

STATE OF HAWAII  
DEPARTMENT OF PLANNING  
AND ECONOMIC DEVELOPMENT

LAND USE COMMISSION

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Executive Officer

July 29, 1985

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

Dear Mrs. Uyehara:

Subject: Environmental Impact Statement for State  
Land Use District Boundary Amendment Docket  
No. A83-583/Mauna Lani Resort, Inc.

This is to notify you that the Land Use Commission, at its meeting of July 23, 1985, unanimously approved the Environmental Impact Statement of Mauna Lani Resort, Inc. The Decision and Order for this matter will be forthcoming.

Sincerely,

ESTHER UEDA  
Executive Officer

EU:to

cc: Roger Harris  
Ann Mapes

FINAL  
ENVIRONMENTAL IMPACT STATEMENT

REVISED MASTER PLAN

FOR

MAUNA LANI RESORT

SOUTH KOHALA, HAWAII

JUNE 1985



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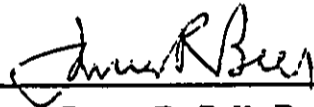
ENVIRONMENTAL IMPACT STATEMENT  
REVISED MASTER PLAN FOR  
MAUNA LANI RESORT  
SOUTH KOHALA, HAWAII

Prepared for: Mauna Lani Resort, Inc.

Prepared by: Belt, Collins & Associates

For Submission to: Land Use Commission, State of Hawai'i

Submitted by:



James R. Bell, President

Honolulu, Hawai'i

July 1985

**MAUNA LANI RESORT  
FINAL ENVIRONMENTAL IMPACT STATEMENT**

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## CHAPTER I

### INTRODUCTION AND SUMMARY

#### 1. PURPOSE OF THIS DOCUMENT

This environmental impact statement has been prepared to accompany a State Land Use District boundary amendment petition and a Conservation District Use Application (CDUA) submitted by Mauna Lani Resort, Inc. to the State Land Use Commission and to the Department of Land and Natural Resources, respectively. It is being prepared in compliance with the requirements of Chapter 343, Hawai'i Revised Statutes and the regulations adopted pursuant thereto.

#### 2. PROPOSED GOVERNMENTAL ACTION

Mauna Lani Resort, Inc. is requesting that State Land Use Commission to amend the State Land Use District boundaries as shown in Figure II-6. This involves changes in the designation of 654 acres: 486 acres would be redesignated from the Agricultural District to the Urban District, and 168 acres would be redesignated from Conservation to Urban. The tax map designations for the affected parcels are Third Division, 6-8-01:por.22 and 6-8-22:por.1. Mauna Lani Resort, Inc. has also submitted a Conservation District Use Application (CDUA) to the State Board of Land and Natural Resources for permission to construct two golf holes and a public shoreline park and to establish the Puako Petroglyph Archaeological Park on a portion of the 775 acres that it leases from the State of Hawai'i.

#### 3. PROJECT DESCRIPTION

Mauna Lani Resort, Inc. currently owns approximately 3,200 acres of land along the South Kohala coastline. The location of this land is shown in Figure II-2. Approximately 778.5 acres of this are within the Urban District, and these form the core of the Mauna Lani Resort. The County of Hawai'i has designated the area as a "major resort" on its General Plan, and approved development of 3,000 hotel rooms, 3,182 resort residential units, shopping, recreational, and entertainment facilities, and supporting infrastructure. Thus far, an 18-hole golf course, 351-unit hotel, and 80-unit condominium project have been developed, together with an historic park, an extensive network of trails, and public beach facilities. A tennis club and beach club are planned, and the first phase of the Mauna Lani Point condominium project is scheduled to be completed by the end of 1985.

Marketing studies conducted for Mauna Lani Resort, Inc., as well as its own evolving development strategy, have suggested the desirability of developing the resort at a lower density and with more recreational amenities than is possible under the existing master plan. Implementation of this revised master plan requires expansion of the Urban District from 778.5 to 1,432 acres, but entails no increase in the number of hotel or resort residential units. More specifically, the additional land is needed to:

- o provide a second golf course and additional open space and recreational areas;
- o create a public shoreline park north of Pauoa Bay;

- o allow the density of the development within the resort's residential and hotel areas to be decreased by approximately thirty percent, thereby increasing the amount of landscaping possible and allowing more design latitude and quality;
- o allow relocation of the hotel site now located along the eastern side of Honoka'ope Bay to a more suitable location at its southern end; and
- o accommodate support facilities that have been constructed in the Agricultural district adjacent to the existing Urban zone.

The approximate acreages of different land uses on the resort's fee land for the existing and proposed master plans are as follows:

<u>Type of Use</u>	<u>Number of Acres Devoted to Use</u>		
	<u>Existing Plan</u>	<u>Revised Plan</u>	<u>Net Increase</u>
Resort Hotel	124.2	144.5	20.3
Resort Residential	318.2	458.5	140.3
Commercial	27.1	40.9	13.8
Resort Support Facilities	5.8	110.9	105.1
Open/Road	57.0	173.2	116.2
Golf Course	205.0	370.0	165.0
Golf Course Reserve	0.0	86.3	86.3
Historic Preserve	23.7	23.7	0.0
Park	3.2	3.2	0.0
Recreation, Misc., Other	14.3	21.3	7.0
<b>TOTAL =</b>	<b>778.5</b>	<b>1,432.5</b>	<b>654.0</b>

In addition, another 23 acres of golf course and additional park area are proposed on the area leased from the State.

#### **4. NEED FOR THE PROJECT**

The original master plan for the Mauna Lani Resort (MLR) was prepared in the early 1970s on the basis of the market information and forecasts available at that time. The visitor market has undergone continual evolution since that time, and in 1984 Ming Chew Associates, a Honolulu-based firm specializing in visitor industry projections was commissioned to update the previous work. Results of his study are summarized below.

The market study addressed both quantitative (how many units) and qualitative (what kind/price units) questions. With respect to the development which could be successfully marketed between now and the year 2000, the Ming Chew Associates study concluded the following:

	Projected Marketability		
	1990	1995	2000
Hotel Rooms	400	700	400-500
Low-Rise Multi-Family Units	400	800	1,400-1,800
Houselots	25	50	70-90
House and Lot	25	50	70-90
<b>Total Rooms/Units/Lots</b>	<b>850</b>	<b>1,600</b>	<b>2,440-3,080</b>
Golf Round per Year	51,000	92,000	128,000-158,000
Acres of Commercial	5	10	16-21
Acres of Auxiliary Services	15	30	45-55

These market absorption figures were based on the assumption that Mauna Lani Resort would concentrate its development effort on the high end of the market, aiming for quality rather than quantity. Such a strategy was deemed more appropriate for the resort than one which attempted to maximize the speed and/or quantity of development.

In order to penetrate the "high-end" market that was targeted, the Ming Chew Associates study concluded that it would be necessary to provide substantially more golf course capacity than is possible under the existing master plan, to decrease the density of development within specific development parcels, and to improve the siting of some facilities. The revised master plan was developed with those goals in mind. When the relative quality of the various sites provided by the existing and revised master plans were evaluated on the basis of ocean or golf course frontage, views, proximity to hotels and recreational facilities, and other physical site characteristics, Peat, Marwick, Mitchell & Co. (1985) concluded that a larger percentage of units overall were graded high or medium quality under the revised master plan. This was attributed mainly "...to the creation of 'greenbelt' golf course and preserve areas or other amenities which would contribute to the scenic and economic value of the individual project sites".

##### **5. SUMMARY OF IMPACTS**

Up to this time, development of the Mauna Lani Resort has been guided by a master plan prepared in 1974-75. As previously noted, State and County approvals have been granted, permitting the development of a major destination resort; these allow the construction of over 6,000 hotel and resort residential units within the existing Urban District. The revised master plan that is the subject of this environmental impact statement has been developed in response to updated market information which suggests the desirability of providing additional recreational facilities and lower densities. It entails construction of the same number of hotel and resort residential units; the primary difference is that the revised plan spreads the units over a greater land area and includes a second golf course. If the State Land Use District boundary amendment being requested is not granted, development will still continue according to the existing master plan. The most important implication of this is that only those impacts which are affected by the location of development (as contrasted to its magnitude) differ between the two plans. Hence, while the impact analysis summarized below estimates the total magnitude of the change that would be produced by

the proposed development, decision-makers should remember that it is only the difference in effects between the two plans that is of consequence.

### **5.1 PHYSIOGRAPHY, GEOLOGY, AND SOILS**

The project area is situated on gently-sloping land; the topographic relief that is present is a consequence of layering and buckling of successive lava flows rather than erosion. Only minor grading is needed to prepare sites for development, and it is usually possible to achieve a balance between cut and fill within individual development sites. Soils, where present, are shallow. While they are satisfactory for urban uses, they have little agricultural potential.

### **5.2 NATURAL HAZARDS**

The U.S. Geological Survey has rated the relative danger from volcanic hazards as "E" on a scale from "A" - least hazard to "F" - greatest hazard. The probability of flows from Mauna Loa actually damaging development within the property is slight, but such an eventuality cannot be completely discounted.

Low-lying portions of the MLR coastline are subject to occasional attack by storm waves and tsunamis. The extent of the flood hazard area has been defined by previous studies, and shoreline development at the MLR will conform to the requirements of the County Flood Control Ordinance. Hence, flood hazard is expected to be held to an acceptable level.

### **5.3 COASTAL PONDS**

The Mauna Lani Resort site contains six major Hawaiian fishponds -- Waipuhi, Lahuipua'a, Manoku, Hopeia, Ka'aipio, and Kahinawo -- in the area around Makaiwa Bay. The company has voluntarily placed these in a preservation area and carries out an ongoing management program there. These ponds will be preserved regardless of which plan is implemented.

In addition to the fishponds, between 20 and 25 small, brackish water ponds are located along the shoreline of the property. Ponds such as these (called "anchialine") are found at many places along the West Hawai'i shoreline but in only a limited number of areas elsewhere in the world. They harbor a number of endemic aquatic forms found only in this type of habitat. A study by Brock (February 1985) concluded that there had been a decrease in native species in the ponds over the past thirteen years, but attributed the decline to the introduction of exotic fish species. This has not been done purposely as part of the resort's development, but it is possible the increased accessibility provided by resort roadways and the opening of the area to the general public may have contributed to the spread of the exotic fish. However, no pond filling is envisioned at this time, and the company has expressed a willingness to cooperate with any public efforts to eradicate the exotic species.

### **5.4 MARINE RESOURCES**

Brock and Brock (1974) and Dollar (October 1983; November 1984; May 1985) have studied the marine communities in the ocean fronting the Mauna Lani Resort site. Following his post-development survey, Dollar concluded that there was no evidence of significant impact on the chemical or biological environment as a result of the construction that has occurred to date at the Mauna Lani Resort.

Several potential adverse effects of ongoing development have been identified. These include: (1) increased sedimentation from wind and stormwater runoff as a result of grading and the importation of topsoil into areas now composed of barren lava; (2) increased nutrient loading from irrigation and fertilization; (3) changes in storm runoff patterns; and (4) shoreline modification. Dollar's May 1985 study assessed the likelihood that each of these would reach significant proportions. He concluded that no noticeable adverse effects had resulted from development to date, that there was no scientific evidence indicating that completion of the existing master plan would have more serious adverse effects than the activities carried out to date, and that there is nothing different about the additional area that would be developed under the revised master plan or the fronting ocean waters that would result in greater adverse effects there.

## **5.5 TERRESTRIAL FLORA**

With the exception of a few clusters of trees, shrubs, and grasses near the shoreline, the portion of the Mauna Lani lying atop the Kaniku lava flow (i.e., the area south of the Mauna Lani fishponds) consists of unvegetated lava. Kiawe is the dominant plant in the central sector, while in the northern sector grasses and shrubs are mixed with scattered clumps of kiawe. Typical coastal strand vegetation is found along the shoreline from the fishponds northward. No endangered or rare plant species are present within the area covered by the State Land Use District boundary amendment request. None of the plant species observed are restricted to the project area, and most are exotic species common throughout Hawai'i. Hence, while the existing vegetation would be largely replaced by species better suited to landscaped urban environments, the change cannot be considered adverse.

## **5.6 BIRDS AND WILDLIFE**

Studies by Bruner (1979 and 1984) indicate that only common species of birds and mammals are present on the Mauna Lani Resort site. The numbers are relatively small due to the limited food supply provided by the dry natural habitat. Much larger numbers of animals, particularly birdlife, are present in the vegetated areas, most commonly those around the existing development. The oxidation pond at the Mauna Lani sewage treatment plant serves as a feeding and nesting area for migratory waterbirds. The endangered Hawaiian hoary bat (which is most often seen in wet areas at higher elevations) has been sighted recently at the Waikoloa Beach Resort just south of the MLR, but there is no evidence that a significant bat population exists in the area. Construction of the project would result in vegetation changes and increased human activity; these, in turn, would lead to a change in the makeup of the faunal population present. Species adapted to urban and semi-urban environments and to the open grasslands of the golf courses would prosper, while those preferring solitary habitat or adapted to survival on the dry native vegetation would probably experience a decline in population.

## **5.7 HISTORICAL AND ARCHAEOLOGICAL RESOURCES**

Situated within the ahupua'a of Kalahuipua'a, the resort site is rich in archaeological remains, and has been the subject of several surveys. An interpretive and management plan for these resources was prepared by Science Management, Inc. for Mauna Lani Resort, Inc. in 1982, and provides guidance relative to historic preservation matters in the ongoing development of the resort. Historic preserves have already been established, and another is proposed as part of the current action.

It is recognized that most of the work done to date has been in the form of reconnaissance, rather than intensive, surveys. It is intended that further surveys will be undertaken, as specific site plans become available. Archaeological salvage and/or preservation will be carried out in accordance with the management plan and the findings of subsequent intensive surveys, in cooperation with appropriate State and County agencies.

## 5.8 SOCIOECONOMIC IMPACTS

As befits its status as a major destination resort, complete development of the Mauna Lani Resort would have a substantial effect on employment, population, and housing in West Hawai'i. It is estimated that visitor expenditures would exceed \$125 million per year by the year 2000 under the existing master plan, and slightly less under the revised plan. This would result in direct visitor industry employment of about 2,200 persons. By the time the entire resort is complete, it is expected that direct visitor industry employment would amount to approximately 5,400 persons. Because of the multiplier effect, this level of direct visitor industry employment would create approximately 5,500 additional employment positions in other industries, so that the total number of jobs created would be approximately 10,000 when the resort is fully developed. More than half of these would be off the resort site.

The de facto population of the resort is expected to reach 3,300 to 3,500 by the year 2000 and 7,700 at ultimate development. It is estimated that about three-quarters of these people would be visitors. The in-migrant households supported by the direct visitor industry employment would contain an estimated 2,300 persons, and many more persons already residing in the area would be supported by these jobs. Indirect and induced employment, with its attendant population effects, would be roughly equal to this.

Additional housing would be required to accommodate direct visitor industry employees, few of who would qualify for the residential units planned on the resort site itself. The existing and revised master plans differ little in this respect. Most long-term housing needs are expected to be met on the open market, with below market units being supplied only for those who cannot compete effectively there. Peat, Marwick, Mitchell & Co. estimated that there would be a need for approximately 370 employee housing units by the year 2000, and that as many as 1,000 might be needed by the time the resort is completed.

Direct visitor industry salaries generated by development at Mauna Lani are estimated to reach \$35 million by the year 2000, and to exceed \$60 million by the time the resort is fully developed. Total household income would be increased by about \$95 million by the year 2000.

A public sector revenue and expenditure analysis prepared by Peat, Marwick, Mitchell & Co. found that both the existing and revised master plans would have positive ratios. This conclusion applies to both State and County governments.

The Mauna Lani Resort is physically separate from existing communities, and the effects on them of its ongoing development would be indirect. Increased visitor industry employment and population growth would inevitably lead to long-term social changes and, because of the "shift-work" nature of many visitor industry jobs, carries with it some special social stresses of its own. Residents of all islands have proved themselves adept at adjusting to these special requirements, and there is no evidence that the South Kohala experience will be different.

## 5.9 TRANSPORTATION FACILITIES

Access to the Mauna Lani Resort site is via Queen Ka'ahumanu Highway. Existing traffic volumes on the highway are light, and the level of service provided is high. Planned development at the Mauna Lani Resort and at other resorts along the highway is expected to produce sharply higher traffic volumes in the years ahead, so that by 1995 the existing intersection design will reach capacity. Improvements will be needed at that time. Provision of adequate levels of service following full development of the resort will require widening portions of Mauna Lani Drive to four lanes, and additional capacity will eventually be required on Queen Ka'ahumanu Highway as well. Kawaihae harbor is capable of accommodating the increased cargo movements that would result from the project, although some increase in warehousing space would be required. Passenger traffic through Keahole Airport would also rise. To accommodate the increase, it is likely that extension of the existing 6,500-foot runway will be required so that it can handle direct flights to the mainland by fully loaded widebody jets, and improved terminal facilities will also be required.

## 5.10 AIR QUALITY

Vehicular traffic associated with development of the Mauna Lani Resort would increase pollutant emissions in the region. Existing air quality is good, however, and no serious problems are envisioned. Some violations of the State Ambient Air Quality Standard for carbon monoxide could occur immediately adjacent to the resort's two major intersections if peak-hour congestion becomes too severe before roadway improvements are made. Federal standards would be met at all times. Planned roadway widening is expected to ease traffic flow, however, and this would remove the threat of air quality standard violations.

## 5.11 NOISE

Aside from brief periods of construction noise, vehicular traffic is expected to be the only significant source of noise associated with the proposed project. An analysis conducted by Y. Ebisu & Associates (May 1985) concluded that existing setbacks from roads would insure that noise levels in residential areas adjacent to roadways would remain below those considered unacceptable by Federal agencies. In fact, traffic noise is expected to be below 55 Ldn (the level considered "Unconditionally Acceptable") in all residential areas except a few along the southern leg of Kaniku Drive. Even there, noise levels at the edge of the parcels immediately adjacent to the roadways would be 60 Ldn or less, and the 55 Ldn goal could be met by slightly increasing the setback or providing an earthen berm.

## 5.12 PUBLIC UTILITIES, SERVICES, AND FACILITIES

Water for the Mauna Lani Resort is supplied by the Lalamilo water system. The source capacity is sufficient to accommodate water demand for the full development of the resort, and wells will be installed as needed to meet demand. Wastewater is disposed of through a privately owned and operated wastewater treatment plant on the resort site. It, and the collection and disposal system associated with it, has been designed so that it can be expanded incrementally to accommodate the entire resort. Electrical power for the project will be supplied by the Hawaii Electric Light Company through its existing substation. On-site distribution lines will be installed as necessary using underground conduits. Telephone service will be provided by the Hawaiian Telephone Company.



Between two-thirds and three-quarters of the residential units within the resort proper will be used by transients who place few demands on local public services. Permanent residents of the resort are likely to be relatively wealthy households who will have limited demands for social services and many other public services. However, households of visitor industry employees will live in the outside community, and public facilities and services will need to be expanded to serve them.

**6. NECESSARY APPROVALS AND PERMITS**

This environmental impact statement has been prepared for submission in conjunction with a request for State Land Use District Boundary amendments and a Conservation District Use Application. These are the first steps in a long approval and permitting process that must be followed before the revised master plan can be implemented. Following is a list of the major approvals which it is certain must be obtained for the overall project and for golf course construction. In the course of developing certain parcels, other permits may be necessary, such as Planned Unit Development permits or Use Permits, depending on the site design.

<u>APPROVALS NEEDED</u>	<u>APPROVING AGENCY OR BODY</u>
<b><u>HAWAII COUNTY:</u></b>	
Rezoning	Planning Department/Planning Commission/Council
Special Management Area Use Permit	Planning Department/Planning Commission/County Council
Plan Approval	Planning Department
Subdivision Approval	Planning Department
Building Permit	Department of Public Works
Grubbing, Grading, Excavation, and Stockpiling Permit	Department of Public Works
Outdoor Lighting Permit	Department of Public Works
Conformance with County Flood Control Ordinance	Departments of Planning & Public Works
Sign Permit	Department of Public Works
Water System Expansion Approval	Department of Water Supply
<b><u>STATE:</u></b>	
State Land Use Boundary Amendment	State Land Use Commission
Conservation District Use Permit	Department of Land & Natural Resources
Historic Sites Review	Department of Land & Natural Resources
Drinking Water System Approval	Department of Health

CHAPTER II  
DESCRIPTION OF THE PROPOSED ACTION

I. REGIONAL SETTING

Mauna Lani Resort is located between the Puako Beach Lots and the Waikoloa Beach Resort along the South Kohala shoreline on the Island of Hawai'i. South of the Waikoloa Beach Resort, the coastline consists of vacant land for many miles; Hapuna Beach State Park and the Mauna Kea Beach Resort are to the north of the Puako Beach Lots. Kawaihae Harbor, West Hawai'i's major port facility, is six miles north of Mauna Lani Resort. Waimea, the Kohala district commercial center, is approximately 12 miles to the northeast (see Figure II-1).

The South Kohala coastline from the district boundary north to Kawaihae Harbor has long been recognized as a desirable location for the development of large-scale resort activities. It has been designated by the State of Hawai'i and the County of Hawai'i in their various plans as a major resort region. The Hawaii County General Plan, adopted in 1971 and updated twice since, designates Puako, including the Mauna Lani Resort site, as a "Major Resort Area," a "self-contained resort destination area which provides basic and support facilities for the needs of the entire development."

Substantial investments have been made in the public infrastructure needed to stimulate and support resort development in the Kohala Coast Resort Region. These include the construction of the Queen Ka'ahumanu Highway, Keahole Airport and the Lalamilo Water System, as well as improvements to Kawaihae Harbor. In conjunction with these government-sponsored efforts, private landowners have prepared and begun implementation of plans for large resort complexes along the South Kohala coastline. Aggregate private expenditures on infrastructure for the resorts exceeds \$100-million to date.

The Mauna Kea Beach Resort is the oldest of the three major resort projects in South Kohala. The world famous Westin Mauna Kea Beach hotel (formerly the Mauna Kea Beach Hotel) and golf course were constructed in the mid-1960's, and 65 single-family houselots (The Fairways North and South) and 40 condominium units (the Villas) have subsequently been developed. Like Mauna Lani Resort, the Mauna Kea Beach Resort is designated as a major resort in the County General Plan. The State Land Use Commission has recently granted a written decision and order approving a request by its owner, UAL, Inc., for Urban designation that would be used for a 350-room hotel and 700 to 1,000 single-family and multifamily resort-residential units on both sides of Queen Ka'ahumanu Highway.

The third major resort in the Kohala Coast Resort Region, the Waikoloa Beach Resort, is being developed by Transcontinental Development Co., which has been responsible for construction of the resort's infrastructure and provision of common recreational facilities such as the resort golf course. Individual hotel and resort condominium projects are developed on parcels within the resort by separate business entities. The 543-room Sheraton Royal Waikoloa is the only hotel constructed so far. Groundbreaking for the 114-unit "Shores at Waikoloa" resort condominium project took place in mid-1984, and initial occupancy is scheduled for 1985. Approval is currently being sought from various governmental agencies to allow the development of the 1,250-room Hyatt Regency Waikoloa Hotel around Waiulua Bay.

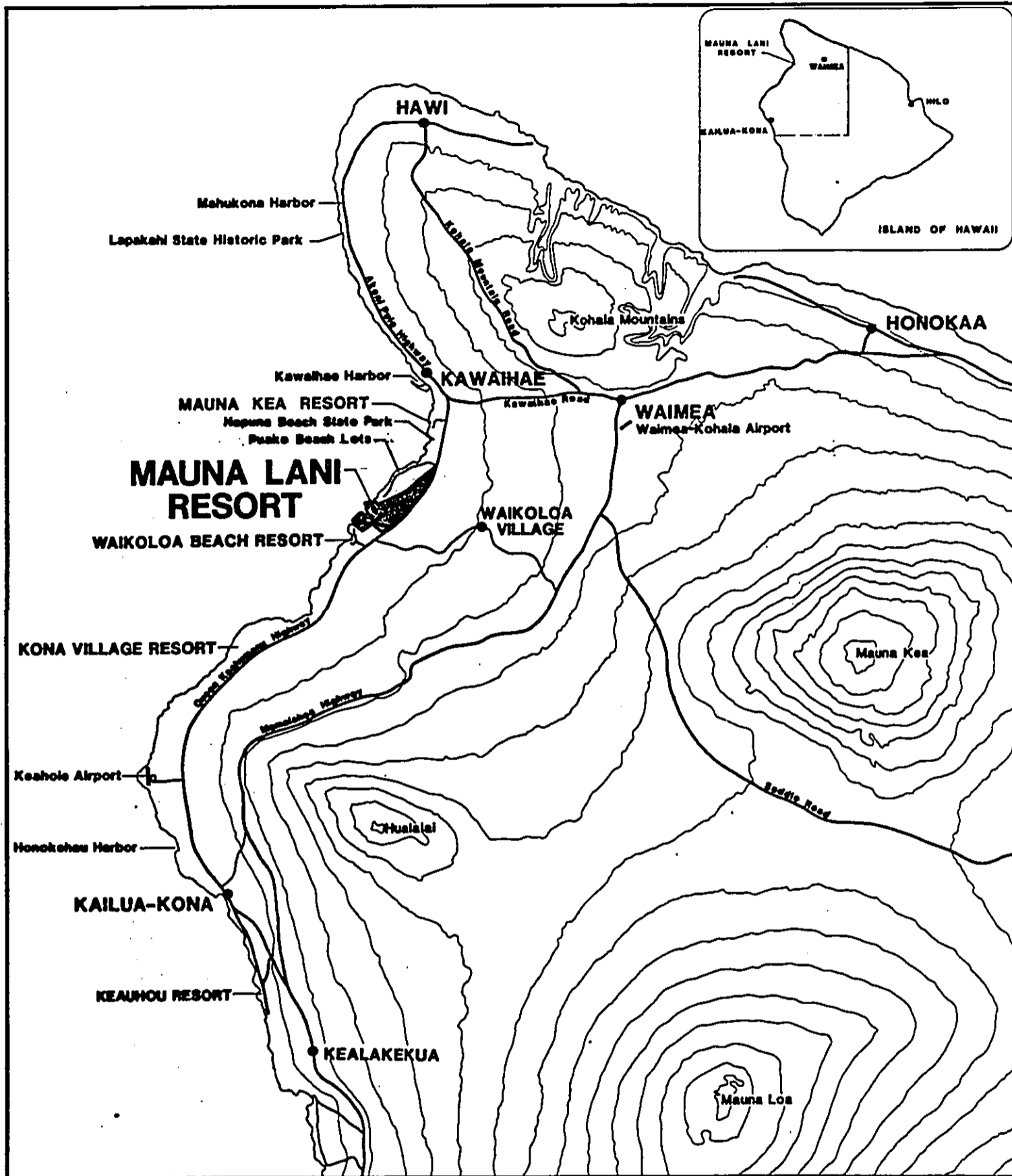
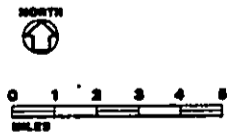


Figure II-1  
**REGIONAL MAP**  
 Kohala and Kona, Hawaii



## **2. HISTORY OF THE MAUNA LANI RESORT**

In 1972, Orchid Island Resorts (the predecessor of Mauna Loa Land, Inc., in turn the predecessor of Mauna Lani Resort, Inc.) acquired fee title to 3,200 acres of land along the South Kohala coast, 175 acres from Francis I'i Brown and the balance of 3,025 acres from Signal Properties (former Parker Ranch land). This land fronts the ocean at the former Francis I'i Brown Kalahuipua'a parcel and extends inland to Queen Ka'ahumanu Highway. Also in 1972, Orchid Island Resorts assumed the lease of 775 acres of State-owned land from Signal Properties. The leased parcel, which is contiguous to the fee land, lies immediately inland of the Puako Beach Lots.

When the resort property was acquired by Orchid Island Resorts, only 164.5 acres of land immediately surrounding the Kalahuipua'a fishponds were in the State Urban District. In November 1973, Orchid Island Resorts submitted an application to the State Land Use Commission to reclassify 614 acres mauka of the Francis I'i Brown parcel from Conservation and Agricultural to Urban; the goal was to create an area large enough (combined with its fee land already in the Urban District) within which to develop a self-sufficient destination resort. The request also sought reclassification from Agricultural to Urban for an additional 410 acres mauka of the resort area for the development of an associated support community. The request was later amended to add another 62-acre Urban area adjacent to and mauka of the proposed resort for employee housing.

In December 1974, the State Land Use Commission reclassified the 614 acres slated for resort use to the Urban District. This was done as part of its then-mandated five-year State Land Use District Boundary Review. Urban designation for both the 410-acre and 62-acre Urban Districts was denied. No changes in the State Land Use District boundaries on the Mauna Lani Resort have been made since that time.

Between 1976 and 1980, the County of Hawai'i granted SMA Permit No. 2 and adopted Zoning Ordinances 380, 607 and 608 to allow the development of the Mauna Lani Resort. These approvals specifically limit development at the 778-acre project site to a maximum of 3,000 hotel rooms and 3,182 residential units. The 3,000 hotel room limit is in accordance with the Hawai'i County General Plan limit for a major resort area.

Because the application for the 62 acres and the 410 acres in the Urban District was denied in 1974, support functions for the resort have been accommodated within the Agricultural District through the use of Special Permits.

### 3. DEVELOPMENT CONCEPT

#### 3.1 STATEMENT OF OBJECTIVES

Mauna Lani Resort, Inc. has a long-term commitment to develop its 3,200 acres, starting with the development of its core resort area, which is the subject of this report. Its interests focus on continuity of planned development and operations rather than on short-term gains. Mauna Lani Resort, Inc. intends to provide a full range of facilities and amenities within a self-contained resort/residential community, integrating a compatible mix of uses in an overall design which meets world class standards.

Development is planned to proceed at a rate that is responsive to changing market demand for resort hotel and residential facilities. Mauna Lani's objective is to remain flexible in providing these facilities so that they satisfy current and projected needs, keeping within the context of a luxury resort development.

#### 3.2 DESCRIPTION OF PROPOSED DEVELOPMENT

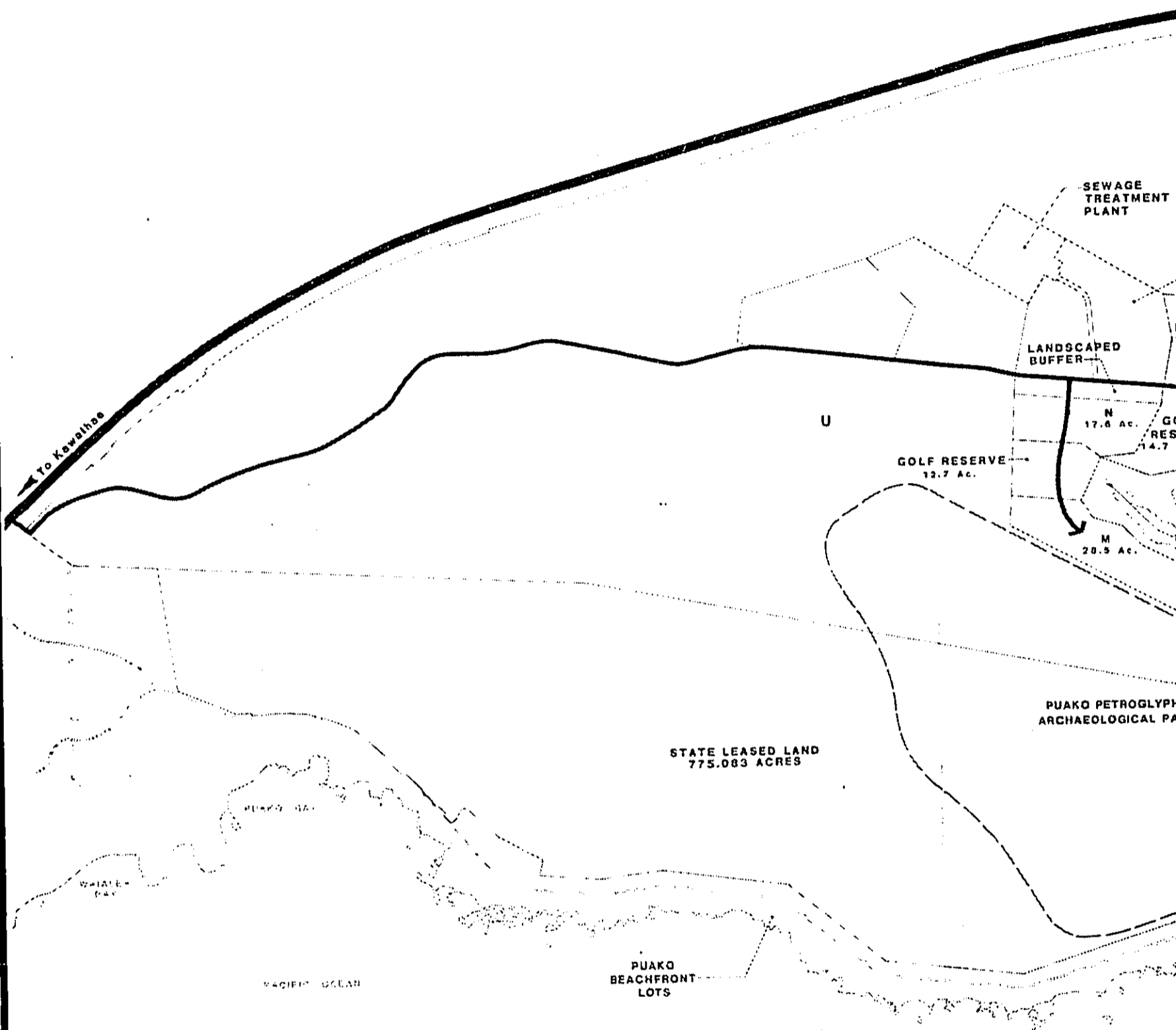
##### 3.2.1 Existing Master Plan

Figure II-2 shows the existing master plan for the 778.5-acre central core of Mauna Lani Resort. Plans approved by the County, which are consistent with the County General Plan, permit the construction of 3,000 hotel rooms, 3,182 vacation and permanent residential units, shopping and entertainment activities, and recreational facilities (including an 18-hole golf course) on the 778.5 acres of Urban District land (see Figures II-3 and II-4 for County General Plan designation and County zoning). Facilities already developed are the award-winning 18-hole championship Francis H. I'i Brown Golf Course, the 351-room luxury-class Mauna Lani Bay Hotel, the 80-unit Mauna Lani Terrace condominiums, and recreational facilities, including an historic park and an extensive network of trails around the ancient fishponds and along the shoreline. A tennis club and a beach club are planned, and the first phase of the 116-unit Mauna Lani Point condominium project is scheduled to be completed by the end of 1985.

Details of the existing master plan are contained in the 1975 Environmental Impact Statement (EIS) submitted to the County for Mauna Loa Land Inc.'s Planned Resort Community at Kalahuipua'a. The earlier EIS was completed before the adoption of the State Environmental Quality Commission's Environmental Impact Statement Regulations adopted pursuant to Chapter 343, Hawai'i Revised Statutes. However, the in-depth studies and analyses performed for the EIS remain valid and are a source of reference for this current EIS.

##### 3.2.2 Proposed Expansion

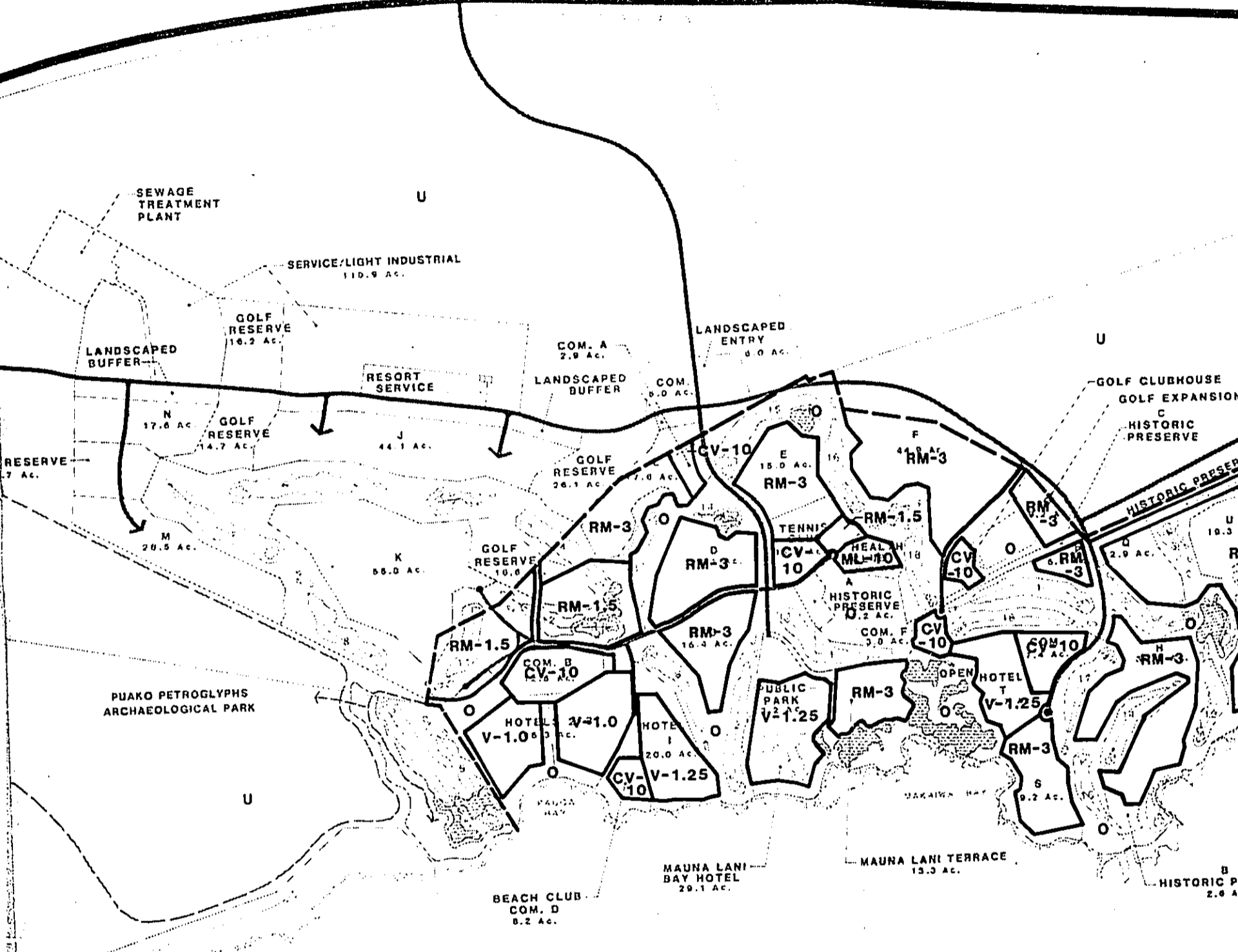
The change in the State Land Use District boundary discussed in this report is needed to allow development of the resort at a lower density and with more recreational opportunities and visual amenities than is possible under the existing plan. It would increase the size of the Urban district from its existing 778.5 acres to approximately 1,432 acres. See Figures II-5 and II-6 for the proposed master plan and the redistricting necessary to accommodate the revised plan. Despite the increase in the amount of Urban-zoned land at the resort, no increase in the number of hotel, resort condominium, or residential units is planned.



0 600 1200  
SCALE IN FEET



QUEEN KAAHUMANU HIGHWAY



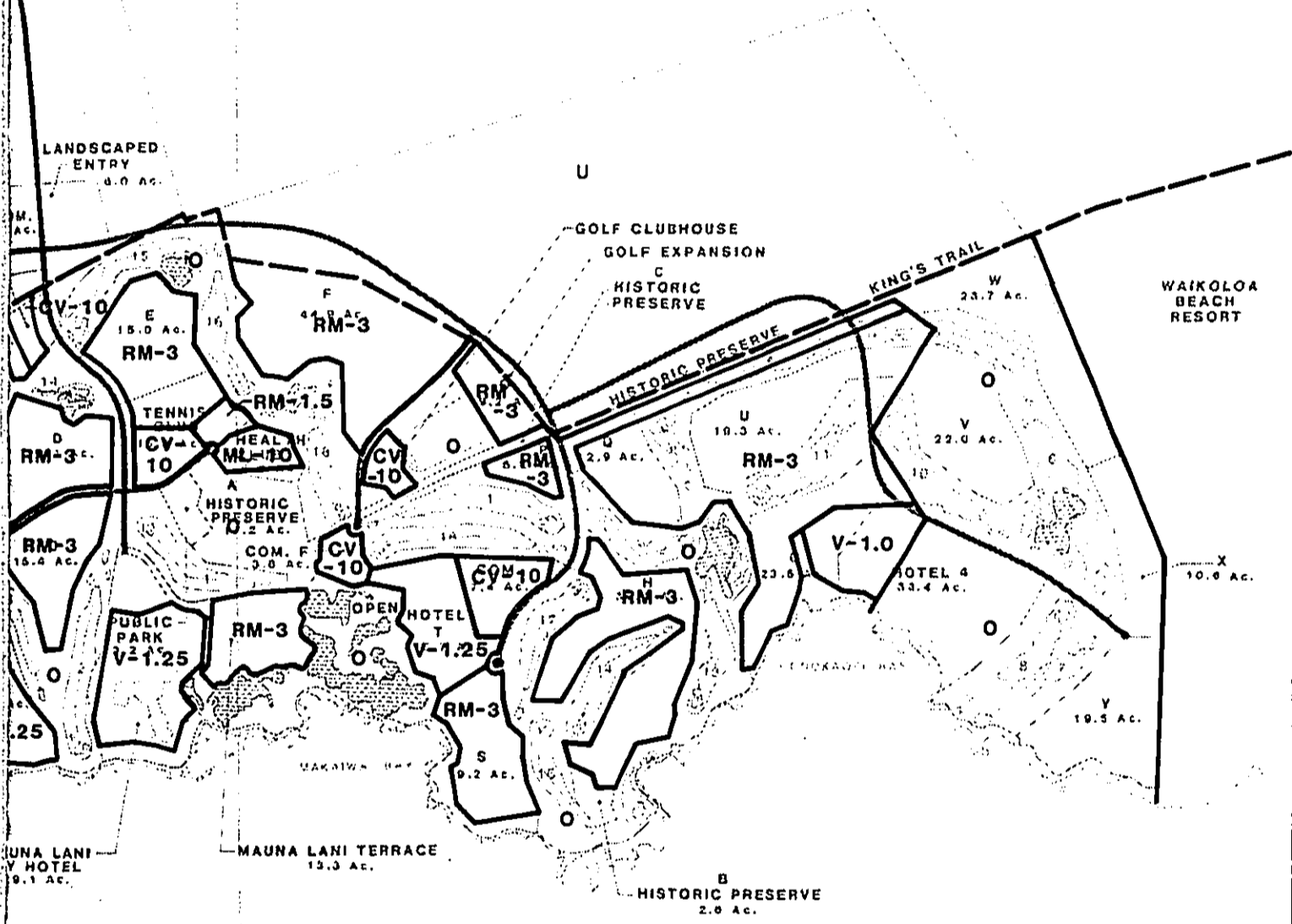
COUNTY ZONING DESIGNATION

RM-1.5	MULTIPLE FAMILY RESIDENTIAL	CV-10	VILLAGE COMMERCIAL
RM-3	MULTIPLE FAMILY RESIDENTIAL	ML-10	LIMITED INDUSTRIAL
V-1.0	RESORT-HOTEL	O	OPEN
V-1.25	RESORT-HOTEL	U	UNPLANNED

Note: Number following zoning indicates required sq. ft. (in thousands) per unit or parcel.

AHUMANU HIGHWAY

To Kailua-Kona

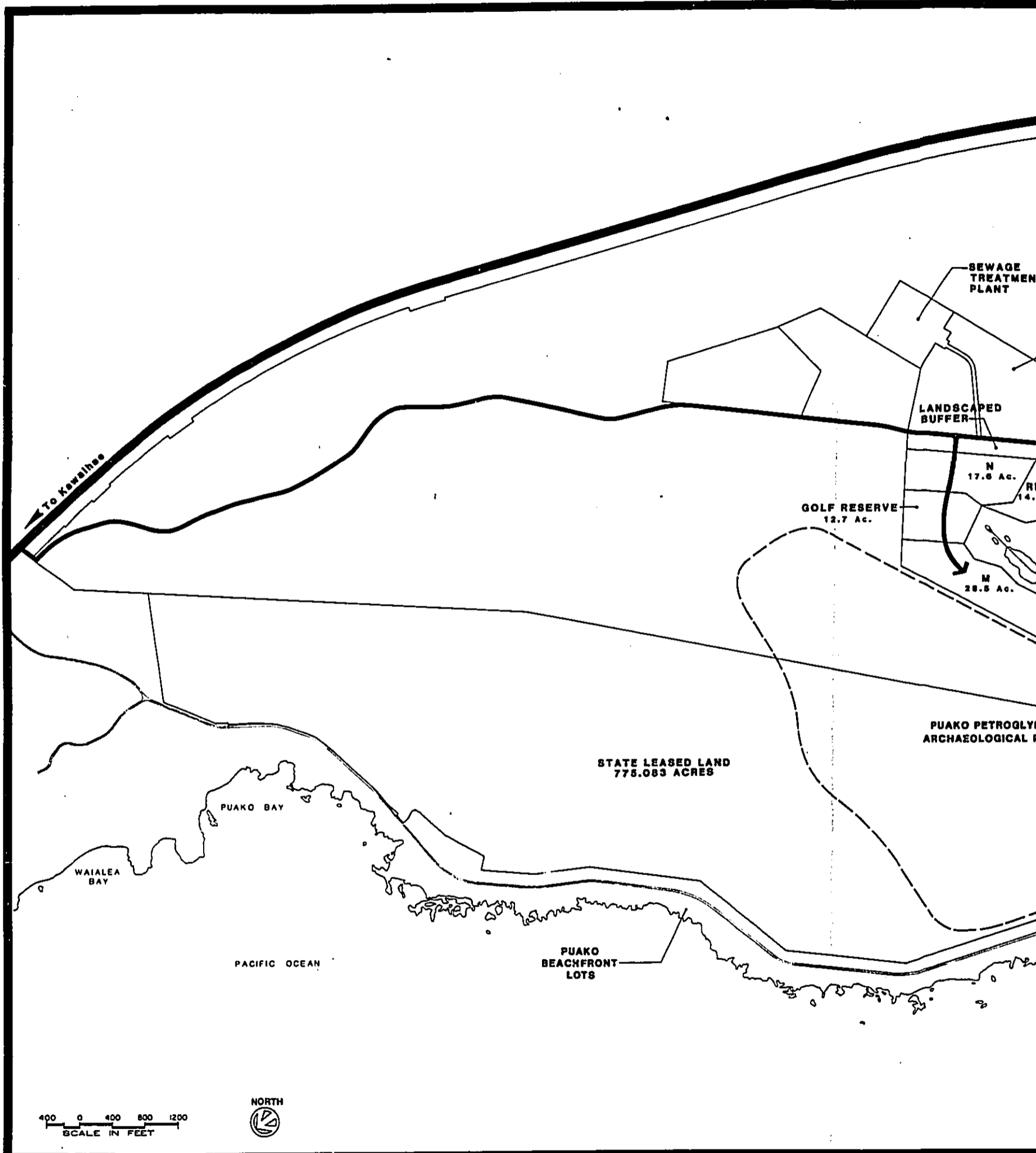


PACIFIC OCEAN

O VILLAGE COMMERCIAL  
 O LIMITED INDUSTRIAL  
 O OPEN  
 O UNPLANNED  
 ft. (in thousands) per unit or parcel.

Figure II-4  
**EXISTING COUNTY ZONING**  
**MAUNA LANI RESORT**  
 South Kohala, Hawaii





400 0 400 800 1200  
SCALE IN FEET



SEWAGE TREATMENT PLANT

LANDSCAPED BUFFER

N  
17.6 AC.

GOLF RESERVE  
12.7 AC.

R  
14.0 AC.

M  
28.8 AC.

STATE LEASED LAND  
775.083 ACRES

PUAKO PETROGLYPH  
ARCHAEOLOGICAL

PUAKO BAY

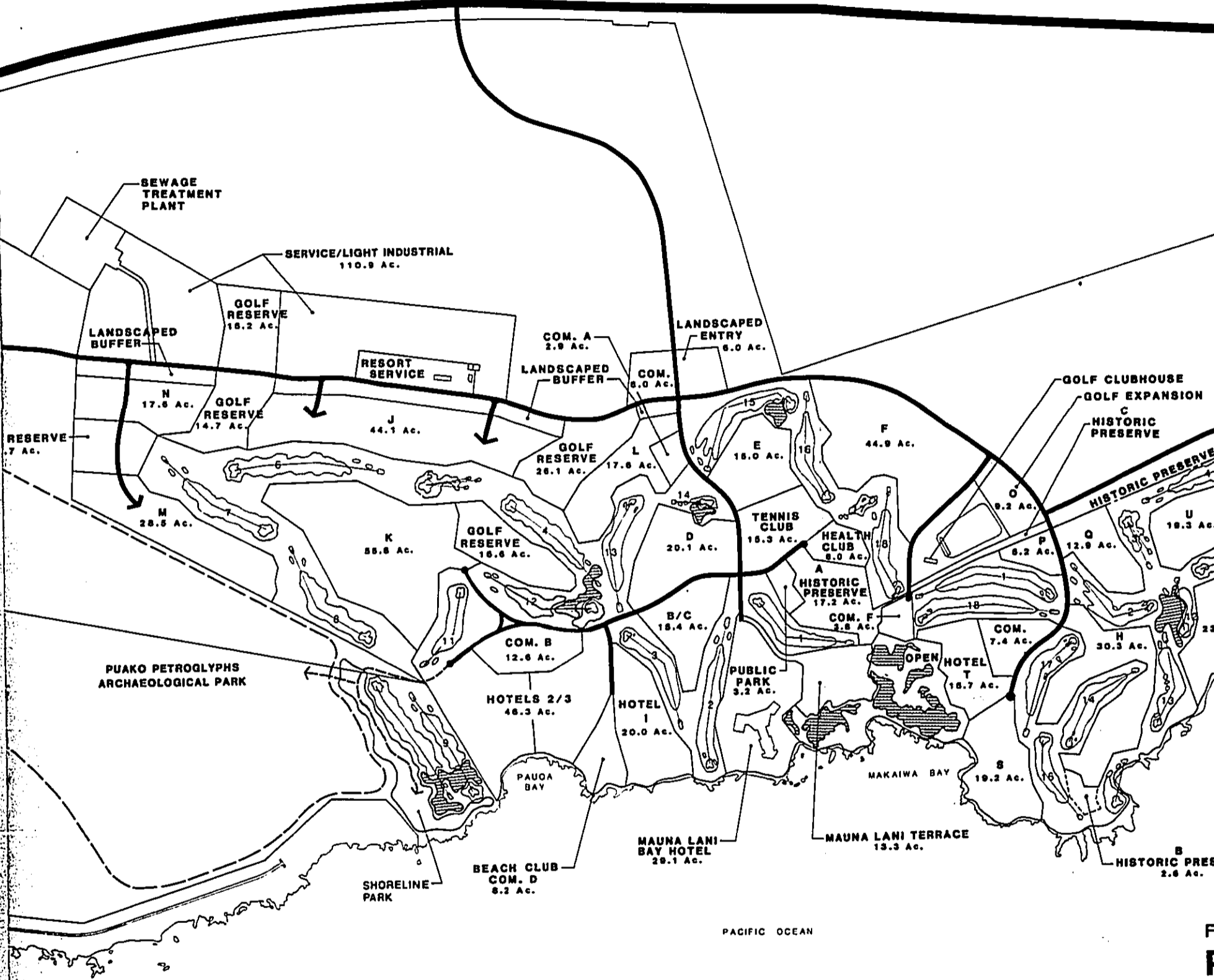
WAIALEA BAY

PACIFIC OCEAN

PUAKO BEACHFRONT LOTS

To Kawaihee

QUEEN KAAHUMANU HIGHWAY



NOTE: Lettered labeled sites are resort residential uses.

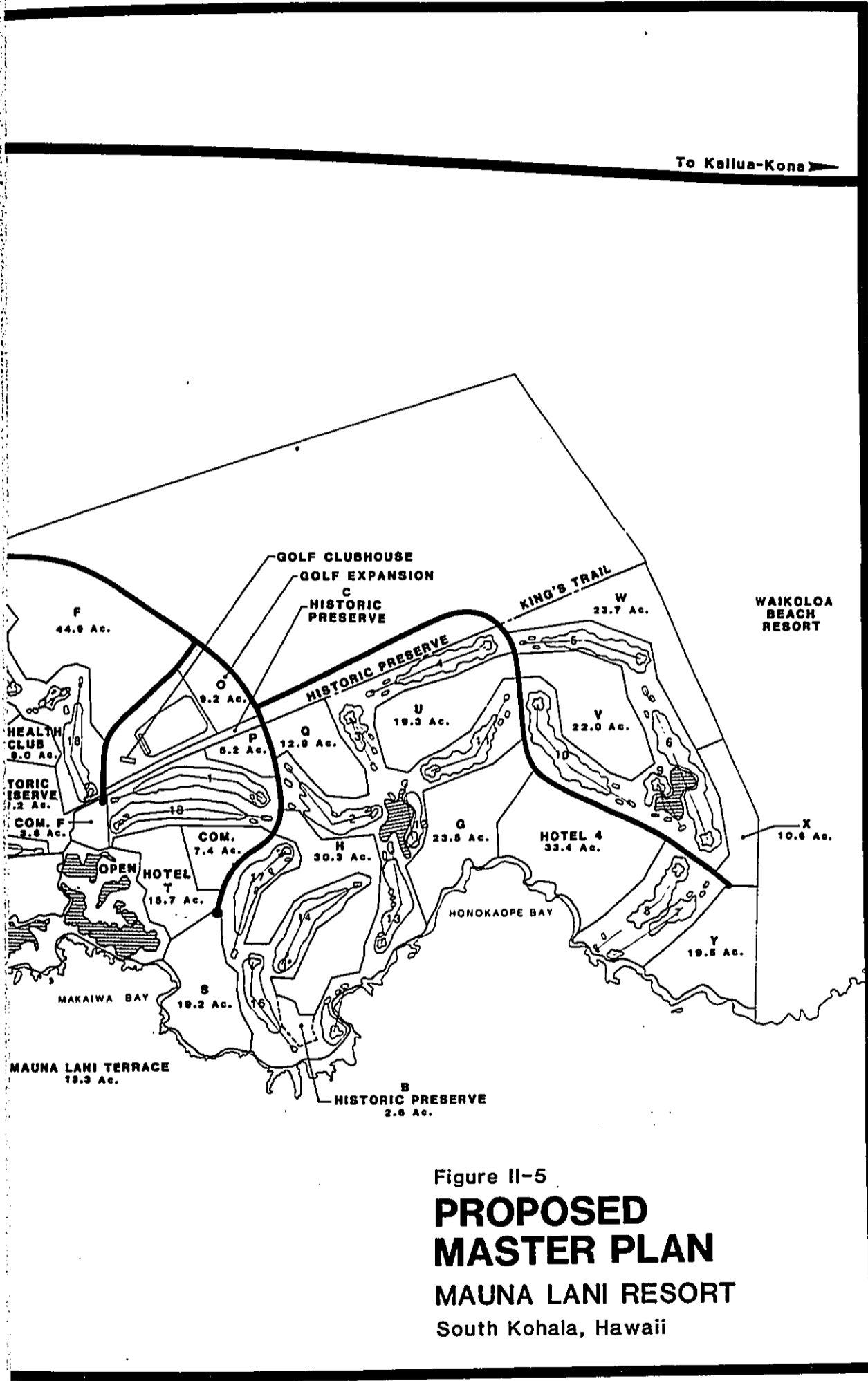
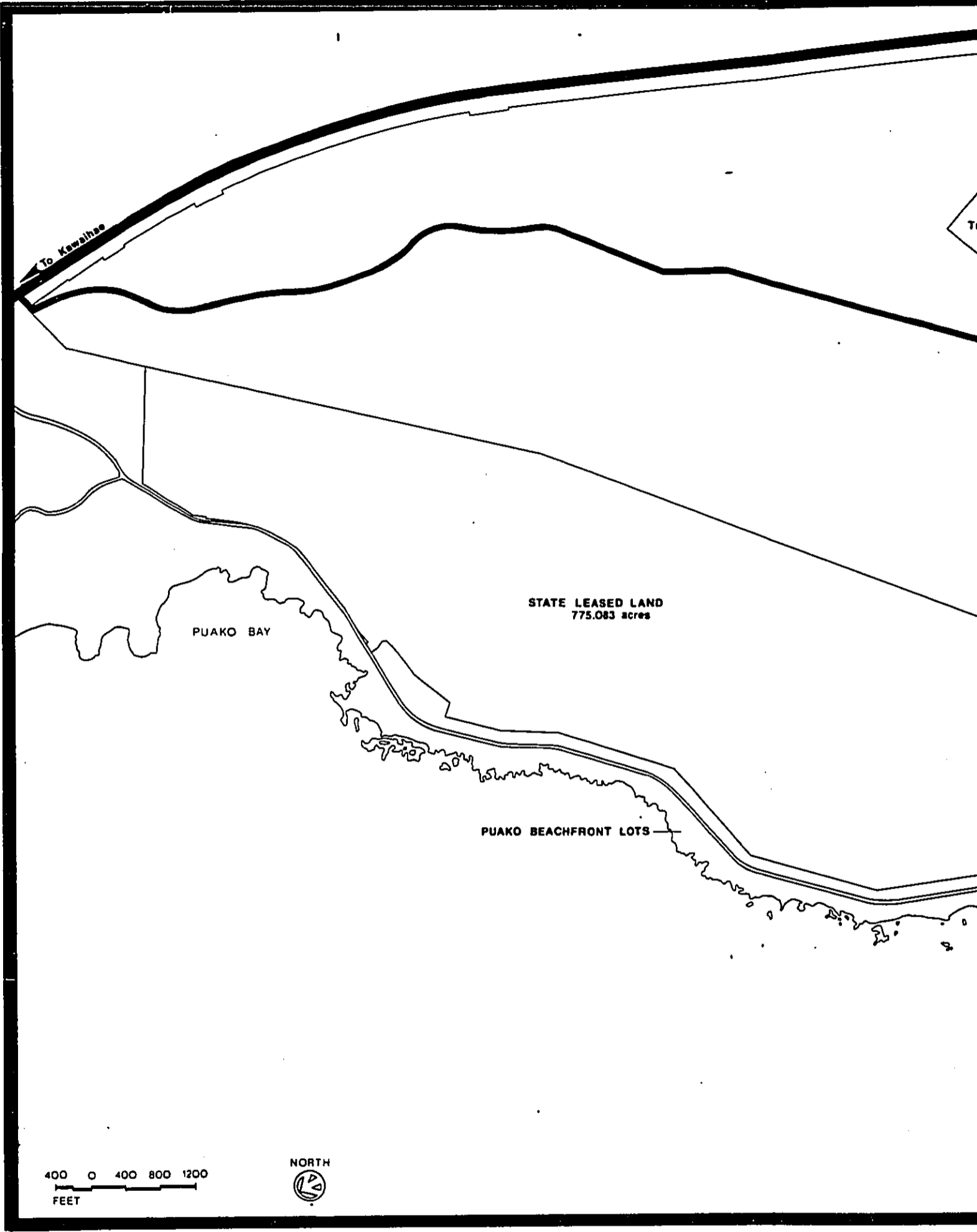
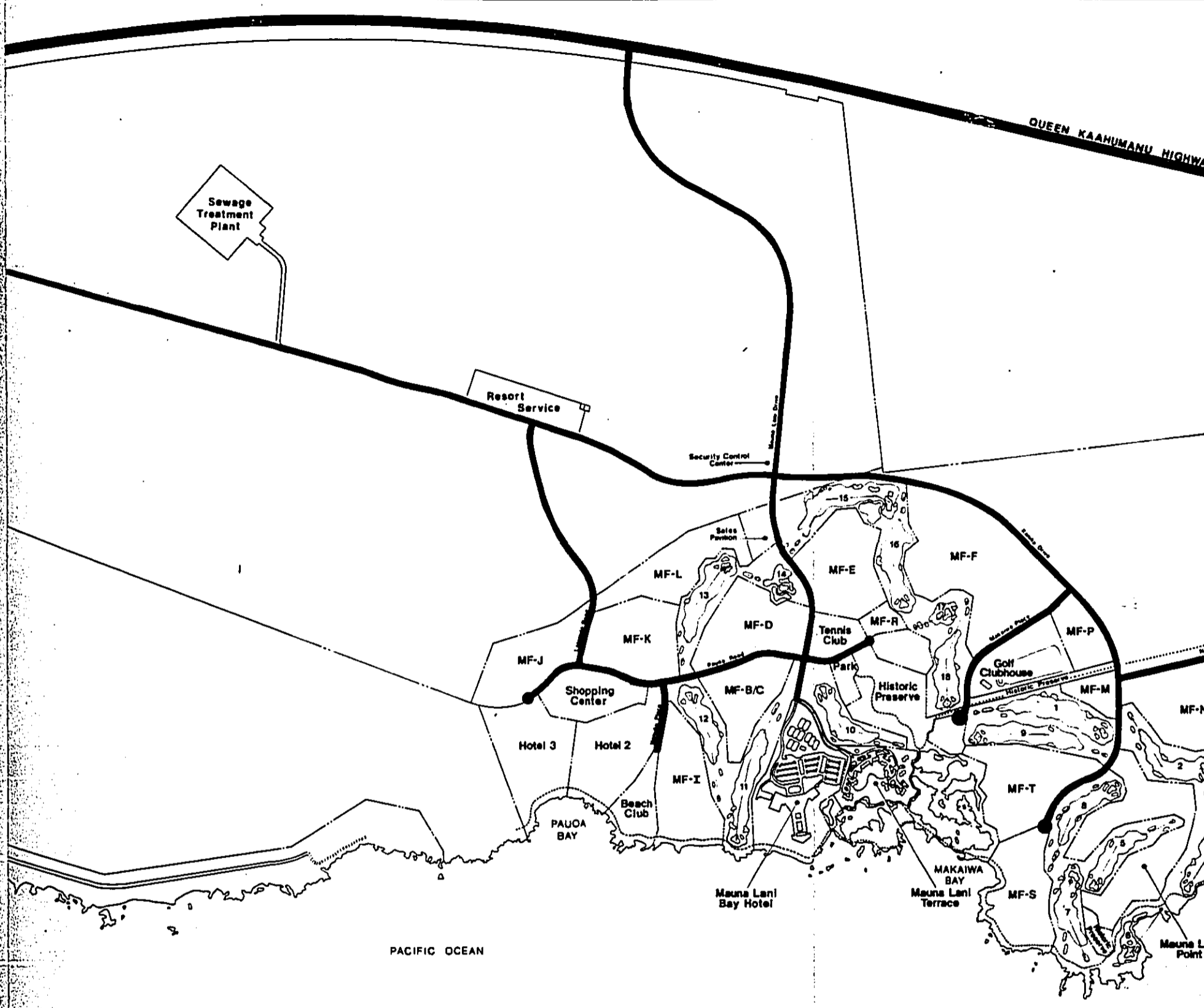


Figure II-5  
**PROPOSED  
 MASTER PLAN**  
**MAUNA LANI RESORT**  
 South Kohala, Hawaii





PACIFIC OCEAN

NOTE: Lettered labeled sites are resort residential uses.

Figure  
**EXISTING**  
**MAUNALOA**  
 South

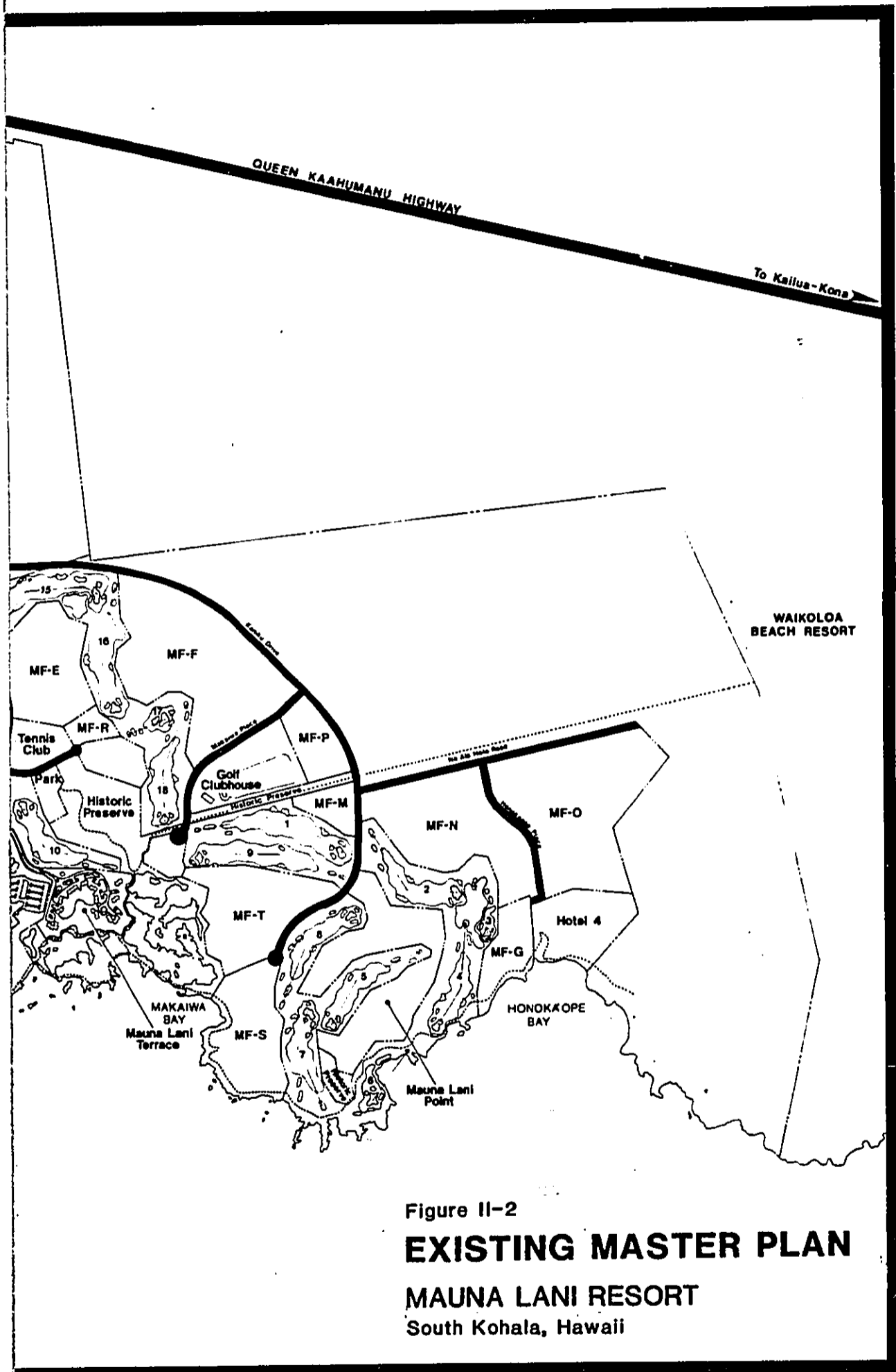
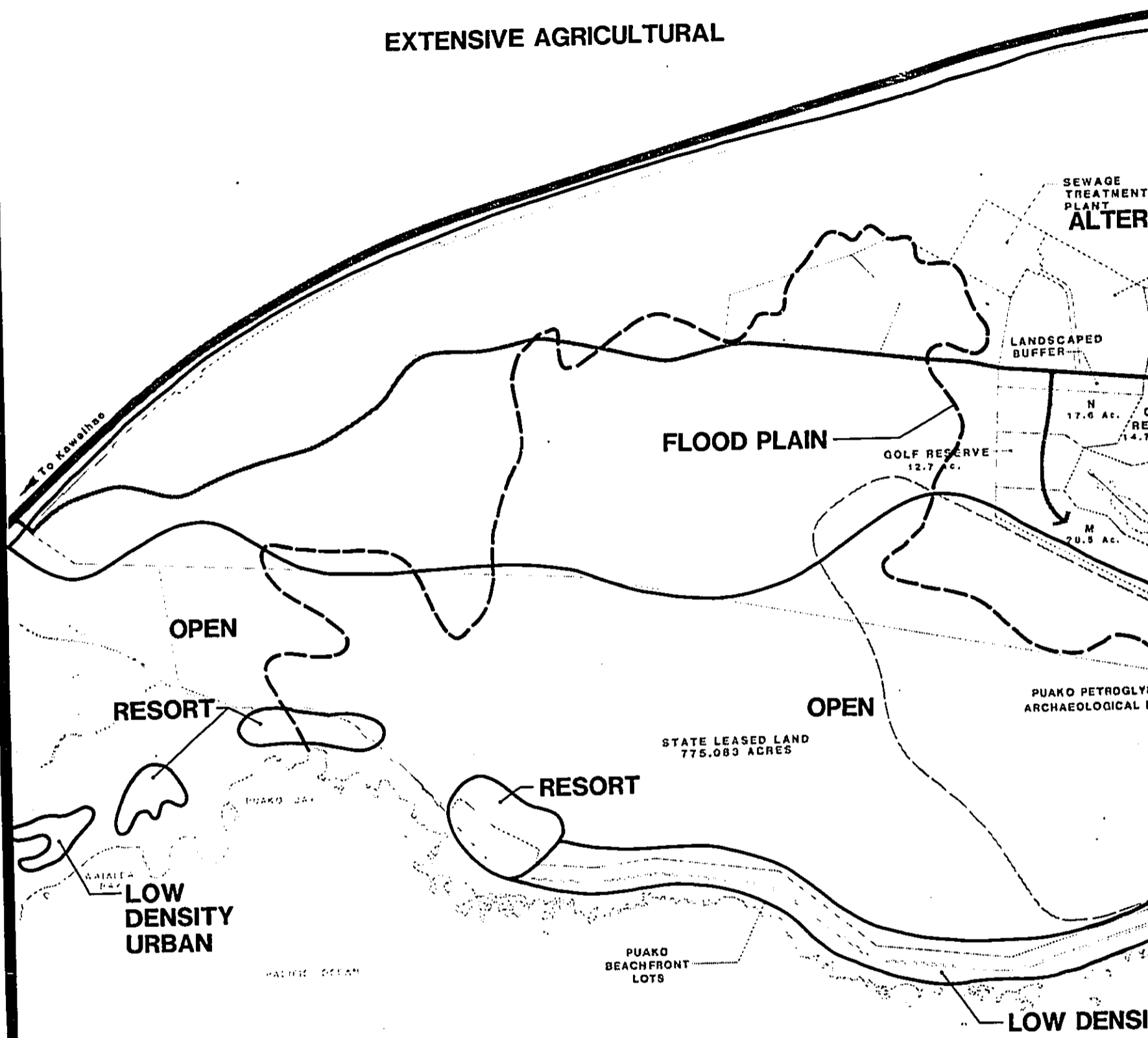


Figure II-2  
**EXISTING MASTER PLAN**  
**MAUNA LANI RESORT**  
 South Kohala, Hawaii

EXTENSIVE AGRICULTURAL



0 400 800 1200  
SCALE IN FEET



QUEEN KAAHUMANU HIGHWAY

EXTENSIVE AGRICULTURAL

SEWAGE TREATMENT PLANT  
ALTERNATE URBAN EXPANSION

SERVICE/LIGHT INDUSTRIAL  
110.9 Ac.

