6.6</td>
<td>6.6</td>
<td>6.6</td>
</tr>
<tr>
<td>Average Value</td>
<td>4.2</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>No. of Times</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State AQS Exceeded</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Notes:** See text for locations of monitoring stations. Carbon monoxide reported in milligrams per cubic meter; other pollutants in micrograms per cubic meter. Carbon monoxide and ozone are daily peak-one hour values; lead is quarterly; other pollutant values are for a 24-hour sampling period.

**Source:** State of Hawaii Department of Health
<table>
<thead>
<tr>
<th>SITE</th>
<th>1996</th>
<th>1995</th>
</tr>
</thead>
<tbody>
<tr>
<td>SITE 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without Village Park Expansion</td>
<td>1.5</td>
<td>1.3</td>
</tr>
<tr>
<td>With Village Park Expansion</td>
<td>7.1</td>
<td></td>
</tr>
<tr>
<td>SITE 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without Village Park Expansion</td>
<td>8.9</td>
<td>5.5</td>
</tr>
<tr>
<td>With Village Park Expansion</td>
<td>8.7</td>
<td></td>
</tr>
<tr>
<td>SITE 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without Village Park Expansion</td>
<td>5.6</td>
<td>4.8</td>
</tr>
<tr>
<td>With Village Park Expansion</td>
<td>5.6</td>
<td></td>
</tr>
</tbody>
</table>

STATE OF HAWAII AGD: 10
NATIONAL AGD: 40

Note: See Figures 1 and 2 for location of receptor sites.