

FINAL  
ENVIRONMENTAL IMPACT REPORT

FOR

THE SUMMIT  
AT MILILANI

A MASTER PLANNED

RESIDENTIAL COMMUNITY

MILILANI, OAHU, HAWAII

BY

ROBERT-MAXWELL & COMPANY

APRIL, 1993

PREPARED BY

PARAMETRIX, INC.



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I. SUMMARY

ENVIRONMENTAL IMPACT REPORT

Type of Action: Applicant

Project Name: The Summit at Mililani

Project Description: The proposed project is a planned residential community to be located on approximately 129 acres mauka (North) of the Mililani Mauka project. (See Figure 1) There will be 598 residential units designed and built on the site, with 322 single family homes to be provided for both the affordable and market segments. The breakdown by income levels is based on median income levels as established by Housing & Urban Development (HUD) criteria\*. It is : 1992 median income for family of four in Honolulu is \$46,000.00

The Summit will be a gated community, with security entrance and paved roadways. Utilities will include sewer, water, cable TV and electricity.. Amenities will center around a centrally located community hall/recreational center. Recreational amenities will include basketball, volleyball, and tennis courts, as well as meeting facilities, a day care center, and community association offices. A shuttle bus service will also be an integral part of the Summit community services to provide transportation services during peak travel times.. Also, the shuttle service will afford children with after school activities to travel safely off the Summit property to their off property activities.. Approximately 52 acres of the Site is designated Preservation and will remain as an unimproved buffer zone to maintain the rural atmosphere of the area. (See Figure 2)

Project Location North-east of the Mililani Mauka Residential project

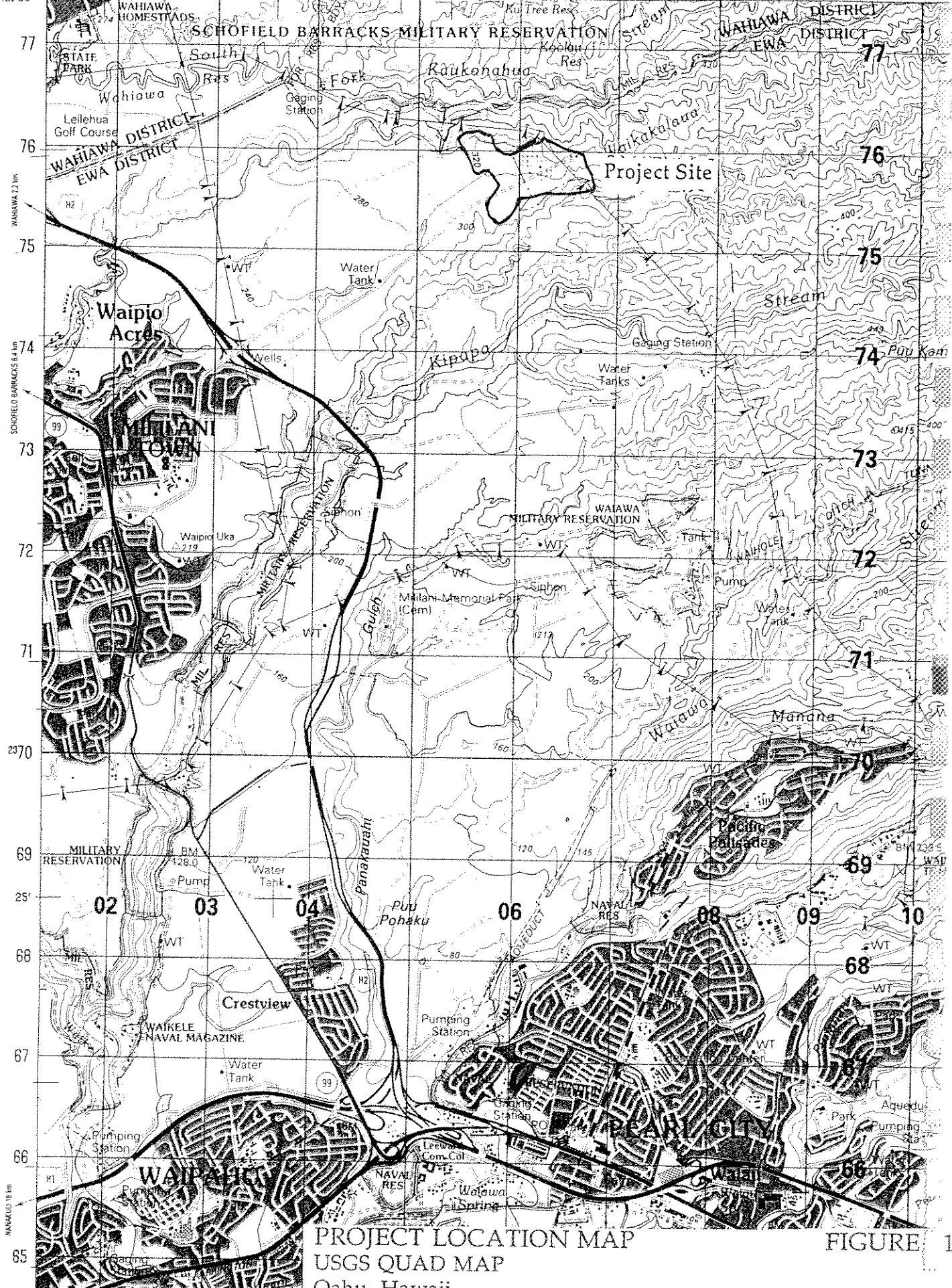
Tax Map Key: 9-5-3: 10

Land Owner: Ruth McLean Bowers

State Land Use: Agriculture, Preservation

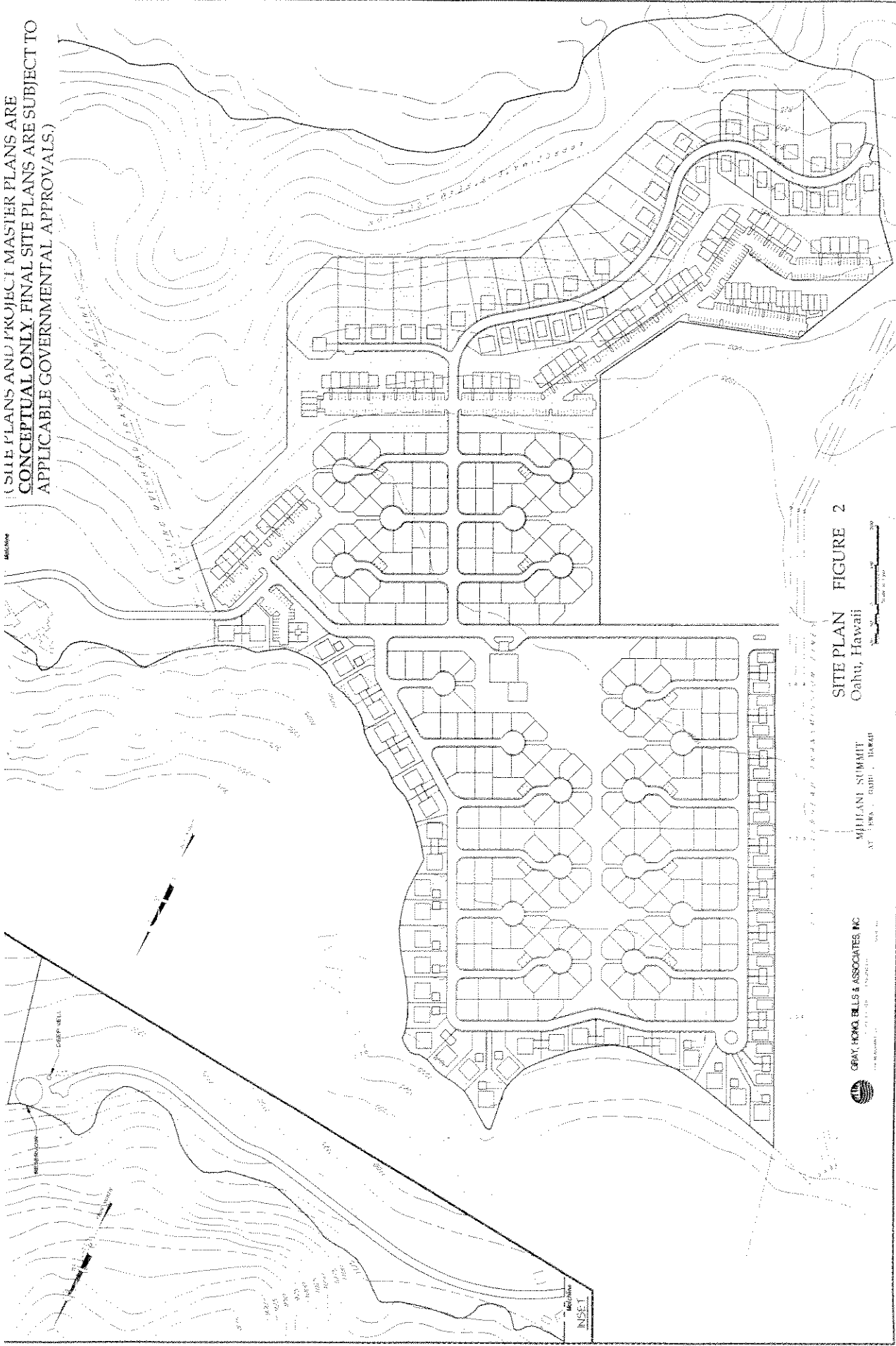
# HAWAII 1:50,000

158° 01' 20.12" 02 03 158° 00' 04 05 06 07 08 09 90  
21° 29' 48.80"



PROJECT LOCATION MAP  
USGS QUAD MAP  
Oahu, Hawaii  
FIGURE 1

(SITE PLANS AND PROJECT MASTER PLANS ARE CONCEPTUAL ONLY. FINAL SITE PLANS ARE SUBJECT TO APPLICABLE GOVERNMENTAL APPROVALS.)



SITE PLAN FIGURE 2  
Oahu, Hawaii

MIIHANA SUMMIT  
AT - PWS - OAHU - HAWAII

GRAY HONG BELLS & ASSOCIATES, INC.  
ARCHITECTS



DATE: 01/15/2010  
DRAWN BY: J. W. WANG  
CHECKED BY: J. W. WANG

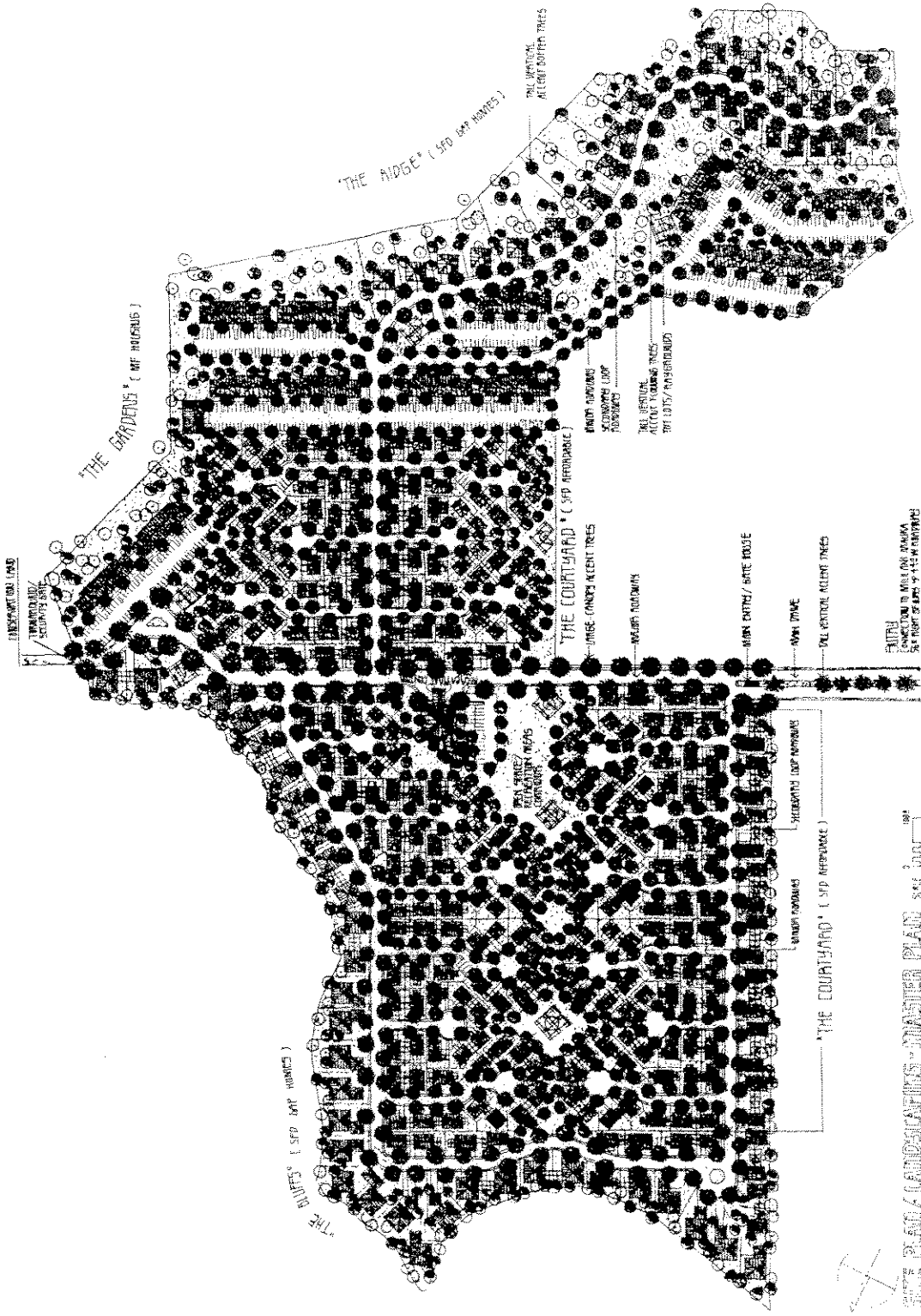
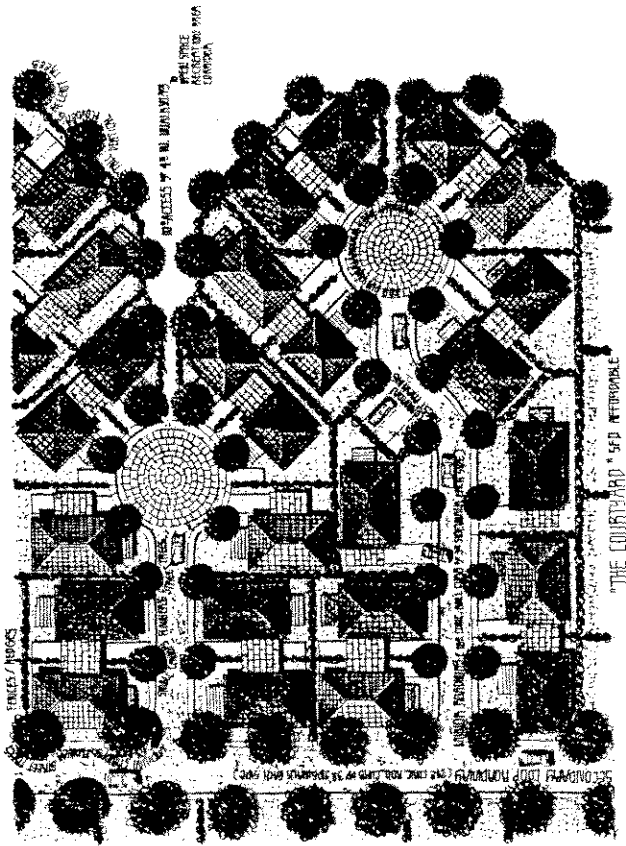


FIGURE 2.1  
 SITE PLAN / LANDSCAPE MASTER PLAN

*The Summit*  
 AT MILLIKEN

ROBERT MANAGELL COMPANY  
 11 000 2005 1972

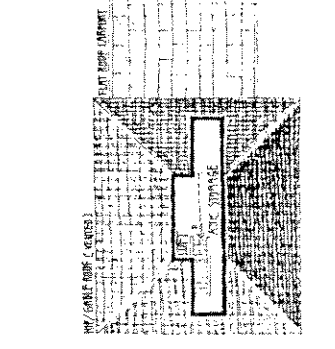
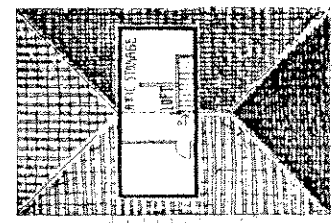
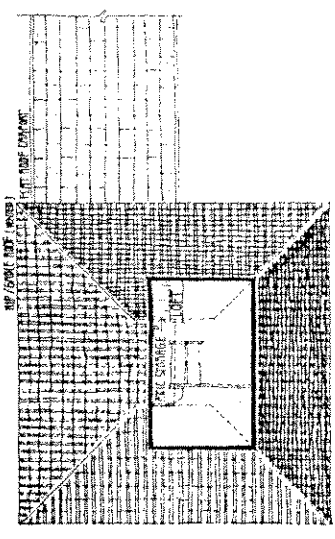




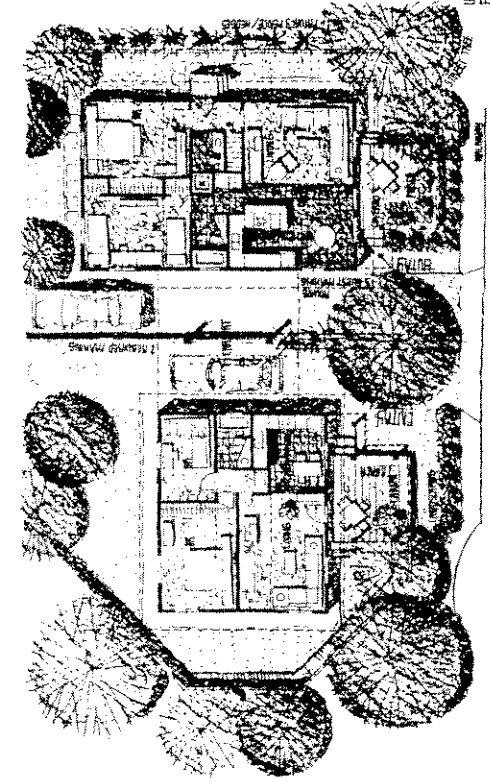
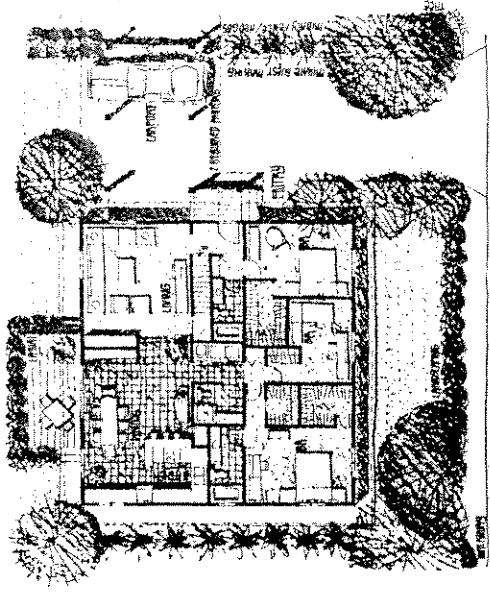
PARTIAL SITE PLAN / LANDSCAPING - SFD SCALE 1/8" = 1'-0"

FIGURE 2.2

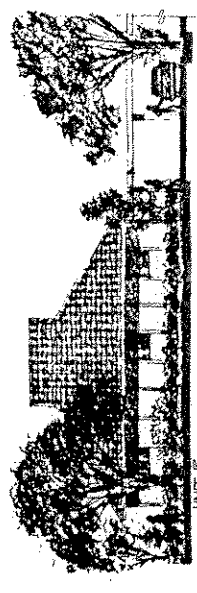
*The Summit*  
 AT MILWAUKEE  
 ROBERT WAXMANN COMPANY  
 11 NOVEMBER 1992  
 22



ROOF PLANS



UNIT FLOOR PLANS

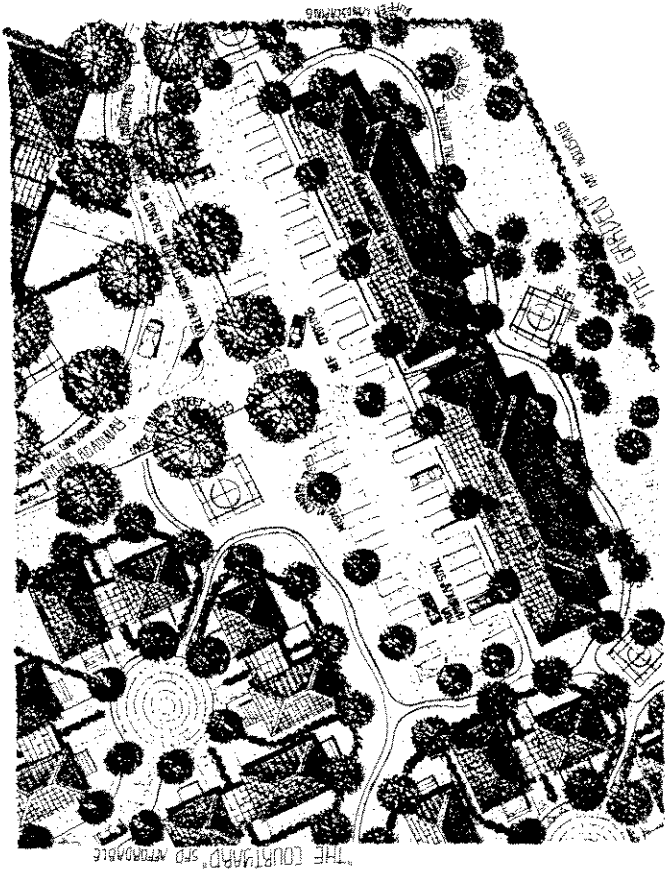


UNIT ELEVATIONS

UNIT FLOOR PLANS / ELEVATIONS - SFD

FIGURE 2.3

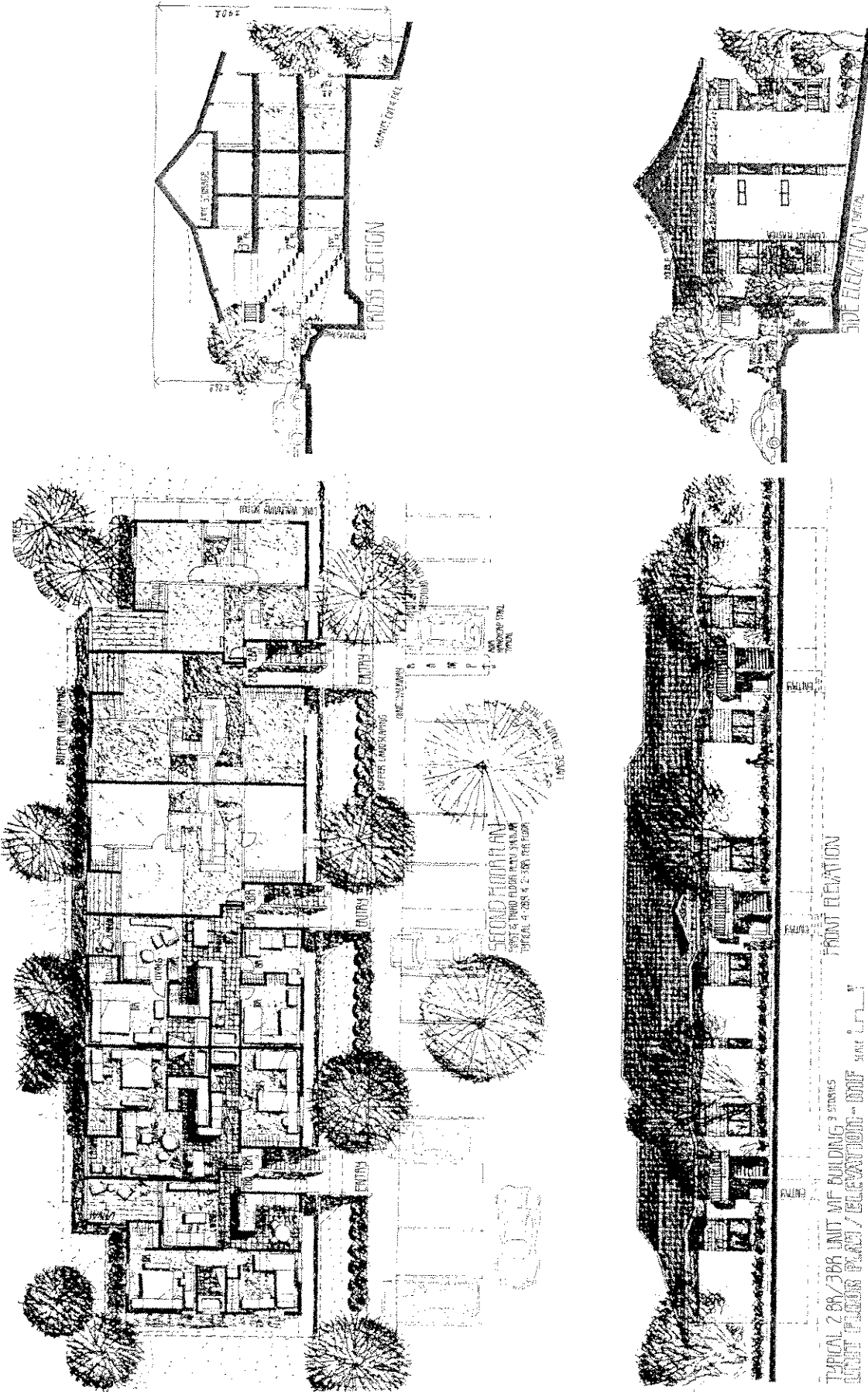
*The Summit*  
 AT OAKHURST  
 ROBERT - MAXWELL COMPANY  
 HUNTSVILLE, ALABAMA 35892



ARCHITECTURAL SITE PLAN / LANDSCAPE PLAN - THE SUMMIT

FIGURE 2.4

*The Summit*  
 AT MILPITAS  
 ROBERT SARGENT CORPUS  
 BERKELEY 1972



TYPICAL 2 BR/3 BR UNIT W/ BUILDING 3 STAIRS  
 FRONT FLOOR PLAN / ELEVATION - ONE SIDE ONLY

FIGURE 2.5

*The Summit*  
 AT GILLEAN  
 ROBERT - MAXWELL COMPANY  
 8 NOVEMBER 1952

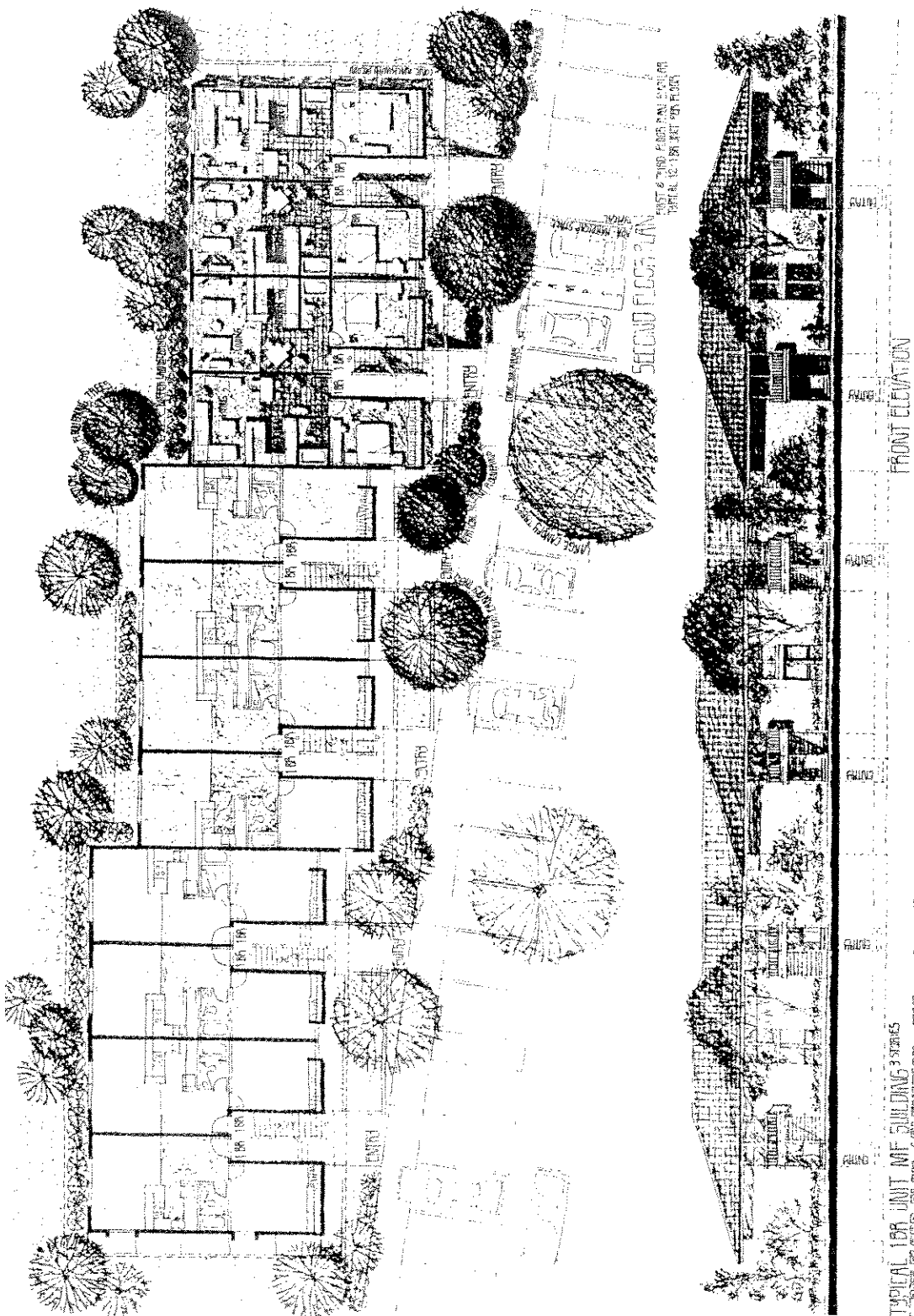
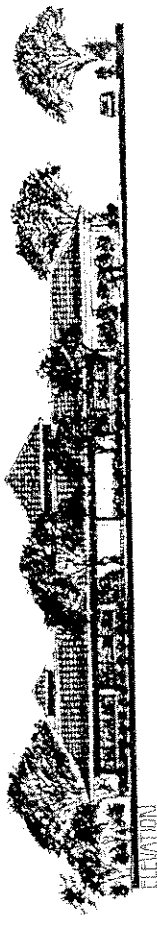
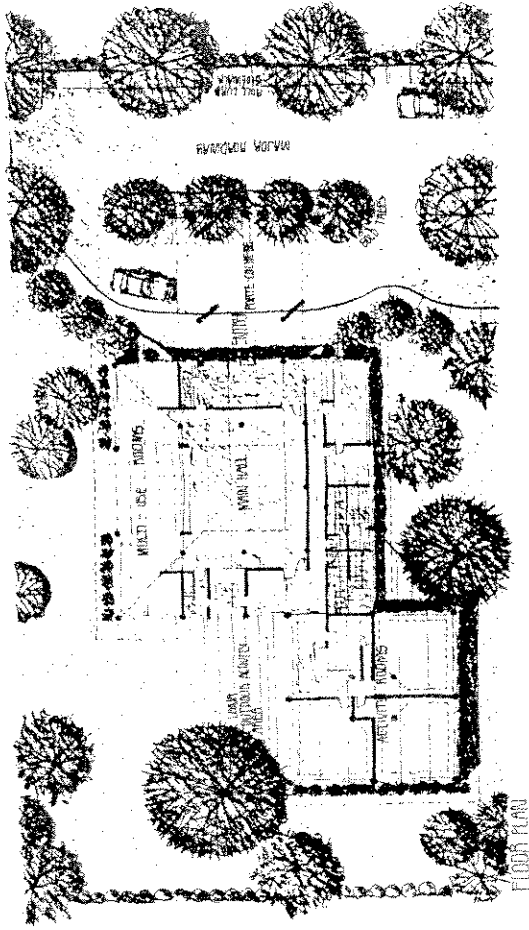


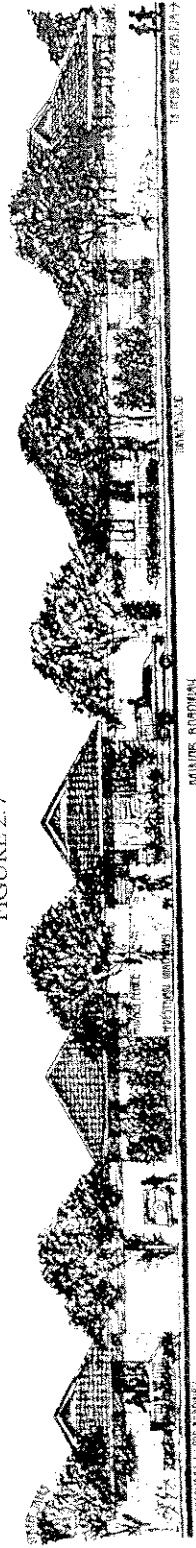
FIGURE 2.6

*The Summit*  
 BY WILLIAM  
 ROBERT BRAXWELL COMPANY  
 11 NOVEMBER 1972  
 7



RECREATION CENTER / OPEN SPACE PROFILE - STD

FIGURE 2.7



CLUBS / TREES / OPEN SPACE PROFILE - STD

*The Summit*

BY MILLIKEN  
 ROBERT SPANGLER COMPANY  
 WASHINGTON DC 20001

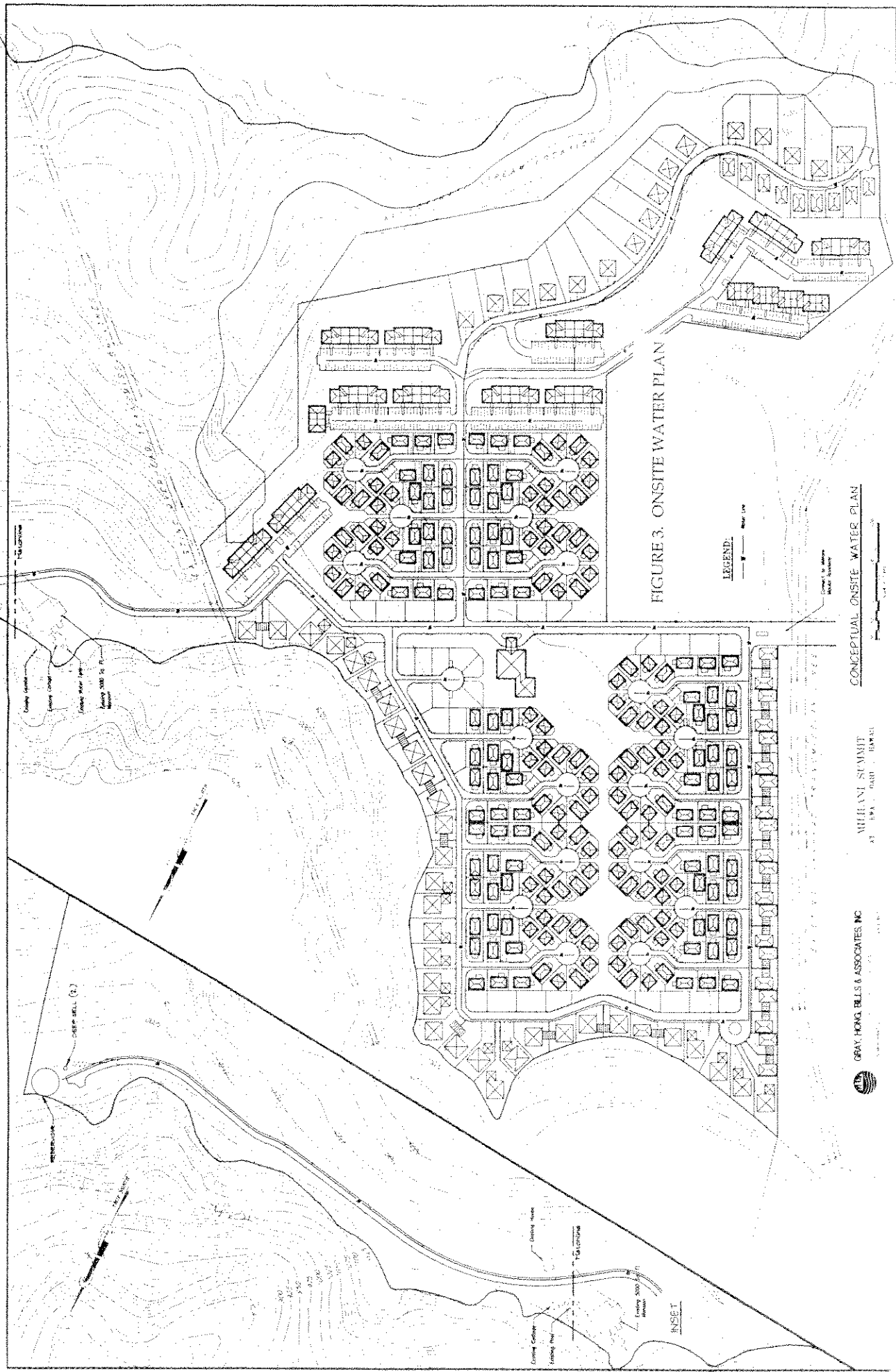


FIGURE 3. ONSITE WATER PLAN

LEGEND:

1" = 100' 0"

CONCEPTUAL ON-SITE WATER PLAN

WILLIAMS SUMMIT

AT 19A - GRID - 10A-11

GRAY, HONG, BULLS & ASSOCIATES, INC.



10/11/11

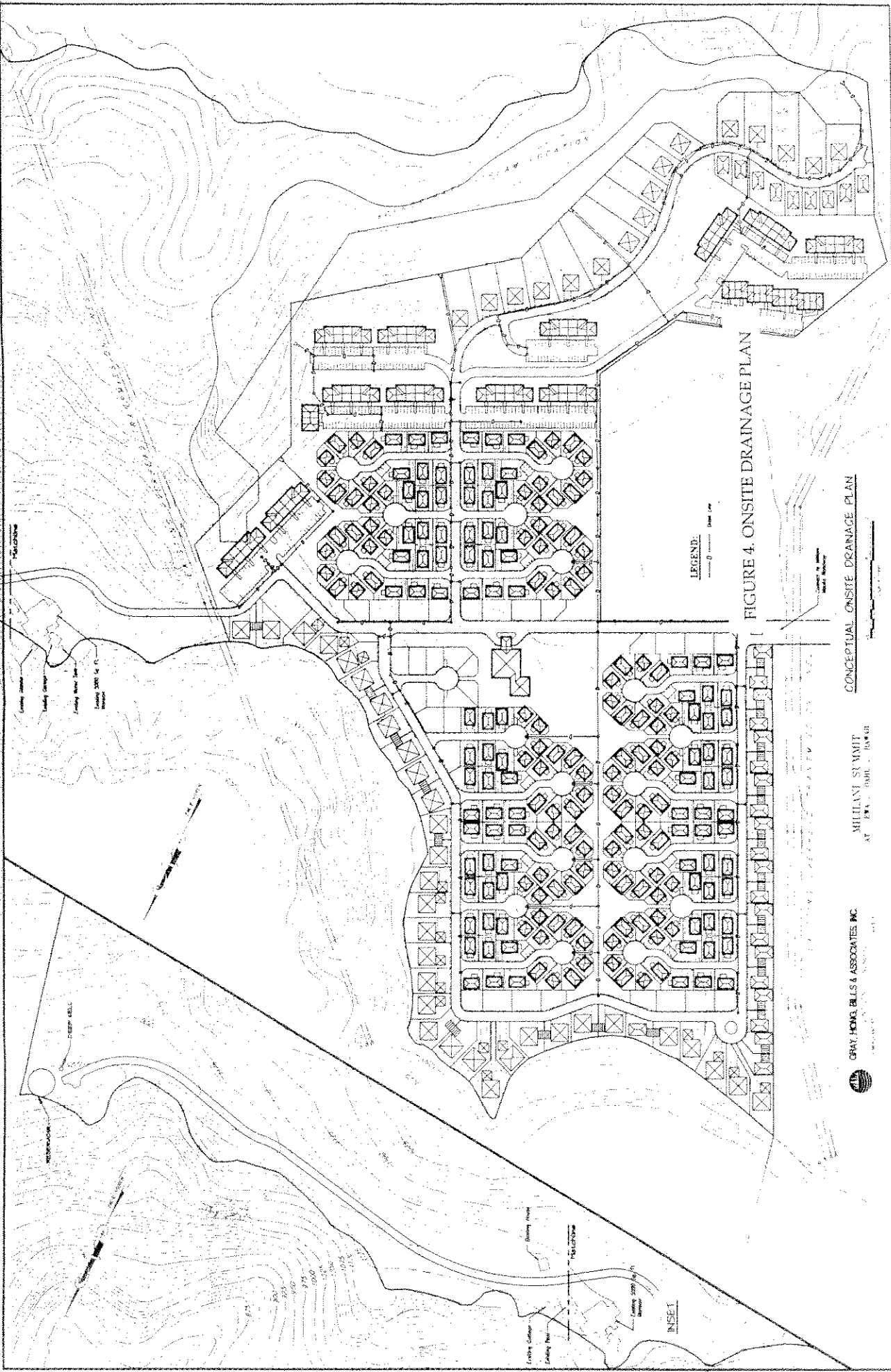


FIGURE 4. ONSITE DRAINAGE PLAN

CONCEPTUAL ONSITE DRAINAGE PLAN

MILLANT SUMMIT  
AT PWS PARK, INDIANAPOLIS, IN 46241

GRAY HORN, BELLS & ASSOCIATES, INC.



LEGEND:

- Catchment Area
- - - Catchment Area Boundary
- X Catchment Area Number
- Catchment Area Name

INSET

Landing Center  
Landing Road  
Landing Area  
Landing Area Boundary

PROPERTY

Property Owner  
Landing Center  
Landing Area  
Landing Area Boundary



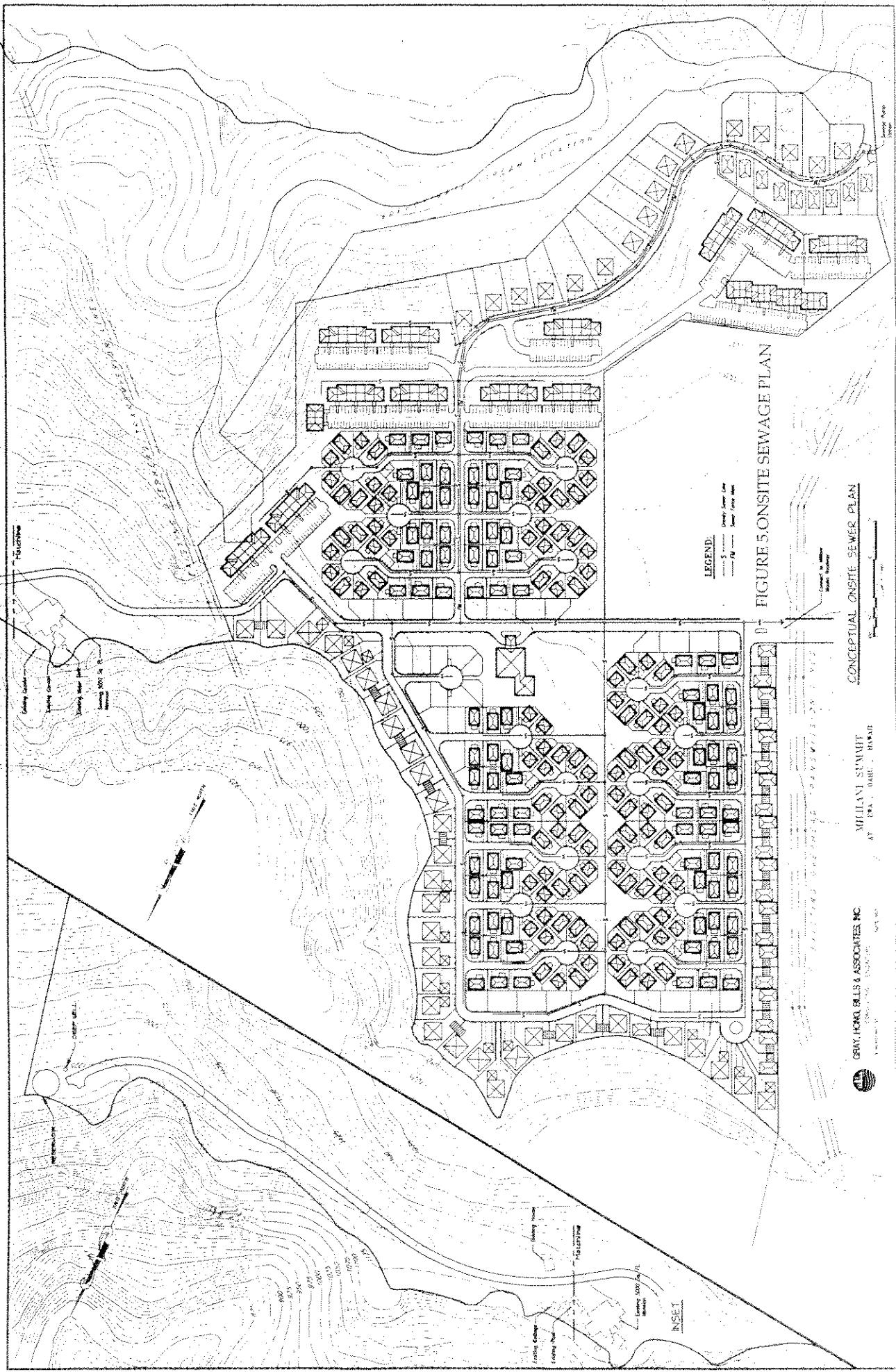


FIGURE 5. ONSITE SEWAGE PLAN

LEGEND:

- Sewer Line
- Manhole
- Structure

CONCEPTUAL ONSITE SEWER PLAN

MILLIANI SUMMIT  
AT SPA, OAK, BAY

GRAY, HOWE & ASSOCIATES, INC.  
CONSULTING ENGINEERS



NSEI

Development Plan: Agriculture  
Zoning: Ag-1, P-1  
Applicant: Robert-Maxwell & Company  
Reviewing Agency: Housing, Finance & Development Corporation  
Contact Person: F. J. Rodriguez  
Parametrix, Inc.  
1164 Bishop Suite 1600  
Honolulu, HI 96813  
Telephone: 524-0594

A. BACKGROUND AND DEVELOPMENT OBJECTIVES

The proposed project offers an opportunity to develop affordable housing in a cost effective and efficient way. The gently sloping plateau is ideal for the siting of affordable housing with the gap, and market homes requiring more site work located in areas with more slope. The multi-family homes will take advantage of the topography with on-grade units at the second floor, avoiding the need for elevators.

The site has an ambient climatic environment. The site characteristics precludes any significant development impact to geology or soils, and minimal impacts to flora and fauna. The planned onsite Drainage system will utilize the existing gullies for storm runoff discharge. There are no significant historic/archaeological sites due to the extensive cultivation/agricultural uses that have historically occurred in the area.

The site benefits from its location to the master planned Mililani Town. It is in close proximity to existing and future planned employment centers including Mililani Technology Park, Campbell Industrial Park and the City of Kapolei. The "regional" planning of Mililani has provided access to commercial and recreational areas, and the improvement of public facilities and supporting infrastructure to accommodate the ongoing growth at Mililani Mauka. The development of the site can be considered a natural extension of the Mililani Mauka residential community and compatible with the building out of the Mililani master plan.

a. Assumptions/parameters

(1) Mililani Mauka (relationship to)

It is likely that the proposed project can be viewed as a natural extension of the Mililani Mauka community that abuts the project site. The project may share Mililani's facilities such as schools and commercial centers, as well as road systems. This sharing will reduce offsite costs and allow for the affordability of the housing units offered at the Summit. Increment 1 of Phase 2 of Mililani Mauka is currently before the City for approval. This community is growing faster than expected.

The Summit project complements the expansion of Mililani Mauka and contributes to providing a broad range of housing stock for Hawaii's affordable housing dilemma. The development of the proposed project supports the Castle & Cooke Residential, Inc. as it achieves the full building out of its master planned community.

(2) Purposes of Act 15

The critical shortage of affordable housing units engendered the creation of Act 15 to accelerate the development of affordable housing unit projects. The provisions of Act 15 of 1988 allows HFDC to expeditiously develop housing through a review and approval process that may exempt a project from the requirements of the County planning processes and zoning regulations. The time savings is substantial and cost savings reflected in housing prices to the consumer. Any qualified private developer can take advantage of Act 15 provisions for expeditious development approval for affordable housing projects through HFDC. Project certification for exemption from the requirements of the County General Plan, Community Development Plan, Zoning, and Subdivision ordinances (backbone infrastructure only), and ultimate construction of County dedicable standard infrastructural improvements will ensure affordability and a buy back clause and a shared appreciation provision which will be incorporated into the deed transaction to limit the speculative potential of the affordable units.

The fairly flat site and its proximity to the ongoing urbanization of Mililani Mauka offers an excellent opportunity to build affordable

homes in a cost effective manner. An expeditious approval process is a critical component to maintaining an affordable project. The financial capacity available under Act 15 can assist in reducing financing costs. All of these elements help to ensure affordable prices.

Affordability of housing (Guidelines/criteria)

Affordable housing as used and defined by HFDC in the "Overview of Affordable Housing Targets, December 1991" is described as follows :

A homeowner is considered to have affordable housing if the housing expense (mortgage loan payment and reserve for property taxes, insurance, lease rent, etc.) does not exceed 33% of income

The State Land Use Commission in 1988 set some conditions for the provision of affordable housing by requiring petitioners to provide housing opportunities for low, low-moderate, and moderate income residents by offering for sale a number of units distributed as follows:

At least 30% of total number residential units at prices which families with an income range of up to 120% of county's median income can afford

At least 30% of the total residential units in the petition area at prices which families with an income range of 120% to 140% of the county's median income can afford

The goal of the Summit project is to provide housing at a targeted ratio of 60 percent affordable and 40 percent distributed among gap and market priced homes.

b. Development Alternatives

(1) No development

No development, the status quo position, would maintain the property as is: a private estate with orchards of mature lychees, limes plus small plantings of other fruit trees.

The ongoing expansion and subsequent completion of the final phase of Mililani Town over the next 10 to 15 years will contribute to maintaining an agricultural operation infeasible and an incompatible use. The operation of commercial agriculture in close proximity to residential housing is less than optimal. Although agricultural operations are protected somewhat under the "right to farm laws" (Chapter 165, HRS), the dust, noise and perceived pesticide drift which

are inherent parts of modern agriculture are sure to cause nearby residents to complain. The operation of heavy farm equipment and the application of pesticides near a housing area is sometimes perceived as a hazard. There is also the potential of residents harvesting some of the crop for their use. This is not only a cost to the producer, but it can be dangerous to residents especially if the crop has been recently treated with pesticides. In some cases, the gardens of residents may be a source of pests to the commercial operations. Overall, past experience indicates that nearby residents are very likely to find farmers less than ideal neighbors. Operators will likely attempt to mitigate the impact of the farming operations on nearby residents which will inevitably increase operating costs.

Note: See draft report, *Agricultural Assessment of the Proposed Summit Development* Evaluation Research Consultants, November 6, 1991.

At the same time the property owner at the completion of the large scale, 1,200 acre residential community will be surrounded by urban uses and the realm of activities that accompany the establishment of a self-contained, master planned development of 21,000 people.

Developing the site will instead complement the ongoing development of Mililani Mauka. It can be perceived as a natural extension. The physical characteristics of the site, i.e., gently sloping plateau, and its proximity to the master planned Mililani Town provide an excellent opportunity to consider the development of affordable housing through proper planning and design activities.

## (2) Subdivision

Developing a subdivision on this site would entail: total site clearance including the stand of mature mixed forest trees located throughout the property (unless otherwise required) 56'/44' right-of-way and 40'/28' roadway respectively with right-of-way for major street 40' with 32' pavement or at the minimum 32' with a 28' pavement for minor streets. a concrete lined drainage channel; no common open space.. Given the requirements of the City and County of Honolulu regarding roadway sizes and under the R.5 zoning contiguous to the site in Mililani Mauka could mean a potential transference of 5,000 square foot lots; this alternative would require approximately 23-24 acres required for roadway alone leaving the remaining 32 acres of a total 55 usable acres for developable lots. The small usable acreage left for the site would not be cost effective and the ultimate selling price would not be cost competitive and in-keeping with the definition of "affordability".

The extensive infrastructure and roadway requirements unless waived in entirety by HFDC as the accepting agent, would make the provision of affordable homes very difficult.

However, if the subdivision was modified as a "cluster subdivision" similar to Mililani Mauka, then providing the 60 percent/40 percent ratio for affordable housing would be financially feasible.

### (3) Cluster

The cluster development alternative would be most preferred and viable as it allows a modification of existing subdivision rules and regulations to City and County standards and criteria as defined in the City's "cluster guidelines". This scenario would allow for the reduction of roadway widths, eliminate the requirements for curbs and gutters and underground drainage. It would provide the opportunity to have a sidewalk on only one side of the roadway with no curbs or modified curbs and sidewalk and grass surface drainage swales. Cluster development will enable smaller lot sizes from 2,500 to 3,500 square feet as presently allowed and approved by the City for any and all cluster projects. The end result is more flexibility and diversity to achieve the 60/40 percent ratio for affordable homes at reasonable and affordable prices.

The cluster approach permits a reduction in road building and utility costs. It allows open space for recreation or community gardens, adding to the tangible economic value to individual house lots. This increased value is created at no additional cost to the developer or HFDC. The approach encourages innovative site design, more efficient use of open space while preserving the natural features or scenic attributes. Attractive views or access to protected areas enhance the value of downsized lots. It is also an excellent way to maintain the rural character of the site. The classic New England village settlement pattern is a superb example of cluster development.

### (4) Modified cluster

This development alternative proposes a zero lot line and a modified zero lot line configuration under the general cluster mode of development where the density is higher and lot sizes smaller than proposed under the cluster concept. The modified cluster would allow the same degree of flexibility at a higher density to meet the 60/40 ratio or higher ratio with a lower unit selling price. A higher density makes the modified cluster a viable alternative. All of the development advantages attributed to cluster development apply including the lower development costs. Other innovative approaches include garden

lots, zip lots, squat lots and parallel lots. These approaches consume minimum land per unit in an attempt to economize land costs.

This modified cluster configuration has not gained overwhelming support in the local community. Interestingly, conventional subdivisions are what we have become accustomed to as the more traditional townscape. Consequently, attached units accommodating higher densities have not been well-received.

## 5. Conclusions

Reviewing the four development alternatives for this site, no development is not an appropriate alternative given the ongoing urbanization of the surrounding area for the next 10-15 years. Of the development options, the cluster development scenario is the most logical for achieving the goal for the development of affordable housing given the beneficial characteristics of the site. The modified cluster concept is acceptable if higher densities, the maximization of affordable units and a more competitive price are the preferred goals. Substantial savings can be realized in the production of affordable housing.

## 6. Design objectives

Develop affordable housing that takes advantage of the natural features, the physical setting of the property and its rural character.

Utilize the cluster development approach to reduce infrastructure costs while preserving scenic and open space amenities such as the 55 acres in preservation abutting the Ewa Forest Reserve and greenways as permanently preserved open space

Provide a full range of housing options in a physical community that embodies the qualities of compactness and a village/neighborhood atmosphere

Site roadways and homes that give careful attention to preserving mature woodlands especially near the main entrance while optimizing cost effective and efficient methods for site development costs

Ensure the safety and well-being of potential residents in the design of the proposed development, i.e., roadways, street lighting, etc.

Provide common open space, pedestrian walkways and recreational area

Create a sense of security and controlled access into the project with a secure, gated entry

Establish a central node or focal point such as a community center

Implement a program integrating pedestrian walkways, bikeways, an auto circulation system and a system of common, permanently preserved open space as greenways or central village greens to enhance the property's natural features and attributes

## 7. Design analysis

### a. Working design assumptions/parameters

#### (1) Overall site design

Target the development to providing affordably priced homes

Site the affordable homes on the flat plateau to minimize the site development cost to ensure affordable selling prices

Locate the gap group priced homes on the perimeter bordering the affordably priced homes where the average slope is 5-10%

Develop market priced homes along Kipapa Ridge where the average slope is between 10% to not more than 30%. This will allow for terrain adaptive homes that may have larger lot sizes to accommodate the grade transition, more visual interest, privacy and positive drainage. Home prices will reflect a higher development cost and a more customized nature than the affordable or gap priced units.

Provide buffer along electrical corridor coterminous with Mililani Mauka development below

Retain and relocate existing trees as appropriate

Separate pedestrian walkway and vehicular travel in open space areas

Establish an open space system that connects the different elements of the project and clearly demarcates paths to make way finding easy

Secure a gated main entry to define a sense of place and aesthetic quality that is both inviting and memorable



Provide fences in areas where appropriate including perimeter between project site and Mililani Mauka and internally, on a lot-to-lot basis with the perspective that "fences make good neighbors"

Integrate landscaping to define main entry and major corridors such as, major roadways, pedestrian walkways, open space and activity areas and nodal points

Create a major activity node/space facility as a recreational/community center for both passive and active recreation and an informal open space for field activities. Include ample parking with possible overflow in field. (Consider using grass-crete or turf blok for parking area instead of asphalt or concrete)

Incorporate at least one sidewalk on major and minor roads and provide adequate width and appropriate landscaping

Define roadways by use and include adequate landscaping to create strong visual points and frame the corridors. Major roadway into project should be minimum of 28' right-of-way. Minor roadways should have a minimum 18' pavement with a minimum 3' sidewalk/walkway. Landscaping along the roadways should be provided as part of open space of abutting house lots. (Trees are part of lot landscaping.) Bikeways are included part of major and minor roads along with 3' wide sidewalks.

Ensure adequate street lighting on major roads be contiguous and appropriate for the particular roadway it connects, i.e., City standard "gooseneck" aluminum metal light fixtures for major roads and the shorter vertical or bollards at minor roads, walkways/sidewalks. For internal walkways in open space vertical and/or bollards would be appropriate depending on scale of open space. Shielding for all lighting should be adequately provided and controlled to minimize nuisance and glare into surrounding residential areas.

## (2) House Design

Stagger residences along minor roads to ensure a sense of privacy, architectural diversity and visual interest to individual lots

Incorporate front porches/lanais for all homes facing onto front yards and abutting roadways

Include the use of well-designed shared driveways and combined carports. Guest parking for individual lots should be provided on individual lot driveway apron or driveway. Common guest parking to

residential area and /or roadway, minor or major, should have provisions for indented guest parking off the roadways. The common guest parking areas should not be paved with concrete or asphalt but with a surface treatment such as turf blok and grass-crete with adequate landscaping screened with trees and hedges.

Design housing units to exude Hawaiian-style architecture with high pitched or with double pitched roofs or combination thereof with a large overhang. Possible roof styles include high pitch with mansard or double pitched with mansard.

Use appropriate roofing materials such as shake, shingles or asphaltic shingles. Metal roofing acceptable subject to subdued and non-reflective colors.

Encourage earth tone colors for roofing and exterior of home whenever possible.

Orient units for maximum cross ventilation of trades and Kona weather where feasible and appropriate. Energy conservation should be included as part of overall design of units including solar water heating panels/heaters as prescribed by law.

Maximize where ever possible and feasible privacy internal to housing units from surrounding an abutting areas.

Provide for expandability as house unit and lot may allow

#### **b. Alternatives**

##### Building systems

- (1) Single wall homes
- (2) Panelized/modular housing
- (3) Double wall homes

##### Foundation

- (1) Slab-on-grade
- (2) Post and pier
- (3) Combination

##### Roofing shape

- (1) Single pitch
- (2) Double pitch
- (3) Combination
- (4) Mansard
- (5) Hip and gable

(6) Regular hip

Roofing material

- (1) Shake
- (2) Shingle
- (3) Asphaltic shingle
- (4) Metal roof

**c. Conclusions**

The most cost effective building construction options to achieve the goal of producing affordable housing for this site are:

Asphaltic shingle is affordable, although a metal roof from a standpoint of maintenance and long life should be highly considered.

A truss system, however, given the parameter for maximizing storage whenever possible, necessitates that an open beam system be incorporated in the design to allow the void in the roof to be used as loft space, additional storage and/or habitable space

The roof configuration be high pitched or double pitched especially if given the situation of incorporating a loft space and an open beam system. The hip roof will be in keeping with a Hawaiian character. Hip and gable does not lend itself to using the void under the roof.

Post and pier is preferred as it allows a reduction in the individual lot and site development costs, adds flexibility of placing electrical and plumbing lines at will. This foundation type allows for changes and additions before and after occupied for modification, additions, alterations and with great ease at a minimal cost. However, slab-on-grade should be used for the carports. The choice between the use of concrete or asphalt for the slab needs to be decided for the applicability to the lot and site.

Overall dimensions of the 4' module will reduce cost of construction, i.e., 24'x 28', 24' x 40' increments of this nature allow basic housing types of sizes 28' x 40' or 40' x 40'.

Front porches or lanais, large overhangs and ample windows, located and sized to provide a sense of openness, an integration of indoor and outdoor spaces to make a cluster feel spacious. A Hawaiian-style of architectural design will allow for ventilation and circulation as found in the historic homes of Kaimuki, Manoa and Nuuanu.

Privacy fencing shall be provided for all lots except for the front yard facing the street which will have landscaping.

## 8. Overall Development Concept

The applicant proposes a planned, gated and secure community with a range of floor plans from an expandable 2BR/1B to a 3BR/3B model. A choice of housing units priced to address affordable, gap and market groups. To provide broad mix of housing types, a multi-family unit will offer affordable homes ranging from 1BR/1B to 3BR/2B targeted to the below 80% and 80%-120% income levels.

The fairly flat site lends itself to a village concept or more traditional neighborhood design incorporating staggered minor roadways culminating with moderate turn-arounds which are heavily landscaped with street trees and other landscape elements to give a sense of space. The compactness provides a network of streets and greens that allows residents to get around easily, especially on foot.

This central area does not afford external views as such, consequently, an environment needs to be created reflecting ambiance and visual relief internal to the site. Further enhancement is provided by the linkage of major and minor streets, a vehicular circulation loop that connects the project that is visually designed with landscaped pedestrian walkways/bikeways and an open space system affording passive and active recreational activities.

The affordable and gap priced single family units will include shared carports and driveways with guest parking on driveway aprons with provisions for larger front yards and smaller side and rear yards. This allows for the placement of front porches/lanais which add to the village flavor and neighborliness.

The house design will include large overhangs, window expanses and blank walls where privacy needs to be maintained in areas abutting neighboring units. An open beam ceiling allowing a loft space to provide additional bedroom, den, play area or storage space. This open beam configuration lends itself to a variety of roofing shapes and forms. This allows the use of asphaltic shingles and metal roofing depending on the design cost and designation, i.e., affordable, gap or market.

## 9. Project description

The applicant is proposing to design and build the following:

### a. Dwelling units

(1) Number - 598 housing units: 322 single family and 276 multi-family homes

The Courtyards: 246 single family homes on plateau

The Bluffs: 51 single family homes

The Ridge: 25 single family homes

The Gardens: 276 multi-family, 3-story homes affordably priced

(2) Type - 60% affordable and 40% gap and market priced units

#### Single family:

"A" unit = 2BR/1B with "loft"

"B" unit\* = 2BR/2B with "loft"

"C" unit = 3BR/3B with "loft"

"D" unit = 3BR/2B with "loft"

\* There are three variations of "B" units depending on whether the unit comes with a single or double carport or parking located under the house.

Note: The "A" unit of previous submittals has been eliminated.

#### Multi-family: \*

"E" unit = 1BR/1B

"F" unit = 2BR/1B

"G" unit = 2BR/2B

"H" unit = 3BR/2B

\* "Lofts/attics" are available with top floor units.

(3) Density calculations -

Total density for site: 11.07 units per acre on 54 developable acres

Single family density: 7.85 units per acre on 41 acres

Multi-family density: 23 units per acre on 12 acres

(4) Size

"A" unit = 672 SF

"B" unit = 960 SF

"C" unit = 1,600 SF

"D" unit = 1,296 SF

"E" unit = 575 SF

"F" unit = 750 SF

"G" unit = 885 SF

"H" unit = 945 SF

(5) Sales price

Single Family homes:

"A" unit = 72 units @\$126,000  
"B" unit = 164 units @\$224,700  
          = 31 units @\$240,000  
          = 9 units @\$255,400  
"C" unit = 32 units @\$292,000  
"D" unit = 14 units @\$273,700

Multi-family homes:

"E" unit = 60 units @\$97,000  
"F" unit = 72 units @\$120,900  
"G" unit = 108 units @\$155,600  
"H" unit = 36 units @\$172,900

(6) Form of ownership - Fee Simple, Condominium Property Regime

(7) Development schedule (see application)

(8) Government subsidy - None requested

**b. Building design**

Double wall construction

1-story with high pitched roof allowing for lofts

Flat roof carports

Exterior: rough textured plywood

Interior: vinyl wall coverings  
Multi-family, 3-stories with high pitched roof allowing for "lofts/attics"  
Windows: bronze anodized aluminum sliders with screens  
Floors: plywood with carpeting and vinyl tile  
Roof: high or double pitched roofs with asphaltic shingle or metal roofing  
Loft with roof venting  
All electric appliances  
Telephone with cable television provisions  
Central flat roof area for the concealment of solar water heating and/or photo voltaic power panels

c. **Open space/recreation/landscaping**

Landscaping includes at least one major street tree in front yard, i.e., shower, Tacoma, and plumeria. Internal to site will be hedges and shrubs (human scale) to provide and maintain privacy. Overall landscaping includes trees such as monkey pod, white monkey pod, gold tree, primavera abutting entry, at community center and at entries to major roadways.

Existing trees not used as buffer along electrical corridor will be relocated and transplanted to open space surrounding community center and along the pedestrian walkways, where feasible and appropriate.

The entry to the Summit will be lined with Cook pines in keeping with the entry to Mililani Mauka and will provide a sense of continuity with Mililani. The overall landscaping theme will capture the sense of space and place as experienced in the older Mililani Town...a more traditional neighborhood.

d. **Roads/circulation**

The onsite roadway system will include approximately 9,300 feet of roadways varying in width from 18' to 24' to service the single family units and about 3,300 feet of 22' wide roadways with perpendicular parking to service the multi-family units.

One major spine roadway connecting the secured, gated main entry with the entry gate mauka of the property accessing the 55 acres in the Conservation District. This includes a 28'- 30' right-of-way with a 20' road, 3' plantings, 5'-7' pedestrian walkway/bikeway and landscaping.

A major secondary loop roadway around the site will be 24' wide including a 20' wide pavement, a 2-lane road and a 4' bikeway/walkway on one side.

The minor roads including cul-de-sacs/modified turn-arounds are 21' wide includes an 18' pavement, 2-lane road with a 3' bikeway/walkway on one side.

Access alignment from Mililani Mauka is being coordinated with Castle & Cooke Residential to ensure efficient use and cost effective development of the road to benefit both parties. There is an existing 20' wide road easement presently serving the Summit site. Specifics on size, materials to be used, and design standards will be coordinated with the City and HFDC to ensure resident safety. This two lane roadway will extend from Ainamakua Drive to the gated entry to the Summit.

Gray, Hong, Bills & Associates, Inc. has received a verbal response from the Fire Department indicating that the roadway system is acceptable as long as turnarounds are placed at the end of all driveways serving the multi-family units. A turnaround will also be required if the driveway length is greater than 150 feet.

**e. Parking**

Guest parking specific to each unit: 1 or 2 per unit located on driveway or driveway apron

Common guest parking: 2 stalls on the small cul-de-sacs and 4 stalls on the longer cul-de-sacs utilizing turf blok/grass-crete

Common guest parking for the multi-family units is 1 stall for every 10 housing units.



## II. PROJECT DESCRIPTION

### A. TECHNICAL CHARACTERISTICS

#### a. **Abutting land uses and ownership**

The site is bounded in the north by the Ewa-Wahiawa District Boundary adjacent to Waikakalaua Gulch and in the south by a tributary to the Kipapa Stream. On the west is the Mililani Mauka Development and the Ewa Forest Reserve. Beyond is the Koolau Mountain Range.

Ruth McLean Bowers is the current landowner of the property which was previously owned by Alan Davis and prior to that, Castle & Cooke, Inc. The property is currently a private estate with orchards, residences and farm shed. Robert Maxwell & Company has an option agreement to purchase the property.

Several developments are located within the vicinity of the proposed project area: Mililani Town, Waipio Acres, Waikalani Woodlands, Melemanu Woodlands, Wheeler Air Force Base, Schofield Barracks and the Mililani Technology Park.

The most prominent is Mililani Town, which (makai of the H-2 Freeway) comprises about 2,300 acres and over 26,000 residents. Mililani Mauka, the 1,200 acres above H-2 Freeway is currently being developed for a projected population of approximately 21,000 people. As of 1990, 29,359 persons lived in the Mililani Census Designated place. Also, planned are a neighborhood commercial center, three neighborhood parks, three recreational centers, two elementary and one intermediate schools. Other facilities proposed include a college or university site (turned down by the University of Hawaii), a retirement community, a police substation, a youth center, and a park-and-ride transit facility.

#### b. **Hazardous areas**

The site is located approximately a mile from Wheeler Air Force Base and outside the potential accident zone for aircraft related accidents. The Army's East Range training area is located north of the site. Although used for a variety of training exercises, there appears to be no danger of direct physical intrusion into the project area.

The site is located in Zone D, Flood Insurance Designation, or "Areas in which flood hazards are undetermined". Because of the site's unique plateau configuration, there is no upland tributary area to cause flooding.

### c. Slope and topography

The proposed project is situated on a plateau within a relatively hilly terrain. The elevation ranges from 825 feet within this gully at the southwest boundary to 1080 feet at the northwest boundary.

The overall average slope is about 12% with the plateau area level to gently sloping at an elevation ranging from about 1000 to 1050 feet. The land plunges on either side of the ridge face over a drop of 200 feet into the Waikakalaua and Kipapa gulches.

### d. Soil and drainage

The arable portion of the site is comprised of *Leilehua soils (LeB and LeC)*. The Leilehua series consists of well-drained soils developed from basic igneous rock. They are gently to moderately sloping at elevations that range from 900 to 1,200 feet.

*LeB, Leilehua Silty clay* with 2 to 6% slopes, occurs in areas bordered by gulches. Permeability is moderately rapid, runoff slow, and the erosion hazard slight. With *LeC, Leilehua Silty clay* with 6 to 12% slopes, runoff is medium and the erosion hazard moderate. The lands are rated prime by the ALISH system.

The majority of the surface runoff flows into the gully located in the southern portion of the property. The remaining runoff flows into the Waikakalaua Gulch. The property does not have drainage improvements which could be used as part of the proposed project drainage system.

### e. Climate

The annual rainfall averages from 60 inches at the site to 90 inches (in the upper reaches of the land in conservation) and is fairly well-distributed throughout the year. Wind is generally mild averaging 10 mph. Temperatures average between 65 to 80 degrees F during the year.

## B. EXISTING LAND USES

a. The site is a private estate which includes a main residence, a caretaker residence, a utility shed, and a small cottage. Twenty acres are currently in agriculture and farm buildings. The remainder is heavily forested. There are approximately 350 lychee trees and 700 lime trees, with small plantings of bananas, pomelo, guava and various tropical

fruit trees. There is no irrigation in evidence. The lychees are well over 30 years old and occupy between 10 to 11 acres. The limes are probably less than 15 years old and occupy about 6 acres.

#### b. Easements

Under an agreement dated September 9, 1980 between Castle & Cooke, Inc., and the property owner, Ruth McLean Bowers. Mrs. Bowers has perpetual access to/non-exclusive easement over and across Lots 2135 and 2136 of a 20-foot all-weather surface access road from the property to Kamehameha Highway or to H-2. The agreement also includes the right to widen the easement to the width required by the City and County of Honolulu for residential development.

#### c. Existing transportation

The existing access to the project site is via an unpaved 20-foot all-weather surface access road connecting the property to Kamehameha Highway and Interstate H-2. The road is constructed and maintained by Mililani Town, Inc. or Castle & Cooke, Inc. at their cost and expense via easement 424.

### C. SOCIAL AND ECONOMIC CHARACTERISTICS

Population/Demographic The population of Mililani Town including Mililani Mauka as of 1990 is 29,359 persons living in 8,900 housing units. Mililani Mauka alone is projected to house a population of 21,000 people. Almost one-third of the community is under 18 years of age with Caucasians comprising 34.2 percent and Japanese 30.9 percent of Mililani's population. Only 3.8 percent of the total population is 65 years. On the southeast, Wahiawa had 5,183 residents in 1990. Wahiawa residents are much younger than Mililani at 27.6 years with the largest age category between the age of 18 to 64 years. Approximately 37.5 were Caucasian, Filipinos 16.4 percent and Japanese 16.2 percent

#### Economy

The tax structure for the area will change as the land is converted from agricultural use to urban use. Real property tax rates will also change. This increased real property values, income taxes and sales tax will offset an increase in the State's operating expenditures and should have a positive effect on the State's budget.

#### Employment

Approximately a third of the workforce in Mililani are in the service industries with the rest employed in professional fields, the military, construction and other forms of employment. Wahiawa had a 8.5 percent unemployment rate and Mililani a 4.1 percent unemployment rate in 1980. Median household income levels for the same time period were \$26,338 in Mililani and \$13,343 in Wahiawa.

New employment opportunities will be generated by the Mililani Technology Park, the City of Kapolei, and Campbell Industrial and Business Park. An educated labor force in Mililani plus the new work opportunities could redirect work travel away from the commute to the employment centers of the Primary Urban Area.

### Housing

There were 8,900 housing units in the Mililani Town Census Designated Place in 1990. Overall housing vacancy was very low at 1.4 percent. Housing units in Mililani tend to be larger with over three-fourths of Mililani's homes owner-occupied. The median value of these housing units was about \$283,600. Rents were a median of \$990 a month; the median rent for Oahu is \$615. Household size was on the average of 3.35 persons per unit in comparison to the Oahu average of 3.02 persons.

Wahiawa contained 1,799 housing units in 1990 with a vacancy rate of 2.7 percent, 53.6 percent owner-occupied, a median value of \$241,500 and median rent at \$737.

Note: See *Social Impact Assessment of The Summit* prepared by Earthplan, March 1992.

## D. EXISTING PUBLIC FACILITIES AND SERVICES

The site is a private estate which includes a main residence, a caretaker residence, a utility shed, and a small cottage. Twenty acres are currently in agriculture and farm buildings. The remainder is heavily forested. There are approximately 350 lychee trees and 700 lime trees, with small plantings of bananas, pomelo, guava and various tropical fruit trees. There is no irrigation in evidence.

The lychees are well over 30 years old and occupy between 10 to 11 acres. The limes are probably less than 15 years old and occupy about 6 acres.

### g. Easements

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across Lots 2135 and 2136 of a 20-foot all-weather surface access road from the property to Kamehameha Highway or to H-2. The agreement also includes the right to widen the easement to the width required by the City and County of Honolulu for residential development.

**h. Existing transportation**

The existing access to the project site is via an unpaved 20-foot all-weather surface access road connecting the property to Kamehameha Highway and Interstate H-2. The road is constructed and maintained by Mililani Town, Inc. or Castle & Cooke, Inc. at their cost and expense via easement 424.