GOLF RESERVE  
18.2 Ac.

LANDSCAPED BUFFER

COM. A  
2.0 Ac.

LANDSCAPED ENTRY  
0.0 A

RESORT SERVICE

LANDSCAPED BUFFER

COM.  
6.0 Ac.

N  
17.0 Ac.

GOLF RESERVE  
14.7 Ac.

J  
44.1 Ac.

GOLF RESERVE  
20.1 Ac.

E  
15.0 Ac.

LOW DENSITY URBAN

GOLF CLUBHOUSE  
GOLF EXPANSION  
HISTORIC PRESERVE

RESERVE  
7 Ac.

M  
20.5 Ac.

K  
85.0 Ac.

RESERVE  
16.6 Ac.

D  
20.1 Ac.

TENNIS CLUB  
15.3 Ac.

HEALTH CLUB  
16 Ac.

MEDIUM DENSITY URBAN

HISTORIC PRESERVE

PUAKO PETROGLYPHS  
ARCHAEOLOGICAL PARK

RESORT

RESORT

RESORT

COM. B  
12.6 Ac.

B/C  
15.4 Ac.

HISTORIC PRESERVE  
17.2 Ac.

COM.  
7.4 Ac.

HISTORIC PRESERVE

OPEN

OPEN HOTEL  
15.7 Ac.

HISTORIC PRESERVE

LOW DENSITY URBAN

MEDIUM DENSITY URBAN  
LANI BAY HOTEL  
29.1 Ac.

MAUNA LANI TERRACE  
15.3 Ac.

HISTORIC PRESERVE

RESORT

PACIFIC OCEAN

LOW DENSITY URBAN

Figure II-3  
COUNTY OF MAUI  
MAUNA LANI PLANNING  
South Kohala, Hawaii



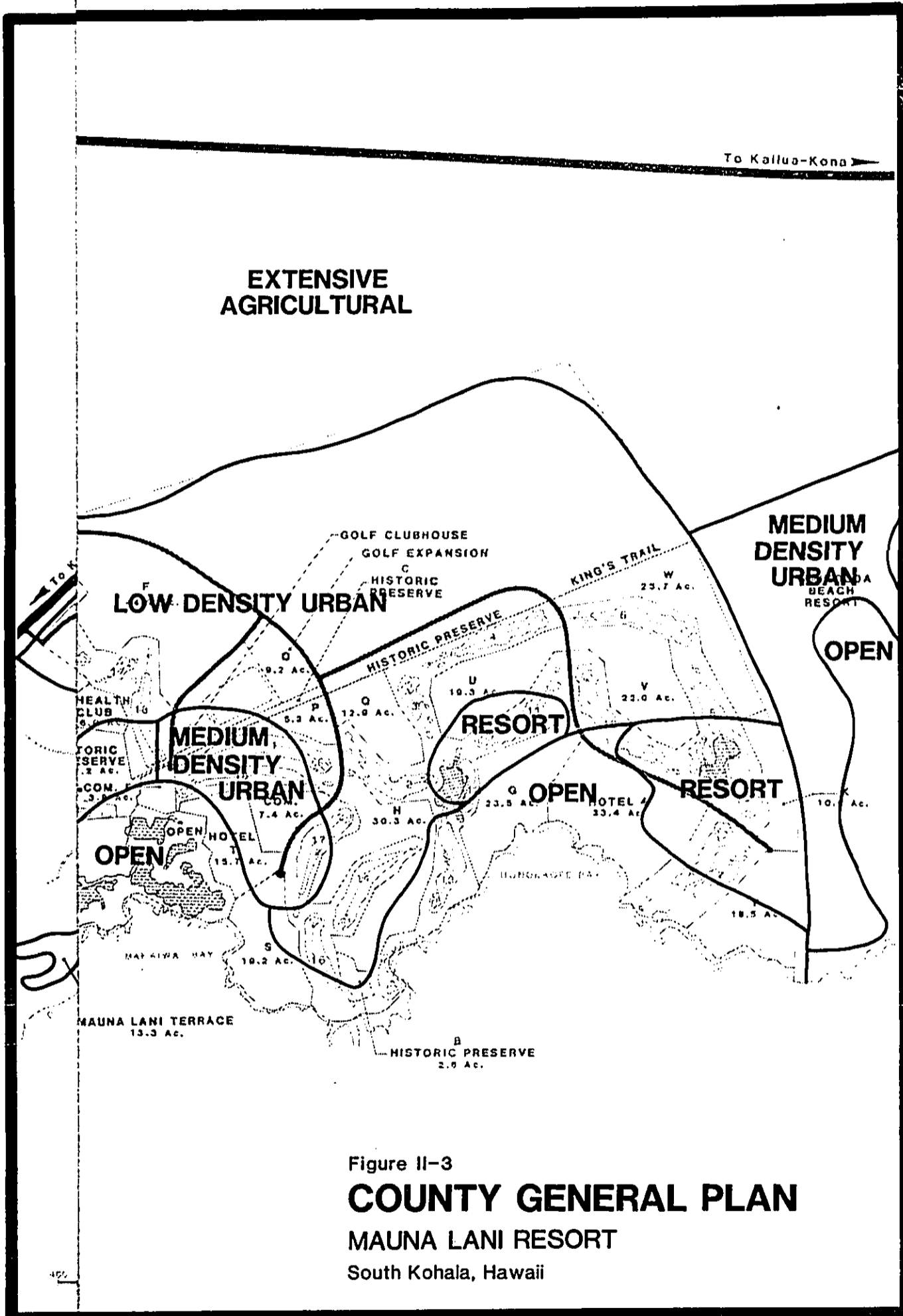
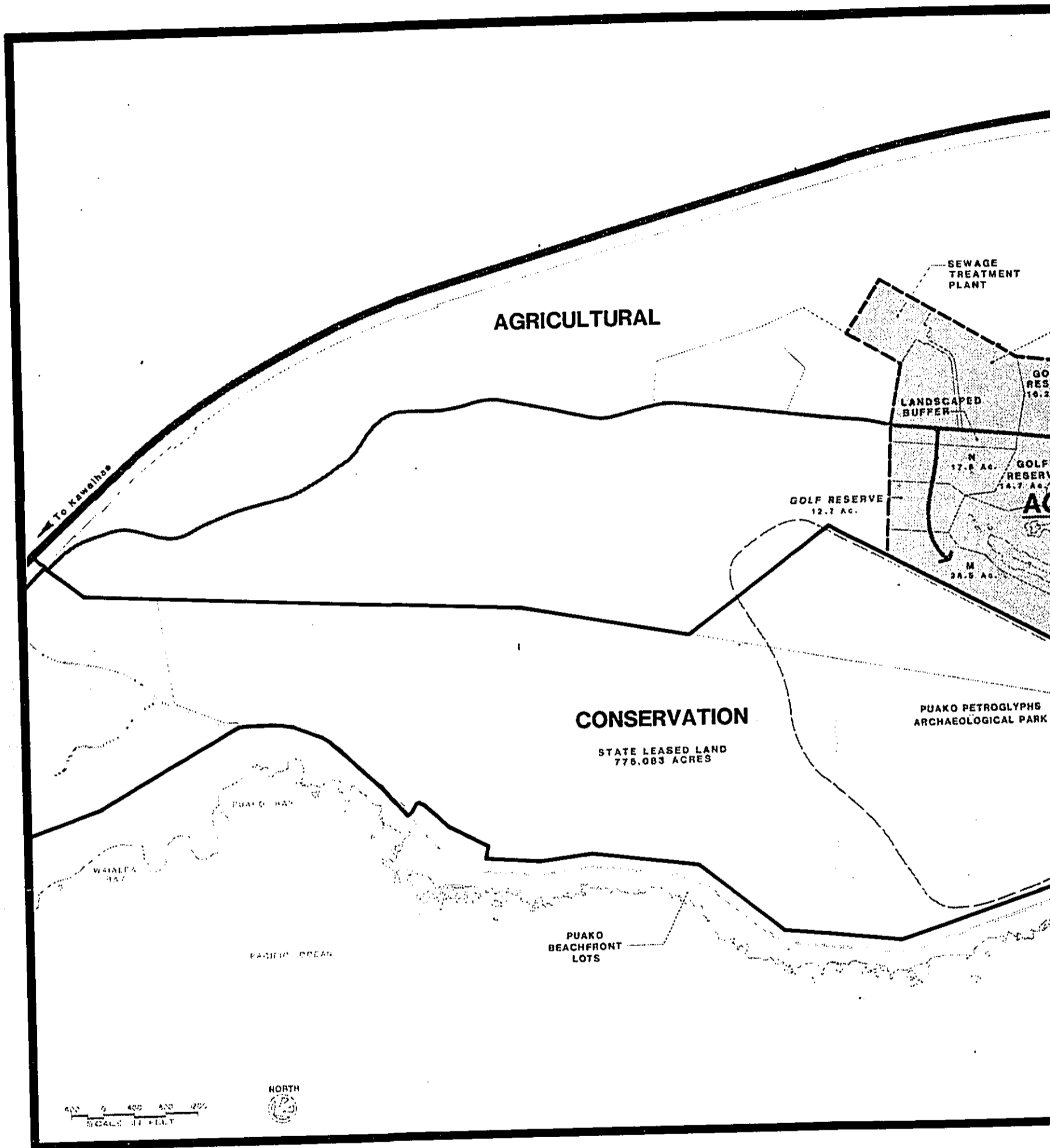


Figure II-3  
**COUNTY GENERAL PLAN**  
**MAUNA LANI RESORT**  
 South Kohala, Hawaii

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QUEEN KAAHUMANU HIGHWAY

AGRICULTURAL

AGRICULTURAL

AGRICULTURAL  
TO URBAN

AGRICULTURAL  
TO URBAN

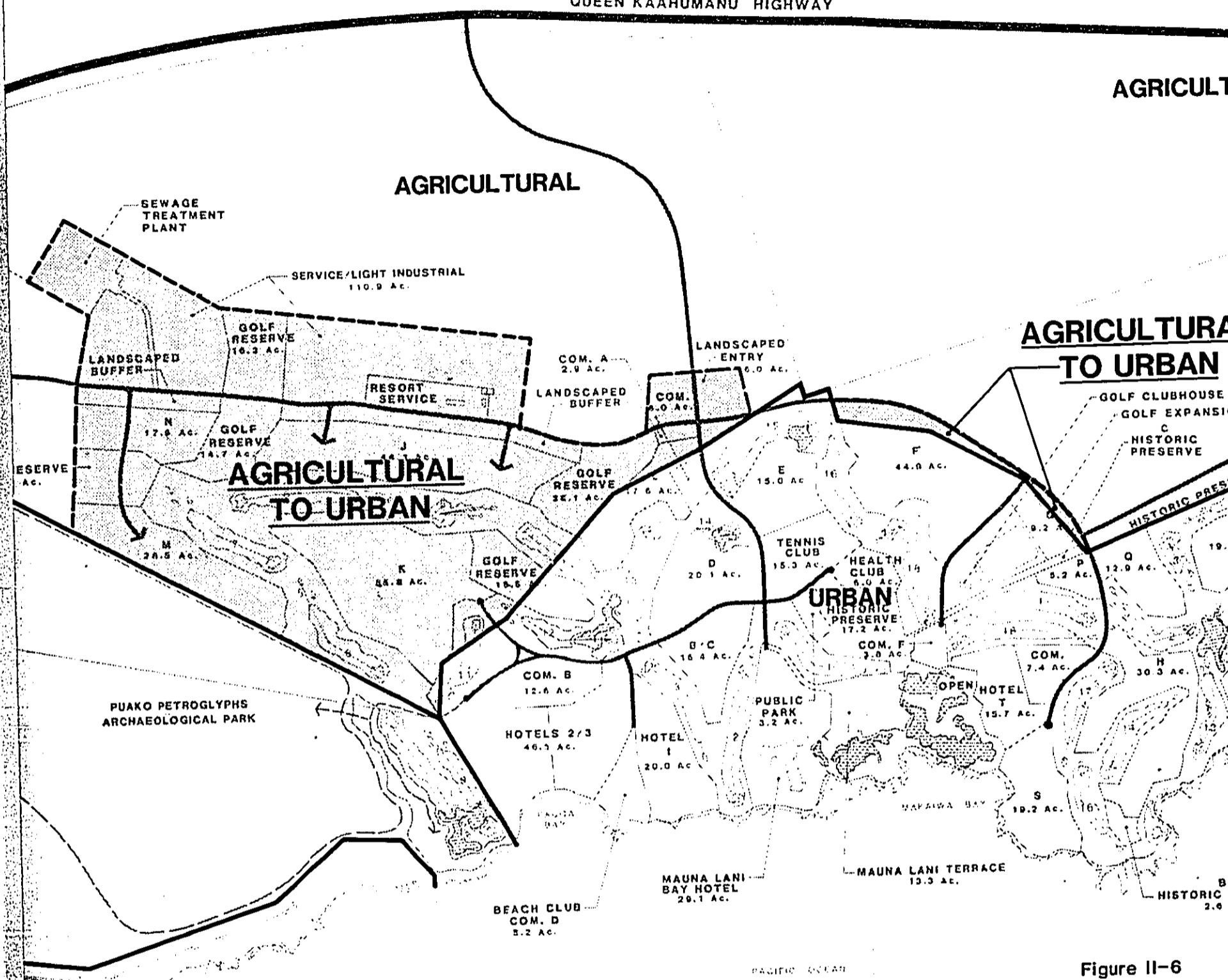
URBAN

PUAKO PETROGLYPHS  
ARCHAEOLOGICAL PARK

RECLASSIFICATION

Agricultural to Urban	486 Acres
Conservation to Urban	168 Acres

Figure II-6  
**REQUESTED  
DISTRICT**  
**MAUNA LANI F**  
South Kohala, Haw



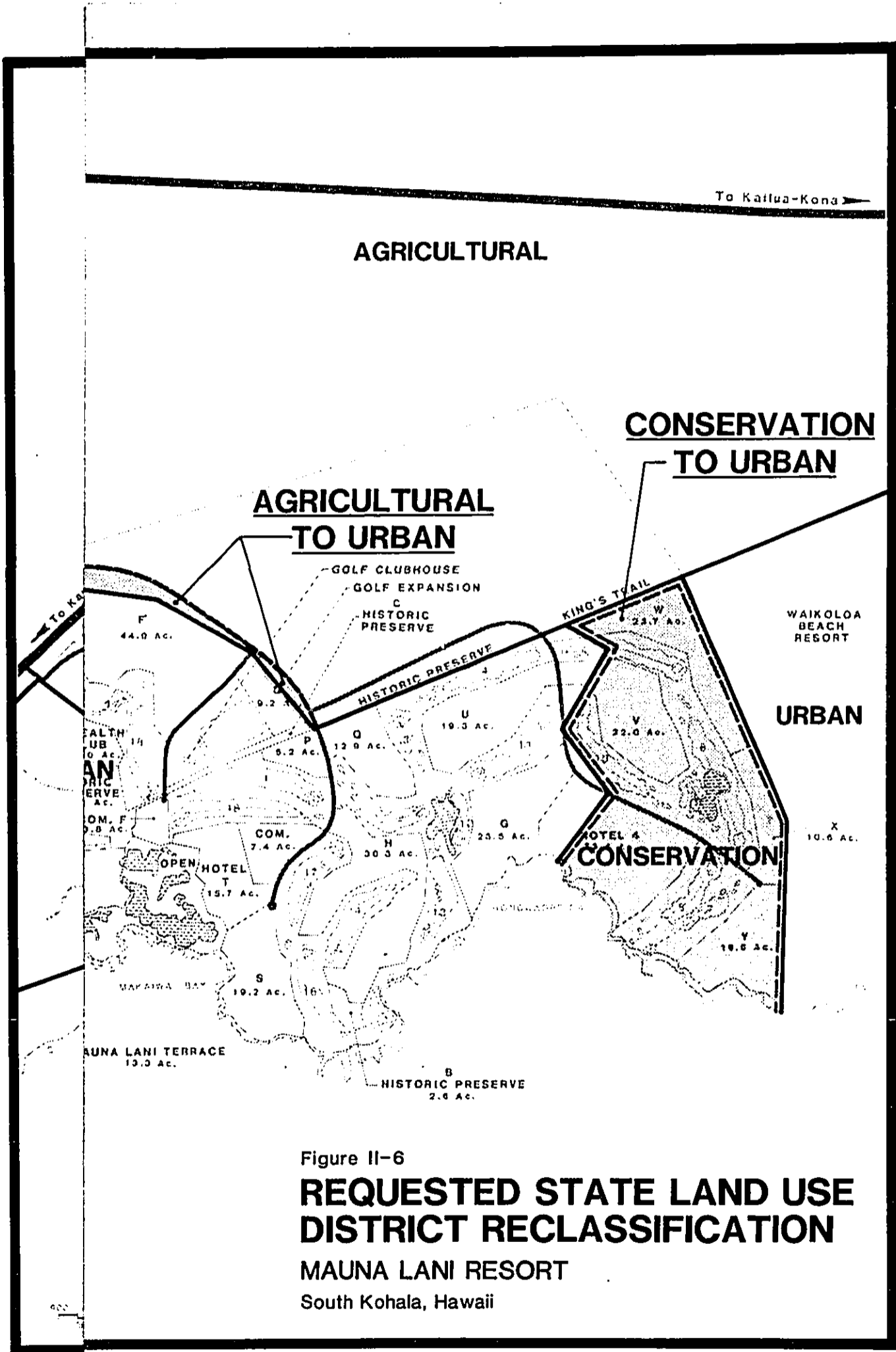


Figure II-6  
**REQUESTED STATE LAND USE  
 DISTRICT RECLASSIFICATION**  
 MAUNA LANI RESORT  
 South Kohala, Hawaii

In specific terms, the additional land is needed to:

- o provide a second golf course and additional open space and recreational areas, including a public shoreline park;
- o accommodate support facilities that have been constructed in the Agricultural district adjacent to the existing Urban zone;
- o allow relocation of the hotel site now located along the eastern side of Honoka'ope Bay to a more suitable location at its southern end; and
- o allow the density of development within the resort's residential and hotel areas to be decreased, thereby promoting the achievement of established luxury resort design goals and standards.

The revised master plan for an expanded core resort area remains true to the original overall development concept of providing first class resort facilities within a self-contained resort community while retaining open space areas, historic and scenic resources, which reinforce the unique character of the resort. Foremost are plans to preserve views as well as natural and established features, including the shoreline, the Kalahuipua'a fishponds, historical sites, and mauka/makai trail systems. Further, plans call for the enhancement of access to these features, which will be retained in open space for public access and enjoyment. Finally, the pockets of development will be physically separated by open-space corridors.

Each of these proposed changes is discussed below.

#### **3.2.2.1 Additional Golf Holes**

Mauna Lani Resort, Inc. proposes to develop a second 18-hole golf course of the same championship quality as the existing ocean-fronting Francis I'i Brown Golf Course. The north nine holes of the existing golf course would be combined with nine new holes to be constructed mauka and north of Hotel Site 2/3. Together, they would form a complete 18-hole golf course. Two of these holes would be constructed within the State leasehold parcel just north of Pauoa Bay, adjacent to the proposed public shoreline park. The remaining existing "south nine" would be combined with nine new holes to the south to form a second 18-hole golf course. Both golf courses would have some golf holes fronting the ocean, a characteristic of the existing Francis I'i Brown Golf Course which makes playing the course a unique experience.

#### **3.2.2.2 Golf Course Reserve**

The existing master plan provides only a single 18-hole golf course -- the existing Francis I'i Brown championship course. The numbers of resort visitors and others using the existing golf course far exceed expectations at the time the original State Land Use districts were created, and the market analysis prepared by Ming Chew Associates (summarized in a later section of this report) anticipates a demand for additional golf facilities as the resort develops. To accommodate this projected demand for a third and fourth golf course, the revised master plan includes five parcels totaling about 86 acres to be set aside as golf reserves for future development (see Figure II-5). These parcels will provide a link between existing golf holes and the new holes to be built when market demand warrants their construction.

### **3.2.2.3 Public Access**

Public access to the shoreline will be provided both at the northern end of the resort and at the southern end. See Figure II-7 for proposed access to the pedestrian shoreline trail which extends from Mauna Lani's boundary with its State leased parcel to the property line separating MLR from Waikoloa Resort. Also shown is existing public access by the Mauna Lani Bay Hotel and Kalahuipua'a Fishponds. Public parking will be provided toward the head of both mauka/makai public access paths (29 stalls at the public shoreline park near Pauoa Bay and 20 stalls at Honoka'ope Bay). See Figures II-8 and II-9 for a more detailed depiction of public shoreline access north of Pauoa Bay and at Honoka'ope Bay.

### **3.2.2.4 Public Shoreline Park**

Figure II-8 shows a conceptual plan for the proposed public shoreline park adjacent to holes 9 and 10 of the new northern golf course. The park would contain a comfort station and showers, picnic facilities (10 tables and 5 barbeque pits), and parking (12 stalls initially and 17 additional stalls planned). Should it become apparent that the parking for 29 vehicles is inadequate to accommodate visitors to the beach park, 11 additional stalls will be constructed by Mauna Lani Resort, Inc. Schematic plans call for the creation of some attractive water features in the low-lying land separating the golf course and the park facilities.

The public park will allow convenient public access to the shoreline and will provide a link to shoreline trail easements running the length of the coast along Mauna Lani Resort's lands. The construction of the new shoreline park and parking will also improve access to the Puako petroglyph fields, which contain one of the most significant petroglyph clusters in the State of Hawai'i.

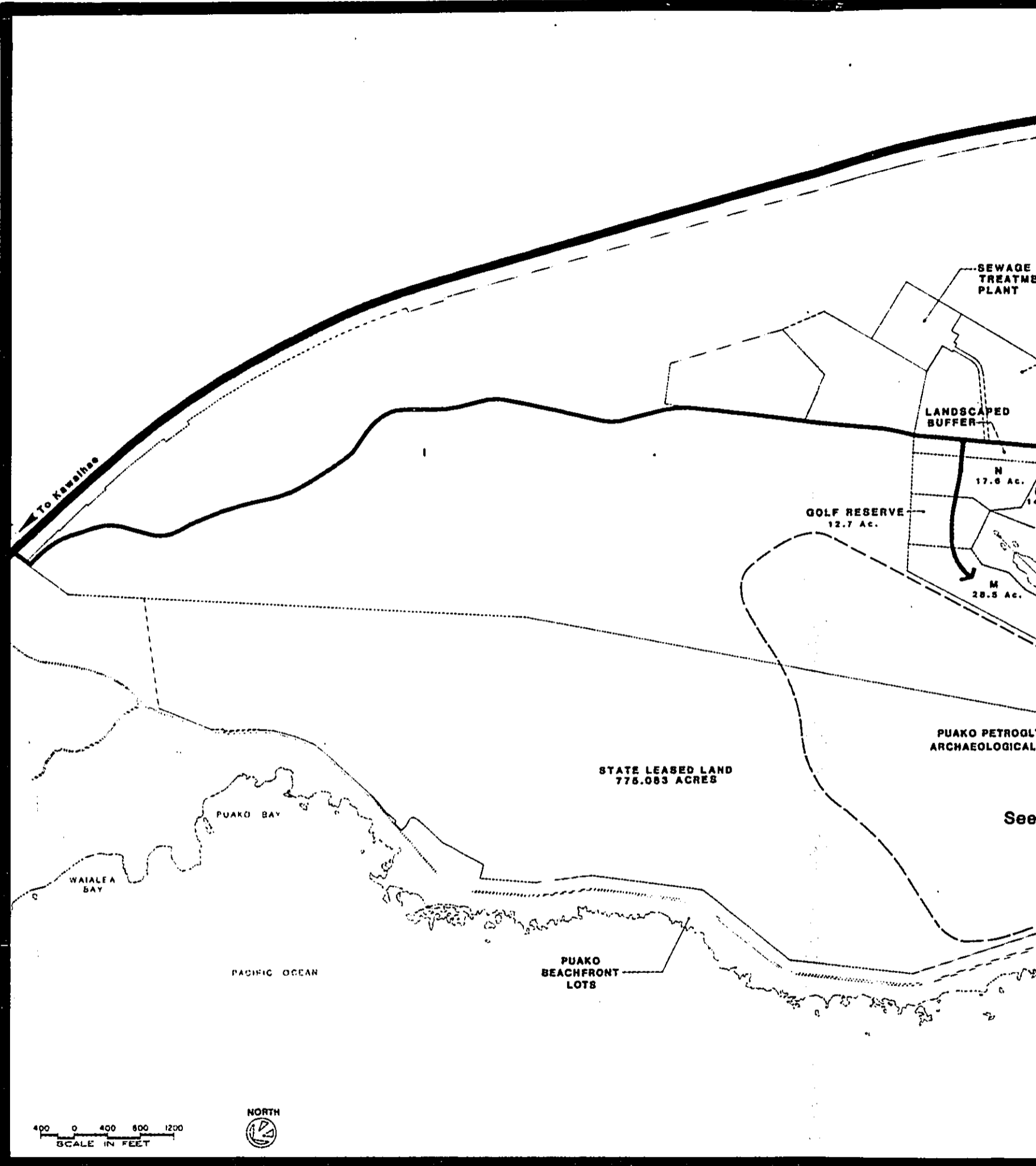
### **3.2.2.5 Archaeological Park**

Through the joint efforts of the Waimea Hawaiian Civic Club and Mauna Lani Resort, Inc., the Puako petroglyph fields have been placed on the State of Hawai'i Register of Historic Places. Over a period of several decades the petroglyph fields sustained damage as a result of vandalism and neglect; however, in recent years they have been cleaned up by members of the Civic Club and MLR personnel. Mauna Lani proposes to construct and maintain, for the term of its lease with the State, the Puako archaeological park containing approximately 190 acres of land it leases from the State and 80 acres of Mauna Lani's adjacent fee lands. The archaeological park will accommodate public access, security, ongoing restoration, signage and parking for 8 vehicles.

### **3.2.2.6 Hotel Sites**

The five hotel sites in the existing master plan (in addition to the Mauna Lani Bay Hotel site) have been retained in the revised master plan. The locations of Sites 2, 3, I and T remain essentially the same. In the proposed master plan, however, the location of Hotel Site 4 has been moved back to its originally planned position further west on Honoka'ope Bay.

Prior to Orchid Island Resort's application to the State Land Use Commission for reclassification of portions of its property, the original plans for its resort included a hotel to be located along the southern side of Honoka'ope Bay. The proposed hotel site fronts a sandy beach and benefits from several topographic features that add to its



400 0 400 800 1200  
SCALE IN FEET



SEWAGE TREATMENT PLANT

LANDSCAPED BUFFER

To Kawaihooe

GOLF RESERVE  
12.7 AC.

N  
17.6 AC.

M  
28.5 AC.

PUAKO PETROGLYPH  
ARCHAEOLOGICAL

STATE LEASED LAND  
776.083 ACRES

PUAKO BAY

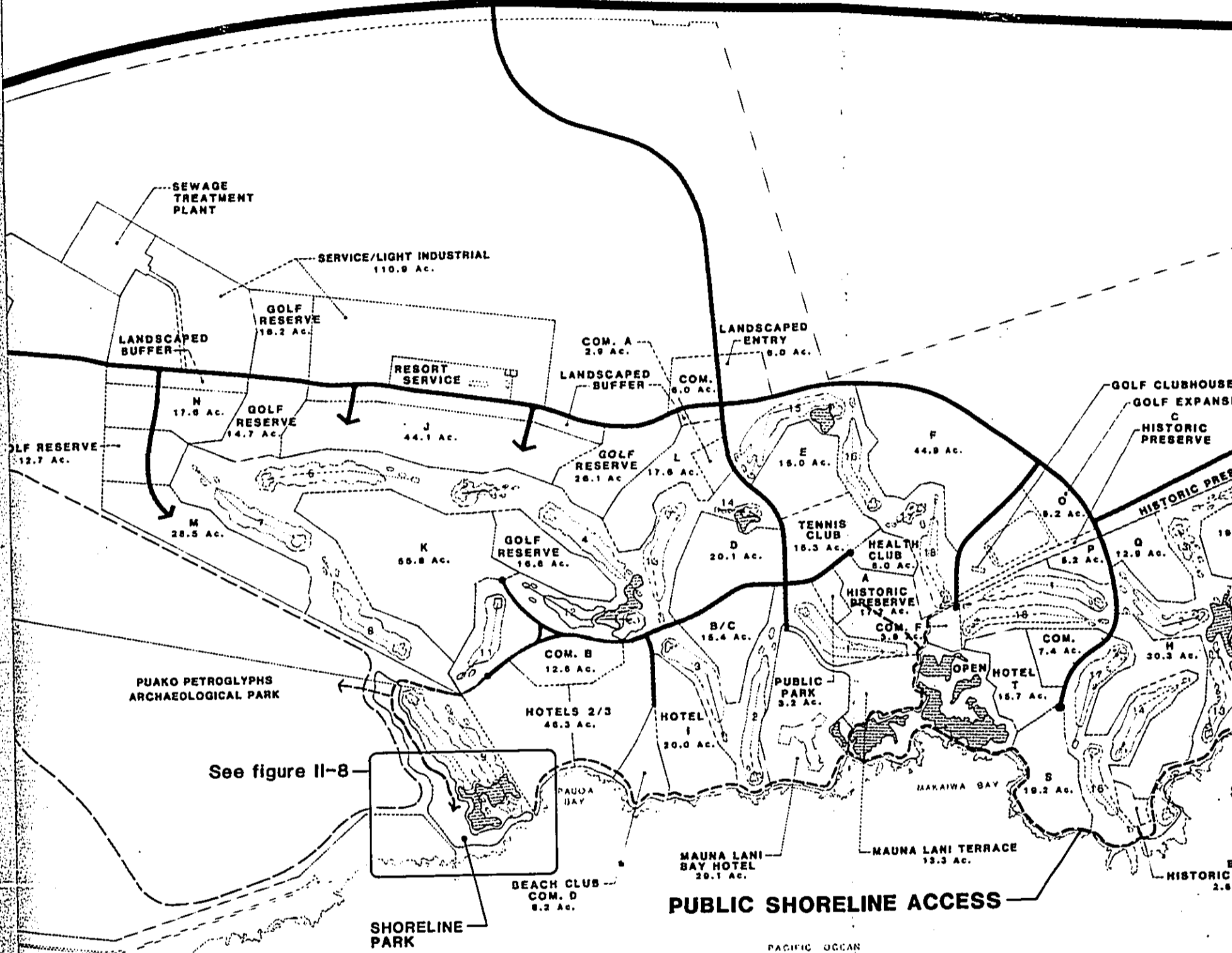
WAIALEA BAY

PACIFIC OCEAN

PUAKO BEACHFRONT LOTS

See

QUEEN KAAHUMANU HIGHWAY



NOTE: Lettered labeled sites are resort residential uses.

Figure II-  
PUBL  
MAUNA  
South K



AY

To Kailua-Kona

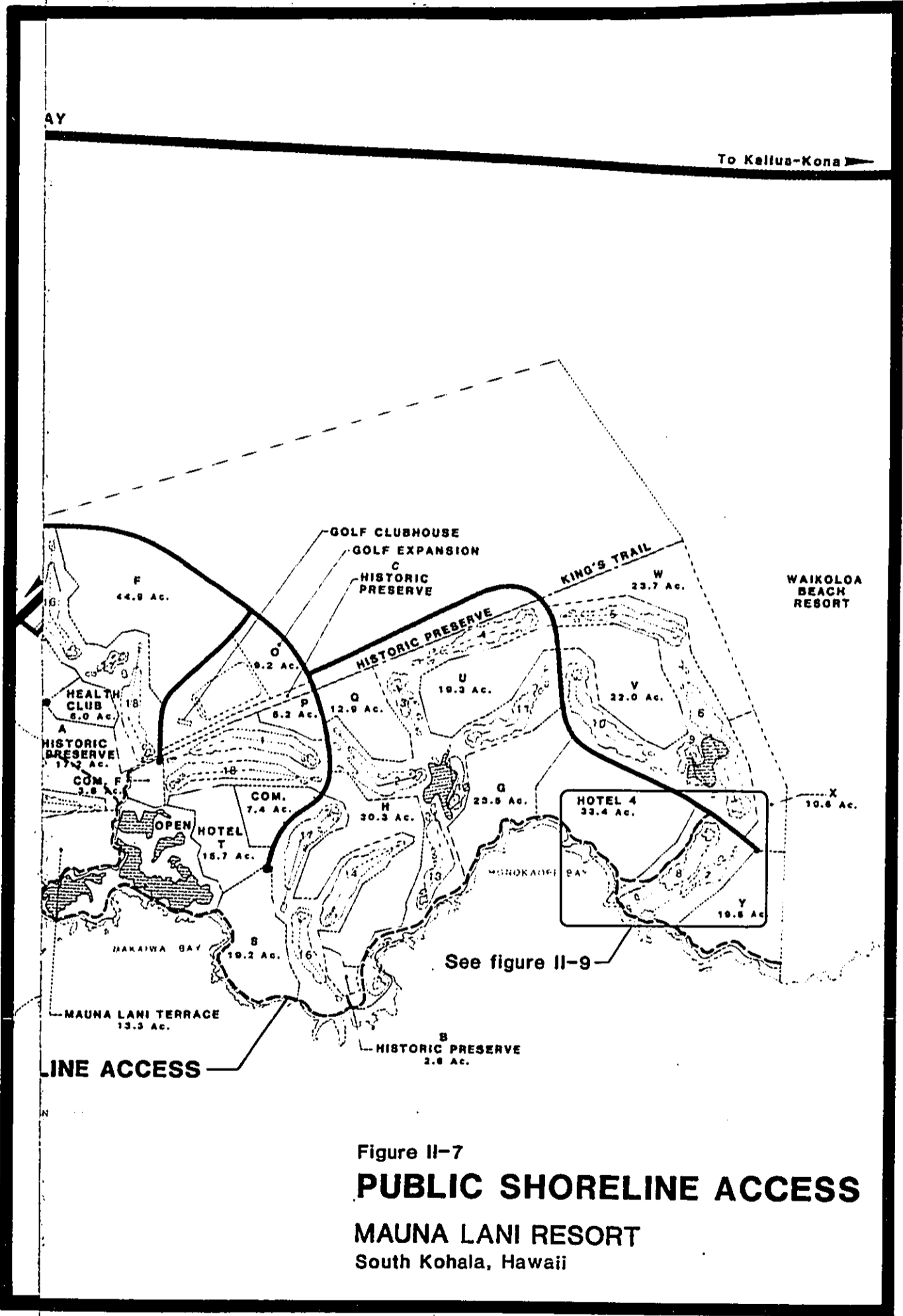


Figure II-7  
**PUBLIC SHORELINE ACCESS**  
 MAUNA LANI RESORT  
 South Kohala, Hawaii

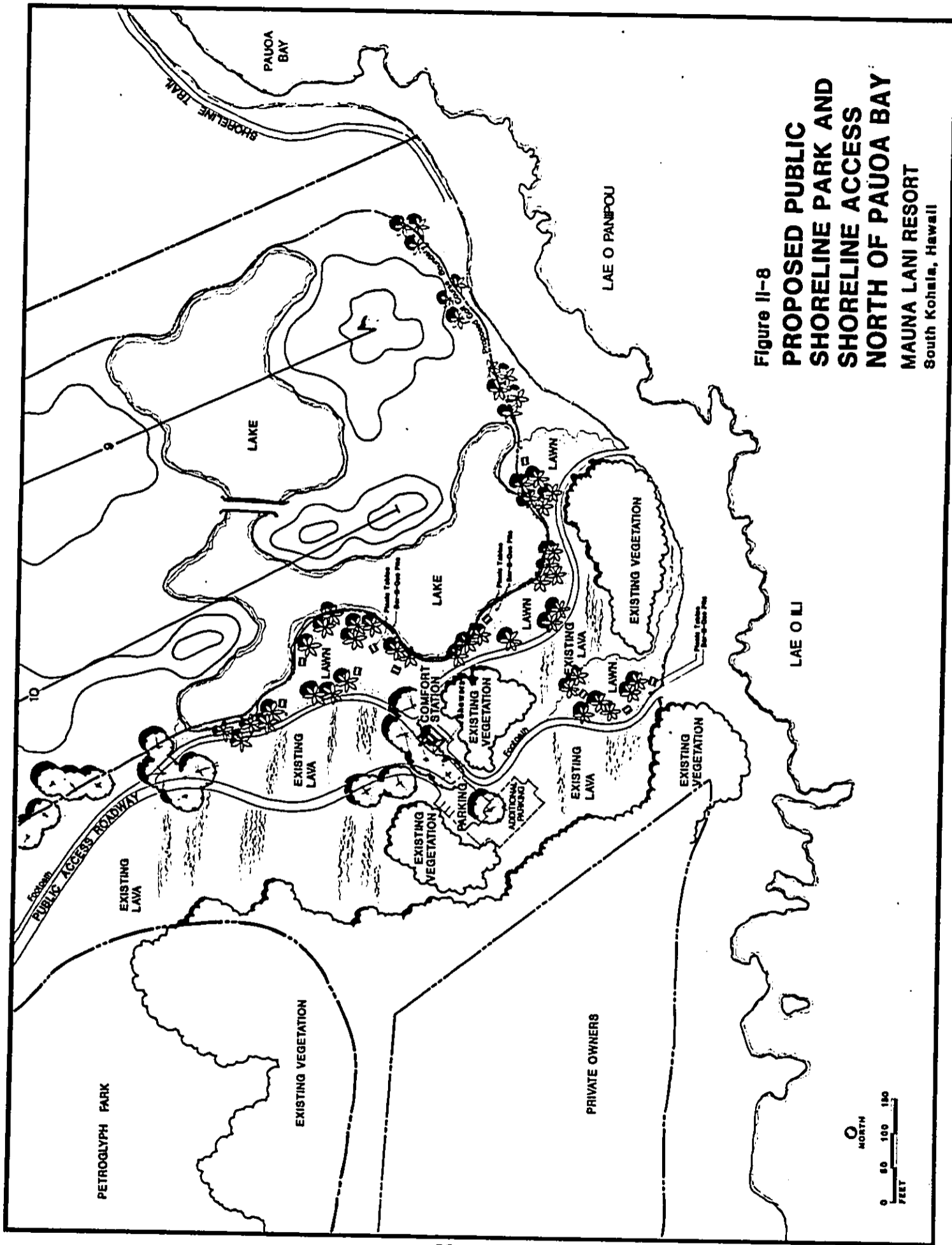
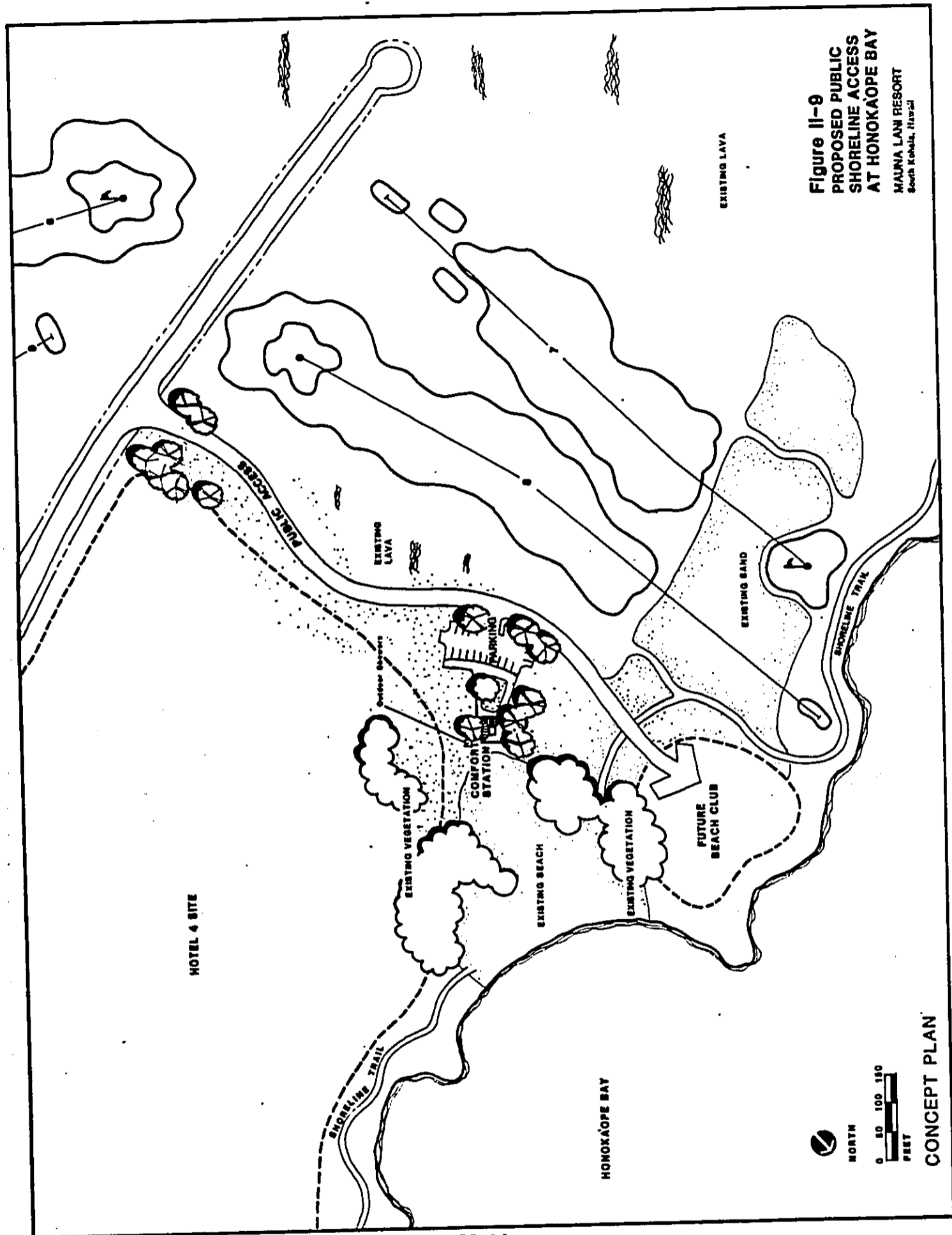

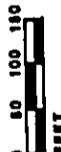


Figure II-8  
**PROPOSED PUBLIC  
 SHORELINE PARK AND  
 SHORELINE ACCESS  
 NORTH OF PAUOA BAY**  
 MAUNA LANI RESORT  
 South Kohala, Hawaii



**Figure II-9**  
**PROPOSED PUBLIC**  
**SHORELINE ACCESS**  
**AT HONOKAAOPE BAY**  
 MAUNA LANI RESORT  
 South Kahoala, Hawaii

 NORTH  
 0 50 100 150  
 FEET

**CONCEPT PLAN**

aesthetic appeal. It was, and still is, considered a site ideally suited to the development of a luxury class hotel. During preliminary discussions with both the State Land Use Commission and its consultants and the County of Hawaii, as part of the 1974 5-year boundary review process, a possible Phase I boundary for the proposed resort was discussed. As a result of these discussions, a boundary was agreed to that precluded a hotel on that site. Following approval of the LUC boundary, a County rezoning application was filed and approved that located a hotel site in a more northeastern location on Honoka'ope Bay. Characterized by flatter topography and the absence of frontage onto a sandy beach, the zoned hotel site is considered far inferior to the original desired site as the location for a luxury resort hotel, and it is proposed that the hotel site be relocated to a position further west along the southern side of the bay.

The Phase I plan has evolved through the years into a more comprehensive plan which incorporates additional elements into the original plan. Earlier, the proposed Honoka'ope Bay hotel site was at the periphery of the resort. Now, as development is occurring, a total plan for the resort property has been worked out; the siting of the Honoka'ope Bay hotel has become an integral part of the revised master plan. Together, the various amenities planned for the southern portion of the resort, including the resited hotel, the new golf holes, public beach access, parking and comfort stations, constitute a unified vital portion of the expanded master plan.

The proposed southwestern hotel site, more than any other available site within the resort, is thought to be best suited to the development of a luxury class hotel. Mauna Lani Resort, Inc. wishes to maintain its viability as a premier destination resort. To do so, it must continue to offer visitors choices that are equal in quality to that of the existing Mauna Lani Bay Hotel. Allowing a luxury class hotel to be built at its now proposed location is a key factor in fulfilling Mauna Lani Resort, Inc.'s overall goal of developing a world-class resort.

### **3.2.2.7 Residential Development**

The number of parcels, as well as the total acreage planned for resort/residential development, will increase from the existing master plan to the proposed revised master plan. However, the total number of residential units ultimately constructed will not exceed the total 3,182 ceiling allowed by the County for the existing master plan. Similarly, while the total hotel acreage will also increase, the existing 3,000 hotel room limit also will not be exceeded. This translates into a decrease in overall density of resort development. The market analysis summarized in the following section of this report indicates that lower densities are necessary to achieve the distinctive market image sought.

Together with the construction of a second golf course, the lower density of residential unit development would permit the development of higher quality units on better sites. Given their slightly higher expected sales prices, however, units under the revised plan are anticipated to be sold at a somewhat more gradual rate than those sold under the existing master plan.

### **3.2.2.8 Support Facilities**

Support facilities north and mauka of the existing resort will continue in their current location. These include the sewage treatment plant, the resort offices, warehousing, storage and contractors' yards. Future service/light industrial uses associated with resort expansion will also be located in this area. These might include short-term uses such as construction sheds and long-term uses such as additional warehouses and maintenance facilities.

### 3.2.2.9 Other Resort Amenities

The proposed master plan provides sites for commercial, recreational and other miscellaneous uses; these enable the resort to be a self-contained entity. Acreage for these uses in the revised master plan have increased from that in the existing master plan; but due to their lower density, the magnitude of development would not be increased.

### 3.2.2.10 Proposed Land Use

The approximate acreage of different land uses on the Resort's fee land for the existing and proposed master plans are as follows:

Type of Use	Sites: Number of Acres		
	Existing Plan	Revised Plan	Net Increase
Resort Hotel	124.2	144.5	20.3
Resort Residential	318.2	458.5	140.3
Commercial	27.1	40.9	13.8
Resort Support Facilities	5.8	110.9	105.1
Open/Road	57.0	173.2	116.2
Golf Course	205.0	370.0*	165.0*
Golf Course Reserve	---	86.3	86.3
Historic Preserve	23.7	23.7	---
Park	3.2	3.2	---
Recreation, Misc., Other	14.3	21.3	7.0
<b>TOTAL</b>	<b>778.5</b>	<b>1,432.5</b>	<b>654.0</b>

\* An additional 23 acres of golf course are proposed in the State leased land on the Resort's northern boundary.

### 3.2.2.11 Need for District Boundary Changes and Conservation District Use Request

To accommodate the revised master plan as described in previous sections of this report, Mauna Lani Resort, Inc. is requesting the State Land Use Commission to amend the State Land District Boundaries as shown in Figure II-6. The redistricting involves changes in Land Use District for 654 acres, 486 acres from Agricultural to Urban and 168 acres from Conservation to Urban. In South Kohala, the original 1964 land use district boundaries ran along the King's Trail through lava lands. The areas seaward of the trail were designated Conservation, as they were undeveloped and scenic. Gradually, these areas were planned for resort uses and brought into the Urban district at Puako, Mauna Lani Resort, and Waikoloa. The southern section of the Honoka'ope Bay area is the only section between Mauna Lani Resort and Waikoloa that remains in the Conservation district even though the entire area is designated for low density urban resort uses in the County General Plan. Over the years, there has been no public access to or use of this area. The current plan will ensure that the public will have access to the scenic shoreline at Honoka'ope Bay. There is much Conservation district scenic shoreline outside this resort region which will likely remain in the district well into the future, both to the south and north of the coastal resorts in South Kohala.

Mauna Lani Resort, Inc. has also submitted a Conservation District Use Application (CDUA) to the State Board of Land and Natural Resources to allow development of two golf holes and a public shoreline park on land that it leases from the State of Hawaii. After review of both requests by the respective authorities, it has been determined that the preparation of an Environmental Impact Statement is required pursuant to Chapter 343 of the HRS.

### **3.3 NEED FOR THE PROJECT: MARKET DEMAND STUDY**

#### **3.3.1 Introduction**

A market study prepared by Ming Chew Associates analyzes the demand for resort facilities at the Mauna Lani Resort. Assumptions and conclusions of the market study were used in refining the conceptual land use plan for the resort. The resulting revised master plan provides the basis for the analysis of the proposed project's impacts.

The general approach of the study was to identify the primary markets that could be served by the Mauna Lani Resort. Economic trends were assessed and projections made of the likely visitor arrivals for both the State and County of Hawai'i. These projections in turn were converted into demand estimates for total transient accommodations, hotel rooms, multifamily units, single-family units and houselots, golf course play, commercial land use and resort support facilities. The demand estimates were then compared with existing and planned supply to arrive at conclusions on the marketability of facilities at Mauna Lani Resort. Table II-3.1 summarizes these conclusions. The estimates represent cumulative demand in excess of the existing February 1984 inventory at the resort.

#### **3.3.2 Hawai'i County Visitor Industry**

Over the past 15 years, the number of visitors to the neighbor islands in general has increased at a faster rate than the number to the State of Hawai'i as a whole. The proportion of westbound neighbor island visitors intending to visit the Big Island peaked at almost 40 percent in 1971, before beginning a decline to 21.5 percent in 1982 (see Table II-3.2). In 1983, the proportion increased slightly to 21.7 percent. Ming Chew Associates anticipates that the proportion of westbound visitors to Hawai'i County will continue the rebound and increase to 32 percent by 2000. This assessment reflects increased promotion of neighbor island destinations, preference for neighbor island amenities by repeat visitors to the State, the recent addition of new visitor facilities on the Island of Hawai'i, and the availability of direct flights from the U.S. Mainland to Keahole Airport in Kona. An increasing proportion of eastbound visitors is also expected to visit Hawai'i County.

#### **3.3.3 Market Analysis for Transient Accommodations**

With the completion of the Sheraton Royal Waikoloa Hotel, the share of Big Island transient accommodations outside Kona and Hilo (mostly on the Kohala Coast) increased sizeably. By February 1983, with the opening of the Mauna Lani Bay Hotel, the proportion of the island's visitor units located on the Kohala Coast began to approach that in Hilo, and by February 1984, the number of transient accommodation units did indeed exceed the number in Hilo for the first time.

The Kohala Coast is just beginning to be fully recognized as a major destination resort region, despite the long-time presence of the world renown Mauna Kea Beach Hotel. Ming Chew Associates expects the region to continue to undergo substantial resort development over the remainder of the century.

Table II-3.1  
 Projected Marketability<sup>(1)</sup>  
 Mauna Lani Resort  
 1990 - 2000

	Projected Marketability		
	1990	1995	2000
HOTEL ROOMS	400	700	900-1,100
LOW-RISE MULTIFAMILY UNITS			
Higher-Quality	100	200	400-500
Mid-Quality	150	300	500-600
Lower-Quality	150	300	500-700
Total	400	800	1,400-1,800
HOUSELOTS			
Higher-Quality	5	10	10-15
Mid-Quality	8	15	20-25
Lower-Quality	12	25	40-50
Total	25	50	70-90
HOUSE AND LOT			
Higher-Quality	5	10	10-15
Mid-Quality	8	15	20-25
Lower-Quality	12	25	40-50
Total	25	50	70-90
TOTAL (ROOMS/UNITS/LOTS)	<u>850</u>	<u>1,600</u>	<u>2,440-3,080</u>
GOLF ROUNDS, ANNUAL	51,000	92,000	128,000-158,000
COMMERCIAL, ACRES	5	10	16-21
AUXILIARY SERVICES, ACRES	15	30	45-55

(1) Cumulative demand in excess of February 1984 inventory.

Source: Ming Chew Associates

Table II-3.2

Visitor Estimates and Forecasts  
County of Hawaii  
1970 - 2000

Year	Westbound		Eastbound(1)		Both Directions(2)
	Percent of State	Estimated Visitors	Percent of State	Estimated Visitors	Estimated Visitors
1970	37.1	511,000	--	--	--
1971	39.8	569,000	--	--	--
1972	39.2	699,000	--	--	--
1973	36.7	759,000	--	--	--
1974	36.8	804,000	--	--	--
1975	37.3	823,000	--	--	--
1976	34.1	870,000	--	--	--
1977	32.2	890,000	18	118,000	1,008,000
1978	31.5	955,000	19	121,000	1,076,000
1979	28.5	895,000	19	156,000	1,051,000
1980	25.9	789,000	16	142,000	931,000
1981	22.7	675,000	17	163,000	838,000
1982	21.5	704,000	18	174,000	878,000
1983	21.7	739,000	18	171,000	910,000
<b>Forecast:</b>					
1985	24.0	948,000	21	220,000	1,168,000
1990	27.0	1,242,000	23	320,000	1,562,000
1995	30.0	1,500,000	25	425,000	1,925,000
2000	32.0	1,664,000	27	486,000	2,150,000

(1) Estimates based upon surveys of Japanese visitors and the assumption that ten percent of other Eastbound visitors visit Hawaii County. Estimated to be 18 percent in 1983.

(2) Westbound only until 1977.

Source: Hawaii Visitors Bureau, Annual Research Reports and Japanese Visitor Opinion Surveys; Ming Chew Associates.



Table II-3.3 shows Ming Chew Associates' projections of occupied room and total room demand by resort region for the Island of Hawai'i. In Hilo, the total demand for transient accommodations is projected to increase from 800 units in 1983 to 1,900 units in 2000; in Kona from 3,000 to 9,800; and in North and South Kohala from 1,100 to 7,900 units. However, when taking existing supply into consideration, Kohala is projected to need 6,600 additional units while Kona would need only 5,300 additional units by 2000. By 1985, demand is projected to exceed supply by about 600 units in Kohala, while Kona and Hilo appear to be adequately supplied until some time after 1985.

It is Ming Chew Associates' belief that most of the demand in North and South Kohala will be satisfied within the Waikoloa Beach Resort, Mauna Lani Resort and the lands being developed by Mauna Kea Properties. Due to the lack of other facilities outside the coastal area, Ming Chew Associates estimates that 70 to 90 percent of the projected new demand in South Kohala would likely be accommodated at these three resorts.

Currently, Mauna Lani Resort accounts for 30 percent of the accommodations in North and South Kohala. It is estimated that the resort could capture about 25 percent of the projected new transient accommodations demand for Kohala through 1995. This capture rate could increase to 25 to 30 percent by 2000, given the relative abundance of beachfront and oceanfront sites in Mauna Lani and the diminishing number of comparable sites elsewhere in the resort region. Thus, demand for transient units at Mauna Lani is estimated by Ming Chew Associates to be 600 units by 1990, 1,100 units by 1995, and 1,600 to 2,000 units by 2000. Of the total transient units, 400 are projected to be supplied by new hotels at Mauna Lani Resort in 1990, 700 in 1995 and 900 to 1,100 in 2000. The remaining units in transient use will be in multi-family developments.

Most transient accommodations inventory in the Kohala Coast Resort region is in the luxury or super-luxury category. Much of future product marketing is expected to be directed toward similar market segments. Such action would tend to expand the basic demand for luxury and super-luxury accommodations, according to the Ming Chew Associates analysis, which anticipates the next hotel at Mauna Lani to be in the same super-luxury category as the Mauna Lani Bay Hotel.

#### **3.3.4 Market Analysis for Resort Multifamily Units**

Applying its estimates of demand for the total number of transient accommodations and hotel units at Mauna Lani, Ming Chew Associates derives the projected number of multifamily units in transient use in the years 1990, 1995 and 2000. It estimates that half of the multifamily units will be used as transient accommodations. Thus, the total unit demand for additional multifamily units at Mauna Lani is forecast to be 400 units in 1990, 800 in 1995 and 1,400 to 1,800 in 2000 (see Table II-3.4).

Projections of achievable prices for resort multifamily units at Mauna Lani are based largely on prices achieved for properties in the three Kohala Coast resorts. Also taken into account were factors such as the high quality development theme for Mauna Lani, the variety of development sites, the quantity and diversity of existing and planned resort activities, and overall planning flexibility. Demand estimates have been divided into three categories of relative quality, labeled higher-quality, mid-quality and lower-quality. The existing Mauna Lani Terrace project is considered mid-quality within Ming Chew Associates' frame of reference. Table II-3.5 shows the projected demand for multifamily units delineated by relative quality. Each level of quality is characterized by average unit price, unit size and average density (number of units per acre).

Table II-3.3

Projection of Transient  
Accommodation Demand by Resort Region  
County of Hawaii  
1983 - 2000

	<u>Hilo</u>	<u>Kona</u>	<u>Kohala</u>	<u>Other</u>	<u>Total County</u>
<b><u>Occupied Units:</u></b>					
1983	579	2,122	764	44	3,509
1985	700	2,800	1,400	100	5,000
1990	1,000	4,200	2,500	300	8,000
1995	1,100	5,700	4,100	500	11,400
2000	1,300	6,900	5,500	900	14,600
<b><u>Estimated Total Demand at 70% Occupancy:</u></b>					
1983	800	3,000	1,100	100	5,000
1985	1,000	4,000	2,000	200	7,200
1990	1,400	6,000	3,600	400	11,400
1995	1,600	8,100	5,900	700	16,300
2000	1,900	9,800	7,900	1,300	20,900
<b>Visitor Plant Inventory as of February 1984:</b>	1,194	4,448	1,422	85	7,149

Source: Hawaii Visitors Bureau, Visitor Plant Inventory, February, 1984; Ming Chew Associates.

Table II-3.4

Forecast of Hotel and Multifamily Unit Demand  
Mauna Lani Resort  
1990 - 2000

Year	Projected Transient Accommodations Demand			MF Units For Other Uses	Total MF Units For Trans. Accom. and Other Uses
	Total(1)	Hotel Units(2)	MF Units		
1990	600	400	200	200	400
1995	1,100	700	400	400	800
2000	1,600- 2,000	900- 1,100	700- 900	700- 900	1,400- 1,800

- (1) Estimated to be 25 percent of North and South Kohala transient accommodations demand through 1995, and then 25 to 30 percent in the year 2000.
- (2) Estimated to be 30 percent of North and South Kohala hotel demand through 1995, and then 30 to 35 percent in the year 2000.

Source: Ming Chew Associates

Table II-3.5

Forecast of Multifamily Demand  
Mauna Lani Resort  
1990 - 2000

	1990			
	Higher-Quality	Mid-Quality	Lower-Quality	Total
Net Unit Demand <sup>(1)</sup>	100	150	150	400
Average Unit Price, 1984 \$	\$550,000	\$450,000	\$350,000	
Average Unit Size, Sq. Ft.	2,200	1,800	1,400	
Average Density, Units/Acre	4	5	6	

	1995			
	Higher-Quality	Mid-Quality	Lower-Quality	Total
Net Unit Demand <sup>(1)</sup>	200	300	300	800
Average Unit Price, 1984 \$	\$550,000	\$450,000	\$350,000	
Average Unit Size, Sq. Ft.	2,200	1,800	1,400	
Average Density, Units/Acre	4	5	6	

	2000			
	Higher-Quality	Mid-Quality	Lower-Quality	Total
Net Unit Demand <sup>(1)</sup>	400-500	500-600	500-700	1,400-1,800
Average Unit Price, 1984 \$	\$550,000	\$450,000	\$350,000	
Average Unit Size, Sq. Ft.	2,200	1,800	1,400	
Average Density, Units/Acre	4	5	6	

(1) This figure represents the amount by which projected demand exceeds the February 1984 actual supply.

Source: Ming Chew Associates

### **3.3.5 Market Analysis for Resort Subdivision Houselots and House and Lots**

The Ming Chew study anticipates demand for both houselots and house and lot packages within the Mauna Lani Resort to be used as vacation homes, permanent residences or investment properties. Its demand analysis is based on the experience of the Mauna Kea Resort, the only Kohala Coast resort with houselots and house and lots developed to date, and on a study that evaluated the marketability of The Villas (low-rise, low-density condominium units) and The Fairways at Mauna Kea North (detached homes built on house lots).

Ming Chew Associates estimates that the demand for resort subdivision houselots would be approximately 7 percent of the multifamily unit demand in 1990, decreasing to 6 percent in 1995 and to 5 percent in 2000. This is a demand of 25, 50, and 70 to 90 houselots, respectively. Further, it is anticipated that buyers will seek constructed detached houses and lots in the same proportion as those seeking lots only, that is 25, 50, and 70 to 90 house and lots in 1990, 1995, and 2000.

As with the multifamily unit demand, the houselot and house and lot demand is divided into three categories of relative quality: higher quality, mid-quality, and lower quality, each characterized by density and price. See Table II-3.6 for the forecast of subdivision houselot demand at Mauna Lani Resort, and Table II-3.7 for the forecast of house and lot demand.

### **3.3.6 Market Analysis for Golf Course**

At the time plans for the Mauna Lani Resort were originally formulated over ten years ago, it was believed that an 18-hole golf course would adequately serve the entire resort complex. However, based on subsequent experience at Mauna Lani Resort and at the other Kohala Coast resorts, it has become evident that the demand for golf play greatly exceeds initial projections. With only a fraction of the resort's planned units developed to date, the desirable limit of 175 rounds of golf per day is already exceeded during peak periods of play. A record 228 rounds were played on February 16, 1984, and the daily average for the year ending June 1984 was 104 rounds a day.

The existing championship Francis I'i Brown Golf Course provides a unique playing experience characterized by the leisurely pace of play, course conditions and the ocean vistas facing the player. As development occurs, Mauna Lani Resort hopes to continue providing opportunities for such experiences on golf facilities that meet the luxury standards established with the Francis I'i Brown Golf Course.

Ming Chew Associates anticipates that, as occupancy at the Mauna Lani Bay Hotel increases, golf play at the hotel could approach the same level of 145 rounds per room per year projected for the Mauna Kea Beach Hotel and Golf Course. At one-third less golf activity, it estimates that subsequent hotels developed at Mauna Lani Resort would generate 100 annual rounds per room. Also, multifamily units and detached homes are expected to generate golf activity, but probably not as much as would the hotels.

The total projected additional golf demand is 51,000 annual rounds in 1990, 92,000 in 1995 and 128,000 in 2000. This amount of activity could not be accommodated at the existing golf courses in the Kohala Coast Resort region since these courses are estimated to be at their desired maximum capacities or close to them. Further, it is estimated that the Francis I'i Brown Golf Course will reach its desired maximum capacity by the time the existing Mauna Lani Bay Hotel and Mauna Lani Terrace, and the Mauna Lani Point (now under construction) reach a stabilized level of occupancy.

Table II-3.6

Forecast of Subdivision Houselot Demand  
Mauna Lani Resort  
1990 - 2000

	1990			
	Higher-Quality	Mid-Quality	Lower-Quality	Total
Houselot Demand	5	8	12	25
Average Lot Price, 1984 \$	\$450,000+	\$350,000	\$250,000	
Average Density, Lots/Acre	0.5 or less	1	2	
	1995			
	Higher-Quality	Mid-Quality	Lower-Quality	Total
Houselot Demand	10	15	25	50
Average Lot Price, 1984 \$	\$450,000+	\$350,000	\$250,000	
Average Density, Lots/Acre	0.5 or less	1	2	
	2000			
	Higher-Quality	Mid-Quality	Lower-Quality	Total
Houselot Demand	10-15	20-25	40-50	70-90
Average Lot Price, 1984 \$	\$450,000+	\$350,000	\$250,000	
Average Density, Lots/Acre	0.5 or less	1	2	

Source: Ming Chew Associates

Table II-3.7

Forecast of House and Lot Demand  
Mauna Lani Resort  
1990 - 2000

	1990			Total
	Higher-Quality	Mid-Quality	Lower-Quality	
House and Lot Demand	5	8	12	25
Average Unit Price, 1984 \$	\$1,000,000+	\$800,000	\$600,000	
Average Density, Units/Acre	0.5 or less	1	2	

	1995			Total
	Higher-Quality	Mid-Quality	Lower-Quality	
House and Lot Demand	10	15	25	50
Average Unit Price, 1984 \$	\$1,000,000+	\$800,000	\$600,000	
Average Density, Units/Acre	0.5 or less	1	2	

	2000			Total
	Higher-Quality	Mid-Quality	Lower-Quality	
House and Lot Demand	10-15	20-25	40-50	70-90
Average Unit Price, 1984 \$	\$1,000,000+	\$800,000	\$600,000	
Average Density, Units/Acre	0.5 or less	1	2	

Source: Ming Chew Associates

Thus, in the opinion of Ming Chew Associates, to support the golf demand generated by planned facilities at Mauna Lani Resort, a second 18-hole championship golf course within the resort will be needed by the time the next hotel begins operations. The second golf course will be at capacity by 1990. By that time, plans should be underway for a third golf course, which is projected to reach capacity by 1995. At that later date, plans should be underway for a fourth course. Ming Chew Associates recommends that provisions be made to "efficiently link subsequent golf courses to avoid the extensive plan revisions now needed to integrate the next golf course with the existing clubhouse." In short, it is recommended that adequate space within the Urban district be set aside now to permit future golf holes to tie in with the existing clubhouse.

### **3.3.7 Market Analysis for Commercial Land Use**

To derive commercial land use demand, daily visitor expenditures at Mauna Lani Resort (excluding expenditures at the hotels) were estimated, then converted to annual potential retail sales, which in turn were converted to commercial sales space demand using an estimated ratio of \$350 of annual sales per square foot of space. Based on an analysis of smaller, high quality centers, Ming Chew Associates estimates that a land use conversion factor of 5,000 square feet of leasable area per acre would permit the type of ambience desired at Mauna Lani Resort. Applying these factors results in estimated commercial land use demand of 5 acres in 1990, 10 acres in 1995 and 16 to 21 acres in 2000. These marketability estimates are considered to be conservative. Demands based on expenditures by full-time residents were not included in the Ming Chew projections, and the potential demand for office space has not been estimated. If these two items were included, Ming Chew Associates believes that slight increments of commercial land use demand could be added to the above projections.

### **3.3.8 Demand for Resort Support Facilities**

Support facilities at Mauna Lani Resort are currently accommodated on lands in the State Agricultural district, by special permit. As the resort expands, demand for ancillary support areas is expected to increase. Logically, these areas would be removed from the resort core so as not to disturb the resort ambience at Mauna Lani.

Based on projected demand for hotel and residential units, Ming Chew Associates estimates that auxilliary services land use demand would be 15 acres in 1990, 30 acres in 1995 and 45 to 55 acres in 2000. Cumulatively, including existing auxilliary land uses, 40 acres would be needed by 1990, 55 acres by 1995 and 70 to 80 acres by 2000.

## **3.4 NUMBER OF UNITS AND PROJECT SCHEDULE**

It is anticipated that the number of hotel rooms and residential units built according to the proposed expanded master plan will be close to the numbers projected by Ming Chew Associates in Table II-3.1 at the beginning of the previous section of this report. The ultimate number constructed will depend on future market demand; however, the proposed plan can accommodate up to the 3,000 hotel rooms and 3,182 residential units permitted by Hawai'i County for Mauna Lani Resort.

Within the first five-year period, it is expected that construction of most of the infrastructure, a golf course, a hotel, a substantial number of residential units, and associated resort amenities will be complete. Construction of the first phase of Mauna Lani Point has begun and under design are the tennis club, which is expected to open by the end of 1985, and the beach club, scheduled for completion in 1986.



Detailed work on the golf course expansion will be initiated as soon as necessary land use approvals have been obtained from the State and County; construction would begin immediately thereafter. The proposed public beach park north of Hotel Site 2/3 would be constructed at the same time as the golf course.

### 3.5 COMPARISON OF EXISTING AND REVISED MASTER PLANS

A quantitative comparison of the existing master plan and the proposed revised master plan was derived by Peat, Marwick, Mitchell & Company, using market assumptions contained in the Ming Chew Associates market study. The remainder of this section summarizes the differences between the two plans.

#### 3.5.1 Potential Maximum Master Planned Units

As stated previously, the potential maximum number of hotel and residential units to be developed under either the existing or the revised master plan would be within the County-approved limits of 3,000 hotel units and 3,182 residential units. Due, however, to the availability of more land area and the suitability of the revised master plan for single-family units, a slightly higher proportion of the residential units would be single-family rather than multifamily under the revised master plan, as shown below:

Master Planned Units at Completion

	<u>Existing Master Plan</u>		<u>Revised Master Plan</u>	
	<u>Units</u>	<u>Percentage</u>	<u>Units</u>	<u>Percentage</u>
Hotel units	3,000	48.5	3,000	48.5
Multifamily	3,032	49.0	2,942	47.6
Single-family	<u>150</u>	<u>2.5</u>	<u>240</u>	<u>3.9</u>
<b>TOTAL</b>	<u><u>6,182</u></u>	<u><u>100.0</u></u>	<u><u>6,182</u></u>	<u><u>100.0</u></u>

About 240 single-family units have the potential to be developed under the revised master plan, compared to only 150 units under the existing master plan.

Although a total of 6,182 units could be developed under either plan, this number represents the maximum allowable developable units. Thus, it probably exceeds the number of units that would actually be developed. It is expected, however, that the ultimate number of units developed under the existing master plan could exceed that under the proposed master plan due to the need to sell more units to receive the same return on investment.

#### 3.5.2 Average Unit Density

The calculation of average unit densities is based on the potential maximum number of units under both master plans. The acreage of the revised plan is almost double that of the existing master plan. Thus the overall resort density is expected to decrease by almost one-half, from 7.9 units per acre under the existing plan to 4.3 units per acre under the revised master plan (see Exhibit I-A of Appendix B). A large part of this is due to the additional golf holes, but the density in residential areas is also projected to decline from about 14 units per acre to slightly over 10 units per acre. This reflects the desire of MLR to provide higher quality development in keeping with perceived market demands.

### 3.5.3 Quality of Resort Projects

The relative quality of the various sites and projects that would be developed under both the existing and revised master plan were estimated using the following criteria:

- o ocean or golf course frontage
- o views available to the project site
- o proximity to hotels or recreational amenities
- o other physical site characteristics

Individual sites were graded and are summarized by type of development (see Exhibit I-B in Appendix B). A larger percentage of units overall were graded high or medium quality under the revised master plan, almost 85 percent as compared to 74 percent under the existing master plan. Peat, Marwick states that "this is mainly due to the creation of 'greenbelt' golf course and preserve areas or other amenities which would contribute to the scenic and economic value of the individual project sites." (Peat, Marwick, Mitchell & Co., 1985:I-4)

### 3.5.4 Projected Absorption of Resort Units

The market absorption of resort units is projected to occur at a faster rate overall under the existing master plan (see Table II-3.8). This is due to the greater number of high and medium-quality units in the revised master plan; these are higher priced, lower density units that can be expected to be absorbed more slowly.

### 3.5.5 Projected Commercial Space Demand

Commercial space demand for the existing master plan is projected based on assumptions used by Ming Chew Associates in its market study and on estimates of commercial space requirements for the visitor and resident population at the resort. Assumptions are based on the number of transient units, an estimate of average daily visitors and average annual expenditures, and retail space demand that is derived from the annual expenditures and desired sales volume. See Exhibit I-D of Appendix B for the projected commercial space demand under the existing master plan. The demand is somewhat higher than that projected by Ming Chew Associates for the revised master plan:

	Demand for Commercial Space (square feet)			At Potential Maximum Development
	1990	1995	2000	
Existing Master Plan (1)	28,500	54,700	102,900	198,500
Revised Master Plan (2)	25,000	50,000	80,000- 10,500	

- (1) Peat, Marwick, Mitchell & Co.  
(2) Ming Chew Associates

Table II-3.8

MAUNA LANI RESORT

Projected Market Absorption of Resort Units  
at Mauna Lani Resort

1990 to Potential Maximum

	1990		1995		2000		At potential maximum development (3)	
	Existing master plan(1)	Revised master plan(2)	Existing master plan(1)	Revised master plan(2)	Existing master plan(1)	Revised master plan(2)	Existing master plan	Revised master plan
Hotel rooms	400	400	700	700	1,000	1,000	3,000	3,000
Multifamily units:								
High quality	100	100	200	200	400	450	840	1,230
Medium quality	150	150	300	300	500	550	578	865
Low quality	200	150	400	300	950	600	1,614	847
Total multifamily units	450	400	900	800	1,850	1,600	3,032	2,942
House lots:								
High quality	5	5	10	10	12	12	21	22
Medium quality	15	8	30	15	43	23	54	35
Low quality	-	12	-	25	-	45	-	63
Total house lots	20	25	40	50	55	80	75	120
House and lots:								
High quality	5	5	10	10	12	12	21	23
Medium quality	15	8	30	15	43	23	54	35
Low quality	-	12	-	25	-	45	-	62
Total house and lots	20	25	40	50	55	80	75	120
Total	890	850	1,680	1,600	2,960	2,760	6,182	6,182
Difference		40		80		200		

(1) Estimated by Peat, Marwick, Mitchell & Co. based on the market absorption of the revised master plan as projected by Ming Chew & Associates, adjusted for site characteristics, average density and estimated sales prices of units under the existing master plan.

(2) Ming Chew & Associates, "Market Analysis for Mauna Lani Resort," November 1984.

(3) Based on the quality of sites available to be developed under the two master plans as estimated by Mauna Lani Resort, Inc. Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

Source: Peat, Marwick, Mitchell & Co.

## CHAPTER III

### ALTERNATIVES TO THE PROPOSED ACTION

#### 1. PROPOSED ACTION: REVISED EXPANDED MASTER PLAN

The proposed action has been described in detail in Chapter II of this report. Essentially, Mauna Lani Resort, Inc. proposes to adapt its existing master plan for resort development to current market demands. These differ from those anticipated when the existing master plan was formulated over ten years ago. Mauna Lani Resort does not seek to increase the number of hotel and residential units approved by the County. Nor does it seek to change the overall character of its planned low density, low profile self-contained resort/residential community. Rather, Mauna Lani Resort, Inc. seeks to enhance its growing reputation as a resort that is centered around golf. To this end, Mauna Lani Resort, Inc. proposes to revise its master plan to accommodate the amenities described in Chapter II.

#### 2. "NO-ACTION" ALTERNATIVE: EXISTING MASTER PLAN

The "no-action" alternative entails development according to the existing master plan within the 778.5 acres of currently classified Urban District land. It means limiting the number of golf holes to the current 18 within the Francis I'i Brown Golf Course and the continued use of special permits for support activities at the resort. Although development of the Mauna Lani Resort along such lines is considered marginally feasible, it is not responsive to changing market demands, does not allow the resort to retain its golf character, and does not support Mauna Lani Resort's goal of providing first class facilities in a luxury resort of world renown. As stated earlier, the existing golf course is operating at capacity during peak seasons. Also, development according to the existing master plan ignores the County's understanding that Mauna Lani Resort would seek urbanization of support facilities sites. The existing master plan is less flexible than that now proposed.

Without the additional Urban land needed for the proposed revised master plan, Mauna Lani's "no-action" alternative would be to proceed with development within the context of the existing master plan, but probably would not be able to market the desired high-quality types of hotel and residential units. Because development under the existing plan would contain less golf and open space than in the revised plan, the character of the resort under the two plans also would be different.

#### 3. ALTERNATIVES CONSIDERED AND REJECTED AS INFEASIBLE

##### 3.1 ALTERNATIVE ACTION 1

This alternative entails developing a second golf course within the existing 778.5 acres of Urban District land and constructing up to the maximum number of hotel and residential units allowed by the County on the remaining land. Such a plan does not provide enough ocean frontage to construct the number of planned ocean-fronting hotels as well as ocean-fronting golf holes; the latter are necessary if the new course is to be of the same quality as the existing golf course.

Higher density zoning would need to be sought if the maximum number of permitted units are to be built on the remaining land in the existing Urban District. The higher density could destroy the luxury character of the resort and reduce open spaces, contrary to the developer's goals. Again, the County's understanding that Mauna Lani Resort would seek urbanization of land on which support facilities are located would be ignored.

Higher-density luxury units may not be marketable, given the competition at similar resorts in the Kohala Coast area and lower-density development at those resorts. On the other hand, a lower-density resort with a second golf course within the existing urban area may not yield enough units to be economically feasible for Mauna Lani Resort, Inc. For these reasons, this alternative was rejected for further consideration as a viable alternative in the EIS.

### **3.2 ALTERNATIVE ACTION 2**

This alternative entails the development of other uses on the 778.5-acre Urban District site, including consolidation into larger lots or subdivision into smaller lots for individual lot owner development. The number of golf holes would be limited to the current 18 and the use of special permits for support activities would be continued.

This alternative is not compatible with Mauna Lani Resort's goal of developing a world class resort under its control. Neither is it consistent with State and County land use plans for the area.

## CHAPTER IV

### DESCRIPTION OF THE AFFECTED ENVIRONMENT AND PROBABLE ENVIRONMENTAL CONSEQUENCES

#### 1. PHYSICAL ENVIRONMENT

##### 1.1 PHYSIOGRAPHY, GEOLOGY, SOILS AND CLIMATE

###### 1.1.1 Existing Conditions

###### 1.1.1.1 Physiography

The 3,200-acre Mauna Lani Resort fee parcel is situated on the western (seaward) side of a physiographic bowl formed by four volcanoes: the Kohala Mountain (5,480 feet), Mauna Loa (13,677 feet), Mauna Kea (13,796 feet), and Hualalai (8,271 feet). It slopes gently seaward from an elevation of about 220 feet along Queen Ka'ahumanu Highway to sea level at the coastline. The overall slope of land is generally less than 10 percent and the topographic relief is a consequence of layering and buckling of successive lava flows rather than erosion. The natural topography has been modified slightly by grading and filling of sites already developed at the resort and by construction of the golf course and roadways.

###### 1.1.1.2 Geology

All of the surrounding mountains are of volcanic origin. Kohala Volcano is considered by many to be extinct, not having erupted for at least 10,000 to 15,000 years. Mauna Kea, the next oldest, has not erupted in historic times, but there is evidence that it has been active within the past 5,000 years. Hualalai last erupted during 1800-1801 and will probably erupt again at some future time; however, the probability of it becoming active in the near future is considered relatively low, and none of the more recent Hualalai flows have come within five miles of the Mauna Lani Resort site. There have been 36 historic eruptions of Mauna Loa, the last multi-phased eruption occurring in 1985. Of these, however, only the 1859 eruption flowed to the South Kohala coastline via the Hualalai-Mauna Kea saddle. This flow reached the sea just south of 'Anaeho'omalu Bay, some three miles south of the Mauna Lani Resort. Most of the more recent flows from Mauna Loa have been either to the west toward the South Kona District or to the east toward Hilo (Mullineaux and Peterson, 1974; Stearns, 1946; and MacDonald, 1970).

The Mauna Loa flows, which cover about two-thirds of the Mauna Lani Resort parcels, are all basaltic lava; they have not been weathered to any appreciable extent and have little or no soil cover. The most prominent of these flows is the prehistoric Kaniku Flow, which covers a substantial portion of the parcel south of Makaiwa Bay. It is estimated to be nearly 1,000 years old.

The only exposed lava on the site that is not from the Mauna Loa volcano is also the oldest. It consists of pahoehoe flows from the Mauna Kea volcano, that reached the sea from Makaiwa Bay on the south to at least Puako Bay on the north. The fish-ponds at Makaiwa Bay are set in these flows. The northern part of these pahoehoe flows is the only area within the resort boundaries that has an appreciable soil covering. However, the soils are alluvial, having been carried down from mauka areas by several major gulches. The soils are not the weathered remains of the pahoehoe flows.

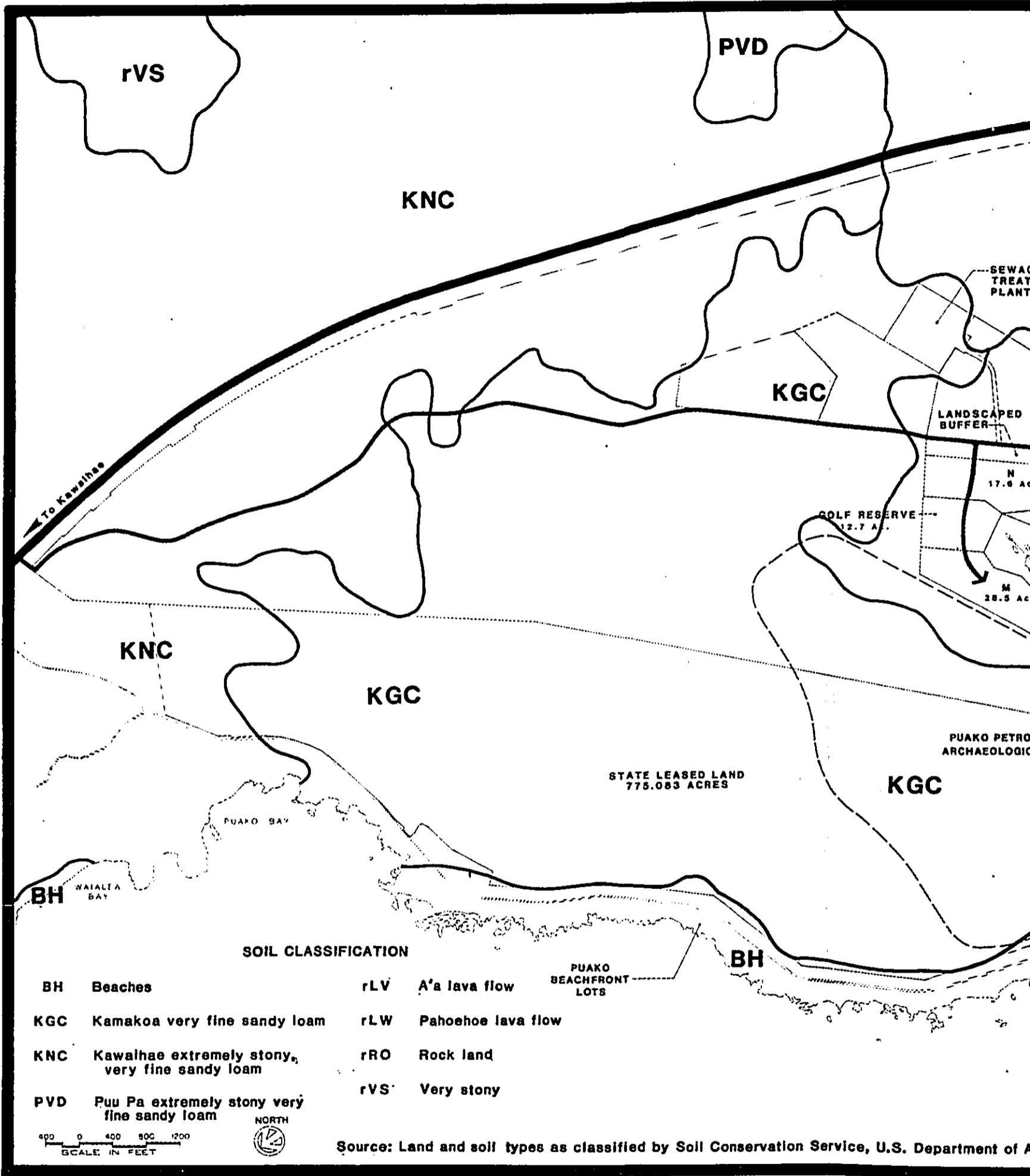
The U.S. Geological Survey (USGS) has assessed the relative risk from volcanic hazards for most areas of the Island of Hawai'i (Mullineaux and Peterson, 1974). Its classification includes 6 degrees of risk, with "A" being the lowest and "F" the highest. Because it is on the flank of Mauna Loa, the island's second most active volcano, the southern portion of the Mauna Lani Resort property is in zone "E". Mauna Kea, which has a very low probability of erupting, protects the northern portion of the Mauna Lani Resort site from Mauna Loa eruptions. As a result, that portion is in zone "B".

The fact that the zones distinguish only between differences in relative risk must be emphasized. In reality, data from the historical period indicates that the probability of flows from Mauna Loa damaging development within the Mauna Lani Resort is slight, although such an occurrence cannot be completely discounted.

### 1.1.1.3 Soils

As suggested by its geologic history, soils on the Mauna Lani Resort site have not been developed from the relatively recent lava flows. Six different soil and land types have been identified on the site by the U.S. Department of Agriculture Soil Conservation Service (SCS) (December 1973). None of the six are agriculturally significant. See Figure IV-1 for the distribution of soils on Mauna Lani lands.

- (1) A'a Lava Flows. A'a lava flows (rLV), with essentially no soil or vegetation, cover most of the southern portion of the resort site. The surfaces of all the a'a flows are masses of clinkery, hard, sharp pieces piled in tumbled heaps that are difficult to traverse on foot. It has been demonstrated that the clinkery a'a surface can be easily moved and crushed by bulldozers into a relatively smooth surface of cobbles one to four inches in size.
- (2) Pahoehoe Lava Flows. Pahoehoe lava flows (rLW), also a miscellaneous land type with meager soil covering, covers about one-sixth of the resort site, extending along the coastline between Makaiwa and Pauoa Bays and inland toward the highway. The surface of the pahoehoe lava is generally much smoother than that of the adjacent a'a, but it is also broken and pockmarked by numerous pressure domes, cracks, and lava tubes. The only soil in this land type is found in these cracks and depressions, having been transported there by wind and storm water runoff.
- (3) Rock Land. This third miscellaneous land type, rock land (rRO), consists of pahoehoe bedrock covered in places with a thin layer of transported soil. Lava outcrops are exposed over 50 to 90 percent of the surface. The little soil that is present is generally confined to holes and cracks in the bedrock. Rock Land extends over the proposed core resort expansion area and service/light industrial area north of the existing resort development.
- (4) Beach Areas. The SCS has mapped three beach areas along the resort site's shoreline. Since this had been done, aerial photographs and excursions along the coastline have pointed to additional areas of beach (BH). Sand lines the beaches continuously from Makaiwa Bay north as far as the end of Puako Beach Road. At Pauoa Bay, the sand is coarse-grained and well sorted, with a "salt and pepper" appearance, indicative of its mix of particles of marine origin and black basalt chips. Between Pauoa Bay and Nanuku Inlet, the sand is finer-grained and contains some fine, olivine grains in addition to basalt chips and shell fragments. Within Makaiwa Bay, the sand is coarse and clean, resembling the Pauoa sand in some small pockets. The sand deposit on the southern half of Honoka'ope Bay extends inland for a considerable distance over the a'a lava, apparently transported by wind.

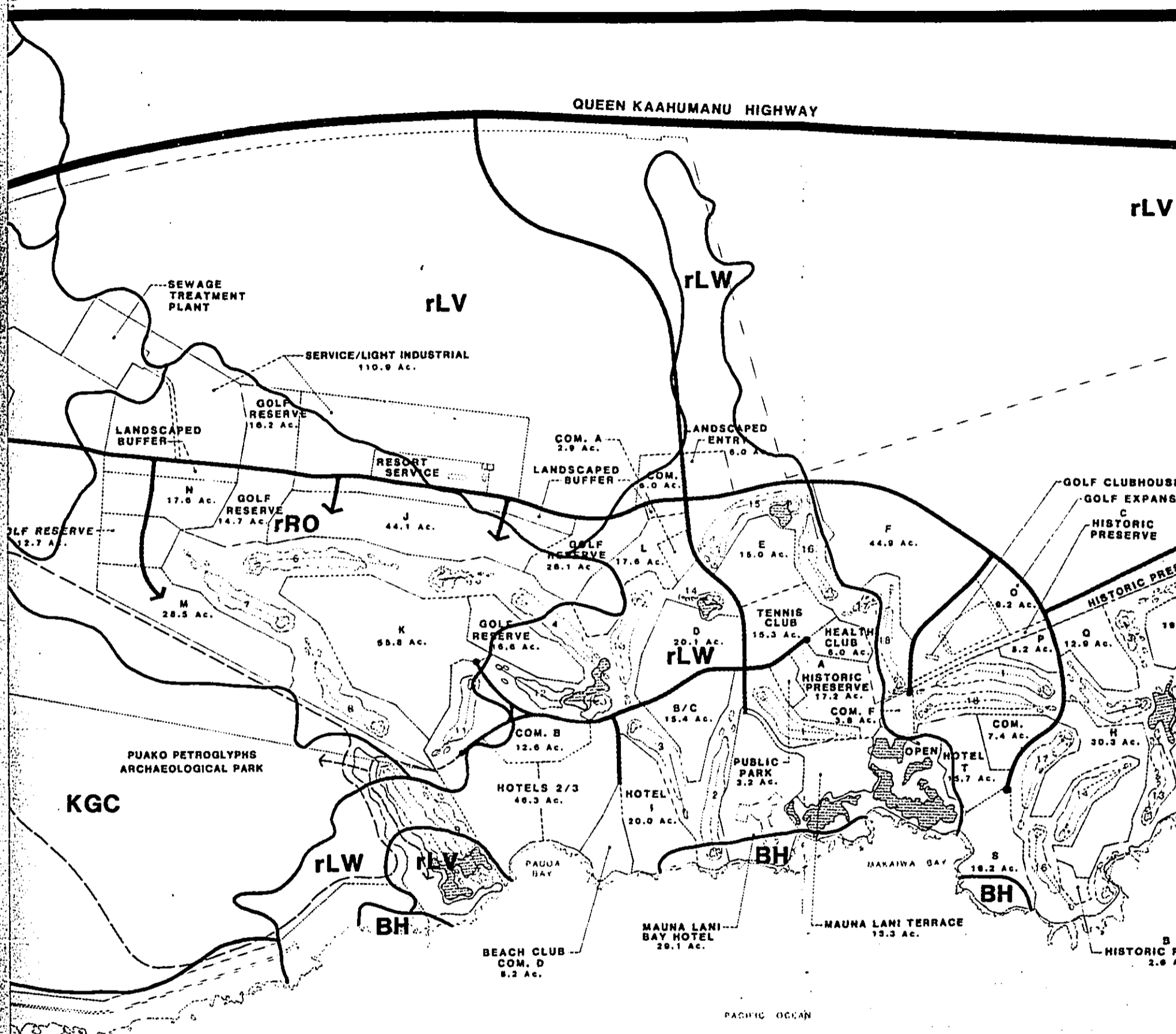


**SOIL CLASSIFICATION**

BH	Beaches	rLV	A'a lava flow
KGC	Kamakoa very fine sandy loam	rLW	Pahoehoe lava flow
KNC	Kawaihae extremely stony, very fine sandy loam	rRO	Rock land
PVD	Puu Pa extremely stony very fine sandy loam	rVS	Very stony

Source: Land and soil types as classified by Soil Conservation Service, U.S. Department of A





NOTE: Lettered labeled sites are resort residential uses.

U.S. Department of Agriculture (1973).

rLV

rLV

rLW

rRO

rLW

KGC

rLW

rLV

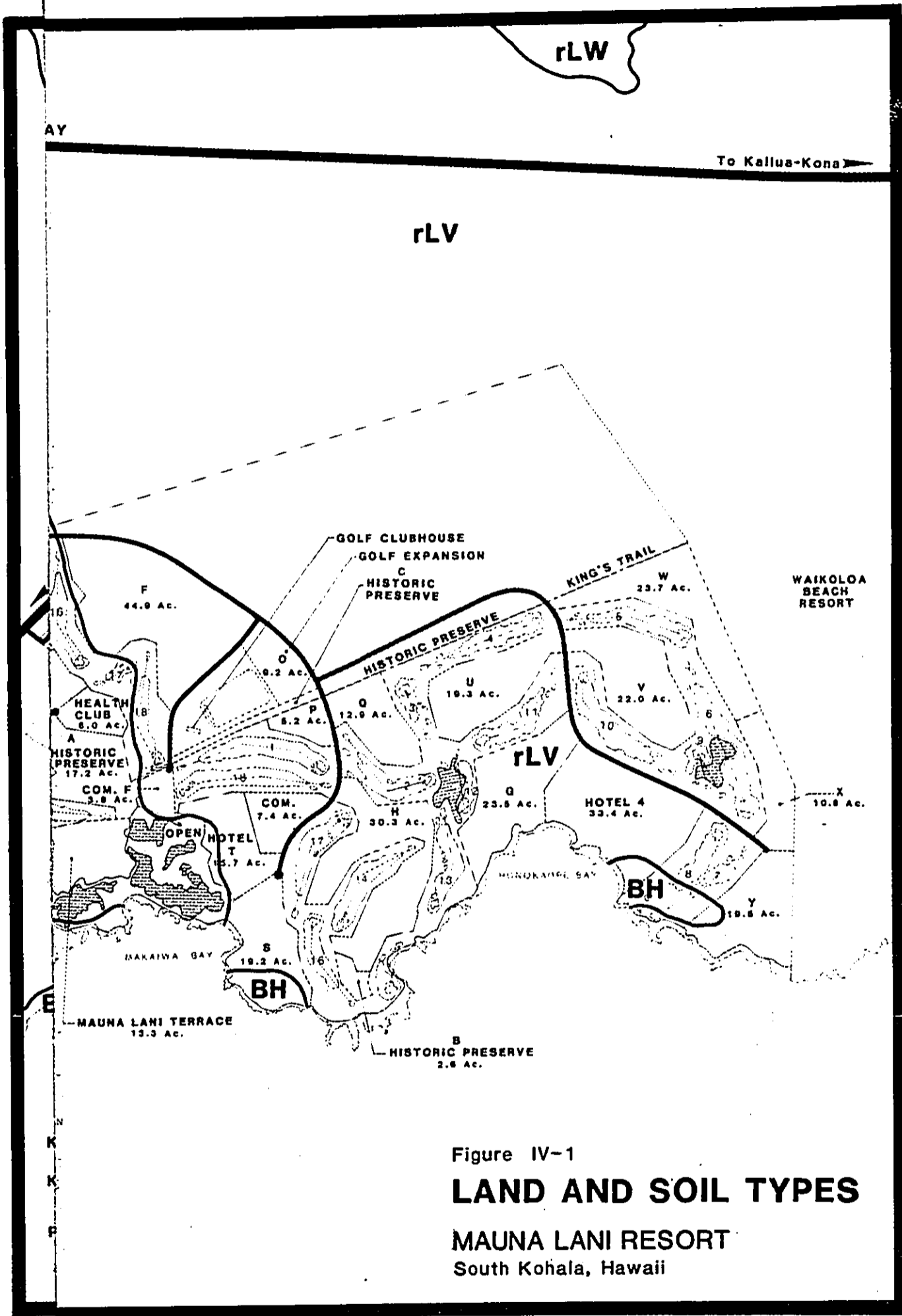
BH

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- (5) Kamakoa Very Fine Sandy Loam. The soil in the level, Puako Flats area is classified by the SCS as Kamakoa very fine, sandy loam (KGC). It is not derived from the underlying lava, but has been transported to the flat land from the slopes of Mauna Kea via gulches. The surface layer of Kamakoa soil is fine-grained and has a weak structure; the underlying layers are somewhat coarser-grained, but also have a weak structure. The lack of clay-sized particles makes both layers of this soil cohesionless. During the area's characteristically dry weather, the soil is susceptible to wind erosion; during rain storms, surface runoff can erode significant areas.

Unlike the preceding land types, the Kamakoa soil has seen some agricultural use. Sugarcane was cultivated on it from 1900 to 1913. After that, a number of cattle pens and pigpens were constructed near the several brackish dug wells. From 1924 to 1934, alfalfa was grown on a small portion of this soil. Each of these efforts was hampered by the lack of rainfall and irrigation water. The only recent agricultural use of this soil has been Mauna Lani's existing coconut/field stock nursery situated next to the sewage treatment plant. The proposed resort core expansion area does not contain large areas of Kamakoa soil. This soil type is mostly confined to part of the area proposed for service/light industrial use.

The SCS rates the agricultural suitability of Kamakoa soil as "Class III Soils have severe limitations that reduce the choice of plants, require special conservation practices, or both." (U.S. Department of Agriculture, SCS, 1973:24, 55) The University of Hawaii Land Study Bureau's master productivity rating for Kamakoa soil is "E", the lowest of their scale (Baker et al, 1965:33 and map 88).

- (6) Kawaihae Extremely Stony, Very Fine Sandy Loam. Kawaihae extremely stony, very fine sandy loam (KNC) is found in the extreme northeast corner of the Mauna Lani Resort site, but is virtually absent from the resort expansion area. It is formed from the volcanic ash deposited by eruptions of Mauna Kea. In contrast to the completely cohesionless Kamakoa soil, the Kawaihae soil is slightly plastic. However, it does have a similar, weak, granular structure, and is also highly erodible. Typically, the soil is 3 feet thick over the bedrock lava.

Past uses of this soil have been primarily as cattle range. Its SCS agricultural capability classification is "Class VII Soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland, or wildlife" (*Ibid.*, 1973:26,55). The Land Study Bureau rates it "E" (Baker et al, 1965:34 and map 88).

#### 1.1.1.4 ALISH Classification

Three classes of agriculturally important lands have been established within the Agricultural Lands of Importance to the State of Hawai'i (ALISH) system: (1) Prime Agricultural Land, (2) Unique Agricultural Land, and (3) Other Important Agricultural Land. Almost none of the land within the proposed expansion site is classified in the ALISH classification system due to its unsuitability for agricultural use. Approximately 10 acres in the sewage treatment plant area are classified as "Other Important" agricultural lands (see Figure IV-2). A very small area at the northern mauka corner of the proposed golf site in State-leased land north of Pauoa Bay is also classified as "Other Important" agricultural lands, an extension of a larger area in the State land not planned for resort use. All other land within the resort core is unclassified.

#### 1.1.1.5 Climate

Most of the resort site has a hot, arid, desert-like climate. Sunny skies prevail, and the dark, treeless terrain heats rapidly in the sun. Close to the shoreline, sea breezes serve as a moderating influence on temperature. Mean annual temperature in the area is about 78 degrees F., with relatively small daily and seasonal fluctuations. Daytime temperatures above 88 degrees F. or nighttime lows below 63 degrees F. are extremely rare. Average summer temperatures are only four degrees higher than those in winter.

The Mauna Lani Resort area is one of the driest on the island and within the State. Average annual rainfall at the Weather Bureau's Puako gage is about nine inches. Most of this rainfall typically occurs during a few storms in the October-to-April winter season, with one or two unseasonable rains at other times. Intense storms along the Kohala coast are rare.

Airflow is most commonly onshore from mid-morning until just before sunset and offshore from early evening until the following morning. This diurnal pattern contrasts with the relatively constant northwest trade winds prevalent in most other areas of the State. The average wind velocity is also less -- 7 to 8 mph for the land-to-sea breeze compared with 12 to 14 mph for the trade winds. However, gusty winds blowing through the saddle between the Kohala and Mauna Kea mountains do reach the shoreline under certain atmospheric conditions.

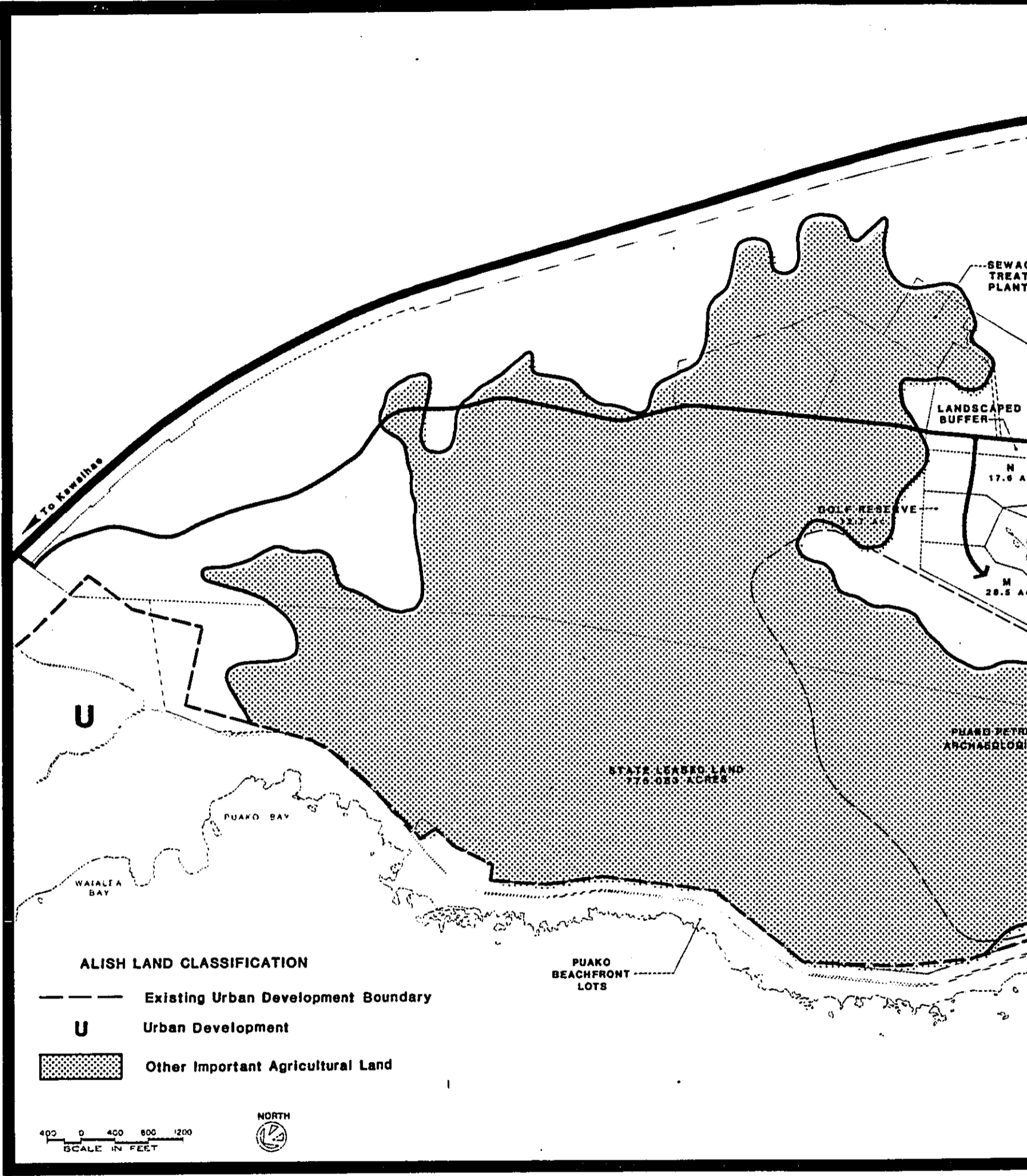
Relative humidity is generally low, commonly under 40 percent during the late morning and afternoon hours of warm, cloudless days. The humidity is also relatively constant year-round, showing a significant smaller summer-winter difference than is common elsewhere.

#### 1.1.2 Physiographic Changes




The extent of topographic change to specific sites within the proposed expanded resort core cannot be projected in detail at the current planning stage of development. However, the land on which development will occur is relatively flat, and it is projected that little mass grading will be required. The task of rough grading for building pads, roadways, and landscaped areas will probably be more difficult on the pahoehoe lava than on a'a. Although the surface of pahoehoe is generally smoother, reshaping it poses some problems: in some places the lava is too tough to be bladed or ripped by bulldozers or graders; there are many bulbous upheavals and depressions; and there are a number of lava tubes, some of which have already collapsed and others which will collapse under the weight of earth-moving equipment. In contrast, although the a'a surface is jagged and extremely difficult to traverse on foot, it is easily shaped by bulldozers to the clinker layer which can be crushed to a smooth, very porous, cobble surface.

There is insufficient soil cover in some areas to support the proposed golf course and other resort landscaping, particularly in the southern sector of the development. Because of this, the importation of soil, most likely from elsewhere on Mauna Lani Resort's property, will be required.

It is likely that crushed a'a cobbles will be used as fill material for developments on pahoehoe; this has been done for the Mauna Lani Bay Resort site. The existing golf course was constructed using crushed lava and soil from the Puako Flats area of the Mauna Lani Resort site. It is likely that the same sources of soil and crushed rock

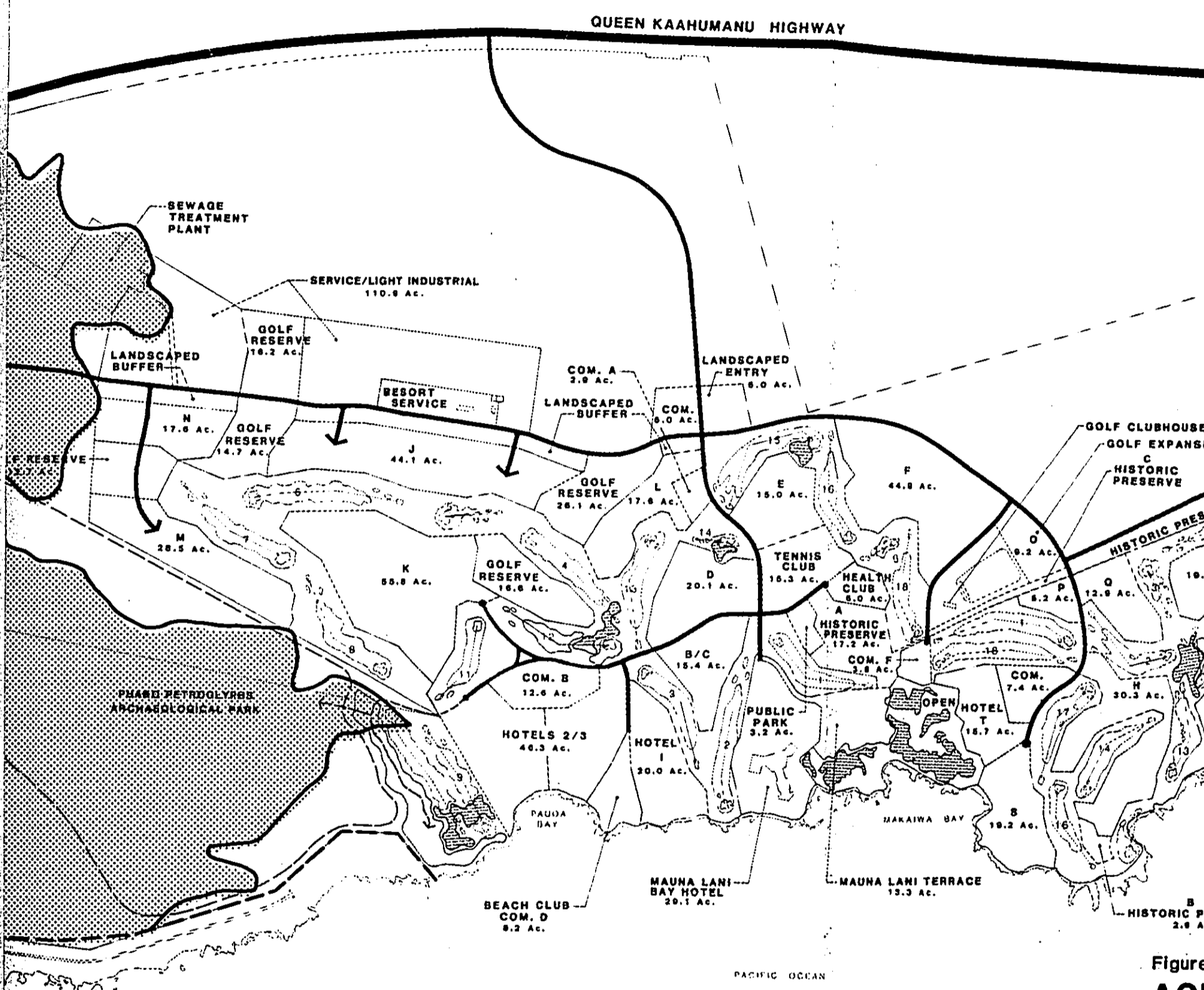


**ALISH LAND CLASSIFICATION**

-  Existing Urban Development Boundary
-  Urban Development
-  Other Important Agricultural Land

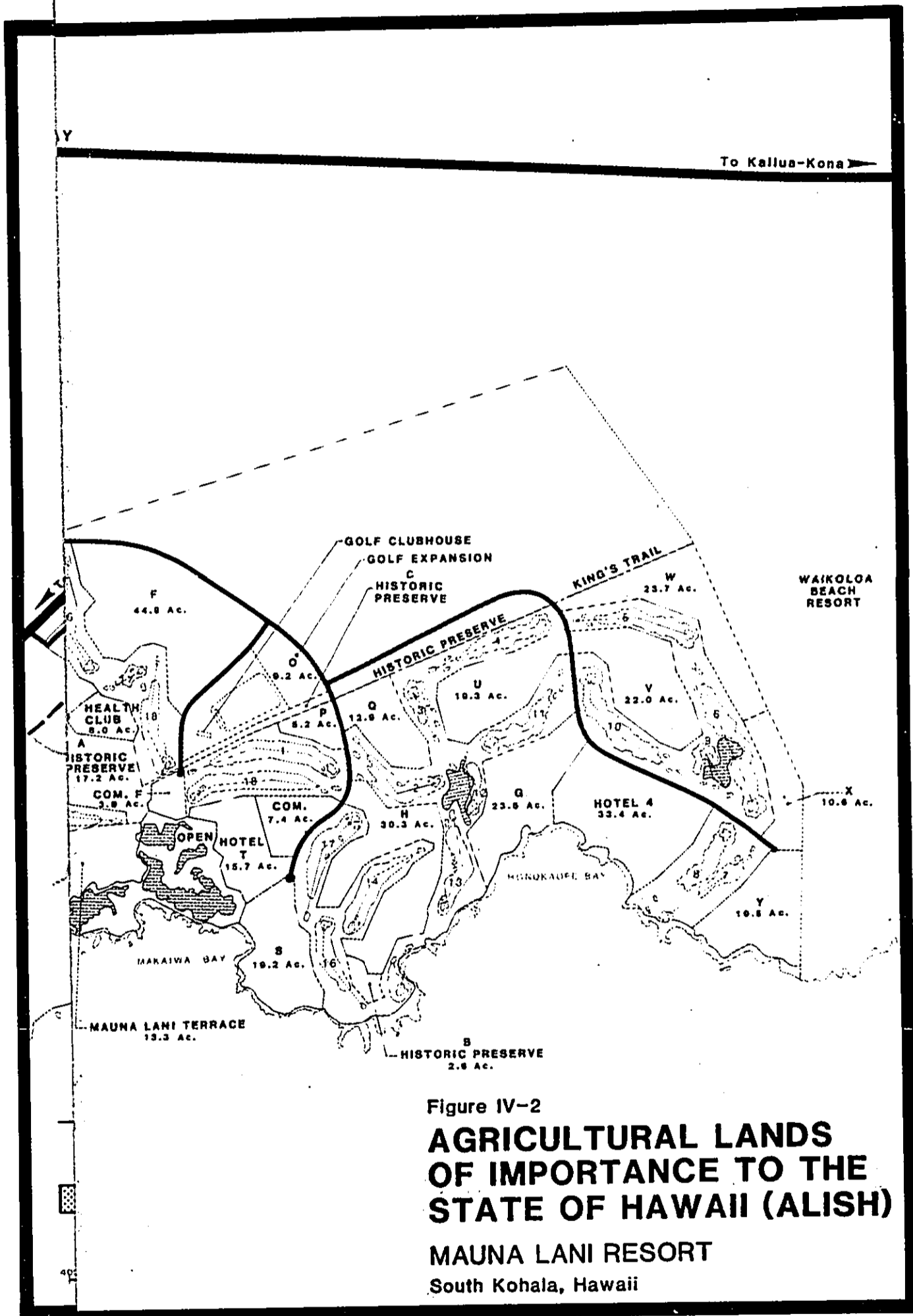
400 0 400 800 1200  
SCALE IN FEET





NOTE: Lettered labeled sites are resort residential uses.

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would be used for the proposed new golf holes within the development area. It is expected that rock will be crushed on-site, as it was during previous construction. The soil from the Puako Flats area is Kamakoa sandy loam, described previously. This soil is adequate for landscaping uses, but in its natural extremely dry condition, it could create a potential dust problem when being transported. Moistening the soil prior to moving it would reduce the potential problem.

### **1.1.3 Impact on Soils and Their Use for Agricultural Activities**

Most of the land at the resort has minimal agricultural potential. Hence, implementation of either the existing or revised master plans would have no impact on the actual or potential agricultural productivity of the site.

Construction of the various hotel and resort projects within the resort may actually increase agricultural production elsewhere on the Island of Hawai'i due to increased demand for local agricultural products such as fruit, nuts, vegetables, meat and fish. The Mauna Lani Bay Hotel makes regular purchases of the above local products and it is expected that other MLR hotels will do likewise.

As a secondary impact, it is anticipated that some agricultural lands in the region will be converted to urban use to accommodate employee housing. Most likely, there will be only slight impact on highly productive agricultural lands, more on marginally productive agricultural lands. The loss of agricultural lands due to employee residential uses will be minimal in comparison to the acreage of lands in agricultural production in the region.

## **1.2 NATURAL HAZARDS**

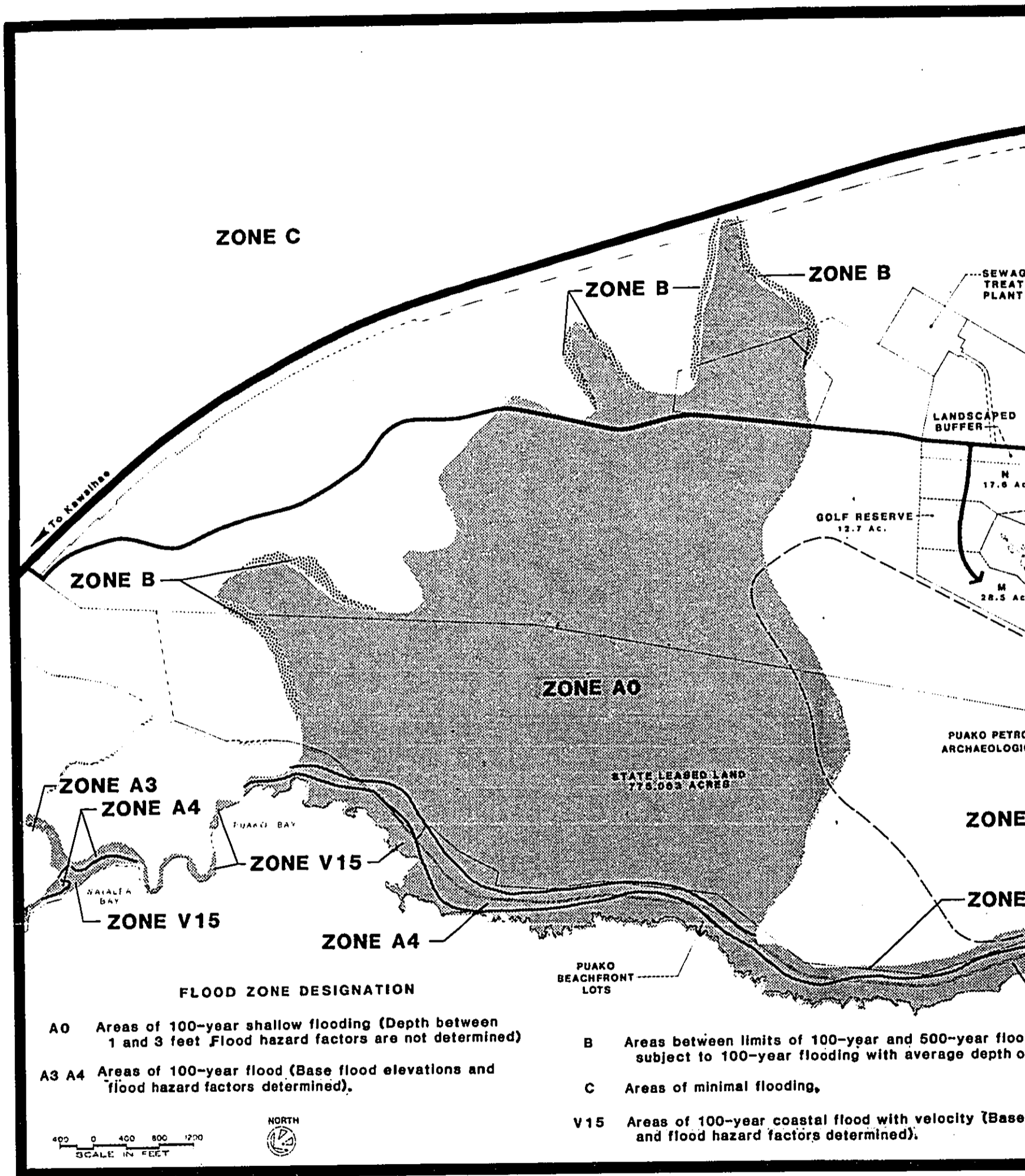
### **1.2.1 Existing Conditions**

Unusually high waves are the basis for the design of coastal structures, and Kona storm waves are the most important in this regard. Typically, they have heights of 8 to 15 feet and periods of 6 to 12 seconds, but under unusually severe conditions (perhaps once in ten years on the average), wave heights may reach 25 feet and periods of 15 seconds (U.S. Army Engineer District, 1963:Table 6). Southern swells have also produced high breaking waves on occasion. For example, breakers of up to 18 feet with periods of 20 seconds were recorded at Hapuna in 1968 (Gayman & Greenbaum, 1968:10).

In addition to exposure to storm waves, development along the South Kohala coastline must also take into account the possibility that a tsunami will strike. Because of their infrequent occurrence and the paucity of shoreline development on that coastline until recent years, reliable tsunami runup information for the area is scarce. However, of the 85 tsunamis that have been observed in Hawai'i since 1813, the one occurring in 1946 was the largest. It reached an elevation of approximately 12 feet above mean low low water (MLLW) at Kawaihae a few miles to the north of the Mauna Lani Resort.

The Mauna Lani Resort shoreline lies within the special flood hazard area as indicated in the Flood Insurance Rate Map for the area (Federal Emergency Management Agency; May 3, 1982). The flood insurance rate maps which define hazard areas are based on the Federal Flood Insurance Administration's scientific and engineering report, The Flood Insurance Study for the County of Hawaii, dated February 1, 1982. Part of MLR's coastal areas lies within the flood hazard boundary for the 100-year coastal flood (See Figure IV-3). The 100-year tsunami elevation at MLR locations range from five to ten feet, depending on proximity to the coast. The 100-year flood has a one percent change of being equalled or exceeded in any given year.





**FLOOD ZONE DESIGNATION**

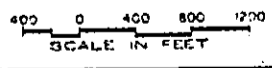
**A0** Areas of 100-year shallow flooding (Depth between 1 and 3 feet Flood hazard factors are not determined)

**A3 A4** Areas of 100-year flood (Base flood elevations and flood hazard factors determined).

**B** Areas between limits of 100-year and 500-year flood subject to 100-year flooding with average depth of 1 to 3 feet

**C** Areas of minimal flooding.

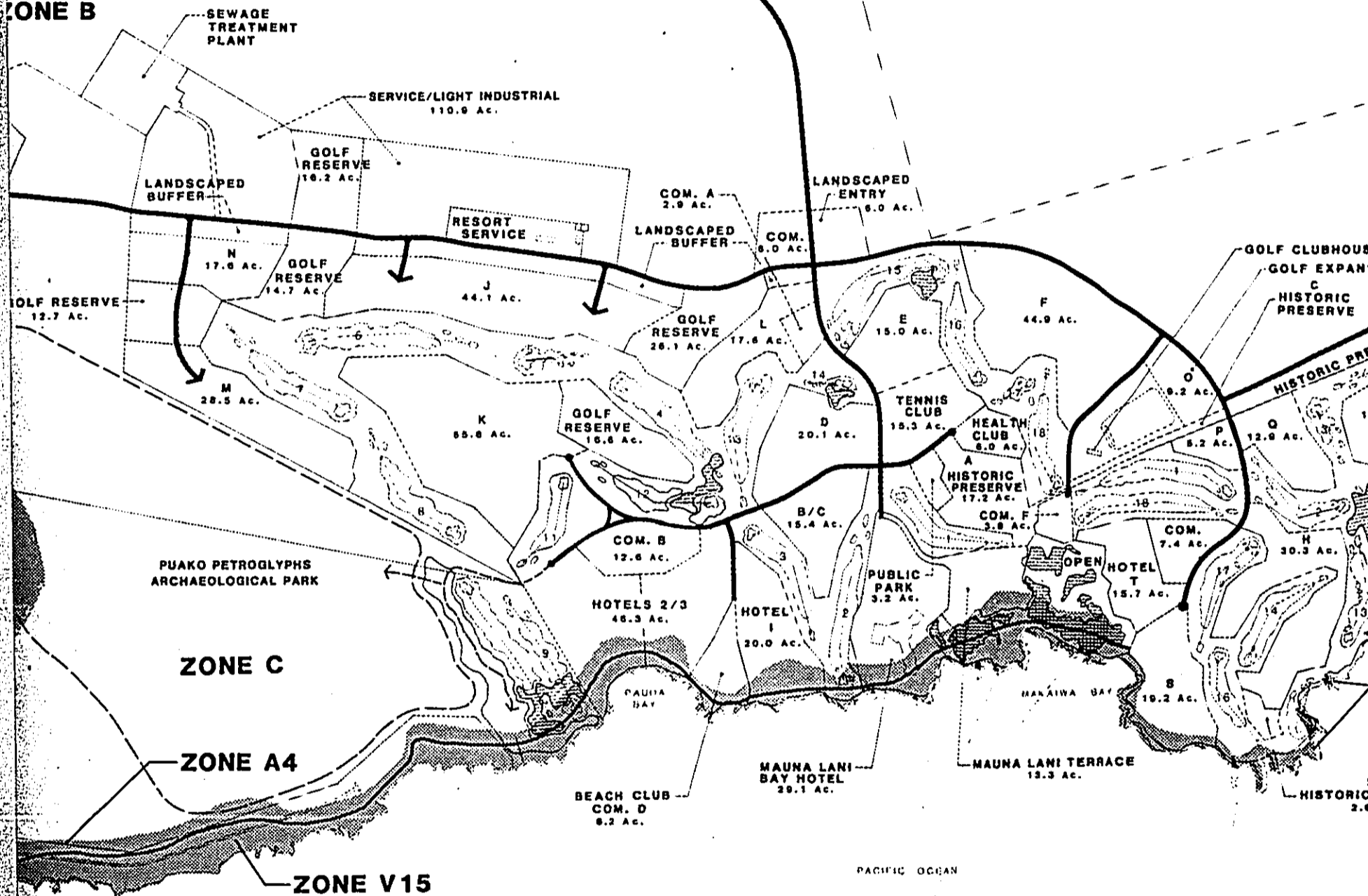
**V15** Areas of 100-year coastal flood with velocity (Base flood elevations and flood hazard factors determined).



QUEEN KAAHUMANU HIGHWAY

ZONE C

ZONE B



10-year and 500-year flood (Certain areas showing with average depth of less than 1 foot).

100-year flood with velocity (Base flood elevations determined).

NOTE: Lettered labeled sites are resort residential uses.

VAY

To Kailua-Kona

ZONE C

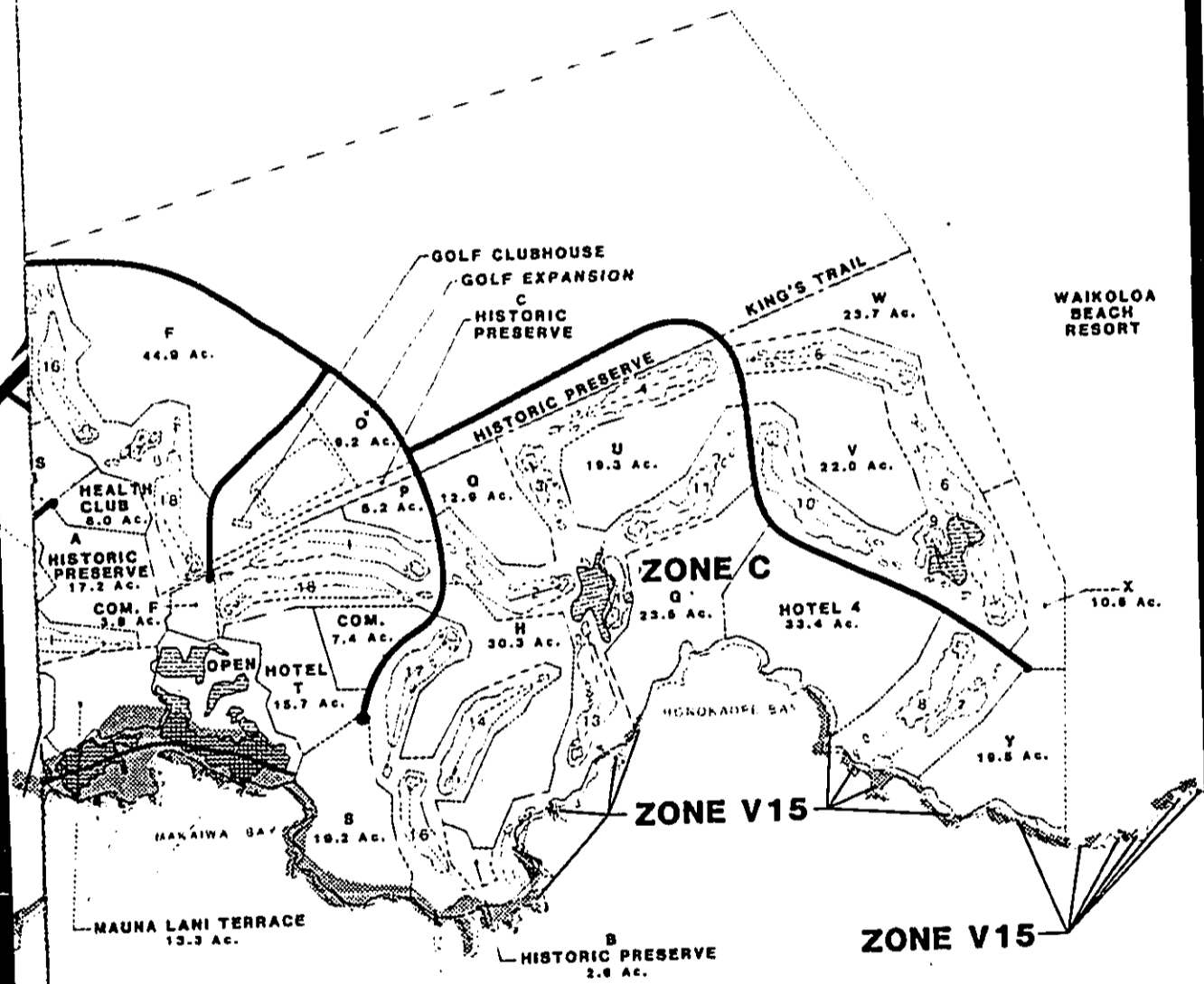


Figure IV-3  
**FLOOD INSURANCE  
RATE MAP**

**MAUNA LANI RESORT**  
South Kohala, Hawaii

Most of the hotel sites at MLR have coastal areas that fall into designated zone V15. Areas zoned V1 to V30 (the "V" stands for velocity -- a measure of wave action) are termed "coastal high hazard" (tsunami) zones, or V zones, in the County Code, and structures to be built within these zones must meet specified construction standards.

As shown in Figure IV-3, most of the MLR property is in Zone C, defined as an areas of minimal flooding. Resort development is not planned in the flood plain at the north end of Mauna Lani fee and leased land. This flood plain is designated AO, and area of 100-year shallow flooding, with depths of one to three feet.

### **1.2.2 Probable Impacts**

Specific site plans for individual parcels are not yet available and future structures are expected to be sited taking into consideration hazardous coastal zones. However, should a facility be in a hazard zone, design will comply with all County requirements applicable to structures in the coastal high hazard area.

Development at MLR is not expected to increase the risk of flooding in the Puako residential lots area.

## **1.3 SURFACE WATER AND DRAINAGE**

### **1.3.1 Existing Conditions**

Five gulches cross Queen Ka'ahumanu Highway and enter Mauna Lani Resort lands, the northernmost one (Kamakoa Gulch) mauka of Pauoa Bay and the southernmost one (unnamed) mauka of Makaiwa Bay. None have continuous topographic definition all the way to the shoreline. The three northern gulches are better defined in their mauka reaches and lose their definition between elevations 200 and 100 feet above sea level. The two southernmost gulches are only vaguely definable, and do not constitute true waterways. All of the gulches are normally dry, sometimes for more than a year at a time. The intermittent flows that do occur in their upper reaches (miles inland) are lost to infiltration and depression storage long before reaching Queen Ka'ahumanu Highway.

### **1.3.2 Probable Impacts**

The second golf course under the revised master plan, as well as some other landscaping in the resort would require irrigation. Irrigation water would be drawn from new brackish water wells located on the resort property. Withdrawal of water from new wells would affect the flow of groundwater toward the coastline and has the potential to affect salinity levels. Development of these wells will be designed to preserve the integrity of the brackish water source.

Surface water runoff from the development would be altered slightly. The extent of change will depend upon the nature of the fill used in creating the golf course, the increase in paving and other impermeable surfaces that will occur within the proposed residential and resort areas, and the configuration of the storm drainage system that will be installed. The design intent of the drainage system will be to limit or avoid stormwater runoff to the shoreline and to handle the runoff on-site. Surface water will be handled by dry wells on MLR lands and by the porous lava that surrounds the parcels.

## **1.4 GROUNDWATER HYDROLOGY**

### **1.4.1 Existing Conditions**

All along the Mauna Lani Resort shoreline, groundwater occurs in a basal lens configuration. A layer of relatively fresh water (i.e. brackish water) saturates the lavas at and near sea level. This water "floats" (as a result of its lesser density) over the salt water contained in the interstitial spaces of the underlying rock. The thickness of the lens at any point is a function of several factors: the permeability of the lavas, the amount of recharge from rainfall or other sources, the distance inland from the effect of waves and tides, and local geologic features such as lava tubes, a'a and clinker layers, cooling cracks, and the thickness of weathered material between successive layers of lava.

At least a portion of the basal lens beneath the Mauna Lani Resort property is makai (or "downstream") of the high-level Waikoloa aquifer. This means that it is recharged, at least in part, by leakage through, or spillage over, the relatively impermeable geologic feature which produces the raised groundwater elevations within that aquifer. Hence, increased withdrawals from the Waikoloa aquifer expected to accompany continuing urban and resort development on the Waikoloa lands will tend to produce increased salinity levels in the basal lens beneath the Mauna Lani Resort lands.

Estimates of groundwater flow toward the shoreline of the Mauna Lani Resort are in the range of 2.0 to 4.0 million gallons per day (mgd). Existing chloride levels are on the order of 600 to 700 ppm near the shoreline and 550 ppm near Queen Ka'ahu-manu Highway. The resort utilizes about 1.0 mgd of the groundwater flow for golf course irrigation. The groundwater is pumped from the well known as the Puako shaft.

### **1.4.2 Probable Impacts**

The impact of resort development on the quantity and quality of basal water flow was assessed in detail in the 1975 Environmental Impact Statement for development at Mauna Lani Resort. Development under the revised master plan would differ from that previously proposed essentially due to the addition of a second golf course, which probably would be irrigated by basal water. In general, however, the discussion of probable impacts due to resort development remains valid and the reader is referred to the earlier document for a full analysis.

## **1.5 NEARSHORE PHYSICAL CONDITIONS**

### **1.5.1 Existing Conditions**

The range of tides along the MLR coast is small and the fluctuations are usually semidiurnal. High tide averages 1.2 feet above mean sea level, with a maximum of 2 feet above mean sea level. Generally, the total tidal range in a day is about 2 feet; maximum tidal range is on the order of 3 feet.

The typical nearshore current velocity is 0.2 to 0.4 knot on a rising tide. The current is in a northerly direction with the rising tide, but near shore it tends to move into the coastline, generally producing clockwise eddies in the bays along the coastline such as Honoka'ope Bay and perhaps Pauoa Bay. On a falling tide, the current reverses, weakens, and tends to create counterclockwise eddies in the bays. The net current drift is northward along the coast.

For a more detailed description of the nearshore conditions, the reader is referred to the 1975 Environmental Impact Statement for development at Mauna Lani Resort. These same conditions prevail today.

## 1.6 COASTAL PONDS

### 1.6.1 Existing Conditions

Located at the MLR site are six large Hawaiian fishponds that have been managed and maintained by the resort and incorporated into the resort master plan. These are the Waipuhi, Lahuipua'a, Manoku, Hopeia, Ka'aipio and Kahinawo brackish water fishponds around Makaiwa Bay, near the existing hotel and condominium project. Along with several smaller ponds in the Kohala and Kona coast area, these fishponds have been the subject of various surveys and evaluations, notably the Kikuchi and Belshe 1971 study and the comprehensive 1972 survey done by Machiolek and Brock. These two studies form the basis of an analysis of the fishponds and other brackish ponds at the MLR site contained in the 1974 EIS prepared during initial master planning for MLR. The reader is referred to this earlier report for details of the then existing pond conditions. More recently, Steven Dollar undertook a baseline assessment of the fishponds in 1983, and Brock performed a survey of the fishponds as well as the anchialine ponds in 1985. This latter survey is described in the following sections.

In addition to the Hawaiian fishponds, the Mauna Lani Resort site contains smaller brackish water ponds in porous lava along the shoreline. Ponds such as those at Mauna Lani are found the length of the leeward coast of the island of Hawai'i. Biologically, many of these West Hawai'i coastal ponds are unique; they harbor a number of endemic aquatic forms found only in this type of habitat, as well as other unusual forms of aquatic life, particularly the small red shrimps (Halocaridina rubra and Metabetaeus lohena) and unusual algal crust (Schizothrix caricola and Rhizoclonium sp.) (Brock; 1985:1 and 21). These shoreline pools without surface connections to the sea, yet showing tidal rhythms and having measurable salinities, are termed "anchialine" by Holthuis (1973).

In the United States, anchialine ponds are known to occur only in Hawai'i, on the leeward coasts of the islands of Maui and Hawai'i. On Maui, anchialine ponds occur within the Natural Area Reserve at Cape Kina'u, and on Hawai'i, major clusters of anchialine ponds are found at Pauoa Bay, 'Anaeho'omalua Bay/Waiulua Bay, Makalawena/'Opae'ula, Kaloko/Kohanaiki, Honokohau/'Aimakapa, and Kailua-Kona. In addition, many individual ponds or small pond groupings are scattered along the leeward Hawai'i coast, from South Point (Ka Lae) to North Kohala (Belt, Collins; 1985:III-17).

The 1974 Machiolek and Brock study is based on the 1972 survey and contains an inventory of biota in the ponds surveyed, a description of their physiography (location, size, shape, water depth and surrounding vegetation), and a characterization of their waters (temperature, salinity and oxygen concentration). The anchialine ponds at the MLR site were classified by Machiolek and Brock as Class B ponds; none were considered Class A ponds. According to their classification, Class A pond sites are those of exceptional natural value based on physical structure, diversity, representative aquatic communities and unusual endemic species. They are generally remotely located and in pristine condition. Preservation of these ponds as unique resources was strongly recommended by Machiolek and Brock. The same researchers deemed Class B pond sites of "significant," rather than unique, aquatic natural value. Pond importance is increased due to their anthropological or water-bird habitat values. Class B ponds are usually found in accessible or culturally modified areas.

The Fish and Wildlife Service of the U.S. Department of the Interior considers anchialine pools to be a Resource Category I habitat, characterized as being of high value for the evaluation of species that are "unique and irreplaceable on a national basis or in the ecoregion section. The mitigation goal for such habitats is no loss of existing habitat value (Federal Register, Vol. 46, No. 14, January 23, 1981)." (Letter of January 5, 1985) Here, no distinction is made between unique and significant ponds as was done by Maciolek and Brock.

The Mauna Lani ponds are called the Lahuipua'a ponds in the Machiolek and Brock report. Among them are the large "open" fishponds (open ponds have occasional or restricted surface connections to the ocean whereas closed ponds -- such as the MLR anchialine ponds -- do not) mentioned earlier; these were characterized as the best preserved examples of traditional Hawaiian fishponds. The "accessory" anchialine ponds were seen to have physical and biological diversity with good populations of representative species.

### 1.6.2 Probable Impacts

Since development began at Mauna Lani Resort, the ponds at the resort (both fishponds and anchialine ponds) have been the subject of various surveys, the most current of which is summarized below. A comparison between the characteristics of the ponds in 1972 prior to development and their present condition provides a basis for estimating the effect of resort development on them. From this data can be extracted projected impacts due to further development at the resort.

In a survey performed for Mauna Lani Resort, Inc. in February 1985, Brock examined twenty-two anchialine ponds and made inspected the four major fishponds at the resort. Ponds were surveyed from north to south and numbered sequentially. Their approximate locations are given in Figure IV-4. Sampling of the ponds was similar to that done in 1972 so as to make a comparison of data from the two surveys more reliable. Eight ponds surveyed in 1972 were not found in 1985, but three new ponds were discovered during the latter inventory. See Table IV-1.1 for a summary of ponds found in both surveys.

The following outlines the findings of the 1985 survey, which are summarized in Table IV-1.2. Ponds are numbered according to the 1985 numbering system.

**Pond 1.** In 1972 this pond was heavily overgrown by hau trees and sedges. By 1985, it was hidden in a thicket of hau and coconut trees. Some individual depressions that held water seem to have been recently dug out. Green crust alga is now present; the fauna had not materially changed over the 13-year period.

**Pond 2.** There has been little physical change in this pond. However, there has been an increase in native species, notably shrimps.

**Pond 3.** This pond was overgrown with sedges in 1972 and had a depth of 10 cm. By 1985 the sedges had been cleared and the pond depth increased to 30 cm. The native predatory o'opu (E. Sandwicensis) now in the pond may account for the absence of shrimps.

**Pond 4.** Situated under a lava fissure, this pond has shown a decrease in native fauna over time.

**Pond 5.** Fewer native species were observed in 1985 than in 1972; it is postulated that this is due to the introduction of the exotic fish Tilapia mossambica.