**i. Existing infrastructure systems: water, sewer, power and communications**

**(1) Water**

The property lies in the Waiawa Aquifer System of the Pearl Harbor Aquifer Sector. The system is part of the largest continuous aquifer on Oahu extending from the Honolulu District west to the Waianae Mountains and south to Pearl Harbor. This aquifer is also the most developed source of water supply for the island.

The Waikakalaua Stream has a small quantity of water, however, it does not flow continuously and the volume is quite small. The Kipapa Stream tributary on the south side of the property has even less water. The streams are not a feasible source for providing a water supply.

The only source of potable water is the groundwater in the basal aquifer. The groundwater head is about 23 feet below the property. Consequently, wells with capacities of several million gallons can be successfully drilled on the property. New wells await governmental approval.

**(2) Sewer**

The five existing dwellings on the property presently utilize individual wastewater systems. A public sewerage system is not available at the site.

The wastewater collection system for the proposed project will be connected with the existing Mililani Town trunk sewer. The wastewater from the Mililani area is treated at the Honouliuli Wastewater Treatment Plant (WWTP). An expansion of the

The wastewater collection system for the proposed project will be connected with the existing Mililani Town trunk sewer. The wastewater from the Mililani area is treated at the Honouliuli Wastewater Treatment Plant (WWTP). An expansion of the Honouliuli WWTP is underway for a planned upgrade by 1993 from the present 25 MGD capacity to 38 MGD. The major components of the treatment and disposal systems were designed for the average flow of 51 MGD--an upgrade that may be completed by 1997. At a historic rate of 4,000 housing units per year, the 1993 expansion to 38 MGD should accommodate development until 1998.

### (3) Power and Communications

Hawaiian Electric Company (HECO) has transmission lines that flank the eastern and western boundaries of the property. These transmission lines, located within easements, are the only utilities proximate to the site.

A HECO substation and Hawaiian Telephone Company remote switching station exists in the Mililani Mauka Development as well as cable television service. ( EXHIBIT H Civil Engineering Report added ).

### j. Existing public facilities: schools, police, fire, parks, shopping centers

#### Schools

There are three elementary schools (Kipapa, Mililani-uka, Mililani-waena), an intermediate school (Wheeler Intermediate) and one high school (Mililani High) close by.

*The Summit at Mililani is estimated to potentially generate 184 students, 112 in grades K-6 and 27 students in grades 7-8 and 45 high school students. Students would attend Mililani Mauka Elementary scheduled to open in September, 1993 (which should be able to accommodate elementary schoolers from The Summit) as well as Wheeler Intermediate and Mililani High School. There is currently capacity to accommodate more students at Wheeler and Mililani. As Mililani Mauka builds out over the next 10-15 years this capacity will be affected. (Update revisions from DOE letter dated 2-18-93 and EarthPlan Social Impact Report dated February, 1993 p.31 attached as Exhibit D.)*

#### Police

Wahiawa Police Station, part of Honolulu Police Department's second district, provides existing police protection for Mililani and

Mililani Mauka. There are four beats in Mililani, the Summit will be in Beat 221.

Presently, police officials are monitoring the cumulative impacts of the development in this area. The Summit by itself is not expected to stress police protection services. There are no short term plans for an expansion of service or facility at this time. A police substation is planned for the park-and-ride facility in Mililani Mauka.

### Fire

There are three existing fire protection facilities:

Mililani, Engine Co. 36

Waiiau, Ladder Co. 38

Wahiawa, Engine Co. 16

The Mililani Station, an engine company with five firefighters per shift, would respond first with the backup provided by the Pearl City Fire Station No. 20 (also an engine company) and the Waiiau Fire Station, a ladder company. Fire officials are monitoring the development in the area. A future fire station is planned for Mililani Mauka.

### Recreational Facilities/Parks

Mililani Golf Course, Mililani District Park, Mililani Waena Park, and Mililani Neighborhood Park are in close proximity to the project site. Other park facilities may be found in neighboring communities such as the Waipahu Cultural Garden Park.

Recreational facilities will be provided by an onsite community center, an informal open space area next to the center, and greenways throughout the project which can be used for tot lots. Additionally, Mililani Mauka will have public parks including a 20-acre district park, and a 12-acre neighborhood park. These parks will be dedicated to the City and be in compliance with City standards.

A youth center located in Mililani Mauka next to the park-and-ride facility is currently being planned.

### Shopping Areas

The residents of the Summit will be able to access a variety of existing shopping centers at Mililani Town, Mililani Mauka, and may commute to Waipahu, Pearlridge, Wahiawa and eventually, to the City of Kapolei and the Hawaii Power Center proposed for Pearl City.

### Emergency Medical Services and Health Care Facilities

Wahiawa's emergency medical service is available with the Fire Department able to provide basic life support. The site is located near the health care facilities available at Wahiawa Hospital, Straub Clinic, Pali Momi and St. Francis West.

k. **Flora and terrestrial fauna**

Flora

Approximately 20 acres of the site is currently used for agricultural purposes and farm buildings. They are approximately 10 to 11 acres of lychee trees. Of the estimated 350 lychee trees one-third are mature trees over 30 years old and the rest between 20 to 30 years old. The lime orchard occupies 6 acres with trees less than 15 years old. There are about 700 lime trees on the property. Other small plantings include guava, bananas, pomelo and assorted tropical fruit trees. The remainder of the property is heavily forested. The mixed forest of such trees as *eucalyptus*, 'ohi'a and koa are found also in the steep gulches. Adjacent to the parcel is the Ewa Forest Reserve which is dominated by introduced species of plants and the pineapple fields master planned as part of the Mililani Mauka development.

Fauna

Onsite fauna consist of introduced birds and mammals such as rats and the small Indian mongoose. The cultivation of the site does not provide a suitable habitat for endemic forest birds or mammals.

l. **Historic/archaeological resources**

The project site was used to grow pineapple from 1932 to about 1946. During the war part of the land was used as radio transmitting and receiving station and ordnance storage warehouse. The land was later transferred again to the Hawaiian Pineapple Company, which later became Dole Corporation. In 1962, Alan S. Davis purchased the property and developed orchards of lychee, lime and banana. The property was sold to its present owner in 1977.

These historic uses/activities had an impact of disturbing the ground such that there is a low likelihood of finding significant archaeological resources in the area. Previous archaeological surveys on adjacent lands have found few sites.

An archaeological survey revealed only three historic sites and no prehistoric sites. The sites recorded date to the World War Two period or historic period (charcoal ovens) probably constructed during the pineapple era. Sites of earlier periods were lacking especially on the flat plateau areas where pineapple had been previously cultivated.



### III. RELATIONSHIP TO PUBLIC PLANS AND POLICIES

This section is included to indicate that the proposed project will comply with the State plans and policies, despite there being no mandatory requirement as provided under Act 15.

#### A. Hawaii State Plan

The Hawaii State Plan (Chapter 226 HRS, as amended) serves as a guide for the long-term development of the State, establishes goals, objectives, policies and priorities for the State, provides a basis for determining priorities and allocating limited resources, improves coordination of state and county plans and all major relevant activities. The following section considers the project with respect to relevant areas of the Hawaii State Plan:

*(226-5) Objectives and Policies for Population.*

(b) (3) Promote increased opportunities for Hawaii's people to pursue their socio-economic aspirations throughout the islands.

**Comment.** Affordable housing is an overriding Statewide concern. The Summit will provide housing opportunities for low, low-moderate and moderate income residents by offering 60% of total number of residential units as affordable homes and the remaining 40% as gap and market priced homes. The Summit is master planned to provide a full range of housing options for Hawaii's residential market. It has been projected that by the year 2000, approximately 64,000 affordable housing units will be needed statewide. The Summit will contribute toward making this goal a reality.

*(226-6) Objectives and Policies for the Economy--in General.*

(b) (6) Strive to achieve a sustained level of construction activity responsive to, and consistent with, State growth objectives.

(b) (13) Encourage businesses that have favorable financial multiplier effects within Hawaii's economy.

**Comment.** The Summit will provide employment opportunities for Hawaii residents and contribute to the maintenance of a healthy construction industry which is a basic industry recognized for generating a relatively high employment multiplier.

*(226-13) Objectives for the Physical Environment (Land, Air, and Water Quality).*

(b) (7) Encourage urban developments in close proximity to existing services and facilities.

**Comment.** The proposed project complements Mililani Mauka, the final increment of the Mililani master plan. It benefits from its proximity to Mililani Mauka which contains a full array of utilities that have been sized to accommodate its full development and all necessary public services. The Summit will add to the cumulative impacts of the Mililani development. The timing and review of existing and planned public services and facilities are thoroughly integrated in the planning and development process for the project.

(226-14) Objectives and Policies for Facility Systems in General.

(b) (1) Accommodate the needs of Hawaii's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.

**Comment.** The Summit is appropriately located to adhere to the intent of this policy. The planning of the project is based on the expansion of the capacity of existing facilities rather than the construction of new facilities. This cost effective approach makes possible the construction of housing at affordable prices.

(226-104) Objectives and Policies for Population Growth and Land Resources.

(b) (1) Encourage urban growth primarily to existing urban areas where adequate public facilities are readily available or can be provided with reasonable public expenditures, and away from areas where other important benefits are present, such as the protection of agricultural land or preservation of lifestyles.

**Comment.** The site is located on land classified for agriculture use. It is adjacent to the master planned Mililani Mauka residential community which is presently undergoing a zoning change for Increment II, Phase II: to develop 995 single family and multifamily residential units, an intermediate school, a commercial center, a park and support infrastructure. Upon completion, Mililani Mauka will be a fully urbanized, self-contained residential community of approximately 6,600 homes and 21,000 people. This urbanized environment is not conducive or compatible to the operation of a commercial agriculture facility located on this isolated site that can only be reached through the Mililani Mauka residential development. The operation of heavy farm equipment along with the dust, noise and the application of pesticides near housing can be perceived as a nuisance and potentially a hazard. Leaving this area in agricultural use would be an abysmally poor planning decision. A more appropriate use of the site is as a natural extension of the residential community of Mililani Mauka.

The project will require only incremental expansion of infrastructure and services to meet the needs of project residents.

(226-106) *Objectives and Policies for Affordable Housing.*

(1) Seek to use marginal or nonessential agricultural land and public land to meet the housing needs of low-moderate-income and gap-group households.

(2) Encourage the use of alternative construction and development methods as a means of reducing production costs.

**Comment.** It is the intent of this project to provide affordable housing on land that is marginal to agricultural production. This acreage is not essential to maintain the viability of diversified agriculture. Essential to the provision of affordably priced homes is incorporating construction and development techniques/alternatives that will reduce the total costs for producing these homes. The Summit addresses these concerns directly.

## B. State Functional Plans

The State Functional Plans are the primary vehicle for implementing the Hawaii State Plan. Twelve State Functional Plans have been adopted in the areas of agriculture, transportation, conservation lands, housing, tourism, historic preservation, water resources, energy, recreation, education, higher education and health. The applicable functional plans have been reviewed. Relevant sections are presented below:

### State Housing Plan

(A) (1) Direct Federal, state and county resources and efforts toward the development of affordable for-sale housing units

(A) (2) Encourage increased private sector participation in the development of affordable for-sale housing.

A) (5) Use alternative approaches in providing affordable housing for-sale.

A) (5) (c) Promote innovative designs, site use, construction methods, factory-built, kit, modular and shell homes...

**Comment.** The Summit offers an opportunity to provide affordable single-family, detached housing in an area that has been planned and designed to accommodate urban growth. Public facilities and utilities external to the project site are available, thereby ensuring that home prices can be offered in the affordable range. The proposed project is private sector initiated and will utilize alternative and/or innovative approaches to design the site and construct the homes. Overall, the

project supports and complements HFDC's purpose and commitment to providing affordable housing for Hawaii's residents.

### C. State Land Use Law

77 acres of the 129 acre Summit site is situated within the Agricultural District and the remaining 52 acres, designated Conservation, will remain as an unimproved buffer zone for the project area. Urban lands are located southwest at Wheeler AFB, Wahiawa, and Mililani Mauka, south with Waipio Acres and Mililani Town.

The State Land Use Commission Regulations require that the application for a boundary amendment show that it is "reasonable, not violative of Section 205-2 (HRS) and consistent with the Interim Statewide Land Use Guidance Policies." Section 205-17, HRS sets forth decision-making criteria for reclassification of district boundaries. The criteria are presented below (in italics) followed by a brief discussion:

*(1) The extent to which the proposed reclassification conforms to the applicable goals, objectives, and policies of the Hawaii State Plan and relates to the applicable priority guidelines of the Hawaii State Plan and the adopted functional plans."*

**Comment.** As previously discussed in sections 1.a. and 1.b. the Summit is consistent with the goals, objectives and policies of the Hawaii State Plan and the State Functional Plans.

*(2) The extent to which the proposed reclassification conforms to the applicable district standards.*

The standards for the Urban District are as follows:

(a) It shall include lands characterized by a "city-like" concentration of people structures, streets, urban level of services and other related land uses;

(b) It shall take into consideration the following specific factors:

[1] Proximity to centers of trading and employment facilities except where the development would generate new centers of trading and employment;

[2] Substantiation of economic feasibility by the petitioner;

[3] Proximity to basic services such as sewers, water, sanitation, schools, parks, and police and fire protection; and

[4] Sufficient reserve areas for urban growth in appropriate locations based on a ten year projection;

(c) It shall include lands with satisfactory topography and drainage and reasonably free from the danger of floods, tsunami and unstable soil conditions and other adverse environmental effects;

(d) In determining urban 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;

(e) It may 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;

(f) It may include lands which do not conform to the standards in paragraphs (a) to (e):

[1] When surrounded or adjacent to existing urban development; and

[2] Only when such lands represent a minor portion of this District;

(g) It shall not include lands, the urbanization of which will contribute towards scattered spot urban development, necessitating unreasonable investment in public infrastructure or support services;

(h) It may include lands with a general slope of twenty percent or more which does not provide open space amenities 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's health, welfare and safety, and the public's interests in the aesthetic quality of the landscape.

**Comment.** The Summit complements the ongoing development and completion of the Mililani master plan, in particular, the final phase at Mililani Mauka. The project will replicate some of the design features in the older Mililani Town, while remaining a self-contained entity. All basic services are available in close proximity and the site is accessible to existing urban centers of trade and employment in many directions. The site is fairly flat where the affordably priced homes will be located and the market housing will be located on the ridge. The acreage in Conservation will remain as a buffer and open space amenity for the development.

The site is free from natural hazards and other adverse environmental conditions and is well suited for residential development. The location of the site to existing infrastructure and the relatively level area of the plateau where the affordable units will be situated are conducive to rendering the homes affordable. Market homes on larger lots will be located where the slopes are steeper and where grading and site preparation can be kept minimal. The multi-family units will make advantageous use of the changes in grade to preserve some view planes, provide privacy and make available units to address the American Disabilities Act, i.e., the level-on-grade units meet the accessibility standards of the Act.

The proposed development implements many of the objectives and policies of the County General Plan and the Central Oahu Development Plan.

(3) *Impact on Areas of Statewide Concern.*

Preservation or maintenance of important natural systems or habitats.

**Comment.** No native or endangered species/habitats exist within the vicinity of the project site.

(b) Maintenance of valued cultural, historical, or natural resources.

**Comment.** No valued, cultural, historical, or scenic resources are found within the project site.

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

**Comment.** The lost of agricultural land will not adversely impact diversified agriculture.

(d) Commitment of State funds and resources.

**Comment.** Although State financing of the project may be utilized to fund construction, no permanent funding will be required and all costs of development will be paid with private funds.

(e) Provision for employment opportunities and economic development.

**Comment.** The proposed development will provide short term construction jobs and some limited employment to manage the completed project. The project will contribute to an increase in housing stock available to the labor force. It will also house potential employees for the Mililani Technology Park which is projected to provide employment opportunities for 8,000 to 9,000 persons. It will also add to the State and County tax base and thus, provide monies for regional reinvestment in improved infrastructure and public facilities/services.

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

**Comment.** The project goal is to provide housing for all these groups.

(4) *In establishing the boundaries of the districts in each county, the Commission shall give consideration to the General Plan of the County in which the land is located.*

**Comment.** The City and County of Honolulu General Plan is an overall guide, a flexible document which establishes a general framework for planning the growth of the island. As guidelines, the goals and policies form a general strategy to direct development and is part of an overall land use approval process that includes the evaluation of social, economic, infrastructure and housing needs. As a flexible document, the General Plan is able to adjust and respond to changing conditions.

The population guideline of the General Plan allocates between 14.9 to 16.5 percent of the total island population to the Central Oahu area. This translates to a population range of 148,976 to 164,917 persons or an average annual growth rate of 0.7 to 1.2 percent a year. The Summit is estimated to represent a population increase of approximately 1,200 persons (based on a household size of 3.03 persons as used by the City's Department of General Planning). This represents a fairly small incremental change of less than a one percent increase over the 1990 Central Oahu population estimated at 130,526 persons (as provided by the City's Department of General Planning, Study and Land Use Evaluation Branch.)

#### **D. Five-Year Boundary Review**

The ongoing Five-Year Boundary Review is a policy-oriented examination of the State land use district classifications. It provides an opportunity for the Land Use Commission to review urbanization proposals from a more comprehensive, long-range perspective than

the usual incremental process. It also offers an opportunity to identify and reclassify conservation or agricultural resources not currently in the appropriate classification.

The boundary review has recommended as a priority #2 recommendation that the adjacent Mililani Mauka, Increment II be reclassified from Agriculture to Urban. The reason for its recommendation is to meet urban land requirements to the year 2000 and its proximity to the existing Urban District. It was found in the analysis study by Wilson Okamoto & Associates-1991, that Oahu will have a deficit of approximately 3,685 acres of urban land in 2000. The area proposed for reclassification are located in Ewa and Central Oahu. As a priority #2 recommendation, the Office of State Planning which is conducting the review, recommends but will not be initiating petitions to reclassify due to resource constraints.

The same reasons used to justify this recommendation can be extended to the proposed Summit site which includes only an additional 55 acres of developable land.

#### E. City & County of Honolulu General Plan

The proposed project implements the objectives and policies of the County General Plan in the areas of: population, economic activity, housing, transportation and utilities and physical and urban design. This section will highlight the applicable General Plan objective/policy and discuss its applicability:

*Population, Objective C - To establish a pattern of population distribution that will allow the people of Oahu to live and work in harmony.*

**Comment.** The proposed project is located in close proximity to the urban complex providing employment opportunities at: Mililani High Technology Park, the military installations at Schofield, Wheeler and within commuting distance from the Honolulu International Airport, Pearl Harbor, Campbell Industrial Park, Barbers Point Deep Draft Harbor and the developing secondary city of Kapolei. The completion of Mililani Mauka will also provide employment opportunities as well as Mililani Town. The maturation of Kapolei may create the critical mass needed to establish a self-contained community not dependent on commuting to Honolulu for employment.

The establishment of the Leeward Oahu Transportation Management Association (LOTMA) also encourages the use of alternative methods of transportation to nurture options to reduce traffic congestion that



may arise from an increase in population base. Park-and-ride facilities, the possibility of rapid transit and shuttle services provide transportation modal opportunities to divert traffic from nodes for critical traffic congestion points.

Economic Activity, Objective A, Policy 1- *Encourage the growth and diversification of Oahu's economic base.*

**Comment.** The Summit will provide both short term and long term employment opportunities. Short term employment will be in the construction industry, while long term opportunities will be in the area of property management and maintenance.

Economic Activity, Objective A, Policy 6- *Encourage the continuation of a significant level of Federal employment on Oahu.*

**Comment.** The Summit will add affordable homes to the housing stock on Oahu. Housing for personnel employed or stationed at the military installations will assist in encouraging continued federal spending on Oahu. An obstacle to expanding the military sector has been the lack of housing.

Housing Activity, Objective A- *To provide decent housing for all the people of Oahu at prices they can afford.*

**Comment.** The goal of the proposed project is to provide affordable housing for Hawaii. At least 60% of the project homes will be priced to sell in the affordable range.

Housing, Objective A, Policy 1- *Develop programs and controls which will provide decent homes at the least possible cost.*

**Comment.** The project site's physical characteristics makes the project well suited for development of affordable homes. Utilization of the site's relatively mild slope, its location to Mililani Mauka, and the available infrastructure will assist in achieving a cost effective program for site development and the delivery of affordable housing.

The site design and plan will take advantage of the benefits of cluster development to reduce development costs while providing an acceptable product. The design concept of the urban village offers a model for development that is compatible with creating affordable communities. A more efficiently used, more compact development implies a cohesive and manageable scale. It would above all respond to preferences for affordability.

Housing, Objective A, Policy 2- *Streamline approval and permit procedures for housing and other development projects.*

**Comment.** The project seeks to utilize the provisions of Act 15 to expedite the permitting and approval process to realize a cost savings that can be passed on to the consumer in affordably priced homes.

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

**Comment.** Unlike the standard subdivision, the proposed cluster plan has several advantages. It achieves a significant savings in land use while providing for an attractive and comfortable living environment. The plan resembles a village pattern with the creation of a central green. Every family will have its own yard space, yet the village concept allows for greenways as additional open space.

The Summit will use a road pattern and interior circulation pattern that accommodates both pedestrian and automobile. The street layout supports a compact design and clustering of homes yielding a cost effective road system and efficient use of infrastructure to serve the community. These homes cost less and are therefore, more affordable to the community.

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

**Comment.** The applicant of the Summit is actively seeking public sector participation as advocated by this policy.

Housing, Objective, Policy 9- *Encourage the construction of affordable homes within established low-density communities by such means as "ohana" units, duplex dwellings, and cluster development.*

**Comment.** The Summit proposes a cluster development concept of design thereby, ensuring decent homes at an affordable price.

Housing, Objective, Policy 10- *Promote the construction of affordable dwellings which take advantage of Oahu's year-round moderate climate.*

**Comment.** The Summit homes have been planned and designed to incorporate the mild weather pattern extant at the ambient site location.

## F. City and County of Honolulu Central Oahu Development Plan

The Development Plans (DP) are relatively detailed guidelines for the physical development of Oahu. They serve to implement the objectives of the General Plan. The Central Oahu Development Plan, adopted in 1983 by the City Council is one of eight development plans covering the City and County of Honolulu. Basically, the development plans are comprised of a text and a map. The text portion includes two parts: Common Provisions and Special Provisions which guide the development in the eight development planning areas.

The map components include a land use map and a public facilities map unique to the DP area. These elements attempt to distribute land uses in a DP area to implement the General Plan goals and objectives while scheduling the timing of the availability of planned public/private facilities and infrastructure.

### (1) Common Provisions

Section 4.6 of the Central Oahu Development Plan states:

*Existing built-up, single-family residential areas. The areas designated for residential use consist of both existing built-up, single-family residential communities and areas that are considered appropriate for true residential development. New development in existing communities shall generally be limited to that which is compatible with or enhances the desired physical and social character and lifestyle. Changes affecting the present physical and social nature of these areas shall be made only when community needs or general public interests can be demonstrated.*

*New residential development in rural areas shall be compatible with the general rural character of the area. The architectural design of non-residential structures shall be compatible in character with the surrounding residential uses.*

**Comment.** The Summit can be considered a natural extension of the Mililani Mauka residential community. The project complements and provides additional housing for affordable, gap and market groups. It is compatible with the existing Mililani master an and will enhance the physical character of the ridge. The project increases the housing inventory available and is targeted to contributing to the provision of homes in the much needed affordable range. The Summit is sensitively designed to blend with the rural nature of the area utilizing the design efficiencies afforded by an "urban" village development concept. The goal of developing an urban village is to create affordable

communities. The social and economic characteristics and lifestyle surrounding the site supports the development of the Summit as a neighborhood village offering a range of diversely priced homes and fulfills demonstrated community need for an expanded housing stock. The landscaping and site layout will incorporate the physical characteristics of the area.

## (2) Special Provisions

The main thrust of the special provisions is on the need to retain lands for agricultural purposes which at this point in Hawaii's history has become difficult to justify. The project site has been a private estate for 30 years with a variety of fruit trees. Its size is minimal compared to the over 92,000 acres of agricultural lands on Oahu with higher productivity rating. Taking this acreage out of production will not have a significant impact on the agricultural sector on Oahu. A limiting factor in diversified agriculture is the size of the market for locally grown crops. This small local market does not require substantial acreage to supply the market.

## (3) Land Use Map

The proposed mapping change to the Central Oahu Development Plan Land Use Map is to residential. The proposed Summit DP designation is adjacent to the Mililani Mauka residential development, part of the 3,500 acre planned community of Mililani. The Mililani Town development offers a broad spectrum of housing ranging from architecturally designed custom homes to government assisted apartment units. To the southeast lies Wahiawa and to the south is Waipio Acres, Waikalani Woodlands, Wheeler Air Force Base and Mililani Town.

## (4) Public Facilities Map

A number of proposed public facilities is planned for the surrounding area, in particular, Mililani Mauka, including two elementary and one intermediate schools, parks, improvements of major public/private facilities and infrastructure such as road improvements and the expansion of a wastewater collection system.

## G. City & County of Honolulu Zoning

Fifty-two acres of the parcel is zoned "P-1", (Restricted Preservation District) which abuts the Ewa Forest Reserve and will remain as an unimproved buffer. The remaining seventy-seven acres, where the

development will be sited, is zoned "Ag-1", (Restricted Agricultural District).

**H. Coastal Zone Management( CZM) Special Management Area(SMA)**

The Summit is not located within a coastal zone management area or special management area.

#### IV. MAJOR IMPACTS AND MITIGATIVE MEASURES

##### A. IMPACTS

Impacts, attributable to the implementation of the proposed project will be in two categories: *Permanent and long term*, and *short-term construction related impacts*.

(1) Permanent long term impacts: Once approved, the project will require :

a. **extensive clearing, grubbing, and mass grading** to prepare the site for the residential improvements. During this period of initial site preparation, there will be the potential for fugitive dust from the grading, and also surface runoff into the gulches adjacent to the site. It will be contractor responsibility to adhere to State Department of Health Rules & Regulations on Air Quality. Surface runoff will have to be controlled by adhering to the County Grading Ordinance for maximum acreage to cleared at one time, and also to mulch and plant soil containment plant materials as soon as possible.

b. The second long term impact will be the **commitment to Urban residential land use**, the currently designated Agricultural State LUC and County DP./Zoning. The stands of lychee are perhaps one of the more impressive collections of this variety of fruit in the State. They will be cleared and removed from cultivation, leaving the site available for urban-residential development. As discussed in the study on Agricultural Economic Impact, the loss of the lychee orchard will not be considered of significance since it is doubtful that the harvesting entered the public or retail market consistently.

c. **The increased demand for public services**, i.e. Sewer, Water, Refuse, and Utilities electrical, telephone, and cable TV will commit the parcel to permanent urban residential land uses. Currently, the ability of the State and County to provide these required urban services has to be programmed into the long range planning policies of the agencies who will be required to make these services available.

(2) Short term impacts: are generally those construction related activities which when completed, are done and final. Adherence to all applicable State and County regulations on ambient noise, fugitive dust, and site preparation will be contractor responsibility.

V. AGENCIES TO BE CONSULTED IN THE REVIEW OF THE ENVIRONMENTAL IMPACT REPORT

DATE OF COMMENT

A. Federal Agencies

- |    |   |         |
|----|---|---------|
| 1. | Department of Agriculture,<br>Soil and Conservation Service |         |
| 2. | Department of the Air Force, 15th Air Base Wing (PACAF)     |         |
| 3. | Department of the Army Corps of Engineers                   | 2-23-93 |
| 4. | Department of the Army,<br>U. S. Army Support Command       | 3-1-93  |
| 5. | Department of the Interior, Fish and Wildlife Service       |         |
| 6. | U.S.Navy FacEngCom.   | 3/16/93 |

B. State Agencies

- |     |  |         |
|-----|--|---------|
| 1.  | Department of Accounting and General Services  |         |
| 2.  | Department of Agriculture  |         |
| 3.  | Department of Education  | 2-26-93 |
| 4.  | Department of Health, Environmental Management Division  |         |
| 5.  | Department of Land and Natural Resources<br>Attention: State Historic Preservation Division;<br>Aquatic Resources Division;<br>Forestry & Wildlife Division;<br>Water Resource Management;<br>Conservation & Environmental Affairs Branch. |         |
| 6.  | Department of Business and Economic Development  |         |
| 7.  | Department of Transportation, Highways Division  | 3-8-93  |
| 8.  | Office of Environmental Quality Control  |         |
| 9.  | Housing, Finance and Development Corporation   |         |
| 10. | Office of State Planning, Office of the Governor<br>Department of Defense  | 3-2-93. |

C. County Agencies and Boards

- |    |   |         |
|----|---|---------|
| 1. | Department of General Planning                  | 3-5-93  |
| 2. | Department of Housing and Community Development | 3-1-93  |
| 3. | Department of Land Utilization                  |         |
| 4. | Department of Parks and Recreation              |         |
| 5. | Department of Public Works                      | 3-5-93  |
| 6. | Fire Department                                 | 2-18-93 |
| 7. | Police Department                               |         |
| 8. | Board of Water Supply                           | 3-1-93  |
| 9. | Department of Transportation Services           | 2-25-93 |

D. Public Utilities

- |    |                            |        |
|----|----------------------------|--------|
| 1. | Hawaiian Telephone Company |        |
| 2. | Hawaiian Electric Company  | 3-9-93 |

E. Neighborhood Boards, Community Associations

- |    |  |         |
|----|--|---------|
| 1. | Mililani Town Association                          |         |
| 2. | Gentry Waipio Community Area Association           |         |
| 3. | Mililani/Waipio/Melemanu Neighborhood Board No. 25 | 2-26-93 |
| 4. | Wahiawa Neighborhood Board No. 26                  |         |
| 5. | Castle & Cooke Residential, Inc.                   | 3-4-93  |

VI.

AGENCY, COMMUNITY GROUPS  
COMMENTS RECEIVED  
DURING REVIEW PERIOD ENDING  
MARCH 23, 1993



**Parametrix, Inc.**

1164 SUSPIC Street, Suite 1500 Honolulu, Hawaii 96813  
808-924-0594 • FAX 808-923-2595

Project: EIR for the City of Honolulu, Hawaii

Mr. Alan K. Arakawa, Manager  
Planning & Engineering  
Castle & Cooke Residential, Inc.  
P.O. Box 2780  
Honolulu, HI 96803

March 26, 1993  
22-2310-01

Subject: Comments dated March 4, 1993 on the Draft Environmental  
Impact Report for the Summit at Mililani, TMK: 9-5-3: 10

Dear Mr. Arakawa:

We have reviewed your comments on the subject EIR and we respond as follows:

1. **Project Relationship:** We regret any misunderstanding that the Draft EIR may have given to your firm in terms of project relationships. It is fully and completely understood that there is nothing binding between the Summit or Mauka beyond a physical proximity. Any impressions to the contrary are erroneous on our part and we regret the references. We are aware that considerable time and energy has gone into the long range planning for a project like Mauka, and that definitive improvements for major utilities have been established on the basis that Mauka is the sole recipient of these efforts. In the time remaining for the potential combining of planning the future infrastructural improvements, it is the Summit's goal to maintain a positive perspective that can be of economic benefit to both properties.

2. **Sewer Adequacy:** The sewer study that you have recommended to be done has not been initiated as of this date. The preliminary analysis provided in our document is perfunctory at best, and a more detailed analysis should be performed. We agree that this is necessary and it will be provided in conjunction with HF&DC review.

3. **Specific EIR comments:**

1. Unit count in terms of project development has varied from a high of over 600 units to a more realistic density of 510 units. Evaluation of the Project under the higher figure was considered as "acceptable" for EIR review purposes since it was evaluating the impacts at a higher unit count. The final number will be determined upon final approval by HF&DC.

Mr. Alan K. Arakawa, Manager  
March 26, 1993  
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2. The clarification as to the Mililani residents only at the private recreational centers is understood. Since they are not dedicated to the City & County of Honolulu for maintenance, the residents only as a master planned project amenity is appreciated.

3. Electrical, telephone, and utilities/infrastructure is presently being designed and coordinated at this time. This is due, in large part, to the uncertainty of the final total number of units acceptable to HF&DC for the Summit project. We acknowledge the omission of the Summit at this early planning stage.

4. The non-availability of the two 4 acre park sites referenced in the Draft EIR on page 23 will be revised in the Final EIR.

5. Phase II, Increment A is acknowledged.

6. EarthPlan will be advised by this response to your firm of the population density discrepancies. Again, no deliberate intent was meant to link Mauka with the Summit.

7. Traffic impacts were analyzed by The Traffic Management Consultant on the basis that previous master plan documents were in fact current and accurate. As you have identified, the traffic assumptions have changed and will need to be re-evaluated. With the current density figures that you have provided, TMC can revise their traffic impact projections to more accurately state the potential impacts. TMC will also be provided a copy of your comments for their use.

8. Water Supply analyses were provided to the Summit by Mink & Yuen in August, 1991. Their preliminary findings have not been revised or updated since that time and should be taken as general in nature and identifying the procedures to be taken for water availability. Mink & Yuen did not provide their expertise in terms of water belonging to any one development entity. Rather, their position was that there is adequate water sources available, and, the Summit can develop their own source, storage, and transmission system.



Mr. Alan K. Arakawa, Manager  
March 26, 1993  
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In conclusion, the comments made by CCRI are reflective of the cooperation, coordination, and planning and design work between CCRI and the Summit development team that has been brought to the point it is today. We appreciate your timely and comprehensive response, and acknowledge and appreciate that "CCRI does not oppose the Summit development" if it does not adversely impact the full development or development schedule of Mililani Mauka in relationship to the infrastructure needs, capacities, improvements, design and planning, and construction.

Sincerely,

F. J. Rodriguez

cc: L. Robert Allen  
EarthPlan  
The Traffic Management Consultant  
Housing Finance & Development Corporation

Mr. F. J. Rodriguez  
March 4, 1993  
Page 2

March 4, 1993

Mr. F. J. Rodriguez  
Parametrix, Inc.  
1164 Bishop Street, Suite 1600  
Honolulu, Hawaii 96813

**SUBJECT: Environmental Impact Report (EIR)  
For The Summit Residential Project, TMK: 9-5-3: 10**

Dear Mr. Rodriguez:

Thank you for the opportunity to review and comment on the EIR for the Summit project. As the proposed development would affect our Mililani Mauka project at full development, we reviewed the EIR with great interest. We would like to point out that much of the EIR is based on data that does not reflect the current Mililani Mauka Master Plan information. We would like to offer clarifications on three general issues as well as our comments on specific items in the EIR.

First of all, we would like to clarify the relationship between The Summit and Mauka. The EIR suggests that The Summit can be viewed as a natural extension of the Mauka project due to its location with respect to Mauka and the amenities and facilities planned for Mauka. However, The Summit may be viewed only as a physical extension of Mauka at best due to its location. In fact, this project is proposed as a gated community and is not expected to be annexed to the Mauka project. Although we have had several discussions with representatives of the Summit, no provisions have been made to accommodate The Summit thus far. All infrastructure built under construction, designed, and planned in Mililani Mauka, including roadways, highway improvements, utility systems, parks, and schools, have been done so for Mauka only. As such, certain constraints have already been set by existing utility and roadway capacities.

Castle & Cooke Residential, Inc. (CCRI) has no objection to the connection of The Summit to utilities constructed as part of the Mililani Mauka development of long as such connections do not adversely impact the schedule or the number of units planned for Mauka. Of particular concern are sizes of roadways, specifically highway improvements, water and sewer system capacities. Comments on traffic and water issues are offered below. Little discussion

in the EIR, however, focused on sewer adequacy. We suggest that a detailed analysis be performed to examine capacity of the proposed sewer system in Mauka and the trunk sewer through Mililani Town to the Waipahu Sewage Pump Station. The analysis should consider the full development of Mauka along with the proposed Summit development.

The EIR also states, in more than one instance, that The Summit "complements" Mauka project. However, as The Summit is located above the planned Mauka development and is intended to be a gated community with private roadways and exclusive amenities, it in no way complements Mililani Mauka. Mauka has been planned as an extension of Mililani Town with no anticipation of adjoining projects by other developers.

Following are our comments on specific items in the EIR:

1. Background and Development Objectives (p.13): The total number of units should be clarified. There exist inconsistencies throughout the EIR with respect to unit count.
2. Technical Characteristics: The recreational centers referenced on page 17 would not be open to residents of The Summit. The private recreation centers are open only to residents of our Mililani project.
3. The HECO substation and Hawaiian Telephone remote switching station mentioned on page 22 may not have the capacity to accommodate The Summit. Planning and coordination between Castle & Cooke Residential, Inc. (CCRI) and these public utilities have not included The Summit.
4. The two four-acre neighborhood parks referred to on page 23 and in Section 4.3.4 of the Social Impact Assessment will be part of the planned school sites, and will not be dedicated to the City & County of Honolulu.
5. Population Growth and Land Resources: The parcel in Mauka currently being considered for zone change by the City Council is Phase II, Increment A.
6. Social Impact Assessment - Residential Population Impacts The assessment states that "the project will slightly exceed population guidelines of the City and County of Honolulu General Plan for Central Oahu." The statement is based on a total approved unit count of 51,865. This

figure, however, does not take into account the full development of Millilani Mauka including Phase II, Increment B, which has been submitted to the City Department of Planning for the 1993 annual review. Neither does the figure consider other large planned developments in Central Oahu such as Waiawa by Gentry. Thus, this statement on population impact contradicts other statements in the EIR that The Summit in an extension of Millilani Mauka in that Phase II, Increment B would have to be fully developed to provide a physical extension of the Mauka project.

7. Traffic Impact Analysis Report (TIAR):

The traffic analysis appears to be based on assumptions which are inconsistent with the current master plan and development schedule for Millilani Mauka. The TIAR refers to a traffic report prepared in January 1989 for Millilani Mauka, which was updated in July 1991 by Parsons Brinckerhoff Quade & Douglas, Inc. Because of several changes to the original master plan, additional roadway and traffic analysis are currently being performed for Millilani Mauka; the draft of a report of these analysis was sent to your planners. Specific areas of concern about the TIAR include:

Location: The Tax Map Key for The Summit appears to be in error (9-5-3:10 rather than 3-5-9:10).

Site Plan and Access: The existing access easement identified by the EIR would not be appropriate for temporary access to The Summit. The number of dwelling units in Mauka, identified by the EIR, using Ainamakua Drive for access is not reflective of the current Mauka Plan. In addition to the 857 units in Mauka, two recreation centers and a commercial center will be served by the portion of Ainamakua Drive east of Meheula Parkway. The 56 foot wide portion of Ainamakua will serve nearly 500 units. The full development of The Summit will appear to overload that section of Ainamakua. A more appropriate route would be through the phased development of Mauka.

There is no plan to extend Meheula Parkway to the project site as part of the Mauka development. Rather, an easement would be granted from The Summit to some connection point on Meheula Parkway.

Anticipated Future Development: The TIAR considered a Phase I of Millilani Mauka consisting of 2,000 dwelling

units. The current Phase I of Millilani Mauka, in fact, includes 3,500 units.

The current development schedule for Millilani Mauka shows completion of these 3,500 units around 1996 and we are implementing roadway improvements to accommodate this schedule. Because the TIAR considered only 2,500 units (2,000 in Millilani Mauka and 500 in The Summit), its findings do not adequately address the potential impact of The Summit at its completion.

More importantly, the TIAR fails to address conditions at full development of both Millilani Mauka and The Summit. If The Summit is an extension of Millilani Mauka, as suggested in the EIR, the project's impact studies should include the fully developed condition. While the TIAR considers a future roadway system which includes the improvements planned and phased for a project of up to 7,000 units in Millilani Mauka, it evaluates conditions for only 2,500 units in a target year 1996.

The TIAR also did not address conditions at any of the intersections within the Millilani Mauka project. The designs of the roadway system and these intersections were based on a roadway master plan which considered peak hour traffic conditions with full development of Millilani Mauka. Additional traffic from The Summit may affect the adequacy of these intersections.

8. Water Supply:

The water allocation for the Millilani Area as well as the operating capacity of existing well facilities should be verified. The EIR states that the water demand that will accompany full development of Millilani Mauka can be provided by existing wells. However, we anticipate the need for new well facilities as early as 1994. Accordingly, we have commenced construction of a new well facility, reservoir, and transmission main to serve the remainder of Millilani Mauka.

The EIR states that "providing water to the property would be accomplished simply by connecting to the Millilani Mauka system." It should be noted that the facilities mentioned above have been planned and designed to service Mauka only. No provision in well or reservoir capacity, reservoir elevation, or transmission capacity was made for other developments.

The EIR further states that the storage reservoir built

Mr. F. J. Rodriguez  
March 4, 1993  
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for Milliani Mauka would have to be located either at the inland tip of the property or further inland. However, the water facilities currently under construction are located offsite.

CCRI does not oppose the proposed Summit development as long as it does not adversely impact the full development or development schedule of Milliani Mauka. We do, however, have many concerns as indicated by our comments. We must be concerned with infrastructure capacities which have been planned and invested in for Milliani Mauka. It should be noted again that some improvements for Mauka have been completed while others are under construction, being designed, and planned with no provision for the Summit. Such provisions will be considered only after determination of the impact and commitment towards the sharing of costs of such improvements are made.

Again, while CCRI does not oppose the development of The Summit, we are moving forward at a rapid pace and certain constraints are being set as we progress. At some point, existing infrastructure may not be able to service The Summit. Representatives of The Summit have been informed of the status of the Mauka project on a periodic basis and are aware of this condition. We will continue to maintain communications with them and provide pertinent information which should be included in their planning process. Should you have any questions, please feel free to call me at 548-4869.

Very truly yours,

CASTLE & COOKE RESIDENTIAL, INC.



Alan K. Arakawa, Manager  
Planning and Engineering

cc: Housing Finance and Development Corporation  
Milliani/Waipio/Melemanu Neighborhood Board No. 25  
Wahiawa Neighborhood Board No. 26

**Parametrix, Inc.**

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Conservation of Environmental Resources

Mr. John Harrison  
Environmental Center  
University of Hawaii at Manoa  
2550 Campus Road, Crawford 317  
Honolulu, HI 96822

March 26, 1993  
22-2310-01

Subject: Comments dated March 15, 1993 on the Draft Environmental  
Impact Report for The Summit at Millilani, TMK: 9-5-3: 10

Dear Mr. Harrison:

We have received your comments dated March 15, 1993, and we respond as follows:

General Comments:

The determination and approach for an EIR rather than an EIS was directed through discussions with HF&DC staff and with Mr. Brian Choy of OEQC. It was decided by OEQC and HF&DC that no triggers existed to warrant an EIS at this time. Consequently, the EIR process was selected to warrant an EIS at this time. Consequently, the EIR process was selected to meet the intent of Chapter 343, HRS, thereby providing an opportunity for public input and response concerning the Summit project. A total of 73 copies of the Draft EIR were printed and circulated to Federal, State, City & County, and public and private agencies and associations. To this date, we have received a total of 18 responses.

Act 15/Hawaii Session Laws (HSL) 1988:

The future status of Act 15, HSL, 1988 will be determined by the final action of the current Legislature.

Use of State Funds:

As stated in the Draft EIR, no State funds have been requested for this project.

Conservation Lands:

The 52 acres of Conservation-designated lands will remain as it is today, and will not be developed as part of this development.

Mr. John Harrison  
March 26, 1993  
Page 2

Reclassification of Lands:

The reiterate, the determination and approach for an EIR rather than an EIS as the vehicle for public input and response was made through the direction and auspices of the HF&DC and OEQC.

Conclusion:

Your reviewers are "seriously concerned with the unofficial review procedures currently being employed for the proposed project." The deficiencies and flaws that your group takes exception to are part of the process initiated and implemented by a State line agency. As applicants, we participate as directed; we do not make up the rules of the game as we proceed in the process. That a Chapter 343, HRS document will be prepared and processed is highly likely. As to when or with which agency cannot be stated at this time. In closing, The Summit at Millilani Project development team will work with, resolve and mitigate all concerns, issues and requirements as mandated by HF&DC under Act 15, HSL 1988.

Sincerely,



F. J. Rodriguez

cc: Housing Finance & Development Corporation  
L. Robert Allen



# University of Hawaii at Manoa

Environmental Center  
A Unit of Water Resources Research Center  
Crawford 317 • 2550 Campus Road • Honolulu, Hawaii 96822  
Telephone: (808) 956-7361

March 15, 1993  
RG-0112

The Honorable John Waihee  
c/o-Office of Environmental Quality Control  
220 South King Street, Suite 400  
Honolulu, Hawaii 96813

Dear Governor Waihee:

Environmental Impact Report  
Mililani - The Summit  
Mililani, Oahu

The applicant proposes to develop a planned residential community with 598 residential units on 129 acres northeast of the Mililani Mauka residential community. The parcel is bounded by the Waikakalua and Kipapa Gulches, and the Ewa Forest Reserve. The parcel is split zoned with 52 acres of the site designated Conservation on the State Land Use District maps, and 77 acres designated Agricultural on both the State Land Use District maps and the City and County of Honolulu Development Plan and Zoning maps. The development is being proposed under Act 15, Hawaii Session Laws (HSL), 1988. The Environmental Impact Report (EIR) is not intended to meet Chapter 343 requirements or to comply with the content requirements of Section 11-200-10, Hawaii Administrative Rules, for an Environmental Assessment (EA).

The Environmental Center has reviewed the proposed action and filing procedures with the assistance of Kem Lowry, Urban and Regional Planning; Casey Jarman, Richardson School of Law; Yu-Si Fok, Civil Engineering; Henry Gee, Water Resources Research Center; and Andrew Tomlinson of the Environmental Center.

### General Comments

The proposed project and the procedures currently being utilized for its review and processing appear to be extremely problematic. Despite the existence of many triggers of Chapter 343-5, HRS, including the use of State funds, the use of Conservation lands, and the amendment of the county general plan, the applicant has only submitted an unofficial EIR to the Housing Finance and Development Corporation (HF&DC) for its review under

The Honorable John Waihee  
March 16, 1993  
Page 2

Act 15, HSL 1988. However, the HF&DC has circulated the EIR for an unofficial, arbitrary 30-Day review period, which closed on March 8, 1993. The review of the document is unofficial, in that it is not intended to comply with any established, legal guidelines for content. And, the applicant is not bound by law to respond to any public comments and concerns related to the EIR, the proposed project, or the procedures. Therefore, the intent of Chapter 343, HRS, is not being fulfilled through these procedures and there is a glaring lack of public disclosure. Our reviewers find that the proposed project meets the triggers for requiring an EA under Chapter 343-5, HRS, and that the procedures and appropriate documentation pursuant to Chapter 343, HRS, and Section 11-200, Hawaii Administrative Rules of the Department of Health should be required.

### Act 15, Hawaii Session Laws 1988

The proposed action is not exempt from compliance with Chapter 343, HRS, based on its potential inclusion under Act 15, HSL and Chapter 201E, HRS. According to Section 7, Act 15, HSL, "The corporation shall not be exempted from compliance with Chapters 343 and 205A, which are intended to maintain and protect the quality of the environment and shorelines."

Furthermore, Act 15, HSL is also scheduled to be automatically repealed on April 20, 1993 as directed in Section 2, Act 15, HSL. Consequently, it appears that the applicant will be unable to obtain Act 15 status from the HF&DC prior to the sunset of the act. This raises further questions as to future status of the proposed project under Act 15, HSL and Chapter 201E, HRS.

### Use of State Funds

The proposed project triggers Chapter 343-5, HRS, due to the use of State funds. The applicant states on page 31 of the EIR that, "Although State financing of the project may be utilized to fund construction, no permanent funding will be required and all costs of development will be paid with private funds." Despite the confusing wording of the statement, it can be surmised that the project may use State funds or financing. In addition, if the proposed project is granted status under Chapter 201E, HRS, and Act 15, HSL, it would then become a State project under the guidelines of HF&DC. Therefore, State funds would be utilized in the proposed project by the HF&DC in the administration of the development.

### Conservation Lands

The action proposes to use 52 acres of Conservation Lands as a "Buffer Zone" within the 129 acres of the project boundaries. According to Chapter 343-5, Section 2, HRS, "Except as otherwise provided, an environmental assessment shall be required for actions

The Honorable John Waihee  
March 16, 1993  
Page 3

which: . . . Propose any use within any land classified as a conservation district by the state land use commission under chapter 205." Clearly, the use of 52 acres of conservation land within the project boundaries, constitutes a "use" under Chapter 343, HRS. As such, the applicant also should file a Conservation District Use Application with the State of Hawaii Department of Land and Natural Resources.

Reclassification of Lands

And finally, the action proposes to use 77 acres of land classified as Agriculture for residential urban development. As stated in the unpublished Environmental Impact Statement Preparation Notice prepared by the applicant for the proposed action, "The [HF&DC] has determined that in accordance with the operating rules and regulations prescribed under the provisions of Chapter 343, HRS, an Environmental Impact Statement (EIS) will be required. This is due to the potential impacts that may result from the land use changes proposed on non-Urban lands (emphasis added). This initial process will precede the petitioning of the State Land Use Commission for a boundary Amendment, changing the lands from Agriculture to Urban." The proposed amendment to the county general plan, through the reclassification of Agriculture lands to Urban, triggers the requirements for an EA under Chapter 343, HRS.

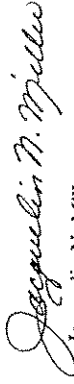
Conclusion

Our reviewers are seriously concerned with the unofficial review procedures currently being employed for the proposed project. There are many potential economic, social, cultural, and environmental impacts associated with the development of the proposed project in Mililani, which are not addressed in the unofficial EIR. These include serious drainage problems associated with established urban development in the Mililani area, particularly the adjacent Mililani-Makua Development, which could be significantly aggravated by further residential development of the area. There also are potentially significant impacts for the socio-economic conditions of the area that warrant full public disclosure and discussion.

The Honorable John Waihee  
March 16, 1993  
Page 4

Finally, we suggest that the Environmental Impact Report could form the basis for a comprehensive Environmental Impact Statement prepared pursuant to the requirements of Section 11-200-10, Hawaii Administrative Rules and Chapter 343, HRS.

Sincerely,



Jacquelin N. Miller  
Associate Environmental Coordinator

cc: DLNR  
Housing Finance and Development Corporation  
Parametrix, Inc.  
Roger Fujitoka  
Casey Jarman  
Yu-Si Fok  
Henry Gee  
Andrew Tomlinson



**Parametrix, Inc.**

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Environmental Science

Mrs. Marilyn B. Lee, Chair  
Miliilani/Waipio/Melemano  
Neighborhood Board No. 25  
P.O. Box 3116  
Miliilani, HI 96789

March 26, 1993  
22-2310-01

Subject: Draft Environmental Impact Report for the Summit at Miliilani,  
Tax Map Key: 9-5-3: 10

Dear Chair Lee:

We are in receipt of the carbon copy of your Board's comments dated February 26, 1993 to Housing Finance & Development Corporation c/o Mr. Joseph Conant, Director. We have reviewed them and respond in the following:

- a. The sewerage system proposed and its adequacy for the Summit is presently being coordinated between the engineers and consultants of the Summit and Castle & Cooke Residential, Inc. (CCRI) and their Miliilani Mauka Utility Master Plan. This, of course, will include the review and approval by CCRI. The potable water system and/or its source for the Summit is separate from that of Miliilani Mauka.
- b. The old adage that "good fences make good neighbors" not only applies internally to a project but also externally to one. The concept of a gated community is to assure privacy and security not only for the Summit residents but also for those residents of Miliilani Mauka abutting the project, and additionally, helps to define physically the boundaries of the Summit community. Every effort will be made to maintain a "good neighbor relationship" between Miliilani Town Association (MTA) and the community association for the Summit. In addition, the Declaration of Conditions, Covenants and Restrictions (DCC&R) and the By-laws proposed for the Community Association of the Summit project will be similar to that already existing and in effect for Miliilani Town, Miliilani Mauka, and the MTA. Obviously, there will be differences; however, only as site and project specifics would require and mandate as necessary.
- c. The Miliilani Mauka Traffic Master Plan is at this time, being reviewed and updated final prior to a final design for approval by governmental agencies. The Summit at Miliilani will address the specific items contained in that planning

document before their own ability to plan and design a compatible interface system will be completed.

- d. Existing agricultural activities on the project parcel has ceased to exist. There are no agricultural leases on site. The site was always occupied and used as a "gentleman's farm." As much as possible, the existing trees will be retained, relocated on site, re-used, and if not possible as indicated above, will be removed and replaced with new trees and/or landscaping.

The balance of your Board's concerns as expressed on page 2 are as follows:

1. 598 units evolved after discussions with HF&DC; however, since this environmental document is a planning tool, the final discussions with HF&DC brought the actual count at this date to 510 units. What will be built, in view of the remaining planning, review and approval processing, may further change.
2. Narrative discussions on the water and utilities cannot be detailed and specific as the final planning, engineering and architectural documents/plans, and coordination with and between the Summit and CCRI engineers and consultants, and that of the State and City & County agencies must be finalized. Solid waste disposal will be by public refuse collection service. An initial assessment of the adequacy and availability has been determined by City Dept. of Public Works (DPW). The only area of impact will be of wastewater (sewerage) since all of the other infrastructure are independent of Miliilani Mauka. This will be designed, planned, engineered, and coordinated with the City and State agencies, and Castle & Cooke Residential, Inc. (CCRI).
3. Sewage treatment and disposal will rest with the final unresolved decisions on the Honouliuli Treatment Plant. Transport of raw sewage to the Honouliuli WWTP is still in the Federal Court's hands for final determination. If full secondary treatment is required, then the ability to connect to Honouliuli WWTP becomes moot since no connections are permitted at the present time.
4. Page 21 of the Draft EIR indicates that the only source of potable quality water for the project is by new and separate water wells on the conservation lands off of the Summit project site. The drilling for any new well will require review and approvals from the Commission of Water Development, State Dept. of Land and Natural Resources (DLNR), as well as the B.W.S. There will be no impact or negligible impact on Miliilani Mauka.



Your Board's continuing concern and overview is appreciated.

Sincerely,

*F. J. Rodriguez*

F. J. Rodriguez

cc: Housing Finance & Development Corporation  
L. Robert Allen



MILLIANI/WAIPIO/MELEMANU NEIGHBORHOOD BOARD NO. 25

P.O. BOX 3116 • MILLIANI, HAWAII 96789

RECEIVED  
MAY 12 1993  
FAMILY SERVICES DIV.

February 26, 1993

Mr. Joseph Conant  
Executive Director  
Housing Finance and Development Corporation  
677 Queen Street, Suite 300  
Honolulu, Hawaii 96813

Dear Mr. Conant:

RE: ENVIRONMENTAL IMPACT REPORT (EIR) - THE SUMMIT

The members of Neighborhood No. 25 appreciate the opportunity to comment on The Summit project proposed by Robert-Maxwell & Company. Our preliminary project concerns, based upon project planner presentations, were sent to Ms. Ramona Mullahey in a letter dated November 19, 1992. These preliminary concerns, not addressed in the Environmental Impact Report (EIR), were as follows:

- ▶ Adequacy of sewer and water capacity after Milliani Mauka's requirements are satisfied.
- ▶ Achieving a continued sense of area community between Milliani Town and an independent gated development with separate Conditions, Covenants and Restrictions (CC&Rs).
- ▶ Developer's role and contribution toward completed and ongoing area transportation improvements and traffic mitigative measures.
- ▶ Status of diversified agriculture on property and whether displacement of agricultural lessees will occur.

Although we appreciate the need for and availability of programs, such as the Act 15 process, to shorten time for delivery of affordable housing, we are concerned that detailed assessment of potential impacts to the surrounding community could be curtailed. In the case of The Summit, this issue is made more critical by the fact that Act 15 is due to sunset on April 20, 1993.

In addition to the concerns expressed above, we have reviewed the Environmental Impact Report (EIR) and have the following comments:



Oahu's Neighborhood Board System - Established 1973

-Page 2-

(1) We note that the total unit count of 598 units proposed by the project is not properly reflected in the Traffic Impact Report and the Social Impact Assessment which lists the count as 500 and 425 respectively. What is the additional impact, particularly with regard to traffic, of the increased number of units?

(2) The narrative portion does not contain detailed information on the project's anticipated water and utility demands, wastewater generation, solid waste disposal and the overall impact of these requirements on the developing Milliani Mauka area.

(3) Page 21 states, for example, that "the wastewater collection system for the proposed project will be connected with the existing Milliani Town trunk sewer." What impact will this connection have on the wastewater system requirements/capacity of the Milliani Mauka community?

(4) Options for obtaining water for the project are presented in John Mink's report, *Water Supply for the Bower Estate Property*. In this regard, what method for water withdrawal is the developer proposing? What impact will the proposal have on Milliani Mauka?

Our Board members very much appreciate the time spent by The Summit project planners presenting site plan information to our organization. We believe, however, that additional information is still required in order to adequately review the impacts of the development on the Mauka community.

Thank you for the opportunity to comment.

Sincerely,

MARILYN B. LEE  
Chair

cc: Mr. Fred Rodrigues, Parametrix, Inc.  
Ms. Ramona Mullahey, Mullahey & Mullahey  
Mr. Edward Aotani, Chairman HFDC Board

**Parametrix, Inc.**

1184 Kalia Street, Suite 1600 Honolulu, Hawaii 96813  
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Consultants of Engineering and Environmental Science

Mr. Robin Foster, Chief Planning Officer  
Department of General Planning  
City & County of Honolulu  
650 S. King Street  
Honolulu, HI 96813

March 26, 1993  
22-2310-01

Subject: Draft Environmental Impact Report for the Summit at Milliani,  
Tax Map Key: 9-5-3; 10

Dear Mr. Foster:

We have received your department's comments dated March 5, 1993 and we respond as follows:

1. **Population:** The stated discrepancy on the population figures are due to the EIR being evaluated under a previously higher unit count. In actuality, the HF&DC will be reviewing the project at a target unit count of 510 residential units. The deadline requirement of HF&DC's closing time for the HF&DC Board to review and certify the proposal left little time to correct the unit count discrepancy. We regret any confusion or misunderstanding this may have caused. Also, we will correct the unit total in the Final EIR.

2. **Relationship to Milliani Mauka:** The stated reference to the Summit at Milliani being an extension to the Castle & Cooke development was never meant to convey nothing more than a physical proximity relationship. We do not agree with your comment that site specific impacts, i.e. utilities, public services, transportation, schools, parks, police, fire and other services have not been discussed. The neighboring Milliani Mauka project has initiated and installed to dedicable standards, the majority of these public facilities, and where possible and acceptable to all parties concerned, mainly the sewerage and the roadway systems, connection by the Summit Project are proposed to these infrastructure systems. These connections, in addition, will be made with the negotiated understanding and agreement with Castle & Cooke Residential, Inc. (CCRI). We have provided in Section III, Relationship to Public Plans and Policies, our best effort to delineate the site specific impacts due to the Summit's development. Ongoing discussions with HF&DC staff planners and the engineering and construction staff of CCRI and their consultants with those of the Summit Project have been a vital and integral part of the dialogue which has been taking place for the last eighteen (18) months. To date, the exchange of

data, engineering and project development plans, and consultant studies have been very fruitful.

3. **Project Timetable:**

a.) Project schedule for the start of construction will be after HF&DC Board's "override" approval of the project. The start of site improvement construction is proposed at the end of 1994. A petition to the State Land Use Commission to change the District Boundary designation from Agriculture and Conservation to Urban will have already been submitted by HF&DC, and will be acted upon the SLUC. While the project is being processed with the SLUC, the project architectural and engineering consultants will be finalizing design, planning and engineering requirements for potable water, wastewater treatment and disposal, drainage flow, and other associated utilities.

b.) Availability for sewer connection to the Honouliuli WWTP expansion is conjecture at this time. Until the court action against the City & County is resolved, there will be few connections made to that Plant. This project will wait its turn like others in the Central Oahu Development Plan area.

c.) Exhibit F, Water Supply Report by Mink & Yuen states that water is available and adequate; however, did not provide specific potable water demand in terms of Million Gallons per Day (MGD) for the project. Given final determination by HF&DC, the final total number of units proposed for the Summit can now be more clearly assessed to the exact and actual water demand for the project which will be in the final EIR. A new and separate well drilling permit for two (2) deep wells will be applied for to the Commission on Water Resource Management, State DLNR.

d.) Exhibit C. is the Traffic Impact Study prepared for the project by The Traffic Management Consultant. It was their conclusion (pp.20,21) that the traffic generated by this project will not be of significant impact to the peak hour traffic operations within the time of this study.

e.) As the project was initially planned as a Cluster Residential development, "private" open space, lot lots with play equipment and benches, picnic tables/benches/barbeque pits, tennis/volleyball/basketball courts, and a recreation/community center was proposed for the project. There is no provision for a public park on the project site. As such, under Act 15, through

HF&DC, the City's Park Dedication Ordinance requirements would be complied with by that that has been proposed under this development concept of the Cluster as part of HF&DC's override powers.

4. **Development Plan Special Provisions for Central Oahu relating to:**

- a.) Population distribution guidelines for Central Oahu will experience significant growth with or without the Summit Project. EarthPlan discusses these growth rates and what can be anticipated from which project in their Social Impact Analysis, Exhibit D. On pages 13-20, these issues are discussed in detail. On an overall impact basis, the General Plan population figures will be exceeded with or without the Summit project.
- b.) Density controls per net acre for Residential, Low-Density Apartment and Medium-Density Apartment land uses were examined, evaluated and incorporated into the overall land use development, and site planning and design for this specific site. Under the guidance and assistance of HF&DC, a single-family detached dwelling and low-rise/low-density apartment unit mixed-use residential development, commonly known as a "Cluster" development under the City & County of Honolulu cluster ordinance and guidelines, was determined to be the best development and land use scheme for this site. This scheme achieved the desired 60-40 percent ratio minimally required for any affordable housing project under Act 15 as administered by HF&DC. The actual ratio achieved by this project approximates 77 percent affordable vs. the minimally required 60 percent as stated above. The "Cluster" development scheme works well with the terrain of the site, in reducing on-site infrastructure and development/construction costs, and provides for the economy of means to allow this actual affordable ratio of 77 percent and reasonable prices for the single-family detached dwellings, and the multi-family units.

We trust that we have responded adequately to your agency's concerns; despite the Act 15 proviso, the applicant will continue to seek out whatever means available to develop this project in terms of providing affordable residential units.

Sincerely,



F. J. Rodriguez

cc: Housing Finance & Development Corporation  
L. Robert Allen

PLANNING DEPARTMENT  
CITY AND COUNTY OF HONOLULU

830 SOUTH KING STREET  
HONOLULU, HAWAII 96813



FRANK FASI,  
MAYOR

ROBIN FOSTER  
CHIEF PLANNING OFFICER  
ROLAND D. LUBBY, JR.  
DEPUTY CHIEF PLANNING OFFICER

GU 2/93-283

March 5, 1993

Mr. F. J. Rodriguez  
Parametrix, Inc.  
1164 Bishop Street, Suite 1600  
Honolulu, Hawaii 96813

Dear Mr. Rodriguez:

Environmental Impact Report (EIR)  
for The Summit Residential Project  
Tax Map Key: 9-5-3: 10

The Planning Department has reviewed the above-referenced document and offers the following comments:

1. Population - page 32 states that the project represents a population increase of approximately 1,200 based on 3.03 persons per household. However, page 1 states that the project will contain 598 residential units--at 3.03 persons per 598 units, the total population would be 1,812. This is a considerable discrepancy.
2. A recurring point made throughout the EIR is that the proximity of the project site adjacent to Millilani Mauka makes it a logical extension of Millilani Mauka. However, this project is not a part of the Millilani Mauka master-planned community and it is therefore inadequate and inappropriate to provide information that only describes Millilani (e.g., development, housing, population). The specific impacts and requirements of the proposal should be described in order to allow a comprehensive evaluation by HFDC.
3. The impacts and requirements of the proposal should be described in both local and regional contexts. Among the issues which should be so addressed are:
  - a. The proposed development's timetable and phasing.

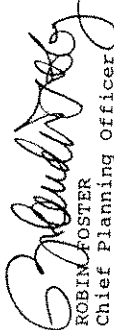
Mr. F. J. Rodriguez  
March 5, 1993  
Page 2

- b. Wastewater - anticipated MGD to be generated; capacity of Honouliuli WWTP to accommodate the project, with consideration given to other planned developments in the area.
  - c. Water - anticipated MGD required; likelihood of receiving the required allocation, with consideration given to other planned developments in the area.
  - d. Traffic - anticipated traffic volumes to be generated; adequacy of traffic capacities of existing roadways, with consideration given to other planned developments in the area.
  - e. Parks - The proposed site plan does not indicate any public neighborhood parks that would be required based on City park requirement standards.
4. The EIR and subsequent environmental reports should disclose the conformance of the project to the Development Plan Special Provisions for Central Oahu relating to:
- a. the General Plan population distribution guidelines for Central Oahu, and
  - b. density controls per net acre for Residential, Low Density Apartment and Medium Density Apartment land uses.

While we understand that the EIR is not required to meet the content requirements of OEQC Title 11, Chapter 200, we strongly recommend that consideration be given to providing HFDC with the above-described information. The Planning Department deems such information imperative to a fair and realistic assessment of the proposal.

We appreciate this opportunity to comment. Should you have any questions, please contact Geri Ung of our staff at 527-6044.

Sincerely,

  
ROBIN FOSTER  
Chief Planning Officer

RF:ft



DEPARTMENT OF THE ARMY  
HEADQUARTERS, 25TH INFANTRY DIVISION (LIGHT) AND U. S. ARMY, HAWAII  
SCHOFIELD BARRACKS, HAWAII 96857-6000  
March 1, 1993



Parametrix, Inc.  
1164 Bishop Street, Suite 1600 Honolulu, Hawaii 96813  
808-524-0584 • Fax 808-523-2995



Major Joseph J. MacDonald  
Department of the Army  
Headquarters, 25th Infantry Division (Light)  
and U.S. Army, Hawaii  
Schofield Barracks, HI 96857-6000

March 26, 1993  
22-2310-01

Public Affairs Office

Mr. Fred Rodriguez  
Parametrix, Inc.  
1164 Bishop Street, Suite 1600  
Honolulu, Hawaii 96813

Subject: Draft Environmental Impact Report for the Summit at Mililani,  
TMK: 9-5-3: 10

Dear Major MacDonald:

We have received your comments on the Draft EIR dated March 1, 1993, and we respond as follows:

The statement of Ms. Mullahey stands as stated, and the developer of this project, Mr. L. Robert Allen, stands by it.

Exhibit E, Noise Study for the Summit Project, was completed in January, 1992 and on pp.29-30, advises that *future residents of the proposed project will probably be able to hear the weapons and noise simulator firings while outdoors.* The study goes on to say *"the risks of complaints from audible training activities at East Range will exist, but the risks of adverse health and welfare effects from these noise events are considered to be minimal due to the relatively low levels of these noise events."*

We apologize for any implication from this early draft, and regret any misunderstanding your office may have taken from our draft report; please feel free to contact me personally if you wish so that I can and will correct any misunderstandings on this sensitive issue. We acknowledge the Army's position that training methods or schedules are not an issue.

We would also like to extend our most sincere Aloha and Mahalo to your staff at Schofield for their gracious and extended cooperation and coordination in assisting us in working with the Army and understanding its positions, concerns and issues.

Sincerely,  
*F. J. Rodriguez*  
F. J. Rodriguez

cc: L. Robert Allen  
Housing Finance & Development Corporation

Dear Mr. Rodriguez:

I am writing in response to your Environmental Impact Report for The Summit, regarding noise caused by military aircraft and ground training.

Members of this staff have met and corresponded with Ms. Ramona Mullahey and Mr. Ben Torigoe, of the Summit project. The meetings and correspondence addressed the proximity of the property to military training areas and flight routes for Army helicopters. A letter from Ms. Mullahey states that future residents of the project will have full knowledge of the noise related to continuous military maneuvers in the area, and that future residents will agree to live with conditions as they exist.

Your report, however, implies that the military will have to alter established aircraft flight routes and training methods to accommodate the new housing development. Your suggestion to use the "pulsed laser weapons simulators" for its realistic training is appreciated but unfortunately does not solve the noise issue. Our troops regularly use the Multiple Integrated Laser Engagement System (MILES). MILES is used in conjunction with, not as a substitute for, blank ammunition. The laser beam is triggered by the sound of the discharged round.

The purpose of this letter is to point out that the Army is not responsible for altering its training methods to accommodate new housing developments. It is the responsibility of the developer to find a suitable property location or make certain that residents understand the nature of their surroundings prior to moving in to a new neighborhood.

Sincerely,  
*Joseph J. MacDonald*  
Joseph J. MacDonald  
Major, U.S. Army  
Public Affairs Officer

**Parametrix, Inc.**

1154 Bishop Street, Suite 503, Honolulu, Hawaii 96813  
808-524-2594 • Fax 808-524-2095

Environmental Services

Mr. C. Michael Street, Director  
and Chief Engineer  
Department of Public Works  
City & County of Honolulu  
650 S. King Street  
Honolulu, HI 96813

March 29, 1993  
22-2310-01

Subject: Comments dated March 5, 1993 on Draft Environmental  
Impact Report for the Summit at Mililani, TMK: 9-5--3--: 10

Dear Mr. Street:

We have received your comments and we respond as follows:

1. The roadway system that will be designed for construction of the Summit project will be private, and will be built in accordance with City standards to the extent that compliance will be possible. Cluster or Modified Cluster type developments have the flexibility of less than City standard widths for design purposes, and these will be submitted for review.
2. All access improvements will be designed to be in compliance with the Uniform Federal Accessibility Standards for pedestrians and disabled/handicapped persons.
3. A Drainage Master Plan will be prepared and submitted for review and approval to the Drainage Section, Division of Engineering.
4. Anticipated storm water runoff associated with construction from this project will be difficult to analyze in view of the contributory factors of Mililani Mauka, Gentry Waiawa, and other projects in the Central Oahu Development Plan Area that contribute runoff to Pearl Harbor.
5. The Final EIR will not be able to provide this best management practices (BMP) methodology due to the lack of final construction plans for offsite and onsite improvements.
6. We do not anticipate de-watering plans for the project's development.

Mr. C. Michael Street  
March 29, 1993  
Page 2

7. Sewer capacity for this proposed project will need to be reviewed in conjunction with the planning underway for the current Phase I of Mililani Mauka. If there is no current or future capacity for sewage treatment for this proposed project, then alternative means will need to be examined. Discussions with the Waste Water Management Division will be on a continuing basis of checking for available capacity.
8. Similarly for the Waipahu Wastewater Pump Station, available capacity will have to be examined as the project comes on line.
9. A detailed Wastewater master plan will be prepared and submitted to the Division of Wastewater Management that will identify the total anticipated flow, phasing of units to be built and brought on line, and the related improvements that will be needed to support the requirements for this project.

Thank you for your timely and comprehensive comments and we look forward to working with your staff on this project.

Sincerely,

F. J. Rodriguez

cc: L. Robert Allen  
Housing Finance & Development Corporation



DEPARTMENT OF PUBLIC WORKS  
CITY AND COUNTY OF HONOLULU

800 SOUTH KING STREET  
HONOLULU, HAWAII 96813



C. MICHAEL STREET  
DIRECTOR AND CHIEF ENGINEER  
CELA B. LAWTRACIO  
SENIOR DIRECTOR

ENV 93-58

FRANK FASI  
MAYOR

March 5, 1993

Mr. F. J. Rodriguez  
Parametrix, Inc.  
1164 Bishop Street, Suite 1600  
Honolulu, Hawaii 96813

Dear Mr. Rodriguez:

Subject: Environmental Impact Report (EIR)  
The Summit Residential Project  
TMK:9-5-3110

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

1. All existing and proposed roads that support the subject project should be fully improved in accordance with City standards.
2. Access improvements, conforming to the Uniform Federal Accessibility Standards for pedestrians and persons with disabilities, should be provided off-site as required.
3. A drainage report should be submitted to the Drainage Section, Division of Engineering, for review and approval.
4. The EIR should address the potential impact on storm water discharge associated with construction activities on water quality of the receiving waters.
5. The EIR should also state what structural or non-structural best management practices (BMP) will be provided to control and reduce the discharge of pollutants resulting from construction and/or dewatering operations.
6. If dewatering activity is anticipated during construction, dewatering permits will be required by the State Department of Health as well as the Department of Public Works, City and County of Honolulu.

Mr. F.J. Rodriguez  
Page 2  
March 5, 1993

7. The gravity sewers in Millilani Mauka, Millilani Town and the Millilani Effluent Disposal System, at this time, are not able to support the proposed wastewater flows from the subject 129-acre parcel since this parcel was never intended to be in the tributary areas of any of these sewer systems. The ultimate future flows from the existing tributary areas of these sewer systems will utilize all available excess sewer capacity.

8. Besides the adequacy of the affected existing gravity sewer systems, the available capacity of the Waipahu Wastewater Pump Station and its force main will have to be evaluated.

9. A wastewater master plan to detail the on-site disposal system for the proposed Summit project should be submitted to Division of Wastewater Management for review and comment. This master plan should also evaluate the exact extent of the inadequacies in the existing municipal sewer system and the related improvements to accommodate the sewer demand of the subject project.

Should there be any questions, please call Alex Ho at 523-4150.

Very truly yours,  
*[Signature]*  
C. MICHAEL STREET  
for Director and Chief Engineer

Parametrix, Inc.

1164 Bishop Street Suite 1600 Honolulu, Hawaii 96813  
808-524-0584 • Fax 808-523-3995

Consulting in Engineering and Environmental Sciences

March 29, 1993

Mr. Donald S.M. Chang, Chief  
Fire Department  
City & County of Honolulu  
3375 Koapaka Street Suite H425  
Honolulu, HI 96819-1869

Dear Chief Chang,

Subject: Draft EIR for the Summit at Mililani TMK: 9-5-3: 10

We are in receipt of your agency comments dated February 16, 1993 indicating "No comments" at this time.

Thank you for your continuing interest and cooperation.

Sincerely,



F. J. Rodriguez

cc: Housing Finance &  
Development Corporation  
L. Robert Allen

FIRE DEPARTMENT

CITY AND COUNTY OF HONOLULU FEB 16 1993  
3375 KOAPAKA STREET, SUITE H425  
HONOLULU, HAWAII 96819-1869



FRANK F. FASI  
MAYOR

February 16, 1993

Mr. F. J. Rodriguez  
Parametrix, Inc.  
1164 Bishop Street, Suite 1600  
Honolulu, Hawaii 96813

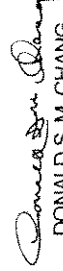
Dear Mr. Rodriguez:

Subject: Environmental Impact Report (EIR)  
for The Summit Residential Project TMK: 9-5-3: 10

We have reviewed the subject material provided and have no additional comments.

Should you have any questions, please call Assistant Chief Attilio Leonardi of our Administrative Services Bureau at 831-7775.