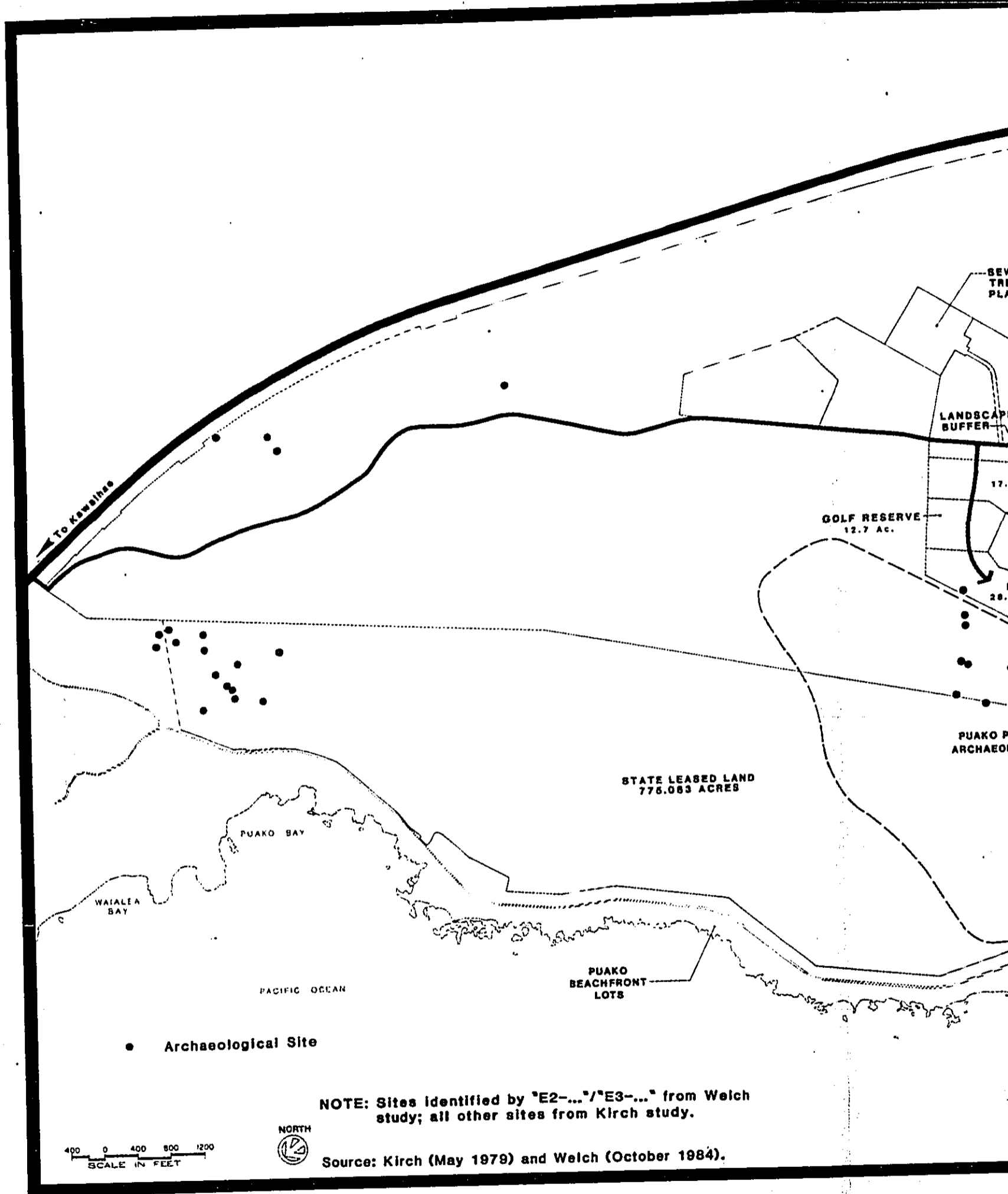
Table IV-1.1

Summary of Comparative Data on Anchialine Pond Presence  
Mauna Lani Resort

Pond Number		Remarks
1972(1) Survey	1985(2) Survey	
C-10	1	
C-11	2	
C-12	3	
C-13		Could not locate in 1985.
C-14		Could not locate in 1985.
C-15	4	
C-16	5	
C-17		Could not locate in 1985.
C-18	6	
C-19	7	
C-20	8	
	9	Not found or sampled in 1972.
C-21	10	
C-22		Could not locate in 1985.
C-23	12	
C-24	13	
C-25		Could not locate in 1985.
C-26		Could not locate in 1985.
	14	Not found or sampled in 1972.
	15	Presence known but not sampled in 1972.
	16	Presence known but not sampled in 1972.
	17	Not found or sampled in 1972.
D-4	18	
D-3	19	
D-2	20	) --- Sampled as one pond in 1972.
D-2	21	
D-1	22	
D-5		Could not locate in 1985.
D-6		Could not locate in 1985.

(1) Maciolek and Brock, 1974  
(2) Brock, 1985





● Archaeological Site

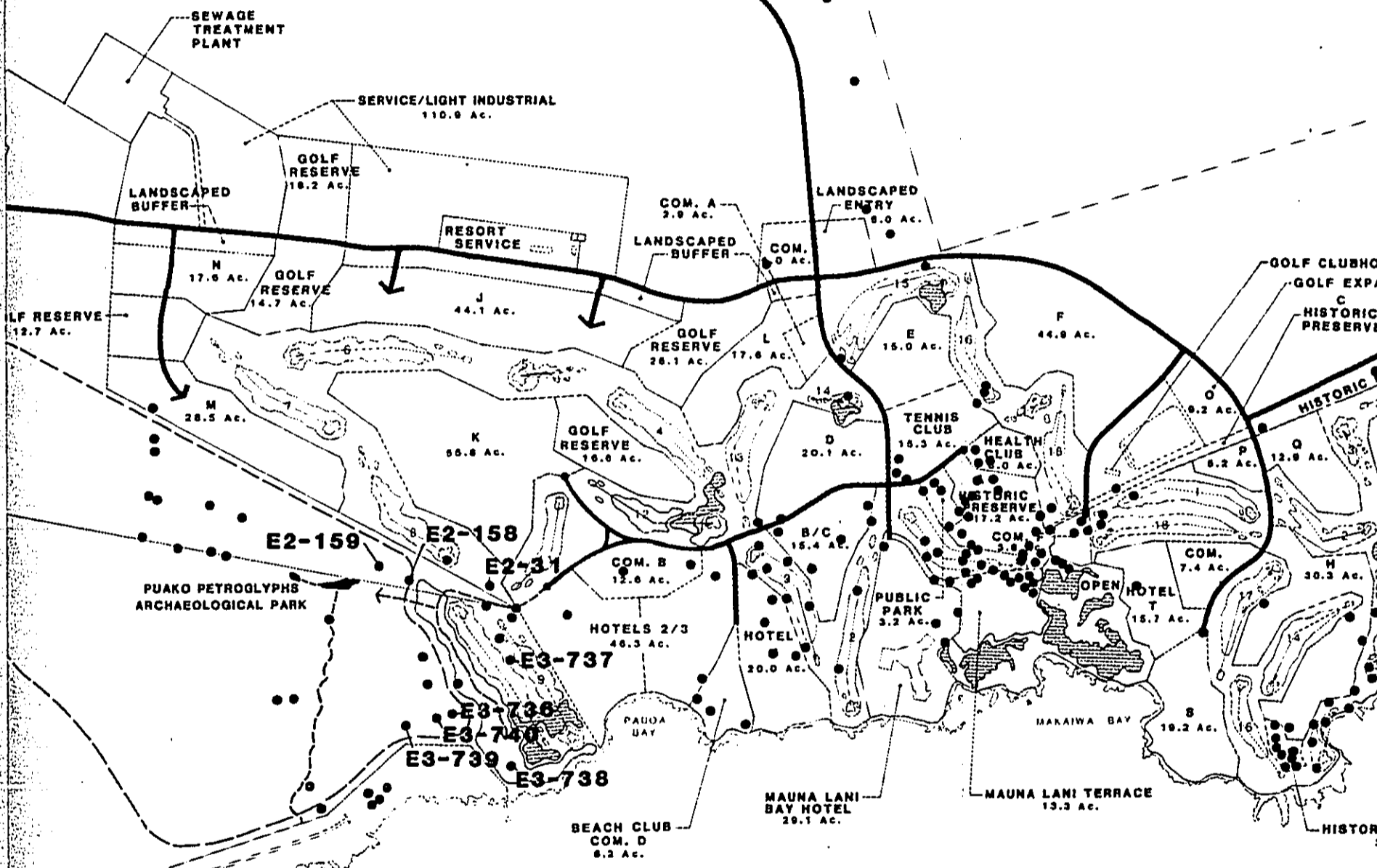
NOTE: Sites identified by "E2-..."/"E3-..." from Welch study; all other sites from Kirch study.

400 0 400 800 1200  
SCALE IN FEET



Source: Kirch (May 1979) and Welch (October 1984).

QUEEN KAAHUMANU HIGHWAY



NOTE: Lettered labeled sites are resort residential uses.

F  
L  
A  
M  
S

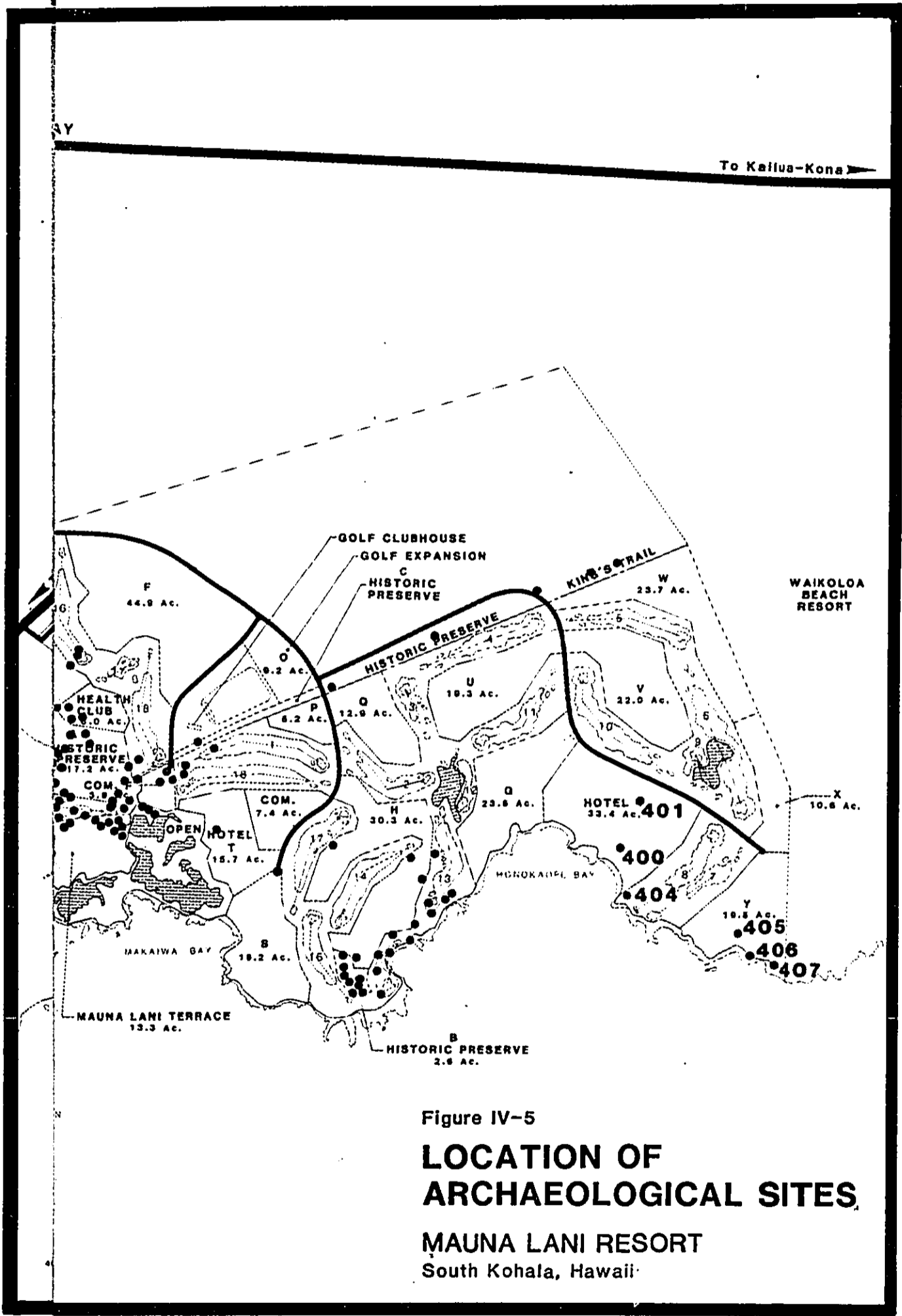


Figure IV-5

**LOCATION OF  
ARCHAEOLOGICAL SITES,**

**MAUNA LANI RESORT**  
South Kohala, Hawaii

Table IV-1.2

Species of Aquatic Plants and Animals  
Anchialine Ponds, Mauna Lani Resort

POND NUMBER	FLORA		WORMS MOLLUSCS				CRUSTACEANS				INSECTS				FISHES										
	Schizothrix gorticola	Rhizoglossum sp.	Ruppia martima	Cladophora sp.	Oligochaeta sp.	Assiminea sp.	Helania sp.	Theodoxus gorticola	Amphipoda, reddish sp.	Amphipoda, other sp.	Metabetaeus lohena	Halocaridina pubra	Palaeon debilis	Macrobrachium ('opae')	Macrobrachium grandimanus	X-Macrobrachium lar	Metopocrapsus thukuhar	Collembola, 1 sp.	X-Odonata, 1 sp.	Kuhlia sandvicensis	X-Eleotris sandvicensis	X-Tilapia moasmbica	X-Poecilia mexicana	(topminnow)	
1972 Survey																									
1985 Survey																									
C10																									
C11																									
C12																									
C13																									
C14																									
C15																									
C16																									
C17																									
C18																									
C19																									
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C23																									
C24																									
C25																									
C26																									
C27																									
C29																									
C31																									
C32																									
D4																									
D3																									
D2																									
D1																									
D5																									

NOTE: "x" preceding name refers to exotic species; all others are native species.

KEY:

- x - found in 1972 survey
- o - found in 1982
- o - found in 1985 survey

SOURCE:

Aquatic Survey of the Kona Coast Ponds, John A. MacIolek and Richard E. Brock, 1974; and "Aquatic Survey of the Anchialine Pond System at Lahupuaa", Richard E. Brock, 1985.

- Pond 6.** A small pond located under a ledge, this pond no longer contains macrofauna.
- Pond 7.** Located in the same fissure as Pond 5, Pond 6 still contains the introduced 'opae as well as snails and opae'ula.
- Pond 8.** A decrease in native aquatic forms has occurred in this pond over the 13-year period. The tilapia and aholehole are now present.
- Pond 9.** This shallow pond with no macrofauna was not recorded during the 1972 survey.
- Pond 10.** Only two native species were observed in 1985, along with the exotic tilapia, which has probably displaced the other native species that were present in 1972.
- Pond 11.** Pond 11 was reportedly connected to Pond 10 in 1972; however, Brock recorded it as separate in 1985. Its faunal composition is the same as that of Pond 10.
- Pond 12.** As in 1972, alga and snails are present, but the exotic tilapia have been introduced and appear to have displaced the shrimp species.
- Pond 13.** Relatively exposed in 1972, this pond now has milo and kiawe trees around its perimeter, almost hiding it from view. Trash from the plant nursery operation is scattered around the edges of the pond. The same aquatic species as were present in 1972 are now still present in the pond and 'opae'ula are now more abundant.
- Pond 14.** This small exposure of water under a ledge was not found in 1972. The only species noted in 1985 was 'opae'ula.
- Pond 15.** Commonly referred to as the "Francis Brown bath pool," this pond was not sampled in 1972, although its existence was known to the survey team. In 1985 the pond had a good growth of orange encrusting alga, along with snails, 'opae and 'opae'ula.
- Pond 16.** Also known but not sampled in 1972, this "roofed bath pond" was surveyed in 1983 and contained orange alga, 'opae'ula and crabs. By 1985, the exotic guppy had been introduced. The surveyors suspect that the predatory o'opu'akupa, now present, has been feeding on juvenile poecilia.
- Pond 17.** Missed during the 1972 survey, this shallow elongate depression contains orange encrusting alga, 'opae'ula, small red amphipods, and crabs.
- Pond 18.** Development has occurred in the vicinity of this pool (see Figure IV-5), but apparently has not adversely affected the fauna. Orange alga, 'opae'ula, and amphipods are still found. In addition, there are now snails and 'opae.
- Pond 19.** In the most recent survey, fewer species were found and no shrimp species were encountered. The recently introduced topminnow was present.
- Ponds 20 and 21.** Separated by about 10 meters of porous a'a, these two ponds were sampled as one in the 1972 survey. Here again, the introduced topminnow was present.
- Pond 22.** Alga had become established and amphipods that were found in 1972 were no longer present in 1985. However, the 'opae'ula was again observed.

**Fishponds.** The Waipuhi, Lahuipua'a, Manoku and Hopeaia fishponds had been managed and maintained continuously for some time prior to the 1972 survey and continue to be primarily for the production of mullet (Mugil cephalus) and awa (Chanos chanos). Since 1972, sediments have been removed from the pond bottoms and ponds have been stocked with a variety of native fishes. Gates (makahas) and walls have also been improved. Due to the presence of native fishes, some of the anchialine pond fauna are not found in the fishponds. The only non-native fish observed in the ponds in 1985 was the topminnow. Brock had informally inspected the ponds in 1983 and had not noticed the presence of this species. He therefore concluded that the topminnow had become established throughout the fishpond complex some time after 1983 (Brock:19). Mauna Lani Resort, Inc. staff have recently verified the presence of five green turtles (Chelonia mydas), a threatened species, in the resort fishponds.

As shown in Table IV-1.1, the number of anchialine ponds reported differs between the two surveys. In general, the apparent loss of ponds may be due to a number of factors, including surveyor error during either survey, natural loss (ponds filled with wind-blown debris and overgrown with vegetation) and perhaps human activities associated with construction. According to Mauna Lani Resort, Inc., however, to its knowledge none of the ponds surveyed in 1972 have been filled in conjunction with construction activities.

Of the 17 ponds sampled during both the 1972 and 1985 surveys, in only one did the aquatic fauna remain essentially unchanged (Pond 13). Ponds 3, 7 and 22 contained the same number of native species, but the species composition had changed. Three ponds (Ponds 1, 2 and 18) showed an increase in native species whereas ten ponds, or more than half (Ponds 4, 5, 6, 8, 10, 11, 12, 19, 20 and 21), showed a decrease in the number of native species. Moreover, only two of the ponds showing decreases had no exotic species introductions (Ponds 4 and 6).

The decrease in native species seems to be related to the presence of exotic fish species, tilapia (Tilapia Mossambica) and topminnow (Poecilia Mexicana). With the introduction of these two species, the biological uniqueness of almost half the ponds surveyed in both 1972 and 1985 has diminished. Brock contends that "ponds with these exotics retain their aesthetic appeal but they will not support the full complement of native species and as such should be adjudged to not have the natural value they once had. The decrease in natural value is here assumed and equated with a decrease in native species." (Brock, 1985:23). Before tilapia was introduced to the ponds, the average number of native species was 6.4 per pond, whereas afterwards the number of native species decreased to 2.2 per pond. According to Brock, this decrease is statistically significant (Paired T test, P 0.001, 4 d.f.) (Brock, 1985:21).

Brock contends that the current lower natural value of the Mauna Lani anchialine ponds could be reversed with the removal of the exotic fishes and the subsequent return of native species. He cautions, however, that "the reversibility of the process should not be viewed as being indefinite; if all anchialine ponds in a given system have predatory exotics present over a sufficient period of time, the native species that are able to survive in intersitial waters for a period of time may also be driven to extinction." (Brock:23).

The introduction of exotic species into the Mauna Lani ponds took place after development started at the resort. Whether the introduction of tilapia and topminnow would have happened without development is uncertain. However, development at the resort has facilitated access to the ponds as well as to other shoreline features. With further resort development and the planned provision of additional public rights-of-

way, under both the existing and revised master plans, the anchialine ponds can be expected to become accessible to increased numbers of persons. This could increase the potential for continued introduction of exotic species and, therefore, a decline in the quality of the anchialine pond systems.

The Fish and Wildlife Service has recently requested that the shrimp Metabetaeus lohena, Procaris hawaiiiana, and Palaemonella burnsi be placed on the annual invertebrate Notice of Review update as Category 2 species. The Service states that a "Category 2 rating is for those species which probably should be listed as endangered or threatened, but for which sufficient information is not presently available to biologically support a proposed rule." (Letter of June 21, 1985 commenting on the DEIS) Of the above shrimps, only M. lohena has been recorded in the Mauna Lani ponds.

Although the anchialine ponds on the islands of Maui and Hawai'i, as a whole, are an irreplaceable resource, those at MLR are not the best examples of the type when compared with others at other potential development sites. As mentioned earlier, Machiolek and Brock consider the MLR ponds to be Class B rather than the more significant Class A ponds. Further, many of the ponds have already lost some of their significance due to the introduction of exotic species, which has led to the demise of endemic species.

It has been Mauna Lani Resort's policy to preserve as much as possible natural on-site features that contribute to the overall character of the resort, which is based on the integration of these natural features into overall resort design and presentation. The anchialine ponds and fishponds are some of the natural features at MLR that have been preserved to date and enhanced in some cases. Mauna Lani Resort, Inc. intends to continue this policy within the context of either the existing or proposed master plan, although the lower density of the expanded master plan would allow the resort to more readily adhere to this policy.

To decrease potential adverse effects on existing ponds, which are anticipated as a result of further development and improved public access, Brock proposes that mitigation measures be considered: eradication of unwanted species, reseedling of ponds with desired species, the creation of new anchialine ponds, and implementation of an educational plan for residents and visitors. Mauna Lani Resort, Inc. plans to create two new ponds by the golf holes and public shoreline park near Pauoa Bay when the second golf course is built. Existing interpretive signage at Mauna Lani Resort shoreline areas will be extended as additional shoreline areas become more easily accessible to the public and resort guests and residents.

Mauna Lani Resort, Inc. is aware of Transcontinental Development Co.'s application to the Department of the Army for a permit to fill anchialine ponds at the Hyatt Regency Waikoloa Hotel site at Waikoloa Beach Resort. Granting such a permit would lead to a decrease in the total number of ponds on the island. Mauna Lani Resort, Inc. has no current plans to alter any ponds on Mauna Lani Resort lands. Moreover, Mauna Lani Resort, Inc. intends to create new ponds so that the total square footage of anchialine ponds and fishponds will increase, although the exact location and configuration of these ponds are presently unknown. Mauna Lani Resort, Inc. feels that its resort projects will not reduce the total inventory of ponds in the State of Hawaii.

It is recognized that pond management will be required to preserve the unique character of some ponds as natural environments, a difficult task given expected increased human activity in the vicinity of these environments. Mauna Lani Resort, Inc. will participate in efforts to protect these unique environments. During future

planning and design phases for individual parcel development, the location of existing ponds will be taken into consideration. Should current plans change and future development of a specific site require the modification of a pond (or ponds) or other shoreline feature, Mauna Lani Resort, Inc. would need to seek a Department of the Army permit, and appropriate mitigation measures would then be considered.

## 1.7 MARINE ENVIRONMENT

### 1.7.1 Existing Conditions

The 1975 EIS prepared for the predecessor company to Mauna Lani Resort, Inc. contained an analysis of the nearshore marine biological resources based on one source, the Sea Grant report, Marine Fauna of the Coast of Northern Kona (Brock and Brock, 1974), which summarizes the results of a survey performed in 1972. At the time, it was the only reference available concerning the nearshore waters of MLR. While the survey gave a good qualitative view of the marine fauna, it did not constitute a baseline survey against which the long-term effect of proposed development might be compared.

More recently, a baseline assessment of the marine environment and fishponds at MLR was completed by Steven Dollar and Christopher Winn (October 1983). The survey covered an area stretching from Pauoa Bay to the southern boundary of the Mauna Lani Resort. Subsequently, a supplement to the 1983 report was completed (Dollar, November 1984). This second report covers the nearshore marine environment in front of the proposed golf holes and public shoreline park north of Pauoa Bay. The remainder of this section is based primarily on information contained in the above two reports and on a supplemental report on potential impacts to the marine environment as a result of development at MLR (Dollar, May 1985).

The above studies of marine community structure in waters fronting MLR lands emphasize coral community assemblages. Dollar states that "corals are considered "keystone" species in that they contribute to the actual structure of the reef, thereby creating a complexity of habitat space, shelter and food for other species groups. As benthic (bottom dwelling) organisms, corals must also tolerate the surrounding water conditions within the limits of adaptability or die. For these reasons, coral communities are the most "relevant" group in evaluating past and potential impacts associated with land development" (Dollar, May 1985:3).

Dollar notes that there are only 35 Hawaiian coral species (of which a few are represented at MLR) compared to more than 200 on most reefs located at lower latitudes and nearer to continental areas. He concludes that "this can be interpreted to mean that Hawaiian reefs are composed of a few highly resilient species that are able to withstand a relatively great range of fluctuating environmental parameters" (Ibid.).

The entirety of the MLR coastline is comprised of a variety of fringing coral reef environments that are typical of the west coast of the Island of Hawaii. The principal objective of the Dollar studies was to collect quantitative baseline information concerning the marine community structure (focusing on corals) and the indigenous marine populations inhabiting the coastal reefs. Benchmark stations established during the surveys allow future monitoring of surveyed areas to determine accurately any changes in the marine communities that may result from development at MLR.



### 1.7.1.1 Physiographic and Coral Communities

**Overview.** The Mauna Lani Resort shoreline consists of coarse carbonate-basalt beaches and vertical basalt shoreline cliffs. Along portions of the sites having beach shorelines, the shallowest offshore zone (to a depth of 15 feet) is usually a flat, relatively barren limestone platform having little coral cover. The barren appearance of this zone and the paucity of macro-fauna there is due to the high level of physical stress caused by waves breaking on the shallow reef.

In areas where the shoreline consists of a vertical basalt cliff, the near-shore area is characterized by basalt boulders that provide a complex three-dimensional reef surface sheltering reef fish and mobile invertebrates and solid settlement surfaces for attached forms. Since this zone is subjected to the direct impact of breaking waves, only those species adapted to withstand intense water motion inhabit the area.

Seaward of both the reef flat and shoreline boulder zones is the Porites-reef building zone. Live coral colonies dominate in the bottom cover, forming a solid limestone surface. Species diversity is often higher in this zone than anywhere else on the reef.

The most seaward zone typically found on Hawaiian coral reefs is the Porites compressa-slope zone. At many locales on the west coast of Hawai'i the shoreline boundary of this zone is clearly delineated by a sharp increase in reef slope angle. In the MLR area, however, this zone is not marked by a sharp drop-off. Rather, the Porites compressa zone integrates gradually with the Porites lobata reef building zone.

For a summary of coral community occurrence at various locations along the Mauna Lani Resort coast, see Table IV-1.3 which shows percentage cover of each species and substrata type by transect station and depth. Data was gathered at the 15-foot, 30-foot and 60-foot depths.

**State Land.** At the Pauoa Bay end of the parcel, the shallow area is dominated by a limestone platform, while at the northern end a basaltic lava shelf makes up the near-shore area. The reef platform is a highly stressed environment that is chronically subjected to storm waves. At the north end, large waves break on an outer reef, thus diminishing in impact at the inner reef shelf.

Moving offshore, a sharp dropoff separates the shallow reef platform from the deeper reef zones; the latter consist almost entirely of coral cover of the two species of Porites ubiquitous to Hawaiian reefs.

**Pauoa Bay.** Similarities exist between the above area and adjacent Pauoa Bay. Both differ in marine community structure from the reefs fronting the Mauna Lani Bay Hotel, Nunuku Inlet, Makaiwa By, Honoka'ope Bay and the South Property line area. Impacts to both areas would thus be similar.

The shoreline within the 850-foot wide mouth of the bay consists of a white sand beach. The bottom of the inner central bay is a barren flat carbonate pavement interspersed with highly eroded coral structures. In general, this central area is a highly stressed environment chronically subjected to intense wave stress. As a result, the reef does not contain a healthy coral community.

**Mauna Lani Bay Hotel Front Reef.** Directly in front of the hotel, a lava shelf separates the outer reef from Nanuku Inlet. The seaward edge of the shelf drops off into a vertical wall which marks the origin of the outer reef. Highest coral cover (about 75

Table IV-1.3  
 Summary of Coral Community Structure From Transect Data  
 Mauna Lani Resort

Site	Depth (ft)	Total Coral Cover %	Coral Species Diversity Hc	<u>Porites lobata</u>	<u>Porites compressa</u>	<u>Pocillopora meandrina</u>	<u>Montipora verrucosa</u>	<u>Montipora patula</u>	<u>Leptastrea purpurea</u>	<u>Porites brighami</u>	<u>Pavona varians</u>	<u>Pocillopora damicornis</u>	<u>Cyphastrea ocellina</u>
Paoua Bay North	15	17.0	0.036	16.9	0.1	0.2	0.1		0.1				
	30	49.1	0.62	36.2	12.5	0.3	0.1						
	60	70.4	0.62	51.0	19.0								
Paoua Bay South	15	5.4	0.58	3.5	22.4	1.9	0.1		0.1	2.4			
	30	44.2	0.89	19.2	51.4								
	60	72.5	0.60	21.1									
Hotel Front Reef	15	17.6	1.01	14.1	10.2	3.1	0.1	0.1	0.1		0.1		
	30	62.0	0.96	47.1	56.3	4.2	0.1						
	60	76.0	0.58	19.7									
Nanuku Inlet	3-15' offshore	0	0										
	3-90' offshore	0.1	0	0.1									
	4-135' offshore	2.8	0	2.8									
	4-180' offshore	14.0	0.42	12.1		1.8						0.1	0.1
Makaiwa Bay	10	61.1	1.17	36.0	14.8	2.2	0.6	4.3			3.1		
	30	33.6	0.74	25.3	0.3	6.8	0.2	0.3	0.1		0.6		
	60	89.0	0.994	46.5	38.7	2.3	0.9	0.5	0.1		0.3		
Wa'awa'a Point	15	12.0	0.75	3.1	2.4	8.5	0.1	0.1			0.1		
	30	15.4	0.85	12.5	37.3	0.1	0.3				0.1		
	60	48.6	0.55	11.3									
Honoka'ope Bay	15	21.3	0.97	12.6	1.1	6.6	1.1						
	30	46.2	0.72	31.0	15.0	0.1	0.1	0.1					
	60	50.5	0.67	16.7	33.9	0.4	0.4						
South Property Line	15	16.1	0.76	9.5		6.3	0.2	0.1					
	30	89.3	0.71	43.9	45.3		0.1				0.1		
	60	60.4	0.75	29.3	30.3		0.8						
State Land North	15	19.3	0.37	17.3	8.7	1.8	0.2						
	30	52.5	0.48	43.5	41.7		0.3				0.1		
	60	68.8	0.68	27.0							0.2		
State Land South	15	4.7	0.59	3.8	3.8	0.7							
	30	32.9	0.40	29.1	3.4	0.3	0.1						
	60	57.3	0.68	33.1	24.2								

Source: Steven Dollar, Baseline Assessment of the Marine Environment and Fishponds at Mauna Lani Resort, South Kohala, Hawaii, 1984; and Supplement I, 1984.

percent) occurs at the 60-foot depth, while the highest diversity of species is at the 15-foot depth. This reef is considered to be one of the most aesthetically appealing at the resort due to the interesting relief provided by channels, caves and steep dropoffs.

**Nanuku Inlet.** Within the entire inlet, depth does not exceed 6 feet. Its innermost areas have been cleared of solid debris and sediment, and the lagoon floor is entirely fine sand. Much of the rubble in the outer lagoon floor consists of dead coral colonies. The overall condition of the lagoon is that of a highly stressed area. It is unclear whether this stress is due to wave shock or chemical alteration due to influences from Waipuhi Fishpond. More than half of the bottom substratum is solid limestone covered with only algal turf. Water clarity fluctuates from very clear to very turbid conditions, a variation due to resuspension of very fine sediment that covers the floor of the inlet.

**Makaiwa Bay.** Coral cover is uniformly high within this sheltered bay, which is perhaps the most unusual locale along the Mauna Lani Resort coastline. The coral cover is composed of the most diverse assemblage of corals found anywhere along the MLR coastline. Dollar asserts that despite an influence in water chemistry from the drainage of Kalahuipua'a Fishponds into Makaiwa Bay, the reef show no effects of any man-induced impacts.

A wide sand channel separates the inner bay from the outer reef. On the northern side of the sand channel, there is a relatively flat shallow reef with lower live coral coverage than in other parts of Makaiwa Bay. Large areas of dead coral and numerous heads of Pocillopora meandrina at the 30-foot depth are indications of high wave stress.

**Wa'awa'a Point.** A vertical cliff forms the shoreline, and the shallowest reef zone consists of large boulders and basaltic blocks covered with Pocillopora meandrina. Cut into the headland are several small pocket inlets. Due to very strong water movement, there is very little benthic cover in these inlets. Beyond the near shore boulder zone, the Porites-reef building zone and Porites compressa-slope areas are similar to those at Pauoa Bay.

**Honoka'ope Bay.** The entire bay floor is covered with uniform white sand interspersed with small coral patch reefs and is within the 30-foot depth range. With its clear, shallow, and calm water, its abundance of patch reefs, and its resident fish populations, Honoka'ope Bay provides a safe spot for snorkeling and diving. A relatively flat plateau extends offshore for a distance of about one mile.

**Southern Property Line.** Here, coral community structure and physiography are very similar to the pattern typical of the Kohala coastline. The transect along the 15-foot contour ran through a typical Pocillopora meandrina boulder zone. The 30-foot and 60-foot transects bisected typical reef building zones, almost equally divided between Porites lobata and Porites compressa.

#### 1.7.1.2 Other Benthic Invertebrates

Table IV-1.4 lists the species of macroinvertebrates observed at each study station. Those in waters fronting the State land are similar to those found in Pauoa Bay. Patterns of occurrence are typical of those found in most Hawaiian leeward reefs. Boring urchins are found on the near-shore reef platforms, while long-spined urchins predominate on the deeper coral zones. Sea cucumbers and sea stars are scattered throughout the entire study area.

Table IV-1.4

Macroinvertebrate Species Occurrence  
Mauna Lani Resort

<u>Species</u>	<u>Pauoa Bay</u>	<u>Hotel Front Reef</u>	<u>Nanuku Inlet</u>	<u>Makaiwa Bay</u>	<u>Waawaa Point</u>	<u>Honokaope Bay</u>	<u>South Property Line</u>
<u>Acanthaster planci</u>		x					x
<u>Actinopyga mauritiana</u>	x	x	x	x	x	x	x
<u>Culcita novaeguinae</u>	x					x	
<u>Diadema paucispinum</u>	x	x	x	x	x	x	x
<u>Echinometra mathaei</u>	x	x	x	x	x	x	x
<u>Echinometra oblonga</u>	x	x	x	x	x	x	x
<u>Echinostrephus aciculatus</u>	x	x	x	x	x	x	x
<u>Echinothrix calamaris</u>	x	x	x	x	x	x	x
<u>Echinothrix diadema</u>	x	x	x	x	x	x	x
<u>Heterocentrotus mamillatus</u>	x	x	x	x	x	x	x
<u>Holothuria atra</u>	x	x	x	x	x	x	x
<u>Linckia guildingii</u>	x	x	x	x	x	x	x
<u>Linckia multiflora</u>	x	x	x	x	x	x	x
<u>Ophiocoma sp.</u>	x	x	x	x	x	x	x
<u>Tripneustes gratilla</u>	x	x	x	x	x	x	x

Source: Steven Dollar

### 1.7.1.3 Reef Fish

Table IV-1.5 lists the fish species found in the study area and shows where they occur. Again, the fish types in the area fronting the State land are similar to those at Pauoa Bay. While the total number of reef species was relatively high (71 species), at all stations there was evidence of low densities of many species, especially Chaetodonts (butterflyfish), Mullids (goatfish), Holocentrids (squirrel fish) and Acanthurids (surgeonfish). Dollar (1985) believes that the depressed population density, particularly of large individuals of the species, can almost certainly be attributed to heavy fishing pressure. During his 1983 survey, numerous instances of spear fishing, shoreline net and pole fishing were observed, and many fishing boats were observed traversing nearshore reef areas. Long-time residents told surveyors that aquarium fish collectors have frequented the Mauna Lani reefs, removing small reef fish. However, while reef fish populations are affected by man-induced factors, they do not appear to be near a stage of total or irreversible species elimination.

### 1.7.1.4 Other Marine Life

Two listed species under National Marine Fisheries Service jurisdiction occur in the coastal waters of Mauna Lani Resort, as they do elsewhere along the west Hawai'i coast and indeed in most Hawaiian waters. They are the federally listed endangered humpback whale (Megaptera novaengliae) and the federally listed threatened green sea turtle (Chelonia mydas). Also suspected of being in the MLR coastal waters is the federally listed endangered hawksbill turtle (Eretmochelys imbricata). It is currently prohibited by law to take these turtles.

### 1.7.1.5 Aquatic Chemical Characteristics

The water chemistry data collected during the 1983 survey pointed to substantial interaction between the offshore aquatic environment and the fishponds, particularly those nearest the ocean. The chemical characteristics of the aquatic environments (both ocean and ponds) show that they are exceedingly diverse and in some cases unique.

Offshore chemical samplings taken during the 1983 survey showed that the ocean environment is oligotrophic, which is typical of the ocean environment surrounding the Hawaiian islands. No evidence was found of significant impact on the chemical or microbiological characteristics of this environment as a result of the then recent construction at Mauna Lani Resort.

### 1.7.2 Probable Impacts

Potential effects of resort development on the marine environment can be projected based on an analysis of the effects that have occurred thus far as a result of the construction of the Mauna Lani Bay Hotel, the Mauna Lani Terrace condominiums, the Francis I'i Brown golf course, and associated resort amenities at Mauna Lani. The experience of other coastal resort developments in Hawai'i can also serve as a guide to predict future impacts.

The proposed changes in the revised master plan (from the existing master plan) include some that might have an impact on the marine environment. They are the development of more resort shoreline, the addition of a second golf course, and the relocation of a hotel site on Honoka'ope Bay. Impacts may result from the following potential changes: (1) increased sedimentation from wind or runoff as a consequence of grading, (2) increased nutrient loading from irrigation and fertilization, (3) changes in storm runoff patterns, and (4) shoreline modification, including changing shoreline access.

Table IV-1.5  
Fish Species Occurrence  
Mauna Lani Resort

Family	Species	Paoua Bay	Hotel Front Reef	Nanuku Inlet	Makaiwa Bay	Waawaa Point	Honokaope Bay	South Property Line
Holocentridae (Squirrelfish)	<u>Myripristis amaenus</u>	x	x		x	x		x
	<u>Fiammeo sammara</u>	x	x		x		x	x
	<u>Adiorx ensifer</u>	x				x		x
	<u>Adiorx lacteoguttatus</u>	x	x				x	x
	<u>Myripristis murdjan</u>	x	x		x			x
Sphyraenidae (Barracuda)	<u>Sphyraena barracuda</u>						x	
Priacanthidae (Big-eye)	<u>Priacanthus cruentatus</u>	x	x					
Lutjanidae (Snappers)	<u>Aprion virescens</u>		x					
Sparidae (Porgys)	<u>Monotaxis grandoculis</u>							x
Mullidae (Goatfish)	<u>Mulloidichthys auriflamma</u>	x	x			x		x
	<u>Parupeneus bifasciatus</u>	x	x		x	x	x	x
	<u>Parupeneus chryserydros</u>		x			x		x
	<u>Parupeneus multifasciatus</u>	x	x			x	x	x
	<u>Parupeneus porphyreus</u>	x			x	x		x
Chaetodontidae (Butterflyfish)	<u>Centropyge potteri</u>			x			x	x
	<u>Forcipiger flavissimus</u>	x	x	x	x	x	x	x
	<u>Chaetodon fremblii</u>	x	x		x	x	x	x
	<u>Chaetodon lunula</u>	x	x		x	x	x	x
	<u>Chaetodon millaris</u>	x	x	x	x	x	x	x
	<u>Chaetodon ornatissimus</u>	x	x		x	x	x	x
	<u>Chaetodon multicinctus</u>	x	x	x	x	x	x	x
	<u>Chaetodon quadrimaculatus</u>	x	x		x	x	x	x
	<u>Chaetodon trifasciatus</u>	x	x		x	x	x	x
	<u>Chaetodon unimaculatus</u>	x	x					x
Carangidae	<u>Caranx melampygus</u>	x					x	
Pomacentridae (Damselfish)	<u>Dascyllus albisella</u>	x	x	x	x	x	x	x
	<u>Abudefduf abdominalis</u>	x	x	x	x	x	x	x
	<u>Abudefduf imparioennis</u>	x	x	x	x	x	x	x
	<u>Abudefduf sordidus</u>	x	x	x	x	x	x	x
	<u>Stegastes fasciatus</u>	x	x	x	x	x	x	x
	<u>Chromis leucurus</u>	x	x	x	x	x	x	x
	<u>Chromis ovalis</u>	x	x	x	x	x	x	x
	<u>Chromis verator</u>	x	x		x		x	
Labridae (Wrasses)	<u>Rodianus bilunulatus</u>	x	x					x
	<u>Labroides phthirophagus</u>	x	x		x	x	x	x
	<u>Pseudochellinus octotaenia</u>	x	x		x			x
	<u>Thalassoma ballieui</u>	x	x		x		x	x
	<u>Thalassoma duperrey</u>	x	x	x	x	x	x	x
	<u>Thalassoma fuscum</u>	x	x			x		x
	<u>Gomphosus varius</u>		x		x			
	<u>Coris flavovittata</u>	x					x	
	<u>Coris gaimardi</u>	x	x		x			x
	<u>Anampses cuvier</u>		x		x			
Scaridae (Parrotfish)	<u>Scarops rubroviolaceus</u>	x	x		x	x	x	x
	<u>Scarus dubius</u>	x	x			x		
	<u>Scarus perspicillatus</u>		x		x	x	x	x
	<u>Scarus sordidus</u>	x						
Cirrhitidae (Hawkfish)	<u>Paracirrhites arcatus</u>	x	x		x	x	x	x
	<u>Paracirrhites forsteri</u>	x	x		x	x	x	x
	<u>Cirrhitops fasciatus</u>	x	x		x	x	x	x
Acanthuridae (Surgeonfish)	<u>Acanthurus achilles</u>	x	x		x	x	x	x
	<u>Acanthurus dussumieri</u>	x	x		x	x	x	x
	<u>Acanthurus leucopareus</u>	x	x		x	x	x	x
	<u>Acanthurus nigrorubrus</u>	x	x		x	x	x	x
	<u>Acanthurus nigrofuscus</u>	x	x		x	x	x	x
	<u>Acanthurus olivaceus</u>	x	x		x	x	x	x
	<u>Acanthurus sandvicensis</u>	x	x	x	x	x	x	x
	<u>Ctenochaetus hawaiiensis</u>		x				x	
	<u>Ctenochaetus strigosus</u>	x	x		x	x	x	x
	<u>Zebrasoma flavescens</u>	x	x	x	x	x	x	x
	<u>Naso lituratus</u>	x	x		x	x	x	x

Table IV-1.5  
(continued)

Family	Species	Pauoa Bay	Hotel Front Reef	Nanuku Inlet	Makaiwa Bay	Waawaa Point	Honokaope Bay	South Property Line
Zanclidae (Moorish Idol)	<u>Zanclus cornutus</u>	x	x		x	x	x	x
Balistidae (Triggerfish)	<u>Melichthys niger</u>	x	x				x	x
	<u>Sufflamen bursa</u>	x	x		x	x	x	x
	<u>Rhinecanthus rectangulus</u>	x			x			x
Monacanthidae (Filefish)	<u>Pervagor spilosoma</u>	x	x		x		x	x
Ostraciidae (Boxfish)	<u>Ostracion meleagris camurum</u>	x			x	x		x
Canthigasteridae (Pufferfish)	<u>Canthigaster lactor</u>	x	x	x	x	x	x	x
Diodontidae (Porcupinefish)	<u>Biodon hystrix</u>	x				x	x	x

### 1.7.2.1 Increased Sedimentation

Currently, with the exception of Nanuku Inlet, the MLR offshore environment does not appear to be subjected to any level of natural sedimentation due to land runoff. There usually is potential for sediment to be transported as windblown dust or runoff during construction, when groundcover is removed. Indeed, there is some evidence that grading for the Kaluakoi Resort on Molokai might have resulted in adverse effects on the marine environment, according to Dollar.

In Dollar's judgment, however, increased sedimentation does not appear to be a likely source of environmental alteration under either the existing master plan or the revised master plan. This is due mainly to the prevalence of raw lava on MLR lands and the lack of soil cover. During construction, the bulldozing and crushing of lava would result in the generation of some windblown material. Dollar estimates that only a fraction of this would be carried in a westerly direction toward the ocean and that an even smaller amount would settle in the nearshore environment.

Runoff, a potential carrier of sediment, does not constitute a major problem, in Dollar's opinion. Groundwater flow would not have the effect of transporting sediment to the ocean since the basal rock acts as a filter.

The baseline marine studies performed in the waters fronting MLR lands showed that no adverse effects were noticeable as a result of construction to date at MLR. It had been noted that some of the richest and most diverse reef assemblages are located in front of the Mauna Lani Bay Hotel and in Makaiwa Bay, where sediment stress would probably have been most pronounced, had it occurred.

Further, most nearshore areas that would receive any runoff is already subjected to a naturally occurring high level of environmental stress, primarily due to waves, and marine organisms in these waters are adapted to these conditions of stress. Also, wave and current patterns are such that exogenous material would be dispersed very rapidly, thereby preventing it from accumulating.

### 1.7.2.2 Increased Nutrient Loading

The existing golf course is irrigated by brackish water and there are no current plans to use effluent on that course or on the second golf course. Should a decision be made to use effluent, golf course fertilization and irrigation may lead to high rates of nutrient loading, which in turn may have an adverse effect on the aquatic ecosystem. If treated effluent were to be used, nutrients are unlikely to build up as a result of golf course runoff, due in large part to rapid dilution and water exchange. Another reason, according to Dollar, is the secondary level of sewage treatment at MLR. In fact, discharge of secondary sewage into marine environments similar to those off MLR lands have resulted in impacts that are considered beneficial, since they result in increased fish populations. Dollar estimates that nutrient loading due to the fertilization and irrigation of two golf courses with treated effluent would not be so great as to increase the likelihood of adverse effects (Dollar, May 1985:9).

Dollar asserts that the "potential for impact to the marine environment due to pesticides and herbicides also seem to be nil. At present no pesticides whatsoever are used on the Mauna Lani golf course, and only very small applications of herbicides are periodically made to the greens. Such small quantities do not appear to be of a magnitude great enough to leach through the soil and lava, be carried to the ocean via groundwater extrusions and then bioaccumulate to the point of producing a noticeable



effect. Even with the addition of a second 18-hole golf course the effects of fertilizers and herbicides still will probably be nonexistent." (Ibid.:10)

#### 1.7.2.3 Changes in Storm Runoff Patterns

Changes in storm runoff patterns have the potential to affect coastal water quality and marine life. Dollar observes that, to date, there appear to be no areas fronting MLR lands that have been adversely affected by runoff. It is expected that increased development under either plan would not result in adverse effects to the marine environment due to altered runoff patterns. Where possible, natural drainage patterns will be preserved. Where these patterns have to be changed as individual sites are developed, it is expected that provisions will be made to accommodate drainage on-site rather than have runoff channeled to the ocean.

Dollar anticipates that "if analyses indicate that the proposed changes in land use and drainage patterns might result in substantial changes in water quality, additional field surveys will be conducted to determine the best location for the discharge of drainage and to assess the significance of expected water quality with respect to marine community structure." (Ibid.:12)

#### 1.7.2.4 Shoreline Modification and Shoreline Use

Mauna Lani Resort, Inc. currently has no plans to alter shoreline areas at MLR, with the exception of the anticipated reconstruction of a beach at Makaiwa Bay, a project for which all permits have been issued and which is approved for construction in the summer of 1986. Thus, potential adverse impacts due to shoreline modification are not anticipated and those that *might result from development of specific sites in future* cannot be predicted at this time.

However, increased accessibility to the shoreline and a change in the intensity of shoreline use (which would occur under either the existing or revised master plan) would undoubtedly have an effect on the nearshore marine environment. Some changes have already been noted since the construction of existing facilities at MLR. After completing his 1983 survey, Dollar concluded that reef fish populations seemed to be depressed along the Mauna Lani shoreline, particularly species highly desirable for eating. Observations by long-time residents indicated increased numbers of pole and spear fishermen with the opening of the resort. As well, fish collectors have been seen in the reefs off MLR lands, collecting small reef fish. The vast majority of fishermen were local residents, not hotel guests (Dollar, 1983:21). At the time of the 1983 study, the reef fish populations, although clearly affected by man-induced factors, did not appear near a stage of total or irreversible species elimination. The reefs at that time retained an adequate number of fish to provide an attraction for divers and others. As mentioned earlier, the waters directly fronting the Mauna Lani Bay Hotel have recently been observed to contain a large variety and number of reef fishes.

The revised master plan includes public access to both Honoka'ope Bay and to the proposed public shoreline park north of Pauoa Bay. This increased accessibility increases the potential for fishing pressure. Should this pressure become too great, Dollar suggests considering some types of conservation measures such as closing portions of the reef area to fishing on an alternating basis or designating some areas as marine reserves.

## 1.8 TERRESTRIAL FLORA

### 1.8.1 Existing Conditions

Existing plant life at the site of MLR was described in the 1975 Environmental Impact Statement, prepared prior to development at the resort. Since then, a golf course, hotel, condominium project and associated resort amenities have been developed. In general, the earlier description of terrestrial flora remains valid, supplemented by the introduction of other species associated with resort landscaping. (See Table IV-1.6 for a listing of plant species found at MLR.)

In April 1984, Earthwatch, environmental resource investigators, undertook a botanical survey of the areas to be added to the resort master plan. The purpose of the survey was to list existing vegetation types and to search for endangered plant species, in order to assess the probable impacts of development on the existing flora. The results of this survey covering the additional lands are described below.

#### 1.8.1.1 General Description of Resort Area

The southern portion of the area on which the project would be developed consists of unweathered lava. Except within the boundaries of the golf course, vegetation in this area is virtually nonexistent. In the middle portion of the resort property, kiawe (Prosopis pallida) is the dominant species. In the northern sector, grasses and scrub predominate in open areas between strands of kiawa trees. The region was first cleared at the turn of the century for sugarcane planting, and portions were later used for cattle pens and diversified crops. Some nursery uses are now established in limited areas.

A greater variety of natural vegetation is associated with the shoreline and ponds. The tree species which predominate in this area are the native milo (Thespesia populnea) and coconut (Cocos nucifera). Other trees present in lesser numbers include hala (Pandanus odoratissimus) and beach heliotrope (Messerschmidia argentea). Shrubs include naupaka kahakai (Scaveola frutescens 'Sericea'), noni (Mirinda citrifolia), and spider lily (Crinum asiaticum). Beach morning glory (Ipomoea pescaprae) is the primary shoreline and pond-edge groundcover.

In addition to the aforementioned species, numerous other plants have been introduced to the MLR as part of the golf course and landscaping. For the most part, these plants are supported only through regular irrigation and the ongoing efforts of the resort landscape maintenance crews. If these efforts were to cease, most, if not all of the introduced species would quickly perish, and the flora would return to its original state.

#### 1.8.1.2 Description of Revised Master Plan Expansion Area

The 1984 Earthwatch study area encompassed that portion of State-leased land north of Pauoa Bay which is the proposed site of two new golf holes and a public shoreline park; the southern portion of Honoka'ope Bay up to the property line with Waikoloa Resort; and the inland portions of the revised master plan lands, surrounding existing resort support facilities. Results of the botanical field survey indicated the presence of six major vegetation cover types within the study area.

**Barren Lava.** Total vegetation cover, consisting mostly of scattered grasses and shrubs, is less than 5 percent in this cover type. Species include fountaingrass (Pennisetum setaceum), ilima (Sida spp.) and kiawe shrubs. Plants are generally confined to cracks and crevices in the lava surface.

Table IV-1.6  
Plant Species Checklist  
Mauna Lani Resort

Scientific Name <sup>1</sup>	Common Name(s) <sup>2</sup>	Origin <sup>3</sup>
<b>MONOCOTYLEDONAE</b>		
<b>GRAMINEAE (Grass Family)</b>		
<i>Aristida adensis</i> L.	Sixweeks threeawn	X
<i>Cenchrus ciliaris</i> L.	Puffelgrass	X
<i>Chloris divaricata</i> R. Br.	Stargrass	X
<i>Cynodon dactylon</i> (L.) Pers.	Bermuda Grass; manienie	X
<i>Echinochloa indica</i> (L.) Gaertn.	Wiregrass; manienie-ai'i	X
<i>Eragrostis ciliaris</i> (All.) Vig.-Lut.	Stinkgrass	X
<i>Eragrostis tenella</i> (L.) Beauv. ex R. & S.	Japanese lovegrass	X
<i>Pennisetum setaceum</i> (Forsk.) Chiov.	Fountaingrass	X
<i>Pennisetum setosum</i> (Sw.) L.C. Rich in Pers.	Feathery pennisetum	X
<i>Rhynchospora repens</i> (Willd.) C.E. Hubb	Natal redtop	X
<i>Setaria verticillata</i> (L.) Beauv.	Bristly foxtail	X
<b>DICOTYLEDONAE</b>		
<b>MORACEAE (Mulberry Family)</b>		
<i>Ficus</i> spp.	--	X
<b>CHENOPODIACEAE (Goosefoot Family)</b>		
<i>Atriplex semibaccata</i> R. Br.	Australian saltbush	X
<i>Chenopodium album</i> L.	Lamb's quarters; 'aheahea	X
<i>Chenopodium carinatum</i> R. Br.	Keeled goosefoot	X
<i>Chenopodium murale</i> L.	Nettle-leaved goosefoot	X
<i>Chenopodium oahuense</i> (Meyen) Aellen	'Aheahea	E
<i>Salsola pestifer</i> A. Nels.	Russian thistle	X
<b>AMARANTHACEAE (Amaranth Family)</b>		
<i>Amaranthus spinosus</i> L.	Spiny amaranth; pakai-kuku	X
<i>Amaranthus viridis</i> L.	Slender Amaranth; pakai	X
<b>NYCTAGINACEAE (Four o'clock Family)</b>		
<i>Boerhavia diffusa</i> L. var. <i>diffusa</i>	Alena	I
<i>Boerhavia diffusa</i> L. var. <i>tetranda</i> (Forst. f.) Heimerl	Alena	I
<i>Bougainvillea</i> spp.	Bougainvillea	X
<b>PORTULACACEAE (Purslane Family)</b>		
<i>Portulaca cyanosperma</i> Egler	Blue-seeded portulaca; 'ihi	E
<i>Portulaca oleracea</i> L.	Common purslane; 'ihi	X
<b>CARYOPHYLLACEAE (Pink Family)</b>		
<i>Spergula</i> spp.	--	X
<b>PAPAVERACEAE (Poppy Family)</b>		
<i>Argemone glauca</i> Pope	Prickly poppy; pua-kala	E
<b>CAPPARACEAE (Caper Family)</b>		
<i>Capparis sandwichiana</i> var. <i>zoharyi</i> Neg. & Deg.	Native caper; pua-pilo	E
<i>Gynandropsis gynandra</i> (L.) Brig.	Wild spider flower; honohina	X
<b>LEGUMINOSAE (Pea Family)</b>		
<i>Leucaena leucocephala</i>		
<i>Prosopis pallida</i> (Humb. & Bonpl. ex Willd.) HBK	Mesquite; kiawe	X
<b>EUPHORBIACEAE (Spurge Family)</b>		
<i>Euphorbia hirta</i> L.	Garden spurge; koko-kahiki	X
<i>Euphorbia glomerata</i> (Millsp.) L.C. Wheeler	Graceful spurge	X
<i>Euphorbia prostrata</i> Ait.	Prostrate spurge	X
<i>Ricinus communis</i> L.	Castor bean; koll	X
<b>MALVACEAE (Mallow Family)</b>		
<i>Malvastrum coromandelianum</i> L. Garcke	False Mallow; hauoi	X
<i>Sida</i> spp.	--	--
<i>Sida fallax</i> Walp.	Ilima; 'ilima papa	I
<b>CUCURBITACEAE (Gourd Family)</b>		
<i>Cucumis dipsaceus</i> Ehrenb. ex. Spach	Wild spiny cucumber	X
<b>STERCULIACEAE (Cocoa Family)</b>		
<i>Waltheria indica</i> var. <i>americana</i> (L.) R. Br.	Waltheria; hi'aloa; 'uhaloa	I
<b>CONVOLVULACEAE (Morning Glory Family)</b>		
<i>Ipomoea brasilensis</i> (L.) Sweet	Beach morning glory; pohuehue	I
<i>Merremia aegyptia</i> (L.) Urban	Hairy merremia; koali-kua-hula	X

Table IV-1.6  
 Plant Species Checklist  
 Mauna Lani Resort  
 (continued)

Scientific Name <sup>1</sup>	Common Name(s) <sup>2</sup>	Origin <sup>3</sup>
<b>BORAGINACEAE (Heliotrope Family)</b>		
<u>Messerschmidia argentea</u> (L.f.) Johnston	Tree heliotrope	X
<b>GOODENIACEAE (Naupaka Family)</b>		
<u>Scaevola taccada</u> (Gaertn.) Roxb.	Beach naupaka; naupaka-kahakai	I
<b>COMPOSITAE (Sunflower Family)</b>		
<u>Ageratum conyzoides</u> L.	Ageratum; malle-hohono	X
<u>Bidens cynapiifolia</u> HBK.	West Indian beggar's tick	X
<u>Bidens pilosa</u> var. <u>pilosa</u> L.	Peggar's tick; ko'oko'olau	X
<u>Gnaphalium peregrinum</u> Fern.	--	X
<u>Picris hieracioides</u> L.	Hawksweed	X
<u>Pluchea odorata</u> (L.) Cass.	Pluchea; sourbush	X
<u>Sonchus oleraceus</u> L.	Sow thistle; pua-lele	X
<u>Taraxacum officinale</u> (L.) Weber in Wiggers	Dandelion; lau-lele	X
<u>Wedelia trilobata</u> (L.) Hitchc.	Wedelia	X
<u>Zinnia pauciflora</u> L.	Wild Zinnia; pua-pihi	X
Unidentified	--	--
Unidentified (island record)	--	--

<sup>1</sup> Families are arranged according to St. John (1973). Genera and species are listed alphabetically within each family. Taxonomy and nomenclature generally follow St. John except where more commonly accepted names are listed.

<sup>2</sup> Hawaiian name also given when known.

<sup>3</sup> Species origins:

- E = Endemic to the Hawaiian Islands: occurring naturally nowhere else in the world.
- I = Indigenous: native to the Hawaiian Islands but also occurring naturally elsewhere in the world.
- P = Polynesian Introduction: plants brought by the Polynesian immigrants prior to contact with the Western World.
- X = Exotic: plants of accidental or deliberate introduction after contact.

Source: Earthwatch, 1984.

**Kiawe Scrub Rockland.** Vegetation cover is generally less than 50 percent on older lava surfaces, usually pahoehoe. Scattered kiawe shrubs form the dominant cover, although ilima, hi'aloa (Waltheria indica var. americana) and sixweeks threeawn (Aristida adensionis) were also observed. Other species found in Open Scrub Grassland, described below, also occur here, but less frequently. The native prickly poppy (Argemone glauca) and an unidentified Compositae (island record) were observed in an area of Kiawe Scrub Rockland adjacent to the existing resort service area.

**Open Scrub Grassland.** Generally providing less than 30 percent coverage, this cover type is characterized by level to gently rolling grasslands with scattered forbs, shrubs and trees. In the northern sections of the study area, the cover type becomes more dense in the tree layer and grades into Kiawe Woodland. Exotic perennial grasses typical of the grasslands (and of dry leeward grasslands throughout the islands) are buffelgrass (Cenchrus ciliaris), feathery pennisetum (Pennisetum setosum) and stinkgrass (Eragrostis cilianensis). Native plant species observed were the indigenous ilima, hi'aloa and alena (Boerhavia diffusa), and the endemic blue-seeded portulaca of 'ihi (Portulaca cyanosperma).

**Kiawe Woodland.** This cover type occupies much of the northern part of the State-leased lands as well as part of Honoka'ope Bay where a small isolated stand of it occurs. Dense, well-established stands of kiawe trees up to 40 feet tall are found in this cover type. Kiawe woodland is characterized by dense tree canopy (from 60 to 100 percent cover) and a sparse highly shaded understory. Plant species in Kiawe Woodland include nettle-leaved goosefoot (Chenopodium murale), feathery pennisetum, Australian saltbush (Atriplex semibaccata), and wild spider flower (Gynandropsis gynandra).

**Coastal Strand.** The shoreline of the study areas north of Pauoa Bay and at Honoka'ope Bay exhibits a variety of physical forms and features. Few plants occur on the substrate by Pauoa Bay. Among those found, however, were two endemic species, the native caper (Capparis sandwichiana var. zoharyi) and 'aheahea (Chenopodium oahuense); and two indigenous species, beach naupaka (Scaevola taccada) and pohuehue or beach morning glory (Ipomoea brasiliensis). Tree heliotrope (Messerschmidia argentea) is also found at Pauoa Bay beach. A small but well-developed sandy beach and associated coastal strand vegetation interrupt the barren lava at the southern end of Honoka'op Bay. A dense growth of pohuehue secures the fine-grained sand between the water and the nearby coastal Kiawe Woodland. Windblown sand is found inland on barren a'a lava and is populated by fountaingrass and kiawe.

**Disturbed/Landscaped Areas.** This cover type includes exotic weeds and ornamentals typical of disturbed roadside areas, perimeters of golf courses and construction sites. The more commonly observed include spurges (Euphorbia spp.), spiny amaranth (Amaranthus spinosus), Bermuda grass (Cynodon dactylon), and sactor bean (Ricinus communis).

**Endangered or Rare Plant Species.** During the 1984 Earthwatch survey, no proposed, listed or candidate endangered or threatened plant species were observed within the proposed development areas.

### 1.8.2 Probable Impacts

Continuation of development at MLR either according to the existing master plan or to the proposed revised master plan would entail clearing, grading, construction of buildings and related resort amenities, and landscaping. Both would result in an increase in the extent and density of vegetative cover, with change in species composition. The revised master plan, however, would result in a more substantial increase due to the

more extensive acreage and the planned construction of one or more irrigated golf courses. This increase would provide additional habitat and food sources for birds and other small animals. At the same time, fauna that are adapted to the naturally arid conditions would be displaced by species better able to take advantage of opportunities in urban and semi-urban environments.

Although extensive earthwork will accompany construction of facilities, it is anticipated that portions of the development site will be left intact where feasible, allowing incorporation of natural landscape elements, including endemic species, into proposed individual site developments, particularly along the coastline. To date, Mauna Lani Resort, Inc. has followed this guideline and intends to continue to incorporate natural elements into its overall resort design.

None of the plant species observed appear to be restricted to the project area, and most are exotic species common throughout Hawai'i. Nearby lands seem to be characterized by the same vegetation cover types observed. None of the plant species observed are proposed, listed, or candidate endangered or threatened species. However, the vegetation survey team noted that some are part of sensitive ecosystems worthy of preservation to the extent possible.

### **1.8.3 Mitigation Measures**

In its 1984 study, Earthwatch recommends the mitigation measures listed below as a mean of lessening any adverse impacts on existing vegetation that is part of an unusual ecosystem. Mauna Lani Resort, Inc. intends to follow these guidelines where possible.

**Recognize and protect unique or sensitive ecosystems.** Shoreline areas surveyed include environmentally sensitive cover types that have already been disturbed. Attempts should be made to enhance such diminishing natural resources through appropriate design and pedestrian orientation.

**Conservation of limited resources.** Drought-resistant plants with low moisture requirements can be incorporated into landscape design, to better conserve limited water resources.

**Unify design elements harmoniously with existing natural ones.** Barren lava landforms can be left unvegetated and thus remain valuable cultural and geologic resources. Attempts at vegetation should be appropriate to the rugged landscape's essential character.

**Use of native species.** Some of the native species observed could be replanted, replaced or incorporated into the landscape rather than being removed completely from the environment. These include prickly poppy, native caper, beach morning glory, 'aheahea, and beach naupaka.

## **1.9 BIRDS AND WILDLIFE**

### **1.9.1 Existing Conditions**

Observations made at the time of the 1975 Environmental Impact Statement for the Mauna Lani Resort lands led to the conclusion that the more common species of birds were to be found at the resort site. It was stated that the shoreline and brackish ponds of the property did not provide the wetlands suitable for nesting of rare native

birds, such as are found in wetlands to the south. Larger mammals sighted were mongooses and feral goats. These observations were in general reconfirmed in two surveys performed by Philip Bruner, the first in 1979 and the second in 1984.

#### 1.9.1.1 Birds

The only indigenous (native) species of bird recorded during the 1984 survey was the Pacific Golden Plover (Pluvialis fulva), a migratory species of shorebird that typically forages in open short grassy terrain (Johnson, Johnson and Bruner, 1981). A substantial increase in such habitat has occurred with the building of the Francis I'i Brown golf course. Prior to the existence of these golf courses, plover were probably not common in this area (Bruner, 1984:2).

During the 1979 study, three additional shorebird species, all introduced species, were observed: Wandering Tattler (Heteroscelus incanus), Ruddy Turnstone (Arenaria interpres), and Bristle-thighed Curlew (Numenius tahitiensis). Also recorded during the 1979 survey was the indigenous Black-crowned Night Heron (Nycticorax nycticorax).

The Honoka'ope Bay portion of the study area contained few birds due to the paucity of suitable habitat. A small patch of coastal woods in this section had small numbers of all of the species listed in Table IV-1.7 with Zebra Dove, Japanese White-eye, and Gray Francolin most numerous. The Pauoa Bay area is able to support many more birds due to more diversified and extensive habitat. Warbling Silverbill, Zebra Dove, Japanese Quail, and Spotted Dove were most common in areas of open parkland, while Gray Francolin, Japanese White-eye, and Northern Cardinal were most numerous in the denser coastal woods.

Currently, the sewage treatment plant site mauka and north of the planned development, serves as a resting and feeding area for migratory birds.

#### 1.9.1.2 Mammals

A total of 11 mongooses were seen during the 1984 survey and evidence in the form of scats indicated the relative abundance of this mammal, especially in the grassland habitat and around developed structures. One feral cat was observed in the coastal woods at the Pauoa Bay end of the resort.

Herds of feral goats (Capra hircus Linnaeus) ranging in size from as few as 3 or 4 animals to as many as 20 to 30 reportedly roamed the site prior to its development as a resort (Belt, Collins & Associates; 1975). Although a few years later a study concluded that feral goats were "relatively uncommon in the drier, lower elevation areas," three were sighted during an August 1984 Belt, Collins field trip to the Mauna Lani Resort site.

The endangered Hawaiian hoary bat (Lasiurus cinereus semotus) occurs on the island of Hawai'i. Most sightings have been recorded in Hilo and in relatively wet forests at higher elevations. However, on September 24, 1984, a dead specimen was found on the grounds of the Sheraton Royal Waikoloa Hotel. The specimen was donated to the Brigham Young University-Hawai'i Campus Museum of Natural History. In a survey of a Waikoloa Resort site, Bruner did not find any evidence that a significant bat population existed on the Waikoloa Beach Resort, and there are no reports of them having been seen at the MLR.

Table IV-1.7

Relative Abundance and Habitat Preference of Exotic (Introduced) Birds  
Mauna Lani Resort

<u>Common Name</u>	<u>Scientific Name</u>	<u>Relative Abundance</u>	<u>Habitat</u>
Gray Francolin	<u>Francolinus pondicerianus</u>	C	G,K,E,P
Japanese Quail	<u>Coturnix coturnix</u>	U	G,P
Spotted Dove	<u>Streptopelia chinensis</u>	C	P,G,E
Zebra Dove	<u>Geopelia striata</u>	A	G,P,E,K
Mockingbird	<u>Mimus polyglottos</u>	R=9	P,K
Japanese White-eye	<u>Zosterops japonica</u>	C	K,P,E
Northern Cardinal	<u>Cardinalis cardinalis</u>	U	K,P
Common Myna	<u>Acridotheres tristis</u>	C	K,P,E
House Sparrow	<u>Passer domesticus</u>	R=27	K,P
Warbling Silverbill	<u>Lonchura malabarica</u>	A	G,P,E

Key to Table:

Relative Abundance = Number of times observed during survey or frequency on eight-minute counts.

- A = Abundant (average on 8-minute count: 10+)  
 C = Common (average on 8-minute count: 5-10)  
 U = Uncommon (average on 8-minute count: less than 5)  
 R = Recorded but not on 8-minute count. Number that follows is the actual number seen or heard.

Habitat = Area most frequented. Order of most preferred or utilized begins at left.

- G = Grassland (open fields)  
 K = Kiawe thickets  
 P = Parkland (mixed grassland and scattered trees)  
 E = Edge of roads or other breaks in the vegetation  
 S = Shoreline (exposed rocky shelf)

Source: Phillip Bruner (1984)



## **1.9.2 Probable Impacts**

Development of the resort according to either the existing or proposed master plan would result in considerable changes in the avian and mammal communities. The change in vegetation and a more urban environment would lead to the gradual increase in the number of exotic and introduced birds and to an increase in pets such as cats and dogs. The Common Mynah would probably increase, as would the House Sparrow and the Nutmeg Mannikin. No major change in feral animal population is expected. The increased human presence, particularly in the food handling areas, may lead to some increase in the number of mice, rats, and mongooses.

The development of a second golf course and other landscaped areas on the open lava flow according to the revised master plan would create increased habitat for the Pacific Golden Plover and other species. Bruner expects that the disruption of the present dry parkland and wooded coastal habitats in favor of a more ordered and invariably wetter landscaped vegetation will decrease population densities for some species, notably those that prefer a drier habitat: Japanese Quail, Gray Francolin, and Warbling Silverbill. To retain these species on-site, patches of "native" vegetation can be retained.

In a letter addressed to the U.S. Army Engineer District (February 22, 1985) on the subject of impacts on the Hawaiian hoary bat as a result of proposed resort development at Waikoloa Beach Resort, the Fish and Wildlife service of the U.S. Department of the Interior stated its biological opinion:

Impacts of the Hawaiian hoary bat would not be expected to seriously harm the bat population on the island of Hawaii. It does not seem likely that the construction and operation of the resort complex would change the environment to the bats' detriment unless insecticides are used heavily. If such pesticides are used, bats may be affected due to decrease in their food supply and, possibly, secondary poisoning. Such negative impacts would not likely to jeopardize the continued existence of the species as a whole.

The type of development planned for Mauna Lani Resort is similar to that for Waikoloa Resort. Thus a similar conclusion can be drawn regarding its potential impacts on the Hawaiian hoary bat.

## **1.10 HISTORICAL AND ARCHAEOLOGICAL RESOURCES**

### **1.10.1 Existing Conditions**

The Mauna Lani Resort is situated within the ahupua'a of Kalahuipua'a. A complex of large and productive fishponds provides a focal point for Kalahuipua'a (Kirch, 1979:1). The area is rich in historic resources and archaeological remains and has been the subject of numerous surveys. Mauna Lani Resort, Inc. has adopted an interpretive and management plan to preserve and display these resources in an orderly manner (Science Management, Inc., 1982).

#### **1.10.1.1 Historical Setting**

Few direct documentary references to Kalahuipua'a appear before the middle of the 19th century. It is known, however, that Kalahuipua'a was visited by explorers and missionaries. William Ellis made a canoe trip along the coastline from Kawaihae to

Kailua-Kona in 1883, but said nothing about settlements at Puako, Kalahuipua'a, or Anaeho'omaluu (Ellis, 1917:305-6). Neither did the annual reports of Waimea missionary Lorenzo Lyons mention Kalahuipua'a, since his ministry apparently extended only as far south as Puako (Doyle, 1953). Lyons does mention the Puako area as one with salt works, but whether there were such salt works in what is referred to as Kalahuipua'a is unknown. Fornander mentions Kalahuipua'a in the Legend of Kaulanapokii and, in passing, in three other accounts (Fornander, 1916:560-61 and 230). The paucity of references to Kalahuipua'a points to the probability that there were fewer residents there than at many other locations along the coastline during the early post-contact period.

During the mid-1800's, Kalahuipua'a was not permanently occupied; the ponds were apparently used only to provide royalty with fish when they were in the area. In 1876 it was acquired by Samuel Parker and incorporated into the Parker Ranch. Between 1900 and 1913, approximately 1,400 acres of land in the "Puako Flats" area, part of it on the land at the northern end of the Mauna Lani Resort lands that are leased from the State, was the site of a short-lived effort at sugarcane cultivation. The "Puako Plantation" was apparently hampered by a lack of irrigation water, although a flume brought some water down from Waimea, and several brackish water wells dug near the coastline supplemented the Waimea supply. The harvested cane was hauled north to the harbor at Mahukona for transshipment via a narrow-gauge railway (Thrum, 1900-13). Following the plantation's failure, the area was used for grazing cattle and raising pigs. The Goto family undertook commercial farming on the Lalamilo tract between 1924 and 1934.

Francis I'i Brown bought the 'ili of Kalahuipua'a from the Parker Ranch heirs in 1932. During the next 40 years, he reconstructed the fishpond walls that had fallen into disrepair and managed the ponds for his personal use. In addition, he built some rudimentary roads, constructed an impressive rock retaining wall at Waiakumalae Point and leveled about 5 acres of a'a clinker in back of the wall. Mauna Lani Resort, Inc. (then Orchid Island Resort) purchased the property from Brown in 1972 and has been pursuing its plans for resort development since that time. The resort has restored the fishponds, which today are among the most significant working Hawaiian fishponds.

Further north is the famous Puako petroglyph field, located partially on land leased by Mauna Lani Resort, Inc. from the State of Hawai'i. The Puako petroglyph field is one of the three largest and most important petroglyph fields known on the Island of Hawai'i and perhaps within the entire state. The majority of the petroglyphs, most of them linear human figures, are thought to date from the pre-European contact period. For years these important cultural artifacts were neglected, but in recent years the petroglyph area has been cleaned up by the Waimea Hawaiian Civic Club and Mauna Lani Resort, Inc. as a community project. The joint cleanup effort is expected to continue.

#### 1.10.1.2 Studies Performed

All archaeological investigations prior to 1980 in the Kalahuipua'a and Puako areas between the Queen Ka'ahumanu Highway corridor and the coast were conducted by the B.P. Bishop Museum. The first research in 1955 involved examination of sites near the Kalahuipua'a fishponds and the petroglyph field, with excavation of various sites. In 1964 the museum carried out a major examination of the Puako petroglyph field including mapping (Welch:5). The most extensive work was conducted by Patrick Kirch on 4,000 acres in the Puako and Kalahuipua'a areas between 1973 and 1975, with the final report published in 1979. The research included intensive survey in 1973, an aerial survey in 1974 and an intensive survey and salvage excavation in 1975 (*Ibid.*:6).

In the past few years, several archaeologists have conducted investigations of sites in the area, including the petroglyph field. As the Puako Petroglyph Archaeological District, the site complex was placed on the State of Hawai'i Register of Historic Places in June 1982, following nomination on behalf of the Waimea Hawaiian Civic Club and Mauna Lani Resort, Inc. In April 1983, the site was placed on the National Register (Ibid).

In connection with the submittal of a Conservation District Use Application, the State Historic Sites Division's archaeologist requested an additional reconnaissance survey of the area to be affected by the proposed project (construction of a public beach park and two golf holes), although it had been covered in the earlier 1973 survey. Findings of this 1984 survey are presented in Section 1.10.1.5 below.

See Figure IV-5 for the location of archaeological sites found during both the 1973-75 survey and the more recent 1984 survey. For descriptive detail, the reader is referred to the Kirch (1979) and Welch (1984) studies.

### 1.10.1.3 Findings of the 1973-75 Survey and Excavation

In mid-1973, Mauna Loa Land, Inc. contracted with The Bishop Museum to conduct an archaeological reconnaissance survey of Mauna Loa's South Kohala lands. The survey covered both the company's leased and fee-owned lands (a total of 3,841 acres) and was designed to assess the cultural resources of the region. It resulted in the location of 179 archaeological sites containing a total of 449 separate features (Kirch:3). Sites were given a significance evaluation based on their potential for further research and/or public interpretation.

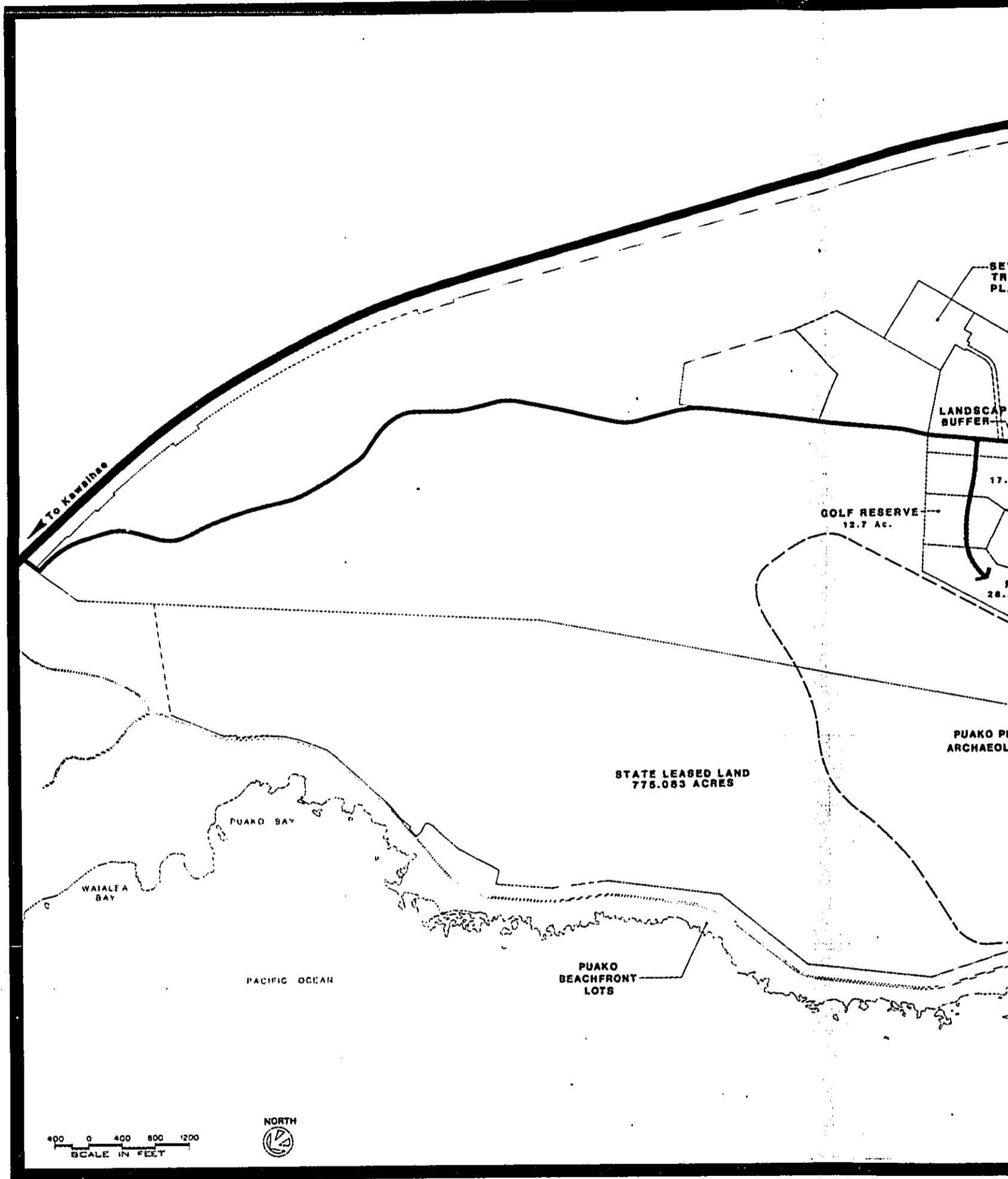
The majority of the sites are located adjacent to or inland from the Kalahuipua'a Fishponds and in the coastal area fronting Ili'ilinaehele and Honoka'ope Bays. The two areas of principal concentration of archaeological sites have been designated Historic Preserves "A" and "B" at Mauna Lani Resort. A third concentration of sites located during the 1973 survey is situated above Puako Bay and includes the extensive Puako petroglyph field, with some 3,000 petroglyphs.

Two historic trails of major significance pass through the surveyed area. The first is the historic Mamalahoa Trail, also known as the King's Trail, which passes over the Kaniku Lava Flow, connecting the Puako area with the coastal areas to the south. The second trail is a short segment of waterworn cobbles leading from a small brackish water pond situated at the head of Ili'ilinaehele Bay up into the Kaniku Lava Flow and parallels the coast to Honoka'ope Bay.

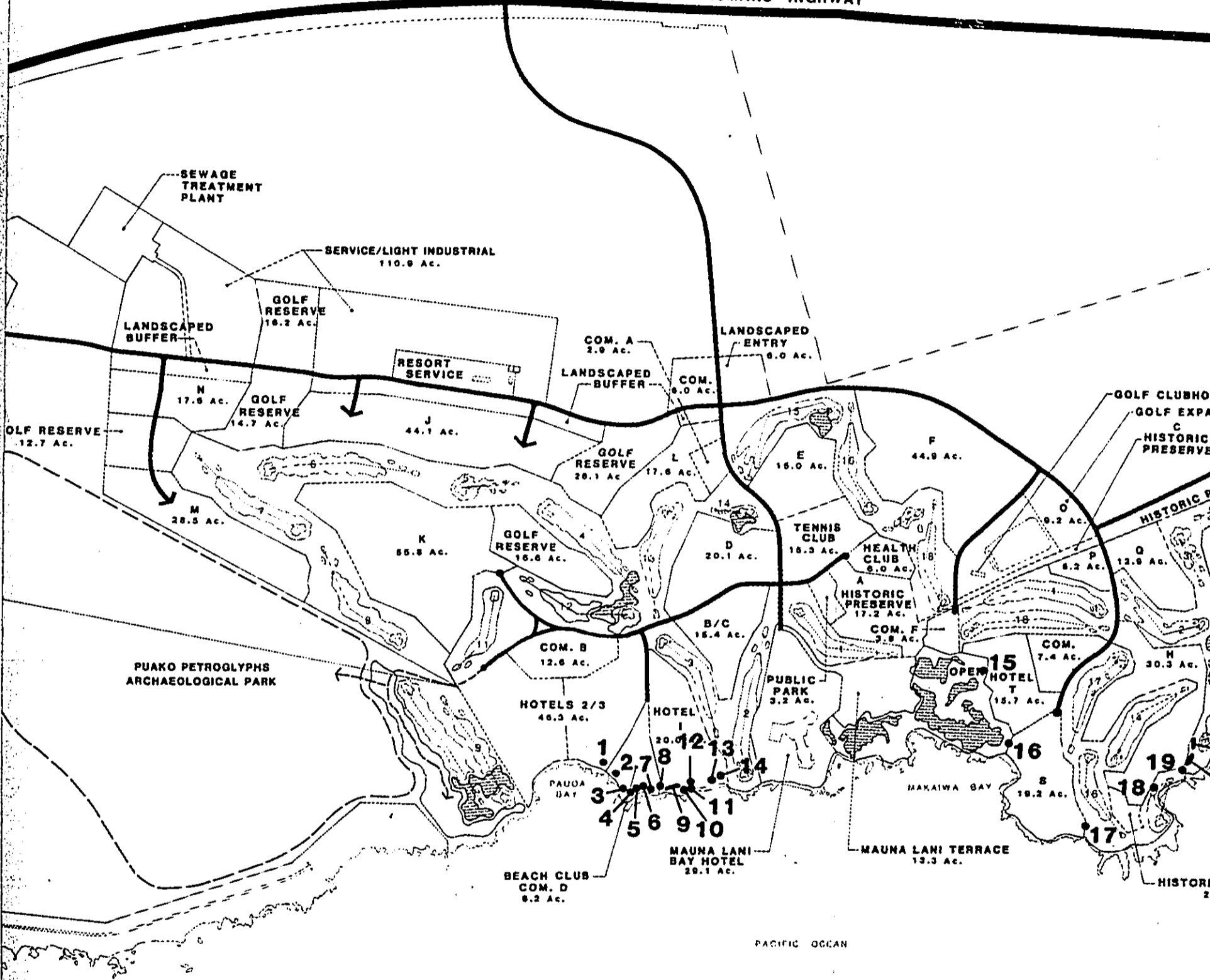
Further details of the 1973 survey are contained in the 1975 EIS, prepared prior to initial development at MLR. In this current document, only those areas affected by the proposed expanded master plan are discussed further.

The proposed relocated site for Hotel 4 contains only two sites identified during the 1973 survey; a third site is between the hotel site and hole 8 of the expanded golf course. Three others are located in residential site Y.

Site 400 consists of paved depressions which were recorded during the survey and not excavated later. Site 401 is described as a burial crypt, a site included as part of the coastal setback. A burial crypt or cist is sunk into a'a clinkers on top of a high a'a clinker hill. No artifacts were noted and the burial may be prehistoric. Visible skeletal remains included portions of at least three individuals; for the most part, the skeletons are poorly preserved (Kirch:53). These two sites are on the Hotel 4 parcel.



QUEEN KAAHUMANU HIGHWAY



NOTE: Lettered labeled sites are resort residential uses.

AY

To Kailua-Kona

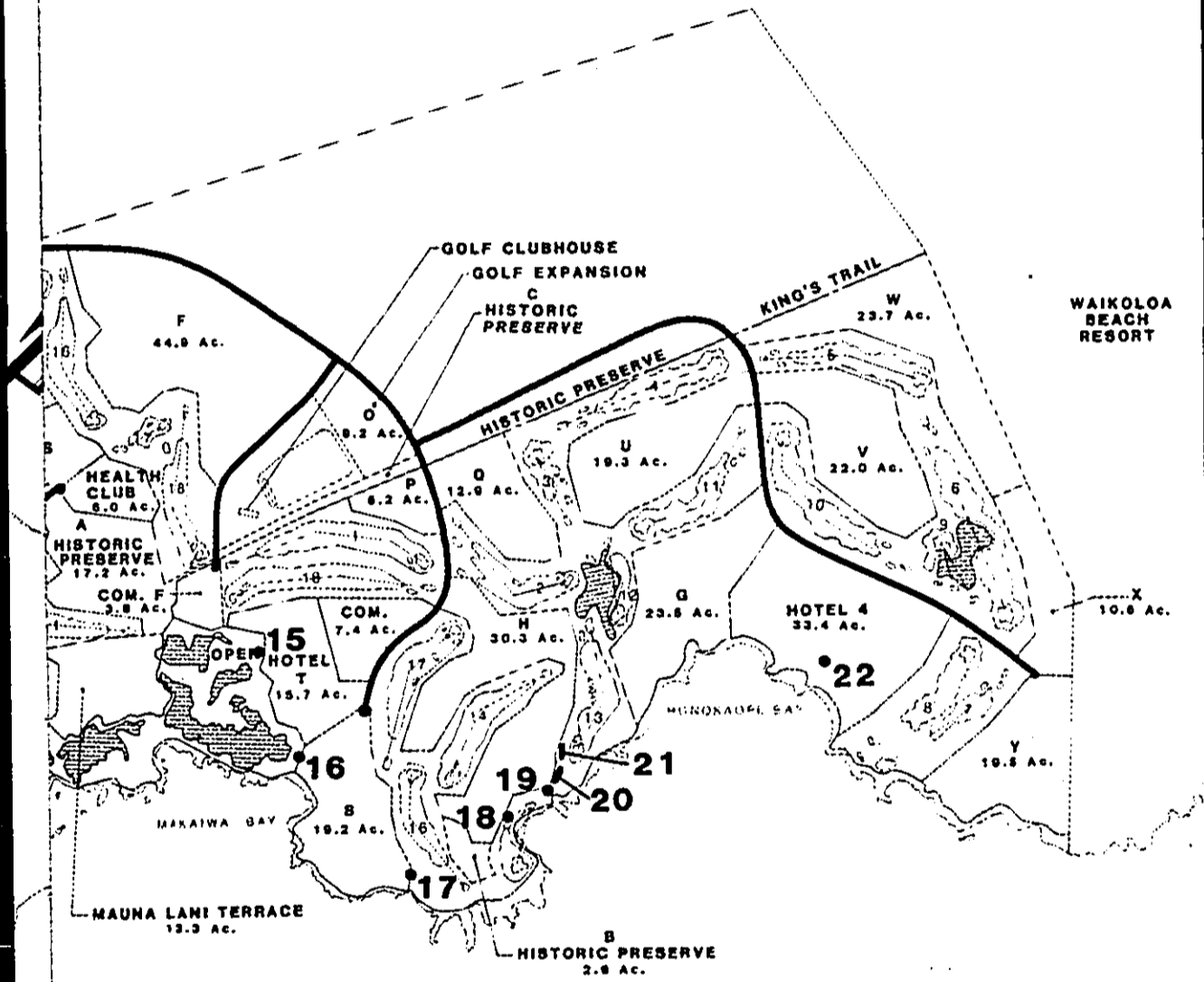


Figure IV-4

# LOCATION OF ANCHIALINE PONDS

MAUNA LANI RESORT  
South Kohala, Hawaii



#### 1.10.1.5 Reconnaissance Survey of Public Shoreline Park and Golf Course Site by Pauoa Bay

In September 1984, Bishop Museum (Welch) conducted a reconnaissance survey of an area near Pauoa Bay on the southern edge of the Puako Petroglyph Archaeological District, at the site proposed for the development of a public shoreline park and two holes of golf. Its purpose was to identify any archaeological resources in the area that might be adversely affected, assess their significance and make recommendations for preservation or further investigation.

Eight sites were identified within the survey area, including E2-31, which had previously been recorded by Kirch. One site, E3-739, when plotted, was found to lie within the Puako Petroglyph Archaeological District (see Figure IV-6 for the location of the sites identified). All sites were located on pahoehoe lava, in kiawe woodland, or on barren pahoehoe outcrops; none were found on the barren lava field near the coast.

**Site E2-31.** First reported by Kirch (1973:53; 1979:56), this site consists of four C-shaped shelters and two bubble openings in the pahoehoe bedrock. A few mollusk shells were observed during the current survey.

**Site E-158.** Two features were found at this site: a small cairn and a small arc-shaped alignment. It is unclear whether the latter feature was intended to serve as a shelter, but it stands about 35 feet from a shallow natural shelter beneath the outcrop. No evidence of human activity was found within this shelter.

**Site E-159.** This site is a C-shaped shelter with a rear wall of a'a boulder outcrop on which large aa cobbles have been stacked.

**Site E3-736.** A low-lying pahoehoe outcrop and cave, this site is considered a possible burial site. The small entrance opens to a lava bubble or tube.

**Site E3-737.** This site is an arc-shaped shelter of large a'a cobbles.

**Site E3-738.** This site is a zig-zag alignment that is probably the result of fairly modern clearance of the pahoehoe outcrop, with no evidence of what the purpose of clearing might have been.

**Site E3-739.** A cairn of stacked flat angular cobbles, this site is almost certainly a modern marker.

**Site E3-740.** An alignment of roughly stacked a'a cobbles, this site could be interpreted as a small C-shaped shelter. However, the alignment may represent the walls of a former small platform with missing stones.

In summary, the above sites consist of typical traditional Hawaiian or historic features. No petroglyphs were found. It is Welch's opinion that of the sites observed, none would require physical preservation due to their architectural value, historic importance, religious significance or value for instructional purposes. However, it is thought that the sites in the survey area do possess scientific research value in terms of their potential for providing data for research of Hawaiian prehistory.

Welch suggests intensive mapping and data recovery of the archaeological sites before modifying the survey area. This action would constitute mitigation of adverse impacts as a result of development. Should the area in the vicinity of Site E3-736 be



affected by development, the site would be investigated to ascertain whether a burial site is present. Excavation of a sample of the deposits at Site E2-31 should be undertaken to recover artifacts and midden that may be present.

#### 1.10.2 Probable Impacts

Mauna Lani Resort, Inc. recognizes the importance of the South Kohala coastal region as the repository of significant historic and archaeological sites, many of which are unique to the area. The sites of significance within the Mauna Lani lands have been incorporated into overall planning for the resort, and the long-range preservation plan contained in the "Interpretive and Management Plan for Mauna Lani Resort" prepared by Science Management, Inc. in 1982 is being followed. Historic Preserves "A" and "B" are shown in Figure IV-5 and a third preserve is proposed along a portion of the King's Trail at the southeastern edge of the MLR.

Mauna Lani Resort, Inc. intends to continue its historic preservation and interpretation policy within the boundaries of its proposed expanded master planned development. It is recognized that, to date, most of the lands owned and leased by Mauna Lani have been the subject of reconnaissance surveys rather than intensive survey. As noted earlier, some sites found during the 1984 Welch survey had not been observed during the 1973 Bishop Museum survey. This points to the need for more intensive survey, which Mauna Lani Resort, Inc. intends to undertake at the appropriate time during the development process. As required, individual parcels will be examined in more detail during follow-up surveys as each parcel is developed.

According to preliminary plans for the public beach park and golf holes by Pauoa Bay, and for the relocated Hotel 4 site at Honoka'ope Bay, historic and archaeological sites located during surveys described in previous sections of this report will not be adversely affected. Further, mitigation measures recommended in these studies will be adhered to. These include intensive mapping, data recovery, and preservation of archaeological sites.

Continuing development of Mauna Lani Resort will have a positive impact on access to archaeological sites. Public access to be provided in conjunction with the development of a public shoreline park will improve access to the Puako petroglyphs. As a corollary, this improved access will also increase the possibility for vandalism and defacement of significant sites. To decrease this possibility, MLR intends to provide access to the petroglyph field from dawn to dusk. Should further measures be necessary, such as surveillance by Mauna Lani Resort staff or a representative of the Hawaiian Civic Club, this would be considered.

Mauna Lani Resort, Inc. has already contacted the State of Hawai'i Historic Preservation Officer and the Hawai'i County Planning Department Historic Preservation Officer to ensure open communication and early coordination during the planning stages of its expanded master plan. A letter dated July 1, 1985 from the State Parks Administrator, Department of Land and Natural Resources (DLNR), to Mauna Lani Resort, Inc. (see Appendix C) states that based on a DLNR staff archaeologist's field inspection of proposed development lands, it was determined that the 1973 Bishop Museum survey and the 1984 Welch survey are "adequate in identifying the various cultural resources within the project area". Although more intensive survey is not now required, it is probable that other sites will be located as planning work continues. Should new sites be uncovered during construction, all activity in the immediate area will cease and both the State and County notified. It is expected that at that time a collective decision will be made as to what action should be taken.

The new golf course is planned to be one of the first amenities built according to the revised master plan. At the time of exact alignment of each fairway, prior to grading, the developer will have a walk-through survey performed by an archaeologist at each fairway site. Survey results will be reviewed with the State and County agencies to their satisfaction. Based on their recommendation, more specific work will be performed on any newly uncovered archaeological sites. Should it be required, plans will be adjusted to work around sites of significance.

## **2. SOCIOECONOMIC CONSIDERATIONS**

Because of the extent of ultimate development that will occur at the Mauna Lani Resort under either the existing or proposed master plan (possibly up to 3,000 hotel units and almost 3,200 residential units on hundreds of acres of land), the resort project has the potential to generate significant economic and social effects. This is particularly true in the long term and in the context of total development in the Kohalas. The nature and extent of these impacts, along with an overview of existing socioeconomic conditions, have been analyzed in two separate but complementary studies prepared in conjunction with this Environmental Impact Statement.

Peat, Marwick, Mitchell & Co. has studied the economic and fiscal implications of the project, whereas Environs Pacific, Inc. has addressed social issues likely to be brought to the foreground as development continues at MLR. The summary of existing socio-economic conditions as well as the discussion of potential socioeconomic impacts presented in the following subsections of this report are based largely on these two studies.

For projection purposes, the entire island of Hawai'i is defined as MLR's impact area; however, the most substantial effects will be felt in the North and South Kohala districts and in North Kona.

### **2.1 EXISTING CONDITIONS**

#### **2.1.1 Primary Economic Activities**

Heavily influenced by Parker Ranch, South Kohala first developed through ranching and support activities. The town of Waimea has emerged as North and South Kohala's commercial center, and today it is supported by truck farming, retail establishments, and second home and retirement industries in addition to the traditional ranching. North Kohala was dominated by sugarcane production and sugar processing until 1975 when the district's last mill closed. Due to this decline in its economic base, North Kohala's population has been stable whereas that of neighboring districts has increased. Residents of North Kohala tend to be aging, and many are still supported by ranching and small-scale agricultural and retail activities. About a third of the district's working population is now employed in service occupations, and most commute to jobs at hotels in South Kohala and North Kona.

Through much of this century, coffee production and ranching provided Kona's economic base, an unsteady one due to large fluctuations in the international coffee market. In the years following statehood and the introduction of jet service to the islands, increasing numbers of visitors began to travel to the Kona coast. North Kona's building boom of the 1960's and 1970's spread to South Kohala; this resulted in the construction of hundreds of new hotel, condominium and residential units. Today, the South Kohala and North Kona districts constitute the center of the island's visitor industry. As of October 1984, the 5,690 hotel and visitor condominium units in the two districts accounted for 82 percent of all visitor units on the island.

The availability of large parcels of land under single ownership and the enactment of horizontal property regime laws were and remain key factors in permitting high quality planned development in several resort areas along the Kohala and Kona coast. There are currently six major resort areas in the South Kohala and North Kona areas: Mauna Lani Resort, Mauna Kea Resort, and Waikoloa Resort and Village in Kohala; and Keauhou Resort, Kona Village and Kailua-Kona in North Kona.

### 2.1.2 Population

Nearly one-third of the island's population resides in North and South Kohala and North and South Kona. The resident population of these four districts was 27,518 in 1980, almost double their population in 1970. This increase occurred at a compounded annual growth rate of 6.6 percent, or nearly twice the 3.8 percent rate for the County as a whole (see Table IV-2.1). The North Kona district experienced the most rapid growth at 11 percent a year, followed by the South Kohala district at 7.1 percent. There were 8,960 households in the Kohala and Kona districts in 1980, with an average household size of about 3 persons per household.

The median age in all four Kohala and Kona districts in 1980 approximated that of the county as a whole (29.4 years) and the state as a whole (28.3), ranging from 28.8 years in North Kona to 32.0 years in North Kohala. Thus, in North Kohala, which has felt the least impact from the visitor industry and recent population growth, the population is relatively older. As seen in the following table, the median family incomes of the North and South Kona districts in 1980 were above the county average of \$19,132, while those of the Kohalas were lower.

Median Family Income  
Kona and Kohala Districts

<u>District</u>	<u>Median Family Income (1979)</u>
North Kona	\$ 21,134
South Kona	20,068
North Kohala	15,719
South Kohala	17,923
County of Hawai'i	19,132
State of Hawai'i	22,750

Source: State of Hawai'i 1983 Data Book and  
Peat, Marwick, Mitchell & Co.

### 2.1.3 Employment Patterns

In the wake of the expanding visitor industry, the construction, retail and financial industries have experienced significant growth in South Kohala and North Kona. In 1980, hotel-related industries accounted for 49.8 percent of civilian employment in South Kohala, 45.6 percent in North Kohala and 64.2 percent in North Kona. As shown in Table IV-2.2, labor force participation among persons 16 years and older in the Kohala and Kona districts in 1980 was 68.2 percent, significantly higher than the county-wide rate of 61.0 percent. Also, the districts' unemployment rate, at 5.9 percent, was lower than the 7 percent rate for the county as a whole.

The occupational distribution shown in Table IV-2.2 reflects the emerging visitor industry base of West Hawai'i's economy. Employment in the Kohala and Kona districts tends to be in the technical, sales, administrative support and service occupations. Together, these occupations account for about 46 percent of total district employment. Managerial and professional occupations account for about 19 percent of the districts' employment, while agricultural production and operations related employment each represent between about 10 and 13 percent of the total.

Table IV-2.1  
 MAUNA LANI RESORT  
 District and County  
 Resident Population and Households  
 1970 and 1980

<u>District</u>	<u>Census tracts</u>	<u>Resident population</u>			<u>Households 1980</u>
		<u>1970</u>	<u>1980</u>	<u>Compounded annual percentage growth</u>	
North Kona	215, 216	4,832	13,748	11.0 %	4,602
South Kona	213, 214	4,004	5,914	4.0	1,853
North Kohala	218	3,326	3,249	(.2)	1,022
South Kohala	217	<u>2,310</u>	<u>4,607</u>	<u>7.1</u>	<u>1,483</u>
Total region		<u>14,472</u>	<u>27,518</u>	<u>6.6 %</u>	<u>8,960</u>
County of Hawaii		<u>63,468</u>	<u>92,053</u>	<u>3.8 %</u>	<u>29,237</u>

Source: U. S. Bureau of the Census, Census of Population and Housing, 1980 and 1981.

Table IV-2.2

MAUNA LANI RESORT  
Kona and Kohala Districts  
Employment Characteristics

1980

	North Kona (tracts 215, 216)	South Kona (tracts 213, 214)	North Kohala (tract 218)	South Kohala (tract 217)	Total region Number Percentage
Labor force participation (persons 16 years and over)	<u>72.2%</u>	<u>66.2%</u>	<u>60.2%</u>	<u>64.1%</u>	<u>N/A</u> <u>68.2%</u>
Civilian unemployment rate	<u>5.3%</u>	<u>5.7%</u>	<u>9.2%</u>	<u>6.3%</u>	<u>N/A</u> <u>5.9%</u>
Employed persons by occupation:					
Managerial and professional	1,462	362	187	407	2,418
Technical, sales and administrative support	1,948	661	169	379	3,157
Service	1,486	460	421	355	2,722
Farming, forestry and fishing	491	520	175	277	1,463
Precision production, craft and repair	839	394	119	327	1,679
Operators, fabricators and laborers	687	265	159	233	1,344
Total	<u>6,913</u>	<u>2,662</u>	<u>1,230</u>	<u>1,978</u>	<u>12,783</u>

N/A Not applicable.

Source: U. S. Bureau of the Census, 1980.

#### **2.1.4 Social and Community Concerns**

Recent surveys of Big Island residents show that a large majority of those polled agreed that tourism is good for the island (Ward Research, 1982) and that new hotels and condominiums are needed to provide more jobs for residents of the Kohalas (Public Affairs Advisory Services, 1979:11; and 1980:13). Major advantages are perceived to be employment opportunities and the strengthening of local businesses. Although less frequently perceived, disadvantages tend to involve housing impacts, potential impacts to the environment or historical sites, and reduced open space (Ibid.:3-5).

To supplement available information from recent surveys and studies, Environs Pacific, Inc. interviewed several persons locally when preparing its report for this Environmental Impact Statement. Those interviewed included local residents, resort workers, business people, and community leaders. An attempt was made to identify community issues and current opinion relevant to development at MLR.

A large majority of those interviewed felt that resort development along the Kohala coast, including development at MLR, has been favorably received over the past several years. Most recently, the development of the proposed Hyatt Regency Waikoloa Hotel complex received strong community support from local residents during public hearings.

Cultural adaptation to changing social mores and patterns of interaction as a result of change brought about by increasing resort development is perceived to have taken place relatively smoothly. Friction between various ethnic groups is thought to be decreasing. Although cultural erosion is recognized, informants feel that visitor industry growth and the associated influx of visitors and new residents contribute only partially to this condition. Other contributing factors cited were television and other media. Moreover, positive aspects associated with increased resort development were also perceived, such as increased opportunities for experiences not normally available within a relatively isolated rural community.

Common concerns centered around the potential impact of the visitor industry on family structure and on public use of facilities, particularly beaches, in the vicinity of new resort facilities.

### **2.2 PROBABLE IMPACTS**

#### **2.2.1 Visitor Expenditures**

Visitor expenditures in the County are expected to increase significantly due to outlays by MLR visitors for goods and services, including food and drink, accommodations and gift items. Indirect expenditures within both the County and State are also expected to increase.

##### **2.2.1.1 Direct Visitor Expenditures**

Hawai'i Visitors Bureau data indicate that the average daily expenditure in 1984 was \$234 per person among Japanese visitors to the islands and \$90 per person among non-Japanese visitors. Although visitors to MLR are predominantly non-Japanese, according to resort estimates these visitors spend substantially more than the average westbound visitor. Based on hotel and condominium room rates at MLR, consultation with MLR, Mauna Lani Bay Hotel and Mauna Lani Terrace administrators, as well as on market analysis data (Ming Chew Associates, 1984), MLR's hotel visitor is

estimated to spend \$180 per day on average and the visitor to a condominium unit \$115 per day. These figures were used by Peat, Marwick to project direct visitor expenditures (in 1983 dollars) on the island.

The projected daily visitor population at MLR in both hotel and condominium units is shown in Table IV-2.3. The derivation of these estimates is summarized in Section 2.2.3 of this chapter. These population projections were combined with the daily spending rates above to arrive at potential direct visitor expenditures on the island.

Table IV-2.3 shows that under the proposed revised master plan direct expenditures are projected to amount to more than \$45-million a year by 1990 and more than \$125-million by 2000. The rate of development under the proposed master plan is expected to be slightly slower than under the existing master plan and, therefore, if the same spending patterns were to hold, direct expenditures under the revised plan would be \$1-million less per year by 1990 and \$5-million less by 2000. However, the higher density facilities that could be developed under the existing master plan would probably not attain the quality of facilities that could be developed under the expanded master plan. Thus visitor expenditures may also be expected to vary somewhat and the differences in total direct expenditures between the two plans may be exaggerated.

#### **2.2.1.2 Indirect and Induced Visitor Expenditures**

In addition to direct expenditures by visitors, indirect and induced expenditures also are expected to be generated. This occurs when establishments that cater directly to visitors in turn purchase goods and services for their operations, or when employees or proprietors of businesses catering to visitors spend their earnings. In a study on the economic impact of tourism in Hawai'i (State of Hawai'i, Department of Planning and Economic development, April 1983:6), DPED estimates that such responding generates about \$1.04 in additional sales within the state for every \$1.00 directly spent by a visitor.

Applying the above multiplier to estimated direct expenditures, total indirect and induced expenditures would amount to over \$47-million in 1990 and over \$130-million in 2000 if development were to continue according to the revised master plan. Table IV-2.3 shows that, under the revised master plan, new facilities are projected to generate additional direct, indirect and induced expenditures of \$92.6-million in 1990 and \$255.7-million by 2000.

#### **2.2.2 Employment Impact**

Development of MLR will generate short-term employment during the construction of new facilities as well as long-term employment during the operation of these facilities. Employment during both phases can be characterized as direct, indirect or induced. Direct employment is the result of direct visitor expenditures; jobs are created at hotels and at other establishments that serve visitors. Indirect jobs are created when businesses serving visitors purchase goods and services from others. Induced effects occur when employees and proprietors of business directly or indirectly dependent on the visitor industry spend their earnings.



Table IV-2.3

Projected Resort Visitor Population  
at Mauna Lani Resort and  
Annual Visitor Expenditures  
(1983 dollars - millions)

	1990		1995		2000		At potential maximum development	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
<u>Daily Visitor Population (1)</u>								
Hotel units	570	570	998	998	1,425	1,425	4,275	4,275
Multifamily units	213	189	425	378	874	756	1,433	1,390
Total resort visitor population	783	759	1,423	1,376	2,299	2,181	5,708	5,665
<u>Annual Visitor Expenditures in State</u>								
Direct	\$ 37.5	\$ 37.5	\$ 65.6	\$ 65.6	\$ 93.6	\$ 93.6	\$ 280.9	\$ 280.9
Visitors in hotels	8.9	7.9	17.8	15.8	36.7	31.8	60.1	58.3
Visitors in multifamily units	46.4	45.4	83.4	81.4	130.3	125.4	341.0	339.2
Total Direct	48.2	47.2	86.7	84.7	135.5	130.4	354.6	352.8
Indirect and induced (2)	\$ 94.6	\$ 92.6	\$ 170.1	\$ 166.1	\$ 256.8	\$ 255.7	\$ 695.0	\$ 692.0
Total Expenditures								

(1) See Section 2.2.3 for derivation of visitor population.  
(2) Projected at \$104 per \$1.00 direct expenditure. State of Hawaii, Department of Planning and Economic Development, The Economic Impacts of Tourism in Hawaii 1970 - 1980, 1983.

SOURCE: Peat, Marwick, Mitchell & Co. and Belt, Collins & Associates.

### 2.2.2.1 Construction Period

**2.2.2.1.1 Direct Construction Employment.** The number of persons working at any one time on a particular construction project fluctuates considerably. While this variability is of some importance, it is extremely difficult to characterize in a macroanalysis such as this. Fortunately, it is nearly as useful to ignore the short-term variations and deal instead with total construction person-years and average construction employment. (A construction person-year is equivalent to one person working for a period of one year; average employment is equal to the total person-years expended divided by the number of years during which the construction is underway.)

Direct construction employment at MLR is projected by facility type in Table IV-2.4 to the year 2000 in average construction person-years. Projections are not made beyond 2000 because the timing of construction after that date is indefinite and cannot be reasonably predicted. However, it is assumed that construction activity after 2000 would occur at the same pace or at a slower pace as projected up to the year 2000.

In the earlier time period to 1990, the demand for construction employment is projected to be about 220 annual person-years under either the existing or revised master plan. Although fewer multifamily units would be built under the revised plan, golf course construction would add to the overall demand for construction employment during the early years. Throughout the development period to the year 2000, multifamily unit construction will generate the greatest demand for labor. Insofar as the absorption rate of multifamily units is expected to be higher according to the existing master plan, so would demand for construction labor.

Based on an assessment of hotel and resort residential developments expected to occur elsewhere along the Kohala coast, Peat, Marwick estimates "that under the revised plan, Mauna Lani Resort's direct construction labor needs would constitute approximately 27% of direct labor needs of all hotel and resort residential construction activity on the Kohala coast by 1990 and approximately 50% by the year 2000." (Peat, Marwick, Mitchell & Co., 1985: II-5).

The types of construction jobs that will be generated by MLR development is expected to be distributed similarly to that of the industry as a whole. About 70 percent of construction employment can be expected to be in skilled craft and labor positions. About 5 percent would be professional or technical and about 9 percent managerial. Due to specialized skill requirements, the latter two categories are most likely to include greater shares of off-island workers who come from larger and more diversified labor pools. (See Exhibit II-H in Appendix B for estimates of direct construction employment at MLR by class of worker.)

**2.2.2.1.2 Indirect and Induced Employment.** Direct employment of construction period workers will stimulate additional purchases of goods and services on the island and elsewhere in the state, resulting in indirect and induced employment. In its 1982 revised model of the construction industry in Hawai'i, DPED estimated that 2.4 full-time jobs are created for every full-time job in the building construction industry. This multiplier was applied to the projected direct demand for construction labor (see Table IV-2.5) to arrive at indirect and induced labor demand.

This indirect and induced demand for labor was further broken down into estimates of on-island and off-island demand. A 1975 study of Kauai's economy (Anderson et al) suggested that indirect and induced employment equivalent to 20

Table IV-2.4

MAUNA LANI RESORT

Direct Employment for Facility Construction

1986 to 2000

(Average annual person-years)

Facility type	1986 to 1990		1991 to 1995		1996 to 2000	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
Hotel units(1)	80	80	60	60	60	60
Multifamily units(2)	122	108	122	108	257	216
Single-family units(3)	8	10	10	13	10	18
Commercial(4)	4	4	4	3	7	6
Civil(5)	6	18	-	-	-	-
<b>Total construction employment</b>	<u>220</u>	<u>220</u>	<u>196</u>	<u>184</u>	<u>334</u>	<u>300</u>

- (1) Demand calculated at 0.5 full-time equivalent jobs per year per unit and average two-year construction period per hotel.
- (2) Demand calculated at 0.9 full-time equivalent jobs per year per unit and average 18-month construction period per project.
- (3) Demand calculated at 2.0 full-time equivalent jobs per year per unit and average one-year construction period per unit.
- (4) Demand calculated at 0.7 person-years per 1,000 square feet leasable space years. Revised plan (including additional golf course) estimated to require about 30 full-time efficient jobs per year over three years. Figures converted to rates over a five-year period. Estimates provided by Mauna Lani Resort, Inc.
- (5) For construction of infrastructural and recreational improvements, including roads, sewage treatment plant, public beach parking areas, etc. Existing plan estimated to require approximately 15 full-time equivalent jobs per year over two years.

Source: Peat, Marwick, Mitchell & Co.

Table IV-2.5

MAUNA LANI RESORT

Direct, Indirect and Induced Construction Employment

1986 to 2000

(Average annual person-years)

Type of employment	1986 to 1990		1991 to 1995		1996 to 2000(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
Direct(2)	220	220	196	184	334	300
Indirect and induced:						
On island(3)	44	44	39	37	67	60
Elsewhere in state	264	264	235	221	401	360
Total employment(4)	528	528	470	442	802	720

(1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

(2) From Exhibit II-G.

(3) Direct employment multiplied by 0.2. Anderson, et al., Kauai Socioeconomic Profile, 1975.

(4) Direct employment multiplied by 2.4. State of Hawaii, Department of Planning and Economic Development Hawaii Construction Model: Further Developments, 1982.

Source: Peat, Marwick, Mitchell & Co.

percent of direct construction employment would remain in the region; this percentage has been applied in the Peat, Marwick study. See Table IV-2.5 for projected indirect and induced employment on the island of Hawai'i and elsewhere in the state.

**2.2.2.1.3 Total Construction Period Employment.** Table IV-2.5 also summarizes the total employment effects of construction to the year 2000. Under the revised master plan, construction would result in about 530 annual person-years from 1986 to 1990, 440 from 1991 to 1995, and 720 to 2000. Total construction demand under the existing master plan would be the same as that under the revised master plan until 1990. However, because of its greater direct employment demand after 1990, the existing master plan would generate proportionately more indirect and induced employment. By the year 2000, the existing master plan would generate about 80 more annual person-years than would the proposed master plan.

Peat, Marwick estimates that the Island of Hawaii may be able to provide approximately 65 percent of the resort's total construction-related labor demand. The remaining 35 percent of direct, indirect and induced employment is expected to be primarily filled by workers who temporarily relocate from other islands (Appendix D:2).

#### **2.2.2.2 Operational Period**

**2.2.2.2.1 Direct Operational Employment.** The operation and management of resort facilities under either existing or revised master plan will generate substantial opportunities for long-term employment in the Kohala and Kona areas. Because of the full-service nature of planned hotels, it is expected that most operational employment will be in the hotels. Table IV-2.6 shows projected operational figures in terms of full-time equivalent positions rather in terms of number of employees. The Peat, Marwick study states:

A survey of luxury hotels indicated that due to part-time, temporary and casual employment, there are between 11 and 12 employees on payroll for every 10 "full-time equivalent" hotel positions. On the other hand, other sources report that because of multiple job holding in the visitor industry, every 10 jobs may be assumed to be filled by approximately 9 employees. Taken together, these findings suggest that the number of persons required to fill future employment demands will be close to the number of full-time equivalent jobs projected. (Peat, Marwick, Mitchell & Co., 1985:II-6).

During the early years, the demand for operational employment will be virtually the same, about 825 full-time equivalent jobs, under both the existing and revised master plans. However, by 2000, operational employment under the existing master plan would demand 80 more full-time equivalent positions than under the revised master plan. This is due to the greater development of multifamily units and commercial space according to the existing plan.

Projected operational employment at MLR is distributed by occupational category in Table IV-2.7, based on the distribution of a sample of hotel industry workers and on projections by Peat, Marwick. It is expected that the greatest number of jobs, about one-third to one-half, will be created in the food and beverage sector due to the normally high concentration of food and beverage service positions in luxury hotels and to the mix of commercial establishments planned. Housekeeping constitutes the next largest occupational category. Peat, Marwick expects that managerial and supervisory positions will account for 9 to 12 percent of total operational employment.

Table IV-2.6

MAUNA LANI RESORT

Projected Direct Employment for Resort Operations

1990 to Potential Maximum

Facility type	1990		1995		2000		At potential maximum development(1)
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	
Hotel(2)	480	480	840	840	1,200	1,200	3,600
Resort residential(3)	94	85	189	171	385	341	636
Retail(4)	143	132	274	252	516	460	993
Resort administration(5)	109	125	121	137	136	152	169
Total operational employment	826	822	1,424	1,400	2,235	2,153	5,382
							5,398

(1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

(2) Projected at 1.2 full-time equivalent jobs per hotel unit.

(3) Projected at 0.2 full-time equivalent jobs per multifamily or single-family unit.

(4) Projected at 1.0 jobs per 200 net leasable square feet of commercial space.

(5) Estimated to follow growth of facility development. Category includes miscellaneous Resort employment such as Resort administration, property development, accounting, maintenance of additional golf course (revised plan only) and infrastructural facilities.

Source: Peat, Marwick, Mitchell & Co.

Table IV-2.7

MAUNA LANI RESORT

Direct Operational Employment by Job Classification

1990 to Potential Maximum

Occupational category	1990		1995		2000		At potential maximum development(1)		Percent distributions		
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Hotel(2)	Resort(2)	Commercial(3)
Management and supervisory	91	90	156	154	244	236	591	593	11%	9%	12%
Office and front desk	124	123	213	210	334	322	802	805	16	22	8
Housekeeping	235	236	402	398	621	603	1,517	1,521	32	51	-
Food and beverage	246	246	420	415	644	625	1,607	1,611	31	-	45
Building and grounds maintenance	55	55	94	93	144	140	353	354	7	12	-
Other services	75	72	139	130	248	227	512	514	3	6	35
<b>Total operational employment</b>	<b>826</b>	<b>822</b>	<b>1,424</b>	<b>1,400</b>	<b>2,235</b>	<b>2,153</b>	<b>5,382</b>	<b>5,398</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

(1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

(2) Based on a sample of 4,098 hotel industry workers. State of Hawaii Department of Health, Health Surveillance Program, 1970 to 1980.

(3) Based on market absorption projections, 50% of commercial space projected to be restaurant, 50% other retail. Retail distribution based on 1990 statewide projection for wholesale and retail industries combined. State of Hawaii, Department of Labor and Industrial Relations, Employment Outlook for Industries and Occupations, 1980-1990, 1984.

Source: Peat, Marwick, Mitchell & Co.

**2.2.2.2 Sources of Direct Operational Employees.** Recent experience at the Mauna Lani Bay Hotel and the Sheraton Royal Waikoloa Hotel has shown that most employees hired were from the Big Island. However, top managerial positions at full-service hotels are typically filled by outsiders. Because of the substantial amount of resort development planned for the Kohala coast in the next few decades, Peat, Marwick anticipates that regional employment opportunities will grow faster than natural population increase. Recent in-migrants from outside the County of Hawai'i are projected by Peat, Marwick to account for 10 percent of MLR's new employees in 1990 and up to 16 percent by 2000.

The island's existing labor pool provides potential employees for future development at MLR. Included are (1) unemployed or underemployed persons, (2) high school graduates or other labor market entrants, and (3) persons working elsewhere on the island. Peat, Marwick's analysis suggests that the first two categories of "available" sources of labor could account for about 45 percent of employees drawn from Hawai'i County's labor pool. "This available labor would include persons who move to the county for reasons other than the possibility of employment in industry segments supported by Mauna Lani Resort." (Peat, Marwick, Mitchell & Co., 1985:II-7).

The remainder of those hired from the local (Hawai'i County) labor pool would be in the third category: those who are employed but desire a job change. Peat, Marwick expects that the majority of such turnover would come from jobs at other South Kohala establishments, and others from employment in the North Kona area.

Table IV-2.8 summarizes the projected mix of direct operational employment at MLR, based on the above estimates. The differences between the existing and revised master plan are not significant.

**2.2.2.3 Total Operational Employment.** Table IV-2.9 summarizes the direct, indirect and induced demand for operational labor at MLR. The resulting total operational employment was first obtained by applying two multipliers to proportionate shares of direct employment, 1.93 for hotel resort residential and resort administrative functions, and 1.66 applied to retail functions. Projection of indirect and induced employment that would remain on the island is based on findings of the previously mentioned Anderson et al study, adjusted to reflect Hawai'i island's greater ability to provide support services to the visitor industry.

Operational employment would be only slightly lower under the revised plan as compared to the existing master plan to 2000; at potential maximum development, total employment would be slightly higher. Including current employment at the Mauna Lani Bay Hotel and at the Mauna Lani Terrace condominiums, MLR would be providing about 2,400 full-time equivalent jobs statewide by 1990 and 5,000 by 2000. If all units for which the resort has governmental approval are built, statewide employment has the potential to increase by 10,000.

Peat, Marwick estimates that the impact of operational employment (direct, indirect, and induced) on the Island of Hawaii is approximately 1,100 employees in 1990, 1,800 in 1995, to 2,800 by the year 2000. For details, see Appendix D and Exhibit A of Appendix D.



Table IV-2.8

MAUNA LANI RESORT

Projected Mix of Operational Employees

1990 to Potential Maximum

Labor supply component	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
On-island sources:								
Available labor(2)	334	333	557	548	845	814	1,937	1,943
Kohala turnover(3)	223	222	372	365	563	543	1,292	1,295
Other turnover(4)	186	185	310	305	469	452	1,076	1,080
Off-island sources(5)	83	82	185	182	358	344	1,077	1,080
Total operational employment	826	822	1,424	1,400	2,235	2,153	5,382	5,398

(1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

(2) Unemployed and underemployed persons on-island and labor market entrants. Projected to account for 45% of on-island labor component.

(3) Persons attracted from other work in North or South Kohala. Projected to account for 30% of on-island labor component.

(4) Persons attracted from other work in North Kona. Projected to account for 25% of on-island labor component.

(5) Based on off-island component of current Mauna Lani Resort employees, and on projections of employment at other area resorts, in-migrant employees projected to account for 10% of employment by 1990, 13% by 1995, 16% by 2000 and 20% by project completion.

Source: Peat, Marwick, Mitchell & Co.

Table IV-2.9  
MAUNA LANI RESORT

Direct, Indirect and Induced Operational Employment  
1990 to Potential Maximum

Type of employment	1990		1995		2000		At potential maximum development(1)
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	
Direct(2)	826	822	1,424	1,400	2,235	2,153	5,382
Indirect and induced:							
On-island(3)	248	247	427	420	671	646	1,615
Elsewhere in state	482	482	823	814	1,269	1,232	3,133
Total operational employment(4)	1,556	1,551	2,674	2,634	4,175	4,031	10,119
							10,150

(1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

(2) From Exhibit II-J.

(3) Direct employment multiplied by 0.3. See discussion in text.

(4) Direct employment except retail multiplied by 1.93, retail multiplied by 1.66. State of Hawaii, Department of Planning and Economic Development, The Economic Impact of Tourism in Hawaii: 1970-1980, 1983. DPED multipliers for retail uses were adjusted to reflect the mix of eating and drinking establishments and other retail uses planned for Mauna Lani's commercial areas.

Source: Peat, Marwick, Mitchell & Co.

### 2.2.2.3 Summary of Employment Demand

Table IV-2.10 summarizes the projected demand for construction period and operational employment by time period and location of employment (within the County and elsewhere in the State). Not included in the figures are an estimated 840 statewide jobs that have resulted from development to date at MLR: 440 full-time equivalent positions at the resort, and 570 in the county. The number of positions created does not differ significantly whether development proceeds according to the existing or proposed revised master plan. Total employment statewide would increase by about 2,000 in 1990, 3,000 in 1995 and almost 5,000 by 2000. Figures shown for "potential maximum development" include operational employment only; it is presumed that at the time of full development, all new construction will have been completed.

### 2.2.3 Population Impact

Development of MLR will result in two types of population impacts: an increase in the on-site population at MLR as a result of increased numbers of visitors and residents at the resort, and an increase in off-site population resulting indirectly from resort development. This latter population increase is due to new employment generated by MLR and the associated in-migration of workers to fill positions not filled by current residents.

#### 2.2.3.1 On-Site Population Impact

On-site population consists of (1) residents who live in multifamily or single-family units at the resort during most or parts of the year, and (2) visitors staying at the resort's hotels and in units at condominium projects that have been put into visitor rental pools. To project population impact, Peat, Marwick made assumptions regarding the usage mix of units, average party sizes and percent occupancies. For this, they relied on the experience of comparable resort facilities and industry trends. A summary of the assumptions are listed below.

Assumptions for On-Resort Population Projection			
<u>Facility and Occupation Types</u>	<u>Percentage Distribution(1)</u>	<u>Occupancy Percentage</u>	<u>Average Party Size</u>
Hotel Units	100%	75%	1.9
Multifamily Units:			
Full-time residents	5	95	2.3
Part-time residents	60	30	2.6
Visitors	<u>35</u>	50	2.7
	<u>100%</u>		
Single-family units:			
Full-time residents	25	95	2.6
Part-time residents	75	30	4.0
Visitors	--	--	--
	<u>100%</u>		

(1) Distribution of uses within facility type.

Table IV-2.10  
MAUNA LANI RESORT

Total Direct, Indirect and Induced Employment  
From Construction and Resort Operations

1990 to Potential Maximum

Location and type of employment	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
On-island:								
Direct	1,046	1,042	1,619	1,585	2,569	2,453	5,382	5,398
Indirect and induced	<u>292</u>	<u>291</u>	<u>466</u>	<u>457</u>	<u>737</u>	<u>706</u>	<u>1,615</u>	<u>1,619</u>
Total on-island	1,338	1,333	2,085	2,042	3,306	3,159	6,997	7,017
Elsewhere in state	<u>748</u>	<u>746</u>	<u>1,058</u>	<u>1,035</u>	<u>1,670</u>	<u>1,592</u>	<u>3,123</u>	<u>3,133</u>
Total employment in state	<u>2,086</u>	<u>2,079</u>	<u>3,143</u>	<u>3,077</u>	<u>4,976</u>	<u>4,751</u>	<u>10,120</u>	<u>10,150</u>

(1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

Source: Peat, Marwick, Mitchell & Co.

Given the anticipated luxury character of the MLR, the majority of multifamily units are expected to be vacation homes used for three to four months a year. About a third of them may be expected to be in visitor rental pools or otherwise used for short-term rentals. The majority of single-family units are also expected to be vacation homes used three or four months of the year. About a quarter of the single-family units are expected to be occupied full-time, and none are assumed to accommodate short-term visitor use. Based on these assumptions, Peat, Marwick projected resort population by facility type and use.

Table IV-2.11 summarizes the expected on-site de facto population impact under the existing and revised master plans. The visitor population is projected to outnumber resort residents by a ratio of more than two to one. Defacto population is expected to increase from over 1,000 in 1990 in both plans to almost 3,500 under the existing master plan and almost 3,300 under the revised master plan in 2000. The difference between the two plans in population impact is small, in the 4 to 6 percent range. At potential maximum development, the difference is negligible.

Visitors and residents at the Mauna Lani Bay Hotel and Mauna Lani Terrace would add almost 600 more persons to the resort total in either plan.

#### **2.2.3.2 Off-Site Population Impact**

Development at MLR will contribute to the growth of the Big Island resident population as persons move to the County to work at the resort. Some of these new employees, particularly if they are household heads, are expected to bring dependents. To project the total population impact of operational employees drawn from off-island, Peat, Marwick made the following assumptions: (1) one-third of the projected managerial and supervisory positions will be filled by in-migrants, (2) managerial and supervisory in-migrants will be household heads and each will be accompanied by an average of two dependents, and (3) other in-migrant operational employees will be accompanied by an average of one dependent each.

Based on the above, direct operational employment at the resort would have stimulated the in-migration to the island of about 200 persons by 1990, nearly 800 by 2000, and well over 2,000 at potential maximum development.

#### **2.2.3.3 Total Population Impact (Operational)**

Table IV-2.12 summarizes the total population impact due to further development at MLR; it includes project-generated growth on-site and off-site. Under either the existing or revised master plan, the ratio of on-site de facto population to off-site residents is about five to one in 1990; at potential maximum development, the ratio is expected to be closer to three to one.

Based on its assessment of hotel and resort residential projects expected to be developed along the Kohala coast, Peat, Marwick estimates that under the revised master plan MLR's total on- and off-site direct population impact will be about 24 percent of regional population impact in 1990 and about 33 percent in 2000.

#### **2.2.3.4 Geographic Distribution of Additional Population**

The geographic distribution of additional population due to resort development at Mauna Lani has been projected based on the 1984 distribution of MLR employees and on the County population forecasts published in the Kona Regional Plan in 1982. A

Table IV-2.11

MAUNA LANI RESORT

Summary of On-Resort Population Impact

1990 to Potential Maximum

	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
Number (cumulative):								
Resident	292	271	590	550	1,180	1,082	1,978	2,062
Visitor	783	759	1,423	1,376	2,299	2,181	5,708	5,665
De facto population	<u>1,075</u>	<u>1,030</u>	<u>2,013</u>	<u>1,926</u>	<u>3,479</u>	<u>3,263</u>	<u>7,686</u>	<u>7,727</u>
Difference		(45)		(87)		(216)		41
Compound annual rate of growth since previous period:								
Resident	N/A	N/A	15.1%	15.2%	14.8%	14.4%	N/A	N/A
Visitor	N/A	N/A	12.7	12.7	10.2	9.7	N/A	N/A
De facto population	N/A	N/A	13.4%	13.4%	11.7%	11.2%	N/A	N/A

N/A Not available.

(1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

Source: Peat, Marwick, Mitchell & Co.

Table IV-2.12  
MAUNA LANI RESORT

Summary of On- and Off-Resort Population Impact  
1990 to Potential Maximum

Population	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
On-resort(2)	1,075	1,030	2,013	1,926	3,479	3,263	7,686	7,727
Off-resort(3)	196	194	423	414	796	768	2,347	2,355
Total population increase	<u>1,271</u>	<u>1,224</u>	<u>2,436</u>	<u>2,340</u>	<u>4,275</u>	<u>4,031</u>	<u>10,033</u>	<u>10,082</u>

(1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

(2) From Exhibit II-P.

(3) Direct operational employee in-migrants and their dependents, as shown in Exhibit II-Q.

Source: Peat, Marwick, Mitchell & Co.

majority of off-site residents would live in North or South Kohala because in-migrant employees are expected to seek housing near their place of work. Most other employees may be expected to live in the Kona area, in larger proportionate numbers as the resort develops. A minority are expected to continue to commute from the Hilo and Hamakua areas because of regional preference, family ties, or the employment of other household members (See Table IV-2.13).

#### **2.2.3.5 Total Population Impact (Operational and Construction Employment)**

Development at Mauna Lani Resort will have an overall effect on the population movement to the Island of Hawaii. Including total operational and construction employment (direct, indirect, and induced), resort residents and visitors, Peat, Marwick estimates an additional 1,500 persons by 1990 and 4,600 by 2000, according to the revised master plan. For details on the sources of this additional population and its geographic distribution, see Appendix D and Exhibits B and C of Appendix D.

#### **2.2.4 Housing Impacts**

Construction and operational employees at MLR who are in-migrants to the County will generate a demand for housing, as will job-takers from within the County who move to be closer to work or to establish new households. Persons who move from within the County may cause a shift in demand to areas in the vicinity of resort development, and Peat, Marwick's projections account for some of the demand from within-County movers.

Indirect housing demand is also generated when development occurs; it is derived from (1) County workers whose employment is indirectly supported by the resort development and (2) new workers filling positions vacated by others who take jobs at MLR. This indirect demand is not accounted for in the Peat, Marwick projections in large part because of the difficulty in predicting how the employee housing market is affected by chains of job turnover in a developing economy. Further, Peat, Marwick asserts that "developers have not customarily been considered responsible for the potential housing requirements associated with the generation of regional economic opportunity in other industries or establishments." (Peat, Marwick, Mitchell & Co., 1985:III-1).

##### **2.2.4.1 Construction Employee Housing**

Construction employment is temporary and thus does not generate the long-term housing demand associated with operational employment. Contractors in South Kohala report that construction workers have been able to obtain housing in the short-term rental market, mostly in the Kona area. Labor agreements typically provide generous subsistence allowances for construction workers, reports Peat, Marwick; therefore, housing affordability is usually not a problem.

During construction of the 351-room Mauna Lani Bay Hotel, the work force from off-island varied from 16.5 percent in August 1981 to almost 45 percent in October 1982, requiring 17 housing units in 1981 and 47 in 1982. The future share of construction workers at MLR from off-island will depend on the timing of other major construction activity in the State and the competition for Hawai'i island construction workers.



Table IV-2.13  
MAUNA LANI RESORT

Geographic Distribution of Total Population Impact  
1990 to Potential Maximum

Area of residence or visitation	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
North and South Kohala: On-resort(2) Off-resort(3)	1,075 <u>127</u>	1,030 <u>126</u>	2,013 <u>279</u>	1,926 <u>274</u>	3,479 <u>541</u>	3,263 <u>522</u>	7,686 <u>1,597</u>	7,727 <u>1,601</u>
Total North and South Kohala	1,202	1,156	2,292	2,200	4,020	3,785	9,283	9,328
North and South Kona(4) Hamakua and Hilo(5)	39 <u>30</u>	39 <u>29</u>	84 <u>60</u>	82 <u>58</u>	159 <u>96</u>	154 <u>92</u>	470 <u>282</u>	471 <u>283</u>
Total population impact	<u>1,271</u>	<u>1,224</u>	<u>2,436</u>	<u>2,340</u>	<u>4,275</u>	<u>4,031</u>	<u>10,035</u>	<u>10,082</u>

(1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

(2) Residents and visitors to Mauna Lani Resort, as shown in Exhibit II-P.

(3) Direct employees and their dependents expected to migrate to the County of Hawaii. Those residing in North and South Kohala projected to increase from 65% of employee in-migrants in 1990, to 68% by the year 2000.

(4) Direct employees and their dependents expected to migrate to the County of Hawaii. North and South Kona residents projected to stabilize at 20% of employee in-migrants in all time periods.

(5) Direct employees and their dependents expected to migrate to the County of Hawaii. Hamakua and Hilo residents projected to decline from 15% of employee in-migrants in 1990, to 12% by the year 2000.

Source: Peat, Marwick, Mitchell & Co.

Table IV-2.14 shows Peat, Marwick's projection of construction employment by origin of worker. An average 35 percent would be drawn from off-island. With the greater future supply of short-term rental housing and an expected continuation of housing subsidy policies, construction employee housing is not projected to be problematic under either the existing or revised master plan.

#### **2.2.4.2 Operational Employee Housing**

Table IV-2.15 shows the projected number of direct operational employees who may be expected to require new housing, increasing from about 150 in 1990 to over 500 in 2000 under either the existing or revised master plan. Demand would be greatest from off-island in-migrants, all of whom would require new housing.

Projected demand for additional housing on the island of Hawai'i is less than the number of employees requiring housing. Some households will have more than one resort employee; also, the phenomenon of "doubling up" within existing households is expected to continue. Table IV-2.16 projects the demand for additional housing units by class of direct operational employee. The existing and revised master plans do not differ much in terms of additional employee housing requirements. Additional housing directly attributable to MLR's expansion is projected by Peat, Marwick to be about 110 units in 1990 and 370 to 380 units by the year 2000.

Peat, Marwick states that "based on an assessment of other hotel and vacation-oriented residential projects judged likely to be completed in the South Kohala coast region in the next 15 years, it is estimated that the additional employee housing demand projected to be generated by Mauna Lani Resort's further development will represent about 21% of total regional demand generated by comparable developments by the year 1990 and about 29% of total regional demand by the year 2000." (Peat, Marwick, Mitchell & Co., 1985:III-4).

Development at Mauna Lani Resort is also expected to contribute toward the demand for additional housing among indirect and induced operational employees. Peat, Marwick projects that approximately 250 and 750 direct, indirect, and induced operational employees will require housing on the Island of Hawai'i in 1990 and 2000, respectively (see Exhibit D of Appendix D).

#### **2.2.4.3 Total Employee Housing**

The total demand for additional housing units on the island includes the demand from operations-related employees (see above) and that from construction-related employees temporarily housed on the island. Peat, Marwick projects that 250 additional housing units will be needed by 1990 and 600 by 2000 (see Exhibit E of Appendix D).

#### **2.2.4.4 Long-Term Future Employee Requirements**

Long-term housing needs are expected to be met on the open market and through employee housing provided by or supported by MLR. It is anticipated that housing studies will be performed when each hotel site is developed. County Ordinance 380, amended by Ordinance 607 and 608, required MLR to provide 28 employee housing units in conjunction with the construction and operation of the Mauna Lani Bay Hotel. It further stipulated that requirements for employee housing associated with subsequent hotel development be determined based on additional housing need studies.

Table IV-2.14

MAUNA LANI RESORT

Direct Construction Employment by Origin of Worker

1986 to 2000

(Average annual person-years)

Origin of worker	1986 to 1990		1991 to 1995		1996 to 2000	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
From on-island	143	143	127	120	217	195
From off-island(1)	<u>77</u>	<u>77</u>	<u>69</u>	<u>64</u>	<u>117</u>	<u>105</u>
Total construction employment	<u>220</u>	<u>220</u>	<u>196</u>	<u>184</u>	<u>334</u>	<u>300</u>

(1) Assuming 35% of workers come from off-island.

Source: Peat, Marwick, Mitchell & Co.

Table IV-2.15

MAUNA LANI RESORT

Direct Operational Employees Projected  
to Require Additional Housing

1990 to Potential Maximum

Labor supply component(1)	1990		1995		2000		At potential maximum development(2)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
On-island labor:								
Available labor(3)	50	50	84	82	127	122	291	291
Kohala turnover(4)	-	-	-	-	-	-	-	-
Other turnover(5)	19	18	31	30	47	45	108	108
Off-island labor(6)	83	82	185	182	358	344	1,076	1,080
Total demanding new housing	<u>152</u>	<u>150</u>	<u>300</u>	<u>294</u>	<u>532</u>	<u>511</u>	<u>1,475</u>	<u>1,479</u>

(1) Based on figures given in Exhibit II-L, Appendix B.

(2) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

(3) 15% new household formation projected.

(4) Assumed to be already settled in area or accustomed to commute.

(5) 10% demand projected.

(6) 100% in-migrants.

Source: Peat, Marwick, Mitchell & Co.

Table IV-2.16

MAUNA LANI RESORT

Projected Additional Housing Unit Demand for Operational Employees,  
Island of Hawaii

1990 to Potential Maximum

Class of worker	1990		1995		2000		At potential maximum development (1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
Managerial or specialty(2)	30	30	52	51	81	78	195	196
Other(3)	81	81	165	163	300	289	853	856
Total units	<u>111</u>	<u>111</u>	<u>217</u>	<u>214</u>	<u>381</u>	<u>367</u>	<u>1,048</u>	<u>1,052</u>

(1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

(2) Projected at 1.0 employee per household.

(3) Projected at 1.5 employees per household.

Source: Peat, Marwick, Mitchell & Co.

Peat, Marwick states: "Because future needs for additional employee housing will depend critically on the quality and size of particular projects, and on supply and demand factors in future regional housing markets, this case-by-case approach is considered the best means of assessing the Resort's appropriate future contributions to employee housing on the island." (Appendix D:4)

### **2.2.5 Income Impact**

Development of Mauna Lani Resort under either the existing or proposed master plan is expected to have a significant impact on personal and household income for residents of the county and the state. Personal income is defined here as wage and salary income from employment. Projections of personal income have been made based on average industry wages and salaries and projected future employment demand. Household income is comprised of wage and salary income as well as other labor income and proprietors' income. Estimation of household income is based on projections of visitor expenditures in the State.

#### **2.2.5.1 Wage and Salary Income from Direct Employment**

Projections of annual wage and salary income as a result of new employment created at MLR are shown in Table IV-2.17 for both the existing and revised master plans. Figures were derived using average annual wages for workers in the construction, hotel and retail industries and the projected number of workers in each category. Throughout the development period, the majority of income benefits is expected to accrue from the operation of hotels, residential units and commercial facilities.

As shown in Table IV-2.17, total annual direct salary and wage income is expected to be virtually the same under the existing or revised plan, increasing from almost \$14-million in 1990 to about \$30-million in 2000, eventually amounting to over \$57-million at potential maximum development. Peat, Marwick estimates that direct employment earnings at the existing Mauna Lani Bay Hotel and Mauna Lani Terrace would add about \$5-million a year (all estimates in 1983 dollars) to the figures shown. By 2000, MLR would generate more than \$34-million a year in direct wages and salaries.