Very truly yours,



DONALD S. M. CHANG  
Fire Chief

AKL:ny



STATE OF HAWAII  
DEPARTMENT OF EDUCATION

P. O. BOX 2360  
HONOLULU, HAWAII 96810

OFFICE OF THE SUPERINTENDENT

CHARLES T. TOSUCHI  
SUPERINTENDENT

RECEIVED  
FEB 20 1993

February 18, 1993

Mr. F. J. Rodriguez  
Parametrix, Inc.  
1164 Bishop Street, Suite 1600  
Honolulu, Hawaii 96813

Dear Mr. Rodriguez:

SUBJECT: Environmental Impact Report (EIR)  
for The Summit Residential Project, TMK: 9-5-3: 10

Our review of the subject EIR indicates that the 598 residential units projected for the subdivision will produce a projected enrollment impact on the schools in the Millilani area. The previous enrollment projections were based on 425 residential units. The new enrollment projections indicate that the development will generate the following number of students:

School	Grades	Projected Students
Millilani-Mauka Elementary	K-6	150
Wheeler Intermediate	7-8	36
Millilani High	9-12	60

The residential development is projected to generate 246 students as compared to 184 students as previously reported.

We disagree with the statement on page 22 of the subject EIR which states that "there is currently capacity to accommodate more students at Wheeler (Intermediate) and Millilani (High)." Both schools are operating beyond capacity and have a shortage of classrooms. The Department of Education (DOE) cannot assure the availability of classrooms to accommodate the students from this development.

Mr. F. J. Rodriguez

-2-

February 18, 1993

The developer will be requested to make a pro rata share contribution to the satisfaction of the DOE for the construction of needed school facilities.

Should there be any questions, please call the Facilities Branch at 737-4743.

Sincerely,

*Charles T. Tosuchi*

Charles T. Tosuchi  
Superintendent

CTT:hy

cc: A. Suga  
R. Lee

**Parametrix, Inc.**

1164 Bishop Street, Suite 1800, Honolulu, Hawaii 96813  
808-524-0564 • Fax: 808-523-2895

Consultants in Engineering and Environmental Sciences



March 3, 1993

Mr. Charles I. Toguchi, Superintendent  
Department of Education  
P.O. Box 2360  
Honolulu, HI 96804

Dear Mr. Toguchi,

Subject: DOE Comment dated February 18, 1993 on the Draft  
Environmental Impact Report (EIR) for the Summit at Mililani  
Residential Project. IMK 9-5-3-10

We have received your agency's comments on the proposed project and we respond in the following:

The development proposal of 598 residential units has not been finalized at this early disclosure period by the State Housing Finance and Development Corporation. Final unit count will be subject to review and finalization in the upcoming months. Further, the project's annual rate of construction completion will permit the applicant to work closely with DOE Facilities Branch to insure that future planning will not result in DOE shortfall of enrollment projections. Page 22 has been revised to reflect your specific concerns.

The applicant is aware that in the event that a shortfall results in DOE facilities as a result of this project, there will be negotiated agreements to provide compensation to the DOE for plant facilities adequate to meet the demands of this project.

Thank you for your continuing cooperation and interest.

Very truly yours,

F. J. Rodriguez

cc: Dept. of Housing Finance  
& Community Development  
L. Robert Allen

**Parametrix, Inc.**

1164 Bishop Street, Suite 1800, Honolulu, Hawaii 96813  
808-524-0564 • Fax: 808-523-2895

Consultants in Engineering and Environmental Sciences



March 3, 1993

Mr. Kazu Hayashida  
Board of Water Supply  
630 S. Beretania Street  
Honolulu, HI 96843

Dear Mr. Hayashida,

Subject: BWS comments on dated 2-25-93 Draft EIR prepared for the  
Summit at Mililani IMK 9-5-3-10

Thank you for your timely and comprehensive comments on the above subject project. The applicant is aware that Mililani Mauka has pioneered the design, planning, and construction for potable water required for their project. The itemized listing of comments are responded to as follows:

1. A private source, storage and transmission system will be developed for the Summit at Mililani. We acknowledge the intent of item # 1.
2. As stated above, the Summit will design and develop their own water system. This system will be provided to the BWS for review and approval as indicated in your memorandum.
- 3,4,5,6. These items are acknowledged and understood.

The Mink & Yuen study (Exhibit F) was prepared in August, 1991 and reflects the basic needs and parameters of source development, storage and transmission design and construction, with all plans reviewed and approved by the BWS and Mililani Town, Inc. As the project continues through the remaining land use approval process at the Department of Housing Finance & Development Corporation and the State Land Use Commission, there will be continuing dialogue with all affected parties.

Thank you again for your continuing cooperation and interest.

Sincerely,

F. J. Rodriguez

cc: Dept. of Housing Finance & Community Development  
Mr. L. Robert Allen

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU  
630 SOUTH BERETANIA STREET  
HONOLULU HAWAII 96843



February 25, 1993

FRANK F. FASI, M&P  
WALTER O. WATSON, JR., Chairman  
MAURICE H. YAMASATO, Vice Chairman  
STEPHEN DEVLIN, AR, CMCA, O.S.F.  
JOHN W. ANDERSON, JR.  
RILEY JOHNSON  
NELISSA J. LITTLE  
C. MICHAEL STREET

KAZU HAYASHIDA  
Manager and Chief Engineer  
SUMMIT RESIDENTIAL, INC.  
1164 BISHOP STREET  
HONOLULU, HAWAII 96813

Mr. Frederick J. Rodriguez  
Parametrix, Inc.  
1164 Bishop Street, Suite 1600  
Honolulu, Hawaii 96813

Dear Mr. Rodriguez:

Subject: Your Letter of February 8, 1993 Regarding the Environmental Impact Report (EIR) for the Proposed Summit Residential Project, TMK: 9-5-3: 10

Thank you for allowing us to comment on the EIR for the proposed 598-unit Summit Residential project. We have the following comments:

1. The Mililani Mauka water system was developed in entirety by Mililani Town Inc., therefore, all water connections to this system requires the approval of Mililani Town Inc. The Summit development was not included in the approved Mililani Mauka water master plan. If incorporation with Mililani Mauka is proposed, the revised Mililani Mauka Water Master Plan which includes the proposed development should be submitted for our review and approval.
2. If the Summit development proposes a separate water system, a water master plan for the proposed development should be submitted for our review and approval. The master plan should include the proposed lot layout, estimated water requirements, elevations and proposed water facilities including source, storage and pipelines with supporting calculations.
3. Exhibit F, Page 10: The full development of Mililani Mauka requires the development of Wells 2858-01, 02 and 03 in addition to the existing wells mentioned.
4. Exhibit F, Page 15: Mililani's water demand is handled by wells installed by Mililani Town Inc. and turned over to the Board of Water Supply (BWS).
5. Exhibit F, Page 19: The proposed development can be served by the Mililani Mauka water network if Mililani Town Inc., not BWS, allows the developer to utilize their source, storage and transmission capacities.



Mr. Frederick J. Rodriguez  
Page 2  
February 25, 1993

6. Exhibit F, Page 20: We understand that a site has been selected for the proposed Mililani 1150 reservoir.

If you have any questions, please contact Bert Kuiuoka at 527-5235.

Very truly yours,

KAZU HAYASHIDA  
Manager and Chief Engineer

**Parametrix, Inc.**

1764 Birchway Street, Suite 1600, Honolulu, Hawaii - 96813  
808-524-6554 • Fax 808-525-2985

Consultants in Engineering and Environmental Sciences

March 3, 1993

Mr. Joseph M. Magaldi, Jr. Director  
Department of Transportation Services  
City & County of Honolulu  
650 S. King Street  
Honolulu, HI 96813

Dear Mr. Magaldi,

Subject: Draft Environmental Impact Report (EIR) for the Summit at  
Mililani Residential Project TMK: 9-5-3-10

We have received your agency's comments dated February 23, 1993. To reiterate, all road systems contained internally of the Summit project site are private. Regarding the concerns expressed below, we respond in the following:

1. At the present time, the proposed project is planning a gated community concept. This will be subject to review and approval by certifying and approving agencies as the project continues through the review process.
2. The Final Traffic Impact Assessment Report will analyze the adequacy of this interim access point and as you have pointed out, the intersections of Ainamaku Drive at Ainamaku Drive and Meheula Parkway in the turning geometrics. Discussions with the adjacent landowner will also be a vital part of final traffic engineering design.
3. At this early disclosure time, the final residential development total has not been finalized. All final determinations will be subject to the review and approval of the State Housing Finance & Development Corporation.
4. This aspect of the Mililani Mauka traffic corridor patterns will need to be evaluated when the Traffic Plan is finalized. Coordination with the Castle & Cooke administration will be maintained to assure conformity.
5. All bikeways will be designed with appropriate width clearances. We understand that this requirement is applicable to the public roads. As the project roads internally are private, additional clearance in the shoulder lanes of the roadways has been proposed for one-way bikeway travel allowance.

6. All connecting roadway systems that interface with the Mililani Mauka residential development will be coordinated with their Final Traffic Master Plan. This will be particularly true of those segments that will be dedicated to the City & County. Continuing discussions with the adjacent landowner's traffic consultants are vital to the success of this project.

Thank you for your prompt response and continuing cooperation.

Very truly yours,



F. J. Rodriguez

cc: Dept. of Housing Finance & Community Development  
Mr. L. Robert Allen

CITY AND COUNTY OF HONOLULU

HONOLULU MUNICIPAL BUILDING  
610 SOUTH KING STREET  
HONOLULU, HAWAII 96813



FRANCIS  
MAY

RECEIVED  
FEB 25 1993  
CARRANZA, INC.

JOSEPH M. MAGALDI, JR.  
DIRECTOR

TE-522  
PL93.1.044

February 23, 1993

Mr. F. J. Rodriguez  
Parametrix, Inc.  
1164 Bishop Street, Suite 1600  
Honolulu, Hawaii 96813

Dear Mr. Rodriguez:

Subject: The Summit Residential Project  
Environmental Impact Report  
TMK: 9-5-3: 10

This is in response to your letter dated February 8, 1993 requesting our comments on the subject project.

Based on our review, we have the following comments:

1. From the conceptual site layout of this development, we understand that the internal roadway system for this project will be private and that the cluster development scenario will be utilized.
2. The interim access to this development is proposed as a temporary connection at the mauka end of Ainamakua Drive in the vicinity of Mililani Mauka Units 107/108. The adequacy of the roadway and Ainamakua Drive should be assessed. We are particularly concerned with the intersections of Ainamakua Drive at Ainamakua Drive and at Meheula Parkway with regard to the right and left turn demands, respectively.
3. The number of dwelling units being serviced from Ainamakua Drive for the Mililani Mauka development should be verified.
4. The need to extend the 88-foot roadway section further mauka along Meheula Parkway to provide future access to this development should be addressed.
5. Our minimum desirable clear width for a one-way bike lane is 4 feet.

Mr. F. J. Rodriguez  
Page 2  
February 23, 1993

6. Coordination with the developers of the Mililani Mauka project must be maintained for roadways which will provide access to both developments and which are intended to be dedicated to the City.

Should you have any questions, please contact Mel Hirayama of my staff at 523-4119.

Sincerely,

JOSEPH M. MAGALDI, JR.  
Director

**Parametrix, Inc.**

1164 Bishop Street, Suite 1600, Honolulu, Hawaii 96813  
808-524-0554 • Fax: 808-525-2995

Mr. E. James Turse, Director  
Department of Housing and Community Development  
City & County of Honolulu  
650 S. King Street  
Honolulu, HI 96813

March 25, 1993  
22-2310-01

Subject: Comments dated March 4, 1993 on the Draft Environmental  
Impact Report for the Summit at Miliiani, TMK: 9-5-3: 10

Dear Mr. Turse:

We have received your agency comments and respond as follows:

Your supportive comments on the Act 15 application before the State Housing Finance and Development Corporation are appreciated. We will maintain our current efforts to obtain certification before the State. In the event that we will have to consider other options, we can contact your department and review the various economic limits set forth by your department.

Thank you for your prompt response and continuing cooperation.

Sincerely,

*F. J. Rodriguez*  
F. J. Rodriguez

cc: L. Robert Allen  
Housing Finance and Development Corp.

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

650 SOUTH KING STREET, 27TH FLOOR  
HONOLULU, HAWAII 96813  
PHONE: (808) 523-4427 • FAX: (808) 527-5459



FALANX F. PABE  
MAYOR

March 1, 1993

Mr. F. J. Rodrigues  
Parametrix, Inc.  
1164 Bishop Street, Suite 1600  
Honolulu, Hawaii 96813

Dear Mr. Rodrigues:

Subject: Environmental Impact Report (EIR)  
for The Summit Residential Project, TMK: 9-5-3: 10

The proposed development does not conflict with any current or proposed City project. The Department of Housing and Community Development (DHCD) does not oppose the proposed development. DHCD understands that the developer has applied for exemptions under Act 15 which will require that 30 percent of the units to be developed be made affordable to households with incomes up to 120 percent of Oahu's median income and that an additional 30 percent of the total be made affordable to families with income between 120 and 140 percent of Oahu's median income.

In the event that the developer is unable to receive exemptions under Act 15, the Department of Housing and Community Development would request that 10 percent of the housing units to be developed be made affordable to households with incomes below 80 percent of Oahu's median income and that an additional 20 percent of the total be made affordable to families with incomes between 81 and 120 percent of Oahu's median income, or that the developer provide an in-kind substitute acceptable to DHCD.

Should you have any questions, please contact Jason Ching of our Planning and Analysis Division at 523-4368.

Thank you for the opportunity to comment.

Sincerely,

*E. James Turse*  
E. JAMES TURSE  
Director



**Parametrix, Inc.**

1164 Bishop Street, Suite 1600, Honolulu, Hawaii 96813  
808-524-0564 • Fax 808-422-2935



March 3, 1993

Mr. Kisuk Cheung, P.E.  
Department of the Army  
U.S. Army Engineer District, Honolulu  
Fort Shafter, Hawaii 96858-5440

Dear Mr. Cheung,

Subject: Comments received dated February 18, 1993 on the Draft Environmental Impact Report (EIR) for the proposed residential project, The Summit at Mililani, TMK: 9-5-3-10

Thank you for your agency's comments on the subject project and we respond in the following:

- a. It is acknowledged that no DA permit will be required.
- b. Our flood hazard information is correctly stated.

Thank you for your continuing cooperation.

Very truly yours,

F. J. Rodriguez

cc: Dept. of Housing Finance &  
Community Development  
Mr. L. Robert Allen



DEPARTMENT OF THE ARMY  
U.S. ARMY ENGINEER DISTRICT, HONOLULU  
FORT SHAFTER, HAWAII 96858-5440

REPLY TO  
ATTENTION OF

February 18, 1993

Planning Division

Mr. F. J. Rodriguez  
Parametrix Inc.  
1164 Bishop Street, Suite 1600  
Honolulu, Hawaii 96813

Dear Mr. Rodriguez:

Thank you for the opportunity to review and comment on the Environmental Impact Report for the Summit Residential Project, Mililani, Oahu (TMK 9-5-3: 10). The following comments are provided pursuant to Corps of Engineers authorities to disseminate flood hazard information under the Flood Control Act of 1960 and to issue Department of the Army (DA) permits under the Clean Water Act; the Rivers and Harbors Act of 1899; and the Marine Protection, Research and Sanctuaries Act.

a. The project does not include work within waters of the U.S.; therefore, a DA permit will not be required.

b. The flood hazard information presented on page 17 of the report is correct.

Sincerely,

Kisuk Cheung, P.E.  
Director of Engineering



FEB 23 1993

JOHN WASHLEE  
GOVERNOR



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
869 PUNCHBOWL STREET  
HONOLULU, HAWAII 96813-5097

March 8, 1993

Mr. F. J. Rodriguez  
Parametrix, Inc.  
1164 Bishop Street, Suite 1600  
Honolulu, Hawaii 96813

Dear Mr. Rodriguez:

Subject: Environmental Impact Report  
The Summit Residential Project  
TMK: 9-5-3: 10 First Division


The Traffic Impact Analysis Report should be revised to include traffic mitigative measures and roadway improvements based on added traffic impacts that are generated by the proposed residential subdivision upon our highway facilities with the Mililani-Mauka development at full buildout. Mililani-Mauka's committed improvements are intended to support its own development. Consequently, the additional impact of the proposed residential project should be evaluated.

In addition, an implementation schedule for the required roadway improvements should also be included in the revised TIAR and coordinated with the Mililani-Mauka developer.

The developer should additionally retain a full-time Traffic Manager to implement rideshare programs such as carpooling, providing park/ride and daycare facilities, subscription bus service, and vanpools to encourage commuters to help reduce the number of vehicles on our highways during peak traffic periods.

Thank you for the opportunity to provide comments.

Sincerely,

  
Rex D. Johnson  
Director of Transportation

REX D. JOHNSON  
DIRECTOR  
DEPUTY DIRECTORS  
JOYCE T. OMIKE  
AL PANG  
JEANNE K. SCHULTZ  
CALVIN W. TSUDA  
IN BEERY REFER TO:  
STP 8-5094

Parametrix, Inc.

1164 Bishop Street, Suite 1600 Honolulu, Hawaii 96813  
808-524-0584 • Fax: 808-525-2455



Mr. Rex D. Johnson, Director  
Department of Transportation  
869 Punchbowl Street  
Honolulu, HI 96813-5097

March 25, 1993  
22-2310-01

Subject: DOT comments dated March 8, 1993 on the Draft Environmental  
Impact Report for the Summit at Mililani, TMK: 9-5-3: 10

Dear Mr. Johnson:

We have received your agency's comments and respond as follows:

1. The Traffic Impact Analysis Report (TIAR) will be amended as per your request so that a clearer delineation of traffic impacts due to Mililani Mauka and the Summit can be determined. This can be done as the project moves forward in the continuing land use amendment changes, namely the State Land Use District Boundary amendment process.
2. Project implementation will be an integral part of phasing and coordination with the Mauka project not only in traffic, but also in utilities and infrastructure. The civil engineering consultant and the planning consultants will coordinate this aspect of project phasing.
3. The Robert Maxwell Company will review this request for a full time Traffic Manager and if incorporation of this position can be included in what is predominantly an affordable housing project, the applicant will provide this service.

Thank you for your timely comments and continuing interest.

Sincerely,



F. J. Rodriguez

cc: L. Robert Allen  
Housing Finance & Development Corporation

JOHN WAMBE  
ASSISTANT

MAJOR GENERAL EDWARD V. RICHARDSON  
DIRECTOR OF CIVIL DEFENSE

ROY C. PRICE, SR.  
VICE DIRECTOR OF CIVIL DEFENSE



STATE OF HAWAII  
DEPARTMENT OF DEFENSE  
OFFICE OF THE DIRECTOR OF CIVIL DEFENSE  
3949 DIAMOND HEAD ROAD  
HONOLULU, HAWAII 96814-4445

March 2, 1993

Parametrix, Inc.  
1164 Bishop Street, Suite 1600  
Honolulu, Hawaii 96813

Attn: F. J. Rodriguez

Gentlemen:

Environmental Impact Report for the Summit  
at Milliani Residential Project

We appreciate this opportunity to comment on the Summit at Milliani Residential Project; Milliani, Oahu, Hawaii. Project area TMK: 9-5-3: 10.

We do not have negative comments specifically directed at this environmental impact report. However, we do have a proposal for a siren alerting system for the planned residential community. This residential project is located in an area not covered by an existing siren/siren simulator warning device. We propose that a solar powered electronic siren and siren support infrastructure be purchased and installed by the developer to alert residents of an impending or actual event that threatens the subdivision. This siren must be an "Omni directional" sound radiation device, have a minimum output of 115 db and be compatible with the existing civil defense siren system. The proposed siren requires a 100-foot radius buffer zone in which there is no residential building. The suggested location of this siren is annotated in red in the large open field area along the main entry road as shown in the "Site Plan" Figure 2. Just as parks, schools, fire hydrants, underground/overhead utilities and sidewalks are planned as integral parts of subdivisions, so must emergency warning systems be planned for the safety of communities.

Parametrix, Inc.  
March 2, 1993  
Page 2

Our State Civil Defense planners and technicians are available to assist in determining the technical specifications of the siren and siren support infrastructure. Please have your staff call Mr. Mel Nishihara of my staff at 734-2161.

Sincerely,

For: ROY C. PRICE, SR.  
Vice Director of Civil Defense

Enc.



PHONE (808) 734-2161

**Parametrix, Inc.**

1154 Bishop Street, Suite 1600 Honolulu, Hawaii 96813  
808-524-0594 • Fax 808-523-2895

Consultants in Engineering and Environmental Sciences

Mr. Roy C. Price, Sr.  
Department of Defense  
State of Hawaii  
3949 Diamond Head Road  
Honolulu, HI 96816-4495

March 25, 1993  
22-2310-01

Subject: Comments dated March 2, 1993 on the Draft Environmental  
Impact Report for the Summit at Millilani, TMK: 9-5-3: 10

Dear Mr. Price:

We have received your agency's comments dated March 2, 1993 and we respond as follows:

The siren alerting system proposed by the State Department of Defense has been duly noted by the Project's Master Planning consultants by this response to your office. At the appropriate time when the Project is in the final stages of construction and phasing, we will contact Mr. Nishihara to comply with your recommendations.

Thank you for your timely comments and continuing cooperation.

Sincerely,



F. J. Rodriguez

cc: L. Robert Allen  
Housing Finance & Development Corporation

**Parametrix, Inc.**

1154 Bishop Street, Suite 1600 Honolulu, Hawaii 96813  
808-524-0594 • Fax 808-523-2895

Consultants in Engineering and Environmental Sciences

Mr. William A. Bonnet, Manager  
Environmental Department  
Hawaiian Electric Company, Inc.  
P.O. Box 2750  
Honolulu, HI 96840

March 25, 1993  
22-2310-01

Subject: Comments dated March 9, 1993 on the Draft Environmental Impact  
Report for the Summit at Millilani, TMK: 9-5-3: 10

Dear Mr. Bonnet:

We have received your comments on the above project and we respond as follows:

1. a-e. Robert Maxwell Company is aware of the existing HECO transmission lines that traverse the property and also, the accompanying conditions that govern any land usage within said easements. All appropriate required improvements will be designed to meet HECO's easements rights and if necessary, will obtain HECO's consent to alter said easements.

2. The determination as to whether a new substation will be needed is contingent on the phasing and coordination with Millilani Mauka, Phase I. In any event, Summit design staff will advise and discuss HECO in ample time for the need of a new or expanded substation.

Thank you for your continuing interest and cooperation.

Sincerely,



F. J. Rodriguez

cc: L. Robert Allen  
Housing Finance & Development Corporation



William A. Bonnet  
Manager  
Environmental Department

March 9, 1993

Mr. F. J. Rodriguez  
Parametrix, Inc.  
1164 Bishop Street, Suite 1600  
Honolulu, Hawaii 96813

Dear Mr. Rodriguez:

Subject: Environmental Impact Report (EIR)  
for The Summit Residential Project  
TMK:9-5-3: 10, Mililani, Oahu

We have reviewed the subject EIR for The Summit, and have the following comments:

1. Page 22 states: "Hawaiian Electric Company (HECO) has transmission lines that flank the eastern and western boundaries of the property. These transmission lines, located within easements, are the only utilities proximate to the site." The developer should be informed of the following:
  - a. The existing transmission line easement boundaries, poles, anchors, and conductors shall be accurately plotted on the grading plans.
  - b. Grading and construction plans shall be submitted to HECO for review and approval to ensure that adequate clearance is provided over the roads that will be constructed under the conductors (two locations), that existing poles and anchors will not be affected by the grading work, that water will not drain into the easement area which may cause erosion around the poles, anchors and access roads, and that access to each structure site is maintained.
  - c. Landscaping plans shall be submitted to HECO for review and approval to ensure that tall-growing trees will not be planted under the conductors.

Mr. F. J. Rodriguez  
March 9, 1993  
Page Two

- d. No buildings or structures will be allowed within the easement areas.
  - e. HECO shall be fairly compensated for any relocation work required to maintain clearances and the structural integrity of its facilities.
2. Page 22 also states: "A HECO substation and Hawaiian Telephone Company remote switching station exists in the Mililani Mauka Development as well as cable television service." Distribution Engineering and T&D Planning should determine the distribution requirements and whether or not a new substation is necessary for this new development.

Sincerely,





DEPARTMENT OF THE NAVY

COMMANDER  
NAVAL BASE PEARL HARBOR  
BOX 110  
PEARL HARBOR, HAWAII 96860-5020

RR  
MAR 17 1993

PARAMETRIX, INC.  
HONOLULU

IN REPLY REFER TO:  
11010  
Ser. N4(239)/1037  
16 MAR 1993

Mr. F. J. Rodriguez  
Parametrix, Inc.  
1164 Bishop Street, Suite 1600  
Honolulu, Hawaii 96813

Dear Mr. Rodriguez:

ENVIRONMENTAL IMPACT REPORT (EIR)  
FOR THE SUMMIT RESIDENTIAL PROJECT, TMK: 9-5-3:10

Thank you for the opportunity to comment on the subject Environmental Impact Report that was transmitted to us by your letter of February 9, 1993. The Navy has no comments to offer at this time.

Our point of contact is Mr. Bill Liu, Facilities Engineer, at 471-3324.

Sincerely,

E. A. DAILIDE  
Commander, CEC, USN  
Deputy ACOS Facilitator and Environment  
By direction of  
the Commander

Parametrix, Inc.

1164 Bishop Street, Suite 1600, Honolulu, Hawaii 96813  
808-524-0544 • Fax: 808-523-2995



March 17, 1993

E. A. Dailide, Commander, CEC, USN  
Department of the Navy  
Naval Base Pearl Harbor  
Box 110  
Pearl Harbor, HI 96860-5020

Dear Commander Dailide,

Subject: Draft EIR for the Summit at Millilani TMK: 9-5-3: 10

We are in receipt of your agency comments dated March 16, 1993 indicating "No comments" at this time.

Thank you for your continuing interest and cooperation.

Sincerely,

F. J. Rodriguez

cc: Housing Finance &  
Development Corporation  
L. Robert Allen



RECEIVED  
MAR 22 1993

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

STATE OF HAWAII  
DEPARTMENT OF HEALTH  
PARAMETRIX, INC.  
HONOLULU

P. O. BOX 3238  
HONOLULU, HAWAII 96813

In reply, please refer to:

March 17, 1993

92-404/epo

Mr. Frea J. Rodriguez  
Parametrix Inc.  
1164 Bishop Street, Suite 1600  
Honolulu, Hawaii 96813

Dear Mr. Rodriguez:

Subject: Environmental Impact Report (EIR) for  
The Summit Residential Community

Thank you for allowing us to review and comment on the subject document.  
We have the following comments to offer:

Solid Waste

The Summit will bring 598 new residences to Milliani. The Office of Solid Waste Management strongly suggests that the Environmental Impact Statement address the volumes of waste that will be generated by these households, as well as, the collection and disposal needs for the waste. The developer should detail what measures will be made within the development in order to implement the State mandated waste diversion of twenty-five percent (25%) by 1995 and fifty percent (50%) by the year 2000. Such efforts should include a waste minimization plan for use during construction or provision of areas for source separation of recyclables, and greenwaste collection within the gated community.

Also we ask that the developer make use of secondary resources whenever possible in the construction and operation phases. Examples of secondary resources are crushed glass for use in asphalt and compost as a soil amendment for landscaping purposes.

If you should have any questions on this matter, please call  
Ms. Caroline McCabe of the Office of Solid Waste Management at 586-4243.

Wastewater

It has been determined that the proposed project is located within the County sewer service system. As the area is sewered, we have no objections to the proposed planned residential community to be located on approximately 129 acres mauka (north) of the Milliani Mauka project, provided that the project is connected to the public sewers.

Mr. Frea J. Rodriguez  
March 17, 1993  
Page 2

The developer should work closely with the County to assure the availability of additional treatment capacity and adequacy for the project. Non-availability of treatment capacity will not be an acceptable justification for use of any private treatment works.

If you should have any questions on this matter, please contact  
Ms. Lori Kajiura of the Wastewater Branch at 586-4290.

Very truly yours,

JOHN C. LEWIN, M.D.  
Director of Health

c: Office of Solid Waste Management  
Wastewater Branch

**Parametrix, Inc.**

1164 Bishop Street, Suite 1609 Honolulu, Hawaii 96813  
808-524-0584 • Fax 808-523-2299



City of Honolulu, Department of Public Works

Dr. Bruce S. Anderson  
Department of Health  
P.O. Box 3378  
Honolulu, HI 96801

March 25, 1993  
22-2310-01

Subject: DOH comments dated 3/17/93 on the Draft EIR for the Summit  
at Mililani, TMK: 9-5-3: 10

Dear Dr. Anderson:

We respond to your agency comments as follows:

1. **Solid Waste:** At the present time, the City Department of Public Works, Solid Waste Division, will be picking up and processing the refuse from the Summit project. The applicant does not have provisions defined or developed at this early planning stage on solid waste recycling. Also, the construction of the proposed project will be in accordance with City building code requirements. Where there is the opportunity to utilize secondary resources in the construction and operation of the project, this will be planned into the design.
2. **Wastewater:** Connection to the City sewer system is a requirement that is being reviewed with the adjacent landowner Castle & Cooke Residential, Inc. and the City Department of Public Works. The basic element of compliance will rest with the ability of the Honolulu Sewage Treatment Plant to accept the sewage from the Summit project in conjunction with the Mililani Mauka development. At the present time, this is an unresolved issue and will be the subject of discussions with the Mililani Mauka management as well as the City DPW.

Thank you for your timely comments and continuing cooperation.

Sincerely,

F. J. Rodriguez

cc: Housing Finance & Development Corp.  
L. Robert Allen



JOHN WARDER  
GOVERNOR OF HAWAII



BOARD OF LAND AND NATURAL RESOURCE  
DEPOTES

1164 Bishop Street, Suite 1600, Honolulu, Hawaii 96813  
808-524-0544 • Fax 808-523-2095



RECEIVED  
MAR 25 1993

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
STATE HISTORIC PRESERVATION DIVISION  
33 SOUTH KING STREET, 6TH FLOOR  
HONOLULU, HAWAII 96813

AGRICULTURE DEVELOPMENT  
PROGRAM  
AQUATIC RESOURCES  
CONSERVATION AND  
ENVIRONMENTAL AFFAIRS  
CONSERVATION RESOURCES  
MANAGEMENT  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
DIVISION  
LAND MANAGEMENT  
STATE PARKS  
WATER AND LAND DEVELOPMENT

March 25, 1993  
22-2310-01

Mr. Don Hibbard, Administrator  
State Department of Land and Natural Resources  
Historic Preservation Division  
33 S. King Street, 6th Floor  
Honolulu, HI 96813

Subject: Your agency comments dated March 22, 1993 on the Draft EIR  
for the Summit at Mililani, TMK: 9-5-3: 10

Dear Mr. Hibbard:

We have received your comments on the archaeological study prepared for this project and have provided them to the consultant archaeologists. We note that the Abstract on page i and also the Recommendations on page 18 summarize the lack of significant impact of the proposed project on the sites identified on the project site. The archaeologists will be in contact with Dr. Dye to resolve any remaining discussions points that need to be finalized.

Thank you for your continuing cooperation and we look forward to a timely resolution of your concerns.

Sincerely,

F. J. Rodriguez

cc: Housing Finance & Development Corp.  
L. Robert Allen  
Aki Sinoto Consulting

Mr. F. J. Rodriguez  
Parametrix, Inc.  
1164 Bishop Street, Suite 1600  
Honolulu, Hawaii 96813

March 22, 1993

PARAMETRIX, INC.  
HONOLULU

LOG NO: 7820  
DOC NO: 9303TD32

Dear Mr. Rodriguez:

SUBJECT: Environmental Impact Report (EIR) for the Summit Residential  
Property  
Waipi'o, Ewa, O'ahu  
TMK: 9-5-3: 10

Thank you for the opportunity to review this project. The EIR contains as Exhibit A an archaeological inventory survey report (Clegghorn, Anderson, and Sinoto 1992). This report lacks a description of survey techniques and an explicit discussion of the likely traditional Hawaiian settlement pattern, and is therefore not acceptable. Also, the EIR does not, so far as we can tell, show or discuss the relationship of the proposed project to the historic sites recorded by the inventory survey. Thus, we lack the information that we need to complete our review of this project.

We look forward to reviewing a revised inventory survey report when this is available.

If you have any questions please call Tom Dye at 587-0014.

Sincerely,

DON HIBBARD, Administrator  
State Historic Preservation Division

TD:bek

VII. LIST OF PREPARERS

BEN TORIGOE, A.I.A/ .RAMONA MULLAHEY

GRAY, HONG, BILLS - CIVIL ENGINEERING

PARAMETRIX, INC. HONOLULU  
ENVIRONMENTAL IMPACT REPORT



ARCHAEOLOGICAL INVENTORY SURVEY  
OF THE PROPOSED SUMMIT PROJECT  
MILILANI, WAIPIO, O'AHU  
TMK 9-5-3:10

by

Paul L. Cleghorn, Ph.D.  
Lisa Anderson, M.A.  
Aki Sinoto, B.A.

prepared for

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

January 1992

Aki Sinoto Consulting  
2333 Kapiolani Blvd. No. 2704  
Honolulu, Hawai'i 96826

EXHIBIT A  
HISTORICAL-ARCHAEOLOGICAL

## ABSTRACT

An archaeological inventory survey of the proposed Mililani Summit project area was conducted by Aki Sinoto Consulting under contract to Environmental Communications, Inc. The area is located *mauka* of the existing Mililani Mauka Subdivision in the *ahupua'a* of Waipio, Ewa District, O'ahu Island.

Portions of the project area are currently occupied by lime and lychee orchards. Historic literature and documents search showed the area to have undergone extensive compounded disturbance and alteration. The major impacts started with pineapple cultivation which introduced a lot of fill material on the ridgetop plateau areas; during World War Two the military took over portions of the project area and constructed several large ordnance storage facilities and other support facilities; and the recent orchard activities have altered the landscape further.

Three sites were recorded during the current survey. Two are historic period charcoal ovens attributed to Japanese pineapple workers. The third is a four-feature complex of the remnants of World War Two period military facilities. No prehistoric period remains were encountered in any part of the project area. The two charcoal oven sites, located in the gulch floor on the Kipapa Gulch side, are considered significant under National Register Criteria A and D. They will be avoided during development.

No recommendations for further work prior to commencement of development activities are presented due to the absence of significant sites in the impact zone of the proposed development. Archaeological monitoring of construction-related ground disturbing activities are also not recommended in view of the results of the current survey as well as previous findings from the surrounding areas.

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## INTRODUCTION

At the request of Environmental Communications, Inc., Aki Sinoto Consulting conducted an inventory level archaeological survey of approximately 129 acres in Mililani, on the island of O'ahu (TMK 9-5-3:10) (Fig.1). The archaeological survey was conducted by Lisa Anderson, Paul Cleghorn, and Aki Sinoto during 30 October and 1 November 1991. Approximately 58% of the parcel is zoned agricultural (AG-1) and the remainder is zoned preservation (P-1). The agricultural portion of the property is currently occupied by lychee and lime orchards (Figs. 2-4)

## ENVIRONMENTAL SETTING

The majority of the property lies on the ridge between Waikakalaua Gulch and Kipapa Gulch. This land ranges from flat to gently sloping. Part of the parcel extends down into Kipapa Gulch, where the land ranges from gently to steeply sloping.

The project area is relatively wet, receiving about 50 inches of rain per year (Armstrong 1983:62). This creates fairly lush vegetation in non-orchard areas (Fig. 5). The side of Kipapa gulch is dominated with eucalyptus (*Eucalyptus spp.*), and the bottom is dominated by guava (*Psidium guajava*), mango (*Mangifera indica*), kukui (*Aleurites moluccana*), ti (*Cordyline terminalis*), and shampoo ginger (*Zingiber zerumbet*).

The soils that make up the majority of the project area are Lelihoa silty clays (Foote et al. 1972:81-82, map 51) that occur on 2 - 13 percent slopes. These soils generally have a dark reddish-brown surface layer of about 12 inches thick, containing concentrations of heavy minerals. The subsoil is a dark reddish brown and dusky-red silty clay and clay that is about 36 inches thick. The substratum is dark reddish-brown clay mixed with weathered gravel. Permeability is moderately rapid, runoff is slow to medium, and the erosion hazard is slight to moderate.

The soils in Kipapa Gulch are classified as Helemano silty clay (Foote et al. 1972:40, map 51). This soil class has a 10-inch thick surface layer of dark reddish brown silty clay. The subsoil is a dark reddish-brown and dark

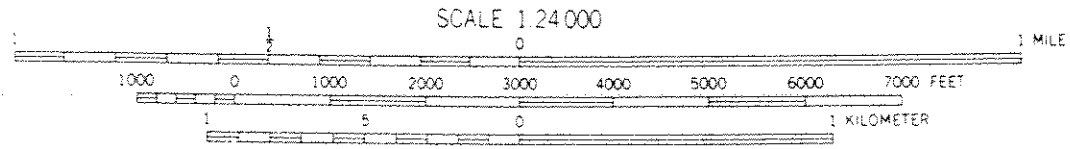
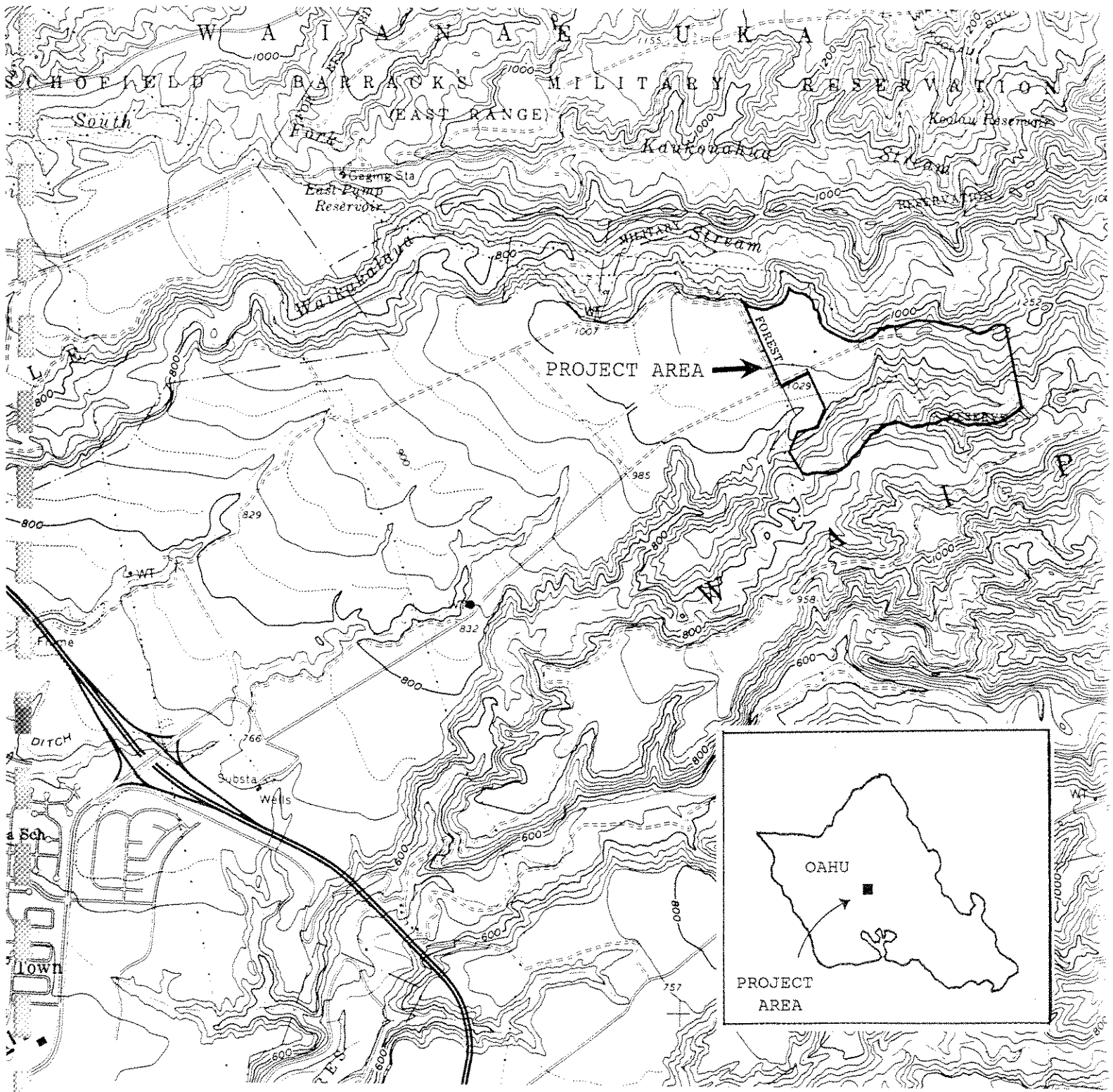


Figure 1. Location of Project Area



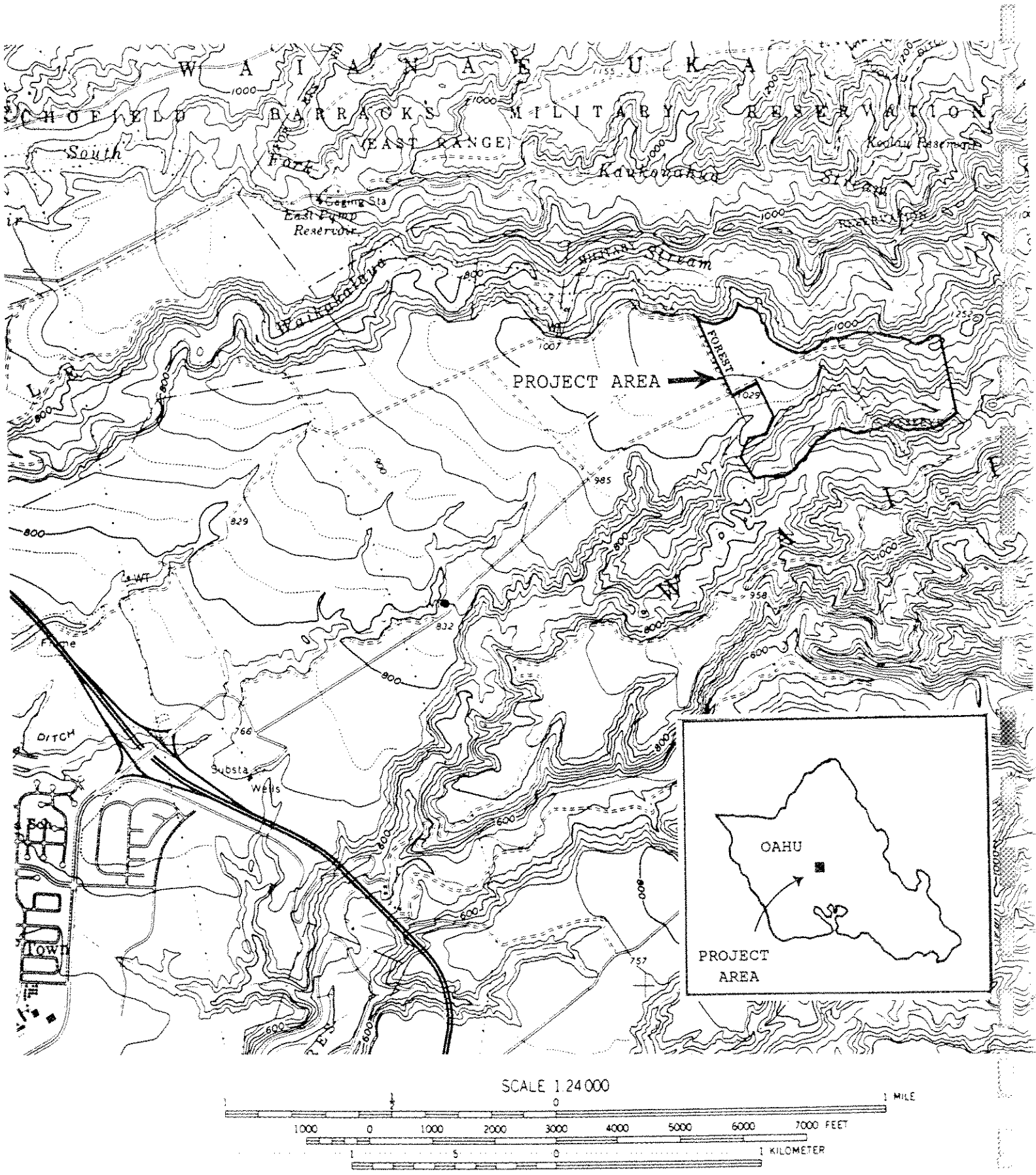


Figure 1. Location of Project Area



Figure 2. General View of Lychee Orchard (View West)



Figure 3. General View of Lychee Orchard (View West)



Figure 4. General View of Lime Orchard (View West)



Figure 5. Mauka View of the Kipapa Gulch side (View East)

red silty clay that is about 50 inches thick. The substratum is soft, highly weathered igneous rock. Permeability is moderately rapid, runoff is medium to very rapid, and the erosion hazard is severe to very severe.

The mountainous land that makes up the extreme eastern side of the property is classified as rough mountainous land (Foote et al. 1972:119, map 51). This land is dominated by steep topography. In most areas it is not very stoney and the soil mantel is very thin, ranging from 1 - 10 inches over saprolite. The saprolite is generally soft and permeable to roots and water.

#### HISTORICAL BACKGROUND

The Mililani-Mauka project area is located in the Waipio ahupua'a (native land division) within the district of Ewa. Ewa is one of the largest districts on the island of O'ahu, containing 13 ahupua'a. In pre-Contact times (pre-A.D. 1778), Ewa was considered "a favored residence of Oahu Kings" (Sterling and Summers 1978:1), and Ewa was important for agricultural pursuits.

The lowlands, bisected by ample streams, were ideal terrain for the cultivation of irrigated taro. The hinterland consisted of deep valleys running far back into the Ko'olau range. Between the valleys were ridges, with steep sides, but a very gradual increase of altitude. The lower parts of the valley sides were excellent for the culture of yams and bananas (Handy and Handy 1972:469).

This general description of the Ewa district is supported by accounts of taro cultivation in Kipapa Gulch.

It is said that terraces formerly existed on the flats in Kipapa Gulch for at least 2 miles upstream above its junction with Waikele. Wild taros grow in abundance in upper Kipapa Gulch (Sterling and Summers 1978:19).

Waipio is the noted birthplace of John Ii, "one of the leading citizens of the Hawaiian Kingdom during the nineteenth century" (Ii 1959:vii).

John Papa Ii was born in Kumelewai, Waipio, on 3 August 1800, on the land of Papa Ii, whose namesake he was. Papa Ii was the owner of the pond Hanaloa and two other pieces of property, all of which he had received from Kamehameha, as did others who lived in that ahupua'a, or land division, after the battle of Nuuanu. He gave the property to his kaikua hine, who was the mother of the younger Ii (Ii 1959:20).

The project area is located between Kipapa and Waikakalaua Gulches, which have been described in Hawaiian legend as the location of the great battle between Mailikukahi, moi of O'ahu, and invading chiefs of Hawaii.

At Waikakalaua they met Mailikukahi with his forces, and a sanguinary battle ensued. The fight continued from there to Kipapa Gulch. The invaders were thoroughly defeated, and the gulch is said to have been literally paved with the corpses of the slain, and received the name Kipapa from this circumstance. Punaluu was slain on the field which bears his name, the fugitives were pursued as far as Waimano, and the head of Hilo was cut off and carried in triumph to Honouliuli, and stuck up at a place still called Poo-Hilo (McAllister 1933:107).

The lands of Waipio, including Waipio Peninsula and Pearl Harbor were passed on from John Papa Ii to his only daughter Irene. During the late 1800s and early 1900s, much of Waipio was planted in sugar cane and pineapple. Portions of the project area were leased to Hawaiian Pineapple Company, Ltd. from 1932 to 1945.

During World War II, many of the lands of the John Papa Ii estate were taken by the United States federal government, including 94.089 acres (Lot 1) of the 128.664 acres project area.

By the end of the war, the Army and Navy owned 62,058 acres on all of the islands, double the area held in 1940, when their only sizable holdings were on Oahu. In addition, the Army held temporary possession of 210,000 acres, and the Navy and Marine corps, 118,000 (Allen 1950:21).

The official declaration of taking the site area was dated July 1946. However, it is likely that the lands were taken at an earlier date since an

existing military structure (Site 4436, Feature 2) was constructed in 1942. Most lands were seized at the beginning of the war.

Months passed before legal papers were signed for some property which the Army took over at the outbreak of the war. By the end of 1943, formalities for 2,000 cases of occupancies were pending, and Army units were still making 40 requests a day for permission to occupy private holdings (Allen 1950:221).

The lands within the project area were utilized for a radio transmitting and receiving station (Site 4436, Feature 1), and ordnance storage warehouses (Site 4436, Features 2-4 ).

The said land is necessary for certain military installations needed to provide adequately for the related military purposes incident thereto. The said land has been selected by me for acquisition by the United States for use in connection with the establishment of Army Air Forces radio transmitting and receiving stations and for such other uses as may be authorized by Congress or by Executive order, and is required for immediate use (Bureau of Conveyances Document 86,276).

Both Kipapa and Waikakalaua Gulches were used for most of the Army's underground ammunition storage. Kipapa Gulch was also the site of a major underground gas storage area where four 62,000-barrel tanks were stored (Allen 1950:226).

In December of 1951, the United States discharged some of the land that had been taken from the John Ii Estate including Lot 11 which is in the project area (Bureau of Conveyances Document 134,436).

In 1952, the land was transferred from the John Ii Estate to Hawaiian Pineapple Company, Ltd., which became Dole Corporation in 1960 (Transfer Certificate Title 82,936).

In 1962, Alan S. Davis purchased the property from the Dole Corporation. At that time, the Davis family resided at 1001 Wilder Avenue, in a house left to Alan Davis from his father Henry F. Davis. Alan Davis, uncomfortable with living in the city after the 1946 tidal wave destroyed their previous Makapuu home, decided to move his father's house to Waipio (personal communication Helen S. Davis, 1991).

The house was moved in about 1963 in four separate trailer loads. "It was interesting because we could only move between 11:30 p.m. and 4:40 a.m." (ibid.). The moving of the house was further complicated by the construction of the Aiea overpass. "We had to rush to move the house before the overpass was built. As it was, we still had to cut down part of the roof" (ibid.) The house was placed on the same site where an old house for the caretaker once stood (Fig. 6).

"We tore down the military warehouses except for one and put cottages on top of the foundations (Fig. 7). We bought the cottages from the pineapple company and moved them to our property" (ibid.).

When the Davis family bought the property it was covered in Eucalyptus trees. These were cleared for the lychee, lime, and banana orchards that Alan Davis put in and that remains today.

The property was held in trust for daughters Linda and Nancy Davis. In 1977, the land was sold to Ruth M. Bowers of Texas, who is the present owner.

#### PREVIOUS ARCHAEOLOGICAL RESEARCH

The first archaeological work done in the area was conducted by J. Gilbert McAllister in 1933, as part of his island-wide survey. He recorded the previous existence of two archaeological sites in Kipapa Gulch, both of which were destroyed by sugar cane cultivation. These sites were:

Heiau o Umi (Site 131) which was located in the bottom of Kipapa Gulch, just NW of the government road. McAllister stated that a leveled area could still be discerned in the cane field where this heiau had been located (McAllister 1933:107).



Figure 6. Alan S. Davis' House (View North)



Figure 7. Cottages Built atop slab (Site 4436, Feat. 4) (View North)



Moaula Heiau (Site 130) was located just above Heiau o Umi, on the Honolulu side of Kipapa Gulch. The two heiau were supposed to be associated with each other. This heiau was also planted in cane (McAllister 1933:107).

In 1977, Paul Rosendahl, then with the Bishop Museum, surveyed approximately 320 acres in Waikakalaua Gulch. He found no archaeological sites, but noted extensive land modifications that were associated with large scale historic agricultural pursuits (Rosendahl 1977).

In 1985, William Barrera conducted a literature search and a reconnaissance survey of the final phase, Mililani Mauka, of Mililani Town. No archaeological sites were found on the property. Barrera states that if any sites ever existed on the property, "pineapple cultivation has long since erased any such evidence" (Barrera 1985:2).

In 1987, Margaret Luscomb Rosendahl conducted a reconnaissance survey of c. 2.75 acres in Mililani Town. The surface was completely altered and covered in low grass. No archaeological sites were found.

In 1990, Aki Sinoto conducted a surface assessment of Waikakalaua Gulch. A fairly extensive historic complex was discovered.

#### SUMMARY

The project area has had considerable historic uses and activities taking place. These activities range from large scale agricultural pursuits (pineapple and fruit orchard) to military activities (transmitting and receiving station, munitions storage). These historic uses tend to have associated large scale ground disturbances. This combined with the fact that previous archaeological surveys in adjacent lands have found few archaeological sites leads to the prediction that there is a low likelihood for finding significant archaeological resources in the project area.

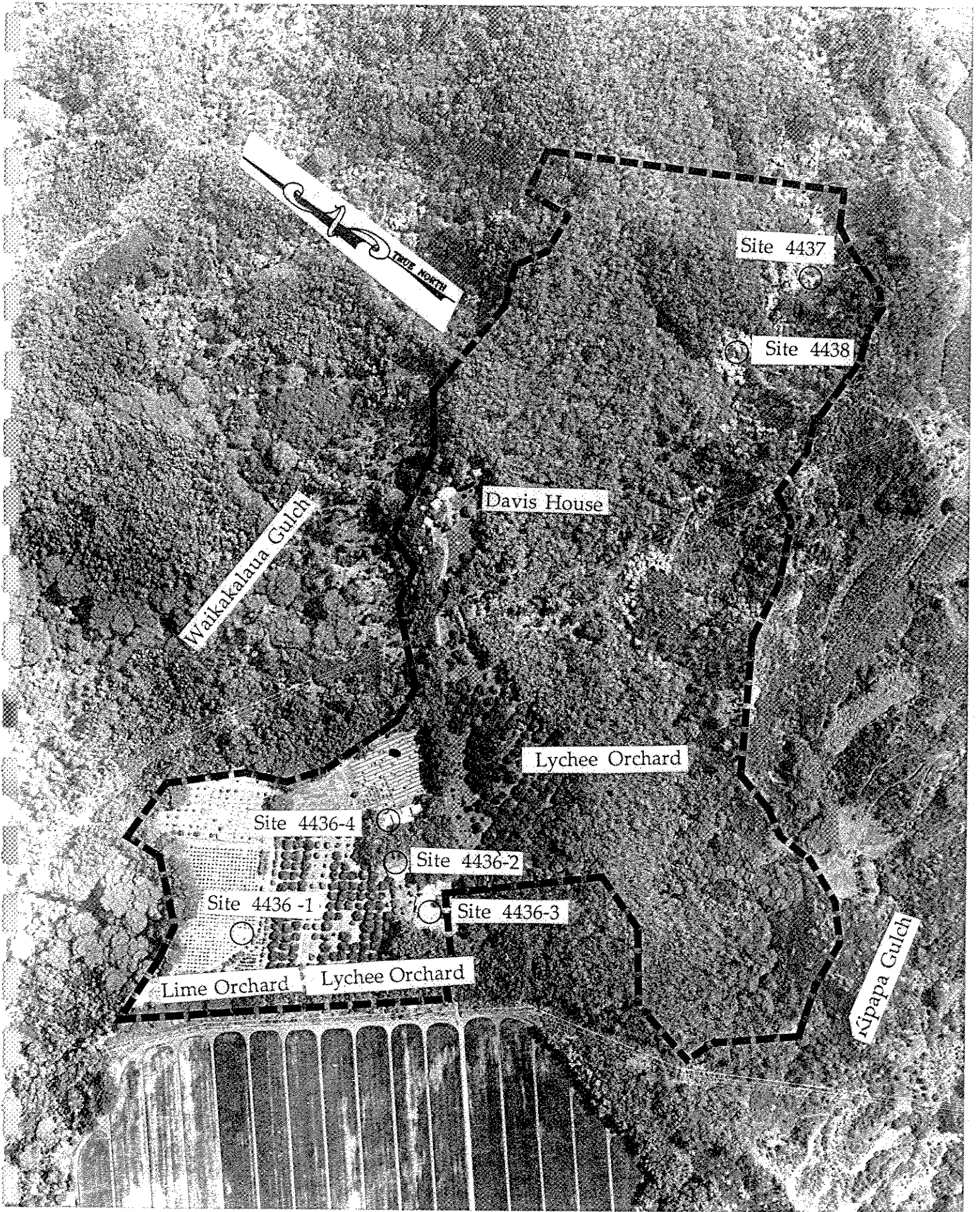


FIGURE 8. LOCATION OF SITES

## RESULTS OF SURVEY

A total of three historic era sites, consisting of six features, were located in the project area; no prehistoric sites were found. Four of these sites are cement slabs that were probably associated with military activity in the area, and two are charcoal ovens. The following are descriptions of these sites.

### Site 50-80-09-4436. Historic Complex.

This is a complex of four cement slabs that were constructed by the U.S. Military during World War II (see Historical Background above). Each slab is described separately below.

Feature 1 (Figs. 7, 8). This concrete slab, located in the lime orchard, measures 12.3 by 6.2 m, with a maximum height of 0.9 m above ground surface; interior wall height is 0.15 m. The slab is 0.08 m thick and its long axis has an orientation of 314 degrees off of Magnetic North. No dates or other inscriptions were observed in the cement. Numerous glass and ceramic insulators were observed on the surface adjacent to the slab. This is probably the remains of the transmitter-receiving station described above.

Feature 2. This is a concrete slab measuring 60.4 by 18.0 m overall with a maximum height of 0.9 m. Its long axis aligns to a Magnetic orientation of 307 degrees. A currently used green warehouse was built on the slab (Fig. 10). The warehouse has canek walls and a corrugated metal roof. A 2.7 m wide loading dock extends for the entire length of the slab with a 5.0 m long ramp continuing off the east end. This is undoubtedly the military warehouse the Davis family left standing (see above).

Feature 3. This concrete slab measures 66.5 by 17.7 and has the same configuration as Slab 2. Its long axis has a Magnetic orientation of 245 degrees. The current property manager's house has been built on the central portion of this slab (Fig. 11).

Feature 4. Another concrete slab is located 30 m east and parallel to Slab 2. It has a Magnetic orientation of 133 degrees along its long axis. Two wooden frame houses have been built atop this slab (see Fig. 7).

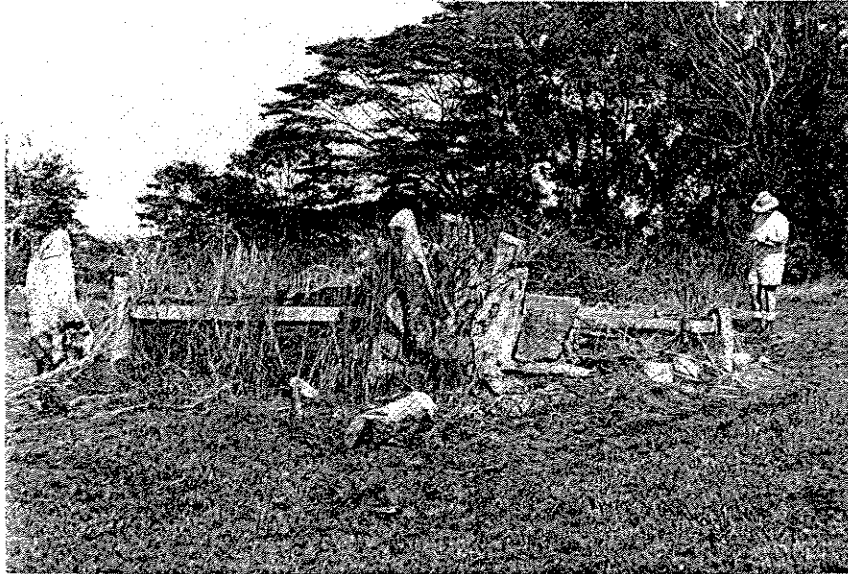


Figure 9. Site 4436, Feature 1. Cement Slab (View Northwest)

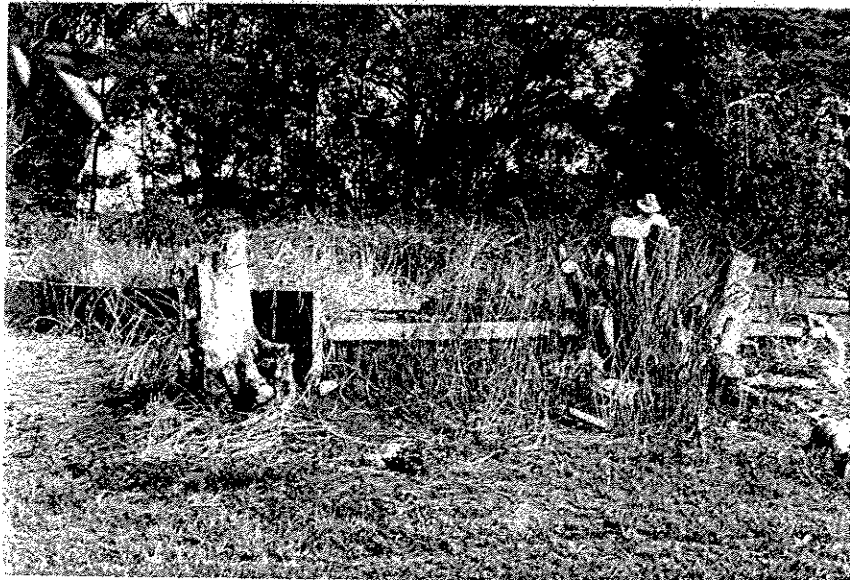


Figure 10. Site 4436, Feature 1. Cement Slab (View Northeast)

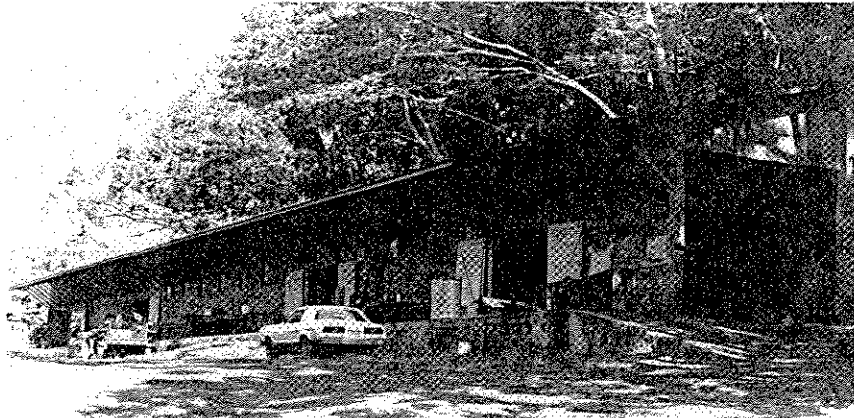


Figure 11. Site 4436, Feature 2. Warehouse on Slab (View North)



Figure 12. Site 4436, Feature 3. Property Manager's House on Slab (View West)

Site 50-80-09-4437. Charcoal Oven (Fig. 12).

This is a cement and rock charcoal oven with a domed roof. Exterior dimensions are 5.0 by 4.0 by 2.2 m high. Interior measurements are 4.2 by 3.4 by 1.0 m high. The opening, or doorway, is 0.9 m wide and 1.4 m high; the roof at the opening is 0.35 m thick. The oven is constructed of cement plastered over basalt boulders and cobbles. Burlap cloth impressions are visible on the ceiling. There are five air vent holes in the roof with diameters of 16 cm; square metal covers were found next to two of the openings. One meter away from the back of the oven is an upright metal pipe that extends down into the ground to a chimney opening at the back interior of the oven. Abundant charcoal was observed on the floor of the oven and a bundle of logs (probably guava) were stacked next to the opening.

A 10 - 12 m long retaining wall extends to the SE of the oven. The retaining wall is two to three stones high and simply consists of rocks pushed into the bank to help retain the slope.

Numerous historic to modern period artifacts were observed in the vicinity. These included a wheel barrow, 1-gallon glass bottles, a rubber inner tube, a rubber tire, a lengthwise half of a 55-gallon metal drum, cinder blocks, and corrugated metal sheeting.

Site 50-80-09-4438. Charcoal Oven (Fig. 13).

This cement charcoal oven is similar to Site 4437. Although it is not as domed and more basalt pebble aggregate is visible in the cement; its design and construction suggest the same builder. Exterior measurements are 5.0 by 4.1 by 2.1 m high. Interior measurements are 3.75 by 3.4 by 1.8 m high. The opening is 0.9 m wide and 1.3 m high. The oven is constructed of basalt boulders and cobbles, and cement. Five air vents are located in the roof, and an upright pipe extends from the interior floor to the surface at the rear of the oven. Two 1.0 m long wing walls flank the opening. Abundant charcoal is visible on the interior surface. Artifacts observed include corrugated metal sheeting and a 55-gallon drum.

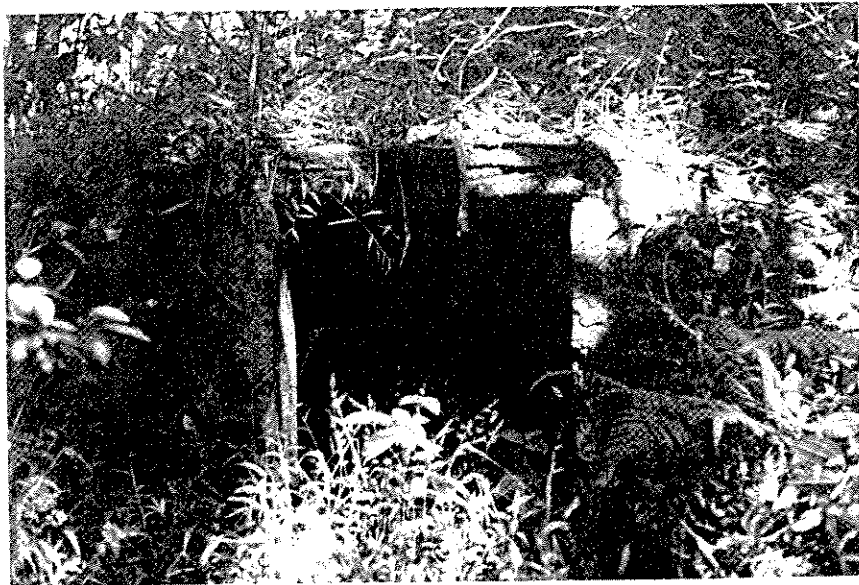


Figure 13. Site 4437, Charcoal Oven (View North)



Figure 14. Site 4438, Charcoal Oven (View Northwest)

## DISCUSSION

All of the sites recorded during the current survey date to the World War Two period (concrete slabs) or the historic period (charcoal ovens). Sites representing earlier periods were markedly lacking throughout the survey area, but especially on the flat plateau areas that were previously cleared for pineapple. Previously conducted borings and recently excavated backhoe trenches and postholes for fences all indicate varying thicknesses of fill on the flat plateau areas (Aaron O'Brien, pers. comm.). Extensive compounded surface alteration in this area; consisting of pineapple cultivation, military use, and most recently for the residential and orchard; would have completely destroyed or obscured any surface remains or features associated with earlier historic or prehistoric periods. The adjoining lowlands on the Kipapa Gulch side also exhibits previous disturbance.

Site 4436, the military complex, does not appear to meet any of the National Register Criteria for Evaluating the Significance of Historic Properties. The foundations for the military structures have been extensively modified and have little of their original integrity, with the exception of Feature 2. There are many other better examples of military warehouse construction from the same era on active military bases on the island.

Sites 4437 and 4438, the two charcoal ovens, are probably historic in age (more than 50 years old). Their morphology suggests pineapple era Japanese construction. Their state of preservation is good to excellent. The associated artifacts suggest continued use into fairly recent times. Similar examples of such sites exist in other parts of O'ahu. These sites appear to meet National Register Criterion A, which states that a site is associated with events that have made an important contribution to the broad patterns of history; and also Criterion D, which states that a site has yielded or has the potential to yield information significant to the understanding of traditional culture and history of an area.



## RECOMMENDATIONS

The lack of prehistoric archaeological sites existing in the project area was predictable, given the lack of sites found in adjacent properties (see Previous Archaeological Research above) and the extensive historic activities in the area (agricultural and military). Given the findings of the current investigations, combined with the results of previous archaeological investigations in the general area, there is an extremely low probability of finding any unexpected archaeological remains during construction activities.

The archaeological procedures undertaken during the current survey have constituted adequate mitigation for the sites in the areas slated for impact. The charcoal oven sites, located in the upper gulch area, will not be affected during the proposed phase of development. Thus no further work, including archaeological monitoring of construction, is recommended. However, if unanticipated archaeological remains (including human burials) are encountered, the developer must contact the State Historic Preservation Division at once for an evaluation of the find.

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# Agricultural Assesment of the Proposed Summmit Development

November 6, 1991

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EXHIBIT B

AGRICULTURAL ECONOMICS

## The Site

This is a 128.66 acre parcel located muaka of Mililani Mauka at an elevation slightly above 1000 ft. Approximately 20 acres of the land is currently being used for agriculture, including farm buildings. With exception of the existing residence and its immediate surrounding, the remainder of the parcel is heavily forested and often extremely steep. There are approximately 350 lychees trees and 700 lime trees on the parcel. There also are small plantings of guava, bananas, and pomalo as well as several individual tropical fruit trees. There is no evidence of any irrigation.

The arable portion of the parcel is comprised of Leilehua soils (LeB and LeC). These lands are rated prime by the ALISH system (the highest rating), given a rating of B by the Land Study Bureau if not irrigated and a rating of A if irrigated (A is the highest and E the lowest score), assigned a land evaluation rating of 81 and 72 by the proposed LESA system (highest rating on Oahu is 96 and the lowest is 12), and productivity classifications of IIe and IIIe by the Soil Conservation Service (I is the highest and VIII is the lowest, the "e" refers to a potential for erosion damage). This is productive land, relatively flat (less than 10 % slope), amendable to machine cultivation, and capable of producing a wide variety of crops, including: bittermelon, broccoli, bulb onion, cucumbers, daikon, dasheen, edible ginger root, edible podded peas, eggplant, green peppers, green or snap beans, green onions, green peppers, lettuce (semi-head types only), mustard cabbage (Kai Choy), red radish, oriental gourds, potato, pumpkin and winter squashes, summer squash, sweet potatoes, sweet corn, taro (upland varieties), tomatoes, watermelon, avocado, bananas, guavas, limes, yellow passion fruit, macadamia nuts, papaya, and pineapple. Forage production and horticulture are also agronomically possible.

Such lands are not scarce on Oahu. There are over 92,000 acres of agricultural lands on Oahu with higher productivity rating. The recent trend on Oahu has been for lands to be taken out of production. Since a high of 59,300 acres of land in crop production in 1967, acreage in crop production has declined to 39,600 acres in 1990 (See Figure 1). Some of these nearly 20,000 acres taken out of production have been converted to urban uses, but there still appears to be an inventory of potentially productive lands that are not currently utilized.

## Current Uses

The lychees appear healthy and well cared for. There are several gaps in the orchard and only few of the missing trees have been replaced. About one-third of the lychees are very large, tall, mature trees with overlapping canopies, well over 30 years old. The size of the tree and the milding sloping surface will increase harvest costs. The remaining trees, while still mature, are younger and smaller, probably between 20 and 30 years old. There are also a few, young non-bearing trees, presumably planted as replacements. The lychee trees currently occupy between 10 and 11 acres. As there are no real commercial planting of lychee trees on Oahu, it is difficult to estimate the yields. Based on information from other regions, yields from a mature orchard should range between 10,000 to 25,000 pounds per acre. However, lychees tend to be alternate year bearers in Hawaii and this could reduce the potential yields by up to 50 percent.

The limes represent a more recent planting, and are probably less than 15 years old, and many are significantly younger. There are many gaps in the orchard and about 20 percent of the trees are diseased and should be removed. The limes currently occupy about 6 acres. A healthy, well managed lime orchard should average over 6,000 pounds of limes per year over a 15 year cycle.

There is no evidence that the production from either the lychee or lime plantings ever entered into the marketing system. As these are mature orchards and therefore it must be must concluded that either (1) production was abysmal or (2) the crop was disposed of through non-traditional market channels.

## Alternative Agricultural Uses

The project site has some advantages in the production of fruit and vegetables relative to other areas in the State. The primary advantage is that it is close to the principal market in Hawaii and to transportation links to overseas markets. A list of crops currently produced commercially on Oahu is given in Table 1 as well as the Honolulu market supply of these products and their origin.

There are factors, however, which limit the economic potential of the project site for the production of fruit and vegetables. The most significant is the cost and supply of water. The commercial production of most crops will require supplemental irrigation, and this would require that irrigation water be supplied. Purchasing irrigation water from the Board of Water Supply would make most crops unprofitable.

Another factor will be the future location of residential housing adjacent to the project site. Currently, the only neighboring activity is pineapple production. But this area will be converted to housing when Mililani Mauka is completed. The operation of commercial agriculture in close proximity to residential housing is less than optimal. Even though agricultural operations are somewhat protected under "right to farm laws" (Chapter 165 of the Hawaii Revised Statutes) which limit the circumstances under which existing farming operations may be deemed a nuisance, the dust, noise and perceived pesticide drift which are inherent parts of modern agriculture are sure to cause nearby residents to complain. Also the operation of heavy farm equipment and the application of pesticides near housing is sometimes perceived to be a hazard. There is also the potential of residents harvesting some of the crop for their own use. This not only is a cost to the producer, but can be dangerous to the residents if the crop has recently been treated with pesticides. In some cases, the gardens of residents are a source of pests to the commercial operations. Overall, past experience indicates that nearby residents are very likely to find farmers less than ideal neighbors. Operators are likely to attempt to mitigate the impact of its operations on nearby residents. This will increase operating costs.

Also, agronomic potential (the crop will grow) and economic potential (the crop can be grown for a profit) are not the same. Some of the crops listed have been tried and found to be unprofitable, either because of high production costs, lack of markets, or the availability of less expensive imports. Also, some of the crops that can be grown in this area could be grown elsewhere in the State more profitably.

An indication of the seasonality of crops and potential demand for new planting can be obtained by examining the monthly distribution of the supply of local produced fruits and

vegetables presented in Table 2. This Table is based on historical State data. Also given are the percentage changes in production during the previous 2 years. These changes provides an estimate of current production trends. The farm gate prices are based on 5 year averages.

The three crops listed in Table 1 with the largest demands in the Honolulu market are tomatoes, dry onions, and potatoes. Most of the demand for these products is met by imports. This, however, does not imply that there exists a substantial potential for expanded local production of these products. Potato production has been tried on Oahu and found to be unprofitable and thus this is not a likely crop for future expansion. The demand datum listed for dry onions includes several different varieties of onions. Most of the onions currently imported are the medium and long day varieties and are priced below what it would cost to produce bulb onions in Hawaii. The demand for locally produced onions, which have to have a higher price in order to be profitable, is limited. The potential for increased acreages of bulb onions is therefore limited.

Tomatoes can be a very profitable crop when marketed during the times when imports from the mainland and Mexico are scarce. However, when imports are plentiful and cheap, it is difficult to profitably produce tomatoes in Hawaii. Thus, there is some room for expansion in the production of tomatoes. However, plantings would have to be managed so as to produce during the late fall and winter, generally not the not the best agronomic time to grow tomatoes.

The crops for which there is a potential demand for increased acreage and which can be produced in a region with the physical, agronomic, and climatic characteristics of project site are listed in Table 3. Also present in this Table are the current average yields per crop acre, the number of crops per year, and expected water demand in acre-inches. The last 3 columns, number of acres required to replace all imports to Honolulu in 1988, the acreage required to replace the 1988 arrivals from the neighbor islands, and the number of acres that would be required if all products either imported or produced on the neighbor island were to be produced on Oahu, provide an upper limit on the potential demand of diversified agriculture for land on Oahu.