#### **2.2.5.2 Total Household Income**

The estimate of direct employment salary and wage income is relatively straightforward compared to the estimate of total employment income from direct, indirect and induced employment throughout the state. In the second instance, the dispersion of indirect and induced employment effects among many industries and the lack of appropriate data make it difficult to project income for these separate categories. However, projections of total household income statewide resulting from MLR development can be made based on visitor expenditure levels.

According to DPED estimates, in 1980 every dollar spent by a visitor to Hawai'i generated \$0.74 in income to households. Based on the visitor expenditures expected to be generated by the resort's new facilities, resulting total additional household income is projected by Peat, Marwick to be as shown below.

Table IV-2.17

MAUNA LANI RESORT

Annual Wage and Salary Income From Direct Employment

1990 to Potential Maximum  
(In 1983 dollars; millions)

Type of employment	1990		1995		2000		At potential maximum development(1)
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	
Construction(2)	\$ 4.77	4.78	4.24	4.00	7.25	6.51	-
Hotel and resort(3)	7.73	7.81	13.01	13.00	19.47	19.15	49.84
Commercial(4)	1.11	1.03	2.13	1.96	4.01	3.59	7.74
Total personal income	\$ 13.61	13.62	19.38	18.96	30.73	29.25	57.58

(1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

(2) Average annual wage of \$21,700, reflecting a projection of 30% workers from off-island. Based on the State Department of Labor and Industrial Relation's report on covered wages in the construction industry in the State and in the County of Hawaii in 1983.

(3) Excluding tips. Hotel, resort residential, and Resort administration employment wages projected at the 1983 county hotel industry average of \$11,313.

(4) Commercial sector wages projected at \$7,801, based on average wages in applicable retail industry classifications, weighted by the observed distribution of direct visitor-related expenditures in 1982.

Sources: State of Hawaii, Department of Labor and Industrial Relations, Employment and Payrolls in Hawaii, 1983 and Department of Planning and Economic Development, 1983 Data Book.

Total Annual Household Income From  
Visitor Expenditures Generated at  
Planned Facilities  
(1983 dollars - millions)

	1990	1995	2000
Existing master plan	\$ 34.3	\$ 61.7	\$ 96.4
Revised master plan	33.6	60.2	92.8

Because of its slower rate of unit absorption, the revised master plan is expected to generate slightly less total household income statewide up through the year 2000. Because the units in the revised plan would attract a wealthier clientele, household income might be somewhat higher at ultimate development of the revised plan than for the existing plan.

**2.2.6 State and County Revenue and Expenditure Analysis**

The net revenues derived from continued development at MLR can be estimated by comparing projections of tax revenues and expenditures. Following an estimate of public sector revenues from state and county tax collections, a revenue and expenditure analysis is performed first for the State and then for the County.

**2.2.6.1 Public Sector Revenues**

In this section, total annual public sector revenues attributable to development at MLR are estimated. County revenues are then projected; finally an estimate of state revenues is obtained by subtracting county revenues from the total.

Based on data contained in the the 1983 Data Book (DPED Input/Output Model), the ratio of tax revenues to visitor-related direct expenditures ranged from 0.106 to 0.111 in recent years. Assuming that State and County tax collections will be \$0.11 for every dollar of direct visitor expenditure, public revenues will amount to about \$5-million in 1990, \$9-million in 1995, \$14-million in 2000, and more than \$37-million at potential maximum development (in 1983 dollars). These figures are projected for development under either the existing or proposed master plan.

Of the above totals, the revenues received by the County are assumed by Peat, Marwick to approximate County real estate collections. This approximation is deemed valid based on the following: (1) the Tax Foundation of Hawaii, in Government in Hawaii, estimates that real property taxes account for nearly 90 percent of tax revenues to the County of Hawai'i, and (2) other sources of county revenue such as liquid fuels, utility franchises and motor vehicle weight tax, are less directly tied to the construction and operation of resort facilities.

Table IV-2.18 shows the calculation of real property tax revenues attributable to development of MLR under the existing and revised master plans. Additional County tax revenues would be somewhat higher according to the existing master plan through 2000, then become somewhat lower at potential maximum development. The majority of County revenues will come from property taxes on multifamily units at the resort throughout the project.



Table IV-2.18

MAUNA LANI RESORT

Projected Real Property Tax Revenues Attributable to Development at Mauna Lani Resort

1990 to Potential Maximum  
(In 1983 dollars; millions)

Source of property revenue	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
New revenue sources:								
Hotel units(2)	\$ .41	.41	.71	.71	1.01	1.01	3.04	3.04
Multifamily units(3)	1.72	1.52	3.44	3.07	7.08	6.12	11.60	11.26
Single-family units(4)	.14	.18	.32	.40	.50	.71	1.02	1.63
Single-family lots(5)	.06	.07	.10	.12	.11	.17	-	-
Commercial space(6)	.03	.03	.06	.05	.11	.10	.21	.21
Second golf course(7)	-	.01	-	.01	-	.01	-	.01
Total revenues	\$ 2.36	2.22	4.63	4.36	8.81	8.12	15.87	16.15

- (1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.
- (2) Collections projected to be proportionate to those paid at Mauna Lani Bay Hotel.
- (3) Real property taxes estimated at an assessed value of \$450,000 per unit and the current county tax rate of \$8.50 per \$1,000 assessed value.
- (4) Real property taxes estimated at an assessed value of \$800,000 per unit (including land) and the current county tax rate of \$8.50 per \$1,000 assessed value.
- (5) Real property taxes estimated at an assessed value of \$350,000 per unbuild lot and the current county tax rate of \$8.50 per \$1,000 assessed value.
- (6) Assessed value per net leasable square foot based on estimates provided by Mauna Lani Resort. Real property taxes projected at current county rate of \$8.50 per \$1,000 assessed value on buildings and \$10 per assessed value on land.
- (7) New golf course, including 20 acres located on state leased land, valued at \$5,500 per acre. Real property taxes projected at current county rate of \$10 per \$1,000 assess value.

Source: Peat, Marwick, Mitchell & Co.

Estimated annual tax collections by the state are the difference between total tax revenues and county tax collections. Under either the existing or revised master plan, they are expected to increase from about \$5-million a year in 1990 to \$14-million in 2000, with an ultimate \$37-million per year at potential maximum development (see Exhibit II-V in Appendix B).

#### **2.2.6.2 State Revenues and Expenditures**

New facilities development at MLR will be accompanied by increased visitors and on-site population who will require increased expenditures of public resources. Some public costs are assigned to visitors; these same costs are assigned to residents as are other government costs. State government expenditures averaged \$2,137 per resident and \$400 per visitor in 1983 (See Exhibit II-W in Appendix B).

Per capita expenditures are multiplied by projected numbers of visitors and residents at MLR to arrive at additional state expenditures incurred on their behalf. Results would be similar under the existing or revised master plan (See Exhibit II-X in Appendix B). Comparing revenues derived from resort development at Mauna Lani with associated expenditures, revenues to the State exceed costs in all periods according to either master plan.

#### **2.2.6.3 County Revenues and Expenditures**

A similar analysis may be performed to project additional net revenues for the County (see Exhibits II-Z and II-AA in Appendix B). County government expenditures averaged \$547 per resident and \$493 per visitor in 1983. As for the State, revenues exceed expenditures for the County in all periods under either master plan, with the existing master plan providing somewhat higher net additional revenue for the first ten years and about the same net revenues from the year 2000 (See Exhibit II-BB in Appendix B).

#### **2.2.7 Social Impacts**

Potential social effects resulting from development at MLR have been addressed in detail in the environmental impact statement (EIS) prepared in 1974 for Mauna Loa Land, Inc., a predecessor to Mauna Lani Resort, Inc. In general, the extent of development then-proposed and now-envisioned is almost the same, with the same number of units planned for ultimate development, although the character of the resort has changed somewhat to a lower density golf-oriented community. Potential social impacts as a result of MLR development, as presented in the earlier EIS, in general remain valid; these impacts may be less severe given the intervening years and other resort development in the Kohala Coast resort region.

The Environs Pacific study anticipates several areas of potential social impact, reflecting concerns voiced by those interviewed for the study. These same concerns have been raised in other studies performed in conjunction with analysis of potential impacts due to resort development, particularly on the Kohala coast.

##### **2.2.7.1 Effects on Family Structure**

Increased numbers of women in the workforce. With growing employment opportunities in the visitor industry, in particular at planned resorts such as MLR, increasing numbers of women hold jobs outside the home. Although this employment contributes positively to household income, negative impacts associated with family cohesion and

stability are perceived to be prevalent. These include lack of supervision of school-age children who thus have more opportunities for engaging in socially unacceptable behavior.

Shift work. A common feature of visitor industry employment is shift work. This can be disruptive to family routines, particularly when both spouses work within the industry. The lack of shared time at home hinders communications between parents and among parents and children.

Exposure to persons of the opposite sex. Resort employment provides workers with opportunities for social interaction with persons of the opposite sex, both fellow workers and visitors. Such exposure increases the chance for mild or serious flirtation. These can be reported back to the spouse through gossip networks, and this can increase jealousy and mistrust, with detrimental effect on the family.

#### **2.2.7.2 Effects on Social Structure and Community Character**

Impacts of resort development on local residents' values, lifestyles, and "quality of life" are indirect and difficult to measure. Nevertheless, these effects have been felt during recent development on the Kohala coast and are expected to continue to be significant, particularly in the long run. These stresses are expected to evolve as social and economic conditions change. To some extent, it is possible to identify effects that can be expected to increase along with resort development.

Exposure to new customs and cultures. Many of those surveyed viewed positively the opportunities for interaction between local residents and visitors that provide exposure to new customs and cultures. However, imported values may have a negative effect on local life styles, which many are reluctant to forego in favor of less traditional life styles.

Cultural adjustments. Further development of resort facilities will attract some employees from outside Hawai'i County. Based on the experience of existing Kohala coast resort facilities, most in-migrants will be Caucasians moving in from the mainland U.S and other Hawai'i islands to fill upper level positions. Asian immigrants will probably also become part of the resort work force, if the experience of other Hawai'i resort areas is paralleled on the Big Island. In both cases, there will be problems of intercultural adjustment among groups, with potential for stressful relations between different ethnic and class groups.

Cultural isolation. In-migrant workers and their families tend to cluster together physically and socially in separate ethnic groups, increasing community problems aggravated by such isolation. Environs Pacific notes, however, that the clustering of various ethnic groups is not a new phenomenon brought on by growth of the visitor industry, but rather has been the norm for the region.

Opportunities for employment. In addition to providing opportunities for employment, development on the Kohala coast increases the market for local handicrafts and art, thus encouraging the preservation of an important part of Hawaiian culture.

Erosion of the "aloha spirit". It is generally believed that the "aloha spirit" has not been eroded in the Kohala coast resort region to the same degree as at resorts catering to large tour groups. Proposed development at Mauna Lani Resort will continue to be of the same luxury quality that characterizes existing MLR development, facilitating the preservation of the "aloha spirit."

Traditional use of public areas. An influx of visitors associated with resort development at Mauna Lani will affect the traditional use of public areas, particularly beaches which are not abundant on the island of Hawai'i. Also perceived as potential areas of impact are shoreline trails and fishing grounds. In some cases, it is expected that resort development will enhance access to these traditional recreational areas.

### 2.2.7.3 Crime Impacts

Crime is a major concern of island residents, with some feeling that crime rates tend to rise with increased visitor activity. Crime data nationwide and in Hawai'i contain contradictory conclusions. Studies done for projects in Hawai'i for the most part do not link major crime with increased tourism. However, according to Environs Pacific, the Waimea and Kona police do recognize a link between visitor industry development and certain types of petty crime such as theft. In particular, they note the increase in theft at beach parks over the past several years as resort development has spread. Concurring with studies performed, the police do not feel that there is a direct link between increased visitor population and more serious crimes such as assault, rape, and murder. They believe, however, that visitors constitute a market for drug trafficking and that this market will continue to expand along with the planned resorts, leading to drug related crimes.

Another area for potential criminal acts is one identified in other visitor industry studies: the indirect effect of tourism on crime through conflicts between long-time residents and newcomers who may be employed at resorts. Physical confrontations may lead to assault charges against either party.

### 3. TRANSPORTATION FACILITIES

#### 3.1 EXISTING TRANSPORTATION FACILITIES

##### 3.1.1 Highway Network

Major roadways in the West Hawai'i Region are shown on Figure II-1. Access to the Mauna Lani Resort (MLR), as well as to the other major resorts within the Kohala Coast Resort Region, is provided by Queen Ka'ahumanu Highway. Completed in 1975, this 33-mile long, two-lane, controlled-access State Highway links major resort development along the coast with Keahole Airport and the resort town of Kailua-Kona to the South and, via a connection with the Waimea-Kawaihae Road, with Kawaihae Harbor, Akoni Pule Highway, and Waimea to the north. The Hawai'i Belt Road (Mamalahoa Highway) serves the upland areas of North Kona and South Kohala. Queen Ka'ahumanu Highway and the Hawai'i Belt Road are connected by the Waimea-Kawaihae Road (about six miles north of the Mauna Lani Resort), Waikoloa Road, (about two miles south of the MLR), Ka'imi Nani Street (known also as the Kona Palisade Subdivision Road, and located just south of Keahole Airport), and by Palani Road at Kailua-Kona.

##### 3.1.2 Airports

Three airports serve the Kohala Coast Resort Region. Two, Keahole and Waimea-Kekaha, are operated by the State Department of Transportation. The third, the recently opened Waikoloa Airport, is operated by Princeville Airways. The Kamuela and Waikoloa airports are used primarily by commuter airlines and private aircraft.

Keahole Airport is located slightly more than 20 miles south of the Mauna Lani Resort. It is served by all three of the major interisland air carriers, as well as by several of the commuter airlines and air cargo companies. In 1984, Keahole Airport handled almost 1.3 million passengers.

Keahole Airport's 6,500-foot long runway is adequate for the largest interisland aircraft. Wide-bodied jet aircraft, such as the DC-10 and L-1011, now make direct flights into it from the West Coast of the United States. However, the runway is too short to permit these aircraft to take off with a full load of fuel. Hence, return flights to the mainland require a stop at General Lyman Field in Hilo or Kahului Airport on Maui. These airports have longer runways, and the aircraft are able to take on additional fuel and passengers at them before proceeding on to the mainland.

##### 3.1.3 Harbors

Developed into a deep-water harbor by the U.S. Army Corps of Engineers in 1959, Kawaihae Harbor is used primarily by interisland barges. The primary cargo handled is building materials, consumer goods, large equipment and machinery, as well as the provisions and supplies needed to operate the hotels in South Kohala and Kona.

## 3.2 IMPACTS ON TRANSPORTATION FACILITIES

### 3.2.1 Introduction

Thus far, only a small fraction of the hotel and residential units planned for the Mauna Lani Resort (MLR) have been constructed. Hence, while traffic on the resort entrance road (Mauna Lani Drive) is light, ongoing development will lead to much higher traffic on it within the foreseeable future. Moreover, the Mauna Lani Resort is not being developed in isolation. Rather, it is only one of three major resort projects now underway in the South Kohala Resort Region. The other two -- the Waikoloa Beach Resort (WBR) and the Mauna Kea/Hapuna Resort (MKR) -- as well as ancillary and independent development at Puako, Waikoloa, Kawaihae, and elsewhere, are also growing. This continuing regional growth will generate major increases in the number of vehicles using Queen Ka'ahumanu Highway; it will also increase the volume of passengers and goods passing through Keahole Airport. The significance of traffic generated by ongoing development at the Mauna Lani Resort can only be judged within this context.

The remainder of this discussion is divided into five parts. Section 3.2.2 describes existing vehicular traffic volumes and trends on the roads most impacted by the Mauna Lani Resort project. Section 3.2.3 discusses expected traffic generation rates and turning movement percentages, and vehicle-types expected from the MLR and other traffic sources that would directly affect Queen Ka'ahumanu Highway. Section 3.2.4 combines data on existing traffic volumes with estimates of project- and non-project-related traffic to forecast total future traffic volumes. Section 3.2.5 compares these projected volumes with estimates of highway capacity to determine the level of service that can be expected on Queen Ka'ahumanu Highway if the proposed plans are implemented; it also discusses long-range highway improvement needs and possible mitigation measures. Finally, Section 3.2.6 discusses the ability of existing and proposed airport facilities to accommodate projected increases in volume.

In reading the section, readers should keep two important facts in mind:

- (1) First, and perhaps most importantly, approval of the State Land Use District boundary amendment being requested would not substantially affect the rate, basic character, or ultimate magnitude of development at the Mauna Lani Resort or of the traffic which it would generate. Hence, while future traffic volumes on Queen Ka'ahumanu Highway will increase markedly in future years, the increase would be essentially the same for the "with-" and "without-project" scenarios.
- (2) Secondly, long-range forecasts such as are presented here are no better than the land use/development scenarios on which they are based. To the extent that the rate of development in the coastal resorts (which are the primary drivers in the regional economy) exceeds that now expected, traffic volumes might also increase more rapidly than projected. Similarly, slower than expected development rates will result in less traffic. In view of the foregoing, it is perhaps most useful to treat the discussion as an indication of the kinds of problems that may arise in future years rather than an exact timetable.

### **3.2.2 Past and Present Highway Traffic Volumes**

#### **3.2.2.1 Existing Highway Traffic on Queen Ka'ahumanu Highway**

The results of past 24-hour counts at selected locations on Queen Ka'ahumanu Highway are summarized in Table IV-3.1. They show significant growth in highway traffic since the roadway opened in 1975.

Because the State counts have been taken only bi-annually, it is impossible to correlate the increases that have been recorded with the opening of specific projects at the Waikoloa Beach Resort, the Mauna Lani Resort, or the Mauna Kea Resort. However, traffic counts on the entrance roads to all three resorts, as well as changes in traffic volumes on Queen Ka'ahumanu Highway, suggest that vehicles moving to and from the WBR and MLR (both of which opened after 1975) may account for between one-third and one-half of all the vehicles now traveling on it. The MKR has been a major source of traffic on the highway since it opened, and it is clear that South Kohala resort development will remain by far the most significant generator of traffic.

Waikoloa Road joins Queen Ka'ahumanu Highway at a T-intersection located between the entrance roads to the MLR and the WBR. Traffic on it has also climbed substantially over the past eight years. This is due to expansion of the coastal resorts and growth of the resident population in Waikoloa Village.

In 1982 and 1984, peak-hour traffic on Queen Ka'ahumanu Highway ranged from 7.0 to 10.7 percent of the 24-hour volume. The afternoon peak, which generally occurs between 3:30 and 4:00, is noticeably higher than the morning peak. The latter occurs in mid-morning (between 10:30 and 11:30 am) rather than during the 7:00-8:00 period more typical of urban, non-resort areas.

The most recent vehicle-type classification study on Queen Ka'ahumanu Highway was conducted in 1978 before construction of the two newest resorts had been started. At that time, approximately 94 percent of the trips were made by passenger cars and light single-unit trucks, 1.5 percent were made by buses, and 4.5 percent were made by medium and heavy trucks. In view of the increased visitor traffic through the area in recent years and the relatively low percentage of trucks and buses observed on resort entrance roads in South Kohala, it is considered likely that the percentage of medium and heavy trucks on Queen Ka'ahumanu Highway has decreased markedly since the 1978 classification study. This supposition is supported by data from a 9-hour count conducted by Belt, Collins & Associates at the entrance to the Mauna Lani Resort in February 1984.

#### **3.2.2.2 Traffic on the Mauna Lani Resort Entrance Road**

Currently, traffic on Mauna Lani Drive, the entrance road to the Mauna Lani Resort, is relatively light. A count taken immediately makai of its intersection with Queen Ka'ahumanu Highway on 24 February, 1984 recorded a total of 1,466 vehicle-trips between 8:15 am and 5:15 pm. No 24-hour figures are available for Mauna Lani Drive, but if the temporal distribution of traffic at the MLR is roughly the same as it is at the nearby Mauna Kea Resort (Belt, Collins & Associates, 1979), then total traffic into and out of the MLR on the day of the count amounted to approximately 2,200 vehicle-trips (see Table IV-3.2).

Table IV-3.1 Historical 24-Hour Traffic Volumes at Selected Locations on Queen Ka'ahumanu Highway: 1976 through 1984.

LOCATION	1976		1978		1980		1982		1984	
	Volume	Volume	Percent Change	Volume	Percent Change	Volume	Percent Change	Volume	Percent Change	
Kawaihae-Waimea Road										
Northbound	1,172	1,500	28.0%	1,292	-13.9%	1,692	31.0%	2,049	21.1%	
Southbound	1,186	1,585	33.6%	1,526	-3.7%	1,753	14.9%	2,137	21.9%	
Total	2,358	3,085	30.8%	2,818	-8.7%	3,445	22.2%	4,186	21.5%	
North of Waikoloa Road										
Northbound	593	886	49.4%	647	-27.0%	1,184	83.0%	1,717	45.0%	
Southbound	569	883	55.2%	894	1.2%	1,389	55.4%	1,812	30.5%	
Total	1,162	1,769	52.2%	1,541	-12.9%	2,573	67.0%	3,529	37.2%	
South of Waikoloa Road										
Northbound	607	850	40.0%	645	-24.1%	1,346	108.7%	1,707	26.8%	
Southbound	575	842	46.4%	785	-6.8%	1,489	89.7%	1,893	27.1%	
Total	1,182	1,692	43.1%	1,430	-15.5%	2,835	98.3%	3,600	27.0%	
North of Keahole Airport Road										
Northbound	858	1,127	31.4%	775	-31.2%	1,478	90.7%	1,966	33.0%	
Southbound	851	1,183	39.0%	643	-45.6%	1,520	136.4%	1,945	28.0%	
Total	1,709	2,310	35.2%	1,418	-38.6%	2,998	111.4%	3,911	30.5%	
South of Keahole Airport Road										
Northbound	1,581	2,233	41.2%	2,113	-5.4%	2,549	20.6%	3,607	41.5%	
Southbound	1,594	2,304	44.5%	2,107	-8.6%	2,707	28.5%	3,484	28.7%	
Total	3,175	4,537	42.9%	4,220	-7.0%	5,256	24.5%	7,091	34.9%	

Source: State of Hawai'i Department of Transportation; compiled by Belt, Collins & Associates



TABLE IV-3.2 EXISTING TRAFFIC ON MLR ENTRANCE ROAD BY 15-MINUTE AND HOURLY PERIODS, WITH DIRECTIONALITY AND PEAKING FACTORS.

TIME	In From North	In From South	Total In	Out To South	Out to North	Total Out	Two-Way Total	Hourly Totals			Hour As Percent of 24-hour
								In	Out	Total	
8:15-8:30	0	4	4	0	0	0	4				
8:30-8:45	5	14	19	3	4	7	26				
8:45-9:00am	3	26	29	1	5	6	35				
9:00-9:15	4	30	34	4	2	6	40	86	19	105	4.7%
9:15-9:30	5	24	29	4	9	13	42				
9:30-9:45	6	26	32	2	3	5	37				
9:45-10:00am	10	33	43	3	8	11	54				
10:00-10:15	5	39	44	4	7	11	55	148	40	188	8.4%
10:15-10:30	13	33	46	5	9	14	60				
10:30-10:45	7	13	20	3	9	12	32				
10:45-11:00am	8	5	13	5	5	10	23				
11:00-11:15	8	5	13	9	8	17	30	92	53	145	6.5%
11:15-11:30	7	19	26	10	5	15	41				
11:30-11:45	10	10	20	8	7	15	35				
11:45-12:00pm	7	14	21	5	14	19	40				
Noon-12:15	7	10	17	8	5	13	30	84	62	146	6.5%
12:15-12:30	6	8	14	8	3	11	25				
12:30-12:45	10	15	25	6	12	18	43				
12:45-1:00pm	7	6	13	6	7	13	26				
1:00-1:15	9	6	15	11	12	23	38	67	65	132	5.9%
1:15-1:30	11	10	21	6	11	17	38				
1:30-1:45	14	6	20	4	1	5	25				
1:45-2:00pm	14	13	27	11	8	19	46				
2:00-2:15	11	12	23	12	17	29	52	91	70	161	7.2%
2:15-2:30	19	7	26	11	14	25	51				
2:30-2:45	17	10	27	9	11	20	47				
2:45-3:00pm	13	8	21	10	16	26	47				
3:00-3:15	10	9	19	11	32	43	62	93	114	207	9.2%
3:15-3:30	5	14	19	17	10	27	46				
3:30-3:45	12	15	27	20	20	40	67				
3:45-4:00pm	13	15	28	10	20	30	58				
4:00-4:15	14	8	22	15	11	26	48	96	123	219	9.8%
4:15-4:30	8	3	11	24	15	39	50				
4:30-4:45	15	9	24	11	11	22	46				
4:45-5:00pm	6	4	10	10	12	22	32				
5:00-5:15	9	6	15	13	7	20	35	60	103	163	7.3%
9-Hour Total	328	489	817	299	350	649	1,466	817	649	1,466	65.5%
24-Hour Total			817			649				2,238	

Source: Belt, Collins & Associates

### 3.2.3 Project-Related Traffic

#### 3.2.3.1 Trip-Generation Rate

The Mauna Lani Resort contains a number of different types of land uses, each of which has its own characteristic traffic generation rate. In terms of their impact on total traffic entering and leaving the resort, the proposed hotels and multi-family housing are the most significant.

Traffic counts conducted over the past five years on the entrance roads to the various South Kohala Resorts show the following trip-generation rates:

<u>Resort Project</u>	<u>Date</u>	<u>Veh.-Trips/ Day Per Hotel Room</u>	<u>AM Peak-Hr.</u>	<u>PM Peak-Hr.</u>
Mauna Kea Resort	1/4-5/79	5.5	6.9%	10.9%
	2/24/84	6.5	9.6%	10.5%
Mauna Lani Resort	2/22/84	5.4	7.4%	10.9%
Waikoloa Beach Resort	8/30/84	2.5	7.9%	10.5%

These trip generation rates represent traffic that leaves the resort property; they do not account for trips whose origins and destinations both lie within the confines of the resort (as when a visitor drives his/her car from a hotel to the golf course or when a service vehicle makes multiple stops within the resort). No quantitative data regarding the extent of such internal trips are available, but qualitative observations, as well as the limited number of potential destinations within the resorts during their present (early) stage of development indicate that such internal trips currently constitute a very small percentage of the total trips made.

The trip generation rate for hotels at the Waikoloa Beach Resort is much lower than for the others listed. This probably stems at least in part from the fact that the WBR count was made in August, when the occupancy rate of the Sheraton Royal Waikoloa Hotel (the only hotel that has been completed) was quite low, while the counts at the Mauna Lani and Mauna Kea Resorts took place in February, which is typically a high occupancy month. A figure of 5.5 vehicle-trips per hotel room is believed to be the most appropriate for general usage, and it has been used in this report.

Trip generation rates for multi-family apartment (resort condominium) units vary greatly. Moreover, whereas the existing South Kohala hotels provide a good source of empirical evidence for trip-generation by hotels, data of comparable quality is lacking for resort condominiums. For the purposes of this report, such units were assumed to generate six vehicle-trips per day per occupied unit and to have peak-month occupancy rates of approximately 70 percent. Other traffic generation rates used in projecting traffic from the proposed project and from other regional development affecting traffic volumes on Queen Ka'ahumanu Highway are 6.0 vehicle-trips per occupied single-family unit per day (with average occupancy of 45 percent), 5.0 vehicle-trips per day per thousand square feet of commercial space, and 100 vehicle-trips per day per 18-hole golf course. The great majority of the usage of the commercial space and golf course will come from guests of the resorts; these users are

already present on the resort site and do not generate additional off-site trips. Hence, the increased traffic estimated for them is related primarily to employee traffic.

### 3.2.3.2 Turning Movements

In order to project future traffic volumes on Queen Ka'ahumanu Highway, it is necessary to estimate the origins and destinations (and, hence, the turning movements) patterns of arriving and departing vehicles. Since estimates of non-project related traffic volumes on Queen Ka'ahumanu Highway were needed in order to assess the effects of continued development of the Mauna Lani Resort, this had to be done not only at the Mauna Lani Drive/Queen Ka'ahumanu Highway intersection, but at the other major intersections between Waimea-Kawaihae Road and the Waikoloa Beach Resort as well. In preparing these estimates, turning movement data from the Waikoloa Beach Resort, the Mauna Kea Resort, and the Mauna Lani Resort was collected and analyzed. This data is summarized in Table IV-3.3. They indicate that during the morning and afternoon peak hours, approximately 60 percent of the traffic leaving all three resorts turns north onto Queen Ka'ahumanu Highway, while only 40 percent turns south. Roughly the same directional splits were observed for entering traffic.

The traffic patterns referred to above are the result of the current split of visitor and employee traffic at the resorts, as well as a reflection of the current geographic distribution of employees' homes and regional visitor attractions. As the number of persons employed in the region increases, significant expansion of the housing stock in the region is to be expected, and the distribution of these new residences is expected to differ somewhat from that which currently exists. As a result, turning movement patterns are expected to change as well. To account for this, adjustments to the turning movement percentages were made before applying them to the projected unit totals in future years.

### 3.2.3.3 Vehicle-Type Classification

Data on the types of vehicles using Mauna Lani Drive was collected at the same time the vehicle counts were made in early 1984. They indicate that approximately 97 percent of the trips on the entrance road are made by automobiles, pickup trucks, and vans; two percent of the trips are by medium and heavy trucks; and one percent is by buses. Given the similar types of land uses that are involved, it is reasonable to assume that this pattern will continue in the future at the Mauna Lani Resort.

## 3.2.4 Forecast Traffic Volumes

### 3.2.4.1 Introduction

As previously indicated, the proposed change in the Urban boundary of the Mauna Lani Resort is intended to permit the applicants to reduce the overall density of their project and to provide an additional golf course for use by guests of the already-planned hotels. It would not significantly affect the overall development timetable or result in more, or different types, of units being constructed than is possible under the existing designation. Hence, strictly speaking, the proposed action would not result in higher traffic volumes on the resort entrance road or on Queen Ka'ahumanu Highway than would otherwise be the case. In other words, with respect to traffic, there is no measurable difference between the "with" and "without" project scenarios. At the same time, it was deemed likely that the proposed boundary amendment might arouse concerns over possible traffic congestion. Hence, a detailed analysis of regional traffic volumes was conducted.

Table IV-3.3

Historical Peak-Hour Turning Movement Percentages

	Observed Turning Movements at Resorts' Entrance Roads During Peak Hour as % of Total Traffic			Projected Hyatt
	WBR	MLR	MKB	
<b>A.M. Peak:</b>				
Directionality: (% In/% Out)	59/41	55/45	52/48	55/45
To North	61	53	69	60
To South	39	47	31	40
From North	56	40	64	60
From South	44	60	36	40
<b>P.M. Peak:</b>				
Directionality: (% In/% Out)	46/54	41/59	32/68	45/55
To North	58	60	62	60
To South	42	40	38	40
From North	60	43	63	60
From South	40	57	37	40

Notes:

- (1) WBR percentages are based on a traffic count taken Thursday, August 30, 1984.
- (2) Mauna Lani Resort percentages are based on a traffic count taken on Friday, February 24, 1984.
- (3) Mauna Kea Beach Resort percentages are based on a traffic count taken on Friday, February 24, 1984.
- (4) The projections for the Hyatt Regency Waikoloa are estimated averages based on behavior observed at other S. Kohala Resorts.

#### **3.2.4.2 Mauna Lani Resort Traffic**

Based on the trip generation rates discussed in Section 3.2.3.1 and on the development timetable given in Table II-3.1, future traffic volumes on Mauna Lani Drive were projected. As shown in Table IV-3.4, afternoon peak-hour traffic on Mauna Lani Drive is expected to increase to approximately 830 in 1995, to 1,250 in 2000, and to 2,500 when development of the resort is completed. Note that the figures shown are for the equivalent of average daily traffic. During peak occupancy periods in the hotels and resort condominiums, traffic volumes could be significantly greater.

#### **3.2.4.3 Queen Ka'ahumanu Highway**

All of the vehicles entering or leaving the Mauna Lani Resort must do so using Queen Ka'ahumanu Highway. Hence, the proposed project would have a substantial effect on regional, as well as local traffic. There is significant interplay between the Mauna Lani Resort and other resort and residential development within the region. In order to understand how traffic from the MLR would affect other intersections to the north and south, a simplified traffic model was constructed based on the traffic generation rates discussed previously, the best available estimates of the origin and destination of vehicles entering and leaving the various resorts, and forecast changes in the volume of through traffic, i.e., traffic on Queen Ka'ahumanu Highway which neither originates at nor is destined for the area between the Waikoloa Beach Resort and the Mauna Kea Resort.

Peak-hour traffic volumes at selected locations along Queen Ka'ahumanu Highway for the years 1990, 1995, 2000, and at completion of the Mauna Lani project (about 2010) are summarized in Table IV-3.4. As might be expected from the magnitude of the development that is planned, they show substantial increases over existing levels. The implications of this rise in traffic with respect to service levels and the probable need for highway improvements are discussed in Section 3.2.5.

#### **3.2.5 Impact on Level of Service**

In order to assess the significance of the effect that traffic from the Mauna Lani Resort would have on the level of service (i.e., the amount of congestion) of Queen Ka'ahumanu Highway, the traffic forecasts developed in the previous section were compared against the calculated capacity of Mauna Lani Drive, Queen Ka'ahumanu Highway, and the intersection of the two for each of the forecast years. The highway capacities were calculated using the methodology recommended by the Transportation Research Board of the National Academy of Sciences (1965 and 1980:37-72).

##### **3.2.5.1 Segments of Queen Ka'ahumanu Highway Between Intersections**

Open stretches of Queen Ka'ahumanu Highway (i.e., those away from intersections) can accommodate as many as 1,800 to 2,000 vehicles per hour (total in both directions). Currently, traffic volumes are relatively low, and the level of service provided is "A" (the best possible) at all times. The analysis conducted for this report suggests that these portions of Queen Ka'ahumanu Highway would provide adequate levels of service, i.e., "C" or better, until the year 2000.

The opening of units that are now planned for completion after that date will add further to traffic volumes, however. As a result, it is expected that the capacity of the existing two-lane roadway will be exceeded shortly after the turn of the century. At that time, additional lanes will be needed on Queen Ka'ahumanu Highway between

Table IV-3.4

Projected Peak Hour Traffic on Mauna Lani Drive and at Selected Locations on Queen Ka'ahumanu Highway: 1990, 1995, 2000, and Ultimate Development

LOCATION	YEAR			
	1990	1995	2000	Ultimate
<b>SOUTHBOUND ON QUEEN KA'AHUMANU HIGHWAY:</b>				
- Appr. to Waimea-Kawaihae Road	320	470	600	900
- Between MKR and Puako Road	350	500	630	930
- Between Puako Road and MLR	370	520	660	980
- Between MLR and Waikoloa Road	400	570	730	1,120
- Between Waikoloa Rd. and WBR	410	590	750	1,110
- South of WBR	360	520	670	1,000
<b>NORTHBOUND ON QUEEN KA'AHUMANU HIGHWAY:</b>				
- Approach to WBR	230	320	410	630
- Between WBR and Waikoloa Road	390	550	700	1,010
- Between Waikoloa Rd. and MLR	360	510	640	960
- Between MLR and Puako Road	430	610	790	1,270
- Between Puako Road and MKR	390	550	720	1,140
- Between MKR and Waimea-Kawaihae Rd.	410	570	730	1,150
<b>MAUNA LANI DRIVE:</b>				
- Inbound from North	95	145	220	440
- Inbound from South	130	195	290	590
<b>TOTAL INBOUND =</b>	<b>225</b>	<b>340</b>	<b>510</b>	<b>1,030</b>
- Outbound to North	195	295	445	890
- Outbound to South	130	195	295	590
<b>TOTAL OUTBOUND =</b>	<b>325</b>	<b>490</b>	<b>740</b>	<b>1,480</b>
<b>MAUNA LANI DRIVE TOTAL =</b>	<b>550</b>	<b>830</b>	<b>1,250</b>	<b>2,510</b>

Source: Belt, Collins & Associates

Kailua-Kona and the Waimea-Kawaihae Road. While no specific analysis of it was conducted as part of this study, it is likely that construction of the new Waimea-Kawaihae Road, or at least improvements to the Waimea-Kawaihae intersection, will be needed as well. The capacities of Waikoloa Road and Puako Beach Road, the other major non-resort roads in the region, appear to be adequate for projected long-term growth (although signalization of the intersections will probably be required because of the heavy through traffic on Queen Ka'ahumanu Highway that is forecast at those locations.

### 3.2.5.2 Mauna Lani Drive/Queen Ka'ahumanu Intersection

While the between-intersection capacity of the highway will remain adequate for many years to come, traffic entering the existing unsignalized Mauna Lani Drive/Queen Ka'ahumanu Highway intersection will reach capacity (i.e., Service Level E) by about 1995. Intersection improvements will be required to accommodate increased traffic volume beyond 1995.

A means of increasing intersection capacity that can be considered is signalization, which could keep the intersection functional for several additional years. However, by the year 2000, if signalization were to be used, it would probably have to be supplemented by construction of an additional storage lane on Mauna Lani Drive for vehicles turning north out of the resort and an additional northbound lane on Queen Ka'ahumanu in the immediate vicinity of the intersection. Soon after, even these provisions would become inadequate, and maintenance of adequate level of service would require construction of an interchange and widening of the highway. This requirement is attributable not just to the Mauna Lani Resort, but rather to the overall growth in highway traffic associated with regional development.

Signalization, although relatively inexpensive, is not acceptable to Mauna Lani Resort, Inc.'s current thinking. An alternative would be to consider undertaking other means of increasing intersection capacity, (the construction of a storage lane or an interchange, or highway widening) sooner than if signalization were first to be implemented. Specific improvements to the intersection cannot be precisely characterized during this early stage of planning. As development progresses at Mauna Lani Resort, it is expected that further analysis of intersection requirements will be performed. Any intersection improvements that are proposed will be coordinated with the Highways Division of the State Department of Transportation.

It is worth noting that the intersection capacity deficits described above are not unique to the Mauna Lani Resort. Rather, they are typical of those that will be faced by all of three of the major resorts that front Queen Ka'ahumanu Highway. In fact, because of its more rapid development, it is expected that improvements to the Queen Ka'ahumanu Highway/Waikoloa Beach Resort Entrance Road intersection may be required as early as 1990, well before the time improvements will be needed at Mauna Lani. Queen Ka'ahumanu Highway itself is constructed within a 300-foot wide right-of-way; this is enough to accommodate any needed improvements.

Queen Ka'ahumanu Highway was constructed by the State of Hawai'i before work on the Mauna Lani Resort was begun. The existing intersection of the Highway and Mauna Lani Drive was built by the resort's owners. It is expected that Mauna Lani Resort, Inc., along with Mauna Kea Properties and Transcontinental will continue to work with the State and County in planning, scheduling and funding improvements to the respective resorts' intersections with Queen Ka'ahumanu Highway. Eventually, however, if projected resort growth bears out, the subsequent growth in regional

traffic will necessitate widening the highway to four lanes between the intersections as well. It is likely that the State Department of Transportation would undertake this as part of its normal transportation facility improvement program. However, the State Department of Transportation has stated that at this time, "the Highways Division does not foresee the availability of funds to widen the Queen Kaahumanu Highway." (Letter of June 18, 1985)

### 3.2.6 Air Transportation Facilities

Because of its visitor orientation, the development at the Mauna Lani Resort would generate a significant amount of air passenger traffic. Most of this would pass through Keahole Airport, but a small percentage might be expected to arrive and depart through the Waimea-Kohala Kamuela and Waikoloa airports as well.

The amount of air travel generated by development at the Mauna Lani Resort is primarily a function of the number of visitor units present, the average length of stay, and the average occupancy rates of the various visitor units. Persons residing on the resort and other residents of the region supported by project-related employment would also use the region's airports, but travel from those sources would be relatively minor in comparison to that generated by visitors to the resort.

Based on the average daily visitor census for the Mauna Lani Resort reported elsewhere in this report (see Table IV-2.11), 90 percent of the visitors to the resort arriving/departing through Keahole Airport, and one air trip by a resident for each 10 air trips by visitors, the Mauna Lani Resort would generate the following volume of air traffic:

Average Length of Stay	Estimated Air Passenger Trips @ Keahole			
	1990	1995	2000	Ultimate
3.0 days	180,000	340,000	530,000	1,365,000
6.0 days	90,000	170,000	265,000	680,000

Depending upon the assumed length of stay, this suggests that the number of air passengers using Keahole Airport would increase from 50 to 100 percent over its 1983 level of 1.2 million as a result of the proposed project. This, together with even greater increases in passenger travel associated with other West Hawai'i development makes it evident that substantial expansion of the terminal facilities will be required.

In addition to expanding the terminal facilities, it will also be necessary to lengthen the runway and make other changes in ground facilities to accommodate the larger aircraft used for direct flights to and from the mainland. Improvements to Keahole Airport are high on the State Department of Transportation's priority list, and an update of the Keahole Airport Master Plan is scheduled to begin this year. Adequate land area and revenues are available to support the needed improvements, and it is expected that they will be in place in time to meet the projected demand.



#### **4. AIR QUALITY IMPACTS**

##### **4.1 INTRODUCTION**

This section of the report assesses the impact that implementation of the revised master plan for the Mauna Lani Resort would have on local and regional air quality. The overall project is clearly an "indirect source" of air pollution as defined in the Federal Clean Air Act (United States Congress, August 1977) since its primary effect on air quality results from the vehicular traffic which it would generate. Other project-related sources of air pollution addressed below include construction activity and electrical power generation.

##### **4.2 AIR QUALITY STANDARDS**

A summary of State of Hawai'i and national ambient air quality standards is presented in Table IV-4.1. Note that Hawai'i's standards are not divided into primary and secondary categories. Moreover, they are more stringent than their Federal counterparts and are absolute ceiling values not to be exceeded at all, whereas the Federal standards allow one period per year in excess of the standard without being considered a violation. Amendments to the State's particulate matter and sulfur dioxide standards intended to make them equivalent to the Federal standards have been proposed, but the recommended changes are still under review by the State Department of Health's Air Advisory Committee for further review and consideration.

Primary standards are intended to protect public health with an adequate margin of safety, while secondary standards are intended to protect public welfare through the prevention of damage to soils, water, vegetation, man-made materials, animals, wildlife, visibility, climate, and economic values. In the case of the automotive pollutants (carbon monoxide (CO), oxides of nitrogen (NOx), and photochemical oxidants (Ox)), there are only primary standards.

The U.S. Environmental Protection Agency (EPA) is mandated by Congress to periodically review and re-evaluate the Federal standards in light of new research findings (6). The last review resulted in the relaxation of the oxidant standard from 160 to 240 micrograms/cubic meter (ug/m<sup>3</sup>). The carbon monoxide (CO), particulate matter, sulfur dioxide (SO<sub>2</sub>), and nitrogen dioxide (NO<sub>2</sub>) standards are currently under review, but final action has not been taken yet (U.S. Environmental Protection Agency, April 29, 1985).

Finally, the State of Hawai'i also has fugitive dust regulations for particulate matter (PM) emanating from construction activities (Hawai'i, State of, Department of Health, Title 11, Chapter 60). There can be no visible emissions, and the maximum downwind level of PM cannot be more than 150 ug/m<sup>3</sup> above upwind levels as measured with a Hi-Volume sampler for a 12-hour period. Elimination of the 150 ug/m<sup>3</sup> standard has also been proposed in the same package of amendments discussed earlier.

##### **4.3 EXISTING AIR QUALITY**

While there are no continuous air monitoring stations in West Hawai'i, the absence of large stationary sources and the relatively low existing vehicular traffic make it highly likely that existing air quality in the region is currently good most of the time. The nearest active State Department of Health air monitoring station is located some 60 miles east at Hilo. Data from that station suggest that the State's

Table IV-4.1  
Summary of State of Hawaii and Federal Ambient Air Quality Standards

Pollutant	Sampling Period	Federal Standards		State Standards
		Primary	Secondary	
1. Total Suspended Particulate Matter (TSP)  (micrograms per cubic meter)	Annual Geometric Mean	75	60	--
	Annual Arithmetic Mean	--	--	55
	Maximum Average in Any 24 Hours	260	150	100
2. Sulfur Dioxide (SO <sub>2</sub> )  (micrograms per cubic meter)	Annual Arithmetic Mean	80	--	20
	Maximum Average in Any 24 Hours	365	--	80
	Maximum Average			
3. Nitrogen Dioxide (NO <sub>2</sub> )  (micrograms per cubic meter)	Annual Arithmetic Mean		100	70
4. Carbon Monoxide (CO)  (milligrams per cubic meter)	Maximum Average in Any 8 Hours		10	5
	Maximum Average in Any 1 Hour		40	10
5. Photochemical Oxidants (as O <sub>3</sub> )  (micrograms per cubic meter)	Maximum Average in Any 1 Hour		240	100
6. Lead (Pb)  (micrograms per cubic meter)	Maximum Average in Any Calendar Quarter		1.5	1.5

Sources: State of Hawaii, Title 11, Chapter 59, Air Quality Standards Title 40, Code of Federal Regulations, Part 50

stringent standards are being met for sulfur dioxide and total suspended particulates. Unfortunately, the two principal automotive pollutants, carbon monoxide and oxides of nitrogen, are not monitored on the Island of Hawai'i.

The worst air pollution episodes experienced in Hawai'i County are due to periodic volcanic eruptions. While volcanic emissions are somewhat variable and have not been fully characterized, it is well known that visibility is affected by the presence of fine particulates resulting directly from volcanic activity as well as secondarily from forest fires caused by lava flows. In addition substantial increases in the ambient concentrations of mercury and sulfur dioxide have been recorded during eruptions.

Measurements of sulfur dioxide taken during the January 1983 eruptive phase, for example, indicated 24-hour concentration as high as 982 ug/m<sup>3</sup> at the Volcano Observatory and 654 ug/m<sup>3</sup> in Hilo. Despite the volcanic activity underway at the time, sulfur dioxide and particulate measurements made during January and March, 1983 in Kona and Hilo show that concentrations of those pollutants were relatively low. This was also true of the SO<sub>2</sub> data collected as part of the normal routine monitoring in Hilo during 1983. The low levels may be explained by the infrequent monitoring and variable wind directions.

Analysis of the airborne particulate matter during the eruption revealed some rather interesting results as unusually high concentrations of selenium, arsenic, indium, gold, and sulfur were found along with strikingly high concentrations of iridium (Zoller, W.H., et al., December 1978).

#### **4.4 CLIMATE & METEOROLOGY**

##### **4.4.1 Temperature and Rainfall**

There is little seasonal or diurnal temperature variation at the project site. As shown in Table IV-4.2, monthly temperature averages vary by only about 6 degrees from the warmest months (July and August) to the coolest (January and February).

An 18-year rainfall record also indicates that the area is rather dry with an annual average of only 10.65 inches. Monthly means range from 2.63 inches in January to 0.14 inch in July. Table IV-4.2 also includes a summary of this precipitation data.

##### **4.4.2 Surface Winds**

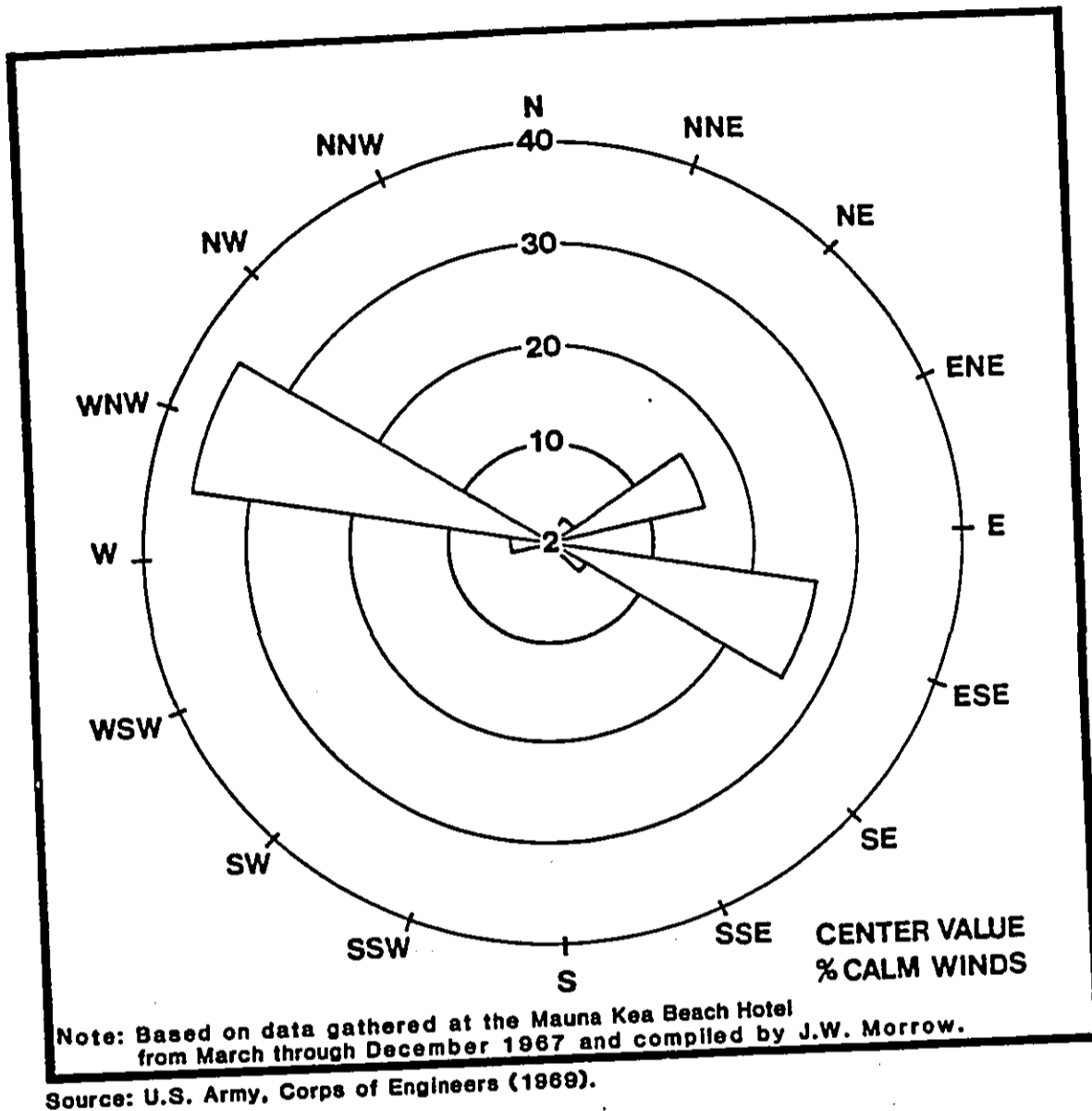
Raw data collected at the Mauna Kea Beach Hotel in 1967 have been previously reduced to produce an annual wind rose for the project site (Morrow, February 1979). The period of data collection ran from March through December, 1967, and totaled 3,785 hours. The annual wind rose is presented in graphical form in Figure IV-6. The data clearly indicate an east-west dichotomy. Closer examination of the raw data reveals the fact that the ESE-ENE winds generally occur during night, early morning and evening hours, while the WNW-W winds predominate during the daytime hours. This suggests a strong land-seabreeze regime which apparently dominates air movement in the area.

Table IV-4.2

## Temperature and Rainfall Data, Puako, Hawai'i

<u>Month</u>	<u>Temperature (deg F)</u>	<u>Rainfall (in)</u>
Jan	73.10	2.63
Feb	72.90	1.50
Mar	73.80	0.67
Apr	76.70	0.83
May	77.00	0.69
Jun	78.30	0.45
Jul	78.30	0.14
Aug	79.10	0.41
Sep	77.70	0.39
Oct	77.30	0.54
Nov	75.40	0.74
Dec	73.80	1.66
Mean:	76.12	10.65

- Notes:
1. Temperature data based on a 1974 summary of the National Oceanographic and Atmospheric Administration
  2. Rainfall data based on the 1966-83 period.



**Figure IV-6 FREQUENCY DISTRIBUTION OF WIND DIRECTION IN PERCENT**

## 4.5 HIGHWAYS AND TRAFFIC

As noted elsewhere in this report, the principal roadway in the area is the Queen Ka'ahumanu Highway. It is a two-lane, high-speed rural highway with a capacity (two-way total) of approximately 2,000 vehicles per hour. The Queen Ka'ahumanu Highway is designed with a 24-foot pavement width. Access from the Mauna Lani Resort to the highway is via Mauna Lani Drive. The traffic projections described in Section 3.2.4 of this chapter were used in evaluating the air quality impact of the proposed project.

The traffic analysis indicated potential capacity problems for the Queen Ka'ahumanu Highway-Mauna Lani Drive intersection by the year 2000. Because of this, in performing the air quality impact analysis it was assumed that the improvements identified as necessary in the traffic impact analysis would be made. For the year 2000, these include signalization of the intersection, construction of a left-turn storage lane on Mauna Lani Drive for vehicles turning onto Queen Ka'ahumanu Highway northbound, and widening Queen Ka'ahumanu Highway in the vicinity of the intersection to include an additional northbound lane. For the ultimate development scenario, it was assumed that both Queen Ka'ahumanu Highway and Mauna Lani Drive were widened to four lanes with a full interchange constructed to serve the significantly greater traffic demand.

## 4.6 LONG-TERM IMPACT

### 4.6.1 Emission Factors

Automotive emission factors for carbon monoxide (CO), oxides of nitrogen (NO<sub>x</sub>), and nonmethane hydrocarbons (NMHC) were generated for calendar years 1984, 1990, 1995, and 2000 using the Mobile Source Emissions Model (MOBILE-2) (United States Environmental Protection Agency, February 1981). To localize emission factors as much as possible, the August, 1983 age distribution for the City & County of Honolulu (Honolulu, City and County of, Department of Data Systems, August 1983) was input in lieu of the national statistics normally used.

### 4.6.2 Microscale Analysis

Because it involves motor vehicles as the principal air pollution source, carbon monoxide was selected for modeling because it has a relatively long half-life in the atmosphere (about 1 month) (Seinfeld, 1975) and it comprises the largest fraction of automotive emissions. In this instance, microscale screening analyses were performed for the Mauna Lani Drive intersection with Queen Ka'ahumanu Highway and the main internal intersection. The EPA computer model PAL (U.S. Environmental Protection Agency, February 1978) was employed with an array of receptors around each intersection. Since a review of the traffic data indicated that the peak traffic hours tended to be during the afternoon, worst case meteorological conditions were selected accordingly. A wind speed of 1 meter per second, an acute wind/road angle, and neutral stability (Pasquill-Gifford Class "D") (U.S. Environmental Protection Agency, 1973) were all selected to maximize concentration estimates in the vicinity of the intersections.

One-hour carbon monoxide (CO) concentrations were computed for 1984, 1990, 1995, 2000, and the ultimate resort development. In addition, 8-hour concentration estimates were determined for both intersections in all study years. A "persistence" factor of 0.6 was applied to the maximum 1-hour concentrations in order to generate the 8-hour estimates. This factor is recommended in an EPA publication on indirect

source analysis (U.S. Environmental Protection Agency, September 1978) and was further corroborated by analysis of carbon monoxide monitoring data in Honolulu which indicates the same 8-hour to 1-hour ratio (Morrow, July 1984). The assumed locations of the receptors adjacent to both intersections are shown in Figure IV-6. The projected CO concentrations for one-hour and eight-hour averaging periods are shown in Tables IV-4.3 and IV-4.4.

#### **4.6.3 Mesoscale Analysis**

A mesoscale or regional impact analysis based on annual emissions was also performed. Using the aforementioned emission factors and traffic projections, it was possible to estimate future annual emissions of the principal pollutants associated with this project. The results of this analysis are depicted in Figure IV-7 and may be compared with the 1980 emissions inventory for the Island of Hawaii shown in Table IV-4.5.

The estimated 70 million kilowatt hours of annual electrical demand by the ultimate development will necessitate the generation of electricity by power plants. Currently, Big Island electricity is generated primarily by the burning of high sulfur fuel oil, diesel oil, and bagasse, with a small amount also coming from the HGP-A geothermal plant. With the exception of the geothermal plant, all of these result in the emission of various quantities of sulfur oxides, nitrogen oxides, particulates, and hydrocarbons. Coal has also recently been introduced to Hawaii for use in sugar mills during the off-season to replace more expensive oil. This too will result in emissions of the aforementioned major pollutants. By the time Mauna Lani Resort reaches its full development, it is uncertain how the electrical supply market will be divided among the various types of power plants. There will, however, certainly be some fuel burning occurring and this will result in pollutant emissions external to the Mauna Lani site, but attributable to it because of its increased electrical demand.

#### **4.7 SHORT-TERM IMPACT**

The principal source of short-term air quality impact will be construction activity. Construction vehicle activity will increase automotive pollutant concentrations along Queen Ka'ahumanu Highway as well as in the vicinity of the project site itself. However, the increased vehicular travel would result in violations of ambient air quality standards.

The site preparation and earth moving will create particulate emissions as will building and on-site road construction. The movement of construction vehicles on unpaved on-site roads will also generate particulate emissions. EPA studies on fugitive dust emissions from construction sites indicate that about 1.2 tons/acre per month of activity may be expected under conditions of medium activity, moderate soil silt content (30%), and a precipitation/evaporation (P/E) index of 50 (Thorntwaite, 1931). Although there is little or no soil on the project site, the soil that is brought in may well have a silt content greater than the 30% cited above. This, in conjunction with the relatively dry local climate (P/E Index = 12), suggests a potential for even greater fugitive dust emissions such as were experienced during construction of the Mauna Lani golf course.

Table IV-4.3

1-Hour and 8-Hour Carbon Monoxide Concentrations During  
Peak-Hour Traffic Conditions Mauna Lani Drive at  
Queen Ka'ahumanu Highway: 1984 - 2000+

Receptor	Concentrations (mg/m <sup>3</sup> )									
	1984		1990		1995		2000		Ultim.	
	1-Hr.	8-Hr.	1-Hr.	8-Hr.	1-Hr.	8-Hr.	1-Hr.	8-Hr.	1-Hr.	8-Hr.
R1	1.1	0.7	8.1	4.8	6.9	4.2	17.3*	10.4*	3.1	1.8
R2	1.1	0.7	7.3	4.4	6.3	3.8	16.8*	10.1*	3.1	1.8
R3	1.1	0.7	6.4	3.9	5.7	3.4	15.8*	9.5*	3.0	1.8
R4	0.6	0.4	7.3	4.4	6.0	3.6	9.8	5.9*	2.0	1.2
R5	0.6	0.4	6.6	4.0	5.5	3.3	9.9	6.0*	2.0	1.2
R6	0.6	0.4	6.0	3.6	5.1	3.1	10.0	6.0*	2.0	1.2
R7	0.4	0.2	3.3	2.0	5.6	3.3	5.2	3.1	1.6	0.9
R8	0.4	0.2	3.9	2.3	5.1	3.0	5.2	3.1	1.5	0.9
R9	0.4	0.2	4.1	2.4	4.6	2.8	5.3	3.2	1.4	0.9
R10	0.5	0.3	0.7	0.4	0.8	0.5	1.3	0.8	0.6	0.4
R11	0.5	0.3	0.7	0.4	0.2	0.1	0.3	0.2	0.1	0.1
R12	0.1	0.1	0.2	0.1	0.2	0.1	0.3	0.2	0.1	0.1
R13	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
R14	0.0	0.0	0.0	0.0	0.8	0.5	1.3	0.8	0.6	0.4
R15	0.5	0.3	0.7	0.4	0.2	0.1	0.3	0.2	0.1	0.1
R16	0.1	0.1	0.2	0.1	0.2	0.1	0.3	0.2	0.1	0.1
R17	0.1	0.1	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.0
R18	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0

Notes:

1. See Figure 4-1 for receptor locations.
2. mg/m<sup>3</sup> = milligrams/cubic meter
3. Meteorological conditions:
  - Wind speed = 1 meter/second
  - Wind/road angle = 10 degrees
  - Stability category = D (neutral)
4. \* = highest concentrations

Source: Morrow, May 1985:23 & 25



Table IV-4.4

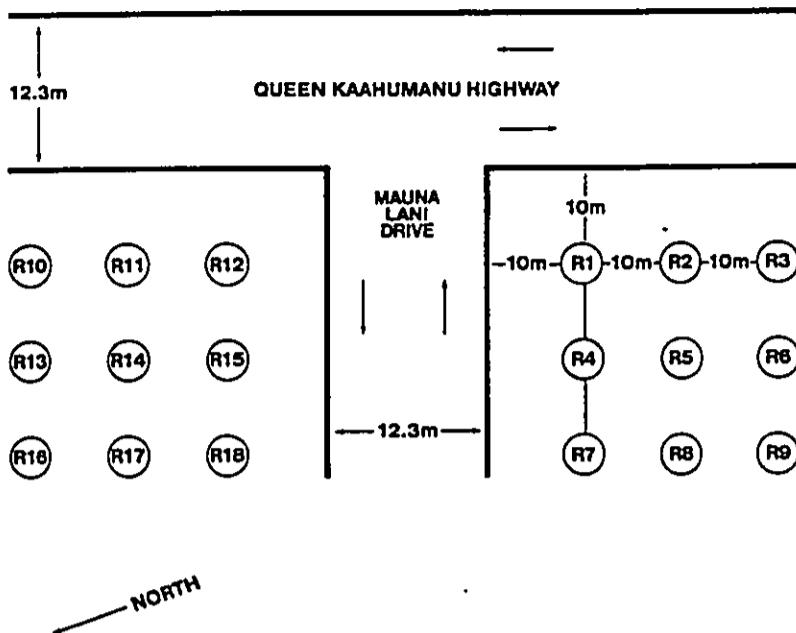
1-Hour and 8-Hour Carbon Monoxide Concentrations During  
Peak-Hour Traffic Conditions Mauna Lani Drive at  
Primary Internal Intersection: 1984 - 2000+

Receptor	1984		1990		1995		2000		Ultim.	
	1-Hr.	8-Hr.	1-Hr.	8-Hr.	1-Hr.	8-Hr.	1-Hr.	8-Hr.	1-Hr.	8-Hr.
R1	0.7	0.4	1.2	0.7	1.5	0.9	12.1*	7.3*	11.1*	6.7*
R2	0.6	0.3	0.9	0.6	1.2	0.7	7.4	4.4	8.0	4.8
R3	0.4	0.2	0.7	0.4	0.9	0.5	6.0	3.6	7.0	4.2
R4	0.7	0.4	1.2	0.7	1.4	0.8	12.2*	7.3*	12.3*	7.4*
R5	0.5	0.3	0.9	0.6	1.2	0.7	7.9	4.7	7.9	4.7
R6	0.4	0.2	0.7	0.4	0.9	0.6	5.7	3.4	6.5	3.9
R7	0.7	0.4	1.1	0.7	1.2	0.7	11.8*	7.1*	13.1*	7.9*
R8	0.5	0.3	0.9	0.5	1.1	0.7	8.4	5.0	8.2	4.9
R9	0.4	0.3	0.7	0.4	0.9	0.6	5.7	3.4	6.3	3.8
R19	0.5	0.3	0.9	0.5	1.0	0.6	2.0	1.2	2.1	1.3
R20	0.2	0.1	0.4	0.2	0.5	0.3	0.9	0.6	0.8	0.5
R21	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1
R22	0.6	0.3	1.0	0.6	1.1	0.7	2.1	1.3	2.3	1.4
R23	0.3	0.2	0.5	0.3	0.6	0.4	1.2	0.7	1.1	0.7
R24	0.1	0.1	0.2	0.1	0.2	0.1	0.4	0.2	0.3	0.2
R25	0.6	0.4	1.0	0.6	1.1	0.7	2.5	1.5	2.5	1.5
R26	0.4	0.2	0.6	0.4	0.7	0.4	1.4	0.8	1.4	0.8
R27	0.2	0.1	0.3	0.2	0.3	0.2	0.6	0.4	0.5	0.3

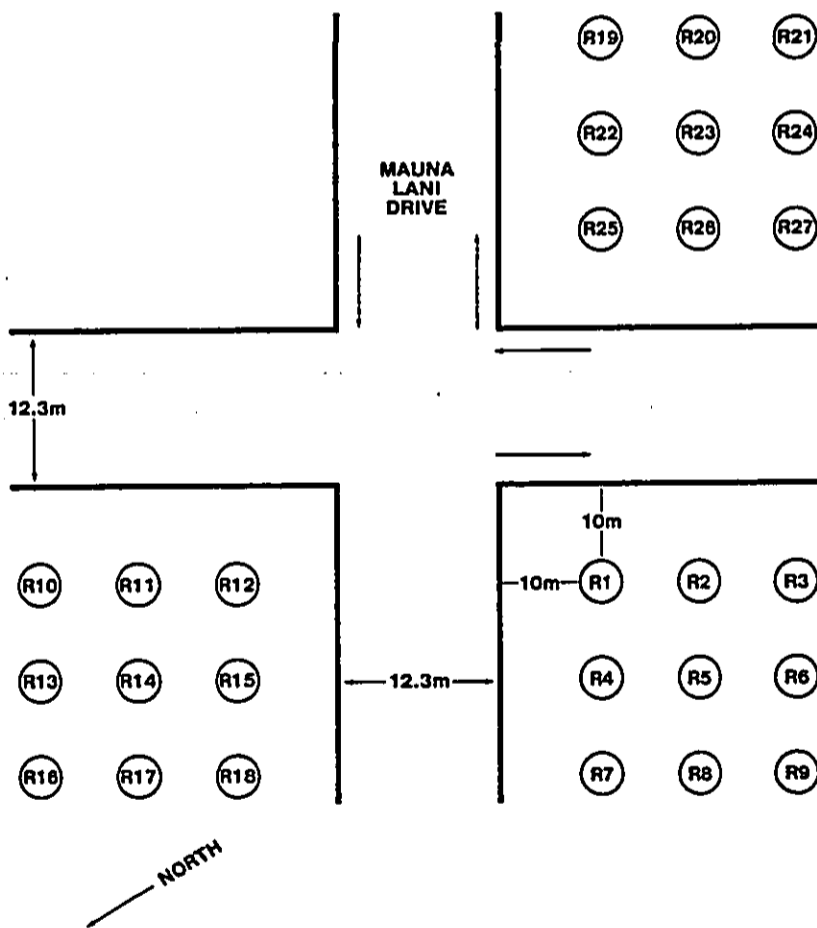
**Notes:**

1. See Figure 4-1 for receptor locations.
2. mg/m<sup>3</sup> = milligrams/cubic meter
3. Meteorological conditions:
  - Wind speed = 1 meter/second
  - Wind/road angle = 10 degrees
  - Stability category = D (neutral)
4. \* = highest concentrations

MAUNA LANI DRIVE AT QUEEN KAAHUMANU HIGHWAY



MAIN INTERNAL INTERSECTION



Source: Morrow (May 1985).

Figure IV-7 LOCATION OF ASSUMED RECEPTOR POINTS

Table IV-4.5

Emissions Inventory  
County of Hawaii  
1980

Source Category	Emissions (Tons/Year)				
	TSP	SOx	NOx	CO	HC
Steam Electric Power Plants	262.9	3232.9	1308.9	65.9	21.8
Gas Utilities	0.0	0.0	11.5	0.0	0.0
Fuel Combustion in					
Agricultural Industry	2251.7	995.8	798.0	0.0	7.3
Refinery Industry	0.0	0.0	0.0	0.0	0.0
Petroleum Storage	0.0	0.0	0.0	0.0	391.9
Metallurgical Industries	0.0	0.0	0.0	0.0	0.0
Mineral Products Inventory	1080.1	13.6	11.5	0.0	0.0
Municipal Incineration	0.0	0.0	0.0	0.0	0.0
Motor Vehicles	262.9	177.3	3048.5	42177.3	4035.4
Construction, Farm and					
Industrial Vehicles	40.0	31.8	453.5	1515.7	152.4
Aircraft	5.7	4.5	45.9	1449.8	174.2
Vessels	11.4	90.9	63.2	65.9	29.0
Agricultural Field Burning	1800.2	0.0	0.0	20627.3	2445.9
-----					
TOTAL IN TONS PER YEAR:	5715.0	4547.0	5741.0	65902.0	7258.0
-----					

Source: State of Hawaii, Department of Health

## 4.8 DISCUSSION AND CONCLUSIONS

### 4.8.1 Microscale Analysis

The 1-hour and 8-hour concentration estimates at the Mauna Lani Drive-Queen Ka'ahumanu Highway intersection exhibited a rather interesting fluctuating pattern over the analysis period. Levels at sites close to the intersection increased from 1984 to 1990, but then declined slightly in 1995. The substantial rise between 1984 and 1990 would be attributable to a significant rise in traffic volume as project development progressed. The slight reduction in CO levels between 1990 and 1995 would be due to the reduction in per vehicle emissions as a result of the Federal motor vehicle emissions control program. In other words, the net result of rising traffic volumes and declining emissions per vehicle over this period was weighted towards declining emissions. During these years, both State and Federal carbon monoxide standards appeared to be met.

In the year 2000, however, concentrations within 10 meters of the roadways rose to levels which would exceed the State standards although remain below the Federal limits. This is due primarily to queueing on both roadways by vehicles attempting to make turning movements into or out of Mauna Lani Drive. The results reflect the assumptions made regarding signalization and addition of another northbound lane on Queen Ka'ahumanu Highway and suggest that careful evaluation and design of this intersection in future years will be required to prevent traffic and air quality problems.

The concentrations estimates for the ultimate development scenario fell back sharply from the year 2000 estimates because of the assumed construction of a widened highway and adequate interchange to accommodate ingress/egress to the resort.

The pattern of results at the main internal intersection was similar but not exactly the same. Concentration estimates tended to show a consistent rise with increasing traffic, and did not exhibit the same significant decline at the ultimate development stage. This is simply due to the fact that a major reconstruction of that intersection was not assumed as it had been in the case of the Queen Ka'ahumanu intersection. The results suggest the possibility of violations of State air quality standards within 10 meters of the roadway and again indicate the need for careful evaluation and design of that intersection for future years to avoid problems.

### 4.8.2 Mesoscale Analysis

As expected, the mesoscale analysis indicated that the traffic generated by the proposed development would result in a net increase in emissions of all three major automotive pollutants in the project area. Since the Federal motor vehicle emission control program depends on new cars with lower emissions gradually replacing older, more polluting vehicles, the reason for rising emissions is that the increase in traffic volumes exceeds the decrease in per vehicle emissions. The difference between pollutants is due to the different standards and compliance dates for each thereby resulting in different rates of improvement. In this particular case, a rise in emissions is not surprising since a rather substantial increase in traffic volume is projected to occur in an area which is presently almost pristine. When compared to the 1980 county emissions inventory, the projected increases range from about 2% for non-methane hydrocarbons to about 8% for nitrogen oxides.

The emissions resulting from fuel combustion necessary to meet the estimated electrical demand of the project could be fairly significant; however, because of the long-term nature of this project and the possible variability in types of electrical generating facilities existing after the year 2000, no attempt was made to quantify the emissions associated with such facilities.

#### 4.8.3 Short-Term Impact

The potential for fugitive dust due to the dry climate and fine soils make it very important for adequate dust control measures to be employed during the construction period. There will be existing occupied units downwind of construction areas, and particularly during the drier, windier summer months fugitive dust could be the source of complaints not to mention possible violations of the State or Federal standards.

Dust control could be accomplished through frequent watering of unpaved roads and areas of exposed soil. The EPA estimates that twice daily watering can reduce fugitive dust emissions by as much as 50%. Dust barriers near existing dwellings might be considered if problems arise from wind-driven dust. The soonest possible landscaping of completed areas will also help.

## 5. NOISE IMPACTS

### 5.1 INTRODUCTION

Implementation of either the existing or revised master plans will involve essentially the same types of construction activities and traffic volumes. Hence, the discussion which follows is applicable to both the proposed and "no-action" (i.e., no land use boundary amendment) alternatives. It focuses on traffic noise because that is by far the most significant type of noise associated with the proposal.

Construction noise for the type of structures envisioned is limited in both intensity and duration. Noise levels on sites adjacent to construction areas would be elevated, but no serious disruption of the ongoing activities of the resort or its residents is expected.

### 5.2 NOISE DESCRIPTORS AND THEIR RELATIONSHIP TO LAND USE COMPATIBILITY

Because of the great physical, temporal, and spatial variability which environmental noise exhibits, many different systems have been developed to characterize it. The two descriptors currently used to relate traffic noise levels to land use compatibility, and to assess environmental noise in general, are the "Equivalent Noise Level" (Leq) and the "Day-Night Average Sound Level" (Ldn). Both of these descriptors are averages of instantaneous A-weighted sound levels as read on a standard sound level meter.

Current Federal noise standards and acceptability criteria for residential uses are shown in Table IV-5.1. As a general rule, noise levels of 55 Ldn or less occur in rural areas, or in urbanized areas which are shielded from streets carrying large volumes of traffic. In urbanized areas, noise levels typically range from 55 Ldn to 65 Ldn, and motor vehicle traffic noise is usually the controlling factor. Residences which front major roadways are generally exposed to noise levels of about 65 Ldn, and the traffic noise may reach 72 Ldn where high speed freeways are involved; noise levels for buildings that are shielded from roadways by intervening structures may be 55 Ldn or less.

An exterior noise limit of 65 Ldn is used nationally for the purposes of determining noise acceptability for funding assistance from Federal agencies such as FHA, HUD, and VA (U.S. Department of Housing and Urban Development, July 12, 1979). Because of Hawaii's open living conditions, the widespread use of naturally ventilated dwellings, and the relatively low exterior-to-interior sound attenuation which these afford, an exterior noise level of 65 Ldn does not eliminate all risks of adverse noise impacts. For these reasons, and as recommended by the U.S. Environmental Protection Agency (March 1974), a lower level of 55 Ldn is considered the "unconditionally acceptable" (or "near-zero risk") level of exterior noise for residential uses. However, after considering the cost and feasibility of applying a stringent 55 Ldn standard, government agencies have selected 65 Ldn as a more appropriate regulatory standard for residential uses. An exterior noise level as high as 75 Ldn is generally considered acceptable for commercial, industrial, and other uses that are not noise-sensitive. Naturally ventilated offices and other commercial establishments are an exception to this because of their open character; for these, 65 Ldn is usually taken as a maximum.

Table IV-5.1

Exterior Noise Exposure Classification: Residential Uses

<u>Noise Exposure Class</u>	<u>Day-Night Sound Level</u>	<u>Equivalent Sound Level</u>	<u>Federal Standard(1)</u>
Minimal Exposure	Not Exceeding 55 Ldn	Not Exceeding 55 Leq	Unconditionally Acceptable
Moderate Exposure	Above 55 Ldn But Not Above 65 Ldn	Above 55 Leq But Not Above 65 Leq	Acceptable(2)
Significant Exposure	Above 65 Ldn But Not Above 75 Ldn	Above 65 Leq But Not Above 75 Leq	Normally Unacceptable
Severe	Above 75 Ldn	Above 75 Leq	Unacceptable

(1) Federal Housing Administration, Veterans Administration, Department of Defense, and Department of Transportation.

(2) FHWA uses the Leq instead of the Ldn descriptor. For planning purposes, the two are equivalent if: (a) heavy trucks do not exceed 20 percent of the 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.

Source: Federal Interagency Committee on Urban Noise, June 1980.

In the analysis which follows, the 55 Ldn level was used to define the farthest extent of noise impact zones on each side of the affected roadways. This conservative criteria is consistent with the resort character of the project, the relatively low existing ambient noise levels, and the limited noise attenuation provided by naturally ventilated structures.

### 5.3 EXISTING TRAFFIC NOISE LEVELS

As a means of gaining an understanding of the existing noise environment and calibrating the Federal Highway Administration (FHWA) traffic noise model used to project future noise levels, traffic noise measurements were made along Queen Ka'ahumanu Highway during May 1985 (see Table IV-5.2). Stations 1 and 4 are on flat terrain in the vicinity of Puako Beach Road and the existing sewage pump station. Stations 2 and 3 are south of the project and in the vicinity of the Kona Village Resort. Stations 5 and 6 were inside the north gate of Mauna Lani's existing dirt service road. Site 7 is near the crossing of the Mauna Lani entrance road and the existing gravel road between the highway and Kaniku Drive. Note that the noise levels reported in Table IV-5.2 are not for peak traffic periods and are not, therefore, directly comparable to the noise level estimates contained in Table IV-5.3.

Table IV-5.3 indicates that existing peak-hour noise levels are below 55 Ldn beyond 110 feet from the centerline of Queen Ka'ahumanu Highway. Traffic noise levels along the internal roadways of the resort are below 55 Ldn at distances of 50 feet or more. So, except for the narrow corridors immediately along the roads, the existing traffic noise environment in the vicinity of the Mauna Lani Resort is in the "Minimal Exposure, Conditionally Acceptable" range.

The measured traffic noise levels cited above and in Table IV-5.2 are 5 to 7 db lower than those predicted by the FHWA traffic noise model; this difference is consistent with measurements carried out in 1984 in the vicinity of the Mauna Kea Resort (Ebisu, May 1984). The reason for the variance from the mainland-developed noise model is believed to be related to the fact that the traffic mix in the Kohala Coast Resort area contains a higher percentage of late model street vehicles and a lower percentage of off-road and older vehicles than the mainland locations that were used in calibrating the original model. In particular, because of the extensive use of rental cars, the vehicle mix is weighted towards relatively new compact cars, and these produce much less audible tire hum and engine exhaust noise than the average. The predominance of such quiet vehicles is expected to increase as the visitor industry develops further.

### 5.4 FUTURE TRAFFIC NOISE AND NOISE IMPACTS

Future traffic noise levels 50 feet from the centerlines of Queen Ka'ahumanu Highway, Mauna Lani Drive, and Kaniku Drive were made for the years 1990, 1995, 2000, and ultimate development of the resort using the traffic volume projections contained in Section 3.2.4 of Chapter IV. These are presented in Table IV-5.4. As shown in the table, traffic noise increases of approximately 2 Ldn per five-year period are expected along the external and internal roadways serving the Mauna Lani Resort. Over the full development span of the project, traffic noise adjacent to Queen Ka'ahumanu Highway is expected to rise by 7 to 8 Ldn, and total increases of 10 to 11 Ldn are predicted along the internal roadway to the resort.



TABLE IV-5.2. TYPICAL HIGHWAY NOISE LEVELS: SELECTED TIME PERIODS, MAY 3 AND 4, 1985.

Location	Time of Day (Hours)	Average Speed (MPH)	Hourly Traffic Volume			Measured Predicted(1)	
			Auto	Medium Truck	Heavy Truck	Leq (dB)	Leq (dB)
1. 50 feet from centerline of Q.K.Highway at Puako Beach Road Intersection	1245 to 1354	50	224	2	8	58.0	61.6
2. 50 feet from centerline of Q.K.Hwy. at entrance to Kona Village Resort	1720 to 1742	50	299	0	8	60.9	62.0
3. 100 feet from centerline of Q.K.Hwy.at entrance to Kona Village Resort	1748 to 1832	50	262	0	4	52.5	52.6
4. 300 feet from centerline of Q.K.Highway at Puako Beach Road intersection	1405 to 1440	50	208	12	8	44.0	44.8
5. At north end of Mauna Lani Resort Service Road 600 feet from Q.K.Hwy.	1000 to 1019	50	-----No	Counts	Made	42.0	38.0
6. At north end of Mauna Lani Resort Service Road 1100 feet from Q.K.Hwy.	1029 to 1037	50	-----No	Counts	Made	38.5	34.0
7. 50 feet from centerline of Mauna Lani Drive entrance road	1112 to 1209	35	116	2	2	52.5	52.6

NOTE: Traffic noise estimates at locations 5 and 6 based upon spot traffic counts between 1245 and 1354 hours.

Source: Y.Ebisu & Associates, May 1985.

Table IV-5.3. Distance from Roadway Centerlines to 65 and 55 Ldn Contours Under Peak Hour Traffic Conditions: Existing and Ultimate Development of the Mauna Lani Resort.

Street Section	65 Ldn Setback (ft)		55 Ldn Setback (ft)	
	Existing	Ultimate	Existing	Ultimate
Queen Ka'ahumanu Hwy.(N)	45	130	110	603
Queen Ka'ahumanu Hwy.(S)	41	124	100	576
Mauna Lani Drive (East)	11	55	51	255
Mauna Lani Drive (West)	14	24	33	84
Kaniku Drive (South)	--	22	--	93
Kaniku Drive (North)	--	15	--	32

NOTE: The existing right-of-way widths of Queen Ka'ahumanu Highway, Mauna Lani Drive, and Kaniku Drive are 300 feet, 80 feet, and 60 feet, respectively. Hence the only area outside the road right-of-way that would be subject to noise levels in excess of 65 Ldn is the area adjacent to Mauna Lani Drive east of its intersection with Kaniku Drive. Only commercial uses and open space, both of which are relatively insensitive to noise, are planned for this area.

Source: Y. Ebisu & Associates, May 1985.

Table IV-5.4. Traffic Noise Increases At 50-Foot Distance From Roadway Centerlines: 1990, 1995, 2000, and Ultimate.

Street Section	Existing Ldn	Future Ldn			
		1990	1995	2000	Ultimate
Queen Ka'ahumanu Hwy.(N)	64.0	66.7	68.3	69.4	71.2
Queen Ka'ahumanu Hwy.(S)	62.8	66.4	68.0	69.0	70.9
Mauna Lani Drive (East)	55.0	58.9	60.8	62.6	65.6
Mauna Lani Drive (West)	50.4	53.6	54.4	55.0	58.4
Kaniku Drive (South)	----	50.2	53.7	56.4	59.2
Kaniku Drive (North)	---	42.6	43.9	47.0	50.1

NOTE: The noise estimates presented above assume a traffic mix of 95% automobiles, 2.5% medium trucks, and 2.5% heavy vehicles (trucks and buses) on Queen Ka'ahumanu Highway; a mix of 97% automobiles, 1.5% medium trucks, and 1.5% heavy vehicles is assumed for internal streets.

Source: Y. Ebisu & Associates, May 1985.

Increases of 7 to 11 Ldn are significant, because the 65 and 55 Ldn setback distances would be increased by a factor of 4 to 6 times as a result of the increased traffic. However, because the increase will be gradual -- 5 Ldn per five-year period -- the change will not be perceptible or measurable on an annual basis. Moreover, as described more fully below, the traffic noise levels are expected to remain moderate.

The width of the impact zones adjacent to roadways that would experience highway traffic noise levels in excess of 55 Ldn and 65 Ldn at ultimate development (i.e., completion of the proposed expansion) are given in Table 5-4. Three important facts about them should be noted:

- (1) They are the same for the existing and revised master plans.
- (2) The projected noise levels on Queen Ka'ahumanu Highway are the result of greatly increased traffic from other development in the region, as well as from ongoing development of the Mauna Lani Resort.
- (3) The existing right-of-way widths of Queen Ka'ahumanu Highway, Mauna Lani Drive, and Kaniku Drive are 300 feet, 120 feet, and 60 feet, respectively. Hence, the only area outside the road right of-way that would be subject to noise levels in excess of 65 Ldn is the area adjacent to Mauna Lani Drive east of its intersection with Kaniku Drive. Only commercial uses and open space, both of which are relatively insensitive to noise, are planned for this area.

While there appears to be little danger of excessive traffic noise levels within the Mauna Lani Resort project itself, rising traffic volumes on Queen Ka'ahumanu Highway -- a part of which is attributable to ongoing development of the Mauna Lani Resort -- could adversely affect homes within the Mauna Kea Resort, especially "The Fairways at Mauna Kea South". Noise levels there are currently in the "Minimal Exposure, Unconditionally Acceptable" range as defined in Table 5-1, but the noise exposure at two existing residences will probably change to "Moderate Exposure -- Acceptable" between 1995 and ultimate development of the resort due to the combined influence of all planned developments in South Kohala.

The proposed master plan for the Mauna Lani Resort involves the addition of landscaped buffers and residential parcels along the northern section of Kaniku Drive (the existing service road). The 150-foot wide buffer that is planned along the road will insure that, even at ultimate development, traffic noise levels in the adjoining residences will remain at or below 55 Ldn.

Meeting the "Minimal Exposure, Unconditionally Acceptable" criteria stated in Table IV-5.1 adjacent to the southern leg of Kaniku Drive will require the maintenance of a buffer zone extending approximately 95 feet from the roadway centerline. Since the road right-of-way in this area is only 60-feet wide (i.e., it extends only 30 feet on either side of the centerline), either an additional setback of 65 feet from the edge of the right-of-way to the nearest residential structure or sound attenuating berms or structures will be required if the noise levels are to remain in the "Unconditionally Acceptable" range.

In summary, traffic noise levels associated with the revised master plan would be essentially the same as those resulting from the existing master plan. In absolute terms, both plans would result in significantly higher traffic noise levels on Mauna Lani Drive and Kaniku Drive, and they would contribute (together with other South Kohala development) to higher noise levels adjacent to Queen Ka'ahumanu Highway.

Fortunately, the majority of the existing and planned residential developments are situated away from Queen Ka'ahumanu Highway, and the "Minimal Exposure, Unconditionally Acceptable" criteria can be achieved with only minor exceptions. Within the Mauna Lani Resort itself, adverse noise impacts are expected to be minimal. Even without additional buffer zones, planned residences should not be subject to noise levels in excess of 60 Ldn as discussed above. The maintenance of building setbacks along Kaniku Drive would insure that all resort development remains within the "Minimal Exposure, Unconditionally Acceptable" category.

**6. PUBLIC SERVICES AND FACILITIES**

**6.1 SCHOOLS**

**6.1.1 Existing Facilities**

The majority of students from on-resort families and new employee families are expected to attend classes at the schools noted below:

Public Schools by Area of Residence

<u>Service Region</u>	<u>Elementary or Intermediate Schools</u>	<u>High Schools</u>
North Kohala	1	1
South Kohala	1	1
North and South Kona	7	1
Hilo	13	2

South Kohala is the location of two of the county's best known private schools, Hawaii Preparatory Academy (grades K through 12) and Parker School (grades 7 through 12), both in Waimea.

According to the Hawaii District Office of the DOE (personal communication with Herbert Watanabe, July 1985), Big Island students living one mile or more from the nearest public school are provided bus transportation to and from school if they have access to an established bus route. Parents of those who do not are reimbursed for car mileage. Should a certain community have enough new students, a determination is made whether a new bus route should be established.

**6.1.2 Probable Impacts**

Planned development at MLR will increase demands on the public school system by inducing population growth, with its corollary increase in school age children. It is expected that resort residential units will generate relatively little new demand for public educational services. This is only because a small share of them will be occupied by full-time residents and because purchasers of luxury resort units have typically completed their child rearing years or send their children to private schools.

Table IV-6.1 shows projected numbers of new public elementary and high school students attributable to future resort development by their expected region of residence. These projections are based on estimates of students per housing unit, supplied by the Hawai'i State Department of Education (January 3, 1985). Approximately 30 percent of new students would reside in units at Mauna Lani Resort and would attend school in Kohala. Other new students would be dependents of hotel employees who have in-migrated or established a household on the island. About half of all new students are expected to be in grades K through 6 and the other half in grades 7 through 12.

Impact on the public school system under either the existing master plan or the proposed master plan would be slight, even for Kohala schools, which would be most affected. Communication from the Department of Education indicates that projected levels of new student enrollments would be accommodated in existing and planned

Table IV-6.1

MAUNA LANI RESORT

Student Generation for Hawaii County Public High and Elementary Schools Attributable to Further Development of Mauna Lani Resort

1990 to Potential Maximum

School region	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
Hilo	5	5	9	8	13	12	35	35
Kohala	33	32	65	63	124	116	284	286
Kona	6	6	12	12	21	21	59	59
Total students	<u>44</u>	<u>43</u>	<u>86</u>	<u>83</u>	<u>158</u>	<u>149</u>	<u>378</u>	<u>380</u>

(1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

Sources: State of Hawaii, Department of Education, 1985 and Peat, Marwick, Mitchell & Co., 1985.

facilities. Additional staff may eventually be needed to meet the increased projected demand. The cost of such services are included in an analysis of public costs to the State, presented in a previous section of this report. Most likely, new school bus routes will not be established to accommodate the new students until well into the future when increased numbers would warrant the expense.

## **6.2 HEALTH CARE FACILITIES**

### **6.2.1 Existing Facilities**

The Kohala area is serviced by two state-operated hospitals, the Kohala Hospital located in Kapa'a in North Kohala and the Honoka'a Hospital. The Kohala Hospital is primarily a long-term care institution that also offers 24-hour emergency services. Served by a staff of three physicians, the facility has 10 acute care beds and 16 long-term beds. The Honoka'a Hospital has 35 beds, 27 for acute care patients and 8 for long-term care. It is used by 13 to 14 physicians. Neither hospital is equipped to provide full patient services, and the facilities at Honoka'a are considered substandard because the building in which they are housed is thought to be too old and too small.

According to the State Department of Health, the "full service" health care facility closest to Kohala residents is the Kona Hospital; it has 53 acute care beds, 26 beds for long-term care, and an active staff of 36 physicians. Nevertheless, an administrator in the Department described Kona Hospital's resources as inadequate for the needs of the existing regional population.

In Waimea, the private Lucy Henriques Medical Center has emergency and out-patient clinical facilities staffed by five full-time physicians and a half-time pediatrician. The center also has 10 specialists who are regularly associated with the clinic.

Alexander Grant Company conducted a study of Hawai'i County's hospital facilities in January 1985. The study found that major long-term care facilities now operate at or above their desired capacities and that the Kohala service area appears to have an undersupply of physicians (Peat, Marwick, Mitchell & Co.:III-8).

### **6.2.2 Probable Impacts**

Development of additional facilities at MLR, either under the existing master plan or the proposed expanded master plan, will have an impact on all four medical facilities discussed. Moreover, even if no further development took place at MLR, medical facilities would require expansion, given projected growth in Kohala. In particular, the anticipated increased population in the South Kohala district would eventually require additional acute care facilities. The administrator of Kona Hospital reported that the changing population profile of West Hawai'i points to the need for expanded services in areas associated with an older population such as cardiovascular, orthopedic and urological care (February 1984). Also, an aging population and the movement of retirees to South Kohala's resort region will necessitate the expansion of long-term care facilities in the region.

## **6.3 POLICE PROTECTION**

### **6.3.1 Existing Services and Facilities**

The Waimea police station in South Kohala currently houses a total of 13 uniformed police personnel, four officers, and nine patrol personnel (normally, the



force consists of 17 personnel). Other police facilities in the area are the Kapa'au station, which serves the North Kohala area, the Kona station in North Kona and the Ka'u station in South Kona. Police staffing and workload indicators for the four districts are shown in the table below.

Police Services and Workload Indicators in the  
Kohala and Kona Districts and County of Hawai'i

Year Ended June 30, 1984

<u>District</u>	<u>Percent of County Resident Population</u>	<u>Uniformed Personnel</u>		<u>Percent of County Index Crimes</u>	<u>Percent of County Traffic Accidents</u>
		<u>Number</u>	<u>Percent of County</u>		
North Kohala	3.4	11	4.4	1.4	1.9%
South Kohala	6.3	17	6.8	5.2	6.7
North Kona	22.0	55	22.1	29.4	23.5
South Kona	3.3	15	6.0	2.3	2.7
Total County		249			

Source: County of Hawai'i Police Department, 1985.

Both the Waimea and Kapa'au police stations are of relatively recent construction, and there is room in both for additional staff.

### 6.3.2 Probable Impacts

Under either the existing or proposed master plan for MLR, there will be a regional increase in both resident and visitor population over a period of several years. The County Police Department anticipates that this de facto population growth will be accompanied by a shift in criminal and traffic incidents to the Kohala coast region (Guy A. Paul, January 16, 1985). Police chief Guy Paul foresees a greater police workload as a result of development at MLR and at other Kohala coast resorts, with perhaps the need for the establishment of a police substation that would require capital outlays as well as the cost of additional personnel and equipment. Such costs would be included in the projections of costs to the County discussed previously in this report.

## 6.4 FIRE PROTECTION

### 6.4.1 Existing Services and Facilities

Fire protection service for the South Kohala district is headquartered in a County-operated station in Waimea. The station provides 24-hour service and has a staff of six, supplemented by volunteers from Puako and Waikoloa Village and by a fire equipment operator from Kawaihae. The Waimea station is equipped with one engine, a 1,250-gallon water tanker and a rescue van used by an emergency medical unit. Additional engines and a ladder truck are dispatched from Kailua-Kona when needed; also, a privately owned fire truck manned by volunteers is stationed at the Mauna Kea Beach Hotel.

#### **6.4.2 Probable Impacts**

The construction of new hotel and residential units at MLR under either the existing or proposed master plan will lead to increased demand for fire protection services and facilities.

Mauna Lani Resort, Inc. is in the process of formulating an agreement with the County Fire Department regarding the possibility of making available one acre of MLR fee land for a future fire station. Recent discussions have focused on the construction of a facility by the Kohala Coast Resort Association, to be leased back to the County for use as a fire station and Emergency Medical Services (E.M.S.) station. The station would be located within five miles of Mauna Lani Resort, Mauna Kea Resort, and Waikoloa Resort so that each could benefit from the highest possible ratings for hotel and condominium units. In the interim, Mauna Lani Resort, Inc. proposes to form a volunteer fire company.

In a recent development, the County of Hawaii Planning Department reports that the Kohala Coast Resort Association has offered "to fund the full construction of a new 24-hour fire station and fire fighting equipment (except emergency medical service vehicle) on land described in this section. The County would be responsible for all personnel and administrative and operational costs. Funding would be through the floating of bonds by the County wherein retirement (repayment) of the bond would be by the association." (Letter of June 21, 1985)

The County fire chief states that development of MLR will not cause fire protection problems given the Resort's proposed measures described above and provided that new resort facility design and construction comply with current County fire and building codes and requirements.

#### **6.5 WATER SUPPLY**

##### **6.5.1 Existing Conditions**

###### **6.5.1.1 Potable Water**

A preliminary analysis of municipal water supply and demand in the South Kohala district was completed by the U.S. Army Corps of Engineers in 1984. Within the South Kohala district, water demand could increase from 2.5-million gallons per day (mgd) to 20 mgd by 2010. The principal cause for increased demand is resort development along the coast. The present supply of 4.5 mgd would be increased to 17 mgd by private development of groundwater. The development of groundwater is regulated by the State of Hawai'i, Department of Land and Natural Resources, Division of Water and Land Development. Approval from the State Department of Health must also be obtained.

The principal current sources of water for the coastal region of the South Kohala district are the Lalamilo water system operated by the County of Hawai'i, which services MLR, and the private Waikoloa water system.

In January 1979, an agreement was signed by the County of Hawai'i, Mauna Loa Land, Inc. (the predecessor of Mauna Lani Resort, Inc.) and Olohana Corporation (the predecessor of Mauna Kea Properties, Inc.) to develop a water system utilizing groundwater from the State-owned tract of land known as Lalamilo.

Mauna Lani Resort, Inc.'s reserved water allocation from the system is currently 1.0-million gallons a day (mgd) from Well A and 0.5 mgd from Well B/C. Well D has been drilled, but has not yet been outfitted with a pump. When the well becomes functional, it is expected to yield 1.44 mgd (based on 24-hour pumpage), 1.3 mgd of which will be allocated to Mauna Lani Resort, Inc. Hence, a total of 2.3 mgd of potable water will be available to MLR in the near future.

#### **6.5.1.2 Golf Course Irrigation**

Although some landscaped areas in MLR are irrigated with fresh water, the irrigation system for the Francis I'i Brown golf course uses brackish well water.

#### **6.5.2 Probable Impacts**

##### **6.5.2.1 Potable Water**

The future supply of potable water which will be available to Mauna Lani Resort, Inc. is deemed adequate to satisfy the forecasted water demand at the resort. To supplement its fresh water supply, as noted above, Mauna Lani Resort, Inc. plans to continue its water development efforts. The resort currently uses about 0.5 mgd of potable water, and thus will have in reserve in the near future an additional 1.8 mgd for development. In addition, five future well sites have been designated on Parker Ranch land, four of which will serve the water needs of the resort. The well sites chosen run in a north-south direction at about the 1,100-1,200-foot elevation extending from the existing Lalamilo "B" well to Kamakoa Gulch. A rock wall and unimproved road mark the 10,000-foot long corridor, within which the five well sites were designated. All wells will be built to Department of Water Supply standards and dedicated to that agency.

At present, it is estimated that each of the four new wells will provide a 1.3 mgd allocation to MLR. Therefore, the existing 2.3 mgd supply will increase by about 5.2 mgd when the four wells are operating, giving MLR a total of 7.5 mgd of potable water for all future possible uses. It is expected that the wells will be developed as needed.

Given the planned rate of development under the proposed revised master plan, water use has been projected for the years 1990, 1995 and 2000, as well as for potential maximum development (3,000 hotel units and 3,182 residential units). Projections are based on actual usage figures at MLR and on County of Hawaii's, Department of Water Supply, standard rates for water usage.

MLR is projected to require about 1.5 mgd by 1990, 2.2 mgd by 1995, 3.2 mgd by 2000, and almost 6 mgd at potential maximum development (see Table IV-6.2). The existing 2.3 mgd supply will therefore be adequate until 1995, and it is anticipated that by that time the exploitation of new wells will be under way.

It should be noted that actual potable water usage as development progresses at MLR may vary from that which has been projected in Table IV-6.2. However, the anticipated water supply from all sources, including the four new wells on Parker Ranch land, is estimated to be adequate to allow full development at Mauna Lani Resort.

Groundwater withdrawal from the new wells to accommodate future development at Mauna Lani is expected to have some impact on other nearby water sources. Well sites most likely to be affected are (1) the existing Lalamilo wells, (2) Waikoloa's

TABLE IV-6.2

PROJECTED POTABLE WATER USE  
(In million gallons per day)

## Mauna Lani Resort

Period	Type of Use	Area Acres	No. Units	Water Demand (Max. Day)		
				Domestic	Irrigation	Total
Existing	Hotel (Exist.)	29.1	351	0.176	0.187	0.363
	MF	13.3	80	0.038	0.044	0.082
	SF					
	G. Clubhouse	5.0		0.011	0.012	0.023
	Commercial					
	Resort Serv.	11.0				0.015
	STP	16.0				0.001
	Park	3.2			0.007	0.007
	Road	1.4			0.027	0.027
	Sub-Total			0.225	0.277	0.518
1990	Hotel (Exist.)	29.1	351	0.176	0.187	0.363
	Hotel (Other)	17.4	400	0.200	0.112	0.312
	MF	70.4	480	0.226	0.182	0.408
	SF	3.7	26	0.012	0.010	0.022
	G. Clubhouse	5.0		0.011	0.012	0.023
	Commercial	5.0		0.011	0.012	0.023
	Resort Serv.	11.0				0.015
	STP	16.0				0.001
	Park	3.2			0.007	0.007
Road	26.9			0.323	0.323	
	Sub-Total			0.636	0.845	1.497
1995	Hotel (Exist.)	29.1	351	0.176	0.187	0.363
	Hotel (Other)	30.4	700	0.350	0.196	0.546
	MF	134.7	880	0.414	0.334	0.748
	SF	7.4	59	0.028	0.022	0.050
	G. Clubhouse	10.0		0.022	0.024	0.046
	Commercial	9.5		0.021	0.022	0.043
	Resort Serv.	11.0				0.015
	STP	16.0				0.001
	Park	3.2			0.007	0.007
Road	29.8			0.408	0.408	
	Sub-Total			1.011	1.200	2.227

TABLE IV-6.2 (Continued)

Period	Type of Use	Area Acres	No. Units	Water Demand (Max. Day)		
				Domestic	Irrigation	Total
2000	Hotel (Exist.)	29.1	351	0.176	0.187	0.363
	Hotel (Other)	43.5	1,000	0.500	0.280	0.780
	MF	249.0	1,680	0.790	0.638	1.428
	SF	13.8	104	0.049	0.040	0.089
	G. Clubhouse	10.0		0.022	0.024	0.046
	Commercial	17.5		0.039	0.040	0.079
	Resort Serv.	11.0				0.015
	STP	16.0				0.001
	Park	3.2			0.007	0.007
	Road	29.8			0.408	0.408
	Sub-Total			1.576	1.624	3.216
Full Develop.	Hotel (Exist.)	29.1	351	0.176	0.187	0.363
	Hotel (Other)	115.4	2,649	1.325	0.742	2.067
	MF	423.9	2,942	1.383	1.118	2.501
	SF	34.6	240	0.113	0.091	0.204
	G. Clubhouse	10.0		0.022	0.024	0.046
	Commercial	38.0		0.085	0.086	0.171
	Resort Serv.	94.9				0.129
	STP (Res. Ser.)	16.0				0.001
	Park	3.2			0.007	0.007
	Road	29.8			0.408	0.408
	Total			3.104	2.663	5.894

Notes:

1. The maximum water demand for hotels is based on February 1985 water usage, adjusted to 100% occupancy and multiplied by 1.5 maximum day factor = 500 gpd/unit.
2. The maximum water demand for multi-family units is based on 100% occupancy, 2.5 persons per unit, 125 gpd/capita and multiplied by a 1.5 maximum day factor = 470 gpd/unit.
3. The maximum water demand for commercial use is based on the county's standard use.
4. The irrigation rate for hotels is based on average irrigation rate and adjusted for density = 530 gpd/unit for the existing hotel and 280 gpd/unit for other hotels.
5. The irrigation rate for the multi-family units is based on the MF water consumption for February 1985 adjusted for density. It was assumed that all of the water for that month was used for irrigation and no water for domestic use. Irrigation rate for MF = 280 gpd/unit.
6. The irrigation rate for roadways is based on current usage at MLR.

potable water wells, (3) Mauna Lani's irrigation water well (golf course supply), and (4) Waikoloa's Parker 1 well (golf course supply). To minimize interference effects, the future well sites were chosen with 1,500- to 2,000-foot spacing from each other and from existing potable water wells. Hydrologic analyses by engineering consultants indicate that the regional groundwater flow will support the total anticipated draft. If this proves not to be the case, the Mauna Lani and Waikoloa golf course wells, because of their more seaward locations, would show salinity increases first. Should this happen, undeveloped well site locations can be changed, most likely to be relocated north of the existing Lalamilo wells.

#### 6.5.2.2 Golf Course Irrigation

Irrigation water requirements of the second golf course and any others would be met through an on-site system of brackish water wells. The existing golf course is irrigated with brackish water and no adverse effects have been noted. It is expected that the same type of irrigation for additional golf courses would similarly not pose a problem. The use of effluent might be considered at a later date. The effects of such use are addressed in Section 6.6.2.

### 6.6 WASTEWATER TREATMENT AND DISPOSAL

#### 6.6.1 Existing Conditions

There are no public sewage treatment facilities in the South Kohala coastal region. The Mauna Lani Resort, as the other Kohala coast resorts, is served by a privately-operated wastewater treatment plant and underground connection system. The system was constructed by Mauna Lani Resort, Inc., which continues to operate the facility. Fees are assessed users connected to the system to help pay operating and maintenance costs. Treated effluent from the plant is used for tree nursery irrigation, the only location at the resort where it is used.

#### 6.6.2 Probable Impacts

The existing wastewater treatment facility at MLR has a design capacity of 0.76 mgd. The facility has been designed so that it can be expanded to handle 2.1 mgd. Sewage generation at 100 percent occupancy is shown in Table IV-6.3. Cumulative flow is currently 0.134 mgd, a fraction of what the existing wastewater treatment facility is designed to accommodate. Under the revised master plan, cumulative flow is projected to reach 0.380 mgd in 1990, 0.604 mgd in 1995, 0.942 mgd in 2000, and 1.855 at potential maximum development. Thus, the expanded facility would be capable of handling flows at full development and 100 percent occupancy.

When effluent flow increases beyond the irrigation needs of the tree nursery, the surplus treated wastewater can be mixed with brackish water to be stored in the golf course manmade lakes and used to irrigate the existing golf course and the new golf course. A total of up to about 2.0 mgd of this blended water would be needed to irrigate the two Mauna Lani Resort courses.

Replacing some brackish water with treated effluent for irrigation purposes would have a beneficial effect on energy use (brackish water is pumped using a powered lift). Negative impacts of wastewater use include the potential for public health problems, the potential adverse effect on groundwater and coastal water, and the deteriorated appearance of the lakes.

TABLE IV-6.3

SEWAGE GENERATION AT 100% UNIT OCCUPANCY

## Mauna Lani Resort

<u>Development Year</u>	<u>Site</u>	<u>Units</u>	<u>Generation Rate gpd/unit</u>	<u>Flow (mgd)</u>	<u>Cumulative Flow (mgd)</u>
Existing	Hotel 1	351 rms.	300	0.105	
	MF A	80 U.	280	0.022	
	Golf Club(1)	5.0 ac.	1,320	0.007	
				0.134	0.134
1990	Hotel 2	400 rms.	300	0.120	
	MF	400 U.	280	0.112	
	SF	26 U.	280	0.007	
	Com.	5.0 ac.	1,320	0.007	
			0.246	0.380	
1995	Hotel	300 rms.	300	0.090	
	MF	400 U.	280	0.112	
	SF	33 U.	280	0.009	
	Golf Club(2)	5.0 ac.	1,320	0.007	
	Com.	4.5 ac.	1,320	0.006	
			0.224	0.604	
2000	Hotel	300 rms.	300	0.090	
	MF	800 U.	280	0.224	
	SF	45 U.	280	0.013	
	Comm.	8 Ac.	1,320	0.011	
			0.338	0.942	
Full Develop.	Hotel	1,649 rms.	300	0.495	
	MF	1,262 U.	280	0.353	
	SF	136 U.	280	0.038	
	Comm.	20.5 Ac.	1,320	0.027	
			0.913	1.855	

Note: Sewage Generation rates are based on 100% unit occupancy and 90% of average domestic water use rates which excludes irrigation.

SEWAGE GENERATION

1. Sewage Generation Rates. The following rates computed are used in developing sewage generation volumes for the MLRI development. The rates are based on 100 percent unit occupancy and 90 percent of average domestic water use rates which excludes irrigation.

**Hotel 1:**

Water Use Per Unit = 334 gpd

Sewage generation rate =  $0.9 \times 334 = 301$  gpd/unit

Say 300 gals/unit

**Other Hotels:**

Water Use Per Unit = 334 gpd/unit

Sewage generation rate =  $0.9 \times 334 = 301$  gpd/unit

Say 300 gpd/unit

**Multi-Family:**

Water Use Per Unit = 2.5 Persons  $\times$  125 gals/person = 313 gpd/unit

Sewage Generation Rate =  $0.9 \times 313 = 282$  gpd/unit

Say 280 gpd/unit

**Commercial:**

Maximum Water Use = 2,200 gpd/acre

Average Water Use =  $1/1.5 \times 2,200 = 1,467$  gpd/acre

Sewage Generation Rate =  $0.9 \times 1,467 = 1,320$  gpd/acre



To alleviate potential public health problems, the effluent can be disinfected by chlorination at the wastewater treatment plant. Also, residential units are planned to be at a substantial distance from the golf courses, so that a buffer is maintained between them. Groundwater in the Mauna Lani Resort area is not suitable for potable use, and therefore seepage into the ground would not have an effect on potable water sources. There would be minimal runoff from irrigation, with most of the irrigation water held in the soil.

If surplus effluent is not used for golf course irrigation, it will be used to irrigate undeveloped areas of Mauna Lani Resort, Inc. lands.

## **6.7 SOLID WASTE DISPOSAL**

### **6.7.1 Existing Conditions**

The Kailua landfill is located near Kailua-Kona and will serve the North Kona and South Kohala coastal area until a planned new landfill site becomes operational. The County Sewers and Sanitation Bureau is considering a new landfill site which would be located about 10 miles east of the Kona Village Resort, in the vicinity of Pu'uanahulu. The new site is expected to be operational in about three to four years, and would accommodate solid waste generated by planned resort development in South Kohala (Sugiyama; September 20, 1984).

### **6.7.2 Probable Impacts**

Solid waste generated at MLR is expected to be accommodated at the landfill site mentioned above or at other County operated landfills as new sites are designated.

## **6.8 ELECTRICAL POWER AND COMMUNICATIONS**

### **6.8.1 Existing Conditions**

Electrical power for the Island of Hawai'i is mainly from oil-fired turbines and diesels; however, bagasse-fired boilers at the Island's sugar companies currently provide about 19 percent of the County's generating capacity of 125,900 KW. Electrical power to Mauna Lani Resort is supplied by the Hawai'i Electric Light Company (HELCO). The resort distribution system is through underground conduits, and these extend to the resort under the major roadways.

Telephone service to the MLR is provided by the Hawaiian Telephone Company. A telephone substation is located in the service support area. Telephone signals come to this facility via microwave dish. Cable television (CATV) lines are located underground and extend to all development sites. The CATV signal is picked up by microwave dish at the service support area.

### **6.8.2 Probable Impacts**

It is expected that new resort facilities at Mauna Lani will be connected to the electrical power system as the facilities become operational.

## **7. RECREATIONAL FACILITIES**

### **7.1 EXISTING FACILITIES**

Kohala and North Kona recreational facilities include golf courses, tennis courts, beaches, riding stables, historic sites, small boat harbors, and other amenities and attractions. The location of the major facilities are shown on Figure IV-8. The County's Samuel Spencer Beach Park and the Hapuna Beach State Recreation Area are the principal developed recreational facilities in the immediate vicinity of MLR. They offer white sand beaches, picnic and camp grounds, and restroom and parking facilities. Other County beach parks are located in the Kailua area and at Mahukona Harbor, Kapa'a, and Keokea. A large State Historic Park is located at Lapakahi in North Kohala; it encompasses an extensive archaeological complex, accessible to the public by trails and explanatory signs. At Honokohau and Kawaihae there are small boat harbors and ramps, and just south of Hapuna Beach is the Puako Boat Ramp. A number of additional recreational facilities are proposed for Kohala and North Kona in the Hawai'i County Recreation Plan (Hawai'i, County of, Department of Parks and Recreation and Planning Department; 1973). Table IV-9 shows the availability of State-owned land, much of it available for park and recreational uses.

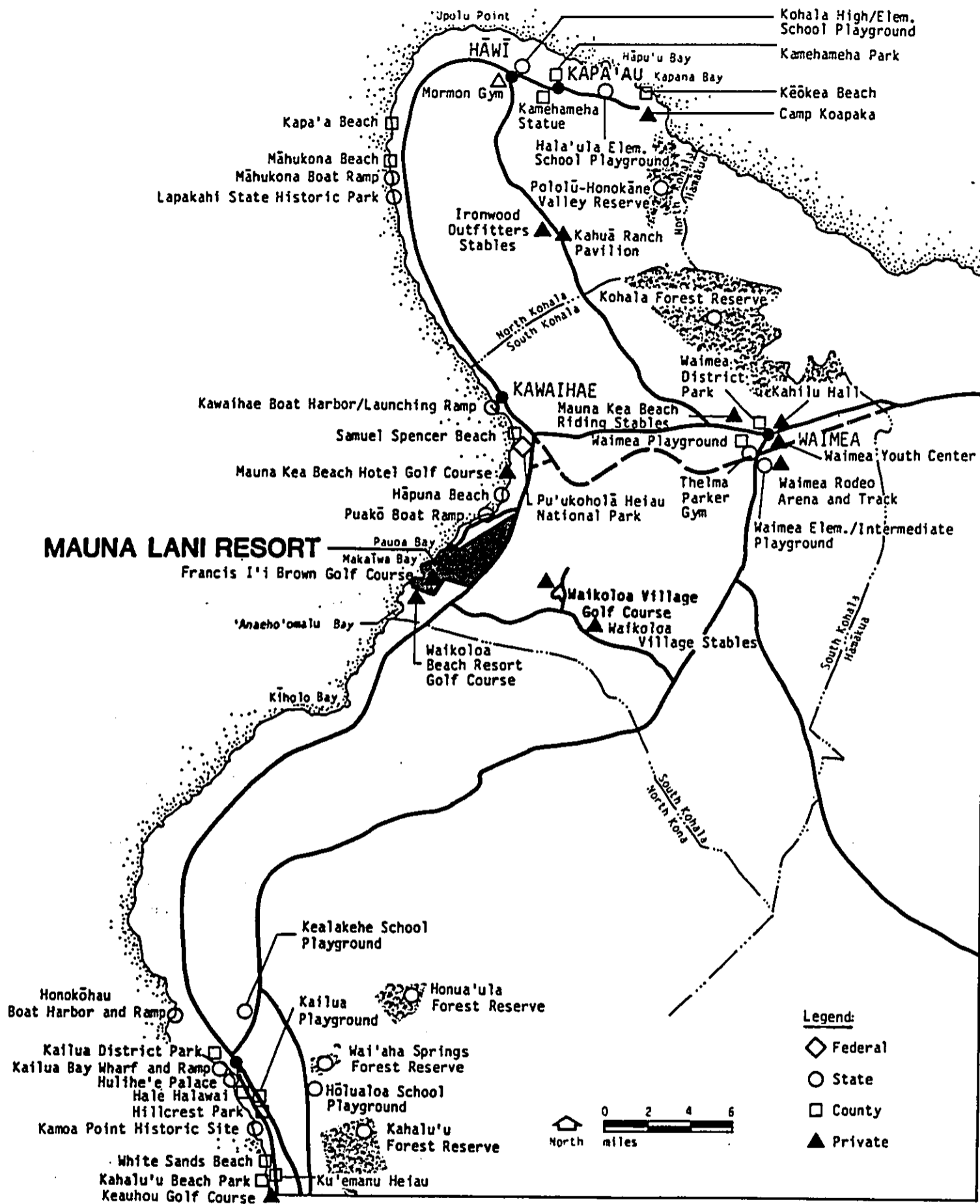
The State Recreation Plan, Technical Reference Document, by the Hawai'i State Department of Land and Natural Resources, noted nine golf courses on the island of Hawai'i in 1980. Since then, two more golf courses have been built, one at Mauna Lani Resort and one at Waikoloa Beach Resort. Golf courses at the three Kohala coast resorts and the one at Waikoloa Village are open to the public, subject to green fees and the availability of tee times. Preferential starting times are given to hotel guests and, at Mauna Kea Resort, also to resort property owners.

In addition to the golf course mentioned above, other recreational opportunities exist on lands owned and leased by Mauna Lani Resort, Inc. A public right-of-way provided by Mauna Lani Resort leads to the shoreline fronting the Mauna Lani Bay Hotel. Rocky shoreline areas and beaches, as well as waters offshore, are used by the public and resort guests. Recreational activities include fishing, squidding, limu gathering, swimming, snorkeling, scuba diving, sunbathing, beachcombing, surfing, windsurfing and sailing.

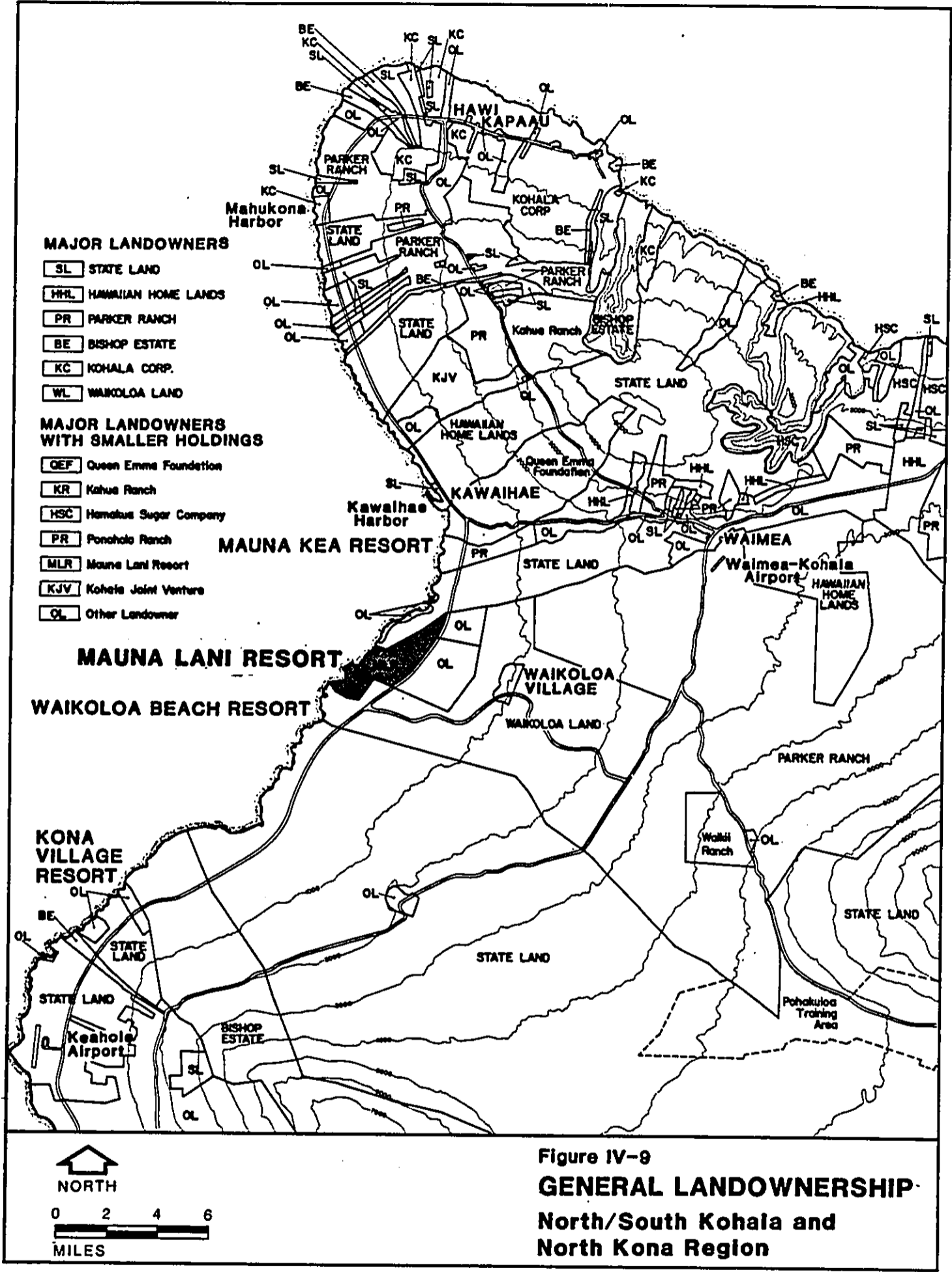
Public access exists to the Resort's historic areas and fishponds. The Puako petroglyph field, a well known Hawaiian archaeological site maintained by community volunteers and Mauna Lani Resort, Inc., is a significant attraction for both island residents and visitors, and is the focus of an archaeological park being developed by Mauna Lani Resort, Inc.

### **7.2 PROBABLE IMPACTS**

Development of MLR under the proposed expanded master plan would increase access to recreational amenities for residents. Two new public access paths to the shoreline would be provided by the Resort, one at the southern end of the resort, to Honoka'ope Bay, and the second to the proposed public shoreline park north of Pauoa Bay (See Figures II-7, II-8, and II-9 in Chapter II of this report). A pedestrian trail skirts the shoreline along Mauna Lani Resort's seaward boundary; it is expected that the trail would continue to be used by the public. Because of improved access, it is anticipated that ocean recreational activities might well increase.



**Figure IV-8 RECREATIONAL FACILITIES IN KOHALA/NORTH KONA REGION**



Access to the Puako petroglyphs would also improve; visitors to the park would have a shorter route than now exists through the shoreline park near Pauoa Bay. The path to the petroglyphs is expected to be open from dawn to dusk.

With the proposed expanded master plan, a second golf course would be built and, as is the existing resort golf course, would be open to the public. Should development proceed according to the existing master plan, the public beach park would not be constructed to the extent proposed under the revised master plan nor would a second golf course be built, thus diminishing recreational opportunities for resort guests and the public.

The Hawai'i County Department of Parks and Recreation has a target ratio of five acres of developed park land for every 1,000 resident population. This ratio is noted in the County Park Dedication Ordinance. MLR now includes 3.2 acres of public park land and several more would be provided at the shoreline park under the revised master plan. The permanent resident population at the resort is currently almost negligible. By 1990, Peat, Marwick projects an increase in the island's population of about 1,000 persons due to development at MLR (on-site residents and families of new employees). By the year 2000, the population impact would be 2,000 persons. According to the Department of Parks and Recreation standards, Mauna Lani Resort, Inc. would be providing sufficient park and recreation land within its resort to satisfy the Department's goal.

Residents and visitors at the Resort are expected to contribute to increased usage of recreational amenities off-site to some degree. However, because of the ample planned facilities on-site, the burden on public recreational facilities off-site as a result of development at Mauna Lani Resort is not expected to be too significant. Further, the provision of additional on-site recreational opportunities for both resort guests and residents and the general public would tend to offset the higher usage of off-site amenities.

## 8. VISUAL IMPACTS

### 8.1 INTRODUCTION

The Mauna Lani Resort site encompasses over 3,000 acres of coastal land. The existing shoreline development is nearly two miles from Queen Ka'ahumanu Highway, the nearest public roadway which provides a view of the property, and it is approximately one mile from the highway to the intersection of Mauna Lani Drive and Kaniku Drive, the resort's two major streets. This geographic separation is a major factor in minimizing the potential visual impact of the proposed project.

The remainder of this section is divided into three parts. The first discusses the effect that the proposed development would have on views of the property from Queen Ka'ahumanu Highway. The second describes the change in visual ambience that would be felt as a result of the proposed construction. The third and final section describes the effect that development would have on views from the shoreline.

### 8.2 VIEWS FROM THE HIGHWAY

Queen Ka'ahumanu Highway forms the inland boundary of the Mauna Lani Resort site south of Mauna Lani Road. Most of the portion of the highway between its intersection with Waikoloa Road and Mauna Lani Drive is constructed in a shallow cut through the Kaniku Lava Flow that hides structures on the resort site. As a result, the first clear view of the property available to northbound motorists comes just before the resort intersection. Hence the first view of the proposed project from this direction is of the existing golf course. No changes to this area are proposed as part of the revised master plan. Over the long term, residential development on Sites E, B/C, and I will also be visible, but these are from 1 to 2 miles distant, and structures would be screened by surrounding landscape vegetation. The choice of finish color and texture for the structures will play a major role in determining their appearance from the highway. The use of white for the Mauna Kea Beach and Mauna Lani Bay Hotels, for example, tends to make them stand out; whereas the use of earth and vegetation tones for structures would tend to make them blend more completely into the natural surroundings.

The planned resort facilities are concentrated on the makai portions of the site. Since Queen Ka'ahumanu Highway angles away from the coast towards the northeast, they would be at a considerable distance as seen from vehicles approaching the resort from the north. The sewage treatment plant and service structures located northeast of Kaniku Drive are closer to the highway, but even in this area the minimum separation is one-half mile. The wastewater treatment plant contains only low-lying structures, but the warehouses and other buildings in the in the service area could be bulkier. Landscaping and/or earthen berms could be used to shield them from view, however.

The revised plan provides one additional golf course. This would provide at least 150 acres of additional green space within the resort. Some of these irrigated acres would be visible from the highway during the early phases of plan implementation, but the residential development that is planned around the new and existing fairways and greens would eventually block most of it from view. The revised plan also provides corridors that would allow the existing and planned courses to be supplemented by up to 36 additional golf holes in the future. If they were constructed, these golf holes would be much closer to the highway than the others and would cut a green swath across the lava rockscape.

### 8.3 VISUAL CHARACTER OF THE RESORT

Implementation of the existing master plan within the present Urban District would result in large scale development along most of the resort's shoreline. Average densities on the hotel and resort residential sites would be about 14 units per acre, and the overall density within the Urban District would be about 8 units per acre. While the existing Mauna Lani Bay Hotel and Mauna Lani Terrace condominium apartments are evidence that a tasteful appearance can be maintained within the densities envisioned by the existing master plan, these early projects benefit from their location adjacent to permanent open space reserves around the ponds, and adjacent to sites that have not yet been developed. As development continues, the area will take on a much more urban appearance, and some of the characteristic feeling imparted by the sites' present isolation will be lost.

Because the revised master plan calls for the same number of resort residential and hotel units to be spread over substantially more acres, average densities are much lower. Considering only the area of the development sites themselves (i.e., excluding the golf courses, parks, recreation areas, etc.), the average density of the hotel and resort residential parcels in the revised master plan is just over 10 units per acre, or about 30 percent less than the existing plan. The overall density of the revised master plan is about 4.3 units per acre, or just over half that of the existing master plan. The lower density will make it possible to impart a much different visual character to the development, and will allow the Mauna Lani Resort to retain the unique character established by the luxury projects constructed to date.

### 8.4 VIEWS FROM THE SHORELINE

Mauna Lani Resort, Inc. has made a major effort to improve public access to the shoreline of the resort. A public pathway system has been installed, and a parking area and restrooms have been constructed to serve local residents. As a result, there is considerably more foot traffic along the shoreline than was true before resort development began. The coastal parcels are prime development sites, and it is inevitable that the barren lava shoreline will be transformed as a result of the development. In this respect, the only way in which the revised master plan differs from the existing plan is in its extension of development along the southern part of Honoka'ope Bay and the provision for golf holes and a public shoreline park on the leased land north of Pauoa Bay.

The golf holes and park planned for the latter area would contain restroom facilities, water features and some landscaping. The open character of the area would be retained, however, and significant adverse effect on its visual character is not expected.

The extension of development on the southern side of the resort would involve the incorporation of the beach at Honoka'ope Bay and the windblown sand deposits which lie behind it into the resort. What is now used as an isolated retreat would be brought into the mainstream of resort activities. Current plans are to preserve portions of the sand deposits as a unique golf course feature, and the number of people able to see this unique feature will be greatly increased. Since Mauna Lani Resort's plans call for the construction of public restroom facilities and parking near Honoka'ope Bay and extension of the improved shoreline path that has been constructed within the existing Urban area, views of these areas would also be more available to the general public.

The only visual aspect of the revised plan which is likely to be considered negative is that it would eliminate the open space buffer which currently exists along the boundary between the Mauna Lani and Waikoloa Beach Resorts. The function performed by this buffer area, which is composed of barren lava, would be largely assumed by the eight golf holes that are proposed for the area under the revised master plan.



## CHAPTER V

### RELATIONSHIP OF THE PROPOSED ACTION TO LAND USE PLANS, POLICIES, AND CONTROLS FOR THE AFFECTED AREA

#### I. STATE LAND USE LAW

All lands in the State have been placed in one of four land use districts (Urban, Agricultural, Conservation, or Rural) by the State Land Use Commission (SLUC). State Land Use District Boundary Reviews have been undertaken by the State Land Use Commission to update its Land Use District Maps. Besides this SLUC-initiated review, provisions for applicant-initiated amendments to the district boundaries have been established in Section 205-4 of the Hawai'i Revised Statutes (HRS), and further promulgated in the State Land Use Commission: Rules of Practice and Procedure and District Regulations (December 21, 1975 as amended).

##### I.1 EXISTING AND PROPOSED DISTRICT BOUNDARIES

The history of the Mauna Lani Resort and its master plan are discussed in Chapter II. The existing Urban boundary and master plan are shown in Figure II-2. Mauna Lani Resort, Inc. is currently requesting amendments to the State Land Use District boundaries that would change 486 acres from Agricultural District to Urban District and 168 acres from Conservation District to Urban District. Figure II-6 shows the proposed district boundary amendments and the revised Mauna Lani master plan.

Note that the revised Mauna Lani Resort master plan also proposes use of Conservation District land which Mauna Lani Resort Inc. leases from the State. The Conservation designation on this land would not change as the proposed uses are compatible with the Conservation District rules (see Section 2 of this Chapter).

##### I.2 REQUIREMENTS FOR BOUNDARY AMENDMENTS

The SLUC District Regulations require that the application for a boundary amendment must show that it is "reasonable, not violative of Section 205-2 and consistent with the Interim Statewide Land Use Guidance Policies". The reasons for the requested changes in the State Land Use District boundaries are presented in Chapter II. The consistency of the proposed district designations with Section 205-2, HRS and with the Interim Statewide Land Use Guidance Policies are discussed in the following sections. A discussion then follows of how the proposed revisions meet the special requirements for petitions for urban classification.

###### I.2.1 Section 205-2, Hawai'i Revised Statutes

The proposed amendments to the State Land Use District boundaries are not violative of the basic standards for determining boundaries that are set forth in Section 205-2, HRS. Relevant standards from this section are quoted below and a discussion of the proposed designations' consistency with the stated standard follows each quote.

"In the establishment of boundaries of urban districts those lands that are now in urban use and a sufficient reserve for foreseeable urban growth shall be included."

Discussion: One of the reasons for the proposed amendments to the boundaries of the Urban District for the Mauna Lani Resort is to incorporate within the Urban District the support facilities (urban uses) that have been constructed within the Agricultural District under Special Permits. Another reason is to provide a sufficient reserve for quality urban growth at Mauna Lani by allowing for a decrease in density and for additional recreational facilities.

"In the establishment of the boundaries of the agricultural districts the greatest possible protection shall be given to those lands with a high capacity for intensive cultivation."

Discussion: Essentially all of the area that is proposed for change from Agricultural to Urban District is rocky, barren lava land. A small portion of this land is designated as "Other Important Agricultural Land" on the Agricultural Lands of Importance to the State of Hawaii (ALISH) maps, and is located adjacent to the wastewater treatment plant for the resort. The capacity of the underlying soil type for intensive cultivation is not high, as indicated by the ratings it is given in various soil classification systems. Thus, the State Department of Agriculture has concluded that it does "not meet the generally understood definitions of important agricultural lands". See further discussion in Section 1.1 of Chapter IV and the State Department of Agriculture's memo on page XII-46.

"Conservation districts shall include areas necessary for:

- a. protecting watersheds and water sources;
- b. preserving scenic and historic areas;
- c. providing park lands, wilderness, and beach reserves;
- d. conserving endemic plants, fish, and wildlife;
- e. preventing floods and soil erosion;
- f. forestry;
- g. open space areas whose existing openness, natural condition, or present state of use, if retained would enhance the present or potential value of abutting or surrounding communities, or would maintain or enhance the conservation of natural or scenic resources;
- h. areas of value for recreational purposes;
- i. other related activities;
- j. and other permitted uses not detrimental to a multiple use conservation concept."

[NOTE: letters added for ease of reference in following discussion.]

Discussion: An examination of the proposed Conservation to Urban redesignation in reference to each of the above-listed points follows.

- a. The Conservation District land that is proposed for Urban is not a watershed or water source area that should be protected.
- b. Essentially all of this land is a barren 'a'a lava flow. Its scenic qualities are generally limited to the shoreline area, and it is expected that these qualities will be preserved. The inland area will be rendered more scenic with the golf course fairways and other landscaping. An archaeological survey (Kirch, May 1979) of all of the Mauna Lani Resort was performed and a management plan

completed (Science Management, Inc., 1982). On the basis of these studies the most important historic sites in the resort have been preserved. As additional areas are prepared for development, the State Historic Sites Section of DLNR and the Hawai'i County Planning Department will be consulted regarding the necessity for additional archaeological work. Communications between Mauna Lani Resort, Inc. and these two governmental agencies has been established and general consultation is underway.

- c. As the Conservation District land under consideration is located between two existing Urban Districts, it is not a wilderness area. The shoreline area would be available for public use and recreation and Figure II-9 shows the planned public access to be installed at Honoka'ope Bay under the proposed Mauna Lani master plan.
- d. There are a few endemic flora and fauna in the Conservation District land proposed for Urban. However, it is expected that development will avoid these, and none of the species involved are rare or endangered.
- e. Converting the Conservation District land to Urban will not cause floods or soil erosion. The land is now barren of soil; soil will be brought in as parcels are developed, but landscaping will be promptly established to avoid wind or water erosion. The only area subject to flooding is the shoreline. If any development is planned within the flood zone, it will follow the County flood control regulations which are based on Federal flood insurance program provisions.
- f. The Conservation District land under consideration is barren 'a'a lava, not forest land.
- g. Retaining the existing open space of the 'a'a lava flow in its natural condition would not enhance the present or potential value of abutting or surrounding communities. Allowing the proposed urban uses around the fairways of the golf course would enhance the value of the surrounding development. It is expected that the natural and scenic resources of the land, largely in the shoreline area, would be incorporated into the proposed development. The golf holes in this area will be as carefully designed as those in the existing Mauna Lani course which preserve interesting lava formations for visual effect.
- h. Conversion of this land to the Urban District would result in improved public access to the shoreline for recreational purposes.
- i. As discussed above, the land under consideration is suited for urban uses and activities, rather than those related to Conservation District purposes.
- j. The hotel and condominium uses proposed for this land are not permitted uses in a Conservation District. The requested change to Urban District, however, will not be detrimental to the land and its resources.

#### **1.2.2 Interim Statewide Land Use Guidance Policy**

The interim policies were to be observed until two years after the effective date of enactment of the State Plan, which was signed into law in May 1978. However, the policies were printed in the 1984 supplement to the Hawai'i Revised Statutes, and therefore have apparently not yet been repealed. Moreover, they are still included in the SLUC regulations. A discussion of the proposed action's consistency with each of the eight policies follows.

- (1) Land use amendments shall be approved only as reasonably necessary to accommodate growth and development, provided there are no significant adverse effects upon agriculture, natural, environmental, recreational, scenic, historic, or other resources of the area.

Discussion: As discussed previously, the land use amendment being sought is reasonable and necessary to accommodate quality development at Mauna Lani Resort. This Environmental Impact Statement outlines the impacts that might result from the revised Mauna Lani master plan and details the mitigation measures that would be taken to avoid or minimize these effects. With the proposed mitigation measures implemented, there would be no significant adverse effects.

- (2) Lands to be reclassified as an urban district shall have adequate public services and facilities or as can be so provided at reasonable cost to the petitioner.

Discussion: Since the revised Mauna Lani Resort master plan would accommodate no greater number of units than has already been approved, it should create no unanticipated demand for public services and facilities. Since Mauna Lani Resort, Inc. will provide all the development's infrastructure (much of which is considered a public service/facility, such as wastewater treatment plant, parks, etc.), the planned resort is not expected to foster extensive public expenditures. See further discussion in Section 2.2.6 of Chapter IV.

- (3) Maximum use shall be made of existing services and facilities, and scattered urban development shall be avoided.
- (4) Urban districts shall be contiguous to an existing urban district or shall constitute all or a part of a self-contained urban center.

Discussion: The revised Mauna Lani Resort master plan calls for urban designation of land contiguous to Urban Districts. It reflects an integrated plan, rather than scattered development. Maximum use will be made of the existing services and facilities installed at Mauna Lani Resort. It has been designed as a self-contained destination resort and the requested boundary amendments will help assure its successful operation as an economic center for the region.

- (5) Preference will be given to amendment petitions which will provide permanent employment, or needed housing accessible to existing or proposed employment centers, or assist in providing a balanced housing supply for all economic and social groups.

Discussion: The revised Mauna Lani Resort master plan will add to the economic stability of the resort and allow for higher quality development and permanent employment opportunities. Mauna Lani Resort, Inc. has already participated with the Hawai'i Housing Authority and the County to provide employee housing, and is also working to provide a balanced housing supply in Hawai'i County for all economic and social groups.

- (6) In establishing the boundaries of the districts in each county, the Commission shall give consideration to the general plan of the County.

Discussion: The relationship of the revised Mauna Lani Resort master plan to the Hawai'i County General Plan is addressed in Section 7 of this chapter. The proposed land use district boundary amendments are substantially consistent with the LUPAG map and policies of the General Plan.

- (7) Insofar as practicable conservation lands shall not be reclassified as urban lands.

Discussion: It is not practicable to develop a second golf course within the existing urban lands at Mauna Lani Resort for the reasons outlined in Chapter II. The need for the second golf course is also outlined there. Considering the discussions above in Section 1.2.1, relating to the types of land to be designated Conservation, it does not appear that there is any practicable reason for retaining this particular land in the Conservation District.

- (8) The Commission is encouraged to reclassify urban lands which are incompatible with the interim statewide land use guidance policy or are not developed in a timely manner.

Discussion: The revised Mauna Lani Resort master plan is compatible with the interim statewide land use guidance policy and will be developed in a timely manner. See discussion in Section 1.3.

### **1.2.3 Special Requirements for Petitions for Urban Classification**

The State Land Use Commission's rules call for specific information to be provided with petitions for reclassification to the Urban District. Items (a) through (o) were submitted in the petition filed with the Commission in October 1984. After that submittal, it was determined that an Environmental Impact Statement was required under Chapter 343, HRS and this document was prepared under the regulations of that law.

### **1.3 PROJECT SCHEDULE AND RELATIONSHIP TO INCREMENTAL DISTRICTING REGULATIONS**

The need for the second golf course is the critical reason behind the petition for urban redistricting. It will be developed within five years from the date of the Commission's approval. Detailed design work on this golf course will start immediately upon receipt of all the necessary land use approvals. Also within the five-year period after SLUC approval, it is planned that virtually all of the infrastructure improvements for the newly designated urban land will be substantially in place and that the hotel planned for Hotel Site 4 at Honoka'ope Bay will be constructed, as well as a substantial number of residential units.

## **2. CONSERVATION DISTRICT RULES**

The administrative rules of the Hawai'i State Department of Land and Natural Resources (June 1981) Title 13, Chapter 2 (formerly Regulation No. 4) govern land use within the Conservation District and provide for four categories, or subzones. As described in Chapter II the revised Mauna Lani Resort master plan proposes use of the State-owned Conservation District land which it leases. The actions for which it seeks approval from the Board of Land and Natural Resources are summarized below and is followed by a discussion of the relationship of the proposed project to the Conservation District rules.

### **2.1 PROPOSAL FOR THE CONSERVATION DISTRICT**

Mauna Lani Resort, Inc. is seeking the following approvals regarding the Conservation District land that it leases from the State:

- \* Authorization for agricultural and recreational uses. The proposed recreational uses are:
  - two golf holes,
  - a public shoreline park, and
  - an archaeological park.
- \* Authorization to subdivide the State parcel into three lots.
- \* Amendment of the subzone boundaries within the southwestern portion of the Conservation District land.

The plan calls for subdivision of the State leased land into three lots. The 40-acre parcel at the northeast end of the land is proposed to be surrendered. It is expected that agricultural uses would occur on this lot. The middle lot is now a kiawe forest area, a small part of which Mauna Lani Resort, Inc. uses to raise orchard and nursery plants. This use would be maintained.

The 230-acre lot on the southwest end of the State parcel would be used for recreation: golf holes, beach park, and archaeological park. For these uses to be established, amendment of the Conservation District subzone boundaries is being requested.

### **2.2 SUBZONES-EXISTING AND PROPOSED**

The Puako Petroglyph Archaeological District does not now lie entirely within the "protective" Conservation District subzone. The objective of this subzone is to protect valuable resources such as archaeological sites. The boundaries of this subzone are supposed to encompass land "necessary for the preservation and enhancement of designated historic or archaeological sites".

The proposed change in Conservation District subzone boundaries would adjust the "protective" subzone to encompass all of the Puako Petroglyph Archaeological District that lies within the Conservation District. The "general" Conservation District subzone boundaries would be altered in response to that change. The "resource" Conservation District subzone fronting the shoreline would remain the same.

With these subzone boundary adjustments, the proposed golf holes and beach park on the leased Conservation District land would be entirely within the "general" and "resource" subzones. The strip of "resource" subzone along the shoreline would remain unchanged and be used for shoreline park activities. The improvements for this

subzone probably would be limited to landscaping and picnic tables. This is consistent with the definition of the "resource" subzone boundaries, which encompass parkland and "land suitable for outdoor recreational uses such as . . . picknicking". It also fulfills the objective of the "resource" subzone, which is "to develop, with proper management, areas to ensure sustained use of the natural resources of those areas".