Crops produced in Hawaii can readily be separated into two groups--those that are



produced for export and those that are produced for local consumption. In terms of crops that can be produced for export, papaya, guava, passion fruit, macadamia nuts, taro (dry land), ginger, and pineapple can all be produced on lands similar to the subject lands. However, papaya has not proven to be feasible in central Oahu due to the problems with mosaic virus. Passion fruit is uneconomical to produce because of the high costs of installing trellises. The market for guava is being developed, but so far the planting have been on the neighbor islands proximate to the processors. Macadamia nuts can be produced more profitably elsewhere in the State. Production in project site would require irrigation and the nuts would have to be shipped off-island for processing or a processing facility would have to be established.

The only feasible export crops are dryland or upland taro and ginger root. There exists a large and currently unexploited market for upland taro on the mainland. Ginger is a proven export crop that is currently produced primarily on the Big Island but it also could be produced on Oahu. The high incidence of insect and disease infestations limit the feasibility of producing summer squashes and melons except for zucchini and watermelons.

New long term investments in orchards are not recommended. There are two reasons for this recommendation: First, agronomic experience with the tree crops listed in Table 1 indicate that none are likely to be economically feasible relative to field crops. For example, it has proven difficult to achieve marketable quality citrus (limes and oranges). Second, the parcel already has established orchards. If orchards are profitable, the best approach would be to continue to operate and perhaps expand the existing plantings.

The estimated demand for acres in Table 3 is, at best, a very rough estimate of the potential demand for land on Oahu. Overall, they probably overestimate the acres needed by about 50 percent. It is unlikely that Oahu would replace the neighbor islands or imports entirely and a well managed commercial operation should achieve higher yield than the averages reported in table 2. Also, it should be noted that the data are for crop acres. Thus for a crop like radishes that is harvested 12 times a year, 1 acre of land could supply 12 crop acres. In addition, the estimates are based on published data for aggregate commodity groups, and thus may significantly overestimate the market for specific crop varieties.

## Conclusions

Placing the subject lands in an urban use will not have a significant impact on the agricultural sector of Honolulu County or the State. First, this is a very small amount of land relative to the amount of crop land on Oahu. Second, lands of similar quality and economic potential are currently lying fallow and there are sufficient lands available to meet current and projected future agricultural needs.

It is not the availability of land that is limiting the expansion of the crops listed in Table 3, but rather the size of the market for locally produced crops. The de facto population of the entire State is only slightly more than a million persons and in the principal market area (Oahu), the de facto population is only 825,000 persons. This is a very small market and it does not require substantial acreage to supply such a market, particularly when many popular foods either require temperate climatic conditions not found in Hawaii or can be produced more profitably elsewhere and imported for less than it costs to produce them locally.

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Table 1. Crops Produced on Oahu and Honolulu Market Supply by Source

Crop	Honolulu Market Supply				Oahu Share (%)	State Share (%)	
	Oahu	State	Mainland	Foreign Total			
	(1,000 pounds)						
Avocado	18	803	609	1,412	1	57	
Bananas, Apple	963	1,057		1,057	91	100	
Bananas, Bluefield	2	4		4	50	100	
Bananas, Cavendish	219	5,047	8,738	13,785	2	37	
Beans <sup>a</sup>	116	547	238	785	15	70	
Bittermelon	83	83	21	104	80	80	
Cabbage, Kai Choi <sup>b</sup>	183	476	27	503	36	95	
Cabbage, Pak Choy	89	117	110	227	39	52	
Corn, Sweet	12	22	878	900	1	2	
Cucumbers	1,209	2,211	1,485	3,696	33	60	
Daikon	802	1,610	36	5	1,651	49	98
Dasheen	8	119	40	2	161	5	74
Eggplant, Long	413	434	29	463	89	94	
Eggplant, Round	41	142	245	387	11	37	
Ginger Root	13	1,192		299	1,491	1	80
Lettuce, Manoa	1,006	1,044		1,044	96	100	
Limes	1	29	583	612	0	5	
Lotus Root	44	44	3	15	62	71	71
Luau Leaf	99	99		99	100	100	
Mango	7	13	22	35	20	37	
Melon, Water	568	13,719	1,375	15,094	4	91	
On Choy	70	70		70	100	100	
Onions, Dry	1	569	12,432	2,653	15,654	0	4
Onions, Green	504	522	227	749	67	70	
Oranges	1	1,107	14,887	15,994	0	7	
Parsley	58	111	69	180	32	62	
Peppers, Green	11	986	2,289	3,275	0	30	
Potatoes, Table		93	22,705	22,798	0	0	
Pumpkins	8	59	902	299	1,260	1	5
Radishes	111	214	2	216	51	99	
Soybean	39	39		39	100	100	
Spinach, American	1	34	1,342	1,376	0	2	
Spinach, Chinese	26	26		26	100	100	
Squash, Hechima	14	14		14	100	100	
Squash, Italian	3	782	1,142	1,924	0	41	
Squash, Hyotan	140	173		173	81	100	
Squash, Togan	53	81	120	201	26	40	
Sweetpotatoes	29	1,015	681	2	1,698	2	60
Tangerines	3	16	367	383	1	4	
Taro	3	275		615	890	0	31
Tomatoes	213	3,502	11,174	14,676	1	24	
Tomatoes, others	10	50	846	896	1	6	
Watercress	934	934	4	938	100	100	
Yam Bean Root	1	5	30	35	3	14	

<sup>a</sup> Green, both pole and bush.<sup>b</sup> Mustard Cabbage

na Not available

Table 2. Seasonal Distribution of Hawaii Grown Fruits and Vegetables - 1988

Crop	Availability (in percent)												Annual Production '000 lbs.	Change in Production Over Last 2 Years	Farm Gate Price \$/lbs.
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
Avocado	11	11	12	13	9	8	6	4	4	6	7	8	900	-44%	0.32
Bananas, Apple	7	7	8	8	7	7	7	9	10	10	10	10	N/A	N/A	N/A
Bananas, Bluefield	9	9	8	7	8	8	10	9	9	8	9	8	122	-98%	0.32
Bananas, Brazilian	7	7	8	7	7	7	8	10	10	10	10	10	1,743	-16%	0.32
Bananas, Cavendish	8	7	7	6	7	7	8	9	9	11	10	10	7,391	-0%	0.32
Bananas, Chinese	8	7	7	5	6	6	8	9	9	12	12	12	N/A	N/A	N/A
Beans, Green (Bush, Green, Snap)	8	8	9	9	10	10	8	8	8	7	7	7	890	-10%	0.74
Bittermelon	4	3	6	9	12	10	10	11	8	10	11	6	220	-36%	0.77
Broccoli	5	6	13	12	11	11	11	8	7	6	6	5	675	-17%	0.45
Burdock	4	6	6	6	7	7	7	8	8	8	12	20	580	12%	0.87
Cabbage, Chinese (Won Bak)	8	10	13	11	8	7	7	7	7	7	7	8	8,000	10%	0.16
Cabbage, Head (Green)	8	9	8	8	8	8	8	8	8	8	8	9	14,950	6%	0.15
Cabbage, Kai Choi (Mustard Cabbage)	10	10	10	8	8	7	8	9	8	7	6	8	1,450	-10%	0.32
Cabbage, Pak Choy	9	10	10	8	9	7	6	8	8	7	8	10	N/A	N/A	N/A
Carrots	3	6	2	9	11	9	22	22	11	6	0	1	80	-100%	0.21
Cauliflower	8	8	11	10	8	9	9	6	6	8	8	8	320	-122%	0.48
Celery	7	8	9	10	10	9	10	8	8	7	7	7	2,730	2%	0.21
Coffee <sup>a</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,700	-41%	2.50
Corn, Sweet	3	4	7	8	10	11	13	11	9	9	10	6	1,480	30%	0.34
Cucumbers	7	7	7	8	10	10	10	9	9	8	8	8	3,960	6%	0.28
Daikon	9	8	8	9	9	8	8	8	8	9	7	9	3,700	-5%	0.17
Dasheen	6	3	3	3	3	5	10	11	11	14	11	21	155	-29%	0.65
Eggplant	5	6	7	8	8	9	10	11	11	10	9	6	1,290	-0%	0.53
Ginger Root	14	14	11	11	11	11	7	6	4	3	2	7	8,800	33%	0.45
Guava	6	5	3	3	4	4	7	12	20	18	11	7	17,130	44%	0.10
Lettuce (Head, Semi-head)	8	9	11	10	10	10	9	8	7	6	6	6	7,000	-24%	0.27
Limes	9	5	3	2	1	4	12	15	16	12	10	11	N/A	N/A	N/A
Lotus Root	4	4	1	0	0	0	1	6	16	17	17	36	145	-3%	1.28
Luu Leaf	8	7	8	8	10	9	8	8	7	8	8	11	N/A	N/A	N/A
Lychee	0	0	0	0	7	36	33	22	2	0	0	0	N/A	N/A	N/A
Macadamia Nuts <sup>b</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	46,500	-0%	0.78
Mango	2	2	2	4	16	42	18	3	7	1	1	1	N/A	N/A	N/A
Melon, Water	0	0	1	5	16	18	18	19	13	7	2	1	13,800	-4%	0.12
On Choy	5	6	8	9	10	10	11	11	10	9	6	5	N/A	N/A	N/A
Onions, Dry	7	8	9	11	10	10	10	8	7	6	8	6	1,980	25%	0.73
Onions, Green	8	8	8	8	9	9	8	8	8	8	9	8	1,220	-18%	0.73
Oranges	18	20	23	15	3	1	0	0	0	1	5	12	N/A	N/A	N/A
Papaya	8	7	8	8	9	8	9	9	7	10	9	9	56,115	11%	0.19
Parsley	9	8	9	9	9	10	9	9	7	7	7	9	310	-3%	0.83
Passion fruit	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	550	-49%	0.12
Peas, Chinese	11	6	11	12	9	8	18	9	6	5	3	3	70	-14%	1.49
Peppers, Green	7	8	9	10	10	8	7	6	5	8	10	10	2,300	11%	0.45
Persimmons	0	0	0	0	0	0	0	0	0	0	13	61	N/A	N/A	N/A
Pineapples	8	8	9	9	10	9	9	9	7	9	7	7	1,232,983	2%	0.08

Table 2., Continued

Crop	Availability (in percent)												Annual Production '000 lbs.	Change in Production Over Last 2 years	Farm Gate Price \$/lbs.
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
Pomelos	13	5	3	0	0	3	8	10	15	13	18	15	N/A	N/A	N/A
Potatoes, Table	0	0	4	7	25	21	13	5	10	14	0	0	N/A	N/A	N/A
Pumpkins	9	8	6	6	9	6	5	7	8	15	12	8	140	-43%	0.23
Radishes	7	7	11	8	9	11	9	8	7	6	8	7	320	36%	0.38
Romaine	7	8	11	9	10	10	9	8	7	7	7	7	1,860	-24%	0.25
Soybean	5	6	6	5	8	11	10	16	12	9	7	6	N/A	N/A	N/A
Spinach, American	7	7	12	8	10	11	10	7	6	6	7	10	N/A	N/A	N/A
Spinach, Chinese	6	4	13	15	13	9	9	7	7	7	4	4	N/A	N/A	N/A
Squash, Kechima (Sequa)	8	7	8	7	9	6	5	6	8	13	12	10	N/A	N/A	N/A
Squash, Italian	3	5	10	10	9	11	15	11	10	8	5	4	1,000	-3%	0.36
Squash, Oriental (Hyotan, Togan)	5	6	8	10	11	11	9	8	8	9	9	6	315	-27%	0.31
Sweetpotatoes	9	7	6	8	9	10	10	9	8	8	8	8	1,600	-31%	0.29
Tangeloes	18	31	23	7	4	1	2	2	1	0	2	11	N/A	N/A	N/A
Tangerines	28	22	4	1	4	1	3	3	3	6	8	18	70	-7%	0.33
Taro (Chinese, Poi)	13	9	11	10	7	6	8	7	9	7	6	7	600	18%	0.27
Tomatoes	9	10	11	10	9	8	7	7	6	7	6	9	7,000	4%	0.43
Watercress	9	8	9	9	9	8	8	7	8	8	8	8	1,230	2%	0.93
Yam Bean Root	10	21	11	12	10	10	8	9	4	2	1	3	N/A	N/A	N/A

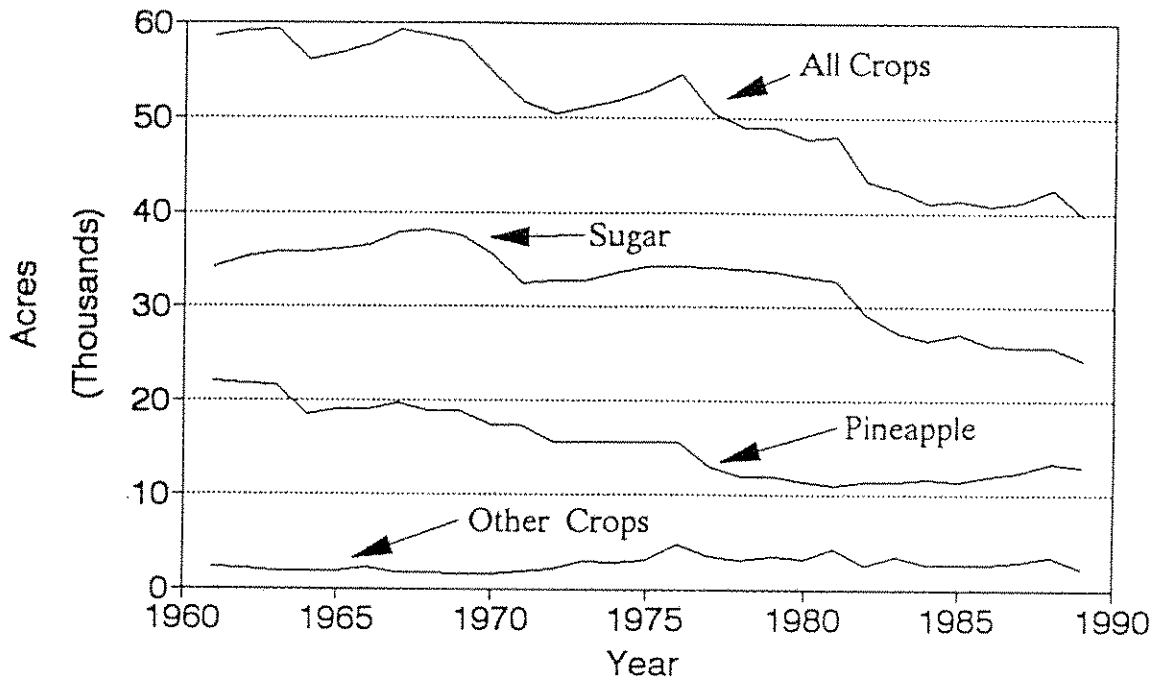
Source: Statistics of Hawaiian Agriculture 86; Honolulu Arrivals, Fresh Fruits and Vegetables 1983-87, Tables 3 & 7, and various sources within the Department of Agriculture, Honolulu, Hawaii.

(a) Production totals and farm-gate prices based on green production; peak months are September through November.  
 (b) available all year round, peak months are August through January.

Adapted from a spreadsheet initially produced by J. Hollyer and P. Levin.

# Agricultural Land Use

Island of Oahu, 1961 - 1989



**Figure 1**

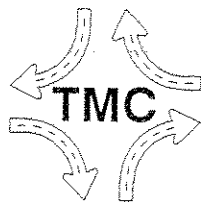


TRAFFIC IMPACT ANALYSIS REPORT  
THE PROPOSED

MILILANI SUMMIT

PREPARED FOR  
PARAMETRIX, INC.

APRIL 8, 1992



PREPARED BY

THE TRAFFIC MANAGEMENT CONSULTANT

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EXHIBIT C

TRAFFIC IMPACT STUDY



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**TRAFFIC IMPACT ANALYSIS REPORT  
FOR THE PROPOSED  
MILILANI SUMMIT**

**I. INTRODUCTION**

**A. Purpose of Study**

The purpose of this study is to assess the traffic impacts resulting from the Mililani Summit. This report presents the findings and recommendations of the study.

**B. Scope of Study**

The scope of this study includes:

1. Description of the proposed project.
2. Description of the study area and existing and proposed land uses.
3. Evaluation of existing roadway and traffic conditions.
4. Estimation of future traffic without the proposed project.
5. Analysis of future roadway and traffic conditions without the proposed project and the development of alternative improvements to meet future highway needs.
6. Development of trip generation characteristics for the proposed project.
7. Superimposing the site-generated traffic over future traffic conditions.
8. The identification and analysis of traffic impacts resulting from the proposed project.
9. Recommendation of improvements that would mitigate the traffic impacts resulting from the development of the proposed project.

## **II. PROJECT DESCRIPTION**

### **A. Location**

The Mililani Summit is located in Central Oahu, immediately mauka (north east) of the proposed Mililani-Mauka Project, under construction at this writing. The 129 acre project site is identified as Tax Map Key 3-5-9:10. Exhibit 1 shows the project location.

### **B. Site Plan and Access**

The proposed development plan for the Mililani Summit is shown on Exhibit 2. Access would be provided by an existing easement through the Mililani-Mauka Project to the Mililani Interchange on Interstate Route H-2 and Meheula Parkway. The easement is currently defined by an agricultural road extending from Ainamauka Drive to the property site. The existing roadway is expected to be upgraded to provide interim access for the proposed project. Exhibit 3 shows the interim access plan. According to the Phase I plans for Mililani-Mauka, about Ainamakua Drive is expected to provide access to approximately 452 dwelling units. The proposed Mililani Summit would add another 500 dwelling units, for a total of 952 dwelling units. Ainamakua Drive is designed to City & County of Honolulu collector street standards, i.e., 56 foot wide right-of-way, and a 40 foot wide curb-to-curb roadway.

Ultimately, it is expected that Meheula Parkway would be extended, as part of the development of Mililani Mauka, to the project site, providing direct access to the Mililani Interchange.

### **C. Proposed Land Use Intensity**

The Mililani Summit would comprise of four separate and distinct developments, totaling 500 single family detached dwelling units. "The Courtyards" would consist of 300 affordable dwelling units, clustered about private cul-de-sacs. "The Bluffs" would include of 98 dwelling units priced for the "gap" segment of the housing market. "The Ridge" would consist of 70 upscale homes. "The Crest" would contain 32 luxury home sites located within a gated community. Full build out and occupancy for the proposed project is expected by 1996, with construction to begin in 1994.

PROPOSED B.W.S. 1225' RESERVOIR  
AND DEEP WELL SITE

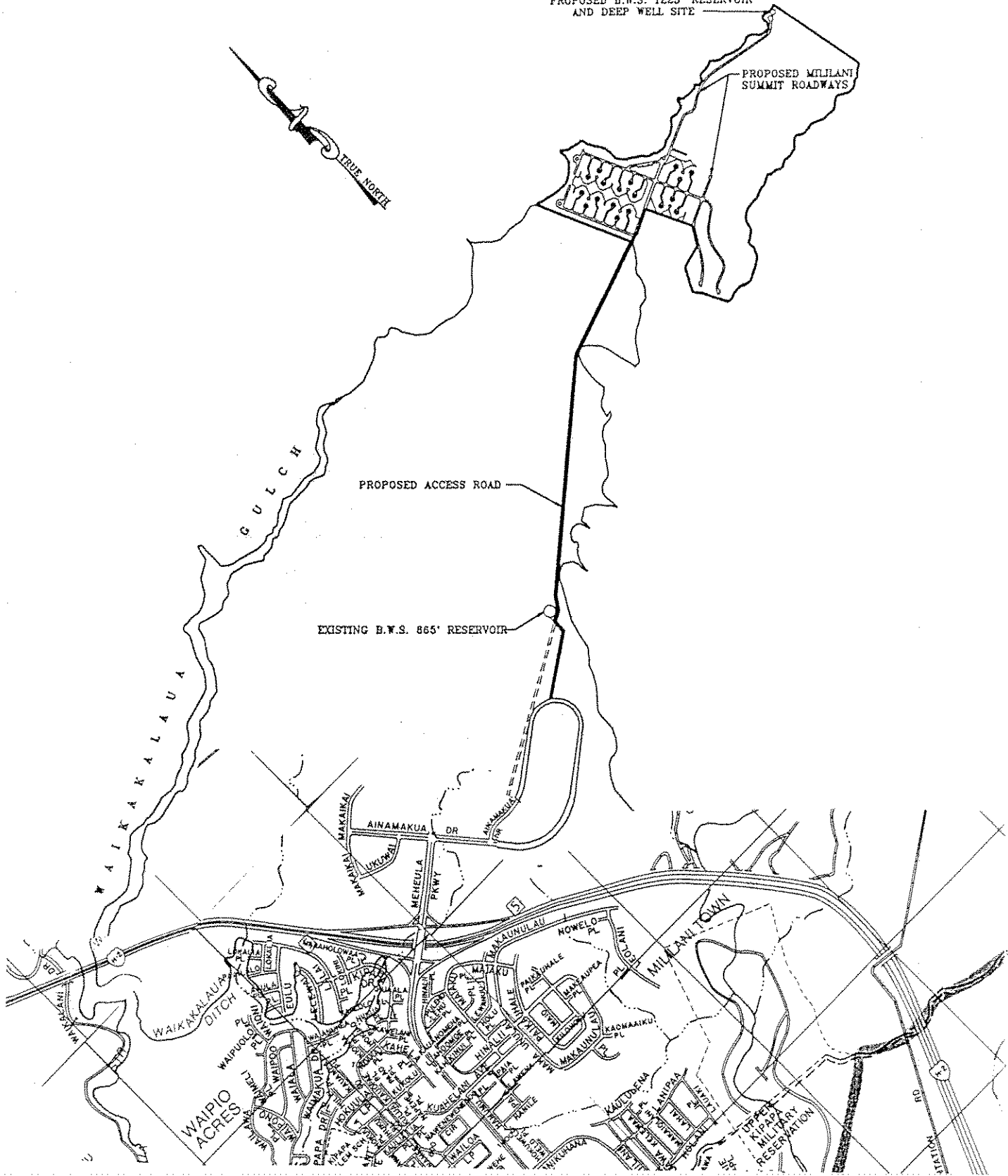


EXHIBIT 1 - LOCATION MAP

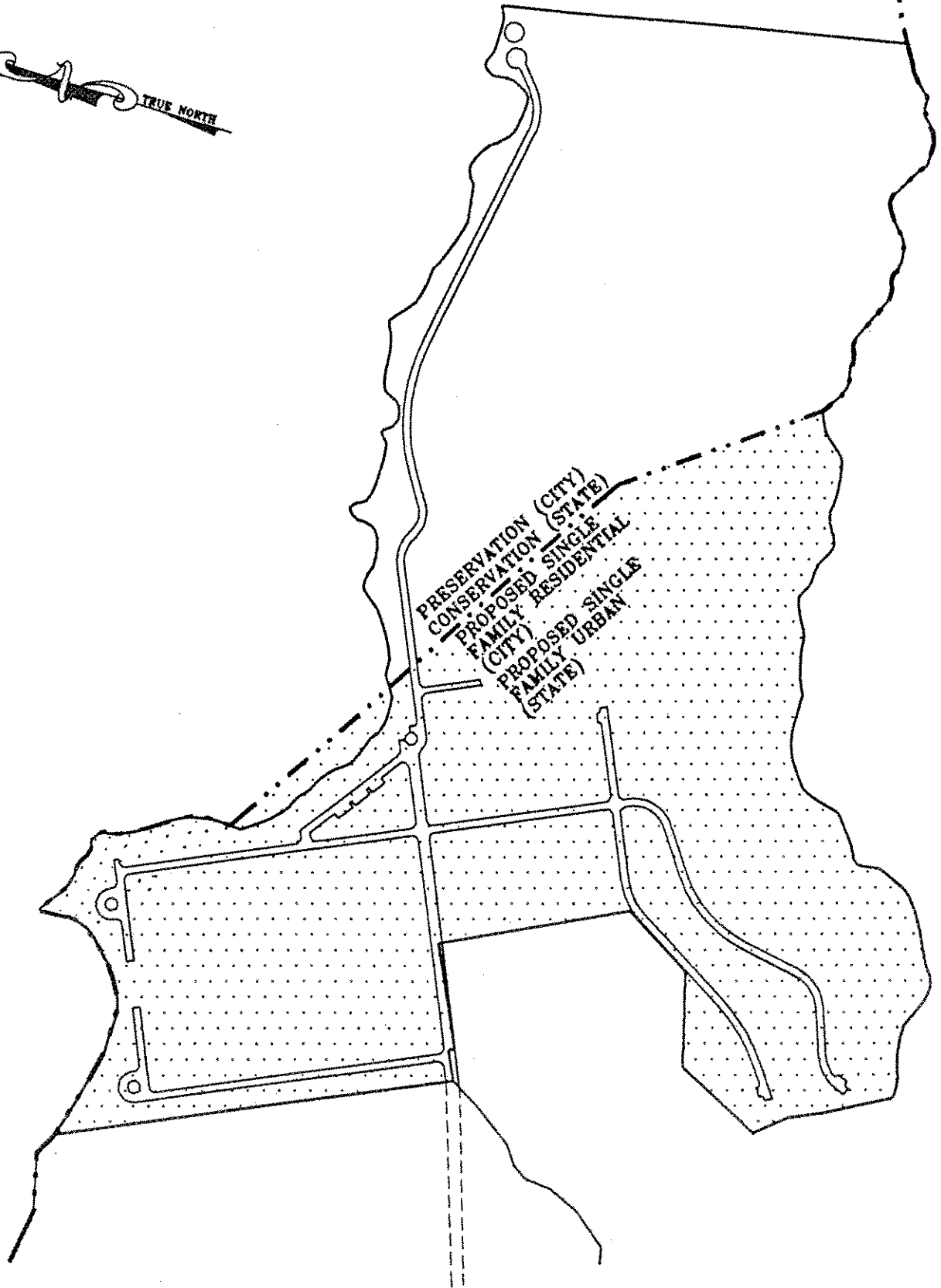


EXHIBIT 2 - SITE PLAN

MILILANI SUMMIT  
PROPOSED DEVELOPMENT  
NOT TO SCALE  
Prepared by: GRAY, HONG, BILLS, & ASSOC.,

PROPOSED B.W.S. 1225' RESERVOIR  
AND DEEP WELL SITE

PROPOSED MILILANI  
SUMMIT ROADWAYS

TRUE NORTH

GULCH

PROPOSED ACCESS ROAD

EXISTING B.W.S. 865' RESERVOIR

WAIKAKALAUUA

TO WAIHANA

H-2 FREEWAY

EXISTING DEEP WELL AND  
EXISTING PUMP STATION

TO HONOLULU

EXHIBIT 3 - INTERIM ACCESS ROAD PLAN

MILILANI SUMMIT  
ROADWAY PLAN  
NOT TO SCALE

Prepared by: GRAY, HONG, BILLS, & ASSOC.,



### **III. STUDY AREA CONDITIONS**

#### **A. Area of Influence**

For the purpose of this analysis, the study area includes the Mililani Interchange ramp connections between Interstate Route H-2 and Meheula Parkway and Interstate Route H-2, south of Mililani. The proposed project is expected to be completed prior to full build out of the Mililani-Mauka Project.

#### **B. Existing Land Uses**

The existing use of the site is pineapple cultivation. The lands makai (south west) of the proposed project site is undergoing urbanization. The proposed Mililani-Mauka Project is discussed in the next section.

#### **C. Anticipated Future Development**

According to the Final Environmental Impact Statement for the Mililani-Mauka Residential Community, Mililani Town, Inc., plans to develop 6,600 dwelling units on a 1,200 acre site, mauka of the Interstate Route H-2, over a 15 to 20 year period. The project also would include a college or university, two elementary and one intermediate schools, and a park-and-ride transit facility.

Phase I of the Mililani-Mauka Project includes 1,200 single-family and 800 multi-family dwelling units, according to the Traffic Impact Study for Mililani Mauka, prepared by Parsons Brinckerhoff, Quade & Douglas, Inc. (PBQD), January 1989. Phase I also includes a 250 space park-and-ride facility and a 40,000 square foot professional office building. For the purpose of analysis, it is assumed that the Mililani Summit and Phase I of Mililani-Mauka would be completed by the Year 1996.

### **IV. EXISTING ROADWAY AND TRAFFIC CONDITIONS**

#### **A. Area Roadway System**

Interstate Route H-2 is an access-controlled freeway facility. South of Mililani, Interstate H-2 Route is a six lane (three lanes in each direction) facility. North of Mililani, Interstate Route H-2 becomes a four lane freeway. The H-2 Freeway provides access to the Mililani area via an interchange at Meheula Parkway. The Mililani Interchange is a "diamond" interchange. The south bound on ramp is a two lane ramp. The remaining ramps are one lane ramps.

The north bound on and off ramps intersect Meheula Parkway at a signalized intersection. The north bound off ramp branches into an exclusive right turn lane merging with east bound Meheula Parkway, and double left turn lanes to west bound Meheula Parkway. Meheula Parkway at the northbound on and off ramps provides two through lanes in each direction and an exclusive left turn and right turn lanes to the off ramp.

The intersection between Meheula Parkway and the south bound H-2 on and off ramps is unsignalized at this writing. West bound Meheula Parkway provides two through lanes and an exclusive left turn lane to the south bound on ramp. East bound Meheula Parkway provides an exclusive right turn lane, an optional through/right turn lane, and a through lane. The south bound off ramp provides separate left and right turning lanes at Meheula Parkway.

Meheula Parkway is a four lane, divided, collector road between Kamehameha Highway and the Mililani Interchange at Interstate Route H-2. Plans for Mililani-Mauka include the extension of Meheula Parkway through the project. Meheula Parkway is expected to provide access for both Mililani Mauka and the Mililani Summit.

## **B. Traffic Volumes and Conditions**

### **1. General**

#### **a. Field Investigation**

The field investigation was conducted on November 6-7, 1991. The field investigation included on site inspection of the road and traffic conditions and a peak period traffic count survey. The traffic survey was conducted from the hours of 5:00 AM to 7:00 AM, and from 4:00 PM to 6:00 PM. Additional traffic count data were obtained from the State Department of Transportation.

#### **b. Capacity Analysis Methodology**

The highway capacity analysis, performed for this study, is based upon procedures presented in the "Highway Capacity Manual", Special Report 209, Transportation Research Board, 1985 and the "Highway Capacity

Software", Federal Highways Administration. Capacity analysis calculations are included in the Appendix, which are compiled under a separate cover.

Level of Service (LOS) is a quantitative and qualitative assessment of traffic operations. Levels of Service are defined by LOS "A" through "F", LOS "A" being the best operating condition and LOS "F" the worst operating condition.

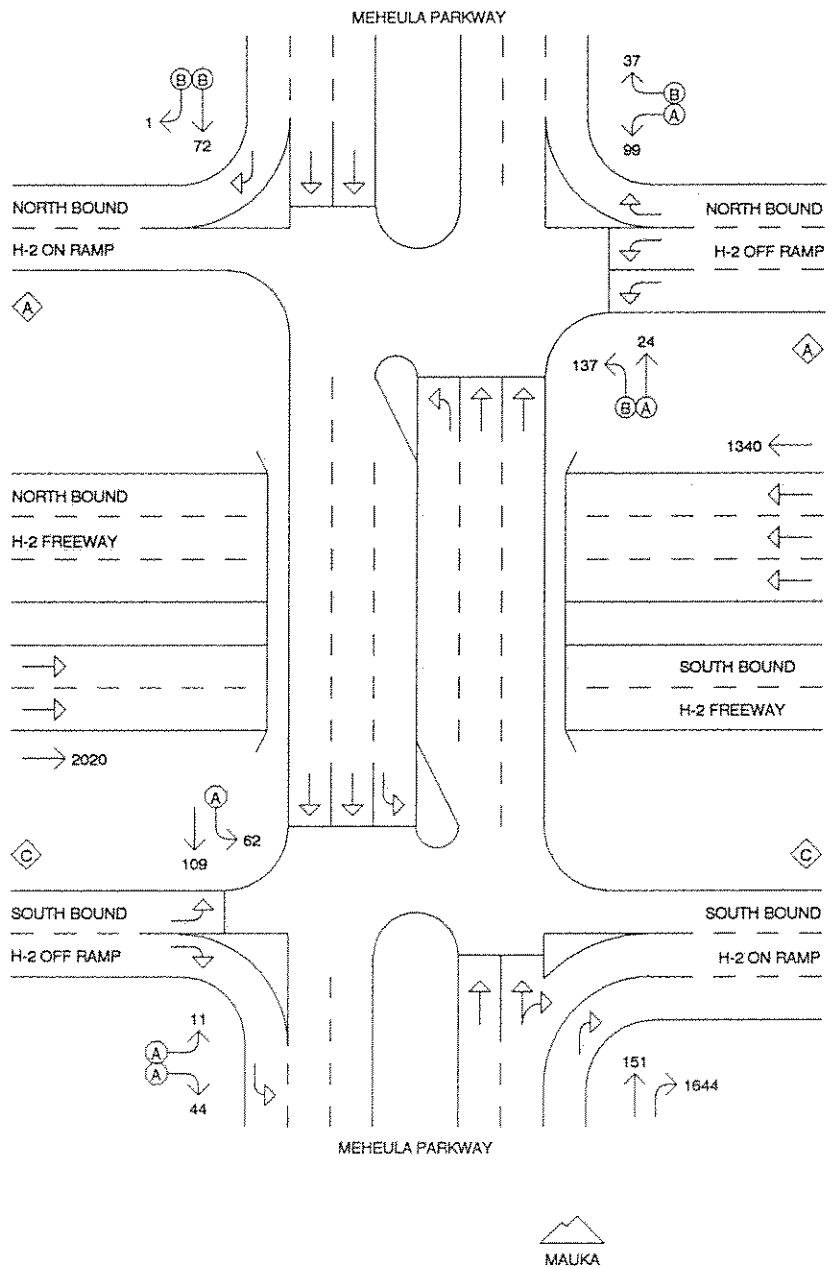
"Volume-to-capacity" (v/c) ratio is a measure that indicates the traffic demand relative to the road carrying capacity. At a v/c ratio of 1.00, the roadway is operating at 100% of its capacity. A v/c ratio greater than one (1.00) shows that the projected traffic demand exceeds the road's traffic handling capacity.

## **2. Existing AM Peak Hour Traffic Analysis**

The morning peak hour occurs between 5:15 AM and 6:15 AM at the Mililani Interchange. Operating conditions during the existing AM peak hour traffic conditions are satisfactory. South of Mililani, Interstate Route H-2 operates at LOS "C" and a v/c ratio of 0.74 in the peak direction (inbound) of traffic. The north bound on and off ramps operate at LOS "A", while the south bound on and off ramps operate at LOS "C" during the AM peak hour. Both the north bound and south bound ramp intersections at Meheula Parkway operate at acceptable LOS. Exhibit 4 shows the existing AM peak hour traffic.

## **3. Existing PM Peak Hour Traffic Analysis**

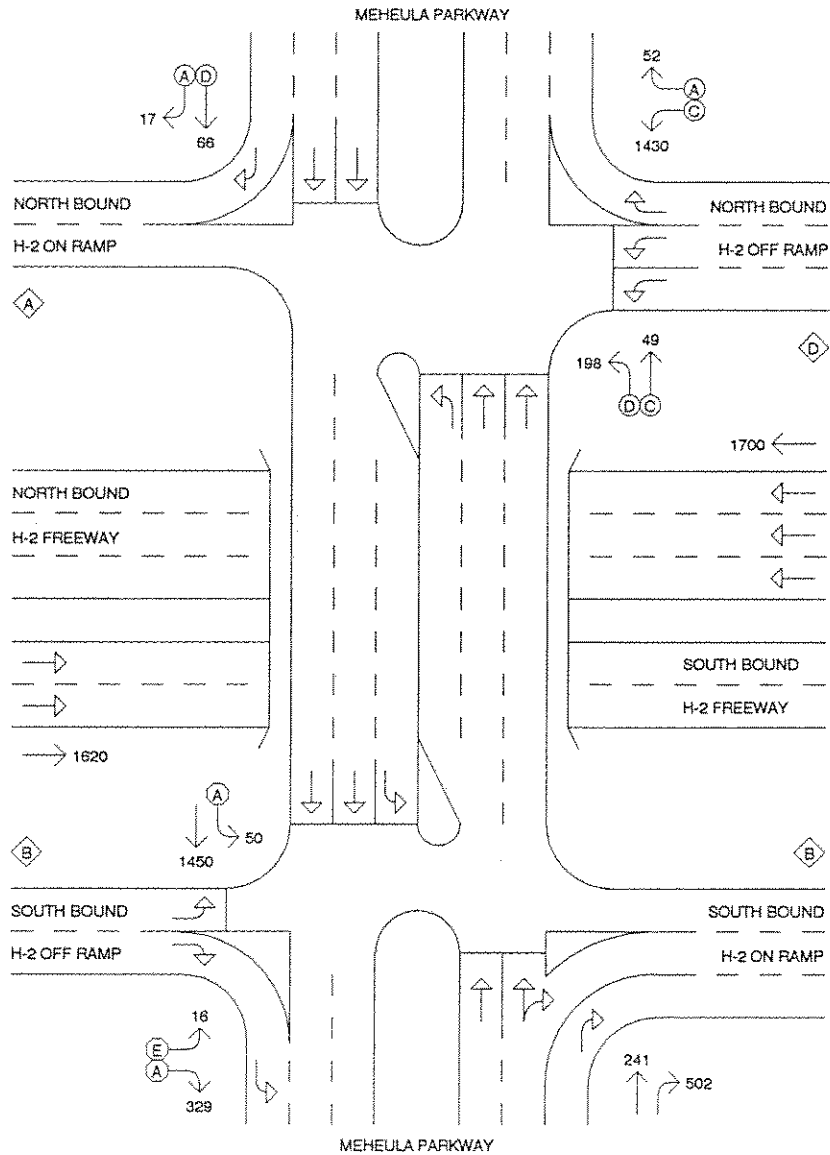
The PM peak hour occurs between 4:45 PM and 5:45 PM at the Mililani Interchange. South of Mililani, Interstate Route H-2 operates at LOS "C" and a v/c ratio of 0.59 in the peak direction (outbound) of traffic. The north bound off ramp operates at LOS "D". The north bound on ramp operates at LOS "A". The south bound on and off ramps operate at LOS "B". The left turn movement from the south bound off ramp to east bound Meheula Parkway operate at LOS "E". Exhibit 5 shows the existing PM peak hour traffic.



LEGEND

- 91 PEAK HOUR TRAFFIC VOLUME (VPH)
- LANE CONTROL
- ⊙ LEVEL OF SERVICE (SIGNALIZED)
- LEVEL OF SERVICE (UNSIGNALIZED)
- ◇ LEVEL OF SERVICE (RAMP JUNCTION)

**EXHIBIT 4 - EXISTING AM PEAK HOUR TRAFFIC**



LEGEND

- 91 PEAK HOUR TRAFFIC VOLUME (VPH)
- LANE CONTROL
- LEVEL OF SERVICE (SIGNALIZED)
- LEVEL OF SERVICE (UNSIGNALIZED)
- LEVEL OF SERVICE (RAMP JUNCTION)

**EXHIBIT 5 - EXISTING PM PEAK HOUR TRAFFIC**

## V. PROJECTED TRAFFIC CONDITIONS

### A. Site-Generated Traffic

#### 1. Trip Generation Methodology

The trip generation methodology used in this study is based upon generally accepted techniques developed by the Institute of Transportation Engineers (ITE), and published in "Trip Generation", 5th Edition, 1991. The ITE trip rates for residential dwellings are developed empirically. The vehicle trip generation data are correlated with various land use characteristics, such as vehicle trips per dwelling unit. The trip generation analysis for the Mililani Summit is based upon 500 single family residential dwelling units.

#### 2. Trip Generation Characteristics

The Mililani Summit is expected to generate 326 vehicles per hour (vph) during the AM peak hour, 85 vph entering and 241 vph exiting the site. During the PM peak hour, the proposed project is expected to generate 461 vph, 300 vph entering and 161 vph exiting the site. Table 1 shows a summary of the peak hour trip generation characteristics for the Mililani Summit.

500 Single Family Dwelling Units		ITE Trip Rate	Vehicle Trips
Average Weekday Vehicle Trip Ends		9.09	4,544
Peak Hour of Adjacent Street Traffic	AM Peak Hour	Enter	85
		Exit	241
		Total	326
	PM Peak Hour	Enter	300
		Exit	161
		Total	461

### **3. Traffic Assignment**

The traffic assignment is similar to the trip distribution analysis conducted by PBQD for the Mililani-Mauka Project. During the AM peak hour, the traffic is expected to exit the proposed project 25% north bound, 20% west bound, and 55% south bound. Traffic entering the site, during the AM peak hour, is expected to originate 20% from the north, 25% from the west, and 55% from the south. During the PM peak hour, the traffic is expected to exit the proposed project 20% to the north, 20% to the west, and 60% to the south. Traffic entering the site, during the PM peak hour, is expected to originate 20% from the north, 20% from the west, and 60% from the south.

#### **B. Traffic Generated by Anticipated Development in the Study Area**

According to the PBQD January 1989 study, Phase I of Mililani-Mauka is expected to generate 1,822 vph during the AM peak hour, 669 vph entering the site and 1,153 exiting the site. During the PM peak hour, Phase I is expected to generate 2,418 vph, 1,337 vph entering and 1,081 vph exiting the site. The peak hour traffic forecasts for Phase I of Mililani-Mauka developed by PBQD on Meheula Parkway and the Mililani Interchange ramps are adopted for use in this study.

According to the PBQD study, the ultimate development of Mililani-Mauka is expected to generate 6,748 vph during the AM peak hour, 2,774 vph entering the site and 3,974 exiting the site. During the PM peak hour, Mililani-Mauka is expected to generate 8,061 vph, 4,492 vph entering and 3,569 vph exiting the site.

#### **C. Through Traffic**

In addition to the anticipated Mililani-Mauka Project described in the previous section, a "background" travel forecast is also developed. This travel forecast is based upon historical traffic data obtained from the State Department of Transportation. Linear regression techniques were applied to the historical data to obtain the growth rate in study area. Based upon this analysis, it was determined that traffic within the region increases at a rate of 4.5% per year, using 1991 as the base year. A growth factor of 1.225 is applied to existing traffic conditions on the Interstate Route H-2 to estimate 1996 peak hour conditions.

## **D. Total Future Traffic Volumes Without Project**

### **1. General**

Exhibits 6 and 7 show the Year 1996 traffic conditions without the proposed project during the AM and PM peak hours, respectively. According to the Mililani-Mauka traffic study, a loop off ramp is proposed on north bound H-2 Freeway to west bound Meheula Parkway at 60% of full build out of Phase I of Mililani-Mauka. The loop ramp would be a two lane off ramp and controlled by the traffic signal on Meheula Parkway. This improvement also would require the realignment of the north bound on ramp. The Mililani-Mauka study also recommends the traffic signalization of the intersection of Meheula Parkway and the south bound H-2 on and off ramps. The following analysis is performed assuming these improvements have been implemented.

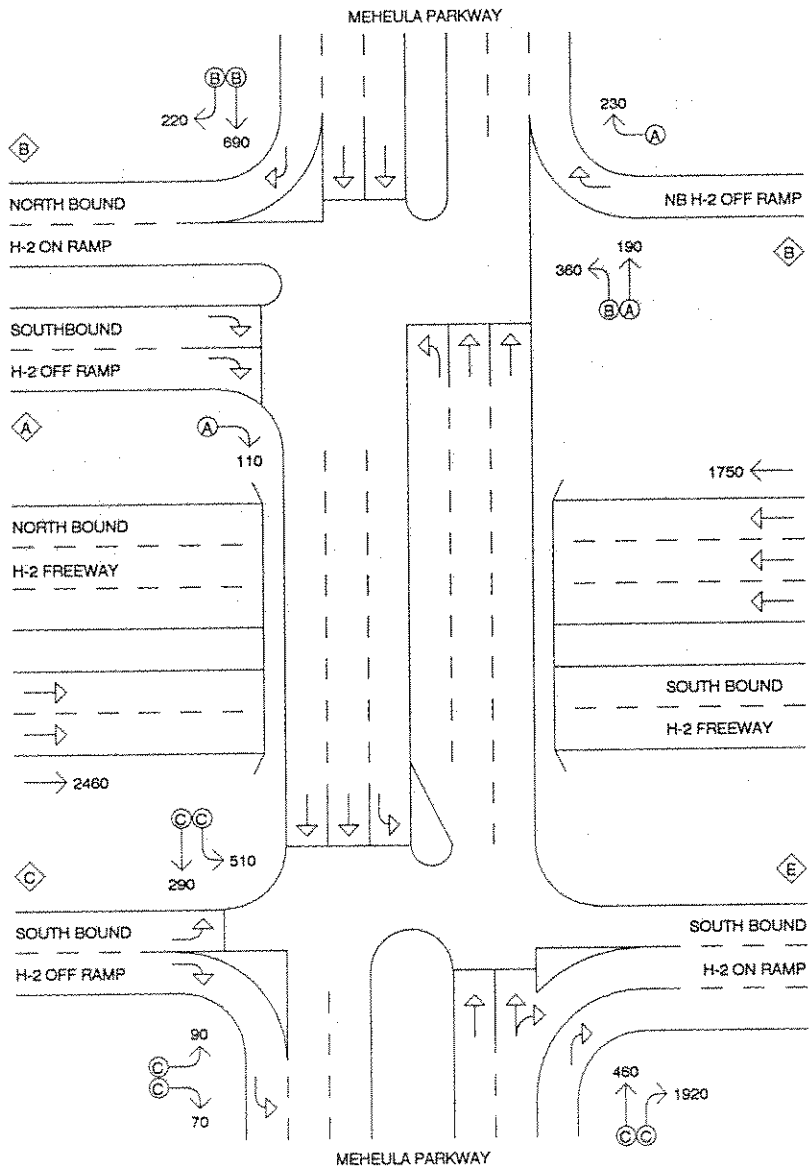
### **2. AM Peak Hour Without Project**

South of Mililani, Interstate Route H-2 is expected to operate at LOS "E" and a v/c ratio of 0.97 in the inbound direction of traffic, during the 1996 AM peak hour without project. The north bound off ramp to east bound Meheula Parkway operate at LOS "B", while the north bound off ramp to west bound Meheula Parkway operate at LOS "A". The north bound on ramp operate at LOS "B". The south bound off ramp is expected to operate at LOS "C" and the south bound on ramp is expected to operate at LOS "E", during the AM peak hour without project. Both intersections between Meheula Parkway and the H-2 on and off ramps are expected to operate at acceptable LOS.

### **3. PM Peak Hour Without Project**

During the 1996 PM peak hour without project, Interstate Route H-2, south of Mililani, operates at LOS "D" and a v/c ratio of 0.78 in the outbound direction of traffic. The north bound off ramp to east bound Meheula Parkway would operate at LOS "D", while the north bound off ramp to west bound Meheula Parkway would operate at LOS "C". The north bound on ramp is expected to operate at LOS "A", during the PM peak hour without project. The south bound off ramp is expected to operate at LOS "D", while the south bound on ramp is expected to operate at LOS "B".

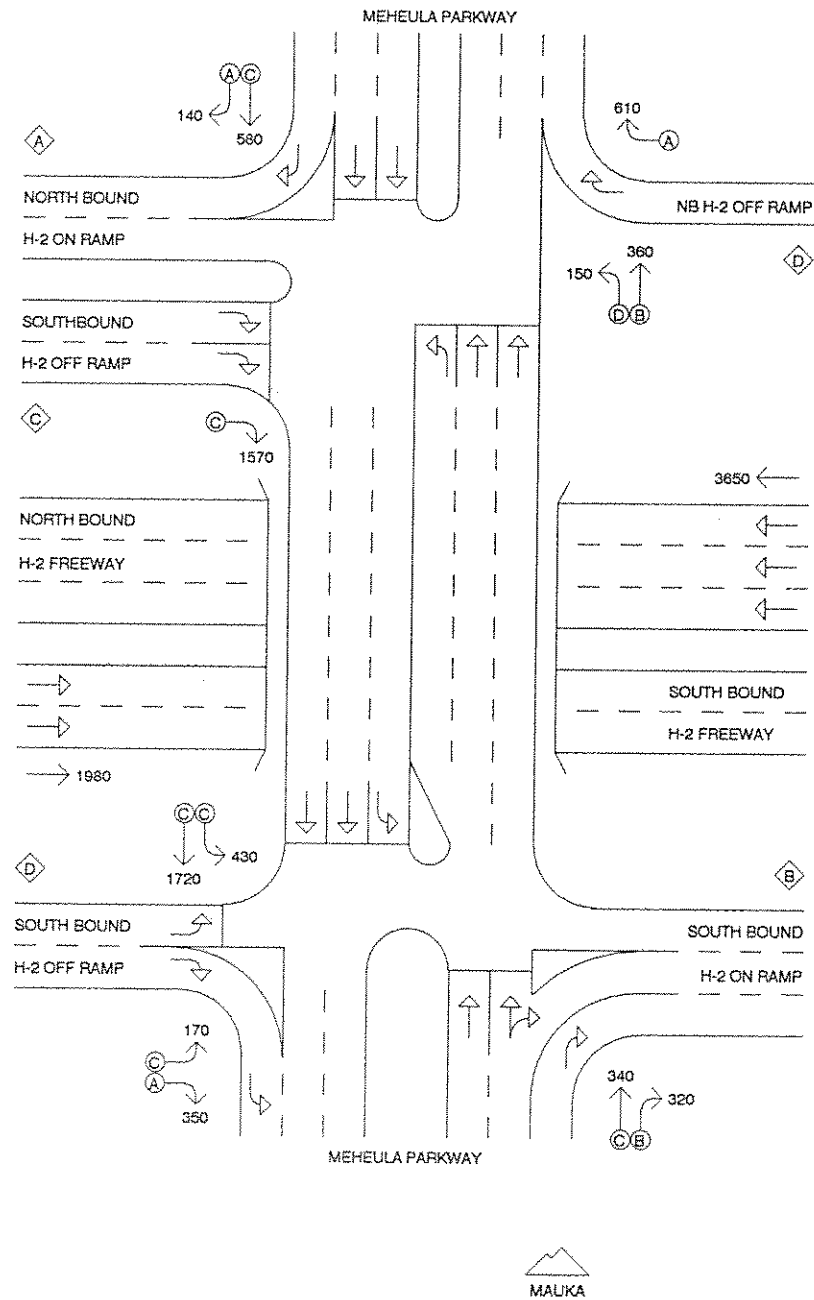




LEGEND

- 91 PEAK HOUR TRAFFIC VOLUME (VPH)
- LANE CONTROL
- LEVEL OF SERVICE (SIGNALIZED)
- LEVEL OF SERVICE (RAMP JUNCTION)

EXHIBIT 6 - 1996 AM PEAK HOUR TRAFFIC WITHOUT PROJECT



LEGEND

- 91 PEAK HOUR TRAFFIC VOLUME (VPH)
- LANE CONTROL
- LEVEL OF SERVICE (SIGNALIZED)
- LEVEL OF SERVICE (RAMP JUNCTION)

EXHIBIT 7 - 1996 PM PEAK HOUR TRAFFIC WITHOUT PROJECT

The left turn movement from east bound Meheula Parkway to north bound H-2 Freeway on ramp is expected to operate at LOS "D". The remaining movements at the Meheula Parkway/freeway ramp intersections are expected to operate at satisfactory LOS.

#### **F. Cumulative Traffic With Project**

Exhibits 8 and 9 show the Year 1996 traffic conditions without the proposed project during the AM and PM peak hours, respectively. The traffic impact analysis with the proposed project is discussed in the following section.

### **VI. TRAFFIC IMPACT ANALYSIS**

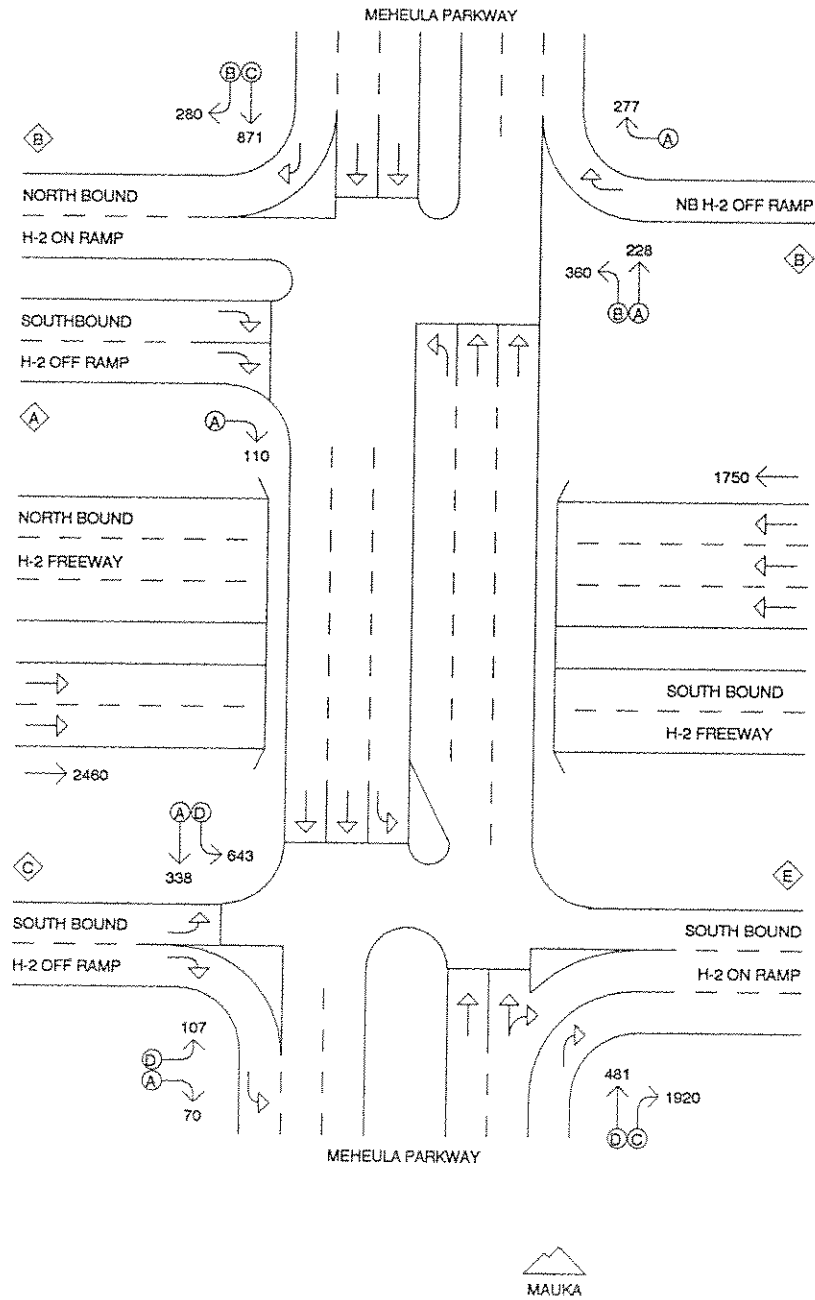
#### **A. AM Peak Hour Traffic With Project**

Interstate Route H-2, south of Mililani, is expected to operate at LOS "E" and a v/c ratio of 1.00 in the inbound direction of traffic during the 1996 AM peak hour with project. The Levels of Service on the H-2 Mililani Interchange on and off ramps are not expected to be affected by the traffic generated by the proposed project during the AM peak hour. The north bound off ramp to east bound Meheula Parkway would continue to operate at LOS "B", as would the north bound off ramp to west bound Meheula Parkway at LOS "A". The north bound on ramp would operate at LOS "B". The south bound off ramp is also expected to continue to operate at LOS "C", as well as the south bound on ramp at LOS "E", during the AM peak hour with project.

The intersection between Meheula Parkway and the H-2 north bound on and off ramps are expected to operate at acceptable LOS. The critical movements on at the intersection of Meheula Parkway and the H-2 southbound on and off ramps are expected to operate at LOS "D".

#### **B. PM Peak Hour Traffic With Project**

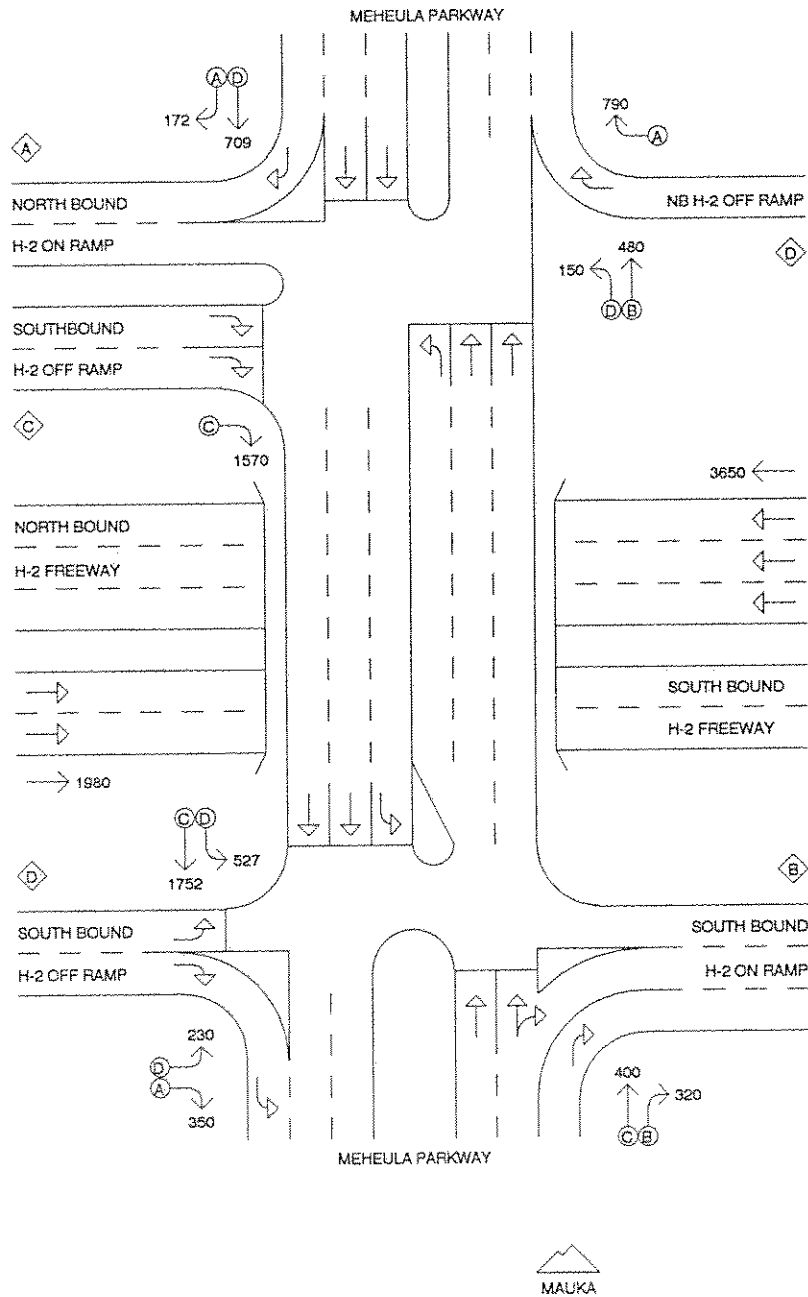
During the 1996 PM peak hour with project, Interstate Route H-2, south of Mililani, operates at LOS "D" and a v/c ratio of 0.82 in the outbound direction of traffic. The levels of service on the H-2 Mililani Interchange on and off ramps are not expected to be affected by the traffic generated by the proposed project during the PM peak hour. The north bound off ramp to east bound Meheula Parkway would continue to operate at LOS "D", while the north bound off ramp to west bound Meheula Parkway would operate at LOS "C". The north bound on



LEGEND

- 91 PEAK HOUR TRAFFIC VOLUME (VPH)
- LANE CONTROL
- LEVEL OF SERVICE (SIGNALIZED)
- LEVEL OF SERVICE (RAMP JUNCTION)

EXHIBIT 8 - CUMULATIVE AM PEAK HOUR TRAFFIC WITH PROJECT



LEGEND

- 91 PEAK HOUR TRAFFIC VOLUME (VPH)
- LANE CONTROL
- LEVEL OF SERVICE (SIGNALIZED)
- LEVEL OF SERVICE (RAMP JUNCTION)

**EXHIBIT 9 - CUMULATIVE PM PEAK HOUR TRAFFIC WITH PROJECT**

ramp is expected to operate at LOS "A", during the PM peak hour with project. The south bound off ramp is expected to continue to operate at LOS "D", while the south bound on ramp is expected to operate at LOS "B".

The left turn movement from east bound Meheula Parkway to north bound H-2 Freeway on ramp and the west bound Meheula Parkway through movement at the north bound ramps intersection are expected to continue to operate at LOS "D". The remaining movements at the intersections between Meheula Parkway and the Freeway ramps are expected to operate at satisfactory LOS. The critical movements on at the intersection of Meheula Parkway and the H-2 southbound on and off ramps are expected to operate at LOS "D".

#### **C. Traffic Impacts Beyond the Time Frame of This Project**

The traffic study for Mililani-Mauka indicates several ramps at the Mililani Interchange would operate at LOS "F". During the AM peak hour with the ultimate development of Mililani-Mauka the north bound and southbound on ramps would operate at LOS "F". During the PM peak hour all the on and off ramps, with the exception of the proposed northbound loop off ramp, would operate at LOS "F". LOS "F" conditions are also projected during both AM and PM peak hours at full build out of Mililani-Mauka.

### **VII. ALTERNATIVES ANALYSIS**

#### **A. Improvements to Accommodate Projected Conditions Without Project**

1. The intersection of Meheula Parkway and the south bound ramps should be signalized.
2. A two lane loop off ramp should be constructed from north bound H-2 Freeway to west bound Meheula Parkway. The existing north bound on ramp would require realignment.
3. Interstate Route H-2 should be improved to provide four lanes, particularly in the south bound direction during the AM peak hour, by using the existing shoulder area as travel way.

#### **B. Improvements to Accommodate Site Traffic**

1. It is recommended that the Meheula Parkway, through Mililani-Mauka, be extended to provide primary access to the Mililani Summit.

2. The traffic improvements proposed as part of Phase I of the Mililani-Mauka Project should be implemented on a timely basis.

**C. Proposed Improvements to Accommodate Traffic Beyond the Time Frame of This Study**

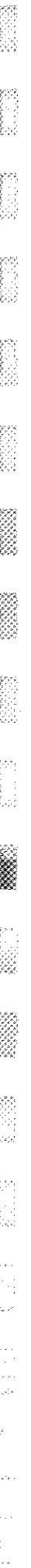
1. The Mililani-Mauka Traffic Study proposes another loop on ramp from west bound Meheula Parkway to southbound H-2 Freeway that may be required at full build out of the Mililani-Mauka Project. A loop off ramp from south bound H-2 Freeway to east bound Meheula Parkway also may be needed.
2. The Mililani-Mauka Study also recommends that Interstate Route H-2 would require widening to an eight lane facility, south of Mililani. This could be accomplished by reducing the shoulder and existing lane widths to provide for an additional travel lane.
3. A transportation system management (TSM) alternative, suggested by the Mililani-Mauka Study, is an aggressive ride-share program, which is aimed at increasing the auto-occupancy ratio from 1.3 persons per vehicle to 1.63 persons per vehicle. This alternative would combine increasing bus ridership and promoting private bus, vanpool and carpool programs. The Leeward Oahu Transportation Management Association (LOTMA) is a program with the objective of pursuing such TSM alternatives. High-occupancy vehicle (HOV) lanes on the H-2 Freeway and HOV ramp entrances and exits would improve travel times for qualified vehicles.
4. The rail transit system could be expanded to provide a spur between the Waiawa terminal and Mililani. The park-and-ride facility could provide a site for the transit station.

**VIII. CONCLUSIONS**

Traffic generated by the Mililani Summit is not expected to significantly affect the peak hour traffic operations within the time of this study. The proposed project is expected to add 2.7% to the inbound traffic on the H-2 Freeway during the AM peak hour, and 4.2% to the outbound freeway traffic during the PM peak hour. The traffic improvements, proposed for Phase I of the Mililani-Mauka, are expected to accommodate the proposed project traffic.

Beyond the development of the Mililani Summit, full build out of the Mililani-Mauka Project has regional, as well as, site-specific implications. The Mililani Interchange would likely require additional loop ramps to accommodate the additional traffic. The location of a university in Central Oahu, development of the Hawaii Technology Park, and other such destination opportunities would reduce the daily commute to and from the primary urban center. The realization of the "second urban center" in West Oahu would also reinforce the decentralization of urban Honolulu. Finally, the proposed fixed rail transit system, combined with feeder bus system and additional spurs to the transit line, has the potential of greatly improving the "people-moving" capacity throughout Oahu.





**Social Impact Assessment**  
**of**  
**The Summit**

**EXHIBIT D**

**SOCIO - ECONOMIC IMPACT STUDY**

# The Summit

## Social Impact Assessment

Prepared for  
Parametrix, Inc.  
by Earthplan

February 1993 (as revised from March 1992)

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## 1. Background and Introduction

### 1.1 Purpose of this Report

Robert-Maxwell and Company proposes to develop approximately 129 acres in Central O'ahu, Hawai'i, into The Summit, a residential community. The project site is currently within the Agriculture and Conservation Districts on the State Land Use Map. Further, the site is designated Agriculture on the City and County of Honolulu Central O'ahu Development Plan, and is zoned Ag-1 and P-1. The developer is seeking certification from the Housing Finance Development Corporation Board for the Summit to be an affordable housing project under Act 15.

The applicant is currently preparing an Environmental Impact Statement. This report is an update of a social impact assessment prepared in March 1992. This report accomplishes the following:

- \* revises the analysis to include the increase in residential units,
- \* incorporates 1990 Census information released subsequent to the completion of the first report,
- \* integrates the changing conditions of the social environment, and
- \* extends the period of Neighborhood Board analysis by one year.

This social impact assessment was prepared by Earthplan, located at Suite 211 at 81 South Hotel Street, Honolulu, Hawai'i. Berna Cabacungan, its principal, was project manager, and the primary researcher and writer. Assistance in this report was provided by two sub-consultants. Trevor Carroll assisted in the research related to census information and Study Area boundaries. Denine Sansom assisted in the analysis of Neighborhood Board community issues not related to the Summit.<sup>1</sup>

### 1.2 Report Organization

The remaining portions of Section 1 describe the project and the target market.

Section 2 describes the existing surrounding community in terms of demographics and housing characteristics. Proposed policies and changes for the Millilani and Wahiawa communities are discussed in Section 3.

Section 4 identifies potential social impacts of the Summit in terms of resident population increase, regional compatibility, relationship to the adjacent community and public services and facilities. Possible community issues related to the proposed project are discussed in Section 5.

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<sup>1</sup> In the first report, Nancy Gilder assisted in the research of Neighborhood Board minutes and Community Resources, Inc. prepared the Summary Tape File 1-A information of the 1990 Census.

### **1.3 Project Description**

The project site is located in Central O'ahu and abuts the eastern boundary of the Mililani Mauka Community. Further east, across the H-2 Freeway, is Mililani Town.

At the northern boundary of the project site is the East Range of the Schofield Barracks Military Reservation. The town of Wahiawa lies immediately north and east of the East Range.

The Summit is envisioned as a community of 598 homes.<sup>2</sup> Access to the site will be via an easement through the Mililani Mauka community. The community's entrance will be secured and gated. A centrally-located community center will provide recreational facilities for Summit residents.

Sixty percent, or 273 homes, will be affordable units, and will be clustered in the Gardens portion of the Summit. "The Bluffs" portion of the project is located at the perimeter of Waikakalaua and Kipapa Gulches. This section will contain 54 single family detached homes (23 percent of the total) priced for people with "gap group" incomes. "The Ridge" will offer 25 single family detached units targeted for families with gap group incomes and for market buyers.

### **1.4 Characteristics of the Project Market**

Preliminary information from the developer indicates that the affordable units will be priced for families with incomes between 80 to 100 percent of the median income. To qualify to buy homes in this range, families will need to have annual incomes ranging from \$35,000 to \$43,900.<sup>3</sup>

It is anticipated that the majority of residents in the affordable, gap group and market units will be owner-occupants. The affordable units will be subject to owner-occupancy requirements typical to housing meeting affordability criteria of the State Housing and Finance Development Corporation. Further, the market study for the proposed project<sup>4</sup> indicates that the Leeward and Central O'ahu districts are high in owner-occupant homes; 88 percent of the single family home buyers were owner occupants in 1990. The Summit is expected to be consistent with this trend, as well as with typical homebuyer characteristics. The average age of the owner occupant of single family homes is 35 years. Typically older, the average investor is 45 years old.

Locations, Inc., further found that, in late 1990, the average single family owner occupant has an annual household income of \$55,000, has approximately \$70,000 available for a downpayment, and has the ability to purchase a \$240,000 residence.

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<sup>2</sup> *The previous housing count was 425 units. The current project represents a 41 percent increase over the original proposal.*

<sup>3</sup> *No buyer income information on the gap group and market units was provided to Earthplan during the course of either study.*

<sup>4</sup> *Locations, Inc., 1991.*



## **2. Description of the Existing Community**

### **2.1 Definition of the Study Area**

The study area for this project includes the communities nearest the project site: Mililani, Mililani Mauka and Waipio Acres. Illustrated in *Figure A*, the study area includes the following:

- \* *Mililani Census Designated Place*, which includes the portions of Mililani located south of the H-2 Freeway and Waikakalaua Gulch
- \* *Census Tract 89.04*, which includes the communities of Mililani Mauka and Waipio Acres, and is bounded by the Leilehua Golf Course and the southern portion of the Schofield Barracks Military Reservation boundary to the north; Kipapa Stream to the south, the Ko'olau Range to the east, and Kamehameha Highway, Waikakalaua Gulch and the H-2 Freeway to the west.

For the study area the information provided includes demographics, family characteristics, statistics regarding housing and occupied units, and labor force information.

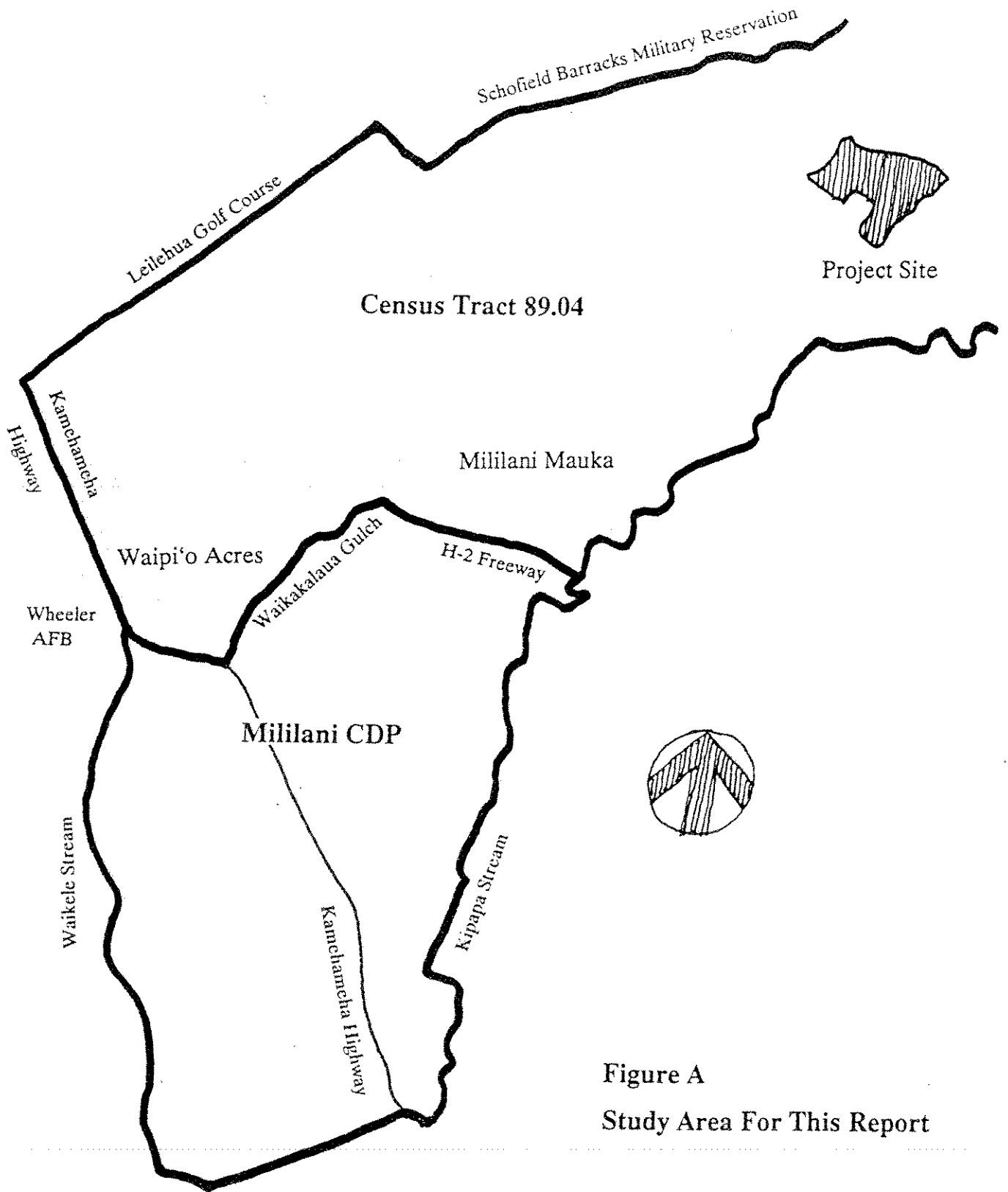
In addition, we include background information on Wahiawa because the project site lies within the boundaries covered by the Wahiawa Neighborhood Board.

### **2.2 Background of the Neighboring Communities**

#### **2.2.1 Mililani**

Mililani, which includes the Mililani Mauka community adjacent to The Summit, is a 3,500-acre planned community. Mililani's developer, Oceanic Properties, Inc., began offering homes for sale in 1968. The growth of this community reflects economic and social developments in postwar Hawai'i which have affected the growth of other Central O'ahu areas, such as increasing family incomes and the desire for single-family homeownership. The project also coincided with shortages of land in areas more proximate to the Honolulu population center, expansion of Federal government mortgage assistance programs, and greater land use efficiency of plantation agriculture.

By the 1960s, Castle & Cooke's holdings included the Dole pineapple plantation and Waialua Sugar Company, with a total land holding of 40,000 acres on O'ahu. Improvements in plantation technology, development of a mature market with little growth potential, and greater crop yields per unit of land made it feasible to look to other uses for land formerly held for agricultural use. Studies by government and private planners in the period around Hawaii's statehood pointed to coming economic growth and an accompanying increase in population.



In the context of this outlook, Oceanic Properties developed plans for a new community of between 2,000 and 3,000 acres in size. The "Waipio Plan" new town proposal envisioned residential expansion as well as creation of local employment through an industrial park to be integrated into the overall plan. The name "Mililani" was selected for the new community from the Hawaiian words "to look up to."

An early revision of the plan established the ultimate size of Mililani at 3,500 acres to incorporate about 15,000 dwelling units housing a population of from 50,000 to 55,000 persons; development was to be completed over a 20 year period.

Oceanic Properties received General Plan approval for the new town project in the early 1960s. The State Land Use Commission gave the first of a series of incremental approvals in 1964. A golf course opened in Mililani in 1966, and the first housing units were completed in 1968.

Development at Mililani has gone through a number of marketing phases. In the early days of the project, potential buyers were unfamiliar with the concept of a planned new community, including such features as imposition of restrictive covenants to control exterior building appearance. Marketing difficulties were also presented by Mililani's geographical remoteness; it was located "in the country". Overall housing demand, however, began to grow in 1972. Transportation improvements, notably the opening of the H-2 freeway in 1977, accompanied development, and Mililani became physically and psychologically more accessible.

The Mililani Master plan includes 3,500 acres divided into three distinct geographic areas:

- \* One area is located on the Wai'anae side of Kamehameha Highway and includes 1,118 acres. This area is fully built out, and is mainly residential in character. It also includes the Mililani Town golf course and community facilities such as churches, schools, parks and community association recreational facilities.
- \* The central portion of Mililani Town includes 1,413 acres between the H-2 Freeway and Kamehameha Highway, and this area has become the core of the community. Located in the central area are higher density uses such as medium-density apartments, Mililani High School, a shopping area and the Town Center.
- \* The third portion of Mililani Town incorporates 1,250 acres on the Ko'olau side of the H-2 Freeway. This is the Mililani Mauka community, and it is directly makai of the project site.

From the inception of the development, Mililani Town has sought to accommodate a broad spectrum of the housing market; thus, the residential inventory ranges from architect-designed luxury homes to modest, government-assisted apartment units. While the majority of Mililani's first home buyers in 1968 had lived nearby (within a six

mile radius of the new town), subsequent buyers have come from throughout O'ahu.<sup>5</sup>

### **2.2.2 Wahiawa**

The major forces in the development of Wahiawa were the pineapple industry and the military. In 1889, Byron Clark requested that the Wahiawa tract be set aside for a settlement association; this area became known as the Wahiawa Colony Tract. The homesteaders immediately formed an agricultural cooperative named Hawaiian Fruit and Plant Company, and in 1902, they set aside central town lots for the use and benefit of the Wahiawa Settlement Association. By 1904, 80 people lived in this colony which contained a post office, store, book club, social club and a one-room school house.

In 1901, James Dole incorporated the Hawaiian Pineapple Company and raised pineapples for canning and exportation. Production quickly increased from 1,893 cases in 1903 to 9,000 in 1904 to over 25,000 in 1905. In 1902, Byron Clark formed the Tropic Fruit Company; this company bottled a new dessert sauce from pineapple. A.W. Eames grew pineapples for the Dole cannery, and in 1906 he formed the Hawaiian Islands Packing Company.

Wahiawa thus became known as the "Land of a Million Pines" and, in 1909, the town boasted a hotel, a well-established government school, a Japanese language school, store, markets, shops and a laundry. Immigrant laborers, many of whom were former sugar workers, lived in Eames camps, Dole camps and independent Oriental camps. The camps were generally segregated according to ethnicities, and many were in locations remote to Wahiawa town.

In the 1930s, the local pineapple industry was affected by the Great Depression and the mainland pineapple industry. Local pineapple companies reorganized and the large corporations absorbed all of the town's pineapple concerns. In-migration continued to occur to meet the labor force needs of the agricultural industry. By 1939, Wahiawa was home to 39,000 residents.

Military facilities and activities were also major contributors to the social and economic growth of Wahiawa. In 1909, 473 soldiers arrived in Honolulu and immediately set up base at Schofield Barracks. Their families soon arrived, adding social diversity and increasing business activities in Wahiawa Town. By the time World War II began, a portion of Schofield had become the Wheeler Field which was attacked on December 7, 1941. The wartime population increased tremendously, sometimes exceeding 100,000 persons, and businesses prospered. After the war thousands withdrew from the military installations, and the population stabilized.

Residential development outside Wahiawa Town and the military installations began as an attempt to consolidate the various plantation camps around Wahiawa. In 1947, Hawaiian Pineapple Company developed Whitmore Village north of the town. The initial

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<sup>5</sup> *Kaina, 1984.*

project encompassed 77 acres, and included 120 dwelling units, a playground and a community center. The company built some of the houses, and others were transported from the different camps.<sup>6</sup>

Today, agriculture and military activities continue to be the major forces in Wahiawa. The community's population is fairly stable, and development tends to be in the form of in-fill housing units. Industrial, commercial, apartment and public service uses form the center of the community, surrounded by single-family residences.

### **2.3 Demographics**

In 1990, 29,359 persons lived in the nearby Mililani CDP and 5,183 persons lived in Mililani Mauka/Waipio Acres. Hence, there were 34,542 in the study area in 1990. As *Table 1* indicates, the study area is similar to the O'ahu-wide community in terms of the distribution of males and females.

#### **Ethnicity.**

There are slight ethnic dissimilarities. Mililani CDP has proportionally more Japanese (30.9 percent) and Caucasians (34.2 percent) than the islandwide community which contains 23.3 percent Japanese and 34.2 percent Caucasians. Further, there are proportionally fewer residents of Filipino and Hawaiian extractions.

In the Mililani Mauka/Waipio Acres portion of the study area, Caucasians were again the largest ethnic group at 37.5 percent, followed by people in the "Other" category at 22 percent. The proportion of Filipinos (16.4 percent) in Mililani Mauka/Waipio Acres was higher than that of Mililani Town and O'ahu. Unlike Mililani which had a large segment of people of Japanese extraction, Mililani Mauka/Waipio Acres had proportionally fewer Japanese (16.2 percent).

#### **Age.**

Mililani CDP is younger than the overall City and County of Honolulu. Almost one-third of the population (32.5 percent) is younger than 18 years of age, as compared to 24.5 percent islandwide. Further attesting to this tendency toward a younger population is the proportion of elderly people. Only 3.8 percent of the total population is 65 years. This is less than half the islandwide proportion of eleven percent in the elderly category. Consistent with these statistics is Mililani CDP's median age of 30.9 years, which is lower than the O'ahu-wide median of 32.3 years.

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<sup>6</sup> Nedbalek, 1984.

**Table 1**

**The Summit Study Area  
Demographic Characteristics, 1990**

	Island of O'ahu	Mililani CDP	Mililani Mauka/ Waipio Acres (1)
<b>Total Population</b>	<b>836,231</b>	<b>29,359</b>	<b>5,183</b>
<b>Sex</b>			
Male	50.9%	50.4%	51.5%
Female	49.1%	49.6%	48.5%
<b>Ethnicity</b>			
Caucasian	31.6%	34.2%	37.5%
Japanese	23.3%	30.9%	16.2%
Filipino	14.4%	13.4%	16.4%
Hawaiian/Part-Hawaiian	11.0%	6.8%	8.0%
Other	19.7%	14.8%	21.9%
<b>Age</b>			
Less than 5 years	7.4%	8.4%	11.1%
5 to 17 years	17.1%	24.1%	15.3%
18 to 34 years	30.6%	25.5%	41.1%
35 to 64 years	33.9%	38.3%	27.4%
65 or more years	11.0%	3.8%	5.1%
<b>Median age</b>	<b>32.2</b>	<b>30.9</b>	<b>27.6</b>
<b>Educational Attainment</b>			
Less than high school	18.8%	7.5%	11.6%
High school graduate only	28.4%	23.6%	34.7%
Some college	28.2%	36.0%	35.1%
4 or more years of college	24.6%	33.0%	18.6%

Source, U.S. Bureau of the Census, 1991 and 1992.

(1) Mililani Mauka/Waipio Acres is Census Tract 89.04. It is bounded by the Leilehua Golf Course and the southern portion of the Schofield Barracks Military Reservation boundary to the north; Kipapa Stream to the south, the Ko'olau Range to the east, and Kamehameha Highway, Waikakalua Gulch and the H-2 Freeway to the west.

With a median age of 27.6 years, Mililani Mauka/Waipio Acres residents tend to be younger than O'ahu-wide and Mililani CDP residents. Unlike Mililani CDP where one-third of the population is under 18 years of age, the largest age category is in the labor force ages of 18 to 64 years of age.

### **Education.**

Mililani CDP's residents tend to have received more education than O'ahu and Mililani Mauka/Waipio Acres residents. Almost 70 percent received some college education or graduated from a four-year college. In Mililani Mauka/Waipio Acres, 53 percent were in this category. Islandwide, 52 percent received college education.

### **Place of Birth and Previous Residence.**

Table 2 indicates that the Mililani CDP has proportionally more Hawai'i-born people (59 percent) than O'ahu (54 percent) and Mililani Mauka/Waipio Acres (50 percent). Less than ten percent of both portions of the study area were born in a foreign country, as compared to 16 percent islandwide.

In terms of residential stability, Mililani CDP tends to resemble O'ahu proportions, while the Mililani Mauka/Waipio Acres communities contain more mobile residents. Over half of the Mililani CDP residents, or 51 percent, lived in the same house five years previous to the 1990. One-third of the Mililani Mauka/Waipio Acres residents fit in this category, and over 28 percent lived in another state in 1985.

### **Family Characteristics.**

The study area is generally more family-oriented than the islandwide community. In the Mililani CDP, 93 percent of the population resided in families; in Mililani Mauka/Waipio Acres, 88 percent. As indicated in Table 3, 83 percent of the islandwide community resided in families.

As may be expected, the study area proportionally contained more married couple families than O'ahu. Compared to O'ahu's 82 percent married couple families, 89 and 85 percent of families in Mililani CDP and Mililani Mauka/Waipio Acres, respectively, contained married couples.

In terms of family income, Mililani CDP families tended to have above average incomes, with the median being \$56,792 in 1990. At the same time, the family median income in Mililani Mauka/Waipio Acres was \$36,906, which is lower than the islandwide family median of \$45,313.

**Table 2**

**The Summit Study Area  
Place and Birth and Residence Five Years Previous, 1990**

	Island of O'ahu	Mililani CDP	Mililani Mauka/ Waipio Acres (1)
<b>Place of Birth</b>			
Born in Hawaii	54.2%	59.1%	50.2%
Other State	30.1%	32.4%	41.7%
Foreign-born	15.7%	8.5%	8.1%
<b>Residence in 1985 (for persons 5 years and older)</b>			
Lived in same house	50.3%	50.6%	33.3%
Another house on O'ahu	25.9%	26.9%	30.3%
Other island	1.1%	0.6%	1.4%
Other state	17.3%	18.7%	28.4%
Foreign country	5.3%	3.2%	6.6%

Source, U.S. Bureau of the Census, 1991 and 1992.

(1) Mililani Mauka/Waipio Acres is Census Tract 89.04. It is bounded by the Leilehua Golf Course and the southern portion of the Schofield Barracks Military Reservation boundary to the north; Kipapa Stream to the south, the Ko'olau Range to the east, and Kamehameha Highway, Waikakalua Gulch and the H-2 Freeway to the west.



Table 3

The Summit Study Area  
Family Characteristics, 1990

	Island of O'ahu	Mililani CDP	Mililani Mauka/ Waipio Acres (1)
<b>Persons in families</b> <i>as percent of total population</i>	<b>689,801</b> 82.5%	<b>27,346</b> 93.1%	<b>4,544</b> 87.7%
<b>Family households</b>	<b>199,597</b>	<b>7,747</b>	<b>1,419</b>
Married couple families	81.5%	88.8%	84.9%
<i>With own children under 18 years</i>	39.4%	58.7%	46.3%
Female householder	13.1%	8.4%	10.0%
<i>With own children under 18 years</i>	5.8%	4.8%	3.5%
<b>Median family income</b> <i>Portion of families below poverty level</i>	<b>\$45,313</b> 5.4%	<b>\$56,792</b> 1.4%	<b>\$36,906</b> 2.3%
<b>Average persons per family</b>	<b>3.5</b>	<b>3.55</b>	<b>3.27</b>

Source, U.S. Bureau of the Census, 1991 and 1992.

(1) Mililani Mauka/Waipio Acres is Census Tract 89.04. It is bounded by the Leilehua Golf Course and the southern portion of the Schofield Barracks Military Reservation boundary to the north; Kipapa Stream to the south, the Ko'olau Range to the east, and Kamehameha Highway, Waikakalua Gulch and the H-2 Freeway to the west.

## 2.4 Housing

Table 4 indicates that, in 1990, there were 10,700 housing units in the study area. The Mililani Town CDP contained 8,900 units and 1,799 housing units were located in Mililani Mauka/Waipio Acres.

As may be expected, most of Mililani's housing units were built within the last 20 years, with 91 percent having been built since 1970. In Mililani Mauka/Waipio Acres, only 59 percent were built since 1970, with Mililani Mauka being the newest community in the area.

Overall housing vacancy was extremely low in the study area with 1.4 and 2.7 percent, in Mililani CDP and Mililani Mauka/Waipio Acres, respectively. Unlike the rest of the island where 1.6 percent of the vacant housing units were held for seasonal, recreational and occasional uses, less than one percent the study area's units were in this category.

Housing units in Mililani tend to be larger than homes in O'ahu. The median number of rooms is six in the Mililani CDP, with O'ahu having a median of four rooms per housing unit. In Mililani Mauka/Waipio Acres, the median number of rooms was four.

Table 5 shows another significant characteristic of Mililani housing units. Over three-fourths of Mililani's homes (77.7 percent) are occupied by their owners, where 54 percent of Mililani Mauka/Waipio Acres housing units were owner-occupied. The former statistic is high, compared to the islandwide 52 percent of owner-occupied housing units.

The median value of owner-occupied units in the study area fell on both sides of the islandwide median of \$283,600. In the Mililani CDP, the median value of owner-occupied units was \$285,300; in Mililani Mauka/Waipio Acres, \$241,500.

At \$990 a month, rent in Mililani CDP was significantly higher than O'ahu-wide median rent of \$615. Median rent in Mililani Mauka/Waipio Acres was also higher at \$737.

On the average, households are slightly larger in Mililani CDP; there was an average of 3.35 persons per unit, as compared to the islandwide average of 3.02 persons. Crowding is generally not a problem in Mililani, however. The proportion of units with one or more persons per room is low compared to islandwide figures.

Nine percent of the total units in Mililani Mauka/Waipio Acres were considered mildly crowded, having between one and 1.5 persons per room. Islandwide, eight percent of the total housing units were considered mildly crowded. This area has smaller-than-average households with 2.96 persons.

**Table 4**

**The Summit Study Area  
Housing Characteristics, 1990**

	Island of O'ahu	Mililani CDP	Mililani Mauka/ Waipio Acres (1)
<b>Total Housing Units</b>	<b>281,683</b>	<b>8,900</b>	<b>1,799</b>
<b>Year Structure Built</b>			
1980 to March 1990	15.9%	33.6%	19.6%
1970 to 1979	29.9%	57.6%	39.2%
1960 to 1969	25.1%	8.0%	25.1%
Before 1960	29.1%	0.8%	16.0%
<b>Total Vacant Units</b>	<b>5.8%</b>	<b>1.4%</b>	<b>2.7%</b>
Seasonal/recreational/occasional	1.6%	0.2%	0.4%
For sale only	0.3%	0.3%	0.2%
For rent	2.0%	0.4%	1.4%
Other vacant	1.9%	0.5%	0.7%
<b>Rooms per unit</b>			
One to three	36.5%	12.9%	32.9%
Four to five	34.6%	36.6%	51.1%
Six or more	28.9%	50.4%	16.0%
<b>Median number of rooms</b>	<b>4</b>	<b>6</b>	<b>4</b>

Source, U.S. Bureau of the Census, 1991 and 1992.

(1) Mililani Mauka/Waipio Acres is Census Tract 89.04. It is bounded by the Leilehua Golf Course and the southern portion of the Schofield Barracks Military Reservation boundary to the north; Kipapa Stream to the south, the Ko'olau Range to the east, and Kamehameha Highway, Waikakalaua Gulch and the H-2 Freeway to the west.

**Table 5**

**The Summit Study Area  
Characteristics of Occupied Housing Units, 1990**

	Island of O'ahu	Mililani CDP	Mililani Mauka/ Waipio Acres (1)
<b>Total Housing Units</b>	281,683	8,900	1,799
<b>Total Occupied Units</b>	265,304	8,776	1,750
<b>Tenure</b>			
Owner-occupied	52.0%	77.7%	53.6%
Renter-occupied	48.0%	22.3%	46.4%
<b>Persons per room</b>			
1.00 to 1.50 (2)	8.2%	6.6%	9.0%
1.51 or more (3)	8.2%	3.0%	5.5%
<b>Persons per unit</b>	3.02	3.35	2.96
<b>Persons in occupied units</b>	802,338	29,359	5,183
As % of total population	95.9%	100.0%	100.0%
<b>Median value of owner-occupied units (4)</b>	\$283,600	\$285,300	\$241,500
<b>Median cash rent</b>	\$615	\$990	\$737

Source, U.S. Bureau of the Census, 1991 and 1992.

(1) Mililani Mauka/Waipio Acres is Census Tract 89.04. It is bounded by the Leilehua Golf Course and the southern portion of the Schofield Barracks Military Reservation boundary to the north; Kipapa Stream to the south; the Ko'olau Range to the east, and Kamehameha Highway, Waikakalaua Gulch and the H-2 Freeway to the west.

(2) Indicates "mildly crowded" conditions

(3) Indicates "very crowded" conditions.

(4) Median values are for non-condominium housing units.

## **2.5 Labor Force**

Mililani Mauka/Waipio Acres had a high unemployment rate when compared to O'ahu and Mililani CDP rates. In 1990, 6.5 percent of Mililani Mauka/Waipio Acres' civilian labor force was unemployed. The O'ahu unemployment rate was 3.5 percent; in Mililani CDP, 2.1 percent.

As shown in *Table 6*, residents in the Mililani CDP tend to have high proportions of higher-paying occupations. In 1990, 60 percent of employed people in Mililani CDP have managerial, professional or administrative jobs. On O'ahu and in Mililani Mauka/Waipio Acres, respectively 46 and 47 percent were occupied as such. Mililani Mauka/Waipio Acres also tended to have slightly higher proportions of people with occupations in precision and craft (eleven percent) and operator/labor (11.3 percent).

Mililani Mauka/Waipio Acres also had a high proportion of military residents. Sixteen percent of the labor force were in the armed forces.

Compared to the O'ahu-wide community, residents in the study area tended to commute for longer periods of time and more people commuted alone. The mean travel time to work was 29.6 and 29.2 minutes for residents in Mililani CDP and Mililani Mauka/Waipio Acres, respectively. Islandwide, this median was 24.8 minutes, as provided in *Table 7*.

Fifty-eight percent of O'ahu commuters drove alone to work, while 21 percent carpooled. In Mililani CDP, 70 percent drove alone, while 22 percent carpooled. Approximately 72 percent of Mililani Mauka/Waipio Acres workers drove alone to work, while only 18 percent carpooled. In both portions of the study area, there were significantly fewer people who used public transportation to work, who walked to work, and who worked at home.

## **2.6 Summary of Characteristics of the Existing Community**

The community nearest the project site is Mililani Mauka, which is part of the Mililani planned community. In 1990, 29,359 persons lived in the Mililani Census Designated Place (CDP). Farther away, in Mililani Mauka/Waipio Acres, there were 5,183 residents in 1990. 1990 demographic and housing information on these two areas are as follows:

### **\* Age, Ethnicity and Education.**

Mililani had proportionally more children, with almost one-third of the community under 18 years of age, than Mililani Mauka/Waipio Acres and the island of O'ahu. Consistent with the presence of young military people, Mililani Mauka/Waipio Acres had a large proportion of 18- to 34-year-olds (41.1 percent).

This atypical proportion of that age group affected Mililani Mauka/Waipio Acres' median age. In terms of median age, Mililani Mauka/Waipio Acres tends to be younger with a median age of 27.6 years. The median age in Mililani CDP was 30.9 years, which was also younger than the islandwide median of 32.2 years.

**Table 6**

**The Summit Study Area  
Labor Force Characteristics, 1990**

	Island of O'ahu	Mililani CDP	Mililani Mauka/ Waipio Acres (1)
Persons 16 Years and Older	651,920	20,829	3,968
Civilian Labor Force	62.9%	72.7%	60.9%
Armed Forces	8.2%	7.4%	15.9%
Not in Labor Force	28.9%	19.9%	23.2%
Unemployed Civilian Labor Force	3.5%	2.1%	6.5%
Occupations of Employed Civilians	395,811	14,815	2,259
Managerial	13.5%	16.0%	14.1%
Professional	14.2%	16.5%	12.9%
Technical	3.9%	5.5%	3.7%
Sales	12.5%	10.6%	10.4%
Administration	18.2%	21.0%	20.6%
Service	16.8%	10.9%	15.3%
Farm/Fishing	1.5%	0.7%	1.1%
Precision/Craft	9.9%	12.0%	10.6%
Operator/Labor	9.5%	6.8%	11.3%

Source, U.S. Bureau of the Census, 1991 and 1992.

(1) Mililani Mauka/Waipio Acres is Census Tract 89.04. It is bounded by the Leilehua Golf Course and the southern portion of the Schofield Barracks Military Reservation boundary to the north; Kipapa Stream to the south, the Ko'olau Range to the east, and Kamehameha Highway, Waikakalaua Gulch and the H-2 Freeway to the west.

**Table 7**

**The Summit Study Area  
Transportation Type and Travel Time, 1990**

	Island of O'ahu	Mililani CDP	Mililani Mauka/ Waipio Acres (1)
<b>Workers 16 and Older (2)</b>	<b>437,518</b>	<b>16,003</b>	<b>2,816</b>
Drove Alone	57.6%	69.5%	72.0%
Carpooled	20.9%	22.3%	18.0%
Public Transportation	9.3%	4.3%	5.9%
Other Means	2.8%	1.0%	1.6%
Walked or Worked at Home	9.3%	2.9%	2.5%
<b>Mean Travel Time to Work</b>	<b>24.8 minutes</b>	<b>29.6 minutes</b>	<b>29.2 minutes</b>

Source, U.S. Bureau of the Census, 1991 and 1992.

(1) Mililani Mauka/Waipio Acres is Census Tract 89.04. It is bounded by the Leilehua Golf Course and the southern portion of the Schofield Barracks Military Reservation boundary to the north; Kipapa Stream to the south, the Ko'olau Range to the east, and Kamehameha Highway, Waikakalaua Gulch and the H-2 Freeway to the west.

(2) These data were tabulated for workers 16 years and over. They are defined as members of the Armed Forces and civilians who were at work during the reference week. From Summary Tape File 3-A, User Note 2, Definitions of Subject Characteristics.

In terms of ethnicity, Caucasians (34.2 percent) and Japanese (30.9 percent) made up almost two-thirds of Mililani CDP's population. Both ethnicities were more heavily represented in Mililani than throughout O'ahu. In Mililani Mauka/Waipio Acres the two largest ethnic groups were Caucasians (37.5 percent) and those in the "Other" category (21.9 percent).

Mililani CDP's residents tend to have received more education than O'ahu and Mililani Mauka/Waipio Acres residents; almost 70 percent received some college education or graduated from a four-year college.

\* **Place of Birth and Previous Residence.**

The Mililani CDP has proportionally more Hawai'i-born people (59 percent) than O'ahu (54 percent) and Mililani Mauka/Waipio Acres (50 percent). Further, over half of the Mililani CDP residents, or 51 percent, lived in the same house five years previous to the 1990. Only one-third of the Mililani Mauka/Waipio Acres residents fit in this category, and over 28 percent lived in another state in 1985.

\* **Family Characteristics.**

The study area is more family-oriented than the islandwide community. In the Mililani CDP, 93 percent of the population resided in families; in Mililani Mauka/Waipio Acres, 88 percent. Mililani CDP families tended to have above average incomes, with the median being \$56,792 in 1990. At the same time, the family median income in Mililani Mauka/Waipio Acres was \$36,906, which is lower than the islandwide family median of \$45,313.

\* **Housing Units.**

The Study Area contained a total of 10,699 housing units in 1990. Mililani had 8,900 housing units; Mililani Mauka/Waipio Acres, 1,799 units.

\* **Housing Vacancy and Tenure.**

Both communities experienced significantly low housing vacancy rates in 1990. Mililani's vacancy rate of 1.4 percent indicates almost no available housing. The vacancy rate of 2.7 percent in Mililani Mauka/Waipio Acres was less than half the islandwide rate of 5.8 percent at the same time.

The Mililani CDP had a very high owner-occupancy rate; over three-fourths of the units were occupied by their units. Owner-occupancy was also high in Mililani Mauka/Waipio Acres at 53.6 percent.



\* **Number of Rooms and Household Size.**

Mililani tended to have larger units with a median of six rooms per unit. Both O'ahu and Mililani Mauka/Waipio Acres had a median four rooms. Mililani Mauka/Waipio Acres had the smallest units in that over half of the units had four to five rooms, and only 16 percent had six or more rooms. In Mililani, 50.4 percent of the housing units had six or more rooms; on O'ahu, 28.9 percent.

\* **Housing Value and Rent.**

Both housing values and rents were higher in Mililani than in Mililani Mauka/Waipio Acres and around O'ahu. In Mililani, the median value of the owner-occupied units was \$285,300, which was higher than O'ahu's \$283,600 and Mililani Mauka/Waipio Acres's \$241,500.

At \$990 a month, Mililani's median rent was 60 percent higher than the islandwide median of \$615, and 34 percent higher than the median rent in Mililani Mauka/Waipio Acres (\$737).

\* **Labor Force**

Mililani Mauka/Waipio Acres had a high unemployment rate of 6.5 percent. when compared to O'ahu and Mililani CDP rates. The O'ahu unemployment rate was 3.5 percent; in Mililani CDP, 2.1 percent.

Residents in the Mililani CDP tend to have high proportions of higher-paying occupations, with 60 percent of employed people in Mililani CDP have managerial, professional or administrative jobs. Mililani Mauka/Waipio Acres also tended to have slightly higher proportions of people with occupations in precision and craft (eleven percent) and operator/labor (11.3 percent).

Mililani Mauka/Waipio Acres also had a high proportion of military residents. Sixteen percent of the labor force were in the armed forces.

Compared to the O'ahu-wide community, residents in the study area tended to commute for longer periods of time and more people commuted alone.

### **3. Changes Which May Occur Independent of the Summit**

#### **3.1 Public Policies**

The project site is in Central O'ahu, which includes the towns of Waipahu, Mililani and Wahiawa, and the residential communities of Crestview, Waipio, Waipio Acres and Melemanu Woodlands.

Central O'ahu is part of the City and County of Honolulu's "urban fringe," as identified in the General Plan. Within the urban fringe, growth is to be managed to prevent an undesirable spreading of development and to retain the proportion of islandwide resident population.

Table 8 contains the General Plan allocation of O'ahu's population for 2010. Central O'ahu is targeted to house 14.9 to 16.5 percent of the total islandwide population. Based on the Series M-K projections for 2010, this proportion translates into 148,900 to 164,917 persons for Central O'ahu.

Agriculture is the dominant land use in Central O'ahu and the Special Provisions of the Central O'ahu Development Plan call for "substantially" maintaining the present level of agricultural activity in this district. With the predominance of agriculture comes wide open spaces and the Central O'ahu Development Plan gives high priority to preserving the panoramic mauka and makai views from public places and views of major landmarks from public places. "Important views" designated in Mililani Town include the view of the Wai'anae mountains from Mililani High School, Meheula Parkway and the Mililani District Park, as well as the view of Diamond Head and Pearl Harbor from Mililani Recreation Center No. 2.

In the vicinity of the project site, two amendments to the Central O'ahu Development Plan Land Use Map are being considered as follows:

\* **Mililani Mauka Phase 2, Increment B.**

Castle and Cooke Residential, Inc., the owner of this 279-acre parcel proposes to re-designate lands currently designated Agriculture to Residential, Low Density Apartment, Commercial, Parks and Recreation, Public Facilities and Preservation. Part of the Mililani Mauka Community, this segment would contain 2,105 dwelling units. This project was not approved in the 1992 Development Plan Annual Amendment Review process, and the applicant has submitted a request for amendment in the 1993 review process.<sup>7</sup>

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<sup>7</sup> Personal communication with Brian Suzuki, City Department of General Planning, February 3, 1993.

**Table 8**

**Population Projections by Development Plan Area, 2010**

	General Plan Distribution of Residential Population (1)		2010 Population Range Based on Series M-K Projections (2)	
Primary Urban Cent	45.1%	- 49.8%	450,774	- 497,751
'Ewa	12.0%	- 13.3%	119,940	- 132,934
<b>Central O'ahu</b>	<b>14.9%</b>	<b>- 16.5%</b>	<b>148,926</b>	<b>- 164,917</b>
East Honolulu	5.3%	- 5.8%	52,974	- 57,971
Ko'olaupoko	11.0%	- 12.2%	109,945	- 121,939
Ko'olauloa	1.3%	- 1.4%	12,994	- 13,993
North Shore	1.6%	- 1.8%	15,992	- 17,991
Wai'anae	3.8%	- 4.2%	37,981	- 41,979
<b>Total O'ahu</b>	<b>95.0%</b>	<b>- 105.0%</b>	<b>949,525</b>	<b>- 1,049,475</b>

*Notes:*

(1) City Council, "Resolution Relating to Amending the General Plan of the City and County of Honolulu, No. 88-404, Cd-1, FD-1"

(2) DBED M-K Population Projections estimate a population of 999,500 persons for the City and County of Honolulu in 2010

\* **Wahiawa Development.**

As trustee for the Galbraith Trust Estate, Hawaiian Trust Company, Ltd. is proposing to develop 900 acres north of Wahiawa Town. The lands are currently designated Agriculture, and will need to be redesignated to Residential, Park and Recreation, Low Density Apartment, Commercial Emphasis Mixed Use, Commercial and Public/Quasi Public. A Draft EIS has been filed. The project includes a "town center" comprising a residential and commercial mixed use core; a golf course; 3,000 market and affordable residential units; a 40-acre business center; various public and community facilities; a commercial/light industrial area; and parks.<sup>8</sup>

### 3.2 Current Development Activity

The major changes which continue to occur in the Study Area are as follows:

- \* **Mililani Mauka** abuts the project site's boundary. This project is the final phase of the original Mililani Master Plan discussed in Section 2.2.1. Mililani Mauka comprises six individual villages, and, at full build-out, the community is expected to contain 6,600 homes, three schools, churches a recreation center and a large community center, two commercial and retail areas and the site for a university campus.<sup>9</sup>

Phase 1 of Mililani Mauka is the development of 3,500 residential units. The original time frame for this phase was seven to eight years. Because of high market demand, however, the schedule was revised to accommodate a six-year time frame. In 1990, approximately 600 new homes were opened in Mililani Mauka, and it is anticipated that almost 500 new homes will be built in 1992.<sup>10</sup>

Recently, in Phase 1 of Mililani Mauka, Castle and Cooke Residential, Inc. received Development Plan approval to change the designation of 15 acres from Residential to Low Density Apartment.

Currently, Castle and Cooke Residential, Inc., is seeking to amend the Central O'ahu Development Plan to allow Increment B of Phase 2. Increment B abuts The Summit project site, and includes 2,105 residential units.

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<sup>8</sup> OEQC, 1993.

<sup>9</sup> Mililani Town, Inc., 1990.

<sup>10</sup> Star-Bulletin staff, 1991.

- \* **Mililani Technology Park** is located adjacent to Mililani Mauka and the Leilehua Golf Course. The 256-acre Park was dedicated in 1987, and the infrastructure for the first phase was completed in 1989. The Park contains four buildings, and, as of June 1991, approximately 350 people were employed at the Park in "high tech" jobs. In June 1992, the developer is received zoning approval to change the zoning on 120 acres from I-2, Industrial, to IMX, Industrial Mixed Use.<sup>11</sup>
- \* Unrelated to the Mililani development are projects in the **Melemanu Woodlands/Waikalani Woodlands** community located in Waikakalaua Gulch between Mililani Mauka and Mililani Technology Park. This residential community has approvals for 1,122 housing units and contains multi-family units in townhouse and high-rise configurations.

Two projects were recently completed. The 130 units in Phases 1 and 2 of the **Evergreen** were made available for occupancy in January 1993. The model unit for the 180-unit Phase 1 of **Launani Valley** is completed and the first units should be available in May 1993.<sup>12</sup>

### 3.3 Probable Scenario Without The Summit

Without The Summit, the Central O'ahu Development Plan area is expected to experience major population growth. As discussed in Section 3.1, the General Plan allocates between 14.9 to 16.5 percent of the total island population to the Central O'ahu area. This translates into a population range of 148,926 to 164,917 persons.

Central O'ahu's 1990 population is estimated at 130,526 persons.<sup>13</sup> As *Table 9* indicates, Central O'ahu's population will increase by 14.1 to 26.3 percent if the target population count is realized. On an average annual rate basis, growth would occur at a rate of 0.7 to 1.2 percent a year. Other changes which are expected to occur in the Study Area are as follows:

- \* **Continued Growth in Mililani Mauka.**

Mililani Mauka is likely to continue to transform the adjacent property into a large residential community. Mililani Mauka has been projected to house a population of 21,000 people. This community is already growing faster than expected, and the developer anticipates steady growth. Phase 1 has begun construction, over 600 homes have already been made available, and 500 new units are expected to be made available this year. Phase 2 is currently in various stages of the land use approval process.

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<sup>11</sup> Personal communication with Raymond Young, City Department of Land Utilization, February 4, 1993.

<sup>12</sup> Personal communication with Joan Duell, Town Realty, March 13, 1992 and December 7, 1993.

<sup>13</sup> Personal communication with Elizabeth Chin, Planner, Study and Land Use Evaluation Branch, City and County of Honolulu Department of General Planning, March 11, 1992.

Table 9

Anticipated Population Growth in Central O'ahu  
without The Summit

1990 estimated population (*)	130,526
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	Low End	High End
General Plan allocation for Central O'ahu	14.9%	16.5%
Central O'ahu target population range for 2010	148,926	164,917
Increase of 2010 population over 1990	18,400	34,391
Percent increase	14.1%	26.3%
Average annual growth rate	0.7%	1.2%

(\*) Personal communication with Elizabeth Chin, Planner, Study and Land Use Evaluation Branch,  
City Department of General Planning, March 11, 1992

\* **Continued Development of Mililani Technology Park.**

The Mililani Technology Park is designed to serve as a long-term economic base that would provide opportunities for residents to live and work in the Central O'ahu area. As part of this effort, the Park has been designated as a part of the Hawaii Foreign Trade Zone No. 9 by the U.S. Department of Commerce. Upon completion, the Park is expected to provide employment opportunities for 8,000 to 9,000 people. It is anticipated that the growth of this Park will continue.

\* **Maintenance of Stability In Existing Wahiawa.**

Wahiawa is a stable residential community in terms of population growth, and it is expected that this trend will continue. Growth will likely be primarily in the form of in-fill housing, as well as any increase in military housing.

\* **Possible New Community Near Wahiawa.**

While Wahiawa Town is likely to remain stable, there may be a new community proposed north of town. This community would transform what is currently open space into a residential community with 3,000 homes. It would bring in new business and introduce new commercial and public facilities to the region.

\* **Continuation Of Military And Agricultural Activities.**

Given current public policies and efforts, both military and agricultural activities are expected to continue in Central O'ahu.

## **4. Potential Social Impacts of the Proposed Project**

### **4.1 Residential Population Impacts**

The Summit is estimated to house approximately 1,812 persons, based on a household size of 3.03 persons.<sup>14</sup> The project population represents a 1.4 percent increase over the 1990 Central O'ahu population of 130,526 persons. The Summit represents a 35 percent increase in the population of Census Tract 89.02 which includes Mililani Mauka/Waipio Acres.<sup>15</sup>

The project will exceed the population guidelines of the City and County of Honolulu General Plan for Central O'ahu, as illustrated on *Table 10*, and as summarized:

1. In June 1990, there were 36,090 housing units in Central O'ahu. Approved additional housing totaled 12,775 units at that time. Since then, 3,000 more housing units were approved for the Central O'ahu Development Plan area, which bring the total of existing and approved units to 51,865.
2. In the 1990 Development Plan Status Review for Fiscal Year 1991, it was estimated that the existing and approved units at that time had the capacity for 154,800 persons. The more recently-approved units would add 9,090 persons, based on a household size of 3.03 persons. Hence, the current residential capacity of existing and approved housing units is estimated at 163,890 persons.
3. The upper limit of the population guideline for Central O'ahu is 16.5 percent of the projected 2010 O'ahu population, or 164,900 persons. Thus, theoretically, there is still room for housing for 1,010 persons, or 333 residential units.
4. With 598 residential units, The Summit will exceed the General Plan population guideline for Central O'ahu by 0.5 percent.

It is noted that the General Plan guidelines are meant to express public policies in population ranges for the Development Plan areas. The guidelines are not intended to be the fixed or sole basis for project evaluation, but rather are part of the overall land use approval process which includes consideration of infrastructure, housing, social and economic impacts.

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<sup>14</sup> The City Department of General Planning uses an average household size of 3.03 persons for Central O'ahu in 2010.

<sup>15</sup> Southeast Wahiawa is Census Tract 89.04, which had a 1990 population of 5,183 persons.



Table 10

The Summit Population Impact

Existing Housing Units (*)	36,090
Potential New Housing Units (**)	15,775
Total Existing and New Housing Units	51,865
Potential 2010 Population in Existing and New Housing Units (***)	163,890
Net Difference Between Upper Population Range for Central O'ahu (164,900) and Potential 2010 Population	1,010
Estimated Population of the Summit	1,288
Summit Population Over the Upper End of Population Range	278
Number of Units Represented by "Excess" Population	92

(\*) Based on Table II-1, Development Plan Status Review: Status: Fiscal Year 1991

(\*\*) Includes 12,775 units as identified in the Development Plan Status Review, plus the 3,000 units approved in January 1992.

(\*\*\*) Includes 154,800 persons estimated in the Development Plan Status Review, and and 9,090 estimated persons in the recently-approved 3,000 units.

As public officials and the community evaluate The Summit, it is suggested that the population impact be weighed against the project's provision of reasonably-priced housing. This project is intended to meet a crucial public need. With sixty percent of the units being offered at affordable prices, and 23 percent priced for gap group incomes, The Summit is committing 83 percent of its project to families who have difficulty in purchasing market housing.

In the case of Central O'ahu, almost all of the population allocation has been committed and any major residential project will exceed the allocation. In its analysis of Increment B of Phase 2 of Mililani Mauka, the City Department of General Planning points out that population is only one consideration in analyzing and evaluating the positive and negative aspects of a project, and that the General Plan was designed to be flexible, thus allowing the department to set overall planning priorities based on current community needs or problems. The department further indicates that it intends to re-examine its current policies in applying and allocating population distribution percentages in Central O'ahu.

## **4.2 Consistency with the Overall Region and the Adjacent Community**

### **4.2.1 The Overall Region**

The Summit is consistent with the types of development occurring in Central O'ahu. The General Plan designates Central O'ahu as urban fringe. Such areas are to be predominantly residential in character and all other uses are to be designed to complement the residential nature of the community. As an affordable residential community, The Summit is consistent with the policies related to the development of Central O'ahu.

Further, the project will benefit the region by providing 83 percent of its units for families with moderate and gap group incomes.

The project will visually be an extension of the adjacent Mililani Mauka community and will contribute to the urbanization of what is currently unused and agricultural land. This decrease in open space is part of a cumulative impact. In that urbanization of the mauka lands is already occurring, the encroachment on open space is not solely attributable to The Summit.

## 4.2.2 Residential Uses

The residential uses near the project site include the following:

- \* **Mililani Mauka and Melemanu Woodlands/Waikalani Woodlands.**

Mililani Mauka is described in Sections 2.2.1 and 3.2. Melemanu Woodlands and Waikalani Woodlands are discussed in Section 3.2.

- \* **Mililani Town and Waipio Acres.**

Mililani Town is described in Section 2.2. Waipio Acres is a small residential subdivision developed in the early 1960s. The project is across the H-2 Freeway from Mililani Mauka and is adjacent to Mililani Town.

The Summit will be similar to the single-family houses and townhouses in Mililani Mauka and the other residential communities. The project's market study indicates that The Summit residents will have characteristics similar to those of other Central O'ahu residents. Since no new or unique demographic characteristic is proposed for The Summit's market, it is expected that the project's residents will blend in with the rest of the community.

The project is currently envisioned as a gated community, and will therefore be physically distinct from the neighboring community. In other proposed gated communities which Earthplan has evaluated, it was found that gated communities are sometimes viewed as a symbol of exclusivity. One way to look at gates is that they are meant to keep people out. When an entire community is gated, this implies that the residents of that community do not want the public having general access throughout their community.

One is more likely to have a negative view towards exclusivity if (1) the gated community is considered a luxury development; (2) economic mobility is limited in the region and there is a big gap between the rich and the poor; and (3) there are already social conflicts which are based on economic disparity or the "haves and have-nots."

These conditions do not apply in The Summit, and it is not expected that the gated aspect will be viewed as a symbol of exclusivity. The project is a mostly an affordable housing project, and will not have characteristics of luxury housing. Also, the characteristics of the Mililani community and 1990 census information point to an economically diverse community; there are more than just the rich and the poor. Further, in our review of Mililani/Waipio/Melemanu Neighborhood Board minutes over the last two years, there were no suggestions of social conflicts attributable to economic disparity.

### 4.2.3 Industrial and Military Uses

The **Mililani Technology Park** is located near Mililani Mauka and the Leilehua Golf Course. A portion of this 256-acre park is developed and occupied. The Mililani Technology Park is being designed to complement the residential communities in this area, and is not expected to impact or be impacted by The Summit.

**Schofield Barracks East Range** is located north of the Mililani Technology Park. The Schofield East Range is used by the U.S. Army for bivouac sites and the maneuvering of combat training units. The **Leilehua Golf Course** is an 18-hole military golf course which has been in operation since 1949. The project is separated from the East Range by the Waikakalaua Gulch. The East Range is not expected to impact or be impacted by The Summit. Further, The Summit is not expected to impact the Leilehua Golf Course.

## 4.3 Public Services and Facilities

### 4.3.1 Police Protection

Police protection services to Mililani are provided by officers in the Wahiawa Police Station. Currently, Mililani is divided into four beats: 220, 220a, 221 and 222. The Summit is in Beat 221. Normally, one patrol officer is assigned to each beat per shift; thus, there are four patrol officers in Mililani at any given time. Currently, however, there is a shortage of officers and Beat 220a is shared among three beat officers.<sup>16</sup>

Police officials are monitoring the cumulative impacts of development in this area to ensure adequate protection. There are no short-term plans for facility or service expansion at this time.

The project will increase the need for police protection services by increasing the residential population. By itself, however, The Summit is not expected to stress police protection services because the magnitude of the project is minor compared to the residential development anticipated in Mililani. Rather, the project will add to the cumulative impacts of Mililani development.

The project will somewhat mitigate the impact on police services by being a gated community. The on-site security will help deter crime within The Summit.

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<sup>16</sup> Personal communication with Wahiawa Police Station officers Sergeant Gilbert Ching (March 13, 1992, and Sergeant Glen Oyamoto (December 3, 1992).

### **4.3.2 Fire Protection**

The Mililani Fire Station and Pearl City Fire Station would respond to a first alarm at the project site. Both have an engine company, with five firefighters per shift. Backup would be provided by the Waiiau Fire Station, a ladder company.<sup>17</sup>

Fire officials are monitoring development in the area to ensure that adequate fire protection continues. The Mililani Mauka project contains a site for a future fire station, but specific details regarding time frame and type of company are unavailable at this time.

The project will increase the need for fire protection services by increasing the residential population and will add to the cumulative impacts of Mililani development.

### **4.3.3 Schools**

Based on the household sizes and project market, The Summit is estimated to house 246 students. An estimated 150 students would be in the Kindergarten through grade six level, and 36 students would be in the seventh and eighth grade. High school students are estimated at 60.

Elementary students would attend the Mililani Mauka Elementary, Wheeler Intermediate and Mililani High Schools. The Mililani Mauka Elementary is scheduled to open in September 1993, and should be able to handle the project's elementary schoolers. Although there is currently capacity for more students at Wheeler Intermediate Schools, this capacity may be filled as Mililani Mauka continues to grow. Mililani High School is currently filled to capacity.<sup>18</sup>

### **4.3.4 Parks**

Recreational facilities for The Summit residents will be provided at a centrally-located community center. Current plans call for an informal open space area next to the center, and greenways throughout the project which can be used for tot lots.

In addition, project residents will have access to public parks in the Mililani Mauka community, which is planned to include one 20-acre district park, one 12-acre neighborhood park and two four-acre neighborhood parks. These parks will be dedicated to the City and will comply with standards established by the City Department of Parks and Recreation.<sup>19</sup>

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<sup>17</sup> *Personal communication with Captain William Anana, Mililani Fire Station, March 13, 1992, and Captain John Clark, Administrative Services, Honolulu Fire Department, December 7, 1992.*

<sup>18</sup> *Personal communication with Tom Saka, Demographics Specialist, State Department of Education, March 13, 1992 and January 8, 1993.*

<sup>19</sup> *Helber, Hastert, Van Horn and Kimura, Planners, 1987.*

## **5. Possible Community Issues Related to The Summit**

Social impacts are changes to individuals and communities which are likely to occur with the presence of the proposed changes. Community issues are *reactions* of individuals and neighborhoods to a proposed change. Reactions and issues change over time, based on factors which influence public opinion, such as political leaders, new in-migrants, values, and the economy.

This section presents *possible* community issues on The Summit. This analysis was based on (1) issues addressed by the area's Neighborhood Boards independent of The Summit; (2) area surveys; and (3) positions of the Neighborhood Board on the proposed action. This analysis provides a full context for how the region and neighboring communities may feel about The Summit as of February 1993.

Section 5.1 presents an analysis of issues addressed by the Wahiawa and Mililani/Waipio/Melemanu Neighborhood Boards. The project site is located in the Wahiawa Neighborhood Board No. 26, but is geographically isolated from Wahiawa Town. The Mililani/Waipio/Melemanu Neighborhood Board No. 25 has been including Mililani Mauka (which is adjacent to the project site) in its discussions for practical purposes; i.e. it is part of the overall master plan for Mililani.

Section 5.2 presents comments of the Neighborhood Boards on this project. Section 5.3 suggests possible community issues which may arise in reaction to The Summit.

### **5.1 Community Issues Independent of The Summit**

The Neighborhood Board system is a formal mechanism for citizen input to public entities regarding islandwide City policies, specific community problems and other matters, and proposed changes. The types of issues addressed by a Neighborhood Board and subsequent actions often reflect values and concerns of the constituent population.

To understand the values, concerns and issues of study area residents, this study examined the minutes of two Neighborhood Boards. The project site is part of the area covered by the Wahiawa Neighborhood Board No. 26. Because of the site's proximity to Mililani Mauka and, hence, the Mililani community, this study also included the Mililani Neighborhood Board No. 25 in the issues analysis. Minutes for meetings held over a two-and-a-half year period (from September 1990 to January 1993) were reviewed. *Figure B* provides the boundaries of the two Neighborhood Boards.

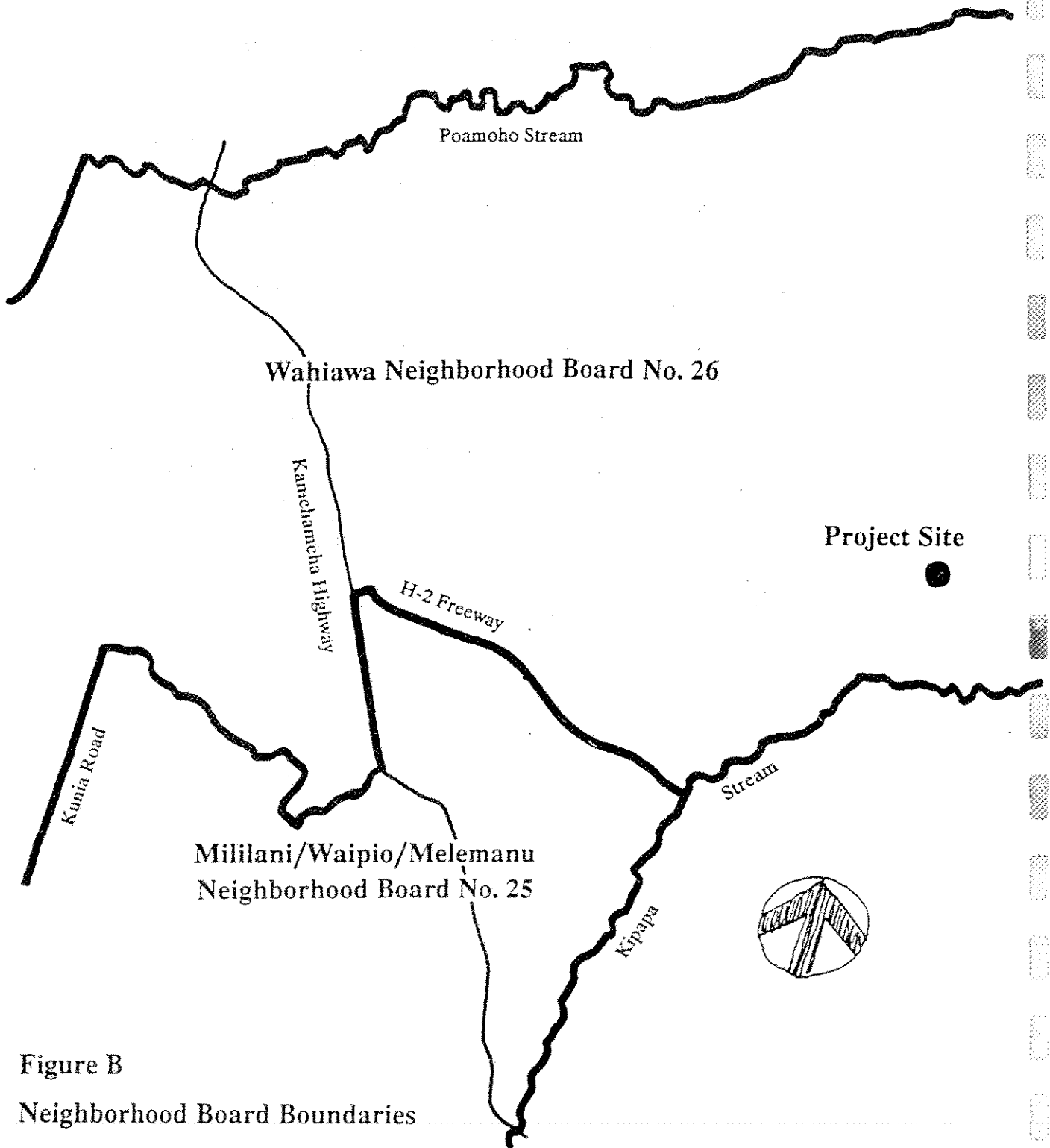


Figure B  
Neighborhood Board Boundaries

### 5.1.1 Wahiawa Neighborhood Board No. 26

Of the two Neighborhood Board areas, Wahiawa is older, and is historically a plantation community with a strong military influence. The Wahiawa Reservoir sharply defines the limits of Wahiawa Town, and new housing is mostly in the form of infill and density increases within residential areas. Hence, the Wahiawa Neighborhood Board deals with issues related to a stable residential community whose needs must be met within set boundaries and often with existing facilities.

Specific issues addressed by the Wahiawa Neighborhood Board include:

- \* Support for efforts in enhancing the natural environment -- This Board supported the concept of a wildlife refuge in the Ko'olaus, and encouraged the preservation of prime agricultural land in perpetuity.
- \* Retention of the low-density environment -- Wahiawa Neighborhood Board members, as well as Wahiawa residents who spoke to the Board, placed great value on retaining the single-family density in much of the community. When four-story apartments were presented to the Neighborhood Board, residents presented petitions opposing the transformation of the neighborhood with apartment buildings. Even an elderly apartment building proposed by the City and County of Honolulu was met with opposition.

It is noted, however, that the Board's desire to retain the relatively rural qualities did not extend to Mililani. The Wahiawa Neighborhood Board unanimously supported Development Plan changes related to the proposed Mililani Mauka project. Further, proposed zoning changes in the Mililani Technology Park were supported by the Wahiawa Neighborhood Board.

- \* Support for ohana zoning in Wahiawa and Whitmore -- The Board supported ohana zoning in these areas providing there is adequate sewer, water, roadways and other infrastructure.
- \* Support for recreational facilities -- This Neighborhood Board supported all proposals for recreational development, including the Makaleha Beach Park, a recreation field for Leilehua High School and funding to improve the Wahiawa Botanical Gardens. This position is responsive to a Board survey which indicated that Wahiawa residents want more recreational activities for their youth.
- \* Support for Mililani Technology Park -- The Wahiawa Neighborhood Board supported this park and supported developer efforts to rezone a portion for mixed use. When the City recommended an impact fee be part of the rezoning conditions, the Wahiawa Neighborhood Board opposed the impact fee and continued to support the rezoning.



- \* Improvement of infrastructure -- The Board actively sought to repair roadways and improve circulation patterns. Board members discussed items such as signalization, modifications to Kamehameha Highway, bus stops and services, and illegal parking.

The Wahiawa Neighborhood Board recently sponsored a survey and 766 responses were returned. The majority did not support a "1/2% increase in the excise taxes to pay for rapid transit." Sixty-five percent felt that Wahiawa needed more rental housing. Over half believed that prostitution is a major problem in Wahiawa and over three-fourths felt that "the proliferation of bars and cabarets [should] be discouraged in Wahiawa."<sup>20</sup>

### **5.1.2 Mililani Neighborhood Board No. 25**

The Mililani/Waipio/Melemanu Neighborhood Board addresses many issues related to growth and development. Because Mililani is a planned community, many public service and community needs are addressed in the master plan and in the land use approval process well before implementation of the different increments. Thus, the Mililani/Waipio/Melemanu Neighborhood Board constantly deals with changes on a regional level, as well as with site-specific proposals.

Specific issues addressed by this Neighborhood Board are as follows:

- \* Continued development of Mililani -- The Mililani/Waipio/Melemanu Neighborhood Board was kept apprised of the proposals and progress related to the growth of Mililani. The Board expressed ongoing support for these proposals, including the re-zoning of the Mililani Technology Park and the Development Plan amendments related to Mililani Mauka, as well as subsequent re-zoning requests.  
  
Like the Wahiawa Neighborhood Board, this Neighborhood Board opposed the impact fee on Mililani Technology Park suggested by the City. It was felt that the benefits should be directly related to impacts and the Board suggested that the benefits include (1) an employment or job training center; (2) child care facilities; and (3) transportation facilities.
- \* Regional infrastructure -- This Neighborhood Board expressed concern if a new project would affect existing infrastructure systems. There was concern about traffic. The Board supported mass transit and wanted to see nearby Crestview in Waipahu established as a terminus for mass transit.
- \* Planning emphasis -- The Mililani Neighborhood Board placed much emphasis on planning and new projects were often evaluated in the context of a major regional plan, such as the Mililani Master Plan and the

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<sup>20</sup> As provided in minutes of the Wahiawa Neighborhood Board No. 25 of the meeting held on January 25, 1993.

development plan for Mililani Mauka. Board members also appreciated when a developer presented the plans for a proposed project early in the process; one developer was criticized for not presenting the project's design in a timely fashion.

- \* Nearby jobs and housing -- Board members were very supportive of projects which would provide jobs near Mililani residences. Hence, both the Mililani Technology Park and the Gentry Industrial Park received Board support. Further, a major reason for supporting Mililani Mauka was the provision of housing.
- \* Strong interest in community-oriented proposals -- The Board supported the Olaloa Long-Term Care Facility, the City's Child Care Center in Mililani, a child care center at the Mililani Technology Park, and the Mililani Mauka Youth Center, and encouraged early implementation of a fire station at Mililani Mauka. Board members encouraged the City to maintain and replace worn out playground equipment.
- \* Inclusion of Mililani Mauka in this Neighborhood Board area -- Mililani Mauka is currently within the boundaries of the Wahiawa Neighborhood Board area. In July 1992, the Board petitioned the Neighborhood Commission to redraw the boundaries of the Mililani neighborhood to include Mililani Mauka. The Board noted that Mililani Mauka is historically part of Mililani, and that 297 Mililani Mauka residents (approximately one-third of the population at that time) signed the petition.<sup>21</sup>

In a survey reported in the Neighborhood Board minutes, the three most important problems facing the Mililani area are (1) traffic/transportation; (2) crime; and (3) crowded schools. A clear majority of the respondents favored including Mililani Mauka in the area covered by the Mililani/Waipio/Melemanu Neighborhood Board.

## **5.2 Community Comments Provided on The Summit**

### **5.2.1 Developer-Sponsored Survey**

The developer mailed surveys to 900 owner-occupants in Mililani Town to gauge preliminary community response to The Summit. There were 134 responses and the following summarizes the results:

- \* 97 percent said that they would be interested in living in the proposed project.
- \* 76 percent would be interested in the proposed project.
- \* 94 percent thought that the project would benefit the community.

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<sup>21</sup> *The Summit is adjacent to Mililani Mauka and would be included in the re-districting if implemented.*

- \* 94 percent believed that affordable housing is needed in the area.
- \* 91 percent "support[ed] any efforts to increase the supply of affordable homes in Hawaii."<sup>22</sup>

### 5.2.2 Neighborhood Board Positions

The Wahiawa Neighborhood Board voted to support the developmental concept of The Summit; the Board further did not "register any objections with [Housing Finance and Development Corporation] regarding this project."<sup>23</sup>

The Mililani/Waipio/Melemanu Neighborhood Board provided concerns on the project, and has not taken a position. The Board is concerned about the adequacy of sewer and water capacity after Mililani Mauka requirements are satisfied. Board members noted that it wanted to see a continued sense of area community between Mililani Town and the gated development. Further, the Board wants the developer to be involved in transportation improvements and traffic generation mitigative measures.<sup>24</sup>

### 5.3 Possible Community Issues Related to The Summit

Based on the analysis of information on the existing Study Area, minutes of the two Neighborhood Boards and stated positions, the following are preliminary community issues on The Summit:

1. Increase of affordable housing -- There will likely be support for the affordability aspect of The Summit. One of the central reasons for the support of Mililani Mauka was that the project was easing the housing shortage. With 83 percent of its units in the low-income and gap group ranges, The Summit will also help address the islandwide and regional housing shortage.
2. Cumulative impacts on infrastructure and public services -- The adequacy of the existing infrastructure systems, particularly roadways, will likely be an issue because the project will increase the residential population. Such an increase will also affect the delivery of resident-oriented public services and add more people to public places, such as parks. Community members will likely want the developer to demonstrate that The Summit will not over-stress these systems.

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<sup>22</sup> Information on the selection or description of survey recipients was not made available to Earthplan. Further, there is no indication of what project information was provided as the basis of the survey.

<sup>23</sup> Letter dated 4 November 1992 from John B. "Jack" Kampfer, Chair of the Wahiawa Neighborhood Board No. 26, to Joseph Conant, Executive Director of the Housing Finance and Development Corporation.

<sup>24</sup> Attachment to minutes of 24 June 1992 meeting of the Mililani/Waipio/Melemanu Neighborhood Board.

3. Community identity -- The community may identify The Summit in two ways. First, and very likely, is viewing The Summit as an expansion of the Mililani Mauka community. The project site abuts Mililani Mauka and will share many of Mililani's facilities, such as schools and commercial centers, and systems, such as the roads. The Mililani/Waipio/Melemanu Neighborhood Board has already indicated a desire to achieve "a continued sense of area" between Mililani Mauka and The Summit.

Second is the possible identification of The Summit with Wahiawa, since the project site is in the Wahiawa Neighborhood Board area. This identification of The Summit is highly unlikely, however, because of the site's geographic and practical distances from Wahiawa. Note that, in the Neighborhood Boards, there is current discussion of whether the Mililani Mauka community will remain as part of the Wahiawa Neighborhood Board.

4. Competition -- Residents may view The Summit as "competition" in two ways. First, as discussed in #2 of this section, the sheer increase in population will increase the competition for public services and infrastructure. Second, and on a larger scale, some people may consider The Summit as competitive with Mililani Mauka. The proposed project may be implemented prior to the completion of Mililani Mauka and may target the same housing market segment. Residents who are particularly supportive of Mililani Mauka and its developer may be apprehensive of timely implementation of Mililani Mauka.

There is also a possible sense of competition for parks and recreational areas. Whereas The Summit residents will be able to use Mililani Mauka recreational facilities because they will be public-dedicated, non-Summit residents will not be able to use on-site recreational facilities due to the gated aspect of the community. This may cause resentment on the part of Mililani Mauka, particularly if public recreational facilities become crowded.

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**NOISE STUDY FOR  
THE SUMMIT PROJECT  
CENTRAL OAHU, HAWAII**

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JANUARY 1992

**EXHIBIT E**  
**NOISE IMPACT STUDY**

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## CHAPTER I. SUMMARY

The existing and future traffic noise levels along the roadways which are expected to service the proposed Summit Project in Central Oahu were evaluated for their potential impact on present and future noise sensitive areas. The future traffic noise levels along the primary access roadways to the project were calculated for the Year 1996. By CY 1996 and following complete project build-out, traffic noise levels on H-2 Freeway are predicted to increase by 2.3 dB, which is considered to be a moderate increase. Along Meheula Parkway west (or makai) of H-2 Freeway, traffic noise levels are predicted to increase by 0.5 dB, which is considered to be minimal. On the mauka side of the freeway, traffic noise levels along Meheula Parkway are predicted to increase significantly by 6 to 7 dB due to the expected development of the Mililani-Mauka area. The predicted increases in traffic noise levels in currently populated areas along Meheula Parkway and H-2 Freeway range from insignificant to moderate increases.

The increases in traffic noise along H-2 Freeway due to project traffic are less than those due to non-project traffic, and will be very difficult to measure due to their relatively low levels. The largest increase in traffic noise levels attributable to project traffic is expected to occur along the mauka section of Meheula Parkway, but the increase is expected to be relatively insignificant at less than 1 dB. Overall, the increases in noise levels associated with project traffic are expected to be very low along both roadways and range between 0.1 to 0.9 Ldn. For this reason, adverse noise impacts associated with project traffic are not expected to occur.

Based on the currently available published and unpublished aircraft noise contours which were developed during AICUZ studies for Wheeler Airfield, the project site is located outside of the existing 60 Ldn noise contours, and is considered to be acceptable for the development of noise sensitive uses as planned. The AICUZ

contours for Wheeler Airfield are planned to be updated by the U.S. Army during CY 1992 following the recent transfer of the facility from the U.S. Air Force to the Army. Unless major increases in the current military operations or significant changes in the aircraft mix occur at Wheeler Airfield, special aircraft noise attenuation measures are not considered mandatory on the project site. The implementation of the noise disclosure provisions of Act 208 is recommended because of the very low background ambient noise levels at the project site and the audibility of the aircraft noise events which are associated with ground and air training activities north of the project site at East Range. Disclosure of simulated weapons firings at East Range using blank rounds and explosive simulators is also recommended.

Unavoidable, but temporary, noise impacts may occur during the construction of the proposed project. Because construction activities may be audible at adjoining properties, the quality of the acoustic environment may be degraded to unacceptable levels during periods of construction. Mitigation measures to reduce construction noise to inaudible levels will not be practical in all cases. For this reason, the use of quiet equipment and construction curfew periods as required under the State Department of Health noise regulations are recommended to minimize construction noise impacts.

## CHAPTER II. PURPOSE

The objectives of this study were to describe the existing and future noise environment in the environs of the proposed Summit Project in Central Oahu. Traffic noise level increases and impacts associated with the proposed development were to be determined within the project site as well as along the public roadways expected to service the project traffic. A specific objective was to determine future traffic noise level increases associated with both project and non-project traffic, and the potential noise impacts associated with these increases. Assessments of possible impacts from noise resulting from fixed and rotary wing aircraft operations at nearby Wheeler Field, military air/ground training activities at Schofield's East Range, and from short term construction noise at the project site were also included in the noise study objectives. Recommendations for minimizing these noise impacts were also to be provided as required.

### CHAPTER III. NOISE DESCRIPTORS AND THEIR RELATIONSHIP TO LAND USE COMPATIBILITY

The noise descriptor currently used by federal agencies to assess environmental noise is the Day-Night Average Sound Level (Ldn). This descriptor incorporates a 24-hour average of instantaneous A-Weighted Sound Levels as read on a standard Sound Level Meter. By definition, the minimum averaging period for the Ldn descriptor is 24 hours. Additionally, sound levels which occur during the nighttime hours of 10:00 PM to 7:00 AM are increased by 10 decibels (dB) prior to computing the 24-hour average by the Ldn descriptor. A more complete list of noise descriptors is provided in **APPENDIX B** to this report.

**TABLE 1**, derived from **Reference 1**, presents current federal noise standards and acceptability criteria for residential land uses. Land use compatibility guidelines for various levels of environmental noise as measured by the Ldn descriptor system are shown in **FIGURE 1**. As a general rule, noise levels of 55 Ldn or less occur in rural areas, or in areas which are removed from high volume roadways. In urbanized areas which are shielded from high volume streets, Ldn levels generally range from 55 to 65 Ldn, and are usually controlled by motor vehicle traffic noise. Residences which front major roadways are generally exposed to levels of 65 Ldn, and as high as 75 Ldn when the roadway is a high speed freeway. In the project area, which is well removed from traffic noise sources, background ambient noise levels are low and are controlled by other noise sources.

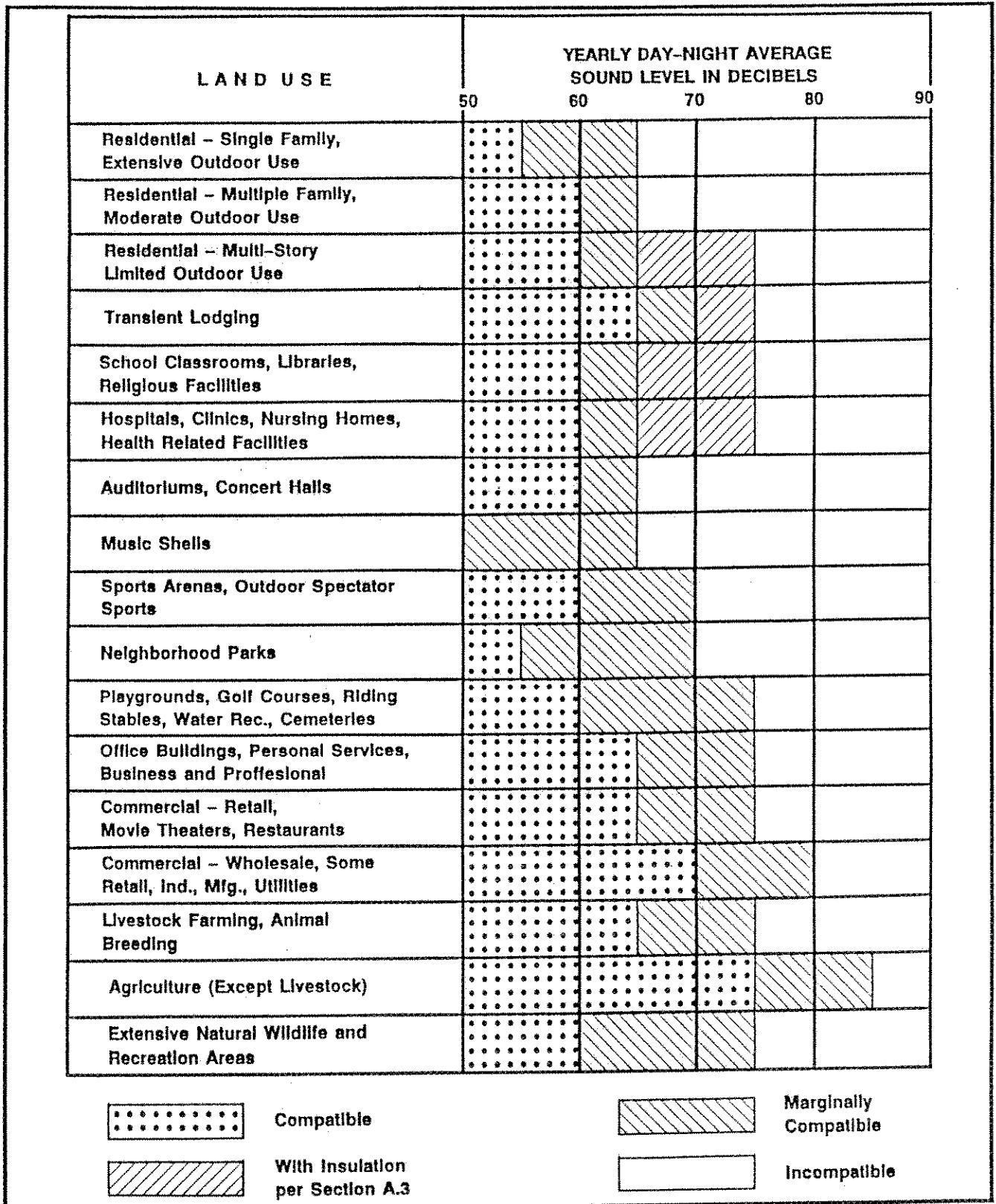
For the purposes of determining noise acceptability for funding assistance from federal agencies (FHA/HUD and VA), an exterior noise level of 65 Ldn or lower is considered acceptable. This standard is applied nationally (**Reference 2**), including Hawaii. Because of our open-living conditions, the predominant use of naturally ventilated dwellings, and the relatively low exterior-to-interior sound attenuation afforded by these naturally ventilated

**TABLE 1**  
**EXTERIOR NOISE EXPOSURE CLASSIFICATION**  
**(RESIDENTIAL LAND USE)**

NOISE EXPOSURE CLASS	DAY-NIGHT SOUND LEVEL	EQUIVALENT SOUND LEVEL	FEDERAL <sup>(1)</sup> STANDARD
Minimal Exposure	Not Exceeding 55 L <sub>dn</sub>	Not Exceeding 55 L <sub>eq</sub>	Unconditionally Acceptable
Moderate Exposure	Above 55 L <sub>dn</sub> But Not Above 65 L <sub>dn</sub>	Above 55 L <sub>eq</sub> But Not Above 65 L <sub>eq</sub>	Acceptable <sup>(2)</sup>
Significant Exposure	Above 65 L <sub>dn</sub> But Not Above 75 L <sub>dn</sub>	Above 65 L <sub>eq</sub> But Not Above 75 L <sub>eq</sub>	Normally Unacceptable
Severe Exposure	Above 75 L <sub>dn</sub>	Above 75 L <sub>eq</sub>	Unacceptable

Notes: (1) Federal Housing Administration, Veterans Administration, Department of Defense, and Department of Transportation.

(2) FHWA uses the L<sub>eq</sub> instead of the L<sub>dn</sub> descriptor. For planning purposes, both are equivalent if: (a) heavy trucks do not exceed 10 percent of total traffic flow in vehicles per 24 hours, and (b) traffic between 10:00 PM and 7:00 AM does not exceed 15 percent of average daily traffic flow in vehicles per 24 hours. The noise mitigation threshold used by FHWA for residences is 67 L<sub>eq</sub>.



LAND USE COMPATIBILITY WITH YEARLY DAY-NIGHT AVERAGE SOUND LEVEL AT A SITE FOR BUILDINGS AS COMMONLY CONSTRUCTED (Source: American National Standards Institute S3.23-1980)

FIGURE 1

structures, an exterior noise level of 65 Ldn does not eliminate all risks of noise impacts. Because of these factors, and as recommended in **Reference 3**, a lower level of 55 Ldn is considered as the "Unconditionally Acceptable" (or "Near-Zero Risk") level of exterior noise. However, after considering the cost and feasibility of applying the lower level of 55 Ldn, government agencies such as FHA/HUD and VA have selected 65 Ldn as a more appropriate regulatory standard.

For aircraft noise, the State Department of Transportation, Airports Division, has recommended that 60 Ldn be used as the common level for determining land use compatibility in respect to noise sensitive uses near its airports. In addition, for those noise sensitive land uses which are exposed to aircraft noise greater than 55 Ldn, the division recommends that disclosure of the aircraft noise levels be provided prior to any real property transactions. **Reference 4** requires that such disclosure be provided prior to real property transactions concerning properties located within Air Installation Compatibility Use Zones (AICUZ) or located within airport noise maps developed under Federal Aviation Regulation Part 150 - Airport Noise Compatibility Planning (14 CFR Part 150).

Impulsive noise sources (such as artillery and weapons firings) are not easily measurable for use in the Ldn descriptor system due to the short duration of the noise events. It should be noted that the noise compatibility guidelines and relationships to the Ldn noise descriptor may not apply to impulsive noise sources. The use of penalty factors (such as adding 10 dB to measured sound levels or using C-Weighting filters) have been proposed (**Reference 5**). However, the relationships between levels of impulsive noise sources and land use compatibility have not been as firmly established as have the relationships for non-impulsive sounds.

On Oahu, State and County noise regulations exist, and are enforced whenever noise emissions exceed specified levels and cause complaints from neighboring properties. State Department of



Health (DOH) and City and County of Honolulu Land Use Ordinance (LUO) noise regulations are expressed in maximum allowable property line noise limits rather than Ldn (see **References 6 and 7**). Although they are not directly comparable to noise criteria expressed in Ldn, state DOH noise limits for residential lands equate to approximately 55 Ldn, and CZC limits equate to approximately 59 Ldn.

The DOH noise limits for impulsive sounds at residential lots are 65 dB (Lmax) and 55 dB (Lmax) for daytime and nighttime periods, respectively. Under the DOH noise regulations, impulsive sounds which exceed the limits are allowable, providing they do not exceed 120 impulses (or 2 minutes of total duration) per 20 minute period.

## CHAPTER IV. GENERAL STUDY METHODOLOGY

Noise Measurements. Measurements of background ambient noise and noise from aircraft and military ground training activities were made at the project site on December 30, 1991, and on January 9, 15, and 16, 1992. The locations of the measurement sites are shown in **FIGURE 2**. The January dates were selected to fall between Tuesday and Thursday, which were reported to be the most active ground training days during any given week. The sites of the noise measurements were selected for their proximity to the area of the military ground training activities, and for their proximity to the ground tracks of aircraft operating at Wheeler Air Force Base. A small sample of noise data were collected from weapons firings and/or simulators.

Traffic Noise. Traffic noise predictions were performed using the Federal Highway Administration (FHWA) Noise Prediction Model (**Reference 8**), and traffic data from the traffic study (**Reference 9**) for the project. Historical traffic counts obtained by the State Department of Transportation for Meheula Parkway and H-2 Freeway (**Reference 10**) were used to develop the relationship between peak hour  $Leq(h)$  and daily  $Ldn$  traffic noise levels. For existing and future traffic along H-2 Freeway, it was assumed that the average noise level, or  $Leq(h)$ , during the PM peak hour were 1.5 dB less than the 24-hour  $Ldn$  along the freeway. This assumption was based on computations of both the hourly  $Leq$  and the 24-hour  $Ldn$  of traffic noise along H-2 Freeway (see **FIGURE 3**). For Meheula Parkway and the project's access roads, it was assumed that the average noise level, or  $Leq(h)$ , during the PM peak hour were 1.0 dB less than the 24-hour  $Ldn$ .

Traffic noise calculations for both the existing and future conditions in the project environs were developed for ground level receptors without the benefit of shielding effects. Traffic assignments with and without the project were obtained from the



FIGURE 3

HOURLY VARIATIONS OF TRAFFIC NOISE AT 100 FT  
SETBACK DISTANCE FROM THE CENTERLINE OF  
H-2 FREEWAY SOUTH OF MEHEULA PARKWAY  
(FEBRUARY 26-28, 1990)



project's traffic study (Reference 9). The forecasted increases in traffic noise levels over existing levels were calculated for both scenarios, and noise impact risks evaluated. The relative contributions of non-project and project related traffic to the total noise levels were also calculated, and an evaluation was made of possible traffic noise impacts resulting from the project.

Aircraft Noise. The most recent published noise contours for Wheeler Air Force Base (WAFB) were constructed in 1982 (Reference 11). Efforts were initiated by the Army to update the 1982 noise contours in 1985, but were not completed. During the 1985 update effort, measurements of community noise around the airfield were obtained at locations west of the project site (Reference 12). From these measurements, it was concluded that the 65 Ldn aircraft noise contour does not extend beyond the property boundaries of the military base. Plans are under way to update the Wheeler Airfield noise contours following the transfer of the facility to the U.S. Army. Although the 1982 and preliminary 1985 noise contours for Wheeler indicate that noise levels at the project site were compatible with residential land uses, additional aircraft noise measurements were obtained at the project site to estimate the current noise level from all aircraft operations at the project site.

## CHAPTER V. EXISTING NOISE ENVIRONMENT

Measured Noise Levels. The steady background ambient noise levels at the interior locations on or adjacent to the project site are controlled by the natural sounds of birds and foliage movement with the wind. FIGURES 4 thru 6 depict the measured variations in background ambient noise during quiet periods at Locations "A" thru "C". During periods of military activity at or near East Range, ambient noise levels at Location "C" increased to the range of 50 to 55 Leq(h) due to military helicopters which hovered over the range or flew near the project site. Because the site is removed from major roadways and is currently undeveloped, background ambient noise levels (as measured on a sound level meter) are approximately 30 to 40 Leq(h), with minimum sound levels of 20 to 25 dB also occurring. The relationship of the project site's noise environment to those of other locations on Oahu is shown in FIGURE 7.

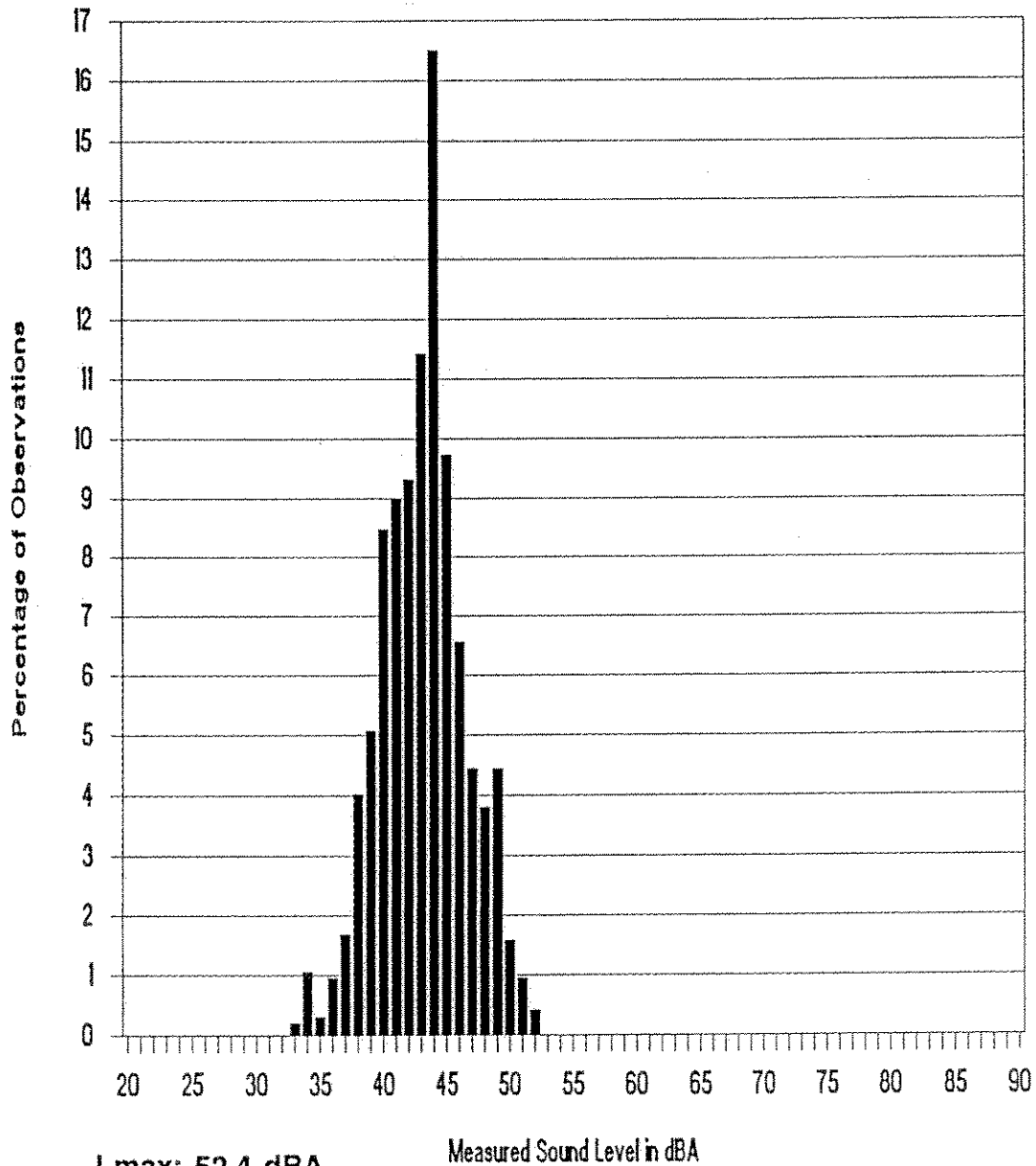
The dominant noise sources in the project area are rotary and fixed wing aircraft which fly near the project site. Weapons and/or simulator firings during ground training activities at East Range are audible due to the low background noise levels, but these events do not control the hourly Leq or daily Ldn levels at the project site. The ambient noise levels in the project site are normally low and rise during aircraft flyby events. However, the occurrence of weapons and/or simulator firings near the proposed project site serve as audible reminders that an Army training area is nearby.

The results of the on-site measurements of background noise levels at Location "C" are shown in TABLES 3 thru 5. In general, aircraft noise events did not exceed 76 dB (Lmax), and their mean levels were typically less than 70 dB (Lmax). The louder and/or longer duration aircraft noise events were generally responsible for causing the measured average or Equivalent Noise Levels (Leq) to exceed 50 Leq(h). These louder aircraft noise events were

**FIGURE 4**  
**HISTOGRAM OF A-WEIGHTED SOUND LEVELS**  
**AT LOCATION 'A'**  
**(1300 HRS TO 1315 HRS)**

DATE: December 30, 1991

METER RESPONSE: Slow

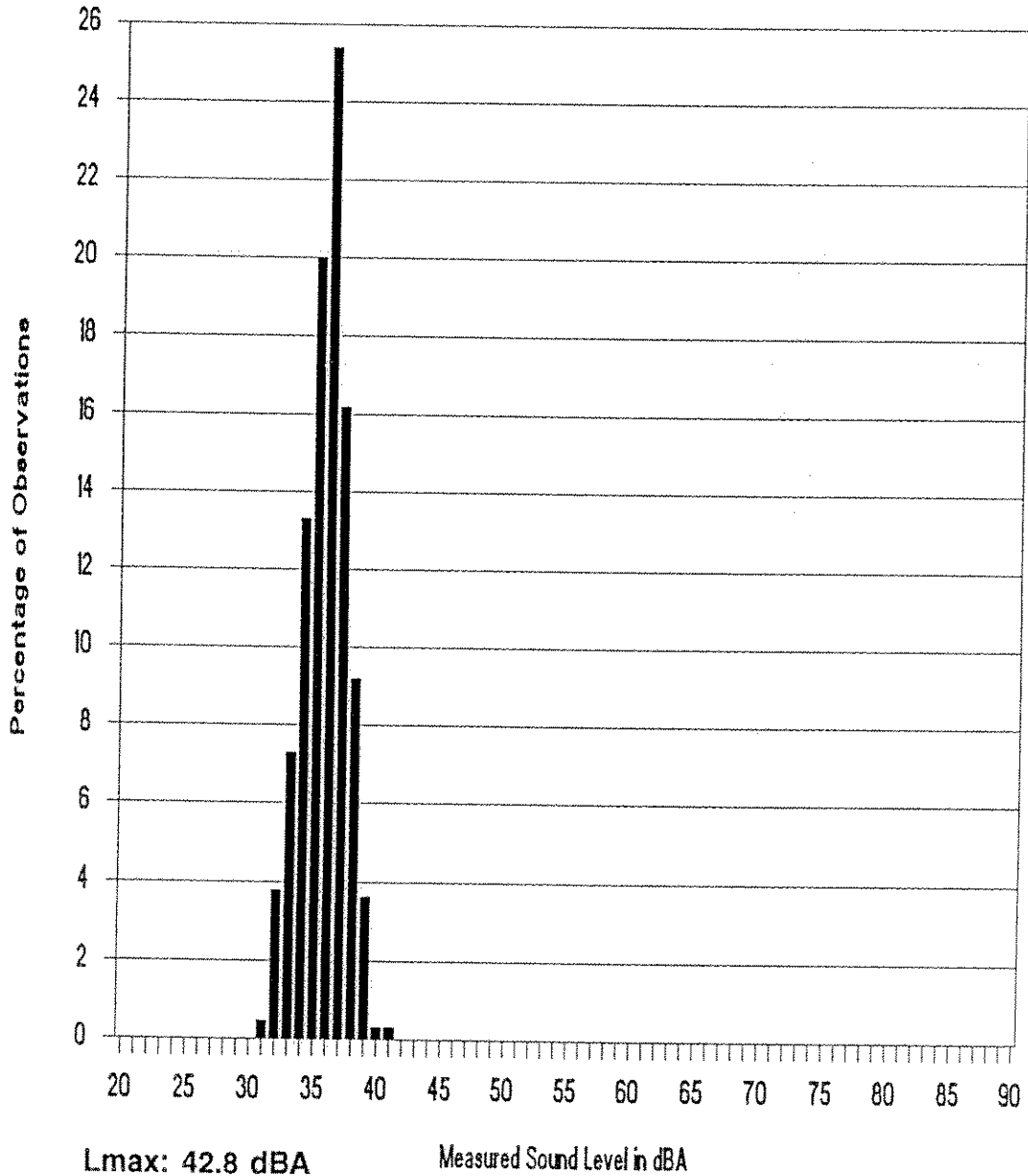


Lmax: 52.4 dBA  
 L10: 48.0 dBA  
 Leq: 44.2 dBA  
 Lmin: 33.9 dBA

**FIGURE 5**  
**HISTOGRAM OF A-WEIGHTED SOUND LEVELS**  
**AT LOCATION 'B'**  
**(1330 HRS TO 1345 HRS)**

DATE: December 30, 1991

METER RESPONSE: Slow



Lmax: 42.8 dBA  
 L10: 38.0 dBA  
 Leq: 36.2 dBA  
 Lmin: 31.8 dBA

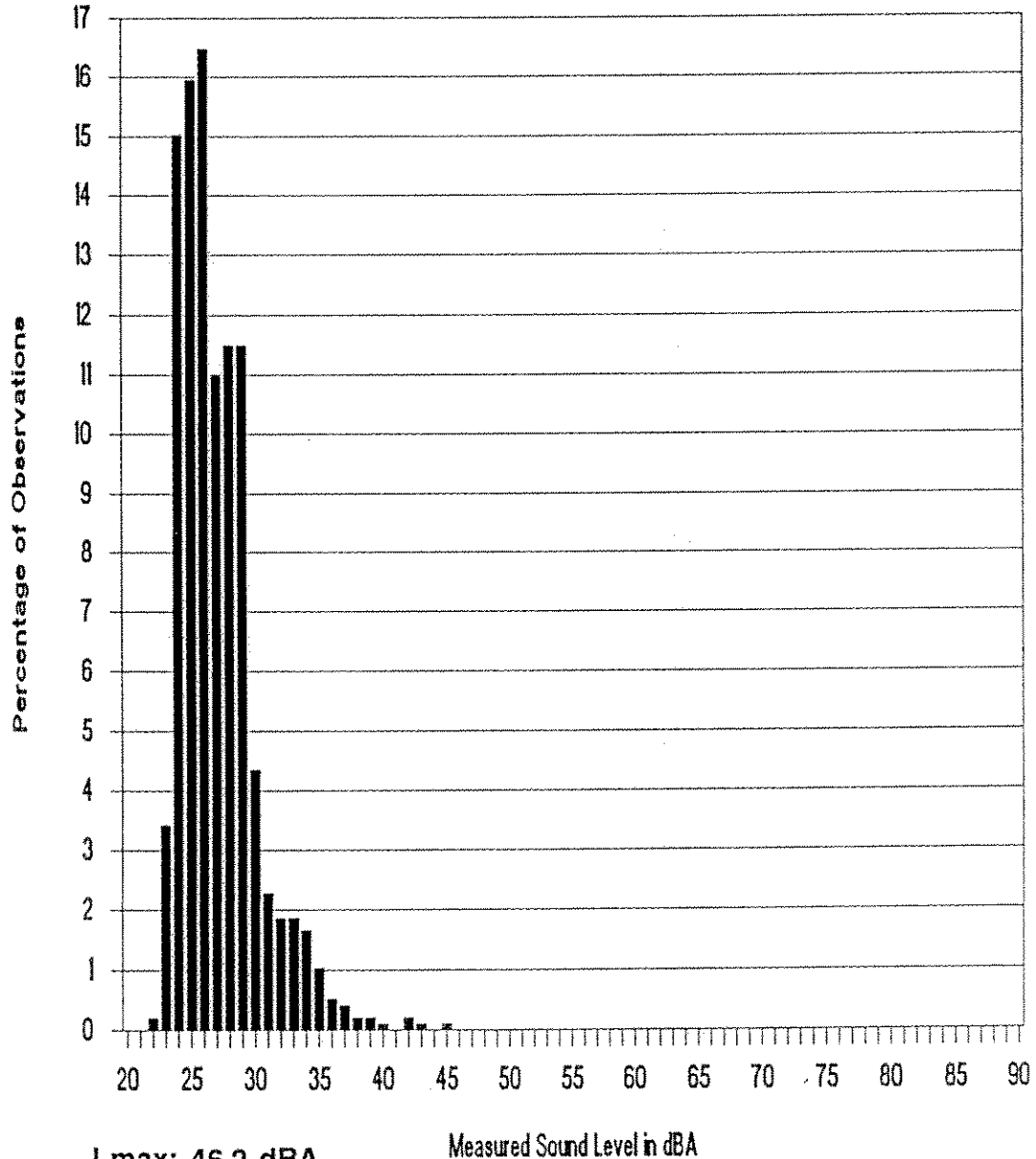
Measured Sound Level in dBA



**FIGURE 6**  
**HISTOGRAM OF A-WEIGHTED SOUND LEVELS**  
**AT LOCATION 'C'**  
**(1010 HRS TO 1040 HRS)**

DATE: January 9, 1992

METER RESPONSE: Slow



Lmax: 46.2 dBA  
 L10: 31.0 dBA  
 Leq: 28.5 dBA  
 Lmin: 22.8 dBA

**FIGURE 7**  
**RANGE OF EXTERIOR BACKGROUND AMBIENT NOISE LEVELS**

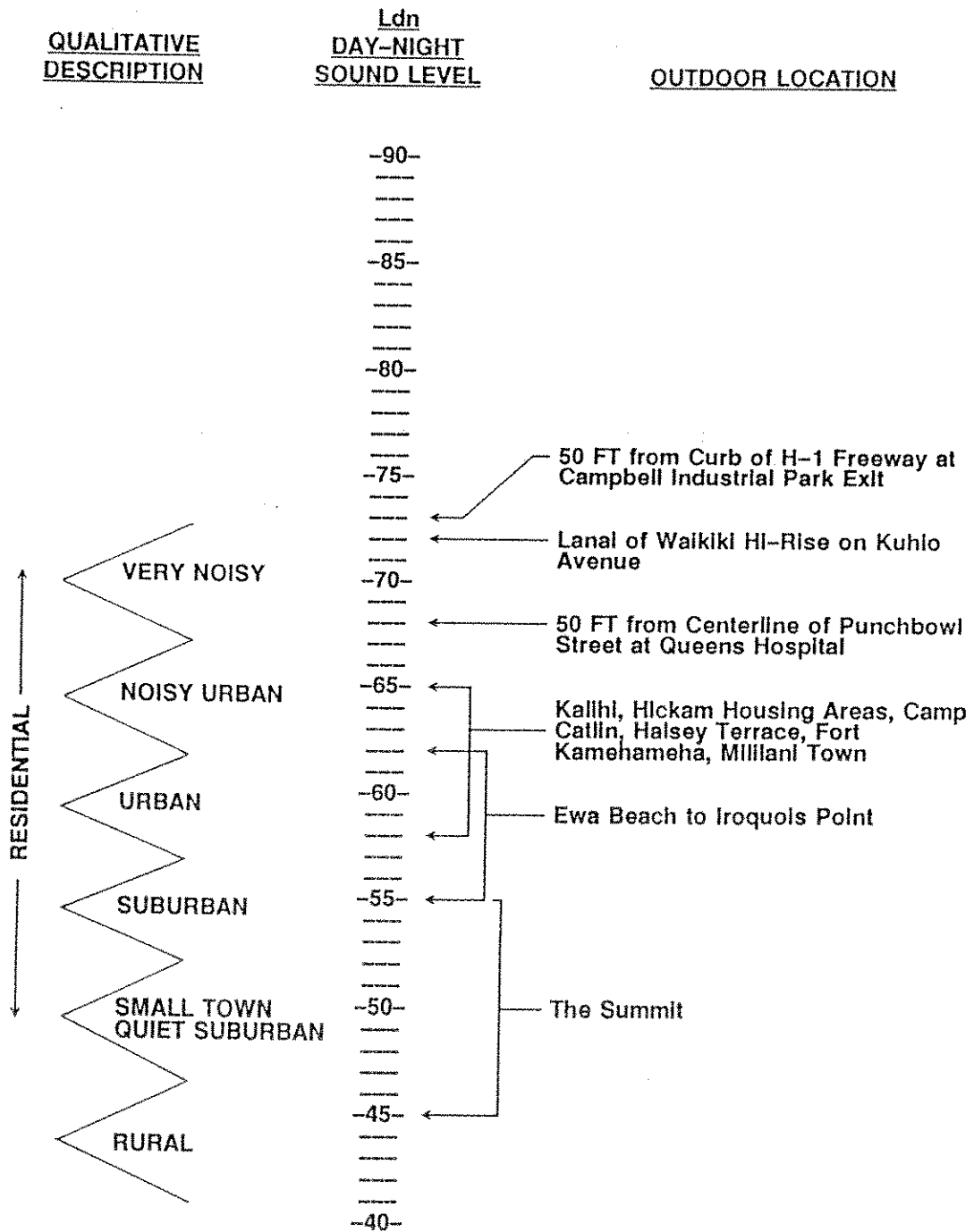


TABLE 3

SUMMARY OF AIRCRAFT NOISE MEASUREMENTS  
 (LOCATION 'C'; JANUARY 9, 1992)  
 (0930 TO 1030 HRS)

<u>AIRCRAFT TYPE</u>	<u>MAXIMUM SOUND LEVELS Lmax (in dB)</u>	<u>SOUND EXPOSURE LEVELS Lse (in dB)</u>
GA-1	48.4	58.4
F-15	75.6	86.8

Composite Aircraft Equivalent Sound Level (Leq): 51.2 dB

(LOCATION 'C'; JANUARY 9, 1992)  
 (1030 TO 1130 HRS)

<u>AIRCRAFT TYPE</u>	<u>MAXIMUM SOUND LEVELS Lmax (in dB)</u>	<u>SOUND EXPOSURE LEVELS Lse (in dB)</u>
Helicopter	55.2	65.8
UH-1	55.9	62.4

Composite Aircraft Equivalent Sound Level (Leq): 31.9 dB

(LOCATION 'C'; JANUARY 9, 1992)  
 (1130 TO 1230 HRS)

<u>AIRCRAFT TYPE</u>	<u>MAXIMUM SOUND LEVELS Lmax (in dB)</u>	<u>SOUND EXPOSURE LEVELS Lse (in dB)</u>
Helicopter	66.4	76.8
GA-1	55.7	64.5

Composite Aircraft Equivalent Sound Level (Leq): 41.5 dB

TABLE 3 (CONTINUED)

SUMMARY OF AIRCRAFT NOISE MEASUREMENTS  
 (LOCATION 'C'; JANUARY 9, 1992)  
 (1230 TO 1330 HRS)

<u>AIRCRAFT TYPE</u>	<u>MAXIMUM SOUND LEVELS Lmax (in dB)</u>	<u>SOUND EXPOSURE LEVELS Lse (in dB)</u>
GA-1	48.2; 48.3; 46.1	55.5; 55.4; 54.0
AH-1	74.4	82.9
UH-1	57.4; 68.5; 46.7	67.0; 74.1; 55.7

Composite Aircraft Equivalent Sound Level (Leq): 48.0 dB

(LOCATION 'C'; JANUARY 9, 1992)  
 (1330 TO 1430 HRS)

<u>AIRCRAFT TYPE</u>	<u>MAXIMUM SOUND LEVELS Lmax (in dB)</u>	<u>SOUND EXPOSURE LEVELS Lse (in dB)</u>
GA-1	45.6	50.8
P-3	59.8	65.9
KC-135	62.6	69.0
AH-1	51.0; 47.6; 55.8	61.2; 52.9; 64.2
UH-1	42.3; 53.9	48.9; 65.0
OH-58	41.3	48.7

Composite Aircraft Equivalent Sound Level (Leq): 37.3 dB

TABLE 3 (CONTINUED)

SUMMARY OF AIRCRAFT NOISE MEASUREMENTS  
 (LOCATION 'C'; JANUARY 9, 1992)  
 (1430 TO 1530 HRS)

<u>AIRCRAFT TYPE</u>	<u>MAXIMUM SOUND LEVELS</u>	<u>SOUND EXPOSURE LEVELS</u>
	<u>L<sub>max</sub> (in dB)</u>	<u>L<sub>se</sub> (in dB)</u>
F-15	72.6; 70.7	79.8; 78.3
AH-1	47.8; 45.8; 53.0; 49.0	55.8; 54.5; 60.9; 56.8
UH-1	64.2; 56.8	69.9; 65.1

Composite Aircraft Equivalent Sound Level (Leq): 47.0 dB

(LOCATION 'C'; JANUARY 9, 1992)  
 (1530 TO 1600 HRS)

<u>AIRCRAFT TYPE</u>	<u>MAXIMUM SOUND LEVELS</u>	<u>SOUND EXPOSURE LEVELS</u>
	<u>L<sub>max</sub> (in dB)</u>	<u>L<sub>se</sub> (in dB)</u>
GA-2	62.0	69.2
OH-58	56.0	64.7

Composite Aircraft Equivalent Sound Level (Leq): 38.0 dB

TABLE 4

SUMMARY OF NOISE MEASUREMENTS OF AIRCRAFT AND WEAPONS FIRING  
(LOCATION 'C'; JANUARY 15, 1992) Leq(5 HR) = 49.8 dB

SOURCE	L <sub>max</sub>			MEAN	ST DEV	SAMPLES
GAL MC-TRACK	38.5			38.5	0.0	1
AH1 KT-TRACK	56.3	54.9	65.4	59.7	4.3	4
OH58 KT-TRACK	45.5	54.5	53.0	52.1	4.1	5
UH1 KT-TRACK	57.4	57.8	69.5	61.6	5.6	3
UH60 KT-TRACK	60.1	62.8	61.4	61.4	1.1	3
GAL FLYBY	42.5	38.5	36.5	42.5	5.3	9
GA2 FLYBY	52.4	49.3	59.0	53.0	3.6	4
AH1 FLYBY	63.1	83.4	50.5	64.0	10.8	5
OH58 FLYBY	52.8	56.5	55.1	54.8	1.5	3
UH60 FLYBY	71.8	58.3	63.4	59.4	6.7	10
BELL206 FLYBY	52.9	61.6		57.3	4.4	2
HIGH JETS	42	52	41	44.0	5.8	6
SIMULATORS	54	49	67	56.7	7.6	3
MACHINE GUN/ SMALL ARMS BLANKS	50	51	46	47.5	4.9	13
	41	42	48	43	4.9	
				45		
				52		
				58		
				49		
				52		
				41		
				52		
				45		

Notes: Aircraft grouped as "KT-Track" were observed flying a straight ground track after takeoff to the north of the property boundary to Ku Tree Reservoir. Aircraft grouped as "MC-Track" were observed flying a right turn after takeoff generally following H-2 south toward Mililani Cemetery.

TABLE 5

SUMMARY OF NOISE MEASUREMENTS OF AIRCRAFT AND WEAPONS FIRING  
(LOCATION 'C'; JANUARY 16, 1992) Leq(5.5 HR) = 49.4 dB

<u>SOURCE</u>	<u>Imax</u>			<u>MEAN</u>	<u>ST DEV</u>	<u>SAMPLES</u>
GA2 MC-TRACK	62.8			62.8	0.0	1
OH58 KT-TRACK	50.5	54.9	53.7	53.0	1.9	3
UH1 KT-TRACK	57.8	57.8	58.0	58.4	0.8	4
UH1 MC-TRACK	65.4			65.4	0.0	1
UH1 FLYBY	52.2	52.2		52.2	0.0	2
UH1 RAPELLING	72.5	72.5		72.5	0.0	2
GA1 FLYBY	53.0	49.4	49.0	45.2	43.1	35.5
				45.9	40.1	8
OH58 FLYBY	46.0			46.0	0.0	1
SIMULATOR	69.6			69.6	0.0	1
MACHINE GUN/ SMALL ARMS BLANKS	58	54	50	48	50	50
	50	50	50	45	55	45
	50	50	55	50	55	50
	50	50	50	50	50	55
	38	52	53	54	57	54
	55	40	40	45	46	50
				48	46	48
MASS VOICES	43	50	48	47.0	2.9	3

Notes: Aircraft grouped as "KT-Track" were observed flying a straight ground track after takeoff to the north of the property boundary to Ku Tree Reservoir. Aircraft grouped as "MC-Track" were observed flying a right turn after takeoff generally following H-2 south toward Millani Cemetery.

"UH1 Rappelling" consisted of repetitive pickup and low-altitude rappelling. The two events observed lasted 1 hour 40 minutes running concurrently.

"Mass Voices" were soldiers calling marching/physical exercise cadence in unison. Duration of events were 11, 3, and 18 minutes respectively.

identified as an F-15 in transit at 76 dB (Lmax), helicopters hovering over East Range at 73 dB (Lmax), and a low flyover by a helicopter at 83 dB (Lmax).

Single shots and bursts of weapons and/or simulator firings were measured on January 15 and 16 (see TABLES 4 and 5). Measured maximum (Lmax using FAST meter response) levels of the weapons firings at Location "C" ranged from 40 to 55 dB, with typical average values of 48 to 50 dB. Blast noise events were also audible at Location "C", and they ranged from 49 to 70 dB (Lmax).

Aircraft Noise. Aircraft noise sources in the project environs are associated with fixed and rotary wing aircraft operations at Wheeler Airfield, helicopter operations at Schofield's East Range, and with high altitude aircraft transiting over central Oahu. TABLES 3 thru 5 summarize the results of the aircraft noise measurements obtained at Location "C", which was adjacent to the northwest corner of the project site. Maximum aircraft noise levels were typically less than 76 dB, but they were usually the loudest noise sources measured. Annually averaged aircraft noise levels over the project site probably do not exceed 55 Ldn, but due to the low background noise levels in the project area, aircraft noise tends to be very audible and noticeable. Based on this estimate of aircraft noise over the project site, it was concluded that special aircraft noise mitigation measures are not required, but that disclosure of aircraft noise for the entire project site is warranted.

Traffic Noise. H-2 Freeway, which is west of the project site, is the dominant traffic noise source in the project environs. The existing traffic noise environment along H-2 Freeway is in the "Significant Exposure, Normally Unacceptable" category, with traffic noise levels ranging from 65 to 75 Ldn along the Right-of-Way. However, since the project site is approximately two miles northeast of H-2 Freeway at its closest point of ap-



proach, highway traffic is not a significant noise source at the project site.

Calculations of existing traffic noise levels along H-2 Freeway and Meheula Parkway during the PM peak traffic hour are presented in **TABLE 6**. The hourly Leq (or Equivalent Sound Level) contribution from each roadway section in the project environs was calculated for comparison with forecasted traffic noise levels with and without the project. The existing setback distances from the roadways' centerlines to their associated 60, 65, and 70 Ldn contours were also calculated as shown in **TABLE 7**. The contour line setback distances do not take into account noise shielding effects or the additive contributions of traffic noise from intersecting street sections. Based on the results of **TABLES 6 and 7**, it was concluded that the existing traffic levels along Meheula Parkway east (or mauka) of H-2 Freeway are very low, and that the noise contours associated with the parkway or the freeway do not extend into the project site.

Existing traffic noise levels at the project site are low (less than 55 Ldn) due to the large setback distances from H-2 Freeway and Meheula Parkway. At the project site, aircraft noise is the dominant noise source. A discussion of existing aircraft noise levels on the project site was provided in the previous section. Between aircraft noise events, background ambient noise levels drop to a range of 30 to 35 dB (see **FIGURES 4 and 5**) and can go below 30 dB during calm periods (see **FIGURE 6**).

TABLE 6

COMPARISONS OF EXISTING AND FUTURE TRAFFIC NOISE LEVELS  
(PM PEAK HOUR AND 100 FT FROM ROADWAY CENTERLINES)

LOCATION	SPEED		** HOURLY LEQ IN dB @ 100' **			
	(MPH)	VPH	AUTO	MT	HT	ALL VEH
<u>EXISTING (1991) PM PEAK HR. TRAFFIC:</u>						
H-2 Freeway (South of Parkway)	55	5,354	68.6	63.6	65.4	71.1
H-2 Freeway (North of Parkway)	55	3,880	67.2	62.2	64.0	69.7
Meheula Parkway (Mauka of H-2)	45	184	50.7	45.0	46.8	53.0
Meheula Parkway (Makai of H-2)	35	2,522	57.9	52.7	55.5	60.7
<u>FUTURE (1996) PM PEAK HR. TRAFFIC:</u>						
H-2 Freeway (South of Parkway)	55	8,837	70.8	65.8	67.6	73.3
H-2 Freeway (North of Parkway)	55	6,532	69.5	64.5	66.2	72.0
Meheula Parkway (Mauka of H-2)	35	2,151	57.3	52.0	54.8	60.0
Meheula Parkway (Makai of H-2)	35	2,822	58.4	53.2	56.0	61.1

Notes:

1. Assumed traffic mix of 96% autos, 2.5% medium trucks, and 1.5% heavy vehicles on H-2 Freeway.
2. Assumed traffic mix of 97% autos, 2% medium trucks, and 1% heavy vehicles on Meheula Parkway.

TABLE 7

EXISTING AND FUTURE DISTANCES TO 60, 65, AND 70 Ldn CONTOURS

STREET SECTION	60 Ldn SETBACK (FT)		65 Ldn SETBACK (FT)		70 Ldn SETBACK (FT)	
	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE
H-2 Freeway (South of Parkway)	697	973	323	452	150	210
H-2 Freeway (North of Parkway)	562	795	261	369	121	171
Meheula Parkway (Mauka of H-2)	40	116	18	54	8	25
Meheula Parkway (Makai of H-2)	129	139	60	65	28	30

Notes:

- (1) All setback distances are from roadways' centerlines.
- (2) See TABLE 6 for traffic volume, speed, and mix assumptions.
- (3) Ldn assumed to be 1.5 dB greater than PM Peak Hour Leq for H-2 Freeway.
- (4) Ldn assumed to be 1.0 dB greater than PM Peak Hour Leq for Meheula Parkway.
- (5) Setback distances are for unobstructed line-of-sight conditions.
- (6) Soft ground conditions assumed along all roadways.

## CHAPTER VI. FUTURE NOISE ENVIRONMENT

Traffic Noise. Predictions of future traffic noise levels were made using the traffic volume assignments of Reference 9 for CY 1996 with and without the proposed project. The future assignments of project plus non-project traffic on the roadway sections which would service the project are shown in TABLE 6 for the PM peak hour of traffic. As indicated in TABLE 6, by CY 1996 and following complete project build-out, traffic noise levels on H-2 Freeway are predicted to increase by 2.3 dB, which is considered to be a moderate increase. Along Meheula Parkway west (or mauka) of H-2 Freeway, traffic noise levels are predicted to increase by 0.5 dB, which is considered to be minimal. On the mauka side of the freeway, traffic noise levels along Meheula Parkway are predicted to increase significantly by 7.0 dB due to the expected development of the Mililani-Mauka area. The predicted increases in traffic noise levels in currently populated areas along Meheula Parkway and H-2 Freeway range from insignificant to moderate increases.

TABLE 7 summarizes the predicted increases in the future setback distances to the 60, 65, and 70 Ldn traffic noise contour lines along the roadways servicing the project and attributable to both project plus non-project traffic in CY 1996. The setback distances in TABLE 7 do not include the beneficial effects of noise shielding from terrain features and highway cuts, or the detrimental effects of additive contributions of noise from intersecting streets. As indicated in TABLE 7, the setback distances to the 65 Ldn contour are predicted to range from 369 to 452 FT from the centerline of H-2 Freeway following project build-out in CY 1996. Along Meheula Parkway, predicted setback distances to the 65 Ldn contour range from 54 to 65 FT following project build-out.

TABLE 8 presents the predicted increases in traffic noise levels associated with non-project and project traffic by CY 1996,

TABLE 8

CALCULATIONS OF PROJECT AND NON-PROJECT TRAFFIC  
NOISE CONTRIBUTIONS (CY 1996)

STREET SECTION	NOISE LEVEL INCREASES (Ldn) DUE TO	
	NON-PROJECT TRAFFIC	PROJECT TRAFFIC
H-2 Freeway (South of Parkway)	2.1	0.1
H-2 Freeway (North of Parkway)	2.2	0.1
Meheula Parkway (Mauka of H-2)	6.1	0.9
Meheula Parkway (Makai of H-2)	0.3	0.1

and as measured by the Ldn descriptor system. As indicated in TABLE 8, the increases in traffic noise along H-2 Freeway due to project traffic are less than those due to non-project traffic, and will be very difficult to measure due to their relatively low levels. The largest increase in traffic noise levels attributable to project traffic are expected to occur along the mauka section of Meheula Parkway, but the increase is expected to be relatively insignificant at less than 1 dB. Overall, the increases in noise levels associated with project traffic are expected to be very low along both roadways and range between 0.1 to 0.9 Ldn. For this reason, adverse noise impacts associated with project traffic are not expected to occur.

Non-Traffic Noise. Aircraft noise over the project site is not expected to exceed 55 or 60 Ldn on an annually averaged basis. Although the aircraft flyby events will continue to be audible at long distances due to the low background ambient noise levels, they should generally be below 70 dB (Lmax), which is not considered to be excessive. This level of noise is not difficult to attenuate if required for noise sensitive individuals. Although the aircraft flyby events will be audible outside the buildings of the project, they can be attenuated using conventional construction materials to produce acceptable interior noise levels. The exterior aircraft noise levels are not considered to be high for or excessive for residential land uses, but may annoy some future residents who feel the aircraft flyby events or overflights are not necessary.

The firing of weapons (using blanks) and simulators are not excessively loud events, and can be attenuated as required to produce acceptable interior noise levels within the project's buildings. Problems with the State DOH noise regulations along the project's lot boundary line are not expected from the weapons firings, since the majority of the measured data were less than 55 dB (Lmax). Noise simulators (artillery and grenade) would be in com-

pliance with the DOH noise limits if they do not exceed 120 explosions in any 20 minute period. The future residents of the proposed project will probably be able to hear the weapons and noise simulator firings while outdoors. As the area west of the project is urbanized, background ambient noise levels from distant traffic in Mililani-Mauka are expected to increase and will provide some degree of sound masking. This will tend to make the weapons and simulator noise events less audible in the project area. The acceptance of this type of audible noise by the future project residents will depend upon their noise sensitivity and other non-acoustic, attitudinal biases of the receptors. Because the proposed project is a residential development, the risks of complaints from audible training activities at East Range will exist, but the risks of averse health and welfare effects from these noise events are considered to be minimal due to the relatively low levels of these noise events.

CHAPTER VII. OTHER NOISE IMPACT CONSIDERATIONS  
AND POSSIBLE NOISE MITIGATION MEASURES

Aircraft Noise, Overflights, and Ground Training Activities.

Based on currently available aircraft noise contours and measurements, special aircraft noise attenuation measures are not considered mandatory on the project site. Existing aircraft noise levels are less than 55 Ldn, and special noise mitigation measures are not considered to be necessary. Nevertheless, helicopter flight corridors should be established around the project site to minimize risks of complaints from future project residents regarding low level overflights by military helicopters, and to minimize the total amount of sound attenuation treatments which may be desired by some residents for aircraft noise reductions. If possible, these flight corridors should be located north and east of the project site.

The disclosure of the military ground and air training activities at East Range to potential residents of the project is recommended. These disclosures will help to minimize risks of future complaints and organized community reaction against these training activities.

As the Mililani-Mauka area becomes more urbanized, constraints on East Range training operations may increase. The use of pulsed laser weapons simulators instead of blank ammunition should be considered for their applicability at East Range. These new-technology devices were used at the Army's National Training Center at Fort Irwin, California (Reference 13), and have the additional benefit of scoring "kills" under simulated battlefield conditions. The use of the new weapons simulators may be beneficial over the long term should training activities intensify.

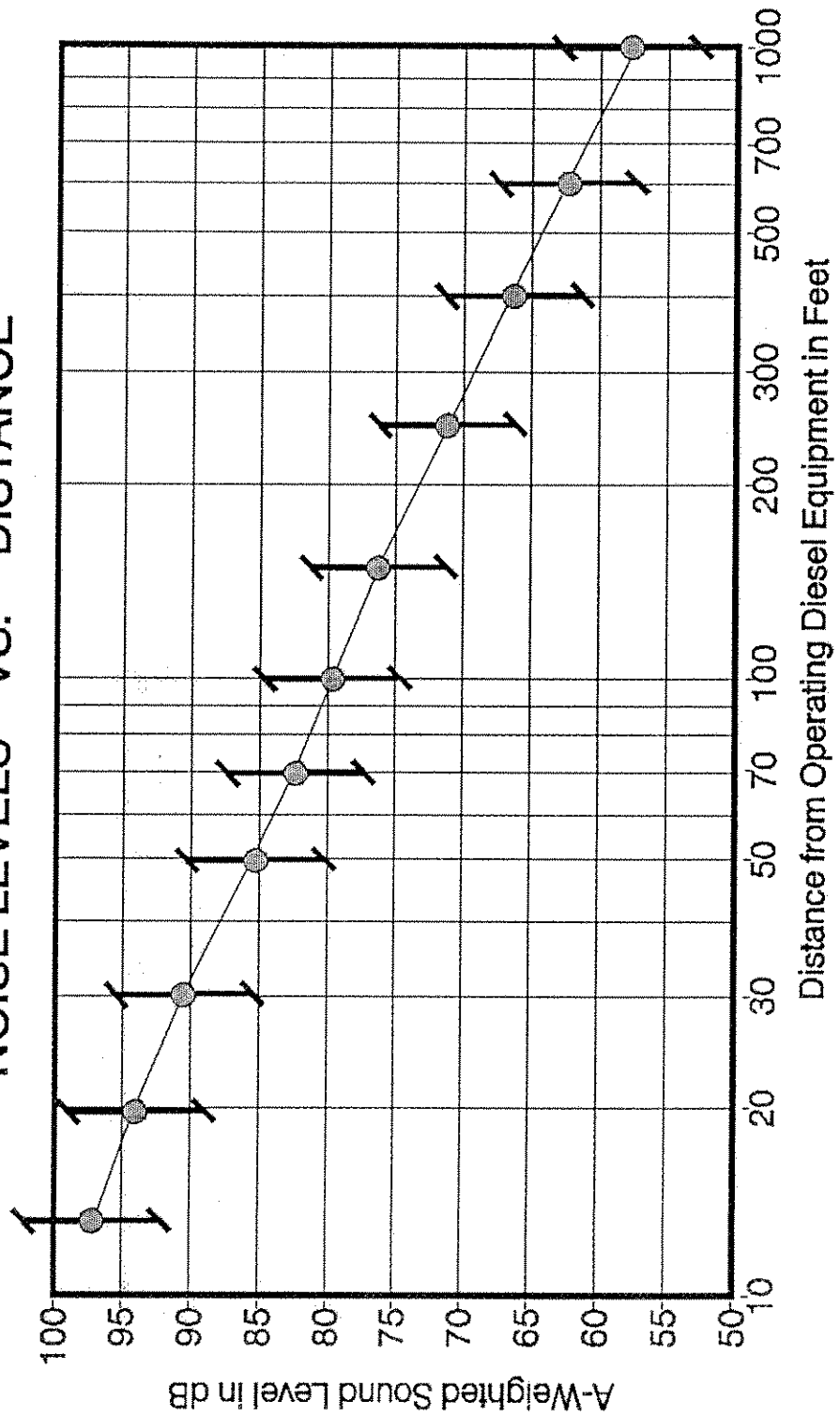
Construction Noise. Audible construction noise will probably be unavoidable during the entire project construction period. The total time period for construction is unknown, but it is antici-



pated that the actual work will be moving from one location on the project site to another during that period. Actual length of exposure to construction noise at any receptor location will probably be less than the total construction period for the entire project. Typical levels of noise from construction activity (excluding pile driving activity) are shown in **FIGURES 8 and 9**. Adverse impacts from construction noise are not expected to be in the "public health and welfare" category due to the temporary nature of the work and due to the administrative controls available for its regulation. Instead, these impacts will probably be limited to the temporary degradation of the quality of the acoustic environment in the immediate vicinity of the project site.

Mitigation of construction noise to inaudible levels will not be practical in all cases due to the intensity of construction noise sources (80 to 90+ dB at 50 FT distance), and due to the exterior nature of the work (grading and earth moving, trenching, concrete pouring, hammering, etc.). The use of properly muffled construction equipment should be required on the job site. The incorporation of State Department of Health construction noise limits and curfew times, which are applicable on the island of Oahu (**Reference 6**), is another noise mitigation measure which can be applied to this project. **TABLE 9** depicts the allowed hours of construction for normal construction noise (levels which do not exceed 95 dB at the project's property line) and for construction noise which exceeds 95 dB at the project's property line. Noisy construction activities are not allowed on holidays under the DOH permit procedures.

# ANTICIPATED RANGE OF CONSTRUCTION NOISE LEVELS VS. DISTANCE



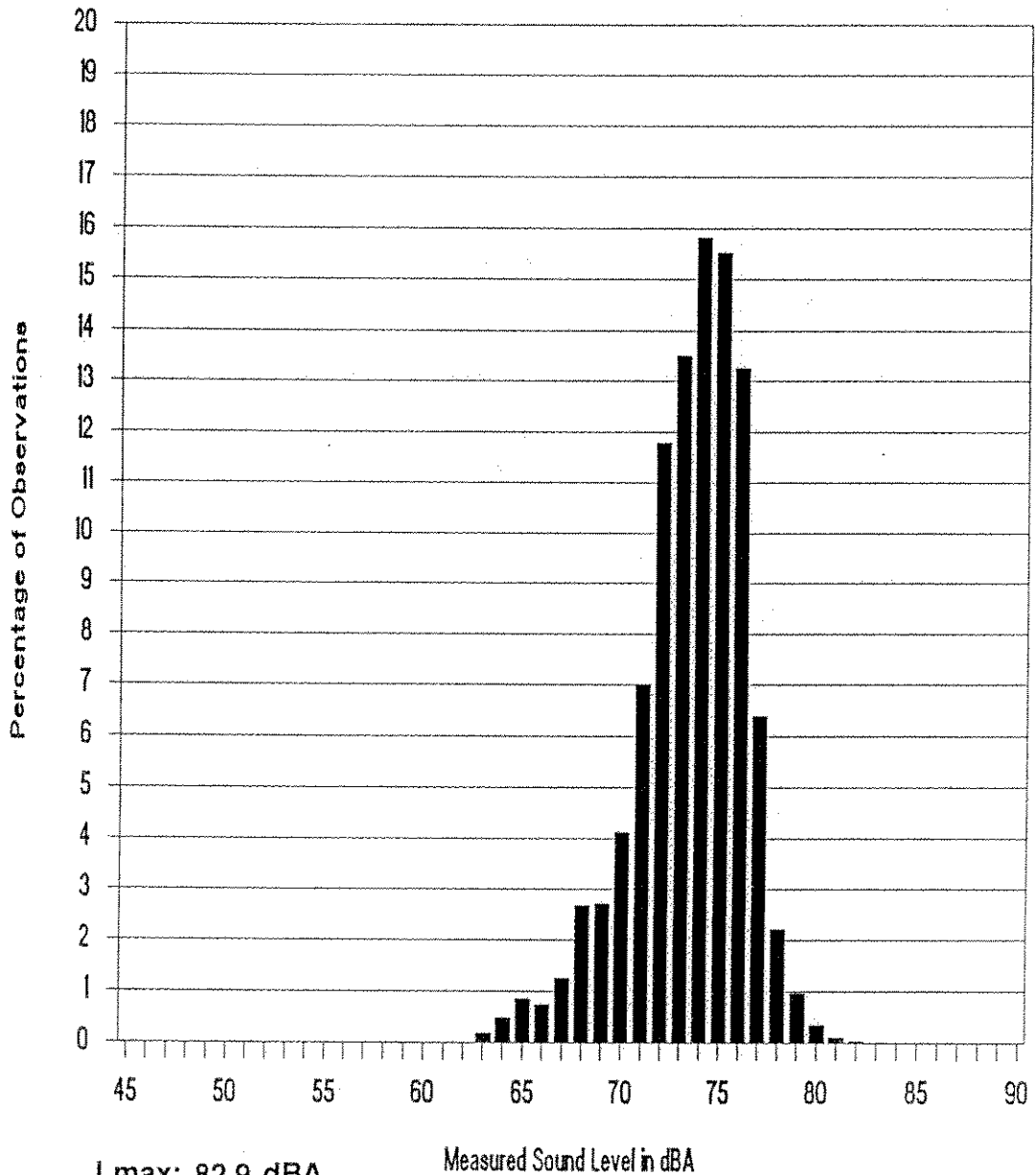
CONSTRUCTION NOISE LEVELS VS. DISTANCE

FIGURE  
8

**FIGURE 9**  
**TYPICAL NOISE LEVELS FROM**  
**GRADING WORK AT 100 FT DISTANCE**

DATE: May 21, 1990

METER RESPONSE: Slow

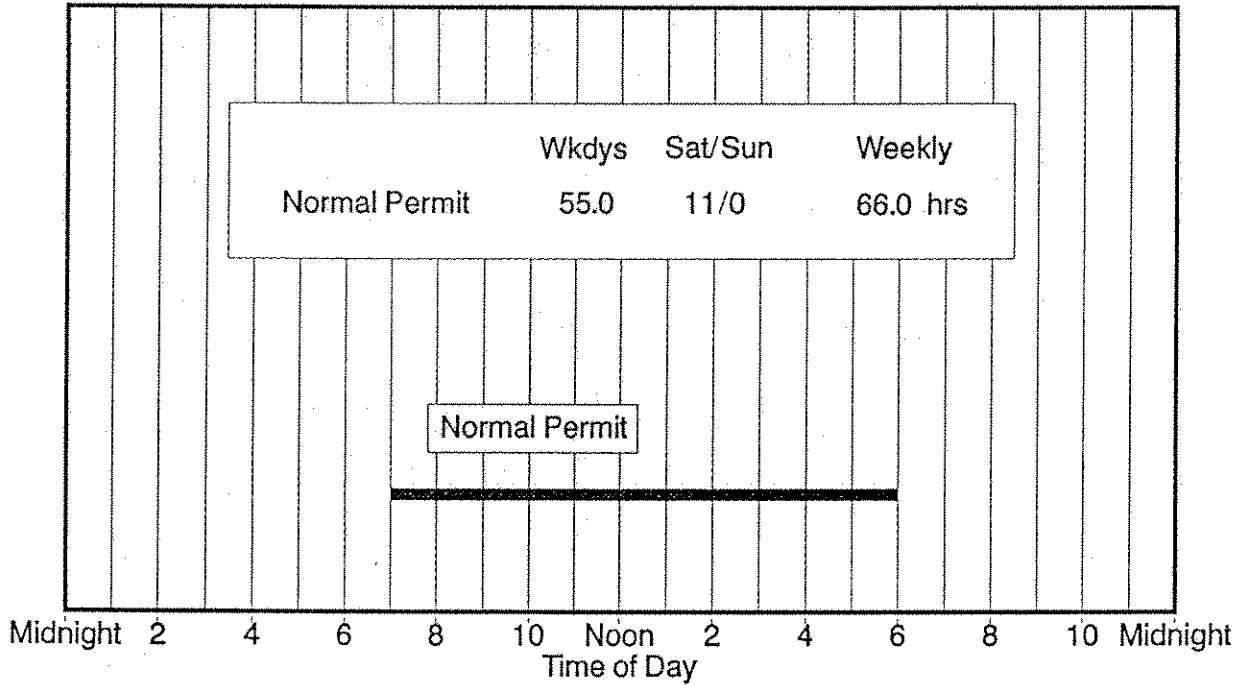


Lmax: 82.9 dBA  
 L10: 77.0 dBA  
 Leq: 74.7 dBA  
 Lmin: 63.0 dBA

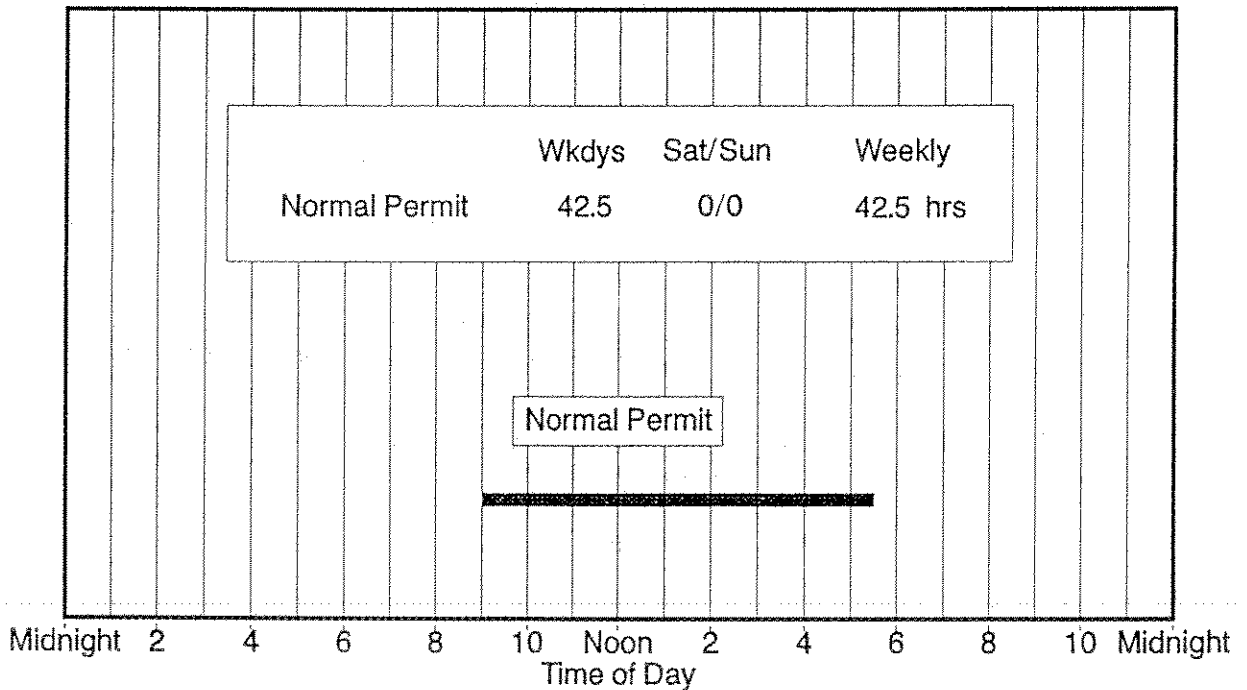
TABLE 9

AVAILABLE WORK HOURS UNDER DOH  
PERMIT PROCEDURES FOR CONSTRUCTION NOISE

a. DOH PERMIT FOR NOISE EMISSIONS  $\leq 95$  dBA.



b. DOH PERMIT FOR NOISE EMISSIONS  $> 95$  dBA.



## APPENDIX A. REFERENCES

- (1) "Guidelines for Considering Noise in Land Use Planning and Control"; Federal Interagency Committee on Urban Noise; June 1980.
- (2) "Environmental Criteria and Standards, Noise Abatement and Control, 24 CFR, Part 51, Subpart B"; U.S. Department of Housing and Urban Development; July 12, 1979.
- (3) "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety"; Environmental Protection Agency (EPA 550/9-74-004); March 1974.
- (4) Act 208, Session Laws of Hawaii 1987; Fourteenth Legislature, State of Hawaii; June 7, 1987.
- (5) "Method for Assessment of High-Energy Impulsive Sounds with Respect to Residential Communities;" Draft American National Standard, ANSI S12.4; Acoustical Society of America.
- (6) "Title 11, Administrative Rules, Chapter 43, Community Noise Control for Oahu"; Hawaii State Department of Health; November 6, 1981.
- (7) "Land Use Ordinance, Section 3.100, Noise Regulations;" City and County of Honolulu; October 22, 1986.
- (8) Barry, T. and J. Reagan, "FHWA Highway Traffic Noise Prediction Model"; FHWA-RD-77-108, Federal Highway Administration; Washington, D.C.; December 1978.
- (9) "DRAFT Traffic Impact Analysis Report for The Summit;" The Traffic Management Consultant; December 1991.
- (10) February 26-28, 1990 24-Hour Traffic Counts; Station H2-5, H-2 Freeway at Meheula Parkway; Hawaii State Department of Transportation.
- (11) Environmental Noise Assessment No. 52-34-0449-84, Airfield Noise Monitoring, Wheeler Army Airfield, Hawaii, 4 November-15 December 1982.
- (12) "Noise Survey Report for Wheeler AFB AICUZ Study;" BBN Laboratories, Inc.; January 1986.
- (13) "Simulating 'The Right Stuff'," IEEE Spectrum, March 1985, pg. 46.

## APPENDIX B (CONTINUED)

### TABLE I

#### A-WEIGHTED RECOMMENDED DESCRIPTOR LIST

<u>TERM</u>	<u>SYMBOL</u>
1. A-Weighted Sound Level	$L_A$
2. A-Weighted Sound Power Level	$L_{WA}$
3. Maximum A-Weighted Sound Level	$L_{max}$
4. Peak A-Weighted Sound Level	$L_{Apk}$
5. Level Exceeded x% of the Time	$L_x$
6. Equivalent Sound Level	$L_{eq}$
7. Equivalent Sound Level over Time (T) <sup>(1)</sup>	$L_{eq}(T)$
8. Day Sound Level	$L_d$
9. Night Sound Level	$L_n$
10. Day-Night Sound Level	$L_{dn}$
11. Yearly Day-Night Sound Level	$L_{dn}(Y)$
12. Sound Exposure Level	$L_{SE}$

(1) Unless otherwise specified, time is in hours (e.g. the hourly equivalent level is  $L_{eq}(1)$ ). Time may be specified in non-quantitative terms (e.g., could be specified a  $L_{eq}(WASH)$  to mean the washing cycle noise for a washing machine).

SOURCE: EPA ACOUSTIC TERMINOLOGY GUIDE, BNA 8-14-78, NOISE REGULATION REPORTER.

## APPENDIX B

### EXCERPTS FROM EPA'S ACOUSTIC TERMINOLOGY GUIDE

#### Descriptor Symbol Usage

The recommended symbols for the commonly used acoustic descriptors based on A-weighting are contained in Table I. As most acoustic criteria and standards used by EPA are derived from the A-weighted sound level, almost all descriptor symbol usage guidance is contained in Table I.

Since acoustic nomenclature includes weighting networks other than "A" and measurements other than pressure, an expansion of Table I was developed (Table II). The group adopted the ANSI descriptor-symbol scheme which is structured into three stages. The first stage indicates that the descriptor is a level (i.e., based upon the logarithm of a ratio), the second stage indicates the type of quantity (power, pressure, or sound exposure), and the third stage indicates the weighting network (A, B, C, D, E....). If no weighting network is specified, "A" weighting is understood. Exceptions are the A-weighted sound level and the A-weighted peak sound level which require that the "A" be specified. For convenience in those situations in which an A-weighted descriptor is being compared to that of another weighting, the alternative column in Table II permits the inclusion of the "A". For example, a report on blast noise might wish to contrast the LCdn with the LAdn.

Although not included in the tables, it is also recommended that "Lpn" and "Lepn" be used as symbols for perceived noise levels and effective perceived noise levels, respectively.

It is recommended that in their initial use within a report, such terms be written in full, rather than abbreviated. An example of preferred usage is as follows:

The A-weighted sound level (LA) was measured before and after the installation of acoustical treatment. The measured LA values were 85 and 75 dB respectively.

#### Descriptor Nomenclature

With regard to energy averaging over time, the term "average" should be discouraged in favor of the term "equivalent". Hence, Leq is designated the "equivalent sound level". For Ld, Ln, and Ldn, "equivalent" need not be stated since the concept of day, night, or day-night averaging is by definition understood. Therefore, the designations are "day sound level", "night sound level", and "day-night sound level", respectively.

The peak sound level is the logarithmic ratio of peak sound pressure to a reference pressure and not the maximum root mean square pressure. While the latter is the maximum sound pressure level, it is often incorrectly labelled peak. In that sound level meters have "peak" settings, this distinction is most important.

"Background ambient" should be used in lieu of "background", "ambient", "residual", or "indigenous" to describe the level characteristics of the general background noise due to the contribution of many unidentifiable noise sources near and far.

With regard to units, it is recommended that the unit decibel (abbreviated dB) be used without modification. Hence, DBA, PNdB, and EPNdB are not to be used. Examples of this preferred usage are: the Perceived Noise Level (Lpn was found to be 75 dB. Lpn = 75 dB). This decision was based upon the recommendation of the National Bureau of Standards, and the policies of ANSI and the Acoustical Society of America, all of which disallow any modification of bel except for prefixes indicating its multiples or submultiples (e.g., deci).

#### Noise Impact

In discussing noise impact, it is recommended that "Level Weighted Population" (LWP) replace "Equivalent Noise Impact" (ENI). The term "Relative Change of Impact" (RCI) shall be used for comparing the relative differences in LWP between two alternatives.

Further, when appropriate, "Noise Impact Index" (NII) and "Population Weighed Loss of Hearing" (PHL) shall be used consistent with CHABA Working Group 69 Report Guidelines for Preparing Environmental Impact Statements (1977).

## APPENDIX B (CONTINUED)

### TABLE II RECOMMENDED DESCRIPTOR LIST

TERM	ALTERNATIVE <sup>(1)</sup>		OTHER <sup>(2)</sup>	UNWEIGHTED
	A-WEIGHTING	A-WEIGHTING	WEIGHTING	
1. Sound (Pressure) Level <sup>(3)</sup>	$L_A$	$L_{pA}$	$L_B, L_{pB}$	$L_p$
2. Sound Power Level	$L_{WA}$		$L_{WB}$	$L_W$
3. Max. Sound Level	$L_{max}$	$L_{Amax}$	$L_{Bmax}$	$L_{pmax}$
4. Peak Sound (Pressure) Level	$L_{Apk}$		$L_{Bpk}$	$L_{pk}$
5. Level Exceeded x% of the time	$L_x$	$L_{Ax}$	$L_{Bx}$	$L_{px}$
6. Equivalent Sound Level	$L_{eq}$	$L_{Aeq}$	$L_{Beq}$	$L_{peq}$
7. Equivalent Sound Level Over Time(T) <sup>(4)</sup>	$L_{eq(T)}$	$L_{Aeq(T)}$	$L_{Beq(T)}$	$L_{peq(T)}$
8. Day Sound Level	$L_d$	$L_{Ad}$	$L_{Bd}$	$L_{pd}$
9. Night Sound Level	$L_n$	$L_{An}$	$L_{Bn}$	$L_{pn}$
10. Day-Night Sound Level	$L_{dn}$	$L_{Adn}$	$L_{Bdn}$	$L_{pdn}$
11. Yearly Day-Night Sound Level	$L_{dn(Y)}$	$L_{Adn(Y)}$	$L_{Bdn(Y)}$	$L_{pdn(Y)}$
12. Sound Exposure Level	$L_S$	$L_{SA}$	$L_{SB}$	$L_{Sp}$
13. Energy Average value over (non-time domain) set of observations	$L_{eq(e)}$	$L_{Aeq(e)}$	$L_{Beq(e)}$	$L_{peq(e)}$
14. Level exceeded x% of the total set of (non-time domain) observations	$L_{x(e)}$	$L_{Ax(e)}$	$L_{Bx(e)}$	$L_{px(e)}$
15. Average $L_x$ value	$L_x$	$L_{Ax}$	$L_{Bx}$	$L_{px}$

(1) "Alternative" symbols may be used to assure clarity or consistency.

(2) Only B-weighting shown. Applies also to C,D,E,.....weighting.

(3) The term "pressure" is used only for the unweighted level.

(4) Unless otherwise specified, time is in hours (e.g., the hourly equivalent level is  $L_{eq(1)}$ ). Time may be specified in non-quantitative terms (e.g., could be specified as  $L_{eq(WASH)}$  to mean the washing cycle noise for a washing machine.





WATER SUPPLY FOR THE BOWER ESTATE PROPERTY

MILILANI, OAHU, HAWAII

TMK: 9-5-3:10

Prepared for

ROBERT MAXWELL & COMPANY

1750 Kalakaua Avenue

Honolulu, Hawaii 96826

Prepared by

MINK & YUEN, INCORPORATED

100 North Beretania Street, Suite 303

Honolulu, Hawaii 96817

August, 1991

EXHIBIT F. WATER SUPPLY REPORT

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## I. INTRODUCTION

The property (Bower Estate) proposed for residential development is the terminal extension of the relatively flat ridge between Waikakalaua and Kipapa streams. Seaward of the property is Mililani Mauka, while inland the rough land of the Koolau Range starts. The upper portion of the property, about 53 acres, falls in the Conservation Zone while the lower 75 acres are zoned for agriculture. Figure 1 is a map of Oahu showing the general location of the property.

Except at the very inland border of the property, the land is level to gently sloping at an elevation ranging from about 1000 to 1050 feet above sea level. The highest, most inland point appears to be about 1130 feet above sea level (elevations taken from 1:24,000 topographic map).

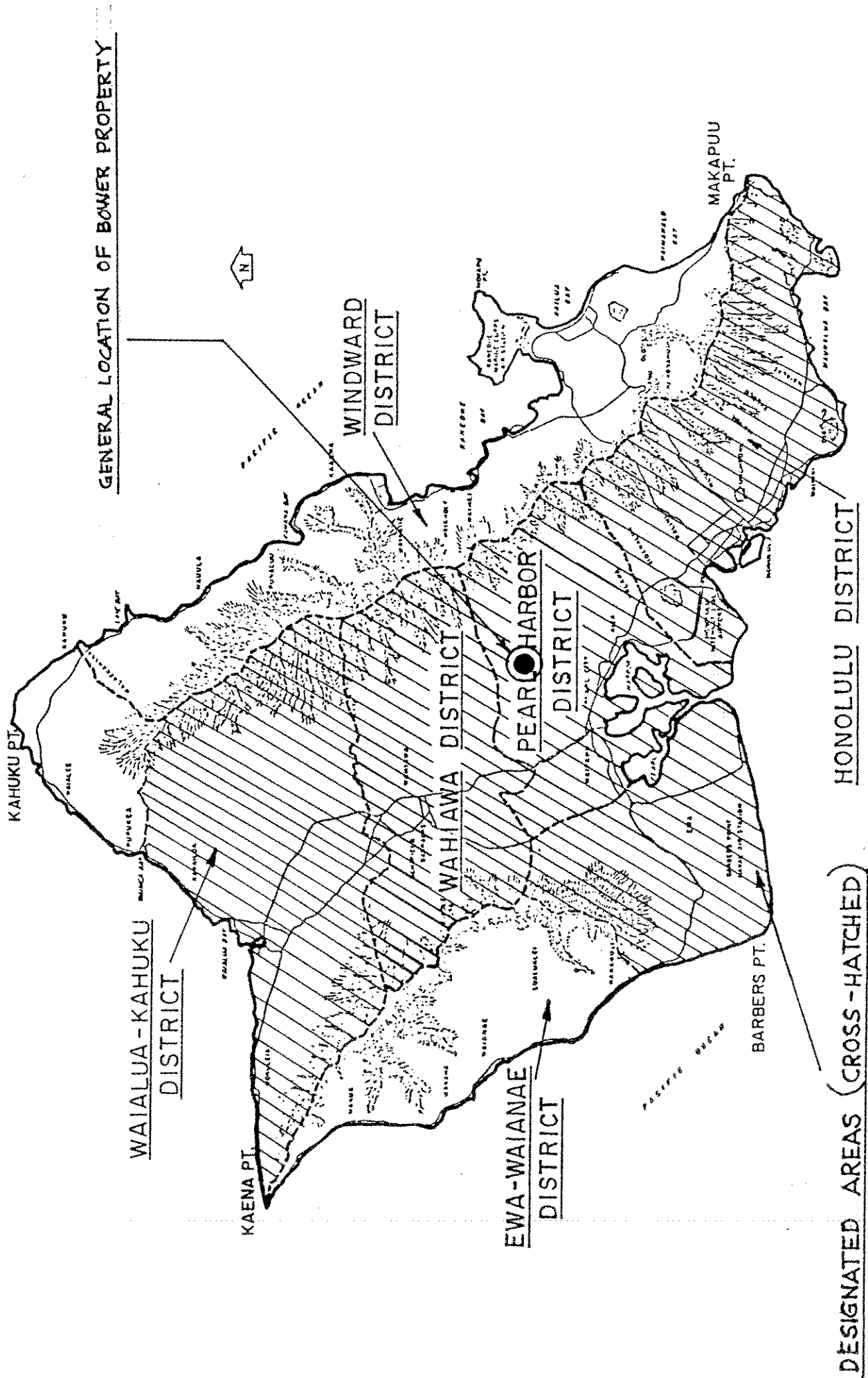


FIG. 1

MAP OF OAHU SHOWING DESIGNATED AREAS

On either side of the ridge facet the land plunges steeply over a drop of 200 feet into the gulches of Waikakalaua and a tributary of Kipapa. The rough gulch terrain will probably be incorporated into the Conservation Zone because it would be unusable without massive, environmentally destructive earth movement. The flat ridge, on the other hand, is ideal for residential development that would not appreciably diminish environmental values.

Figure 2 shows the location of the property as well as the former pineapple fields that are being transformed into Castle & Cooke's Mililani Mauka. Figure 3 is an aerial photograph of the property.

UNIT OF T INTERIOR  
LOGICAL SURVEY

60°2'000m E

(HAULULA)

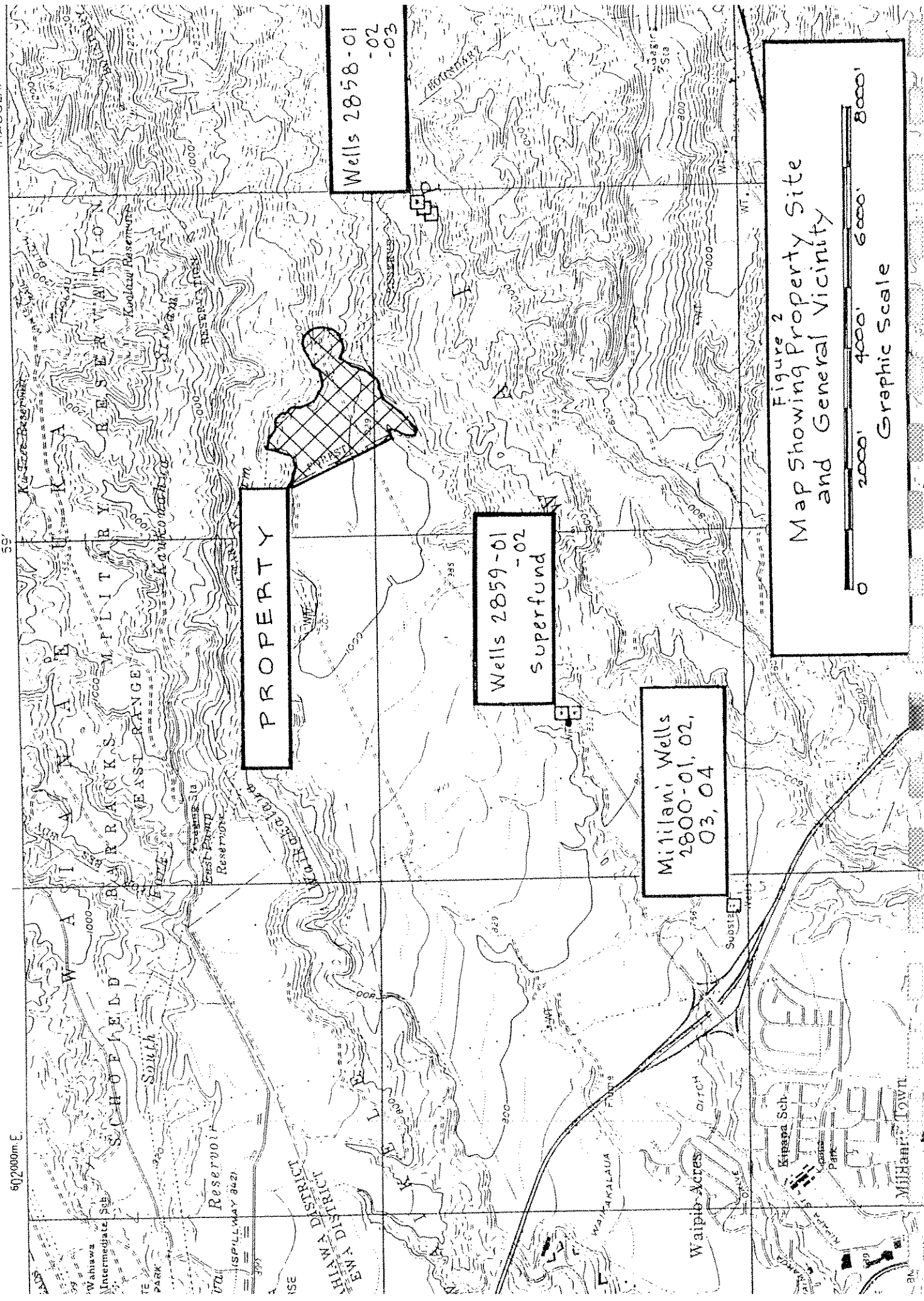
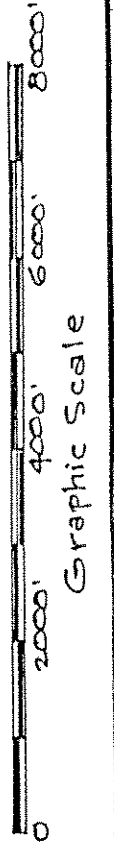


Figure 2  
Map Showing Property Site  
and General Vicinity



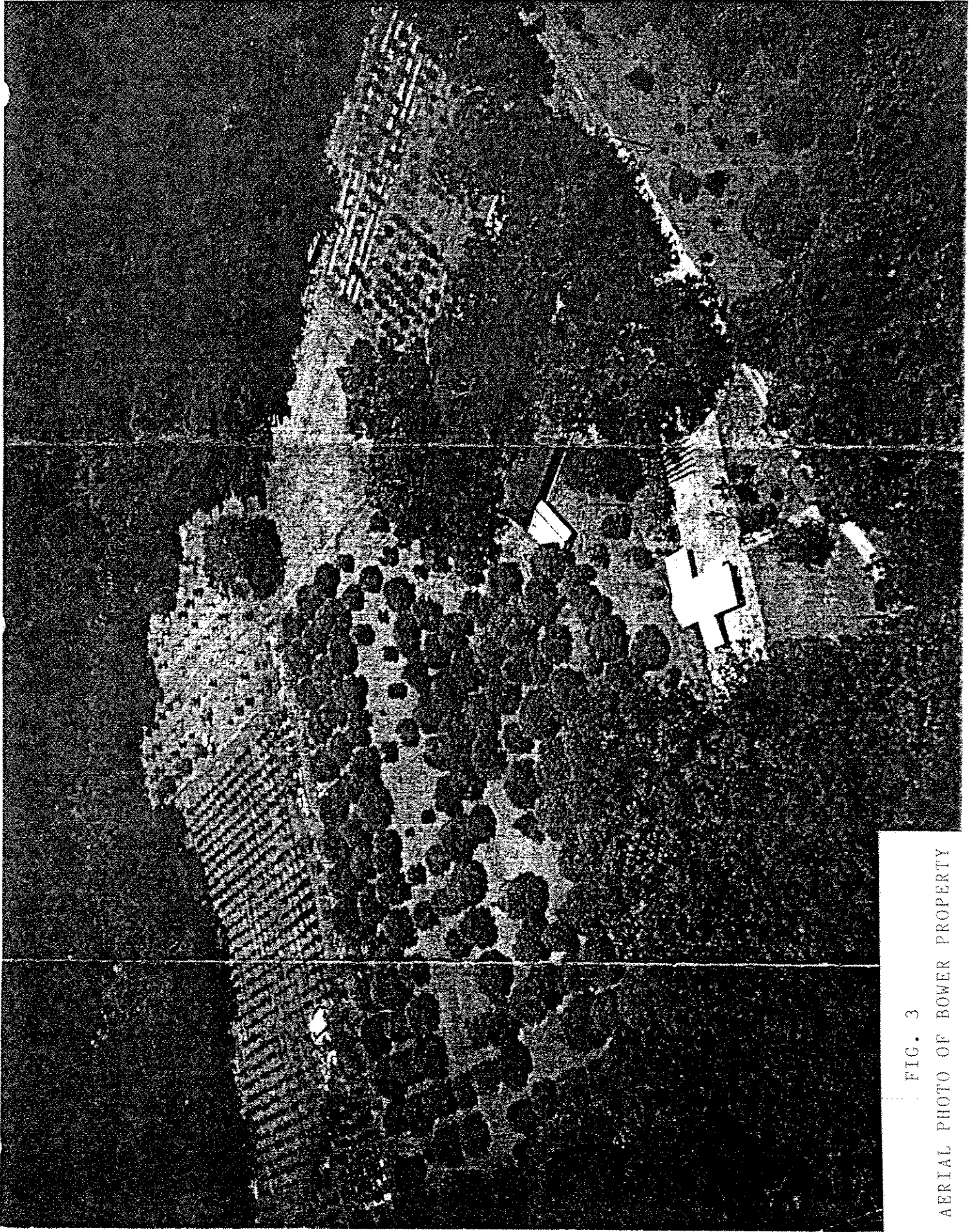


FIG. 3  
AERIAL PHOTO OF BOWER PROPERTY



## II. WATER RESOURCES IN AND NEAR THE BOWER PROPERTY

The property lies in the Waiawa Aquifer System of the Pearl Harbor Aquifer Sector in southern Oahu. The aquifer system is part of the largest continuous aquifer in the island, stretching from the Honolulu District westward to the Waianae Mountains and southward from a subsurface barrier about coincident with Kaukonahua Stream to Pearl Harbor. This vast aquifer is the most voluminous and developed source of water supply in Oahu.

Although Waikakalaua Stream generally has at least a small quantity of water, it does not flow continuously and the total volume of water in the stream on an annual basis is quite small. The tributary of Kipapa Stream on the south side of the property carries even less water. The streams are not a feasible option for providing a water supply.

As elsewhere in southern Oahu, the premier and only source for domestic water is groundwater in the basal aquifers lying between Wahiawa and the southern coast. A basal aquifer is one in which fresh groundwater floats on seawater. If the head (elevation of the water table above sea level) is high, the volume of fresh water below sea level is correspondingly great. When heads are greater than about five feet, fresh water is easily developed by means of wells. Along the coast of southern Oahu heads exceed 10 feet, and far inland, such as in the vicinity of the property, they exceed 20 feet. Not only is groundwater voluminous but it is also easy and safe to develop.

Below the property the groundwater head is approximately 23 feet, which means that wells having capacities of several million gallons per day (mgd) can safely and reliably develop water. There is no doubt that successful wells can be drilled on the property. At this time, however, no new wells can be drilled in southern Oahu because the area is "designated" and the sustainable yield of the water resources is fully allocated. The principal receivers of allocations are the Board of Water Supply (BWS), Oahu Sugar Company and the Department of Defense. There are no private domestic water systems in southern Oahu. Table 1 is a list of major allocations and use affecting the Mililani area.

TABLE 1  
MAJOR WATER ALLOCATIONS AND USE AFFECTING  
THE MILILANI AREA  
(1990)

<u>USER</u>	<u>ALLOCATION BY STATE (MGD)</u>	<u>QUANTITY USED (MGD)</u>	<u>QUANTITY NOT USED (MGD)</u>	<u>% ALLOCATION NOT USED</u>
Oahu Sugar Co.	65.75	46.29	19.46	30
BWS	4.98	4.14	0.84	17

### III. CURRENT AND POTENTIAL GROUNDWATER DEVELOPMENT

Mililani is currently supplied by wells 2800-01, 02, 03, 04 near the H-2 Highway (see Figure 2). Further inland are two wells, 2859-01 and 02, which will serve Mililani Mauka. All of these wells are fitted with 2 mgd pumps, giving a total reliable operating capacity of about 8 to 10 mgd. This quantity can take care of at least 15,000 households, but at present only about half the available capacity is permitted by the State.

In addition to these wells, the State drilled three others just to the south of the Bower property in 1985 in response to the DBCP-EDB concern. At that time detectable concentrations of the pesticides DBCP and EDB were found in the Mililani wells, and the State considered it prudent to drill new wells in an area free of possible contamination. These wells, 2858-01, 02, and 03, were highly productive and yielded pure water, but they are not used and lie dormant without pumps, controls and pipelines leading to storage reservoirs. They are sited in difficult terrain, and the cost of connecting them to the Mililani water system would be considerable. In the meantime, the Mililani wells were outfitted with equipment to remove the DBCP-EDB contaminants and continue to be the basic source of water supply in the region.

Evidently, the water demand that will accompany full development of Mililani Mauka can be provided by existing wells (2859-01 and 02). The relatively small demand that would be generated by residential development on the property under discussion most likely could also be taken care of by these wells. If more water is needed, additional wells could be located elsewhere within Mililani Mauka, including the existing station, or in the property itself. For more water development, however, approval of the State Water Commission must first be obtained.

If we assume that another well would be required to satisfy demand, what would be the cost? The well would have to be about 1200 feet deep. Drilling, casing and testing would cost approximately \$ 750,000.00 (informal quotation from drillers). A permanent pump capable of producing 1 mgd would cost another \$ 200,000.00. Controls and the control station would require several hundred thousand dollars more. Thus, a single completed well ready for service would entail an estimated cost of upwards of \$ 1.5 million or more. Cost of pipelines and storage reservoir are not included in these estimates.

#### IV. STATE WATER MANAGEMENT AND ALLOCATION

In 1987, a Commission on Water Resource Management was established by the Hawaii Legislature with broad powers to protect and allocate the ground and surface water resources of the State. With the establishment of the Water Commission, a State Water Code was formulated which spells out the responsibilities and authority of the Commission.

One of the most important powers of the Water Commission is to designate Water Management Areas if conditions warrant. Before designating an area for water use regulation, the Water Commission shall consider the following criteria:<sup>1</sup>

1. Whether an increase in water use or authorized planned use may cause the maximum rate of withdrawal from the groundwater source to reach ninety percent of the sustainable yield of the proposed water management area;
2. There is an actual or threatened water quality degradation as determined by the department of health;
3. Whether regulation is necessary to preserve the diminishing groundwater supply for future needs, as evidenced by excessively declining groundwater levels;
4. Whether the rates, times, spatial patterns, or depths of existing withdrawals of groundwater are endangering the stability or optimum development of the groundwater body due to upcoming or encroachment of salt water;

5. Whether the chloride contents of existing wells are increasing to levels which materially reduce the value of their existing uses;
6. Whether excessive preventable waste of water is occurring;
7. Serious disputes respecting the use of groundwater resources are occurring; or
8. Whether water development projects that have received any federal, state, or county approval may result, in the opinion of the commission, in one of the above conditions.

The above criteria apply to groundwater. For surface water, the criteria are as follows:<sup>2</sup>

1. Whether regulation is necessary to preserve the diminishing surface water supply for future needs, as evidenced by excessively declining surface water levels, not related to rainfall variations, or increasing or proposed diversions of surface waters to levels which may detrimentally affect existing instream uses or prior existing off-stream uses;
2. Whether the diversions of stream waters are reducing the capacity of the stream to assimilate pollutants to an extent which adversely affects public health or existing instream uses; or
3. Serious disputes respecting the use of surface water resources are occurring.

<sup>1</sup>MacDougal, Douglas W., University of Hawaii Law Review, Testing the Current: The Water Code and the Regulation of Hawaii's Water Resources, Vol. 10, No. 2, Winter 1988, Honolulu, Hawaii, p. 223

<sup>2</sup>Ibid, pp. 223, 224.

In September of 1979, the Ewa-Pearl Harbor and Wahiawa districts were designated as Water Management Areas. The area proposed for development is located in the Wahiawa District and, as such, is governed by the requirements of a Water Management Area.

When a Water Management Area is designated, no one or entity, including water departments, may withdraw water from that area without a permit. Permits are issued by the Water Commission following approval of an application submitted by a prospective water user. The applicant must show that the proposed water use:<sup>3</sup>

1. Can be accommodated with the available water source;
2. Is a reasonable-beneficial use as defined in Section 174C(3);
3. Will not interfere with any existing legal use of water;
4. Is consistent with the public interest;
5. Is consistent with state and county general plans and land use designations; and
6. Is consistent with county land use plans and policies.

<sup>3</sup>Ibid, p. 225



Allocations to various water users, including the County water departments, are made by the Water Commission. The total amount of water available for allocation is dependent upon the sustainable yield of an area, that is, the quantity of water that can safely be withdrawn from the area without the threat of degradation to the water quantitatively and qualitatively.

The Water Commission conducts periodic analyses of the sustainable yields in various areas and can adjust allocations on the basis of changes in sustainable yields and water use patterns. Since it appears that permits are considered on a first-come, first-serve basis, applications for permits should be submitted as soon as an applicant's planning process allows.

#### A. Allocation of Water Resources in the Waiawa Aquifer System

All of the sustainable yield of southern Oahu is allocated although not all allocations are completely used. The largest difference between allocation and use is that for Oahu Sugar Company, averaging about 15 to 20 mgd. It is not likely that the plantation's requirements will increase again to the full extent of its allocation. Eventually the State Water Commission will have to distribute the unused allocation to other users.

In the Koolau aquifer of southern Oahu, which is the resource underlying and available to the Mililani developments, Oahu Sugar Company's allocation is currently 64.3 mgd, but its pumpage in 1990 was only 46.3 mgd, leaving 18 mgd of allocation unused. The Company's allocation of 64.3 mgd continues through 1994, then will be reduced to 58.8 mgd in 1995. Not even all of this lower quantity can be consumed by the Plantation. There is little doubt that a readjustment of allocations will have to be made in the next few years.

The Plantation's allocation is restricted to agricultural usage. Oahu Sugar Company cannot arbitrarily transfer the allocation to another category of use. The logic of transfer that will be made by the Water Commission is to the BWS for domestic supply.

Mililani's water demand is handled by the BWS. If a residential development is carried out on the property, it will have to be served by the BWS. The likelihood of such a development either obtaining an independent allocation or being able to bear the cost of providing water from a private system is extremely small.

The BWS has a permit to draw an average pumpage of 4.88 mgd from the Mililani wells on the mauka side of H-2 (wells 2800-01 to 04, 2859-01, 02), and 1.55 mgd from a well on the makai side (well 2600-03). The property would be supplied by the upper wells if the BWS had available water. In fact, providing water to the property would be accomplished simply by connecting to the Mililani Mauka system.

## V. SOME CONSIDERATIONS IN THE WATER SYSTEM DESIGN

The Bower property is contiguous with Mililani Mauka, and a fortunate coincidence is the similarity in land elevation between the most inland portion of Mililani Mauka and the property. This means that the storage reservoir tank serving Mililani Mauka will also provide pressure adequate for the property.

The maximum elevation in the property is about 1130 feet while the level portion falls between 1000 and 1050 feet. A storage tank at ground level at the very inland margin of the property would meet pressure requirements for the developable area, although pressures for a few homes in the upper fringe of the property may be somewhat marginal. This conclusion is based on examination of the standard 1:24,000 quadrangle.

For Mililani Mauka to receive acceptable pressure, the storage reservoir will have to be located either at the inland tip of the property or further inland. There is no ground elevation in Mililani Mauka that would meet pressure requirements. An elevated tank would seriously detract from scenic esthetics and is not likely to be permitted.

It would be advisable to make certain that the storage tank needed to serve Mililani Mauka is sited so that it can also meet pressure requirements in the property.

The quantity of water needed to serve residential development in the property will be quite small. Assuming 75 acres are developed, the average demand will be about 225,000 gpd.

## VI. CONCLUSIONS AND RECOMMENDATIONS

The Bower property overlies the premier aquifer in southern Oahu. Wells drilled anywhere in the property would yield pure water to large capacity pumps. However, all of southern, central, and northern Oahu is "designated", and in southern Oahu all of the sustainable yield of groundwater is already allocated. New wells cannot be drilled unless an allocation is given by the State Water Commission.

The property is contiguous with Mililani Mauka and thus can be connected to the Mililani Mauka water network if the BWS is willing to make water available. At this time, the Board's allocation is fully committed, but changes in the allocation of other users, especially the Oahu Sugar Company, are likely to take place in the next few years, releasing more water for domestic purposes. It is important that the Board is apprised of the plans to develop the property and of the expected demand.

Because Mililani Mauka will require a storage reservoir either on or inland of the property, an opportunity exists to negotiate a location that will also be able to serve the property.

Options to obtain a water supply for the property are limited, yet expected changes of water allocation in southern Oahu within a few years suggests that opportunities are not foreclosed. Becoming part of the BWS system is the most logical course of action.



November 9, 1992

Robert Allen  
Robert-Maxwell & Company  
1750 Kalakaua Ave, Suite 110  
Honolulu, HI 96826

Dear Robert:

**Subject: Summit at Mililani Competitive Market Assessment**

### **Project Description**

The Summit at Mililani is a 598-unit single family and multi-family residential development located above Mililani Mauka. The project will include six single family models with two to three bedrooms, one to three baths, and 672 to 1,600 square feet of living area on lots averaging 3,000 to 3,500 square feet. Multi-family homes will have one to three bedrooms, one to two baths, and 575 to 945 square feet of living area. Prices for the single family homes will range from \$134,000 to \$292,000. Multi-family homes prices will range from \$97,000 to \$172,900.

### **Competitive Market Analysis**

The competitive market analysis will provide information and analysis for affordable and market-priced homes in new and ongoing projects and market priced homes in existing neighborhood areas. The comparisons were based on particular attributes including: the type of unit, number of bedrooms and baths, living area, land area for single family homes, and sales prices. Resale restrictions and shared appreciation programs were not considered in the analysis. Home design, project features, and construction quality were assumed to be of market standard. The new and ongoing project price information and summaries reflect original sales and not resales.

#### **Multi-Family Homes**

*Affordable:* One Bedroom — The multi-family units proposed compare favorably with other projects. The most similar one bedroom affordable project is Kumelewai Court at Mililani Mauka. This project is about 75 square feet smaller and slightly higher priced. Market priced one bedroom units at Ewa by Gentry are smaller and much higher priced. At \$97,000, the Summit one bedroom units are nearly 40 percent lower priced and 100 square feet larger than Ewa by Gentry. Only multi-family units at the Villages of Kapolei are comparable in size and lower priced, however, these units are not yet built or sold.

## **EXHIBIT G. COMPETITIVE MARKET ANALYSIS**



Robert Allen  
November 9, 1992  
Page 2

Two bedroom — Two bedroom units at the Summit are at the middle to lower end of the affordable price range. At 750 and 885 square feet, the only completed project that offers more living area for a lower price is Kumelewai Gardens at Mililani Mauka. The nearest market competition is the 703 square foot two bedroom, one bath unit at the Ridge at Launani Valley. The 885 square foot two bedroom, two bath unit at the Summit will be priced about \$15,000 lower.

Three Bedroom — A three bedroom multi-family home with nearly 950 square feet of living space for under \$175,000, as planned at the Summit, is affordable. The lowest priced three bedroom unit of comparable size available in the open market is priced 17 percent or \$30,000 above that proposed at the Summit.

### Single Family Homes

*Affordable:* Two Bedroom — West Loch and Kumu Iki at the Villages of Kapolei have delivered several hundred sizable two bedroom single family homes for under \$125,000. These units were conceived and developed under very different market conditions and may not be directly comparable. The two bedroom, one bath and two bedroom, two bath homes at the Summit priced up to \$240,000 can compete well against other affordable projects. The two bedroom, two bath unit priced at \$255,400 is very close to market price.

*Market:* Three Bedroom — Three bedroom homes at the Summit will be well positioned in the open marketplace. A three bedroom, two bath single family home under \$300,000 fills a real market need. Most of the new single family homes currently being offered for sale are comparable in size, but higher priced.

The Summit at Mililani should be well received by potential homebuyers. This project is positioned to fill a market need for lower priced housing. Consideration should be made when determining resale restrictions and shared appreciation programs. The housing products priced near comparable market alternatives should have less stringent restrictions. Should you have any questions, please call me at 545-8827.

Sincerely,



Colin Yasukochi  
Project Manager  
Research & Consulting

**NEW & EXISTING PROJECT SUMMARY**

Project Name	Rating	Project		Product Types and Quality	Overall Pricing	Association Fees	Schools/ Shopping	Amenities/ Views
		Location	Overall Project					
Launani Valley	3	3	3	3	3	Y	3	2
Milliani Mauka	5	5	5	5	4	Y	5	4
Waikele	5	5	5	5	4	Y	4	5
Ewa by Gentry	4	3	4	4	5	Y	3	3
Villages of Kapolei	3	3	4	4	3	Y	3	3
West Loch	3	3	4	4	3	Y	3	3

Rating scale is from 1 to 5, with 5 being the most desirable and 1 the least desirable.

### Multi-Family Affordable One Bedroom

Project	Beds/Baths	Int. Area	Avg Price	Price/Int. Area
Kapolei 5	1/1	560	\$73,000	\$130.36
Kapolei 6	1/1	560	\$73,000	\$130.36
Kumelawai Gardens	1/1	501	\$100,000	\$199.60

### Multi-Family Affordable Two Bedroom

Project	Beds/Baths	Int. Area	Avg Price	Price/Int. Area
Fairway Village	2/2	796	\$179,000	\$224.87
Fairway Village	2/2	830	\$189,000	\$227.71
Fairway Village	2/2	835	\$192,000	\$229.94
Fairway Village	2/2	863	\$199,000	\$230.59
Ho'okumu	2/1	650	\$96,000	\$147.69
Ho'okumu	2/1.5	750	\$136,000	\$181.33
Ho'okumu	2/2	750	\$145,000	\$193.33
Ho'okumu	2/2	830	\$172,000	\$207.23
Ho'omaka Village	2/1	650	\$91,000	\$140.00
Ho'omaka Village	2/1.5	750	\$140,000	\$186.67
Ho'omaka Village	2/2	796	\$165,000	\$207.29
Ho'omalua	2/2	750	\$156,000	\$208.00
Ho'omalua	2/2	833	\$173,000	\$207.68
Kapolei 5	2/1	900	\$99,000	\$110.00
Kapolei 6	2/1	900	\$99,000	\$110.00
Kumelawai Court	2/1	855	\$186,000	\$217.54
Kumelawai Court	2/1	932	\$183,000	\$196.35
Kumelawai Court	2/1	954	\$195,000	\$204.40
Kumelawai Court	2/1	1,005	\$193,000	\$192.04
Kumelawai Gardens	2/1	777	\$116,000	\$149.29
Parkview	2/1	650	\$96,000	\$147.69
Parkview	2/1.5	750	\$136,000	\$181.33
Parkview	2/2	750	\$145,000	\$193.33
Parkview	2/2	830	\$172,000	\$207.23
The Ridge	2/1	703	\$120,000	\$170.70

### Multi-Family Affordable Three Bedroom

Project	Beds/Baths	Int. Area	Avg Price	Price/Int. Area
Kapolei 5	3/2	1,050	\$109,000	\$103.81
Kapolei 6	3/2	1,050	\$109,000	\$103.81
Kumelawai Court	3/2	1,634	\$265,000	\$162.18

### Multi-Family Market One Bedroom

Project	Beds/Baths	Int. Area	Avg Price	Price/Int. Area
Mililani	1Bdrm	537	\$133,343	\$248.31
Palm Villas	1/1	485	\$153,000	\$315.46
Sun Rise	1/1	476	\$165,000	\$346.64
Sun Rise	1/1	477	\$170,000	\$356.39
Waipio Gentry	1Bdrm	498	\$159,100	\$319.48

### Multi-Family Market Two Bedroom

Project	Beds/Baths	Int. Area	Avg Price	Price/Int. Area
Evergreen Terrace	2/2	934	\$199,900	\$214.03
Evergreen Terrace	2/2	934	\$203,900	\$218.31
Evergreen Terrace	2/2	1,289	\$237,900	\$184.56
Evergreen Terrace	2/3	1,289	\$242,900	\$188.44
Fairway Village	2/2	898	\$225,000	\$250.56
Fairway Village	2/2	900	\$233,000	\$258.89
Fairway Village	2/2	918	\$223,000	\$242.92
Fairway Village	2/2.5	1,271	\$283,000	\$222.66
Hampton Court	2/2	873	\$240,000	\$274.91
Hampton Court	2/2	1,190	\$270,000	\$226.89
Mililani	2Bdrm	987	\$221,364	\$224.28
Palm Court	2/2	810	\$197,000	\$243.21
Palm Court	2/2	874	\$199,000	\$227.69
Palm Villas	2/2	716	\$180,000	\$251.40
Sun Rise	2/2	811	\$195,000	\$240.44
Sun Rise	2/2	830	\$200,000	\$240.96
The Arbors	2/2	1,009	\$225,000	\$222.99
The Arbors	2/2	1,010	\$225,000	\$222.77
The Arbors	2/2	1,060	\$225,000	\$212.26
The Arbors	2/2	1,098	\$235,000	\$214.03
The Ridge	2/1	703	\$169,900	\$241.68
The Ridge	2/2	782	\$180,900	\$231.33
The Ridge	2/2	813	\$184,900	\$227.43
Waipio Gentry	2Bdrm	817	\$208,460	\$255.15

### Multi-Family Market Three Bedroom

Project	Beds/Baths	Int. Area	Avg Price	Price/Int. Area
Fairway Village	3/2.5	1,387	\$295,000	\$212.69
Hampton Court	3/2.5	1,702	\$330,000	\$193.89
Hampton Court	3/2.5	1,745	\$340,000	\$194.84
Mililani	3Bdrm	1,368	\$252,790	\$184.79
The Arbors	3/3	1,526	\$287,000	\$188.07
The Ridge	3/2	875	\$204,900	\$234.17
Waipio Gentry	3Bdrm	1,160	\$227,268	\$195.92

### Single Family Affordable Two Bedroom

Project	Beds/Baths	Int. Area	Land Area	Avg. Price	Price/Int. Area	Price/Land Area
Greenways	2/2	850	4,500	\$105,000	\$123.53	\$23.33
Kumu Iki	2/2	964	4,025	\$96,000	\$99.59	\$23.85
Kumu Iki	2/2	1,041	4,025	\$120,000	\$115.27	\$29.81
Sunset Pointe	2/1	758	3,900	\$199,850	\$263.65	\$51.24
Sunset Pointe	2/2	980	3,900	\$200,000	\$204.08	\$51.28
Westloch Estates	2/2	950	4,200	\$102,000	\$107.37	\$24.29

### Single Family Affordable Three Bedroom

Project	Beds/Baths	Int. Area	Land Area	Avg. Price	Price/Int. Area	Price/Land Area
Estates	3/2	1,420	4,200	\$266,000	\$187.32	\$63.33
Greenways	3/2	1,197	4,500	\$125,000	\$104.43	\$27.78
Kumu Iki	3/2	1,068	4,025	\$102,000	\$95.51	\$25.34
Kumu Iki	3/2	1,261	4,025	\$109,000	\$86.44	\$27.08
Kumu Iki	3/2	1,374	4,025	\$118,000	\$85.88	\$29.32
Sunset Pointe	3/2	1,079	3,900	\$216,000	\$200.19	\$55.38
Sunset Pointe	3/2.5	1,162	3,900	\$230,000	\$197.93	\$58.97
Westloch Estates	3/2	1,176	4,200	\$113,000	\$96.09	\$26.90
Westloch Estates	3/2	1,280	4,200	\$117,000	\$91.41	\$27.86

### Single Family Market Two Bedroom

Project	Beds/Baths	Int. Area	Land Area	Avg. Price	Price/Int. Area	Price/Land Area
Cottages	2/2	809	4,400	\$278,000	\$343.63	\$63.18
Mililani	2Bdrm	1,026	4,022	\$276,700	\$269.69	\$68.80
Na Lei	2/2	1,075	5,250	\$304,000	\$282.79	\$57.90
Na Pua	2/2	1,033	4,840	\$298,000	\$288.48	\$61.57
Na Pua	2/2	1,045	4,840	\$302,000	\$289.00	\$62.40
Royal Kunia	2Bdrm	1,025	3,620	\$267,875	\$261.34	\$74.00
Soda Creek	2/1	805	3,270	\$247,000	\$306.83	\$75.54
Sun Terra	2/2	945	3,500	\$252,000	\$266.67	\$72.00
Waipio Gentry	2Bdrm	780	2,775	\$265,000	\$339.74	\$95.50

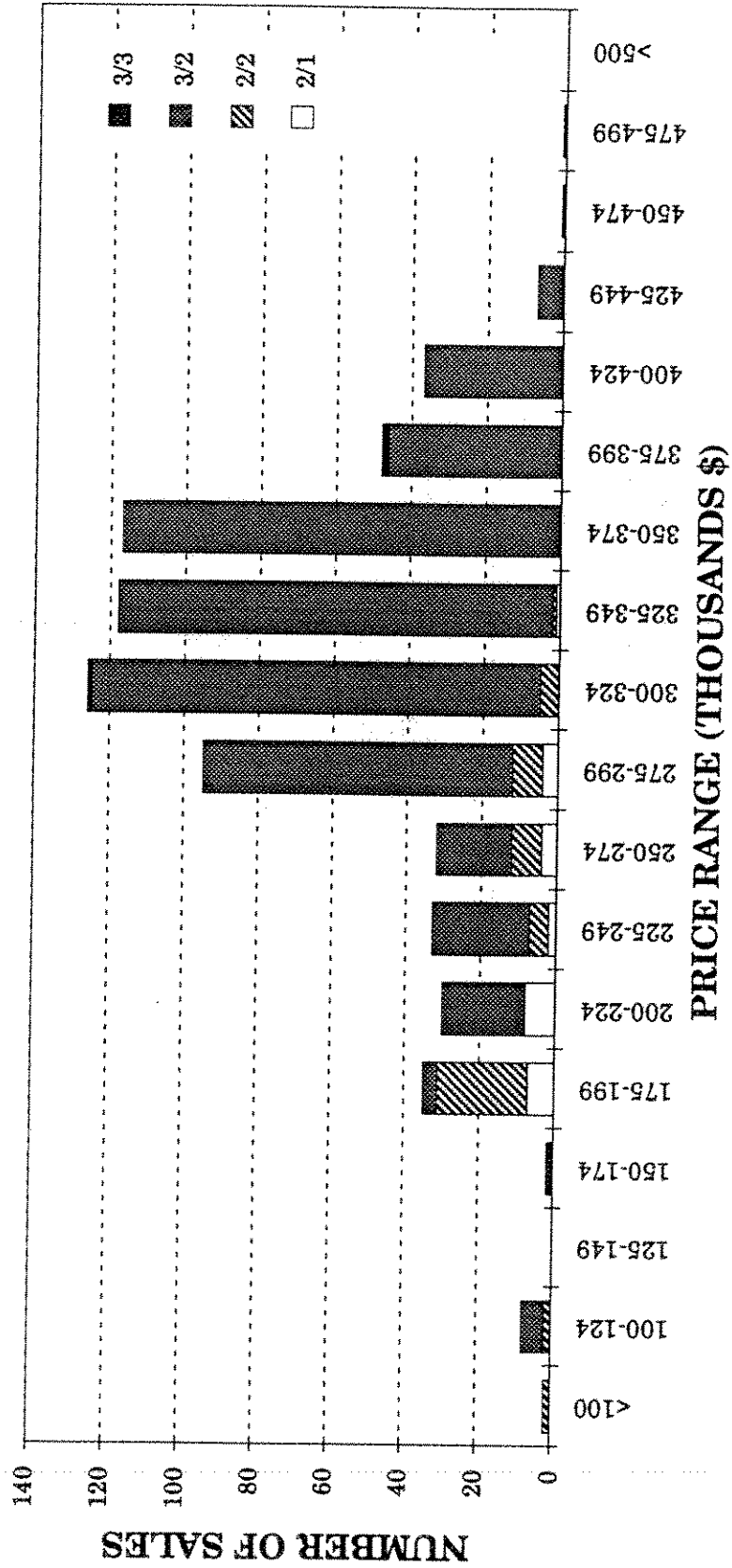
### Single Family Market Three Bedroom

Project	Beds/Baths	Int. Area	Land Area	Avg. Price	Price/Int. Area	Price/Land Area
Cottages	3/2	1,040	4,400	\$285,000	\$274.04	\$64.77
Fairways	3/2	1,223	5,600	\$394,000	\$322.16	\$70.36
Fairways	3/2	1,231	5,600	\$334,000	\$271.32	\$59.64
Fairways	3/2	1,420	5,600	\$372,000	\$261.97	\$66.43
Fairways	3/2.5	1,477	5,600	\$300,000	\$203.11	\$53.57
Golf Club Estates	3/2	1,400	5,100	\$357,000	\$255.00	\$70.00
Golf Club Estates	3/2	1,504	5,100	\$389,000	\$258.64	\$76.27
Golf Club Estates	3/2	1,600	5,100	\$413,000	\$258.13	\$80.98
Golf Club Estates	3/2.5	1,698	5,100	\$422,000	\$248.53	\$82.75
Golf Club Estates	3/2	1,798	5,100	\$450,000	\$250.28	\$88.24

### Single Family Market Three Bedroom (Cont.)

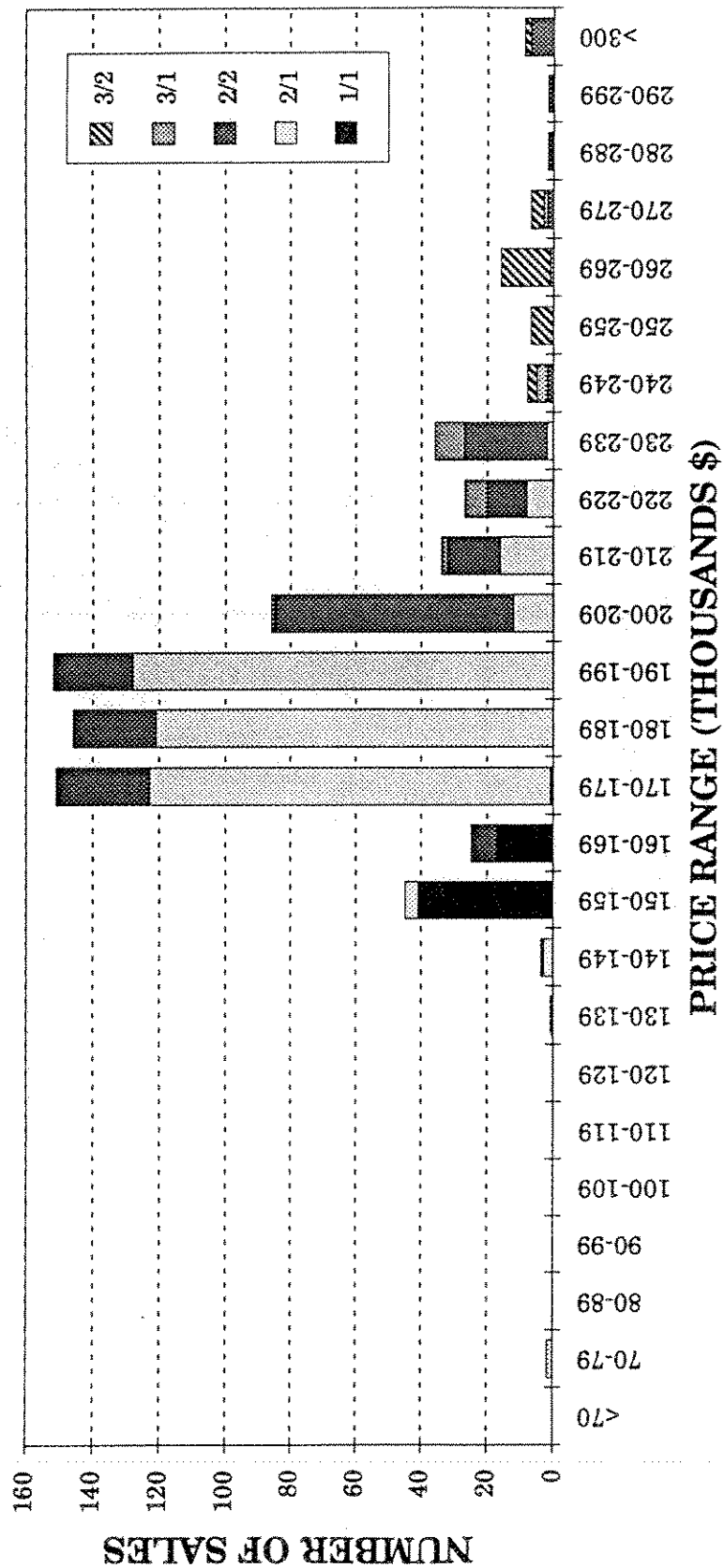
Project	Beds/Baths	Int. Area	Land Area	Avg. Price	Price/Int. Area	Price/Land Area
Kumu Iki	3/2	1,209	5,084	\$250,000	\$206.78	\$49.1
Kumu Iki	3/2	1,338	5,084	\$295,000	\$220.48	\$58.03
Kumu Iki	3/2	1,593	5,084	\$310,000	\$194.60	\$60.98
Kumu Iki	3/2	1,637	5,084	\$261,000	\$159.44	\$51.3
Malanai	3/2	1,721	5,800	\$357,000	\$207.44	\$61.55
Mililani	3Bdrm	1,370	5,468	\$318,689	\$232.62	\$58.2
Na Lei	3/2	1,365	5,250	\$346,000	\$253.48	\$65.9
Na Lei	3/2	1,456	5,250	\$348,000	\$239.01	\$66.29
Na Pua	3/2	1,226	4,840	\$328,000	\$267.54	\$67.7
Na Pua	3/2.5	1,344	4,840	\$333,000	\$247.77	\$68.8
Na Pua	3/2	1,427	4,840	\$340,000	\$238.26	\$70.25
Na Pua	3/2.5	1,572	4,840	\$350,000	\$222.65	\$72.3
Pacific Traditions	3/2	1,412	6,100	\$359,500	\$254.60	\$58.93
Pacific Traditions	3/2	1,624	6,100	\$368,000	\$226.60	\$60.33
Pacific Traditions	3/2	1,875	6,100	\$395,500	\$210.93	\$64.8
Pacific Traditions	3/2	2,086	6,100	\$424,000	\$203.26	\$69.51
Parkways	3/2	1,256	3,700	\$298,000	\$237.26	\$80.5
Parkways	3/2	1,264	3,700	\$280,000	\$221.52	\$75.6
Parkways	3/2.5	1,506	3,700	\$293,500	\$194.89	\$79.32
Parkways	3/2.5	1,589	3,700	\$328,000	\$206.42	\$88.6
Parkways	3/2.5	1,659	3,700	\$306,000	\$184.45	\$82.7
Parkways	3/2.5	1,716	3,700	\$304,500	\$177.45	\$82.30
Parkways	3/2.5	1,818	3,700	\$309,000	\$169.97	\$83.5
Parkways	3/2.5	1,988	3,700	\$317,000	\$159.46	\$85.68
Royal Kunia	3Bdrm	1,268	5,107	\$332,643	\$262.34	\$65.13
Soda Creek	3/2	891	3,270	\$266,000	\$298.54	\$81.3
Soda Creek	3/2	1,050	3,270	\$267,000	\$254.29	\$81.65
Soda Creek	3/2	1,264	3,270	\$286,000	\$226.27	\$87.4
Soda Creek	3/2	1,410	3,270	\$290,000	\$205.67	\$88.6
Sun Terra	3/2	1,088	3,500	\$265,000	\$243.57	\$75.71
Sun Terra	3/2	1,189	3,500	\$275,000	\$231.29	\$78.5
Sun Terra	3/2	1,447	3,500	\$285,000	\$196.96	\$81.43
Sunset Pointe	3/2	1,342	5,000	\$355,000	\$264.53	\$71.00
Sunset Pointe	3/2.5	1,369	5,000	\$346,000	\$252.74	\$69.2
Sunset Pointe	3/2.5	1,477	5,000	\$364,000	\$246.45	\$72.80
Village Park	3Bdrm	1,108	4,883	\$279,436	\$252.20	\$57.23
Waipio Gentry	3Bdrm	1,395	3,794	\$313,829	\$224.97	\$82.7
Westloch Estates	3/2	1,420	5,000	\$266,000	\$187.32	\$53.20
Westloch Estates	3/2	1,486	5,000	\$255,000	\$171.60	\$51.0
Westloch Estates	3/2	1,594	5,000	\$257,000	\$161.23	\$51.4
Westloch Estates	3/2	1,656	5,000	\$272,000	\$164.25	\$54.40

**LEEWARD/CENTRAL SINGLE FAMILY  
SOLD PRICE DISTRIBUTION  
(10/91-10/92)**

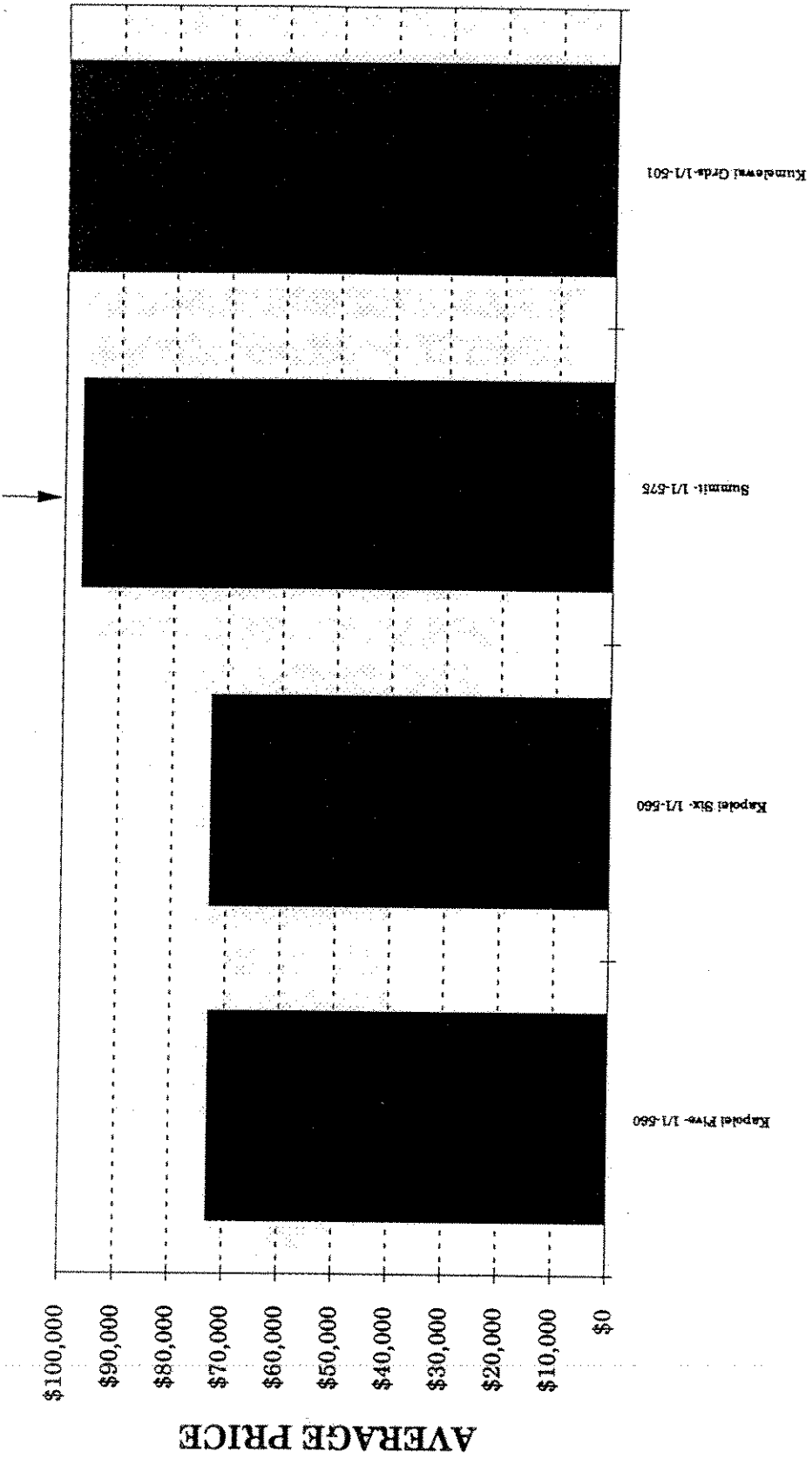




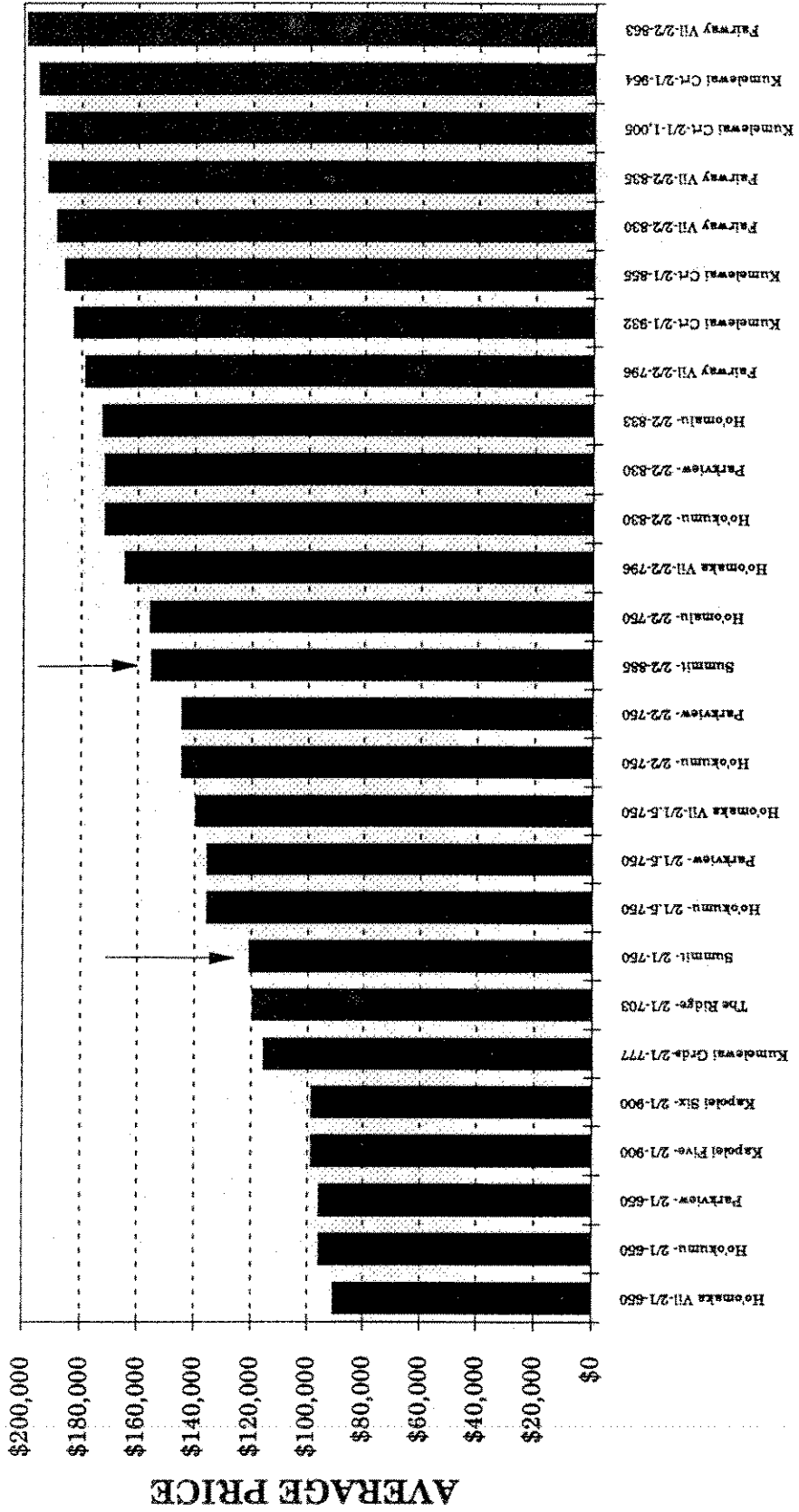
**LEEWARD/CENTRAL MULTI-FAMILY  
SOLD PRICE DISTRIBUTION  
(10/91-10/92)**



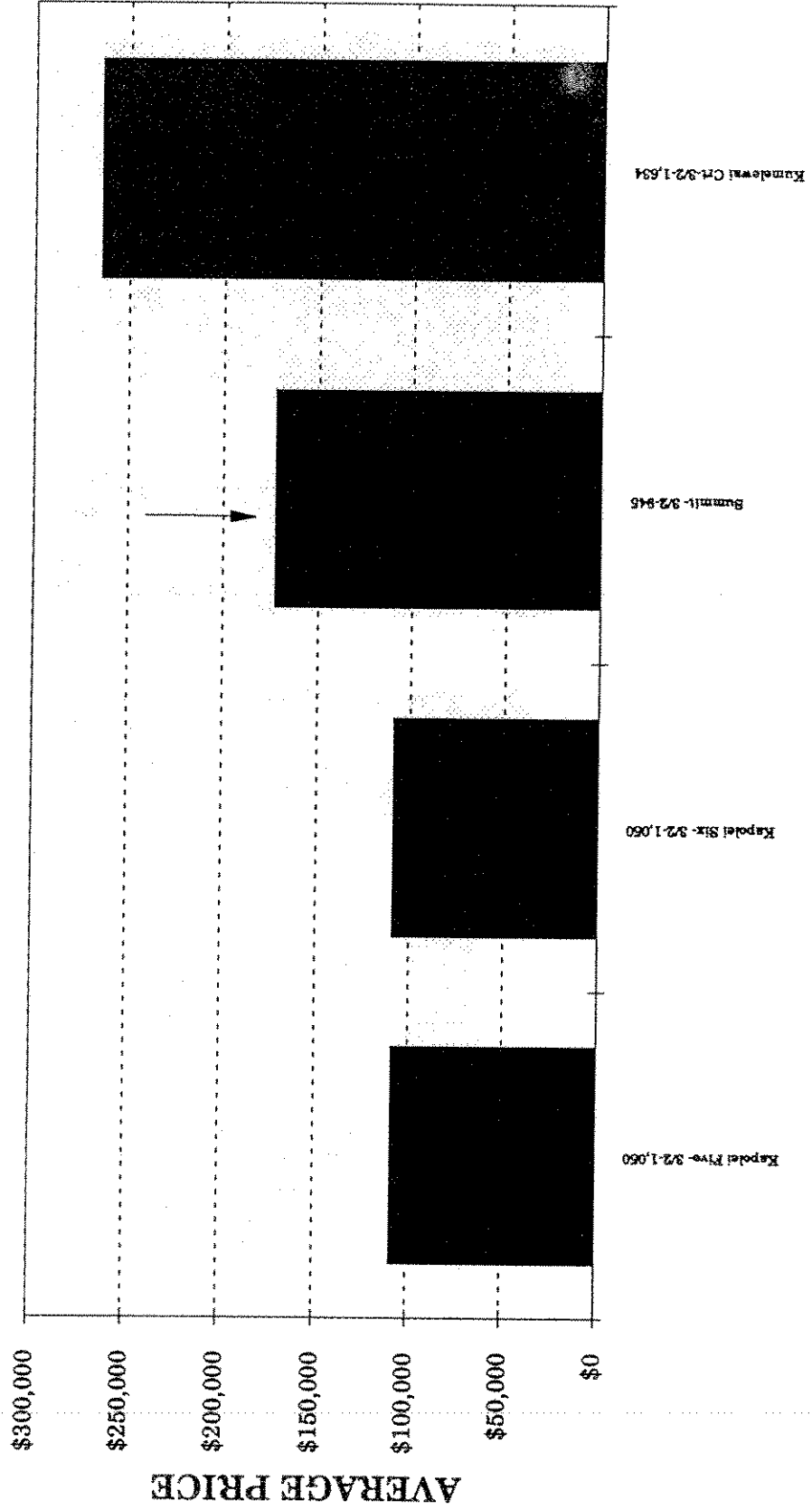
# AFFORDABLE ONE BEDROOM MULTI-FAMILY UNITS



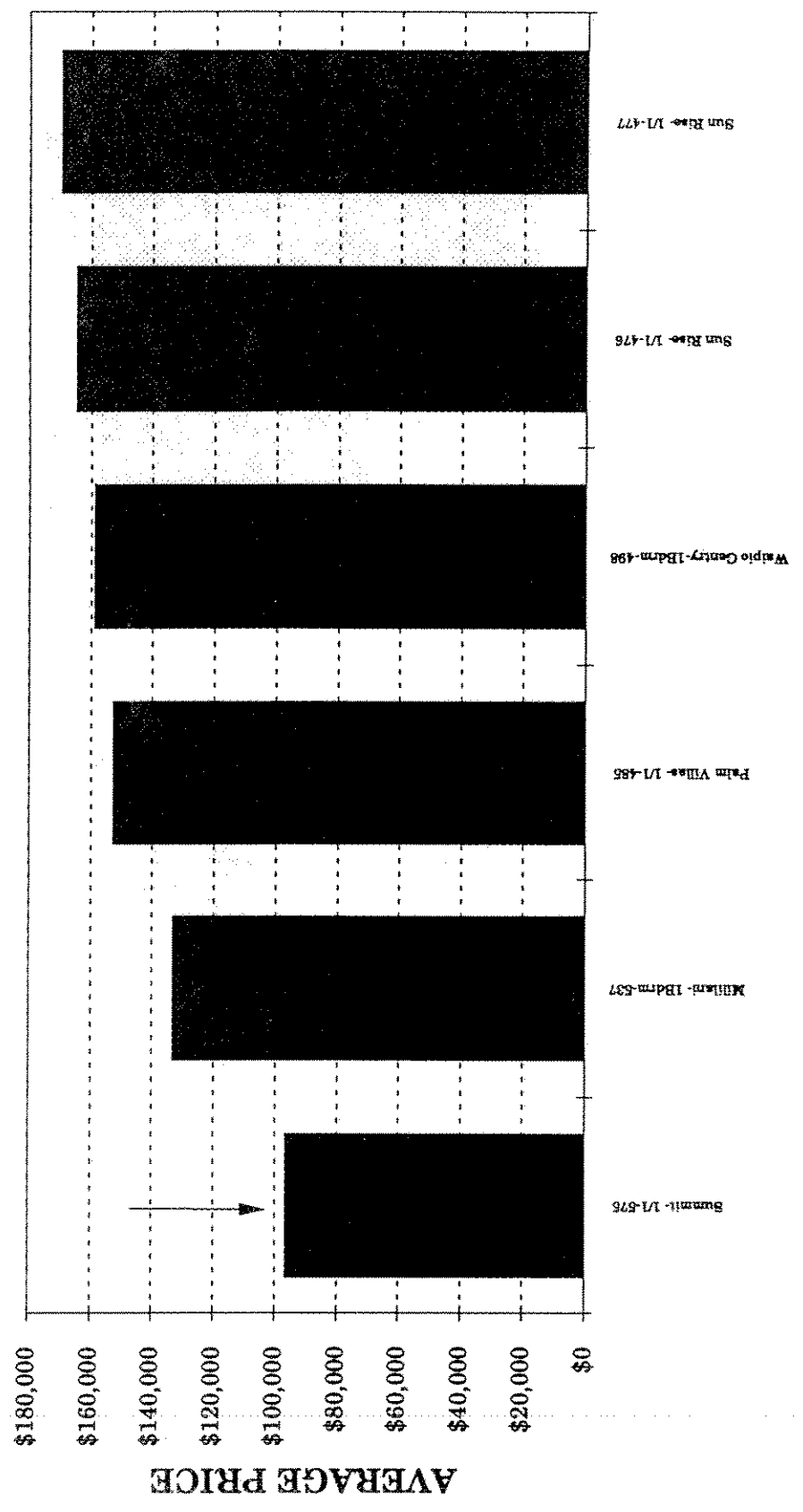
# AFFORDABLE TWO BEDROOM MULTI-FAMILY UNITS



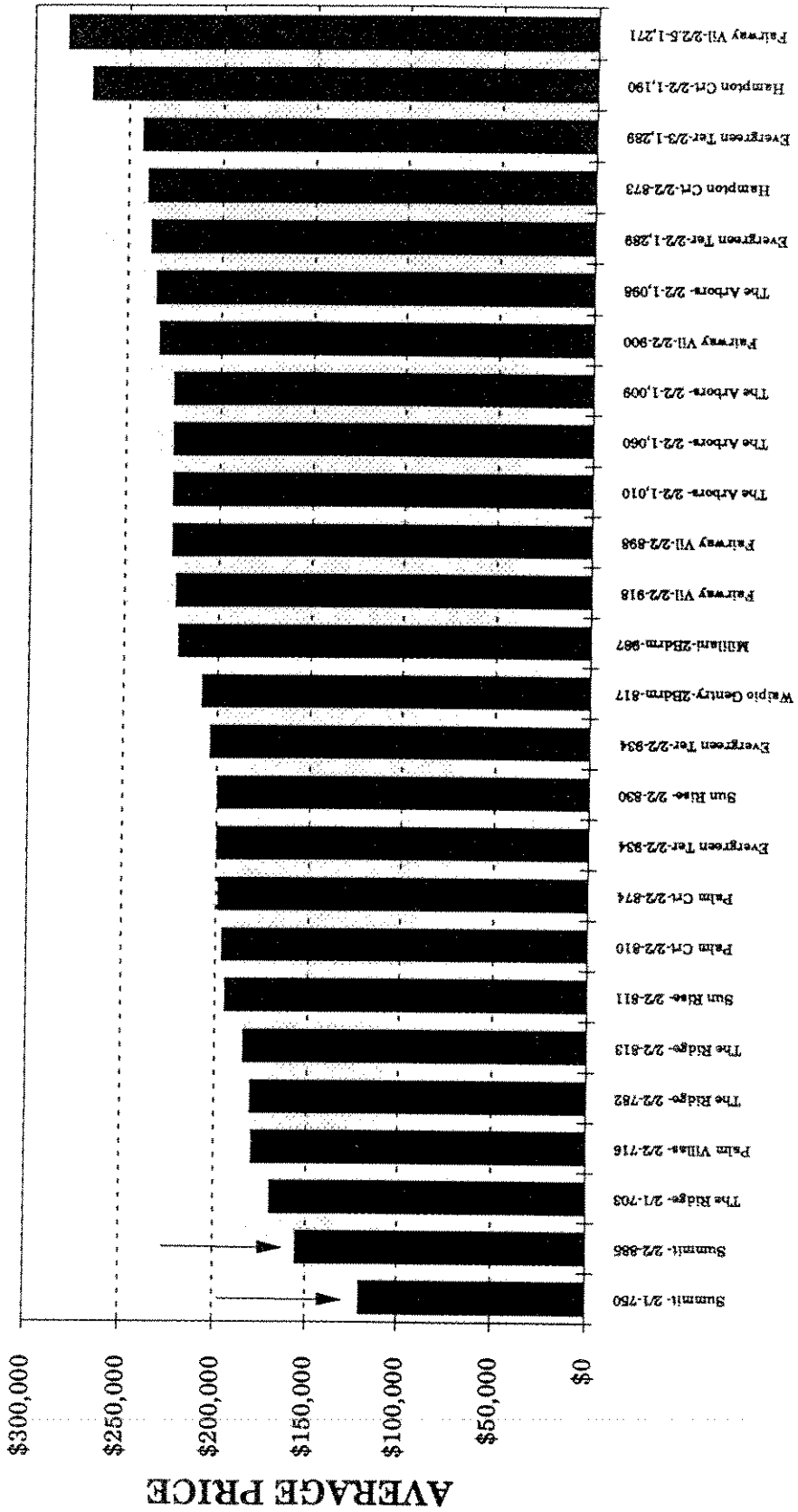
# AFFORDABLE THREE BEDROOM MULTI-FAMILY UNITS



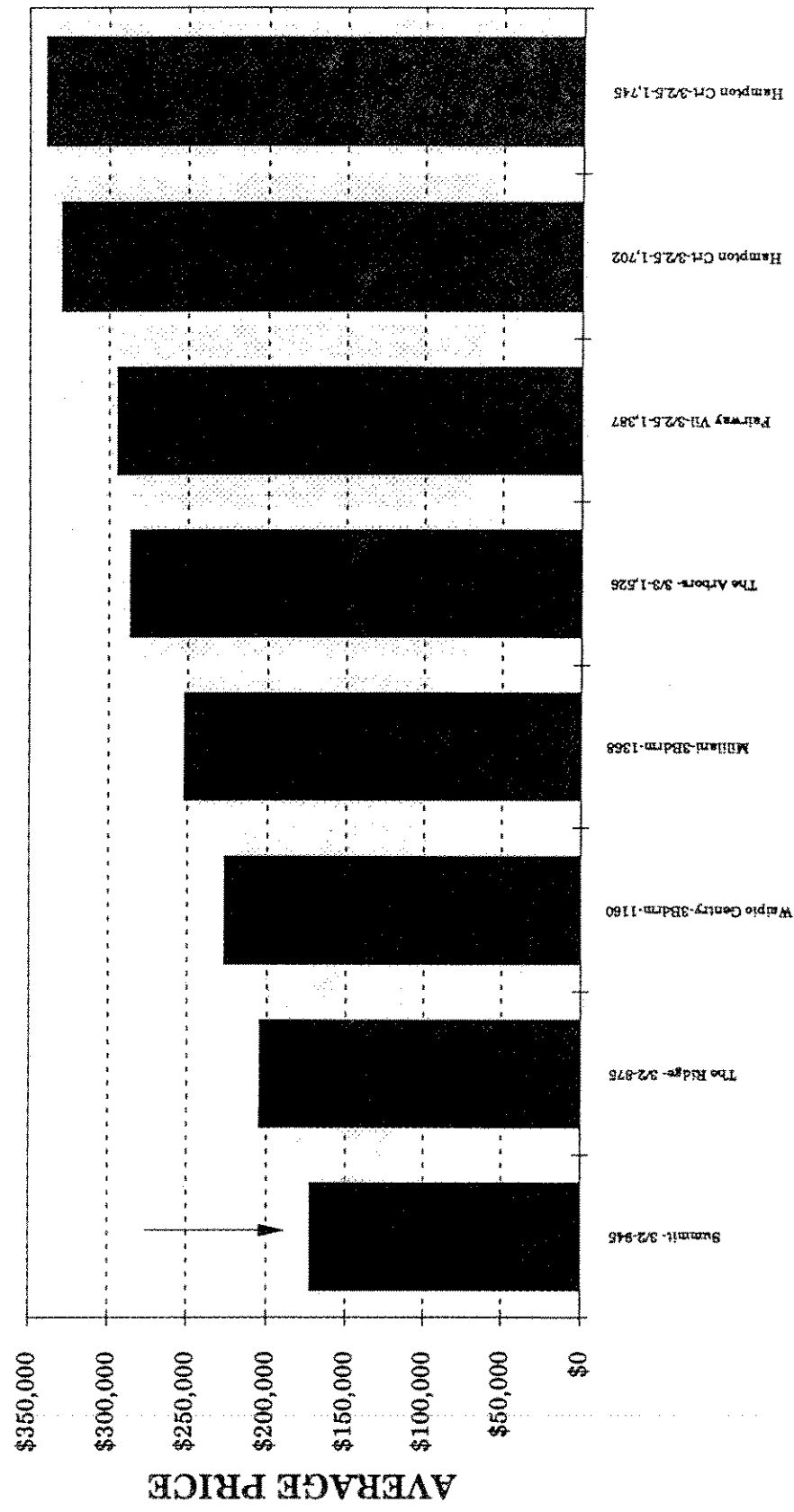
# MARKET ONE BEDROOM MULTI-FAMILY UNITS



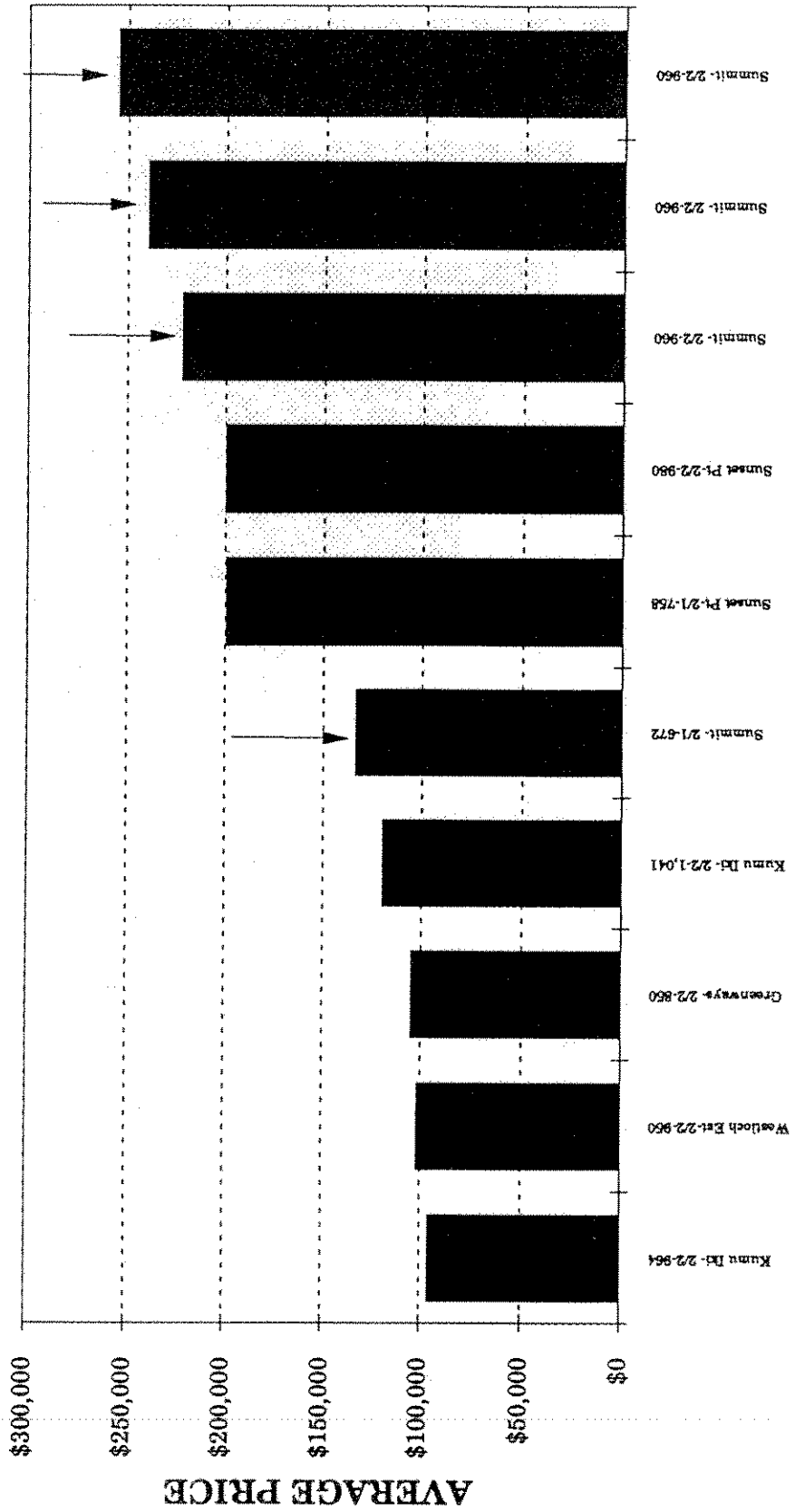
# MARKET TWO BEDROOM MULTI-FAMILY UNITS



# MARKET THREE BEDROOM MULTI-FAMILY UNITS

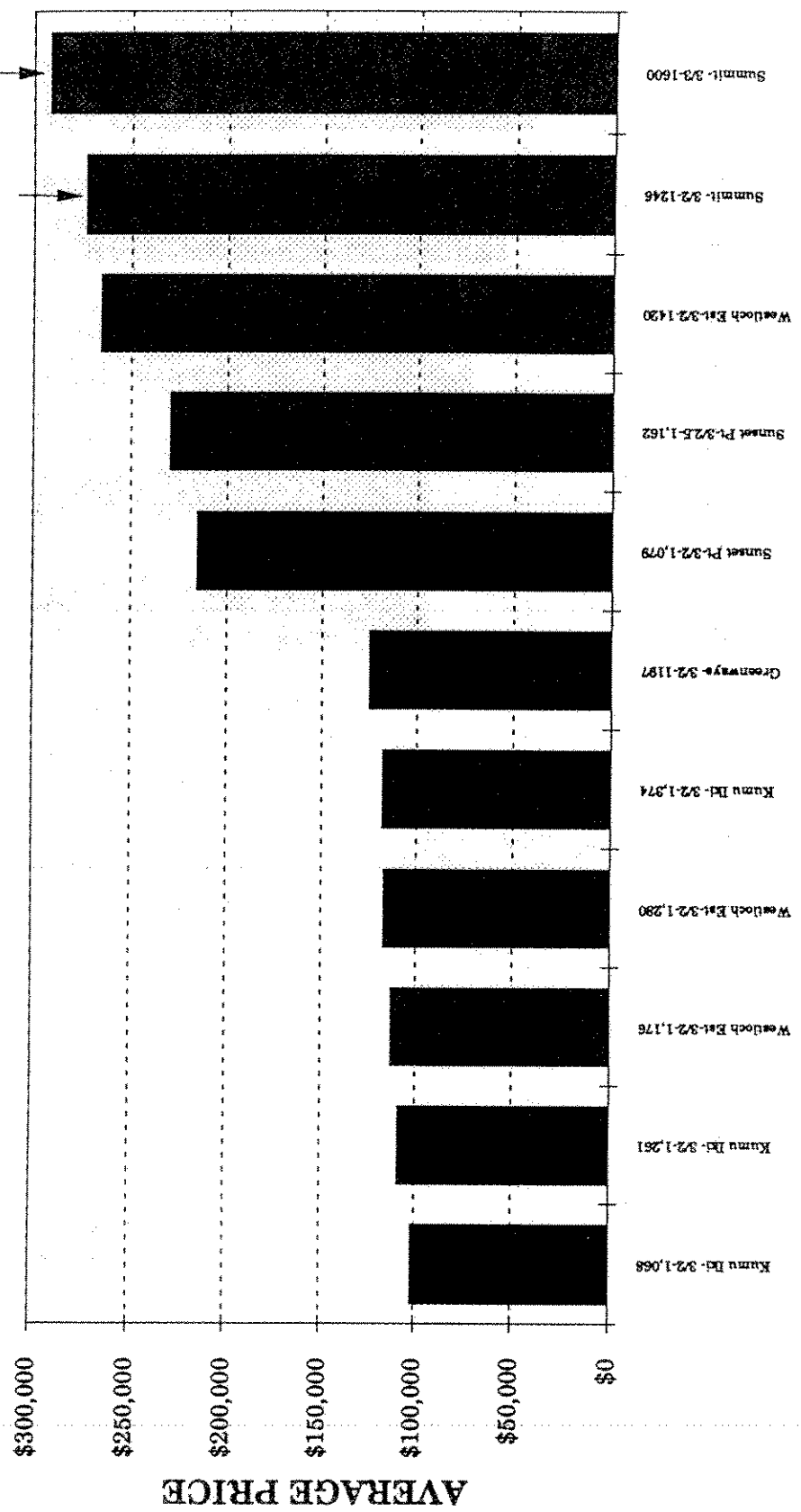


# AFFORDABLE TWO BEDROOM SINGLE FAMILY UNITS

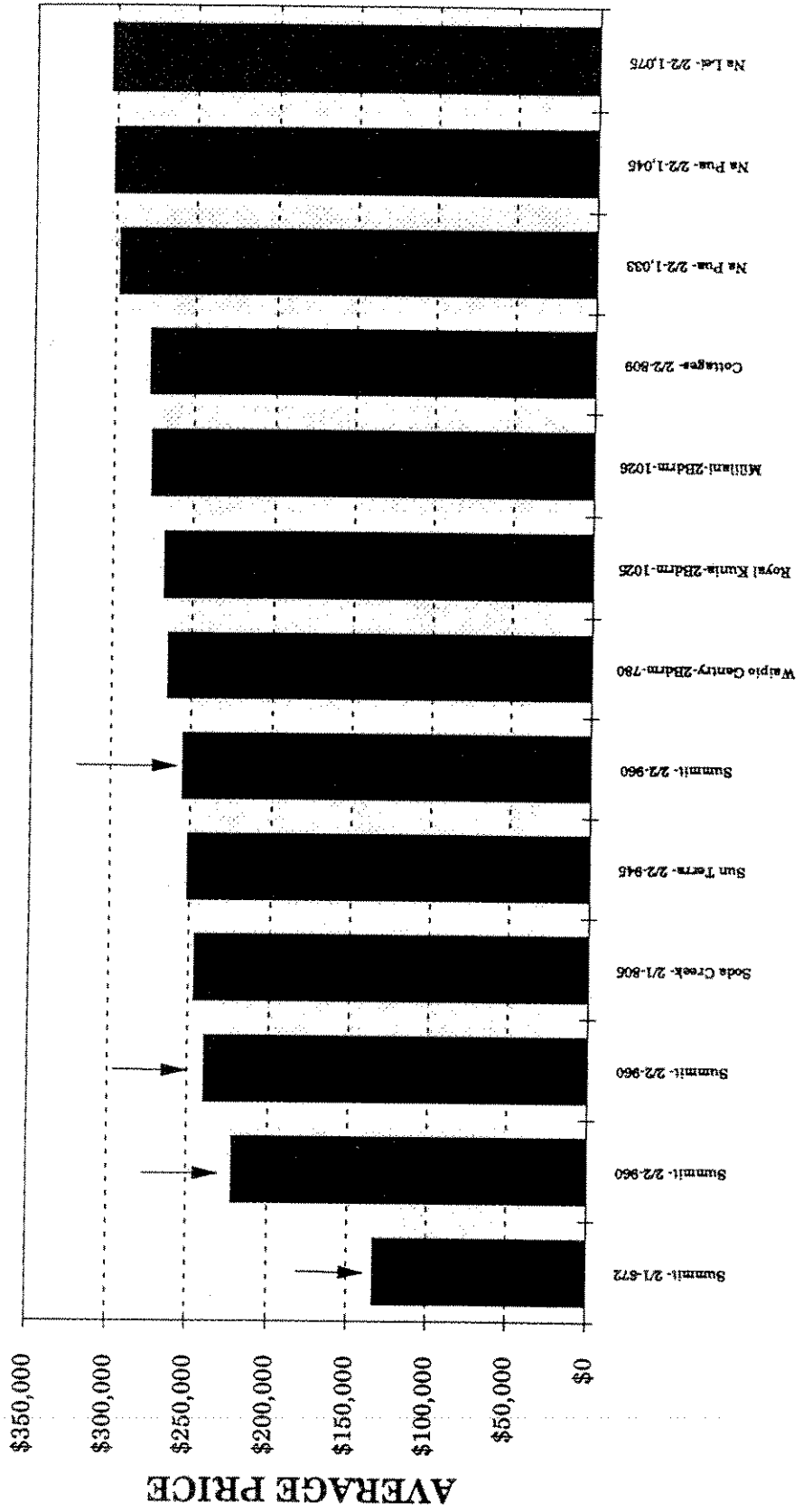




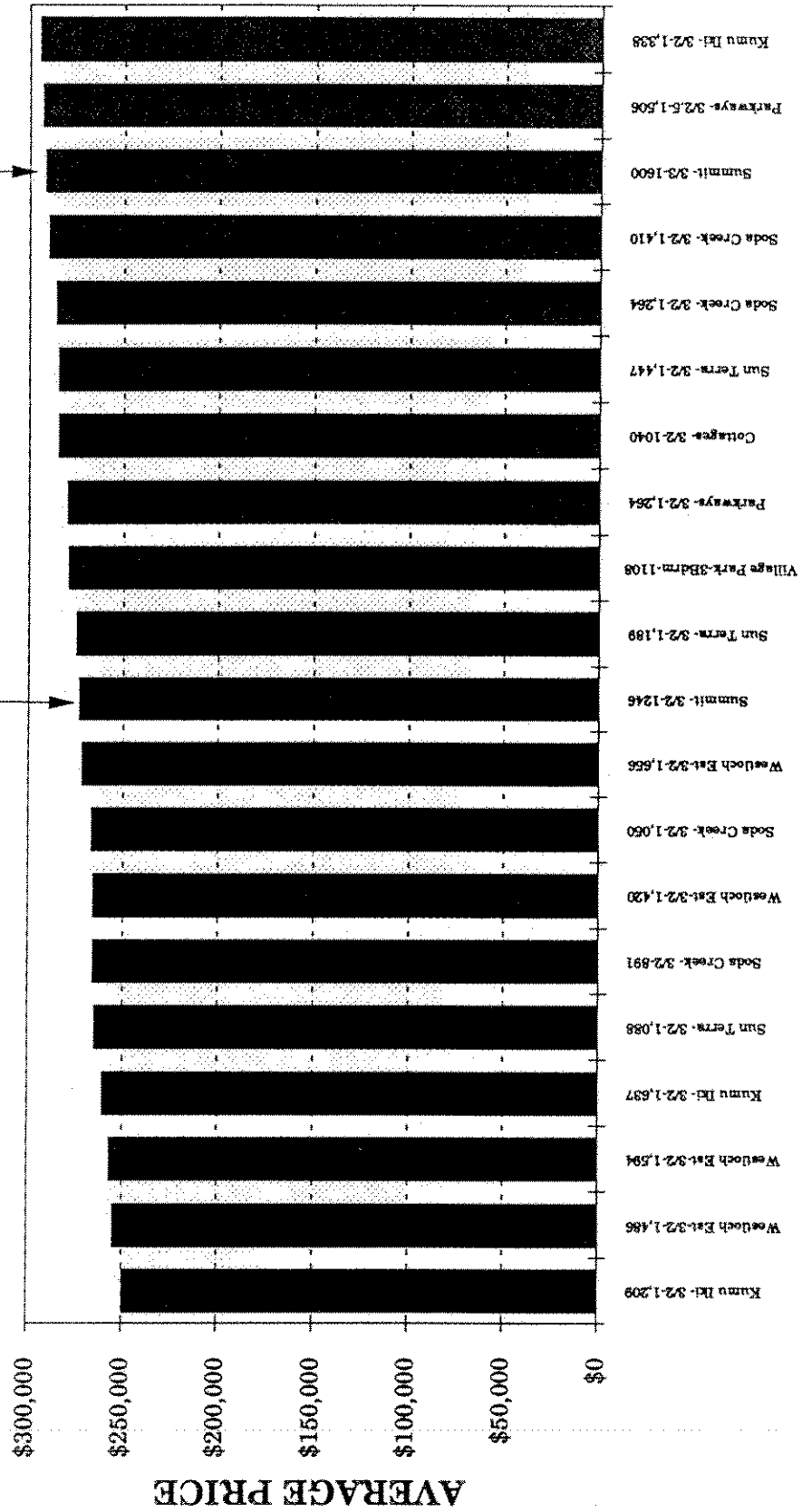
# AFFORDABLE THREE BEDROOM SINGLE FAMILY UNITS



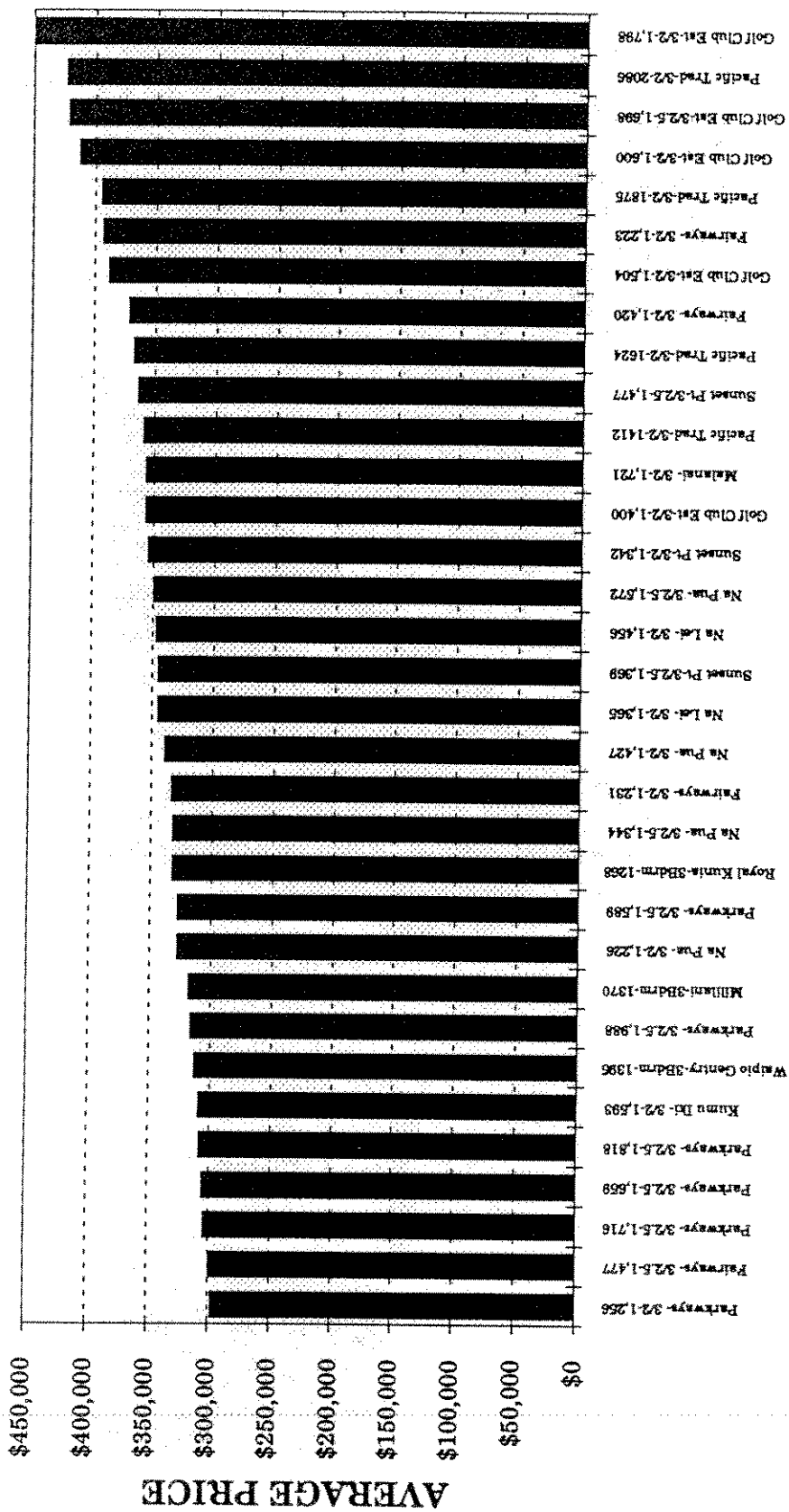
# MARKET TWO BEDROOM SINGLE FAMILY UNITS



**MARKET THREE BEDROOM SINGLE FAMILY UNITS**



# MARKET THREE BEDROOM SINGLE FAMILY UNITS



## EWA BY GENTRY

This master planned community from Gentry Development Co. and Gentry Homes, Ltd. is located along Fort Weaver Road, halfway between the H-1 highway and Ewa Beach. Approximately 7,500 single and multi-family homes are planned along with a golf course, elementary school, parks and a commercial center. The first phase of homes began closing in 1988. Gentry has been fulfilling its affordable housing requirements through low-income rental projects, so all sold units are at market prices.

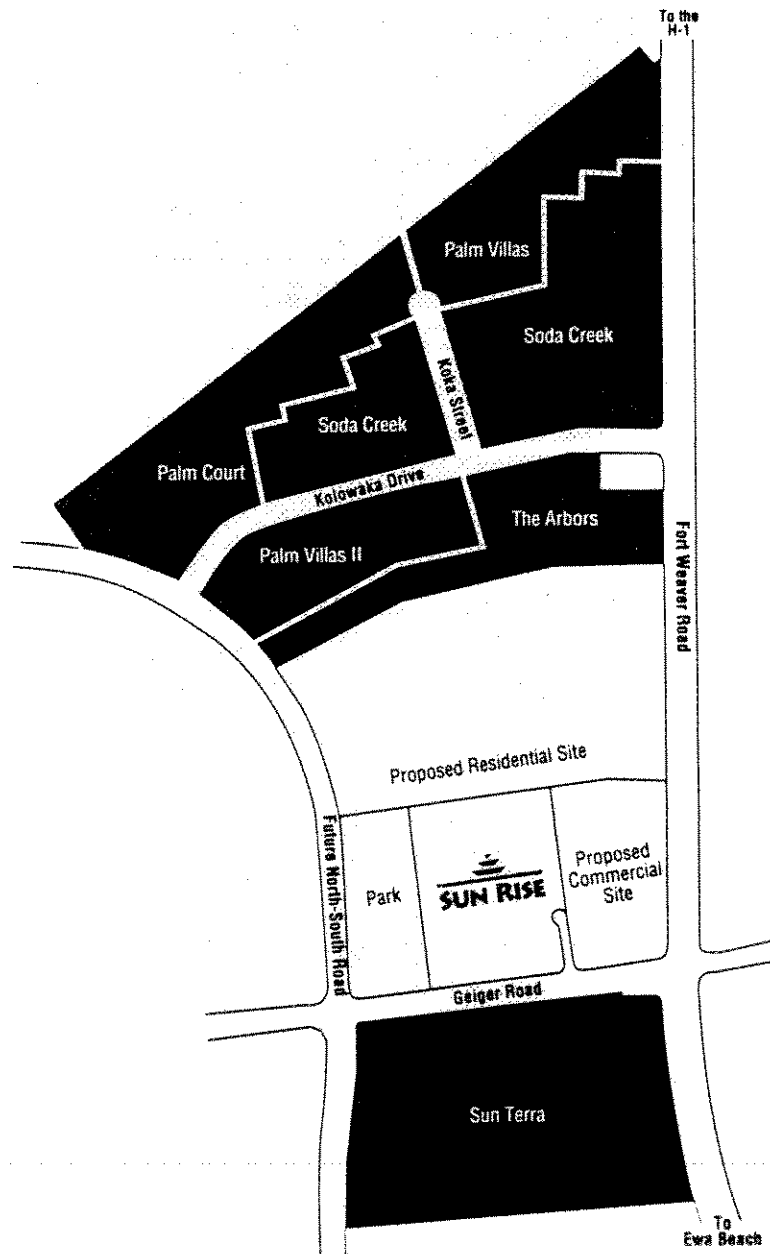


Figure II-1

EWA BY GENTRY

**The Arbors**

**Developer:** Gentry Homes, Inc.

**Location:**

Ewa Plain, intersection of Fort Weaver Road and Kolokawa Drive.

**Year Built:** 1991-1992

**Type:** Multi-family Townhomes

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
1, 1A	98	2/2	1,009	\$225,000
2	37	2/2	1,098	\$235,000
3	37	2/2	1,010	\$225,000
4, 4A	81	3/3	1,526	\$287,000
5	44	2/2	1,060	\$225,000
TOTAL:	297			

**Amenities:**

Gated entry, larger living areas, enclosed garages with garage door openers, high ceilings, private courtyards and/or lanais, recreation center with pool, cabana, and meeting room.

**Comments:**

A fee simple townhome community of 289 two and three bedroom units. Most of the units are in two-story seven-plex buildings. Three bedroom units are two-level; models 1 and 1A are stacked. All units are at market prices.

**Figure II-2**

**EWA BY GENTRY**

**Palm Court**

**Developer:** Gentry Homes, Inc.

**Location:**

Ewa Plain, Phase I on Koka Street and Phase II south of Kolokawa Drive.

**Year Built:** 1989-1990

**Type:** Multi-family

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
1	208	2/2	810	\$197,000
2	208	2/2	874	\$199,000
TOTAL:	416			

**Amenities:**

Two parking stalls conveyed with units: one covered, one open. Barbecue area.

**Comments:**

A fee simple, two-story walk-up townhome project of 416 two-bedroom units. All units were sold at market prices. Average maintenance fees: \$110.00.

**Figure II-3**

**EWA BY GENTRY**

**Palm Villas**

**Developer:** Gentry Homes, Inc.

**Location:**

Ewa Plain, on Koka Street off of Kolokawa Drive.

**Year Built:** 1989-1991

**Type:** Multi-family

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
1	40	0/1	414	\$126,000
2	80	1/1	485	\$153,000
3	424	2/2	716	\$180,000
TOTAL:	544			

**Amenities:**

Two parking stalls conveyed with units: one covered, one open. Project has resident manager. Barbecue area.

**Comments:**

A fee simple, two-story walk-up townhome project of 544 studio, one, and two-bedroom units. All units were at market prices. Average maintenance fees: \$110.00.

**Figure II-4**



**EWA BY GENTRY**

**Soda Creek**

**Developer:** Gentry Homes, Inc.

**Location:**

Ewa Plain, at the junction of Fort Weaver Road and Kolokawa Drive.

**Year Built:** 1988-1990

**Type:** Single Family Homes

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
1	20	2/1	805	\$247,000
2	75	3/2	891	\$266,000
3	100	3/2	1,050	\$267,000
4	85	3/2	1,264	\$286,000
5	80	3/2	1,410	\$290,000
6	85	4/2	1,515	\$330,000
TOTAL:	445			

**Average Lot Size:** 3,270

**Amenities:**

All homes include an enclosed two-car garage.

**Comments:**

Lot sizes average 3,270 square feet. All units were sold at market prices.

**Figure II-5**

**EWA BY GENTRY**

**Sun Rise**

**Developer:** Gentry Homes, Inc.

**Location:**

Ewa Plain, on the north side of Geiger Road one quarter mile off of Fort Weaver Road.

**Year Built:** 1992-1993

**Type:** Multi-family low-rise condominium

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
1	36	0/1	407	\$140,000
2	36	1/1	476	\$165,000
3	36	1/1	477	\$170,000
4	224	2/2	811	\$195,000
5	56	2/2	830	\$200,000
TOTAL:	388			

**Amenities:**

Each unit has a courtyard or lanai. One parking stall conveyed with each unit; two and three bedroom units have an additional covered stall in their building. Recreation and barbecue area.

**Comments:**

Project contains 388 fee simple units in 9 two-story and 28 three-story buildings. Across Geiger Road from Sun Terra single family project. Bounded by proposed park to the west and proposed commercial to the east. All units are at market prices.

**Figure II-6**

**EWA BY GENTRY**

**Sun Terra**

**Developer:** Gentry Homes, Inc.

**Location:**

Ewa Plain, on the south side of Geiger Road at the intersection of Fort Weaver Road.

**Year Built:** 1992-?

**Type:** Single family market homes

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
1	20	2/2	945	\$252,000
2	110	3/2	1,447	\$285,000
3	50	3/2	1,088	\$265,000
4	80	3/2	1,189	\$275,000
5	72	4/3	1,671	\$305,000
TOTAL:	332			

**Average Lot Size:** 3,500

**Amenities:**

Enclosed two-car garage with garage door openers, privacy fence with gate, open kitchens with pass-through to dining.

**Comments:**

One and two-story homes. Across street from Sun Rise multi-family project and proposed park and commercial sites. Lot sizes estimated around 3,500 square feet. All units are at market prices.

**Figure II-7**



VILLAGES OF KAPOLEI

**Kumu Iki (Village 1)**

**Developer:** Castle & Cooke Properties, Inc.

**Location:**

On Ewa plain below Makakilo, bordered by Fort Barrette Road, with access off of Kama'aha and Kealanani Avenues.

**Year Built:** 1990-1991

**Type:** Single family affordable and market homes

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
A1	51	2/2	964	\$96,000
A2	25	2/2	1,041	\$120,000
A3	66	3/2	1,068	\$102,000
A4	80	3/2	1,261	\$109,000
A5	96	3/2	1,374	\$118,000
M6	38	3/2	1,209	\$250,000
M7	22	3/2	1,338	\$295,000
M8	24	3/2	1,593	\$310,000
M9	36	3/2	1,637	\$261,000
M10	37	4/2	1,854	\$323,000
M11	43	4/2	1,950	\$333,000
TOTAL:	518			

**Average Lot Size:** 4,440

**Amenities:**

Homes include two-car garages and fenced rear and side yards.

**Comments:**

Overall project lot sizes average 4,440 square feet. Affordable lots average 4,025 square feet and market lots average 5,084 square feet. Project is across Fort Barrette Road from planned 75-acre public park.

**Figure II-9**

**VILLAGES OF KAPOLEI**  
**Malanai (Village 3)**

**Developer:** Watt Hawaii, Inc.

**Location:**

On Ewa plain below Makakilo, stretched along Farrington Highway at the northeast corner of Kapolei.

**Year Built:** 1991-1993

**Type:** Single family affordable and market homes

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
AFF()	178	n/a	n/a	\$160,000
M5	29	3/2	1,721	\$357,000
M6	34	4/2	1,987	\$374,000
M7	55	4/2	2,246	\$417,000
TOTAL:	296			

**Average Lot Size:** 5,140

**Amenities:**

Market homes have two-car garages, fenced back yards, landscaped front yards with sprinkler system.

**Comments:**

Market homes are either fronting or adjacent to the planned golf course. Market lot sizes average approximately 5,800 sq. ft. and affordable lot sizes average 4,700 sq. ft. All affordable units were awarded by lottery in early 1991.

**Figure II-10**

VILLAGES OF KAPOLEI

A'eloia (Village 2)

**Developer:** Watt Hawaii, Inc.

**Location:**

In the center of Kapolei, one-half mile from Farrington Highway, with access off of Kealanani and Kama'aha Avenues.

**Year Built:** 1993-1995

**Type:** Single family affordable and market homes

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
AFF	187	n/a	n/a	\$180,000
MKT	125	n/a	n/a	Market
TOTAL:	312			

**Average Lot Size:** n/a

**Amenities:**

**Comments:**

Many market homes will front the planned golf course. All affordable units were awarded by lottery in early 1991.

Figure II-11

VILLAGES OF KAPOLEI

**Village 3 Multi-family**

**Developer:** Watt Hawaii, Inc.

**Location:**

Bordering Farrington Highway, at the northeast corner of the Village 3 site.

**Year Built:** 1992-1993

**Type:** Multi-family for-sale

**Unit Mix:**

MODEL	COUNT	BD/BA	(gross) INT AREA	PRICE
1	16	1/1	646	n/a
2	56	2/1	847	n/a
3	16	3/2	1,073	n/a
TOTAL:	88			

**Amenities:**

**Comments:**

Across Kapolei golf course access road from agricultural-use land.

**Figure II-12**



VILLAGES OF KAPOLEI

**Village 5 Multi-family**

**Developer:** West Beach Estates

**Location:**

In the center of Kapolei, bordered by Kama'aha Avenue to the east, Ewa Parkway and to the south, and Village 6 to the west.

**Year Built:** 1992-1993

**Type:** Multi-family affordable for-sale

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
1	12	1/1	560	\$73,000
2	89	2/1	900	\$99,000
3	26	3/2	1,050	\$109,000
TOTAL:	127			

**Amenities:**

**Comments:**

For families at or below 80% of median income level.  
Property is adjacent to planned elementary school, close to small central commercial center (both planned).

**Figure II-13**

**VILLAGES OF KAPOLEI**  
**Village 6 Multi-family**

**Developer:** West Beach Estates

**Location:**

In the center of Kapolei, bordered by Kama'aha Avenue to the north, Ewa Parkway and to the south and Village 5 to the east.

**Year Built:** 1993-1994

**Type:** Multi-family affordable for-sale

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
1	13	1/1	560	\$73,000
2	90	2/1	900	\$99,000
3	26	3/2	1,050	\$109,000
TOTAL:	129			

**Amenities:**

**Comments:**

For families at or below 80% of median income level.  
Property is adjacent to planned community park, close to small central commercial center (both planned).

**Figure II-14**

# LAUNANI VALLEY

This development from Towne Realty is in Central Oahu, north of Mililani, off of the H-2 freeway at Exit 7. The five residential areas designated in the Launani Valley master development stretch along Wikao Drive and the Waikakalaua Stream. Also included in the plan are a park with tennis courts, a basketball court, and bicycle/jogging paths. Schools, shopping and services are nearby.

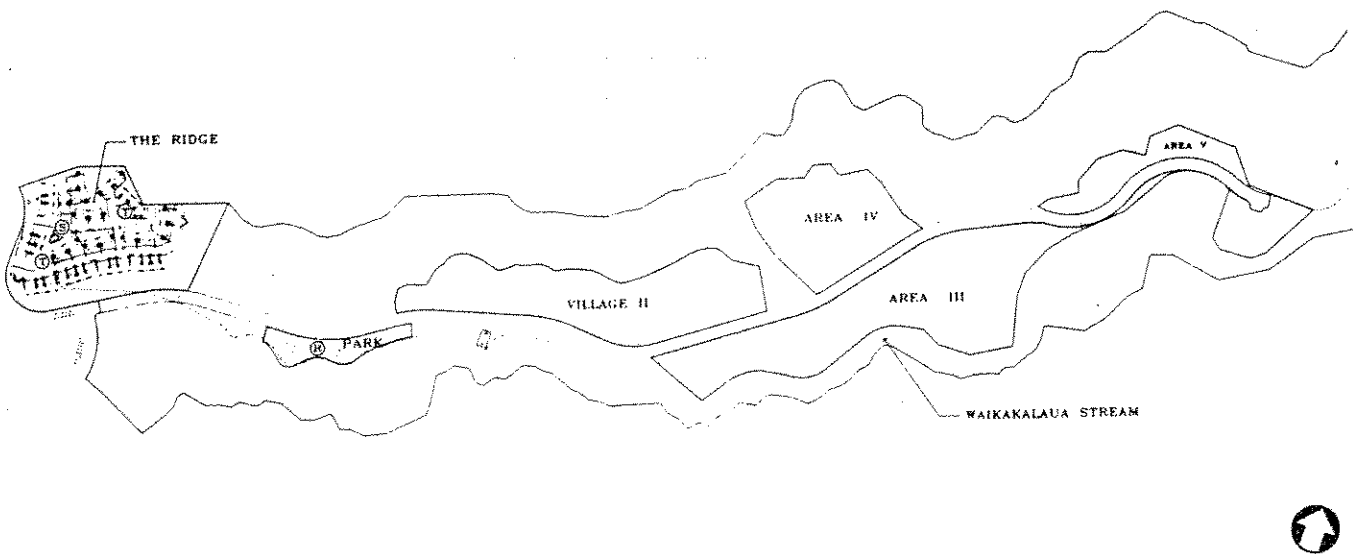


Figure II-15

LAUNANI VALLEY

Evergreen Terrace

**Developer:** Towne Realty

**Location:**

Located in Central Oahu, off H-2 freeway at exit 7 on Waikalani Drive.

**Year Built:** 1992-1993

**Type:** Multi-family low-rise condominium

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
A	39	2/2	934	\$199,900
A1	39	2/2	934	\$203,900
B	26	2/2	1,289	\$237,900
B1	26	2/3	1,289	\$242,900
TOTAL:	130			

**Amenities:**

Swimming pool with sun deck and party area, recreation/meeting room, private park area, private covered lanais. Each unit has one covered parking stall with storage, as well as an open space. Barbecue area.

**Comments:**

Project consists of 13 three-story buildings, each containing 10 fee-simple units. Maintenance fees are \$126 for model A and \$174 for model B. There is a master association fee of \$25. All units are market-priced units.

Figure II-16

LAUNANI VALLEY

**The Ridge**

**Developer:** Towne Realty

**Location:**

Central Oahu, east of H-2 freeway at exit 7, on Wikao Street.

**Year Built:** 1992-1993

**Type:** Multi-family market and affordable condominium

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
A (AFF)	27	2/1	703	\$120,000
A	35	2/1	703	\$169,900
B	56	2/2	782	\$180,900
C	32	2/2	813	\$184,900
D	32	3/2	875	\$204,900
TOTAL:	182			

**Amenities:**

Each unit has individual storage, air conditioning outlets, and a carport. Units are wired for cable TV. The project has equipped tot lots, a community pool, parks with jogging trails and exercise stations. Barbecue area.

**Comments:**

Project consists of 10 two and three-story buildings. Maintenance fees are \$131 for model A, \$146 for model B, \$151 for model C, \$163 for model D. There is a master association fee of \$25. The affordable units are for families at 80-100% of median income, and are all first or second floor A models.

Figure II-17

## MILILANI MAUKA

A master-planned community from Castle & Cooke Properties, Mililani Mauka covers approximately 1,200 acres sloping upland from the H-2 freeway in Central Oahu, or about one-third of the total area of the Mililani Master Development plan. Residential development began in 1990 with Pacific Traditions single family homes and will continue for the next 10 to 15 years. When completed, Mililani Mauka will include approximately 6,600 residential dwelling units in six individual villages or neighborhoods linked by bikeways, pedestrian paths and green belts. Also planned is a 5.7-acre park-and-ride facility, daycare center, retirement community, high-tech "elementary school of the future" and other schools, recreation/community center, two commercial/retail areas, and a series of public parks.

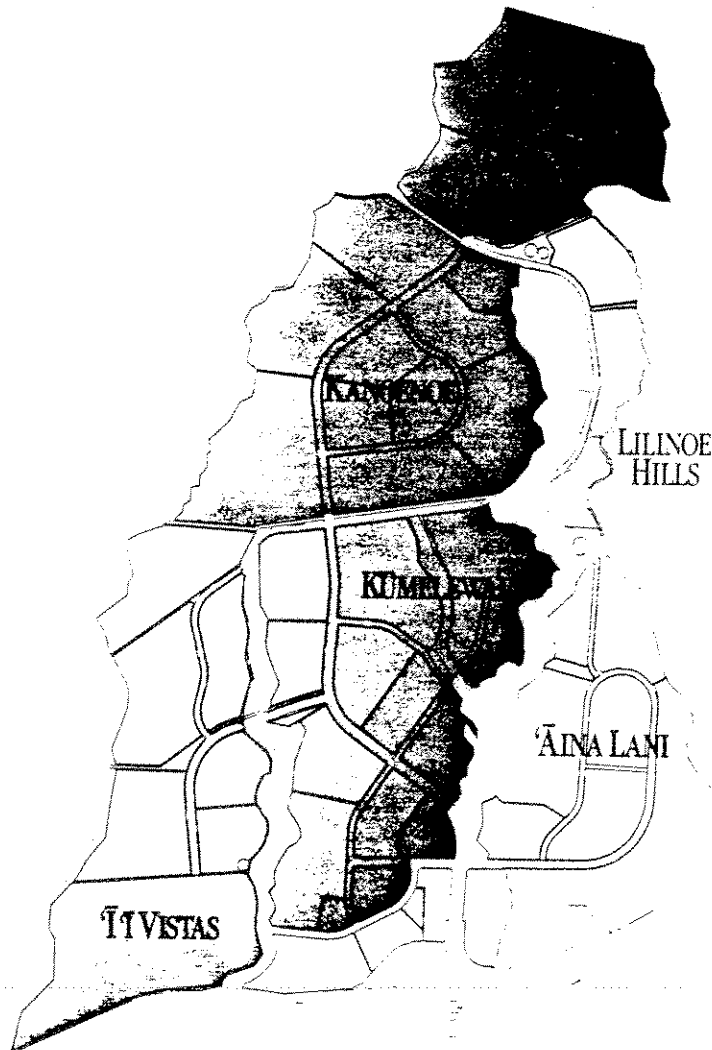


Figure II-18

MILILANI MAUKA

**The Cottages**

**Developer:** Castle & Cooke Properties, Inc.

**Location:**

Central Oahu, east of H-2 freeway off exit 5, with access off of Meheula Parkway.

**Year Built:** 1993-1994

**Type:** Single family market homes

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
1	82	2/2	809	\$278,000
2	82	3/2	1,040	\$285,000
TOTAL:	164			

**Average Lot Size:** 4,400

**Amenities:**

All homes include enclosed garages.

**Comments:**

All units sold at market prices. Project is situated to the north of Olaloa elderly project, between a planned elementary school and a small canyon. Planned as smaller, starter homes. The ridge lots on the edge of the canyon are larger than the interior lots.

Figure II-19

MILILANI MAUKA

Hampton Court

**Developer:** Castle & Cooke Properties, Inc.

**Location:**

Central Oahu, east of H-2 freeway off exit 5, Ainamakua Drive.

**Year Built:** 1992-1993

**Type:** Multi-family market townhouse

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
1	10	2/2	873	\$240,000
2	15	2/2	1,190	\$270,000
3	10	3/2.5	1,702	\$330,000
4	10	3/2.5	1,745	\$340,000
TOTAL:	45			

**Amenities:**

Spacious floor plans and luxurious wood and brass finishing touches, with fireplaces in most units. Private meeting and recreation facility (Hampton Club) with barbecue facilities and a trelliced patio. Large central private park area. Each unit includes an enclosed garage with automatic door openers.

**Comments:**

Designed as an upscale/luxury townhouse project. Maintenance fees are \$148, \$203, \$289, and \$296 for models 1, 2, 3, and 4, respectively.



MILILANI MAUKA

**Kumelewai Court**

**Developer:** Castle & Cooke Properties, Inc.

**Location:**

Central Oahu, east of H-2 freeway off exit 5, Ainamakua Drive and Meheula Parkway.

**Year Built:** 1992

**Type:** Multi-family affordable townhouse

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
A	18	2/1	855	\$186,000
A1	19	2/1	932	\$183,000
B	38	2/1	954	\$195,000
B1	38	2/1	1,005	\$193,000
C	38	3/2	1,634	\$265,000
TOTAL:	151			

**Amenities:**

Each unit has two assigned parking stalls. There are a centrally located party pavilion and children's playground. The entire project is walled for security. Barbecue area.

**Comments:**

Models A, A1, B, and B1 are 'gap group' income-restricted units with a 5-year shared appreciation schedule with Castle & Cooke. Model C is a market unit available to the general public. The project is adjacent to a planned elementary school.

**Figure II-21**

MILILANI MAUKA

**Kumelewai Gardens**

**Developer:** Castle & Cooke Properties, Inc.

**Location:**

Central Oahu, east of H-2 freeway off exit 5, with access off of Ainamakua Drive.

**Year Built:** 1993

**Type:** Multi-family affordable townhouse

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
A	60	1/1	501	\$100,000
B	100	2/1	777	\$116,000
TOTAL:	160			

**Amenities:**

All parking stalls are open. There are a park and pavilion at the center of the project. Barbecue area.

**Comments:**

This affordable project consists of 40 buildings in a garden setting. A 10-year shared-appreciation schedule with the City and County of Honolulu applies. The project is across Ainamakua Drive from a planned elementary school.

**Figure II-22**

MILILANI MAUKA

Na Lei

**Developer:** Castle & Cooke Properties, Inc.

**Location:**

Central Oahu, east of H-2 freeway off exit 5, between the southern curve of Ainamakua Drive and the freeway right-of-way.

**Year Built:** 1991-1992

**Type:** Single family market homes

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
1000	66	2/2	1,075	\$304,000
1200	45	3/2	1,365	\$346,000
1400	57	3/2	1,456	\$348,000
TOTAL:	168			

**Average Lot Size:** 5,250

**Amenities:**

These homes come with a two car garage, a volume ceiling in the living room, and a spacious porch and lanai.

**Comments:**

All homes are sold at market prices. Lot sizes average approximately 5,250 square feet.

Figure II-23

MILILANI MAUKA

Na Pua

**Developer:** Castle & Cooke Properties, Inc.

**Location:**

Central Oahu, east of H-2 freeway off exit 5, bounded by the upper loop of Ainamakua Drive.

**Year Built:** 1992-1993

**Type:** Single family market homes

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
1A	16	2/2	1,033	\$298,000
1B	16	3/2.5	1,344	\$333,000
1C	18	3/2	1,427	\$340,000
2A	20	2/2	1,045	\$302,000
2B	18	3/2	1,226	\$328,000
2C	20	3/2.5	1,572	\$350,000
TOTAL:	108			

**Average Lot Size:** 4,840

**Amenities:**

These homes come with a two car garage, garage door opener, volume ceiling in the living room, and a spacious porch and lanai.

**Comments:**

All homes are sold at market prices. Lot sizes average approximately 4,840 square feet.

Figure II-24

MILILANI MAUKA

**Pacific Traditions**

**Developer:** Castle & Cooke Properties, Inc.

**Location:**

Central Oahu, east of H-2 freeway off exit 5, on  
Ainamakua Drive.

**Year Built:** 1990-1991

**Type:** Single family market homes

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
1	68	3/2	1,412	\$359,500
2	66	3/2	1,624	\$368,000
3	67	3/2	1,875	\$395,500
4	57	3/2	2,086	\$424,000
5	55	4/2	2,330	\$437,000
TOTAL:	313			

**Average Lot Size:** 6,100

**Amenities:**

All homes include two-car garages.

**Comments:**

Lots average 6,100 square feet in size. All units sold at  
market prices. Pacific traditions homes stretch across

# WAIKELE

This family-planned community from Amfac/JMB is on 577 acres of land situated uphill from the H-1 freeway, at the junction of Kamehameha highway as it heads north through central Oahu. The gentle slope of the land provides many of the homes and buildings with sweeping views from Ewa to Diamond Head. The master plan includes over 2,700 single and multi-family residential units in several phases, surrounding an 18-hole golf course. Also planned are three community parks, public recreation center, elementary school, and a large commercial area including Waikele Center, which will be Hawaii's third largest retail center.

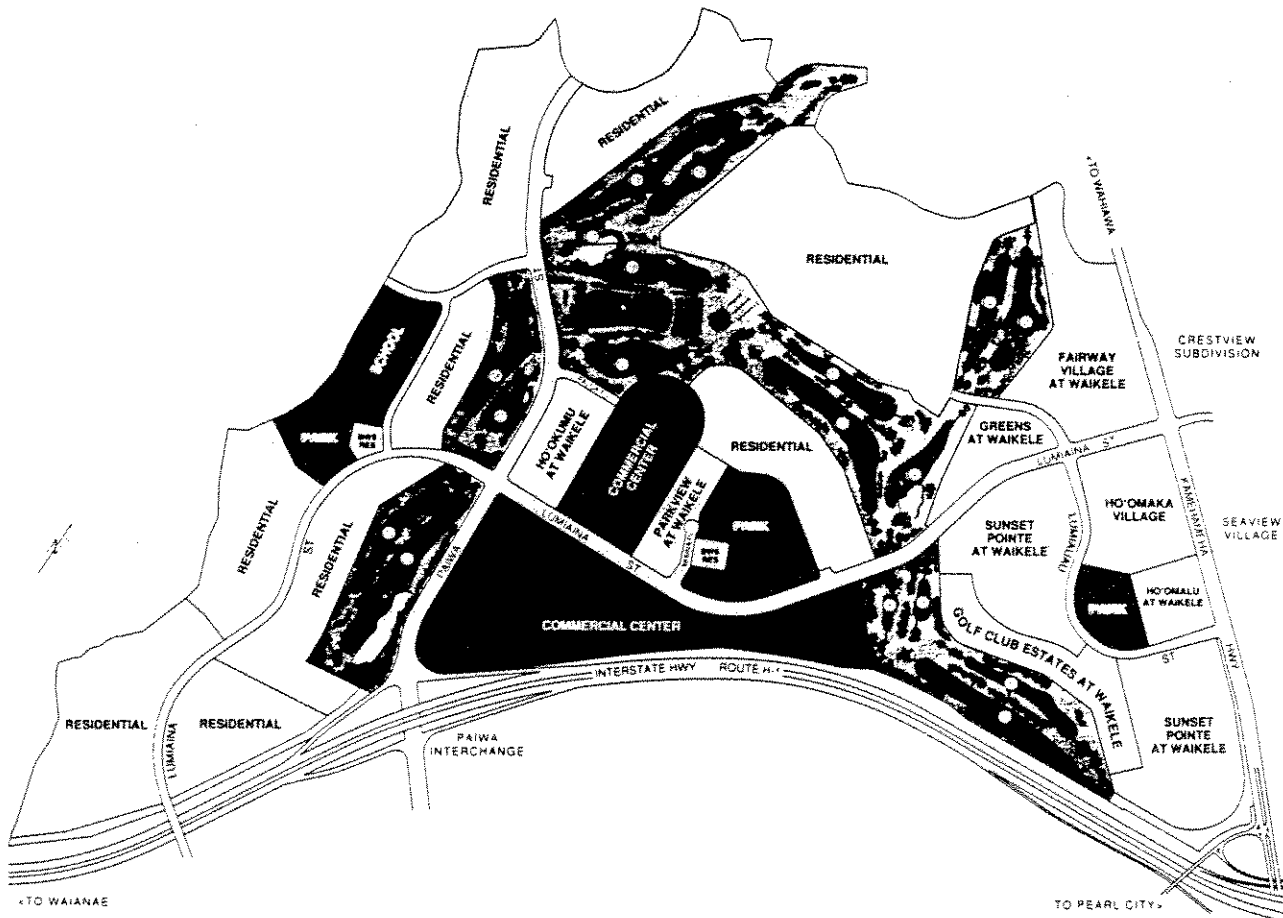


Figure II-26

WAIKELE

Fairway Village

Developer: JPS Hawaii (Schuler)

Location:

On Kam Highway approximately 1 mile north of H-1 Freeway, bordered by Lumiauu and Lumiaina streets.

Year Built: 1992-1993

Type: Multi-family market and affordable townhouse

Unit Mix:

MODEL	COUNT	BD/BA	INT AREA	PRICE
A (AFF)	28	2/2	830	\$189,000
B (AFF)	28	2/2	796	\$179,000
C (AFF)	28	2/2	835	\$192,000
D (AFF)	28	2/2	863	\$199,000
E (MKT)	16	2/2	918	\$223,000
F (MKT)	10	2/2	898	\$225,000
G (MKT)	4	2/2	900	\$233,000
H (MKT)	34	2/2.5	1,271	\$283,000
J (MKT)	32	3/2.5	1,387	\$295,000
TOTAL:	208			

Amenities:

Recreation center, barbecue area. Models H and J have two-car enclosed garages with door openers; models E, F and G have two stalls - one carport, one open. Ground floor units have courtyards, second floor units have lanais.

Comments:

Market buildings are adjacent to or fronting the third fairway of the Waikele golf course. Maintenance fees for market units are \$105 for models E, F, and G and \$145 or \$159 for models H or J, respectively. Master association fees are \$35 for market units.

Figure II-27

WAIKELE

Golf Club Estates

Developer: Armstrong

Location:

Situated between Sunset Pointe and the Waikele golf course, with access off of Lumiauau street.

Year Built: 1992-1994

Type: Single family market homes

Unit Mix:

MODEL	COUNT	BD/BA	INT AREA	PRICE
A	15	4/3	2,016	\$479,000
B	14	4/2.5	1,901	\$467,000
C	14	3/2	1,798	\$450,000
D	14	3/2.5	1,698	\$422,000
E	14	3/2	1,600	\$413,000
F	5	3/2	1,504	\$389,000
G	4	3/2	1,400	\$357,000
TOTAL:	80			

Average Lot Size: 5,100

Amenities:

Spacious floor plans and luxurious master baths.  
Enclosed garages with door openers. Frontage or views of the fifth through eighth fairways of the Waikele golf course (40 lots have golf course frontage.)

Comments:

All units sold at market prices. Master association fees are \$35.

Figure II-28



WAIKELE

**The Greens**

**Developer:** JPS Hawaii (Schuler)

**Location:**

On Lumiaina Street, between Fairway Village and the Waikele golf course.

**Year Built:** 1993-1994

**Type:** Multi-family market townhouse

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
A	30	2/2.5	1,271	\$283,000
B	30	3/2.5	1,387	\$295,000
TOTAL:	60			

**Amenities:**

Ground floor units have courtyards, second floor units have lanais.

**Comments:**

Buildings appear to be similar to golf course frontage buildings of Fairway Villages project. Master association fees are \$17 to 35.

WAIKELE

Ho'okumu

**Developer:** JPS Hawaii (Schuler)

**Location:**

In the center of Waikale, at the junction of Paiwa and Lumiaina Streets.

**Year Built:** 1993-1994

**Type:** Multi-family affordable townhomes

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
A	44	2/1.5	750	\$136,000
B	22	2/2	750	\$145,000
C	22	2/2	830	\$172,000
D	48	2/1	650	\$96,000
TOTAL:	136			

**Amenities:**

One parking stall conveyed with each unit. Additional stalls may be purchased. Barbecue area. Ground floor units have courtyards, second floor units have lanais.

**Comments:**

Master association fees are \$17 and maintenance fees average \$105. Property is adjacent to planned wholesale/discount commercial center.

WAIKELE

**Ho'omaka Village**

**Developer:** JPS Hawaii (Schuler)

**Location:**

At the east edge of Waikele, bordered by Kam Highway, Lumiaina and Lumiauau streets.

**Year Built:** 1990-1991

**Type:** Multi-family affordable townhomes

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
A	84	2/1	650	\$91,000
B	80	2/1.5	750	\$140,000
C	80	2/2	796	\$165,000
TOTAL:	244			

**Amenities:**

One parking stall conveyed with each unit. Additional stalls may be purchased. Barbecue area and small playground. Ground floor units have courtyards, second floor units have lanais.

**Comments:**

Master association fees are \$17 and maintenance fees average \$105. A total of 24 two-story buildings.

<p><b>WAIKELE</b></p> <p><b>Ho'omalū</b></p>
--

**Developer:** JPS Hawaii (Schuler)

**Location:**

At the east edge of Waikele, bordered by Kam Highway and Lumiauau streets.

**Year Built:** 1991-1992

**Type:** Multi-family affordable townhomes

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
A	36	2/2	750	\$156,000
B	18	2/2	833	\$173,000
TOTAL:	54			

**Amenities:**

One parking stall conveyed with each unit. Additional stalls may be purchased. Barbecue area. Ground floor units have courtyards, second floor units have lanais.

**Comments:**

Master association fees are \$17 and maintenance fees average \$105. A total of 54 single-level units in 9 two-story buildings. Situated between Hoomaka Village and an existing public park.

**Figure II-32**

WAIKELE

**Parkview**

**Developer:** JPS Hawaii (Schuler)

**Location:**

In the center of Waikēle, on Lumiaina Place, off of Lumiaina Street.

**Year Built:** 1993-1994

**Type:** Multi-family affordable townhomes

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
A	26	2/1.5	750	\$136,000
B	13	2/2	750	\$145,000
C	13	2/2	830	\$172,000
D	28	2/1	650	\$96,000
TOTAL:	80			

**Amenities:**

One parking stall conveyed with each unit. Additional stalls may be purchased. Barbecue area. Ground floor units have courtyards, second floor units have lanais.

**Comments:**

Master association fees are \$17 and maintenance fees average \$105. Property is situated between planned wholesale/discount commercial center and community park.

WAIKELE

Sunset Pointe

**Developer:** Castle & Cooke Properties, Inc.

**Location:**

On the east side of Waikale on Lumiauau Street. First phase is at corner of H-1 Freeway and Kam Highway; second phase abuts Lumiaina Street.

**Year Built:** 1991-1992

**Type:** Single family market and affordable homes

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
A0	14	2/1	758	\$199,850
A1	48	2/2	980	\$200,000
A2	27	3/2	1,079	\$216,000
A3	34	3/2.5	1,162	\$230,000
M1	35	3/2.5	1,369	\$346,000
M2	44	3/2	1,342	\$355,000
M3	43	3/2.5	1,477	\$364,000
TOTAL:	245			

**Average Lot Size:** 4,450

**Amenities:**

Community parks nearby.

**Comments:**

Constructed in two phases, separated by the Golf Club Estates project. Affordable units were awarded by lottery to families at 140% or less of Oahu median income. Homes are one and two-story, two and three bedroom models. Lot sizes average 3,900 sq. ft. for affordable homes and 5,000 sq. ft. for market homes. Master association fees are \$35.

# WEST LOCH

At completion, this master-planned development, produced jointly by Westloch, Inc. and the City and County of Honolulu will include 1,600 residential units. As the name implies, West Loch is situated to the west of Pearl Harbor's West Loch, surrounding the Westloch Golf Course. The master plan covers approximately 520 acres. Delivery of the first phase of homes began in 1988.

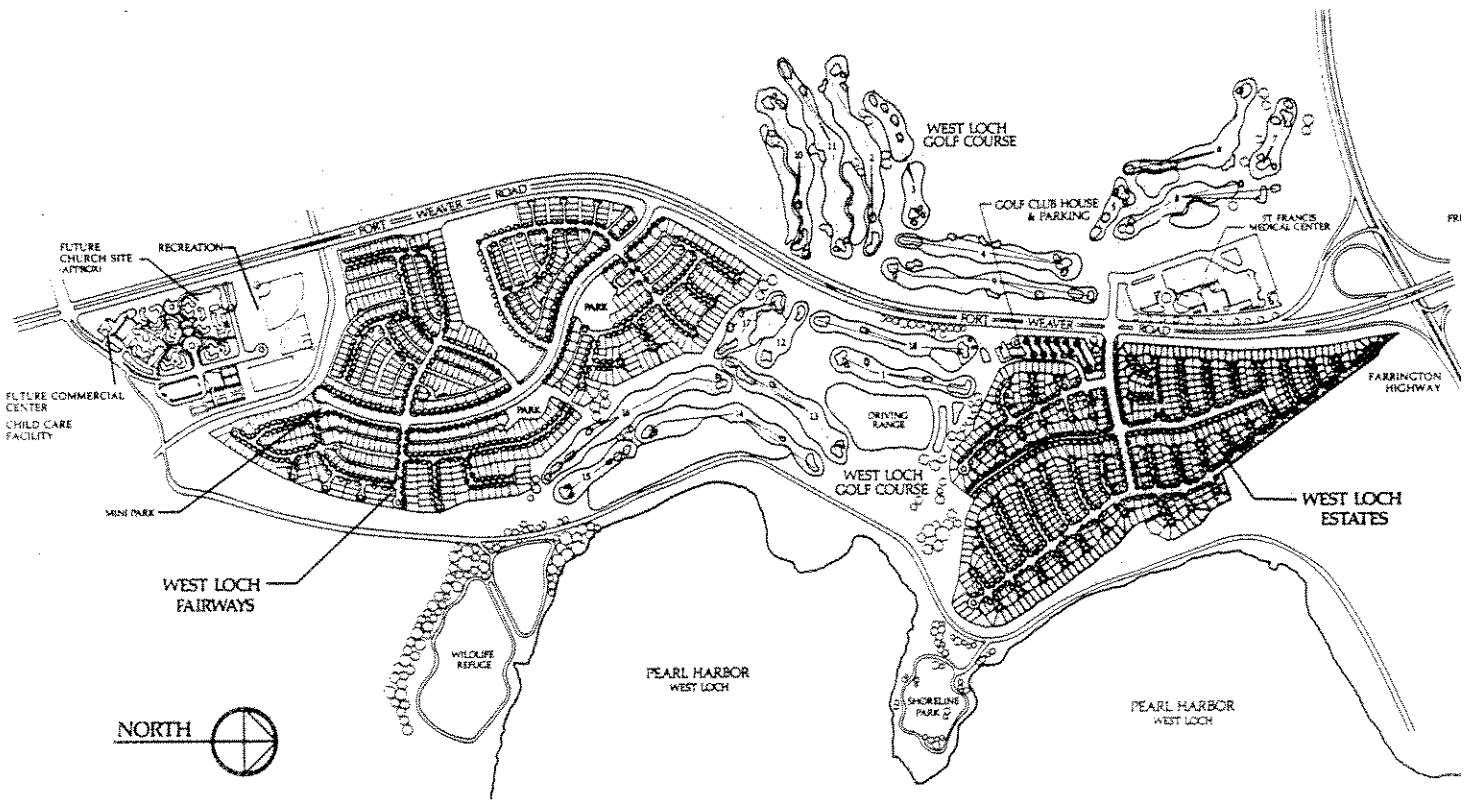


Figure II-35

<p><b>WEST LOCH</b></p> <p><b>Estates</b></p>
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**Developer:** Westloch, Inc. (Sheldon Zane)

**Location:**

On Fort Weaver Road, stretching from H-1 Freeway to the north end of the West Loch golf course.

**Year Built:** 1989-1990

**Type:** Single family market and affordable homes

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
AFF	54	2/2	950	\$102,000
AFF	90	3/2	1,176	\$113,000
AFF	141	3/2	1,280	\$117,000
MKT	47	3/2	1,420	\$266,000
AFF	74	4/2	1,448	\$118,000
MKT	17	3/2	1,486	\$255,000
MKT	54	3/2	1,594	\$257,000
MKT	52	3/2	1,656	\$272,000
MKT	64	4/2	1,754	\$303,000
<b>TOTAL:</b>	<b>593</b>			

**Average Lot Size:** 4,400

**Amenities:**

Access to jogging and biking trails.

**Comments:**

Adjacent to West Loch golf course, across Fort Weaver Road from new St. Francis Medical Center. Lot sizes average 4,200 sq. ft. for affordable units and 5,000 sq. ft. for market units.

**Figure II-36**



WEST LOCH

Fairways

**Developer:** Westloch, Inc. (Sheldon Zane)

**Location:**

Off of Fort Weaver Road, south of the West Loch golf course.

**Year Built:** 1991-1994

**Type:** Single family market homes

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
M6	n/a	5/3	1,685	\$372,500
M7	n/a	3/2	1,420	\$372,000
M8	n/a	3/2	1,231	\$334,000
M9	n/a	3/2.5	1,477	\$300,000
M10	n/a	3/2	1,223	\$294,000
M11	n/a	4/2	1,407	\$300,000
TOTAL:	280			

**Average Lot Size:** 5,600

**Amenities:**

Access to jogging and biking trails. Three public parks.

**Comments:**

Overall, lot sizes average 5,600 square feet. Most of these market-priced homes are fronting or near to the West Loch golf course. South end of property is adjacent to planned recreational park, commercial center, and child-care facility. After choosing a lot, buyers choose one of the six house models to be constructed on the lot.

Figure II-37

**WEST LOCH**  
**Greenways**

**Developer:** Westloch, Inc. (Sheldon Zane)

**Location:**

Off of Fort Weaver Road, south of the West Loch golf course.

**Year Built:**

**Type:** Single family affordable homes

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
A1	31	2/2	850	\$105,000
A2	220	3/2	1,197	\$125,000
A3	64	4/2.5	1,628	\$131,000
TOTAL:	315			

**Average Lot Size:** 4,500

**Amenities:**

Access to jogging and biking trails. Three public parks.

**Comments:**

All units were awarded by lottery over two years ago. South end of property is adjacent to planned recreational park, commercial center, and child-care facility.

**WEST LOCH**

**Parkways**

**Developer:** Westloch, Inc. (Sheldon Zane)

**Location:**

Off of Fort Weaver Road, south of the West Loch golf course.

**Year Built:**

**Type:** Single family zero-lot attached homes

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
Las Vegas	n/a	3/2	1,256	\$298,000
Reno	n/a	3/2	1,264	\$280,000
Washington	n/a	3/2.5	1,716	\$304,500
New York	n/a	3/2.5	1,506	\$293,500
Berkeley	n/a	3/2.5	1,659	\$306,000
New Orleans	n/a	3/2.5	1,818	\$309,000
Miami	n/a	3/2.5	1,589	\$328,000
Daytona	n/a	3/2.5	1,988	\$317,000
TOTAL:	129			

**Average Lot Size:** 3,700

**Amenities:**

Access to jogging and biking trails. Three public parks.

**Comments:**

South end of property is adjacent to planned recreational park, commercial center, and child-care facility. Lot sizes average 3,700 square feet. After choosing a lot, buyers choose one of the eight house models to be constructed on the lot.

**Figure II-39**

<p><b>WEST LOCH</b></p> <p><b>Fairview</b></p>
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**Developer:** Horita

**Location:**

Off of Fort Weaver Road, south of the West Loch golf course, in the middle of the Fairways/Greenways/Parkways project.

**Year Built:** 1992-1993

**Type:** Multi-family affordable condominium

**Unit Mix:**

MODEL	COUNT	BD/BA	INT AREA	PRICE
AFF()	136	1 or 2 Bdrm	n/a	\$99-122,000
<b>TOTAL:</b>	<b>136</b>			

**Amenities:**

Access to jogging and biking trails. Three public parks. Barbecue area.

**Comments:**

South end of property is adjacent to planned recreational park, commercial center, and child-care facility.

**Figure II-40**

## **EXISTING RESIDENTIAL RESALES**

**EXISTING RESIDENTIAL RESALES**

**Mililani**

**Developer:** Castle & Cooke Properties, Inc.

**Location:**

Central Oahu, southwest of H-2 freeway, approximately  
6 miles north of H-1 freeway.

**Resale Data: SINGLE FAMILY**

<b>SALES</b>	<b>BEDROOM</b>	<b>AVERAGE LAND AREA</b>	<b>AVERAGE INT AREA</b>	<b>AVERAGE PRICE</b>
6	Two	4,022	1,026	\$276,700
96	Three	5,468	1,370	\$318,689

**Resale Data: MULTI-FAMILY**

<b>SALES</b>	<b>BEDROOM</b>	<b>AVERAGE INT AREA</b>	<b>AVERAGE PRICE</b>
14	One	537	\$133,343
72	Two	987	\$221,364
35	Three	1,368	\$252,790

**Figure II-41**

**EXISTING RESIDENTIAL REALES**

**Waipio Gentry**

**Developer:** Gentry Development

**Location:**

Central Oahu, between Kam highway and H-2 freeway heading north, approximatley 2 miles from the H-1/H-2 interchange.

**Resale Data: SINGLE FAMILY**

<b>SALES</b>	<b>BEDROOM</b>	<b>AVERAGE LAND AREA</b>	<b>AVERAGE INT AREA</b>	<b>AVERAGE PRICE</b>
1	Two	2,775	780	\$265,000
71	Three	3,794	1,395	\$313,829

**Resale Data: MULTI-FAMILY**

<b>SALES</b>	<b>BEDROOM</b>	<b>AVERAGE INT AREA</b>	<b>AVERAGE PRICE</b>
22	One	498	\$159,100
141	Two	817	\$208,460
16	Three	1,159	\$227,268

**Figure II-42**

**EXISTING RESIDENTIAL RESALES**

**Village Park**

**Developer:** Horita

**Location:**

At the junction of Kunia Road and H-1 freeway, mauka of the freeway, adjacent to Waipahu.

**Resale Data: SINGLE FAMILY**

<b>SALES</b>	<b>BEDROOM</b>	<b>AVERAGE LAND AREA</b>	<b>AVERAGE INT AREA</b>	<b>AVERAGE PRICE</b>
0	Two			
7	Three	5,107	1,268	\$332,643

**Figure II-43**



**EXISTING RESIDENTIAL REALES**

**Royal Kunia**

**Developer:** Horita

**Location:**

Mauka of and adjacent to Village Park subdivision.

**Resale Data: SINGLE FAMILY**

<b>SALES</b>	<b>BEDROOM</b>	<b>AVERAGE LAND AREA</b>	<b>AVERAGE INT AREA</b>	<b>AVERAGE PRICE</b>
4	Two	3,620	1,025	\$267,875
7	Three	5,107	1,268	\$332,643

**Figure II-44**



**Gray • Hong • Bills & Associates, Inc.**  
 119 Merchant Street, Suite 607  
 Honolulu, Hawaii 96813  
 (808) 521 0306 Fax (808) 531 8018

**LETTER OF TRANSMITTAL**

TO: PARAMETRIX DATE: 3-11-93

ATTENTION: FRED

SUBJECT: MILLANI SUMMIT

We are sending you  attached  under separate cover the following items via:  
 Courier  Pick-up  U.S. Mail

No. Copies	Date	Sheet No.	Description
1	12-30-91		ENVIRONMENTAL ASSESSMENT WRITE UP FOR ROADWAYS, DRAINAGE, WATER, SEWER, AND SITE ELECTRICAL IMPROVEMENTS

Action Requested:  
 For review and comment  As requested   
 For approval  For your use

Remarks: AS DISCUSSED, PLEASE REVIEW.

**EXHIBIT H.  
 PRELIMINARY ENGINEERING REPORT**

Very Truly Yours,  
 Signed: Ray Santo

Job No: 2177

Received: \_\_\_\_\_

P/14



**Gray • Hong • Bills & Associates, Inc.**  
119 Merchant Street, Suite 607  
Honolulu, Hawaii 96813  
(808) 521 0306 Fax (808) 531 8018

**LETTER OF TRANSMITTAL**

TO: FRED RODRIGUEZ DATE: 1-7-92

ENVIRONMENTAL COMMUNICATIONS

ATTENTION: \_\_\_\_\_

SUBJECT: NIILILANI SUMMIT

We are sending you  attached  under separate cover the following items via:  
 Courier  Pick-up  U.S. Mail  \_\_\_\_\_

No. Copies	Date	Sheet No.	Description
1	12-30-91		ENVIRONMENTAL ASSESSMENT WRITE-UP FOR ROADWAYS, DRAINAGE, WATER, SEWER AND SITE ELECTRICAL

Action Requested:  
 For review and comment  As requested  \_\_\_\_\_  
 For approval  For your use

Remarks: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Very Truly Yours,  
Signed: Raf Santo

Job No: 2177

Received: \_\_\_\_\_

ACCESS AND INTERIOR ROADS  
ONSITE/OFFSITE IMPROVEMENTS EVALUATION

EXISTING ROADWAYS

There are five existing dwellings within the Mililani Summit property that presently utilize an unpaved roadway over a 20-foot wide access easement extending from Mililani Mauka. This same easement will serve as access to Mililani Summit. Additional easements for access and utilities may be obtained, as necessary.

PROPOSED ROADWAY SYSTEM

As shown on Figure 1, the access alignment from Mililani Mauka will follow the existing 20-foot wide road easement presently serving the Mililani Summit area. The two-lane offsite roadway will extend approximately 1.4 miles from Hamakua Drive and will be privately maintained. This access road will consist of a 20-foot wide asphaltic concrete surface overlain on base course, a four-foot grassed shoulder on either side of the pavement edge.

The onsite roadway system, which will also be privately maintained, includes approximately 11,500 feet of 22-foot wide roadways to service the projected single-family houses. These two-lane roads will have an asphaltic concrete surface overlain on base course unless the road slopes exceed a 12 percent gradient in which case concrete pavement will be provided. Concrete curbing along the outside of both traffic lanes, a four-foot wide concrete roadway and two-foot wide shoulder along one side of the roadway, and a four-foot wide shoulder extending beyond the curbing along the other side.

One located onsite will be a Board of Water Supply access road leading to a new storage reservoir and deepwell pumping station facility. This roadway will be approximately 2,000 feet in length and consist of an 18-foot asphaltic concrete surface overlain on base course, and a two-foot grassed shoulder on either side of the pavement edge.

The estimated cost for the Mililani Summit Roadway System is \$10.0 million.

POTENTIAL IMPACTS

The potential impacts associated with the roadway system for Mililani Summit are:

1. Construction inconveniences;
2. Additional traffic.

Since Mililani Summit is located approximately 1.4 miles from the existing residences within Mililani Mauka, noise and dust due to the onsite construction should not be a problem. Noise and dust generated from normal construction operations near Mililani Mauka, however, will create a short-term inconvenience to the existing nearby residences.

Traffic disruption due to construction vehicles and equipment which utilize the existing streets within Mililani Mauka is also a temporary inconvenience, lasting only the duration of the construction period.

The potential impact due to the additional traffic Mililani Summit will generate is addressed under a separate traffic study.

PROP. ) B.W.S. 1225' RESERVOIR  
AND DEEP WELL SITE

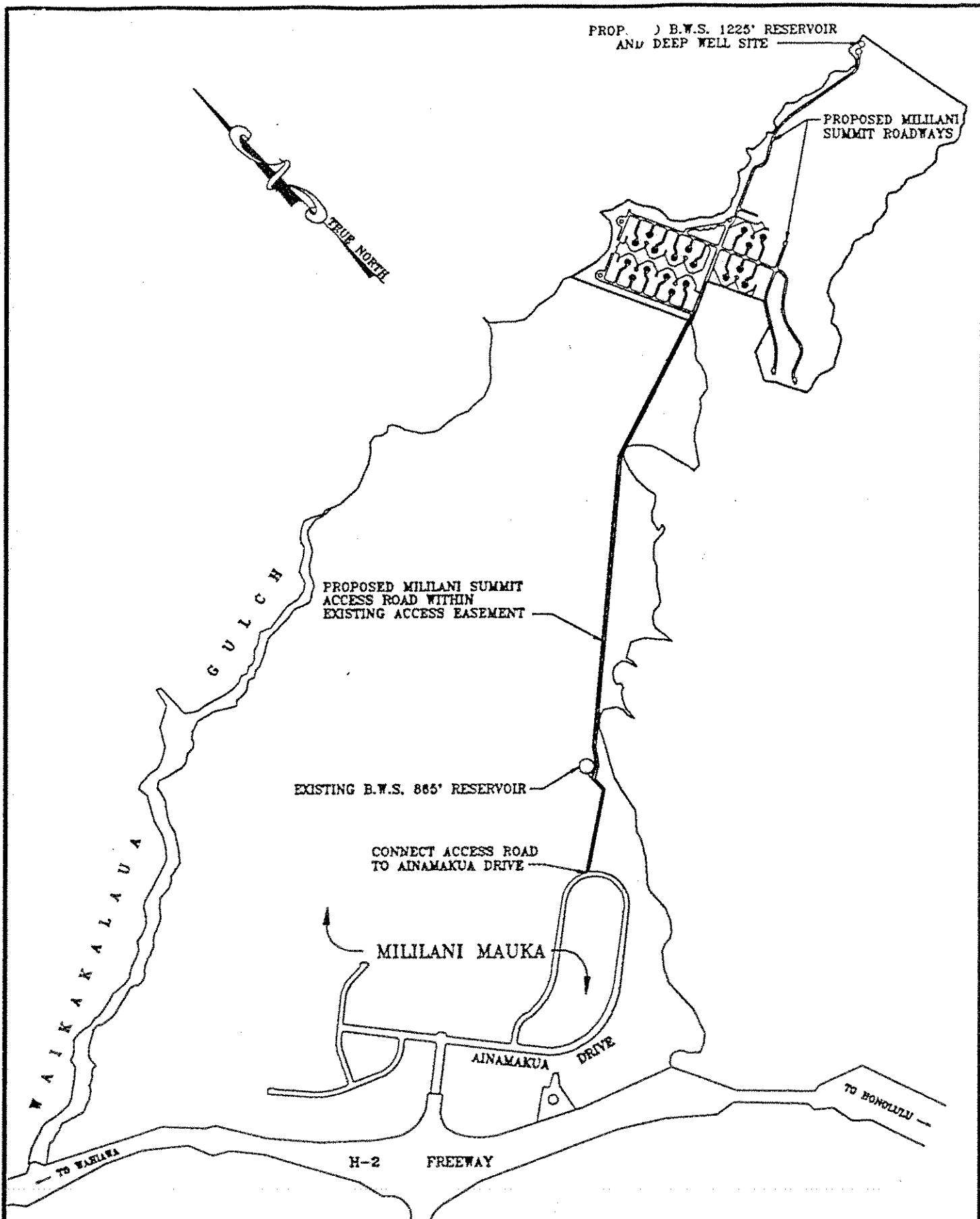


FIGURE 1

MILILANI SUMMIT  
ROADWAY PLAN  
NOT TO SCALE

Prepared by: GRAY, HONG, BILLS, & ASSOC.,

## DRAINAGE SYSTEM

### EXISTING CONDITIONS

The northern boundary of the Mililani Summit property is located near the Ewa-Wahiawa District Boundary adjacent to Waikakalaua Gulch while a gully, which is tributary to Kipapa Stream, meanders through the southern portion of this property. The west side adjoins the Mililani Mauka Development and the western boundary is adjacent to the Ewa Forest Reserve and the Koolau Range beyond.

Mililani Summit is situated on a plateau with relatively hilly terrain. Elevations range from 825 feet within this gully near the southwest boundary to 1080 feet at its northwest boundary.

The majority of the surface runoff sheet flows into the natural gully located within the southern portion of this property. Within the southwest end of this property, this gully presently contains runoff from a drainage basin totalling 203 acres. The remaining onsite storm runoff, which is from the 8 acres within the northern portion of the Mililani Summit property, sheet flows into Waikakalaua Gulch.

The property does not have drainage improvements which may be later utilized as part of the Mililani Summit drainage system.

### PROPOSED DRAINAGE SYSTEM

The proposed Mililani Summit onsite drainage improvements will be privately maintained and the system will consist of catch basins and manholes located within the new onsite roadways, and piping and outlet structures which will collect and discharge surface runoff into the existing unimproved gullies at various locations.

Within the northwest portion of this property, storm runoff from 11 acres presently sheet flows across the adjoining private land into the gully extending along the south boundary but immediately downstream of this property. Included with the development of these 11 acres, Mililani Summit will discharge runoff from a total drainage area of 48 acres into the existing unimproved gully within the limits of this property.

The access road from Mililani Mauka to Mililani Summit will be constructed such that surface runoff will sheet flow across the property similar to its present pattern.

The estimated cost for the Mililani Summit Drainage System is \$1.0 million.

## ROLOGY

hydrologic criteria to determine flow rates based on a storm recurrence interval of 50 years within the gully along the southern portion of Mililani Summit property are as follows:

	<u>Existing Condition</u>	<u>Improved Condition</u>
Design Rainfall Intensity, $i$	= 3.3 inches	3.3 inches
Time of Concentration, $T_c$	= 68 minutes	68 minutes
From remotest point: $L = 1,000'$ , $S = 32.0\%$ )		
Within Gully: $L = 9,000'$ , $S = 2.5\%$ )		
Reaction Factor, C.F.	= 0.95	0.95
Rainfall Intensity, $I$	= 3.14 inches	3.14 inches
Runoff Coefficient, $C$		
Existing ground cover	= 0.50	
Adjusted C-value due to onsite improvements	=	0.53
Unit flow rate, $C \times I$	= 1.57 cfs/Acre	1.66 cfs/Acre
Total Flow Rate Calculated at Southwest Corner of Mililani Summit:		
Existing $Q = 203$ Acres $\times$ 1.57 cfs/Acre	= 319 cfs	
Developed $Q = 214$ Acres $\times$ 1.66 cfs/Acre	=	355 cfs

## POTENTIAL IMPACT

The potential impacts associated with the drainage system for Mililani Summit are:

1. Sediment deposits due to construction;
2. Affect on flood levels within the existing gullies.

Since the potential damage area as a result of sediment deposits is nearly 1/2 mile downstream of Mililani Summit, its downstream impact is considered insignificant. Temporary erosion control measures in accordance with City and County of Honolulu standards will be further utilized to reduce sedimentation and minimize soil erosion.

Although the total drainage area within the gully along the south boundary remains constant with its undeveloped condition, runoff from 11 acres will be diverted through Mililani Summit. Together with the urbanization of this portion of land, the maximum 50-year storm runoff within the gully will be increased to 355 cfs from the present 319 cfs. The unit flow rates are determined based on the above hydrologic calculations.

This increase in runoff is not expected to significantly alter the flood levels within this gully which is a tributary to Kipapa Stream.

Similarly, runoff from approximately 8 acres within the northern portion of the property will still discharge into Waikakalaua Gulch after the Mililani Summit improvements are completed. The increase in runoff due to urbanization of this property is considered insignificant to the flood levels within Waikakalaua Gulch.



## POTABLE WATER SYSTEM

### EXISTING FACILITIES

The five existing dwellings on this property obtain potable water through private treatment of water from Waikakalaua Gulch. Public water is currently not available to this property.

### PROPOSED FACILITIES

The proposed water system for the Mililani Summit will meet the needs for 424 single-family residential houses. New onsite facilities will include a storage reservoir, two deepwells each with a turbine pump and motor unit, and transmission and distribution lines, as shown on Figure 2. The estimated cost for the Mililani Summit Water System is \$3.0 million.

The proposed water system will be an independent Board of Water Supply system contained entirely within the development site and will not be connected to the Mililani Mauka water system. Its design and construction will be in accordance with the Board of Water Supply standards.

A request to the State of Hawaii Water Commission will also be submitted for approval in order to draw groundwater from the Pearl Harbor Basin. The application for source approval will include a hydrologist report which will evaluate data from an exploratory well.

A description of the required water improvements is described as follows:

#### Source and Storage Facilities:

A deepwell pumping station consisting of a primary source well with a 700 gpm electrical lineshaft turbine pump and motor unit, a standby well with pump and motor that has a similar capacity, and one storage reservoir are required to meet the water demands for Mililani Summit.

The 0.5 MG reservoir together with the deepwell facility will be located at the 1,225-foot elevation. The service elevations within the development area will range from 825 feet to 1080 feet.

#### Transmission and Distribution Lines:

The transmission and distribution waterlines will supply the required flows to meet the maximum consumption demand plus the fire protection flow with a residual pressure of 20 psi at the critical fire hydrant, and the peak hour flow with a minimum pressure of 40 psi and a maximum velocity of 6 fps in accordance with the provisions set forth in the Water System Standards.

The transmission line will extend approximately 2,200 feet from the proposed 0.5 MG reservoir along a Board of Water Supply access roadway. Approximately 11,000 feet of distribution lines located within privately maintained roadways will service this development.

### er Demand Assessment

etermination of the proposed water system capacity is based upon the Water  
tem Standards, Board of Water Supply, City and County of Honolulu, 1985.

anticipated daily water demands for Mililani Summit are as follows:

Average Daily Consumption =	0.21 mgd
Maximum Daily Flow =	0.32 mgd
Peak Hour Flow =	0.64 mgd

### ential Impacts

potential impacts associated with the development of Mililani Summit are:

1. Construction inconveniences;
2. Visual concerns; and
3. Sustainable yield on the Pearl Harbor Groundwater Basin.

ce the development site is located approximately 1.4 miles from the  
sting Unit 104 of the Mililani Mauka development, the noise and dust due  
the construction of the potable water system should not be a significant  
sance to the surrounding community. Traffic disruption along the existing  
eets is a temporary inconvenience, lasting only the duration of the  
struction period.

hough the proposed reservoir will be visible, such structures are common  
oughout the State. The visual impacts of the water facilities system can  
mitigated by judicious site selection and the use of landscaping to blend  
with the natural scenery.

State Water Commission will determine the cumulative impact on the Pearl  
bor Basin after review of the source application and its supporting data.

PROPOSED B.W.S. 1225' RESERVOIR  
AND DEEP WELL SITE

PROPOSED MILILANI SUMMIT  
TRANSMISSION & DISTRIBUTION  
WATER LINES

TRUE NORTH

GULCH

WAIKAKALAU

MILILANI MAUKA

AINAMAKUA DRIVE

H-2 FREEWAY

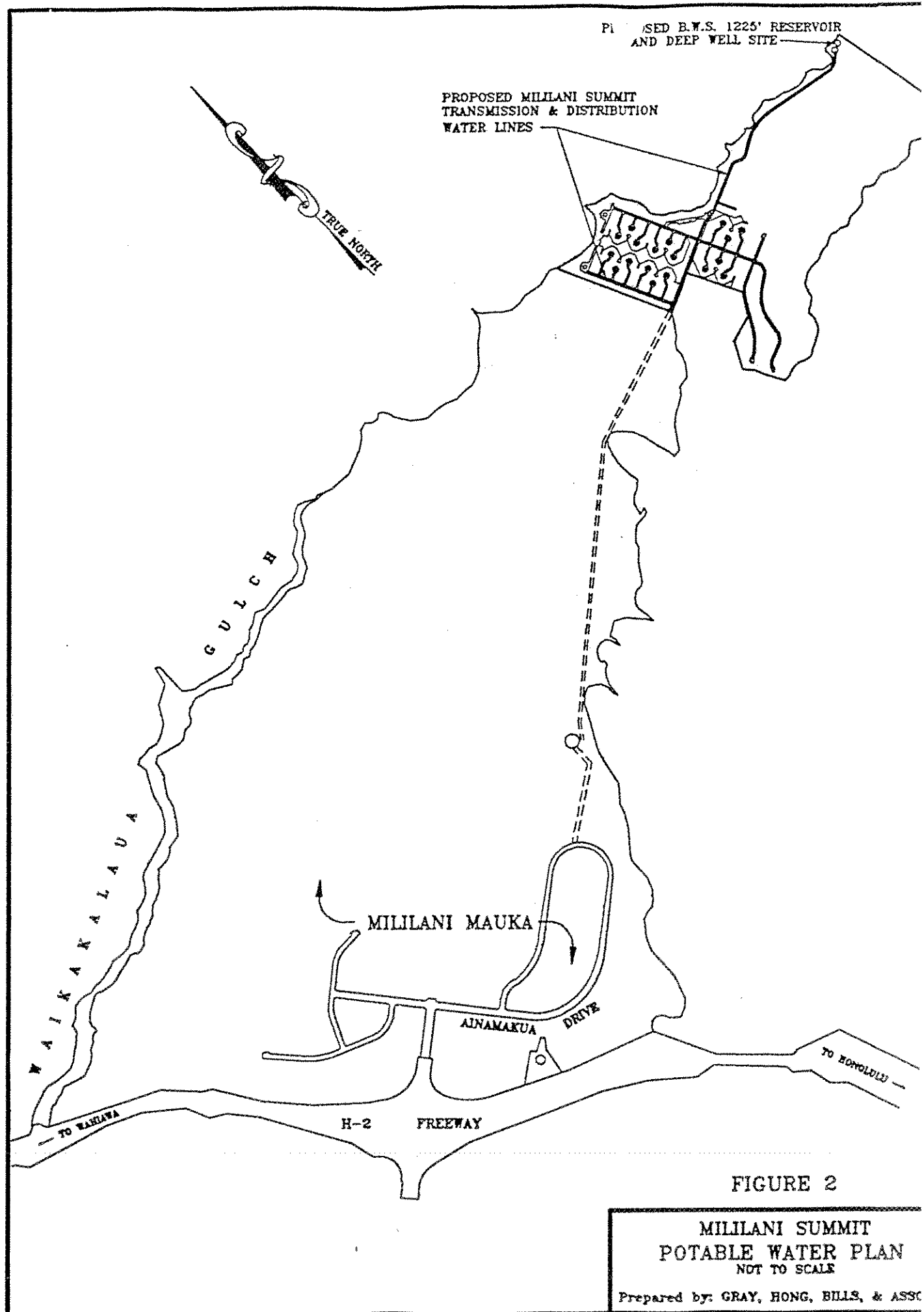
TO WAHIAWA

TO HONOLULU

FIGURE 2

MILILANI SUMMIT  
POTABLE WATER PLAN  
NOT TO SCALE

Prepared by: GRAY, HONG, BILLS, & ASSC



WASTEWATER SYSTEM  
ONSITE/OFFSITE IMPROVEMENTS EVALUATION

EXISTING FACILITIES

five existing dwellings on this property presently utilize individual wastewater systems due to the unavailability of public collection or treatment facilities.

PROPOSED FACILITIES

Construction of onsite facilities and offsite improvements, as shown on Figure 3, are required to accommodate the development of Mililani Summit. The estimated cost for the Mililani Summit Wastewater System is \$1.5 million, as described as follows:

Onsite Facilities:

The wastewater collection system will consist of approximately 11,000 feet of 8-inch gravity sewer piping which will discharge into the proposed offsite gravity sewerline or into lift stations where minimum slopes cannot be attained. Gravity sewerlines will be located within the onsite roadways where possible and along the rear lot line where a lot slope prevents feasible sewer connection from the roadway. The installation of approximately 1,900 feet of force main piping also located within the onsite roadways will be required in order to convey the pumped effluent from the lift station to the gravity system.

Offsite Facilities:

Approximately 7,300 feet of 8-inch gravity sewer piping are required for connection to the existing Mililani Town trunk sewer on Aina Makua Drive near the existing Unit 104 Development of Mililani Mauka. The sewerline will be located along the privately maintained access road constructed as part of Mililani Summit that is within the existing access easement. All sewage generated by the project will ultimately be treated at the Honouliuli WWTP.

Wastewater Flow Assessment

Wastewater discharge flows generated by Mililani Summit are based upon Design Standards of the Division of Wastewater Management, Volume 1 dated February, 1984.

Anticipated wastewater flows are as follows:

Design Average Flow =	0.15 MGD
Design Maximum Flow =	0.64 MGD
Design Peak Flow =	0.69 MGD

MILILANI  
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TO HONOLULU

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## ELECTRICAL AND COMMUNICATIONS SYSTEMS

### EXISTING CONDITIONS

Hawaiian Electric Company (HECO) aerial transmission lines flank the eastern and western boundaries of the Mililani Summit property. These transmission lines, which are located within easements, are the only utilities proximate to the site.

A Hawaiian Electric Company substation and Hawaiian Telephone Company (HTC) remote switching station exist in the Mililani Mauka Development. In addition, cable television service to Mililani Mauka is available .

### PROPOSED DEVELOPMENT

Figure 4 shows the overall improvements required for Mililani Summit and a description of each system is as follows:

#### Electrical:

It is anticipated that the Mililani Summit Development will be served from the HECO Mililani Mauka Substation. This substation transforms the 46 KV transmission voltage to 12 KV for distribution to pad mounted switches and transformers which serve the residences and other electrical loads. An aerial HECO line extension along the new private access road between Mililani Mauka and the Mililani Summit is proposed.

The on-site electrical distribution system will consist of underground cables installed in ductlines, pad mounted switches, and pad mounted transformers. Transformers will be placed according to electrical load density. It is anticipated the 424 housing units will impose an additional load of 1,300 KVA on the HECO system. This additional load may readily be accommodated by the HECO substation.

#### Telephone System:

The telephone system will be an extension of the HTC facilities serving the Mililani Mauka Development. Aerial cables will extend the telephone system along the proposed access road to Mililani Summit.

The on-site telephone system will consist of underground cables, and terminals installed in either above, pedestals or in underground manholes, handholes, or pullboxes. *ground*

#### Cable Television System:

The cable television system which exists in the Mililani Mauka Development will be extended to serve Mililani Summit. Aerial cables will extend the CATV system to the project site along the proposed access road.

The on-site CATV system, which consists of underground cables,

amplifiers, etc., will be installed in underground handholes and pullboxes.

#### Street Lighting System:

The proposed street lighting system for the access road and onsite roadways, which are both privately maintained, will consist of pole mounted lighting fixtures on aluminum poles. The luminaries will be selected such that amount of glare to the residents are minimized.

The conduits which serve the onsite lighting system will be installed underground in duct banks.

#### Underground Duct System:

An underground duct system will be installed within the Mililani Summit site. This duct system will consist of conduits, manholes, handholes, and pullboxes of the size and quantity required by each of the utility companies and the street lighting system. Wherever possible, the conduits will be consolidated in common duct lines, and the service boxes will be grouped together.

#### POTENTIAL IMPACTS

potential impacts associated with the new electrical and communications systems are due to:

1. Proximity of HECO transmission lines; and
2. Additional demands on the electrical system.

Proximity of HECO transmission lines to Mililani Summit may be a source of concern. Studies to determine the effects of such lines on humans are in progress. It may be advisable to take magnetic and electric field readings in the area closest to the transmission lines to establish a "base-line" for future reference and comparative purposes.

Additional electrical load for Mililani Summit may readily be accommodated by the HECO substation. The development of Mililani Summit, therefore, will not significantly impact the existing system.

Extensions of existing electrical distribution, telephone, and cable television systems, as proposed by this development, are considered routine requests for the utility companies. The respective utility companies will determine the specific improvements necessary at the time construction plans are reviewed for approval.

PROPOSED MILILANI SUMMIT UNDERGROUND  
DUCTLINE FOR ELECTRIC, TELEPHONE,  
CATV AND STREET LIGHTING SYSTEMS  
(WITHIN ROADWAYS)



G U L C H

PROPOSED MILILANI SUMMIT OVERHEAD  
ELECTRIC, TELEPHONE, CATV, AND  
STREET LIGHTING SYSTEMS.

CONNECT TO EXISTING MILILANI MAUKA  
UNDERGROUND DUCT SYSTEM.

MILILANI MAUKA

AJNAMAKUA DRIVE

H-2 FREEWAY

M A I X A K A L A U A

TO WAILANA

TO HONOLULU

FIGURE 4

MILILANI SUMMIT  
ELECTRICAL, TELEPHONE, &  
CATV FACILITIES  
NOT TO SCALE  
Prepared by: GRAY, HONG, BILLS, & ASSC