The plans show the comfort station and parking for the proposed public shoreline park in the "general" subzone area, as well as the two golf holes and the water features that will enhance both the park and the golf course. The improvements proposed for the "general" subzone are all related to open space recreational use. These are consistent with the objective of the "general" subzone, which is "to designate open space where specific conservation uses may not be defined, but where urban use would be premature."

## 2.3 PROCEDURES FOR PERMITS AND AMENDMENTS

An application for the proposed subzone boundary amendments, subdivision of the parcel, and agricultural and recreational (golf holes, shoreline park, and archaeological park) uses in Conservation land as discussed above has been filed with the Board of Land and Natural Resources. This EIS comprises part of the applications that are being prepared for the requested Conservation District Use Permit and the proposed State Land Use District Amendments.

### 2.3.1 Conditions of Conservation District Use

All uses allowed in the Conservation District are subject to the conditions outlined in Section 13-2-21 of the regulations. The conditions relevant to the Mauna Lani Resort's Conservation District Use Application are listed below and following each is a discussion of the proposed actions' compliance with it.

- (1) The use shall be compatible with the locality and surrounding areas, and appropriate to the physical conditions and capabilities of the specific parcel or parcels of land.

Discussion: The proposed recreational and agricultural uses are compatible with the open space character of the surrounding inland area and with the adjacent urban development along Puako Road. The establishment of the shoreline park and the archaeological park would be very appropriate to the specific physical conditions of the land along the shoreline and the land containing archaeological resources. The agricultural uses have been proposed for the land in the Conservation District that contains soil, while the golf holes are proposed for the portion of the parcel that is composed of essentially unweathered 'a'a and pahoehoe lava.

- (2) The existing physical and environmental aspects of the subject areas, such as natural beauty and open space characteristics, shall be preserved, or improved upon, whichever is applicable.

Discussion: The area containing the Puako petroglyphs will be preserved, and the physical and environmental setting will be maintained so as to protect the archaeological resources. The natural beauty of the shoreline area will be enhanced by the landscaping of the shoreline park area. The proposed archaeological and shoreline parks, golf holes, and agricultural uses will also preserve the open space characteristics of the land.

- (3) All buildings, structures, and facilities shall harmonize with the physical and environmental conditions stated in this rule.

Discussion: The only structure that would be constructed would be the comfort station at the shoreline park. Landscaping (including the golf holes, water features, and lawn areas), parking and pathways would be installed in the southwestern portion of the Conservation District. These facilities would be designed to harmonize with the environment.

- (4) Use of the area shall conform with the program of the appropriate soil and water conservation district or plan approved by and on file with the department.

Discussion: The Mauna Lani Resort lies within the boundaries of the Mauna Kea Soil and Water Conservation District (SWCD). The district's Long Range Program: 1985 was examined to certify that the proposed uses of the Conservation land conformed to it. The program is concerned with soil-disturbing activities of any type, and other areas of special concern to the Mauna Kea SWCD include low rainfall areas with potential wind erosion problems, and flooding and dust problems in Puako. The purpose of the district's program is to control erosion, sedimentation, and water pollution resulting from the above stated problems. The proposed actions in the leased Conservation District land were found to be in conformance to the policies of the Mauna Kea SWCD (p. 15) as outlined below.

1. The quality of the natural resources of the area will be maintained or improved under the agricultural and recreational uses proposed.
  2. The effect of the actions will be to maintain or improve the standard of living/quality of life for the people of the district, especially by the provision of the shoreline and archaeological parks.
  3. The improvement of the land for leisure time activities will be accomplished by the installation of the shoreline park, archaeological park and golf holes. These improvements also address the concern expressed in the Mauna Kea SWCD program that beaches in the area need to be retained for public use.
  4. The land owners are aware of the benefits of (and will utilize) land use planning and construction period treatment techniques that will prevent erosion and subsequent sedimentation and water pollution problems.
  5. The revised Mauna Lani Resort master plan, including the uses proposed on the leased Conservation District land, will lead to economic stability for the region and benefit the local people.
  6. None of the lands owned or leased by Mauna Lani Resort, Inc. are designated "Prime Agricultural Land". The agricultural uses will be located in the area designated "Other Important Agricultural Land". In the objectives section of the program the Mauna Kea SWCD supports the use of "less productive lands for development of resorts".
- (5) When provided or required, potable water supply and sanitation facilities shall have the approval of the department of health and the board/department of water supply.



Discussion: The potable water system and sanitation facilities on the Conservation District land will be connected to the existing systems within the resort that have been approved by the Hawai'i County Department of Water Supply and the State Department of Health. Expansions of such systems will require approval from the same government agencies.

- (7) The construction . . . of any building or other improvements on lands within the conservation district shall be subject to the building code . . . and four copies of the final location map, plans, and specifications shall be submitted to the chairman . . . .

Discussion: This condition will be observed, and prior to construction of the proposed improvements on the Conservation District land, four copies of all listed materials will be submitted to the Chairman of the Board of Land and Natural Resources (BLNR).

- (8) Provisions for access, parking, drainage, fire protection, safety, signs, lighting, and changes in the landscape shall have the approval of the chairperson or an authorized representative.

Discussion: Plans for these aspects of the proposed improvements will be included in the package of material submitted to the DLNR, and they will not be constructed until approved.

- (11) Except in the case of public highways, access roads shall be limited to a maximum of two lanes.

Discussion: The access road to the beach park and archaeological park will be limited to two lanes.

- (12) Overloading of off-site roadways, utilities, and public facilities shall be minimized.

Discussion: The uses proposed for the Conservation District land are not expected to overload off-site roadways, utilities, and public facilities.

- (13) Clearing areas for construction purposes shall require prior approval by the chairperson, ground cover of slopes over 40% shall not be removed unless specifically authorized by the chairperson.

Discussion: Approval of the clearing plan will be obtained before commencing construction. The area that would be cleared for the recreational facilities has slopes much less than 40%.

- (14) Cleared areas shall be revegetated within thirty days unless otherwise provided for in a plan on file with and approved by the department.

Discussion: The provisions of this condition will be complied with.

- (15) Upon approval of a particular use by the board, any work or construction to be done on the land shall be initiated within one year of the approval of the use and all work and construction shall be completed within three years of the approval of the use.

Discussion: The provisions of this condition regarding time limits will be met.

### **2.3.2 Guidelines for Reviewing Applications**

The Board of Land and Natural Resources has established four guidelines that it applies in reviewing applications. These are given below and the proposed actions' consistency with them is discussed following each one.

- (1) All applications shall be reviewed in such a manner that the objectives of the subzone or subzones are given primary consideration.

Discussion: The subzone objectives are discussed in Section 2.2 of this Chapter, and the actions proposed are consistent with them.

- (2) All applications shall be reviewed so that any physical hazard, as determined by the department shall be alleviated by the applicant when required by the board.

Discussion: The shoreline area is subject to tsunami inundation. However, the comfort station, the only structure proposed in the Conservation District, would be located inland of the 100-year flood boundary shown on the Flood Insurance Rate Map for the area.

- (3) All applications for subdivision shall address their relationship with the county general plan.

Discussion: The relationship of the revised Mauna Lani Resort master plan to the Hawai'i County General Plan is discussed in Section 7 of this Chapter. The proposed actions in the Conservation District land, including the proposed subdivision into three parcels, are also consistent with the General Plan. The actions would protect historic sites, natural beauty, open space, shoreline resources, environmental quality, recreational opportunities, and agricultural land. There would be no conflict with any of the goals, policies, or standards of the General Plan.

- (4) All applications shall meet the purpose and intent of the State's conservation district.

Discussion: The definition of "conservation" in section 1 of the DLNR Title 13, Chapter 2 rules outlines the purpose and intent of the State's Conservation district:

"conservation means a practice, by both government and private landowners, of protecting and preserving, by judicious development and utilization, the natural and scenic resources attendant to land, including territorial waters within the State, to ensure optimum long-term benefits for the inhabitants of the State".

The proposed actions are in accord with this definition. The proposed golf holes, shoreline park and archaeological park would be a means of judiciously developing natural resources for recreational use by both State residents and visitors. The existing agricultural uses on the property will be maintained. These are considered the optimum long-term beneficial uses of the conservation land.

### 3. HAWAII STATE PLAN

The Hawai'i State Plan (Hawai'i, State of, Department of Planning and Economic Development, 1978) consists of a series of broad goals, objectives and policies which are to act as the guidelines for the growth and development of the State. In general, the proposed action is consistent with the overall intent of the State Plan. Discussed below are the specific objectives, policies, and priority actions contained in Part I and Part III of the State Plan which are thought to be the most directly related to the proposed project.

#### **PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES**

##### OBJECTIVE AND POLICIES FOR POPULATION

- (2)(b) POLICY: Encourage an increase in economic activities and employment opportunities on the Neighbor Islands consistent with community needs and desires.
- (3)(b) POLICY: Ensure that adequate support services and facilities are provided to accommodate the desired distribution of future growth throughout the state.
- (4)(b) POLICY: Promote increased opportunities for Hawaii's people to pursue their socio-economic aspirations throughout the islands.

Discussion: At a time when employment opportunities are decreasing in the agricultural sector of Hawaii's economy, opportunities are increasing in the visitor industry. During the first 15 years of development, Mauna Lani Resort is expected to generate about 200 to 300 construction jobs annually. Permanent full-time operational employment at the resort is expected to average from 800 jobs to 5000 jobs at potential maximum development (resort-wide, including existing facilities). Indirectly, employment throughout the state will also be stimulated by development at Mauna Lani Resort.

Adequate services and facilities will be provided by Mauna Lani Resort, Inc. at the resort: internal roads, potable water, wastewater disposal, electricity, and other services. State and County tax revenues generated by the resort (property taxes, income taxes, etc.) will contribute toward the cost of providing services to new residents and visitors.

##### OBJECTIVES AND POLICIES FOR THE ECONOMY - IN GENERAL

- (1)(a) OBJECTIVE: Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawaii's people.
- (6)(b) POLICY: Strive to achieve a sustained level of construction activity responsive to, and consistent with, state growth objectives.
- (9)(b) POLICY: Encourage labor-intensive activities that are economically satisfying.
- (11)(b) POLICY: Promote economic activities, especially those which benefit areas with substantial unemployment problems.

- (14) **POLICY:** Encourage businesses that have favorable financial multiplier effects within Hawaii's economy.

**Discussion:** As stated above, development at Mauna Lani Resort will provide many employment opportunities. It is expected that nine to twelve percent of the operational period positions will be in the managerial or supervisory categories. Many other jobs will provide workers with higher than average total compensation based on wages and gratuities. Construction of facilities is expected to occur over a period of many years. Thus, development of Mauna Lani Resort will contribute to sustaining the level of construction activity in the State. Both hotel/resort and construction employment have favorable financial multiplier effects, 2.4 total jobs for every direct construction job and 1.9 jobs for every direct resort job. Due to the decline of the sugar industry in North Kohala, local unemployment rates have been higher than statewide rates. Direct and indirect employment related to Mauna Lani Resort development will contribute toward alleviating this problem.

#### OBJECTIVES AND POLICIES FOR THE ECONOMY - AGRICULTURE

- (3)(b) **POLICY:** Promote Hawaii's agricultural products locally, on the continental United States, and internationally.
- (6)(b) **POLICY:** Assure the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.

**Discussion:** Local agricultural products are featured at Mauna Lani Resort food service establishments where, very often, visitors are first introduced to some of these products. Further development at the resort will provide an expanded market for local fruits, vegetables, fish, meat, and beverages. At the same time, development at Mauna Lani will not decrease the inventory of agriculturally suitable lands. Most of the lands planned for resort development is barren lava, unsuited to agricultural use, particularly if left unirrigated.

#### OBJECTIVE AND POLICIES FOR THE ECONOMY - VISITOR INDUSTRY

- (a) **OBJECTIVE:** A visitor industry that constitutes a major component of steady growth for Hawaii's economy.
- (3)(b) **POLICY:** Improve the quality of existing visitor destination areas.
- (5)(b) **POLICY:** Ensure that visitor facilities and destination areas are carefully planned and sensitive to existing neighboring communities and activities.
- (6)(b) **POLICY:** Develop the industry in a manner that will provide the greatest number of primary jobs and steady employment for Hawaii's people.
- (7)(b) **POLICY:** Provide opportunities for Hawaii's people to obtain job training and education that will allow for upward mobility within the visitor industry.
- (9)(b) **POLICY:** Foster an understanding by visitors of the aloha spirit and of the unique and sensitive character of Hawaii's cultures and values.

Discussion: Mauna Lani Resort, Inc. intends to maintain its high standards of development throughout the low-density resort, with the goal of blending facilities into the natural surroundings. Mauna Lani Resort is carefully planned and is located between two other major resorts.

Due to the luxury character of the resort and the extensive landscaping, Mauna Lani employs more employees per unit than is usually the case for most visitor facilities in Hawaii. Mauna Lani Bay Hotel provides training for employees and opportunities exist for advancement in the organization. A large proportion of the employees are from communities neighboring the resort.

Mauna Lani Resort has a unique Hawaiian flavor which is imparted to guests through the character of the amenities, access to historical sites which are interpreted by signs, and island-style service.

OBJECTIVES AND POLICIES FOR THE PHYSICAL ENVIRONMENT - LAND-BASED, SHORELINE, AND MARINE RESOURCES

- (1)(a) OBJECTIVE: Prudent use of Hawaii's land-based, shoreline, and marine resources.
- (2)(a) OBJECTIVE: Effective protection of Hawaii's unique and fragile environmental resources.
- (2)(b) POLICY: Ensure compatibility between land-based and water based activities and natural resources and ecological systems.
- (3)(b) POLICY: Take into account the physical attributes of areas when planning and designing activities and facilities.
- (8)(b) POLICY: Pursue compatible relationships among activities, facilities, and natural resources, especially within shoreline areas.
- (9)(b) POLICY: Promote greater accessibility and prudent use of the shoreline for public recreational, educational, and scientific purposes.

Discussion: Mauna Lani Resort, Inc. recognizes the unique and fragile nature of environmental resources on its property and intends to proceed with development causing minimal disturbance to shoreline areas. Hawaiian fishponds have been restored and constitute a focal point for the resort. Amenities have been designed around unusual natural and topographic features. For example, the existing golf course incorporates natural undisturbed lava features into its layout. The shoreline area is accessible to both resort guests and the public; notable natural and historical features in this area are marked by educational signs.

OBJECTIVE AND POLICIES FOR THE PHYSICAL ENVIRONMENT - SCENIC, NATURAL BEAUTY, AND HISTORIC RESOURCES

- (1)(b) POLICY: Promote the preservation and restoration of significant natural and historic resources.
- (4)(b) POLICY: Protect those special areas, structures, and elements that are an integral and functional part of Hawaii's ethnic and cultural heritage.

- (5)(b) POLICY: Encourage the design of developments and activities that complement the natural beauty of the islands.

Discussion: Mauna Lani Resort, Inc. lands are rich in cultural resources: the Hawaiian fishponds, archaeological and historical sites in designated Preserves, and the Puako petroglyphs. The company intends to continue its policy of preserving these invaluable features for the enjoyment and education of guests and Island residents, as well as for future generations. The low density, landscaped character of the resort complement the natural beauty of Hawaii island.

OBJECTIVES AND POLICIES FOR THE PHYSICAL ENVIRONMENT - LAND, AIR,  
AND WATER QUALITY

- (2)(a) OBJECTIVE: Greater public awareness and appreciation of Hawaii's environmental resources.
- (1)(b) POLICY: Foster educational activities that promote a better understanding of Hawaii's limited environmental resources.

Discussion: The general public has access to Mauna Lani Resort and to the shoreline. Under the proposed revised master plan, access would be increased through new public rights-of-way at either end of the resort. Mauna Lani Resort, Inc. supports activities that promote a better understanding of Hawaii's limited environmental resources. The resort is continuing its joint effort with the Hawaiian Civic Club to clean up and maintain the Puako petroglyph area as a community project.

OBJECTIVES AND POLICIES FOR FACILITY SYSTEMS - SOLID AND LIQUID  
WASTES

- (1)(b) POLICY: Encourage the adequate development of sewer systems that complement planned growth.

Discussion: The capacity of the wastewater treatment plant which is planned to serve the entire resort is 0.76 mgd, expandable to 2.1 mgd. By the year 2000, it is estimated that the resort will generate about 0.94 mgd of wastewater; at potential maximum development, this would increase to about 1.85 mgd. An expanded system would adequately service the entire resort built out.

OBJECTIVES AND POLICIES FOR FACILITY SYSTEMS - WATER

- (1)(b) POLICY: Relate growth activities to existing and potential water supply.
- (3)(b) POLICY: Reclaim and encourage the productive use of runoff water and wastewater discharges.

Discussion: Mauna Lani Resort, Inc. currently has access to adequate potable water supplies to meet resort demand in the short term. Four new well site have been designated, and it is expected that new wells will be developed as new resort facilities are built and demand for water increases. The existing wastewater treatment plant is designed so that wastewater can be recycled; effluent mixed with brackish water can be used to irrigate the resort golf courses.

## OBJECTIVES AND POLICIES FOR SOCIO-CULTURAL ADVANCEMENT - HOUSING

- (5)(b) POLICY: Promote design and location of housing developments taking into account the physical setting, accessibility to public facilities and services, and other concerns of existing communities and surrounding areas.

Discussion: The Mauna Lani resort/residential community is being developed between two other major resort/residential communities: Mauna Kea/South Kohala Resort to the north and Waikoloa Resort to the south. On-site services will be developed by the owner and tax revenues generated by the resort will contribute toward funding additional public facilities and services needed to accommodate the new population.

Mauna Lani Resort, Inc. has participated with the Hawaii Housing Authority in providing housing in Waimea suitable for employees. The company will continue to work toward increasing the supply of housing in the Kohala area.

## OBJECTIVES AND POLICIES FOR SOCIO-CULTURAL ADVANCEMENT - LEISURE

- (4)(b) POLICY: Promote the recreational and educational potential of natural resources having scenic, open space, cultural, historical, geological, or biological values.

- (5)(b) POLICY: Ensure opportunities for everyone to use and enjoy Hawaii's recreational resources.

Discussion: Mauna Lani Resort, Inc. continues to promote the recreational and educational potential of natural resources on its lands such as the Hawaiian fishponds, archaeological sites, and the Puako petroglyph field. The revised master plan will provide improved access to the shoreline, including the shoreline area at Honoka'ope Bay that is currently difficult to reach and therefore not much used.

## OBJECTIVES AND POLICIES FOR SOCIO-CULTURAL ADVANCEMENT - CULTURE

- (1)(a) POLICY: Foster increased knowledge and understanding of Hawaii's ethnic and cultural heritages and the history of Hawaii.

Discussion: Most of the sites of cultural interest at Mauna Lani Resort are of Hawaiian origin; these have been preserved and interpreted for the public and resort guests.

## **PART III. PRIORITY DIRECTIONS**

### ECONOMIC IMPLEMENTING ACTIONS

- (1)(a) PRIORITY ACTION: Stimulate the economy to provide needed jobs for Hawaii's people without stimulating unnecessary in-migration.
- (3)(b) PRIORITY ACTION: Maintain or enhance the quality of existing and future hotels and resort destination areas which conform with regional carrying capacities and state policies providing for adequate shoreline setbacks and beach access.
- (5)(b) PRIORITY ACTION: Preserve and enhance Hawaii's significant natural environmental and scenic, historic, and cultural sites.



- (6)(b) PRIORITY ACTION: Develop and maintain career opportunities in the visitor industry for Hawaii's people, with emphasis on managerial positions.
- (13)(d) PRIORITY ACTION: Encourage the expansion of the statewide agricultural base through the promotion of products for export and local consumption.
- (1)(f) PRIORITY ACTION: Promote a consistent and stable level of construction activity.

Discussion: Development at Mauna Lani Resort will lead to a steady level of construction employment over a period of several years, permanent full-time and part-time operational jobs, and stimulate the growth of employment in other sectors of Hawaii's economy. Based on the experience of other similar resort facilities, it is expected that nine to twelve percent of operational jobs will be in the managerial or supervisor category. Mauna Lani's policy is to provide training and promote from within the organization. With the projected available supply of labor on the island, it is anticipated that only ten to fifteen percent of operational employees will be from off-island, many of these from other Hawaiian islands.

Development of Mauna Lani Resort will conform to relevant State and County zoning and other regulations.

Local agricultural products, including fish, meat, vegetables, and fruits, are purchased for consumption at the resort. The development of additional facilities at the resort will provide an expanded base for locally grown agricultural products.

#### POPULATION GROWTH AND DISTRIBUTION IMPLEMENTING ACTIONS

- (2)(a) PRIORITY ACTION: Encourage hiring of Hawaii's people by firms doing business in the State.
- (2)(b) PRIORITY ACTION: Plan the development and availability of land and water resources in a coordinated manner so as to provide for the desired levels of growth in each geographical area.

Discussion: Mauna Lani Resort's policy is to hire from the locally available labor supply for long-term employment at the resort. Traditionally, most of the construction period labor has been mostly from the Hawaiian islands.

Mauna Lani Resort, Inc. has a long history of planning for coordinated development of its lands, and the associated necessary development of water resources.

#### HAWAII'S LAND RESOURCES

- (a) PRIORITY ACTION: Preserve and improve shoreline open spaces and scenic resources.

Discussion: The revised master plan includes the development of a public shoreline park near Pauoa Bay, with public access and parking. Public access and parking will also be provided to Honoka'ope Bay under this plan. Shoreline areas near existing facilities have been improved and preserved.

#### 4. STATE FUNCTIONAL PLANS

State functional plans are intended to provide more detail to the Hawai'i State Plan in 12 specific areas of concern - agriculture, conservation lands, education, higher education, energy, health, historic preservation, housing, recreation, tourism, transportation, and water resources development. As defined in the Hawai'i State Plan (section 2-10), a functional plan sets forth "the policies, programs and projects designed to implement the objectives of a specific field of activity when such activity or program is proposed, administered, or funded by an agency of the State." The State programs most relevant to the proposed project are the administration of the State Land Use Law by the State Land Use Commission and the administration of the Conservation District Use Permits by the State Department of Land and Natural Resources. The proposed action's consistency with the State Land Use Law is discussed in Section 1 of this chapter, and its consistency with the Conservation District Regulations is covered in Section 2 of this chapter.

The 12 State functional plans were examined to determine the relationship of the proposed Mauna Lani Resort master plan to each. Ten of the plans were adopted in 1984, two - agriculture and education - in 1985. All are meant to serve as guidelines only, and are not to be interpreted as law or statutory mandate.

##### 4.1 STATE AGRICULTURE FUNCTIONAL PLAN

Over two-thirds of the land owned by Mauna Lani Resort is basalt lava that has not weathered to any appreciable extent; it has little or no soil/vegetation cover. (See the Geology section of the Existing Environment Chapter.) Although the proposed Master Plan calls for the designation of Urban land now classified in the Agricultural District, the area involved is essentially all lava land that is not suited for cultivation. Only a few acres have been designated as "other important agricultural land" on the "Agricultural Lands of Importance to the State of Hawaii" map. However, the State Department of Agriculture (see memo on page XII-46) has determined that this area does "not meet the generally understood definitions of important agricultural land".

The only implementing actions in the State Agriculture Functional Plan (Hawai'i, State of, Department of Agriculture, November 1984) that may be relevant to the proposed project is the portion of B(2)(a) which states: "give priority in developing and awarding new leases on agriculturally suitable public lands to diversified agricultural activities with growth potential". The 40 acres in the northeast end of the land that Mauna Lani Resort leases from the State will be subdivided out and surrendered for agricultural uses.

##### 4.2 STATE CONSERVATION LANDS FUNCTIONAL PLAN

There are several implementing actions in the State Conservation Lands Functional Plan (Hawai'i, State of, Department of Land and Natural Resources, June 1984a) that are relevant to the proposed project, and these are discussed below. Related discussions are also found in Sections 1 and 2 of this chapter regarding the proposed Conservation District to Urban District change and the Conservation District use application. This functional plan addresses more than officially designated Conservation District lands, and includes (among a lengthy list) shoreline areas under the coverage of the plan.

A(1)(c) IMPLEMENTING ACTION. Review the various rules and regulations and permit systems applicable to Conservation District lands for possible simplification and/or consolidation for effective and efficient management controls and compliance with the Coastal Zone Management program.

Discussion: This implementing action is addressed largely to DLNR, but the issue of compliance with the CZM program is relevant to any shoreline project. Refer to the discussion of the proposed Mauna Lani Resort master plan's consistency with the CZM program policies in Section 5 of this chapter.

A(1)(d) IMPLEMENTING ACTION. Provide for effective enforcement of rules and regulations and permit system applicable to the Conservation District.

Discussion: The proposed project will follow the rules and regulations applicable to the Conservation District Use permit system and to petitions to reclassify Conservation District land to an Urban District designation. See discussions in Sections 1 and 2 of this chapter.

A(1)(e) IMPLEMENTING ACTION. Review applications for use of Conservation lands to control impacts on natural and cultural resources.

Discussion: This EIS document will allow extensive review by government agencies and the public. Adequate control of impacts on natural and cultural resources can be assured through the conditions placed on the various permits/approvals required for the proposed Mauna Lani Resort master plan.

C(2)(b) IMPLEMENTING ACTION. Encourage and support local participation in conservation planning and programming as provided for in the Soil and Water Conservation Districts programs.

Discussion: The relationship of the proposed project to the Mauna Kea Soil and Water Conservation District program is discussed in Section 2.3.1 of this chapter.

C(3)(b) IMPLEMENTING ACTION. Acquire and maintain historic sites for parks and other purposes.

C(3)(c) IMPLEMENTING ACTION. Establish criteria and evaluate areas of public land with historic or natural resource value and establish management practices to ensure the protection of areas from further degradation.

Discussion: Mauna Lani Resort, Inc. has already set aside three areas as archaeological preserves and created a park adjacent to the major one. Also, the fishponds at the resort have been preserved as historic and natural resources. Signs have been installed to interpret these archaeological and natural resources, informing the public to protect against unintentional damage. Mauna Lani Resort, Inc. is also proposing to continue its efforts to establish an archaeological park to encompass the Puako petroglyphs. Mauna Lani Resort will maintain the park, in cooperation with the Waimea Hawaiian Civic Club, to avoid further degradation of these petroglyphs. Security and possibly restoration provisions will be developed in conjunction with the Department of Land and Natural Resources and the Hawai'i County Planning Department.

C(4)(c) IMPLEMENTING ACTION. Maintain scenic and natural open space areas as part of a Statewide system of parks.

Discussion: In addition to the parks discussed above, Mauna Lani Resort, Inc. also proposes to develop and maintain (for the term of its existing and any new lease) a shoreline park on a portion of the State-owned land to the north of their fee land. This would be open to the public and part of the Statewide system of shoreline parks, although funded privately.

**4.3 STATE EDUCATION FUNCTIONAL PLAN**

This functional plan (Hawai'i, State of, Department of Education, November 1984) presents priority implementing actions for education. All of the actions are to be undertaken by the Department of Education. Therefore, they are not applicable to the Mauna Lani Resort proposed master plan.

**4.4 STATE HIGHER EDUCATION FUNCTIONAL PLAN**

There are no policies or implementing actions in this functional plan, prepared by the University of Hawai'i (June 1984), that are of direct relevance to the Mauna Lani project.

**4.5 STATE ENERGY FUNCTIONAL PLAN**

The State Energy Functional Plan (Hawai'i, State of, Department of Planning and Economic Development, June 1984a) has as an objective the promotion of energy-efficient design. This relates both to overall land use planning and to specific building design and equipment selection decisions.

There are no detailed building designs for the undeveloped parcels at the Mauna Lani Resort, but all plans will have to meet the County of Hawai'i energy conservation regulations. Since the proposed Mauna Lani Resort master plan does not call for any more units than have already been approved, it does not create any significant change in energy consumption or demand for gasoline. The additional urban area will be easily serviceable because it is adjacent to the existing urban-designated portion of the resort. Because the number of units will not change, utilities already planned or constructed will be adequate for the new master plan.

**4.6 STATE HEALTH FUNCTIONAL PLAN**

The State Health Functional Plan (Hawai'i, State of, Department of Health, June 1984:5) "focuses primarily on public health programs under the jurisdiction of the State Health Department." Several of the implementing actions relate to operating Department of Health (DOH) permit/approval programs that the proposed project is subject to. These include operating the environmental impact statement process; reviewing private wastewater treatment systems; administering permit programs for discharges to the air, all surface and groundwater, and for treatment and disposal of solid wastes; reviewing plans for new sources of drinking water; and reviewing plans for air conditioning and mechanical ventilation systems for buildings that are used by the public. These topics (wastewater, air quality, water quality, potable water systems, solid waste, and approvals needed) are discussed in terms of the proposed project in various sections of the EIS. The implementing actions also express other areas of concern to DOH, such as reuse of treated effluent, noise, and medical services, that are covered in this EIS as well.

#### 4.7 STATE HISTORIC PRESERVATION FUNCTIONAL PLAN

Essentially all of the policies and implementing actions in the State Historic Preservation Functional Plan (Hawai'i, State of, Department of Land and Natural Resources, June 1984b) are directed at State agencies, especially DLNR. The archaeological resources at the Mauna Lani Resort have been the subject of several surveys and a management plan. These are described in section 1.10 of Chapter IV. The fishponds within the resort have been restored and Mauna Lani Resort, Inc. proposes to maintain the Puako Petroglyphs, which are on both its fee land and the land it leases from the State, as an archaeological park. There are also at present within the resort three other Historic Preserve areas, including one around the King's Trail which will be expanded.

As detailed plans for each parcel are developed, an intensive-level archaeological survey will be conducted, if determined necessary by the State Historic Sites Section of DLNR and the County Planning Department. The expected impacts of the planned development are discussed in section 1.10.2 of Chapter IV. The key recommendations of the management plan for the Mauna Lani Resort archaeological sites, which is on file with the State and County, will be followed. Preservation/interpretive plans will be worked out with the responsible State and County agencies.

The existing and future preservation efforts and interpretive signs/materials at the Mauna Lani Resort help fulfill Objective E of this functional plan which calls for "activities which support and foster increased knowledge and understanding of...the history of Hawaii".

#### 4.8 STATE HOUSING FUNCTIONAL PLAN

This State functional plan summarizes the results of the Hawai'i Housing Authority (Hawai'i, State of, Department of Social Services and Housing, June 1984:ii) study "to formulate a comprehensive plan for the development, operation, and management of housing within the State". Most of the policies and implementing actions apply to the government sector. However, there are several implementing actions that affect the Mauna Lani Resort.

A(2)(c) IMPLEMENTING ACTION. Encourage the use of opportunities and incentives in the State Land use redistricting process to provide lands or homes for affordable or assisted housing development.

Discussion: Mauna Lani Resort, Inc. has developed affordable housing in Waimea and holds property there on which additional units can be constructed. Mauna Lani Resort, Inc. is an active participant in efforts to expand the supply of affordable housing as needed.

B(1)(a) IMPLEMENTING ACTION. Assess and delineate lands suitable for future housing development.

Discussion: The area covered by the expanded master plan for Mauna Lani Resort is suitable for resort housing, hotels and other related facilities, "taking into account the physical setting, accessibility to public facilities and services, employment and other concerns of existing communities and surrounding areas" (p. 21). The master plan will "enable the development process to occur in an organized fashion" (p. 21).

B(1)(c) IMPLEMENTING ACTION. Encourage and assist in the development of rental housing for employees of large businesses and industries outside of urban areas.

Discussion: Section 2.2.4 of Chapter IV discusses the employee housing issue. Mauna Lani Resort, Inc. is working with the County, State, and other organizations on various efforts to encourage and assist in the development of rental housing as needed. Zoning conditions enacted by the County Council require employee housing studies and programs for each hotel planned at Mauna Lani Resort.

#### 4.9 STATE RECREATION FUNCTIONAL PLAN

The State Recreation Functional Plan (Hawai'i, State of, Department of Land and Natural Resources, June 1984c) has as Policy D(2) "the securing of public accesses to resources with recreational value". Two additional public accesses to the shoreline, in addition to the existing one, would be provided in the revised Mauna Lani Resort master plan as shown on Figure II-7. The plan for a public shoreline park that is proposed on the State-owned Conservation District land near Pauoa Bay is shown in Figure II-8. It provides access both to the ocean and to the Puako Petroglyphs. The public access to Honaka'ope Bay would be installed when hotel site 4 is developed. In addition to the access, public parking and restroom/shower facilities are planned. See also the discussion under Implementing Action B(4)(b) of the State Tourism Functional Plan regarding lateral shoreline access.

Policy E(3) of the State Recreation Functional Plan aims to "coordinate visitor and resident recreation interests to achieve compatible recreation usage". Section 7 of Chapter IV addresses the potential impacts of the Mauna Lani Resort on recreational usage on the subject lands and in the region.

#### 4.10 STATE TOURISM FUNCTIONAL PLAN

The Hawai'i State Department of Planning and Economic Development (June 1984b) authored this functional plan and considers it a "guide to help coordinate the various sectors of government and private industry toward achieving statewide objectives of the Hawaii State Plan" (p. 2). The role of government in tourism is seen not only as protecting the economic health of the industry, but also as "advancing the social goals of the community" (p. 8). The policies and implementing actions which are most relevant to the private sector, and particularly to the proposed project, are those concerning physical development.

B(1)(a) IMPLEMENTING ACTION. Encourage the development of an orderly mix of visitor accommodations including full-service hotels, condominium apartments, and some single-family homes, in order to meet the lodging desires of the broad spectrum of our visitor guests.

Discussion: The expanded master plan for the Mauna Lani Resort, as does the existing master plan, provides for an orderly mix of visitor accommodations. The basic difference is the decreased density of the proposed plan and the additional golf course, which will better meet the desires of guests at the Mauna Lani Resort.

B(2) POLICY: Improve the quality of existing visitor destination areas.

Discussion: The lower density of the proposed master plan will improve the quality of the Mauna Lani Resort, compared to the existing master plan.

B(3) POLICY: Encourage greater cooperation between the public and private sectors in developing and maintaining well-designed and adequately serviced visitor industry and related development.

B(3)(a) IMPLEMENTING ACTION. Assure that adequate infrastructure and amenities, such as roads, water, drainage and parks, are provided through a reasonable distribution of financial responsibilities between governmental and private parties.

B(3)(c) IMPLEMENTING ACTION. Encourage private development of designated visitor destination areas where capital improvements have been made or are planned before encouraging development of other possible visitor destinations.

Discussion: The Mauna Lani Resort is a well-designed and adequately serviced development. The infrastructure within the resort has all been paid for by the developer and contributions toward the public Lalamilo water system have also been provided by the developer. As part of the proposed actions Mauna Lani Resort, Inc. proposes to construct and maintain an additional public park. The Mauna Lani Resort is a designated visitor destination area in West Hawaii where extensive public capital improvements have also been made and where public plans have been directing growth since the late fifties.

B(3)(c) IMPLEMENTING ACTION. Institute more expeditious resort development approval systems at the State, County and Federal levels while assuring opportunities for public input.

Discussion: The simultaneous processing of the requested State Land Use District boundary amendments and the Conservation District Use Application will result in a more efficient resort development review, while still allowing opportunity for public input in the EIS process and at the public hearings before the Land Use Commission and the Board of Land and Natural Resources.

B(3)(d) IMPLEMENTING ACTION. Encourage the clustering of hotels and resort condominium developments to provide open space and promote energy conservation.

Discussion: The clustering of hotels and condominiums in the Mauna Lani Resort, rather than spreading this development throughout the island, allows for energy conservation by promoting walking or bicycling as transportation modes between the various facilities at the resort and by utilizing major infrastructure for a group of compatible uses. The proposed master plan for the resort will allow for more open space than the existing plan, because of the lower density.

B(3)(e) IMPLEMENTING ACTION. Encourage the use of regional sewerage systems by hotel and visitor condominium developments rather than use of individual private systems.

Discussion: Instead of using individual private sewage treatment systems for each development within the Mauna Lani Resort, all parcels will be connected to a resort-wide sewerage system. The economies of scale and the greater efficiency of a wastewater treatment plant (WWTP) for the entire resort make it preferable to individual treatment systems. The WWTP and other support facilities were constructed in the Agricultural District under Special Permits. The Urban designation of the WWTP site will recognize its permanence.

B(4) POLICY. Ensure that visitor facilities and destination areas are carefully planned and sensitive to existing neighboring communities and activities.

B(4)(e) IMPLEMENTING ACTION. Resort development should take place within designated visitor destination areas.

Discussion: The Mauna Lani Resort is a designated visitor destination area that is carefully planned and sensitive to existing neighboring communities and activities. The Mauna Lani Resort lands border the Waikoloa Beach Resort to the south. The land Mauna Lani Resort leases from the State is inland of the Puako coastal lots. This land would be left essentially unchanged except for the proposed golf holes and public park at the south end; thus it acts as a buffer between the resort uses and the residential area of Puako. Adequate public access to and along the shoreline will be provided to facilitate public seaside recreational activities.

B(4)(b) IMPLEMENTING ACTION. Ensure that new hotel and condominium projects be set back from the shoreline for access which facilitates and permits use of those areas.

B(4)(d) IMPLEMENTING ACTION. Plan development of resorts in a coordinated manner to minimize loss of public recreational opportunities in designated visitor destination areas.

Discussion: The proposed master plan for Mauna Lani Resort facilitates public access to and along the shoreline. Few, if any, public recreational opportunities would be lost; and public use of the shoreline would greatly increase with the shoreline park and other access improvements.

B(4)(c) IMPLEMENTING ACTION. Ensure the construction, as necessary in connection with both new hotel and large resort condominium projects, of affordable dwelling units adequate to accommodate employee households.

Discussion: Employee housing will be provided as required when new hotels are developed.

D(3)(a) IMPLEMENTING ACTION. Provide relevant information to visitors to foster their understanding of Hawaii's uniqueness in order to minimize damage of natural, historic, and archaeological resources, promote their



personal safety and protection, and foster an appreciation of the contribution of Hawaii's residents to the enjoyment of the visitor's experience in Hawaii.

- D(3)(b) **IMPLEMENTING ACTION.** Provide relevant interpretation of, and public access to, sites of archaeological significance whenever feasible, and establish a program to explain Hawaii's history and values to visitors and residents.

**Discussion:** The Mauna Lani Resort has established substantial interpretive programs for several archaeological areas, including the fishponds and the other historic preserves in its resort. Signs explain the area's history and general concepts of Hawaii's past to visitors and residents. Further interpretive signage will be installed for the Puako Petroglyph area. Before plans to develop parcels are finalized, the State and County will be consulted regarding the necessity for further archaeological survey work, and/or preservation and interpretation of archaeological sites. Mauna Lani Resort, Inc. will continue to protect, maintain and improve historic and archaeological features on its lands.

#### **4.11 STATE TRANSPORTATION FUNCTIONAL PLAN**

None of the policies or implementing actions in this functional plan (Hawaii, State of, Department of Transportation, June 1984) address specific developments like the Mauna Lani Resort. The overall objective of the plan is to provide for the efficient, safe, and convenient movement of people and goods. Section 3 of Chapter IV discusses the impacts of the proposed development at Mauna Lani on transportation facilities, including mitigation measures and long-term highway needs in the region.

#### **4.12 STATE WATER RESOURCES DEVELOPMENT FUNCTIONAL PLAN**

This functional plan, prepared by the Hawaii State Department of Land and Natural Resources (June 1984d:2) "primarily affects State operations, it also involves some actions of...the private sector. It points out where...private industry coordination will be needed and...can help achieve water resources objectives". Like the other State functional plans, it does not mandate private sector actions.

The plan presents general objectives and policies for the management of potable water supply, floodplains, agricultural water, and estuarine environments that could be considered relevant to this project. These topics are discussed in various sections of Chapter IV in this report.

## **5. HAWAII COASTAL ZONE MANAGEMENT PROGRAM**

The Hawai'i Coastal Zone Management Act (Act 188, SLH 1977), which became Chapter 205A, Hawai'i Revised Statutes, established State policies for any action affecting the coastal zone. The act established specific objectives and policies in seven broad categories. The relationship of the revised Mauna Lani Resort master plan to these categories of concern is discussed below.

### **5.1 RECREATIONAL RESOURCES**

Mauna Lani Resort is providing in its revised master plan, as in the current plan, for continuous shoreline trails. Also provided in the new plan are two additional mauka-makai shoreline accesses. One will be at Honoka'ope Bay where public parking and restrooms/showers will be installed. A new public shoreline park will be constructed by Mauna Lani Resort at the north end of Pauoa Bay. The existing master plan does not include the shoreline park near Pauoa Bay. See also Section 7.2 of Chapter IV on recreational impacts of the project.

### **5.2 HISTORIC RESOURCES**

Mauna Lani Resort, Inc. proposes to establish the Puako petroglyphs as an archaeological park. This park will accommodate public access, security, ongoing restoration, signage and parking. Details will be developed in conjunction with the State Historic Sites Section of DLNR, the Hawai'i County Planning Department, the Waimea Hawaiian Civic Club, and Mauna Lani Resort, Inc. Other aspects of the master plan's relationship to archaeological resources are discussed in Section 1.10 of Chapter IV.

### **5.3 SCENIC AND OPEN SPACE RESOURCES**

Extensive landscaping and the open space corridors of the golf holes (2 golf courses), the fishpond area, the historic reserves, the parks, and the shoreline area will maintain scenic views and a spacious character for the resort. The lower densities of the revised master plan will also allow more open space in each development parcel. If development were to continue according to the "no-action" alternative of the existing master plan, overall densities would be higher and the resort would have only one golf course. Under this alternative, public views to and from the shoreline would not be as open as under the proposed master plan.

### **5.4 COASTAL ECOSYSTEMS**

The ecosystems of the nearshore waters and the shoreline area are not expected to be adversely affected by the development proposed in the revised Mauna Lani Resort master plan or the existing master plan. See Sections 1.5, 1.6, and 1.7 in Chapter IV.

### **5.5 ECONOMIC USES**

Resort development of the Mauna Lani lands has been acknowledged as the most appropriate use of the land by the Hawai'i County General Plan and by the actions of State and County agencies (e.g., by the granting of various permits and by cooperating in the Lalamilo Water System). The policies under this heading state that reasonable growth in areas designated for visitor industry facilities (which are recognized as coastal dependent developments) is to be permitted, assuring that adverse impacts are

minimized. As demonstrated elsewhere in this document, the revised Mauna Lani master plan is not expected to cause any significant adverse impacts. In areas of potential adverse effect, mitigation measures will be taken to avoid or minimize them.

Under the alternative existing master plan, higher density development would occur, centered around one golf course and somewhat less coastal area. Current and projected market demand suggests that the alternative is less economically viable, given Mauna Lani Resort, Inc.'s desire to develop a luxury resort. Utilization of only currently designated Urban District land for such a purpose is deemed not feasible.

## **5.6 COASTAL HAZARDS**

Along the Mauna Lani Resort shoreline are areas subject to potential hazards from storm waves and tsunamis. Development along the coast will conform to the requirements of the Federal Flood Insurance Program and will incorporate measures to protect against these hazards. Erosion will be controlled to avoid any impacts on coastal waters.

## **5.7 MANAGING DEVELOPMENT**

This EIS is a tool for communicating the impacts of the revised Mauna Lani Resort master plan at an early stage of planning. It is intended to facilitate participation in the planning and review process. As outlined in Chapter I, the proposed plan will require many permits before it can be implemented. These will afford numerous *opportunities for the Hawai'i Coastal Zone Management Program* network authorities to place conditions on the project which will assure the proper management of coastal zone resources. Under the existing master plan, there would be fewer opportunities for public participation in the planning and review process.

## 6. COUNTY SPECIAL MANAGEMENT AREA

The entire Mauna Lani Resort property falls within the "Special Management Area" (SMA) and is therefore subject to the SMA Rules and Regulations of the County of Hawai'i. The existing master plan for the resort has received SMA approval. An application for an SMA permit has been submitted for the two golf holes and public shoreline access and park near Pauoa Bay. All conditions, as revised, of the previous permit would still remain in effect. Following is a discussion of the relationship of the revised Mauna Lani Resort master plan to the SMA guidelines in the Hawai'i County Planning Commission's Rule No. 9. The guidelines are summarized and brief comments following note the extent to which the revised master plan is believed to be consistent with them.

Guideline A.1. This guideline seeks to minimize alterations to any body of water.

Comment: There are no current plans to alter the anchialine ponds or fishponds within the Mauna Lani Resort. See discussion in Section 1.6 of Chapter IV.

Guidelines A.2 and 3. These guidelines seek to minimize reductions in the availability and/or access to beaches and other recreational areas and shoreline areas due to development.

Comment: The revised Mauna Lani Resort master plan would increase the availability of shoreline recreational resources and access to them.

Guideline A.4. This guideline concerns the visual impacts of the proposed development.

Comment: Most of the development in the revised master plan remains at a distance of a half mile or more from Queen Ka'ahumanu Highway, and thus will not substantially detract from the line of sight between the highway and the sea. Structures will be softened by landscaping which will contrast with the adjacent lava-dominated environment.

Guideline A.5. This guideline aims at minimizing development that adversely affects water, scenic, or wildlife resources, or that adversely affects existing or potential agricultural uses of the land.

Comment: The water, scenic, and wildlife resources of the Mauna Lani Resort are planned to be incorporated into the development and adverse impact on them avoided. Only a small portion of the revised master plan occurs on designated agricultural land and the potential of this land has been rated as low. See further discussion in Chapter IV.

Guidelines B.1,2 and 3. These guidelines state that no development shall be approved unless it has no significant adverse environmental effects, and is found consistent with Chapter 205A, HRS, the Hawai'i County General Plan, the Hawai'i County Zoning and Subdivision Codes, and other applicable ordinances.

Comment: This EIS analyzes the potential of the revised master plan to create adverse effects and outlines the mitigation measures that will be taken to avoid them or minimize them to insignificant levels. The plan's consistency with Chapter 205A, HRS and with the Hawai'i County General Plan is discussed, respectively, in Section 5 above, and Section 7 following. Applications for zoning amendments and resubdivision will be submitted to the County upon approval of the redistricting request and Conservation District Use Application. These and all applicable ordinances will be complied with.

Guideline C.1 and 2. These guidelines seek to ensure access to beaches, recreation areas, and natural reserves, and to ensure that adequate recreation and wildlife preserves are maintained.

Comment: Access will be improved and a shoreline park will be provided under the revised master plan. Anchialine ponds, fishponds and such wildlife resources are planned to be preserved.

Guideline C.3. This guideline concerns solid and liquid waste management.

Comment: These issues are discussed in Sections 6.7 and 6.6 of Chapter IV.

Guideline C.4. This guideline seeks to minimize adverse impacts resulting from alterations to existing landforms and vegetation.

Comment: No specific grading plans for development sites have been prepared, but the revised master plan will allow low density development that utilizes existing landforms. The new golf course, like the existing one is planned to utilize interesting landforms as visual features. There is generally sparse or no vegetation cover within the resort development areas.

Guideline C.5. This guideline seeks to minimize adverse environmental or ecological impacts due to the project.

Comment: Mauna Lani Resort, Inc. is committed to minimizing adverse impacts. Moreover, the multi-level review and permit process that the plan must undergo before it is implemented will ensure that mitigation measures are made conditions to development.

Guideline C.6. This guideline states that the proposed project must be consistent with the General Plan.

Comment: As outlined in the following section, the revised master plan is consistent with the Hawai'i County General Plan.

## 7. HAWAII COUNTY GENERAL PLAN

The Hawai'i County General Plan (Hawai'i, County of, 1971 as amended) contains both a set of policies and land use maps showing the location of desired land uses for the entire island. The latter are referred to as "Land Use Pattern Allocation Guide Maps" (LUPAG maps). A mixture of resort, medium density urban, low density urban, open, and alternate urban expansion designations are shown within the Mauna Lani Resort boundaries on the General Plan LUPAG map (see Figure II-3). The General Plan (p. 77) states that for the LUPAG maps "the boundaries indicated are long-range guides to general location." On the following page the same idea is reiterated:

The land use pattern is a broad, flexible design intended to guide the direction and quality of future developments in a coordinated and rational manner. The General Plan Land Use Pattern Allocation Map indicates the general location of various land uses in relation to each other emphases added.

The County has indicated that in its General Plan revision program that it will designate as industrial on the LUPAG map the area of the Mauna Lani Resort that contains the wastewater treatment plant and resort service facilities. The proposed master plan is consistent with the LUPAG map of the County General Plan.

It is also consistent with the policies of the General Plan. The Mauna Lani Resort is on the list (as Puako-Honoka'ope Bay) of "major" resorts in the Land Use element (p. 79) of the General Plan. It meets the requirements for a major resort:

A major resort area is a self-contained resort destination area which provides basic and support facilities for the needs of the entire development. Such facilities shall include sewer, water, roads, employee housing, and recreational facilities, etc.

The basic infrastructure has been provided at the Mauna Lani Resort, including sewer, water, and road systems. Mauna Lani Resort, Inc. has participated with the Hawai'i Housing Authority in providing housing in Waimea suitable for employees. It is expected that additional requirements for employee housing will be established as hotel parcels are developed. Several active and passive recreational areas have been developed at the Mauna Lani Resort and a shoreline park is proposed to be constructed and maintained by the resort on the land leased from the State. The 3,000 hotel-room limit established by the General Plan would not be exceeded under the proposed master plan. Similarly, the limit on the number of multiple residential units (3,182), specified in the approved 1978 SMA amendment application would remain unchanged.

## 8. HAWAII COUNTY ZONING

The first major County rezoning was granted to Mauna Loa Land, Inc. (the predecessor of Mauna Lani Resort, Inc.) in 1976 for the 778 acres that had Urban designation. Additional rezonings were approved in 1978, 1980, and 1983 for adjustments in parcel boundaries. The request submitted to the State Land Use Commission (SLUC) to designate an additional 654 acres in the Urban district is the major reason for this Environmental Impact Statement. Figure II-5 shows the proposed master plan; and the existing and proposed land use acreages are tabulated in Chapter II. If the SLUC grants the Urban designation for additional acreage, a rezoning application will be filed with the Hawai'i County Planning Department. The additional Urban District land would need rezoning; and some adjustments in zoning parcel boundaries in the existing Urban area would also be sought.

None of the conditions of rezoning now in effect would have to be changed except that the reference to "File Exhibit 2" which is the accepted Environmental Impact Statement and "File Exhibit 3" which is the revised development plan, would have to be amended to reflect this Environmental Impact Statement, rather than the 1975 EIS, and the new master development plan which corresponds to the larger Urban area as granted by the SLUC.

## 9. PLANS OF NEARBY COMMUNITIES

No regional plan has been prepared for South Kohala. The following plans were examined to note the role of the South Kohala resorts in the planning of nearby communities.

### 9.1 NORTH KOHALA COMMUNITY DEVELOPMENT PLAN

There are numerous references in the North Kohala Community Development Plan (Phillips Brandt Reddick, November 30, 1984) to the employment opportunities and economic base which the South Kohala resorts have provided for North Kohala residents. It is reiterated several times that South Kohala tourism development filled the gap left by the closure of the sugar plantation in North Kohala. And in turn, the South Kohala resorts have depended upon North Kohala as a source of employees.

A certain amount of growth in residential housing for visitor industry employees is expected in North Kohala, but the specific locations for such housing have not yet been determined.

The plan mentions the need for expanded public bus service between the North Kohala towns and the South Kohala resorts.

### 9.2 KONA REGIONAL PLAN

The Kona Regional Plan (Hawaii, County of, Planning Department, November 28, 1983) has references to the South Kohala resorts only in the Economic Activities and Land Use chapters. The relationship between the visitor facilities in the Kona and Kohala districts is noted several times. The competition that the destination resorts in South Kohala will pose for Kona's visitor industry is stressed. The opportunities for industrial expansion in the area north of Kailua are mentioned, fueled by both the South Kohala resorts and Kona's visitor market/population growth. Indirect employment opportunities related to the industrial and service sectors that the South Kohala resorts will create for Kona residents are in addition to the direct jobs the resorts will provide.

The economies of the Kohala and Kona Districts will become more and more interdependent, particularly as both are based largely on a growing tourism industry. Coordination in the area of land use planning is recognized as a desirable corollary. Also recognized as desirable is the firm establishment of planned resorts before the development of additional areas for the same purposes.

### 9.3 WAIMEA DESIGN PLAN

The Waimea Design Plan has not yet been officially adopted by the County Council. However, its contents have been examined for relevancy to the Mauna Lani Resort plan. The Waimea plan makes one brief mention of the prospects for Waimea's continued growth in light of resort development on the leeward coast of the island. Mauna Lani Resort's revised master plan does not conflict with the goals and contents of the Waimea Design Plan.



## CHAPTER VI

### RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The proposed Mauna Lani Resort master plan would not exceed the number of units allowed under the existing master plan; the major difference is the additional land area to be devoted to resort uses, including a second golf course, under the revised plan. Because this area is largely barren lava fields, future options for alternate uses of this land are limited, if any. Thus, the proposed plan is not expected to foreclose future options or to narrow the range of beneficial uses of the environment.

As demonstrated in this document, development of the Mauna Lani Resort does not appear to pose any long-term risks to health and safety. It is obviously in the interest of the developer to provide a healthful, safe and enjoyable experience at the resort.

The accesses and parks proposed in the revised master plan will allow increased use of the area's resources, and represent a long-term gain for the public. Over the long term, a man-made environment will largely replace the natural terrain of lava fields. However, numerous open spaces, especially the golf course corridors and along the shoreline, will be maintained and landscaping will enhance the visual character of the resort.

Other major benefits of the revised master plan will be the enhancement of the long-term economic viability of the resort and the long-term employment and other economic benefits which it will bring to the region. No significant long-term losses of resources are anticipated. Detailed plans for the development sites are not yet prepared, however. If the natural or cultural resources on a site cannot be incorporated into the development plans, mitigation measures will be taken to offset the loss.

Growth in population, de facto and resident, will follow resort development at Mauna Lani. This growth will be no higher under the revised master plan than that under the already approved plan. The effects of this growth have already been weighed and the benefits found to offset the impacts.

## CHAPTER VII

### IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Urbanization of additional land area under the revised Mauna Lani Resort master plan will change the natural setting of the sparsely vegetated lava landscape. Most of the common dryland vegetation will be replaced with lush landscaping. However, development will avoid disturbing endemic coastal strand vegetation. Other valued resources of the land, including archaeological sites and anchialine ponds, will be incorporated into the development to the greatest extent possible. Some archaeological sites may be lost, but further archaeological work will be conducted to determine which sites should be salvaged.

Some additional commitment of soil for the second golf course and additional development sites is involved. However, this will not result in a significant depletion in the island's soil resource.

There will be an increase in the capital expended by the developer for the resort, due especially to the second golf course and more extensive infrastructure system. The revised master plan should not create any further commitments for government-supplied services and facilities than the already approved development plan.

## CHAPTER VIII

### OFFSETTING CONSIDERATIONS OF GOVERNMENTAL POLICIES

No significant adverse effects are expected to result from the revised Mauna Lani Resort master plan. There are some minor impacts, but these are more than offset by the benefits the project will offer. State and County plans have encouraged quality resort development along this coast. The public infrastructure is largely in place to support it. The additional acreage requested for Urban designation and the use of the Conservation land leased from the State are necessary to assure a quality destination resort.

Analysis of the public revenues and the public expenditures the resort will generate (see Section 2.2.6) indicates that the cost/benefit ratio is favorable. While this analysis did not incorporate environmental costs, the environmental impacts of the revised master plan are not major.

The revised master plan will develop no more units than are allowed under existing government approvals. Thus, the impacts relate largely to the direct effects on the additional land area used by the revised master plan, due largely to the need for the second golf course. Although the existing lava-dominated landscape will be transformed into a resort environment, the important resources of this land (including anchialine ponds, endemic biota, and significant archaeological sites) are expected to be preserved.

Some archaeological sites will probably be lost. However, further archaeological work, including salvage excavations, will be performed if deemed appropriate by DLNR and the Hawai'i County Planning Department. This archaeological work, plus the establishment of the Puako Petroglyphs Archaeological Park and the previously established archaeological preservation and interpretation program at Mauna Lani Resort, will fulfill the implementing actions of several of the State functional plans which call for access to and interpretation of archaeological resources to foster visitors' and residents' understanding of Hawai'i's history.

The government policies calling for increased access to the shoreline and increased recreational opportunities are also met in the revised Mauna Lani Resort master plan. The archaeological preserves, the shoreline accesses, lateral trail, and park are recreational benefits that offset the use of State land for two golf holes.

As discussed in Chapter 5, the revised master plan is consistent with all relevant government plans and policies. It would fulfill the goals of the State Plan which call for economic growth that maintains a desired physical environment and that meets the needs of Hawai'i's people.

CHAPTER IX  
UNRESOLVED ISSUES

The State Land Use District Boundary Amendment request which this environmental impact statement accompanies is the first of many approvals which must be obtained before the revised master plan can be implemented. Others are listed in Chapter I, Section 5. This document identifies in conceptual terms the outstanding issues that must be addressed before construction can begin or be carried to completion, but many of the details remain to be worked out. The most important of these issues are identified below. None of them constitute areas of real controversy at the present time; rather, it is simply too early in the development process for a final course of action to be settled upon. It is believed that all of them can be resolved without undue difficulty.

- (1) Availability of Adequate Employee Housing. Implementation of the revised master plan would generate essentially the same number of construction and operational job opportunities as the existing master plan. In both instances, ongoing development of the Mauna Lani Resort will generate a demand for a substantial amount of additional housing in West Hawai'i. It is believed that the private housing market is capable of satisfying most of this demand, but some assisted housing will probably be necessary. Mauna Lani Resort, Inc. is presently working with the Hawai'i County Housing Authority, the County Planning Department, and the County Council to develop and implement an employee housing action plan, which essentially is aimed toward the goal of working toward increasing the supply of available housing in the housing in the region. Mauna Lani Resort, Inc. has also held talks with the State Hawai'i Housing Authority.
- (2) Location of Off-Site Population Growth and Facilities. The Mauna Lani Resort master plan described in this document specifies the location of all on-site development. The exact location of the off-site growth which occurs in response to this cannot be determined at this time, however. As growth trends become more clear cut, public facilities needed to serve the expanding population will need to be developed.
- (3) Transportation Improvements. As development at Mauna Lani and surrounding resort projects continues and traffic volumes increase, existing roadways will become congested. Eventually, it will be necessary to improve the Mauna Lani Drive/Queen Ka'ahumanu Highway and Kaniku Drive/Mauna Lani Drive intersections and to widen portions of Mauna Lani Drive and Queen Ka'ahumanu Highway. The need for improvements to Queen Ka'ahumanu Highway is a function of projected regional growth, not just the Mauna Lani Resort itself. The exact design of these improvements and the year in which they will be necessary has not been determined at this time.
- (4) Compliance With State Ambient Air Quality Standards. The analysis conducted for the EIS indicates the potential for ambient air quality violations in the vicinity of major intersections if no improvements are made to accommodate the increased traffic flow that is expected. This is due to the queuing that would otherwise occur. So long as the roadway improvements noted under (3) above are implemented, it will be possible to comply with standards.

- (5) Traffic Noise. The noise analysis conducted for the EIS indicated that existing setbacks from roadways would insure that traffic noise levels within residential areas of the resort remained below the 65 Ldn level used as an acceptability criteria by Federal agencies. However, it indicated the possibility that traffic noise would exceed the preferred 55 Ldn level along the perimeter of a few parcels adjacent to Kaniku Drive. Provision of additional setback from the roadway, noise attenuating berms, or other measures could be used to avoid this potential problem.
- (6) Historic/Archaeologic Sites Preservation. Mauna Lani Resort, Inc. has made a major effort to investigate and, where appropriate, to preserve, the historic remains present within the resort boundaries. Further archaeological salvage work may be necessary as development continues, however, and this will be undertaken on a parcel-by-parcel basis. Until it is completed, the disposition of individual sites and artifacts will not be known.
- (7) Decline In Abundance of Certain Marine Fauna. A few observers claim to have noticed a decline in the abundance of some species of fish along the shoreline of the resort. This has been attributed to over-fishing and collecting facilitated by the improved shoreline access provided by the resort rather than to changes in water quality. Neither the accuracy of these assertions nor possible corrective measures has been determined at this time.
- (8) Extension of Lease on State-Owned Land. The portion of the resort site north of Pauoa Bay is leased by Mauna Lani Resort, Inc. from the State of Hawai'i. The lease will expire in approximately ten years, and it will have to be put out for public bid at that time. Construction of the proposed golf course and public beach park constitutes a long-term commitment of resources on the part of the petitioner; before making it, a new lease will be sought. This will be done by surrendering the remainder of the existing lease and asking the Department of Land and Natural Resources to put a 50-year lease for the area out to bid. Anyone may submit bids on the parcel, and there is no certainty that Mauna Lani Resort, Inc. will be successful in its efforts to secure a new lease. If it is not, plans for the second golf course and adjacent development will need to be revised. Mauna Lani Resort, Inc. will attempt to resolve this leasing issue immediately following positive action (if such is taken) on this redistricting request.

## CHAPTER X

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## CHAPTER XI

### PARTIES CONSULTED AND THOSE WHO PARTICIPATED IN THE PREPARATION OF THE EIS

#### 1. CONSULTED PARTIES

The notice of availability of the EIS Preparation Notice (EISPN) for the Mauna Lani Resort revised master plan was published in the OEOC Bulletin by the Office of Environmental Quality Control on December 8, 1984. The agencies, organizations, and individuals listed below were sent copies of the EIS Preparation Notice (EISPN) with the Environmental Assessment (EA) and were asked to comment on the project. Everyone believed to have an interest in the project or who requested consulted party status was included in the mailing. Those who responded to the request for comments are marked with an asterisk and copies of the correspondence with them are reproduced in Chapter XII.

#### Federal Agencies

- \* U.S. Army Corps of Engineers, Pacific Ocean Division
- \* U.S. Department of Agriculture, Soil Conservation Service
- \* U.S. Department of Commerce, National Marine Fisheries Service - Honolulu
- \* U.S. Department of Energy
- U.S. Department of Health and Human Services
- \* U.S. Department of Housing and Urban Development
- U.S. Department of the Interior
- \* Fish and Wildlife Service
- \* Geological Survey, Water Resources Division
- U.S. Department of Labor, Occupational Safety & Health Administration
- U.S. Department of Transportation
- \* Federal Aviation Administration
- \* Federal Highway Administration
- \* U.S. Coast Guard
- U.S. Environmental Protection Agency, Region IX - San Francisco

#### Congressional Representatives

- The Honorable Daniel K. Inouye
- \* The Honorable Spark M. Matsunaga
- The Honorable Daniel K. Akaka
- The Honorable Cecil Heftel

#### State Agencies

- \* Department of Accounting and General Services
- \* Department of Agriculture
- \* Department of Budget and Finance
- \* Department of Defense
- \* Department of Education
- \* Department of Hawaiian Home Lands
- \* Department of Health

**State Agencies** (continued)

- \* Department of Labor and Industrial Relations
- \* Department of Land and Natural Resources
- \* Department of Planning and Economic Development
- \* Department of Social Services and Housing
- \* Department of Taxation
- \* Department of Transportation
- \* Office of Environmental Quality Control
- Office of the Governor
- Office of Hawaiian Affairs

**State Legislators**

Senator Richard Henderson  
Senator Richard M. Matsuura  
Senator Malama Solomon  
Representative Virginia Isbell  
Representative Andrew Levin  
Representative Robert Lindsey  
Representative Wayne Metcalf  
Representative Harvey Tajiri  
Representative Dwight Takamine

**Hawaii County**

- Mayor - Dante K. Carpenter  
Civil Defense Agency
- \* Department of Parks and Recreation
  - \* Department of Public Works
  - Department of Research and Development
  - \* Department of Water Supply
  - Finance Department
  - \* Fire Department
  - Hawaii Redevelopment Agency
  - Office of Housing and Community Development
  - \* Planning Department
  - \* Police Department
  - Safety Coordinator

**Hawaii County Council**

James L.K. Dahlberg  
Frank De Luz, III  
Takashi Domingo  
Robert Herkes  
Lorraine Jitchaku  
Russell Kokubun  
Merle K. Lai  
Spencer Kalani Schutte  
\* Stephen K. Yamashiro

Public Utilities

- Hawaii Electric Light Company
- Hawaiian Telephone Company
- \* Gasco Inc., Hawaii Division

Community Organizations and Other Groups/Individuals

- Hawaii Hotel Association
- \* Hawaii Leeward Planning Conference
- ILWU Local 142
- Kohala Community Association
- Life of the Land
- \* Mauna Kea Soil and Water Conservation District
- Moku Loa Group, Hawaii Chapter Sierra Club
- \* Na Ala Hele
- Puako Community Association
- Gerald Rothstein
- \* University of Hawaii at Manoa, Environmental Center
- Waimea Hawaiian Civic Club
- Waimea-Kawaihae Community Association
- West Hawaii Committee

2. ORGANIZATIONS AND INDIVIDUALS WHO ASSISTED IN THE PREPARATION OF THIS EIS

The Environmental Impact Statement was prepared for Mauna Lani Resort, Inc. by Belt, Collins & Associates with input provided by subconsultants. The following were involved:

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Steve Dollar  
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Ming Chew Associates  
J.W. Morrow  
Peat, Marwick, Mitchell & Co.  
Y. Ebisu & Associates

Archaeological Survey  
Anchialine Ponds Survey  
Wildlife Survey  
Marine Survey  
Flora Survey  
Social Impact Assessment  
Market Study  
Air Quality Impact Assessment  
Economic and Fiscal Impact Assessment  
Noise Impact Assessment

## CHAPTER XII

### COMMENTS AND RESPONSES DURING THE CONSULTATION PERIOD

The agencies and individuals listed in Chapter XI were all sent copies of the Environmental Impact Statement Preparation Notice (EISPN) with the Environmental Assessment (EA) and a transmittal letter requesting comments. Copies of the EISPN and the transmittal letters sent to these organizations and individuals are reproduced along with copies of our responses to them. Some agencies received individualized transmittal letters, requesting specific information relative to their agency's activities and/or responsibilities. Letters to and from these agencies are reproduced after the group of letters from and to the agencies and individuals responding to the standard transmittal letter.

Standard Transmittal Letter Requesting Comments  
Environmental Impact Statement Preparation Notice

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XII-4

### AGENCIES, ORGANIZATIONS, AND INDIVIDUALS RESPONDING TO THE STANDARD TRANSMITTAL LETTER

#### Federal Agencies

U.S. Army Corps of Engineers, Pacific Ocean Division  
U.S. Department of Agriculture, Soil Conservation Service  
U.S. Department of Commerce, National Marine Fisheries Service  
U.S. Department of Energy  
U.S. Department of Housing and Urban Development  
U.S. Department of the Interior  
Fish and Wildlife Service  
Geological Survey, Water Resources Division  
U.S. Department of Transportation  
Federal Aviation Administration  
Federal Highway Administration  
U.S. Coast Guard

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#### State Agencies

Department of Accounting and General Services  
Department of Budget and Finance  
Department of Defense  
Department of Hawaiian Home Lands  
Department of Health  
Department of Labor and Industrial Relations  
Department of Land and Natural Resources  
Department of Social Services and Housing  
Department of Taxation  
Office of Environmental Quality Control

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Lawmakers

The Honorable Spark M. Matsunaga XII-37  
Hawaii County Council Chair Stephen K. Yamashiro XII-38

Other Organizations

PRI/Gasco, Inc. XII-39  
Hawaii Leeward Planning Conference XII-40  
Na Ala Hele XII-41  
University of Hawaii at Manoa, Environmental Center XII-43

**AGENCIES SENT INDIVIDUALIZED TRANSMITTAL LETTERS**

(Transmittal letters are reproduced before each comment and response pair. A + indicates no response to the transmittal letter was received.)

State Agencies

Department of Agriculture XII-45  
Department of Education XII-48  
Department of Planning and Economic Development XII-51  
Department of Transportation XII-54

Hawaii County Agencies

Department of Parks and Recreation XII-57  
Department of Public Works XII-59  
Department of Water Supply XII-61  
Fire Department XII-63  
Planning Department XII-65  
Police Department XII-68

Others

+ Gerald Rothstein XII-71  
+ Hawaii Electric Light Company, Inc. XII-72  
+ ILWU Local 142 XII-73  
Mauna Kea Soil and Water Conservation District XII-74

**BILL COLLINS  
& ASSOCIATES**  
Engineers • Planners  
Landscape Architects

December 17, 1984  
88-1940

Page two

As you probably know, the Environmental Impact Statement Regulations stipulate that a written response to requests for comments be made within 30 days of their receipt. It is our hope that you will make every effort to respond within this time period so that no issues are given short shrift simply because they are raised belatedly.

If all goes as planned, it is expected that the EIS will be available in May 1985. At that time the document will be circulated for public review and comment.

If you have any questions regarding the project or the kinds of input which would be most helpful to us in preparing the EIS, please call me at 521-5361. I will be happy to provide any additional information and guidance I can.

Sincerely,

Anne L. Mapes

AL:Mill

Attachment

Dear \_\_\_\_\_:

Environmental Impact Statement Preparation Notice  
Mauna Lanii Resort Expansion, South Kohala, Hawaii

Mauna Lanii Resort, Inc. is proposing several changes to the existing Mauna Lanii Resort in South Kohala, Hawaii. These changes include the construction of a second 18-hole golf course and a public beach park, a reduction in the density of residential development by spreading the units over a larger area, and the relocation of an existing hotel site. In addition, it is seeking to eliminate the need for Special Use Permits for existing and proposed support facilities. In order to implement these proposed changes, the petitioner has asked that the Urban District containing the resort be increased by approximately 674 acres. In addition, it is seeking a new lease and Conservation District Use Permit allowing about 40 acres of land north of Pauoa Bay leased from the State to be used for two golf holes and a public beach park.

An Environmental Impact Statement Preparation Notice (EISP/N) announcing the intention to prepare an EIS in accordance with Chapter 343, Hawaii Revised Statutes, was published in the December 8, 1984 issue of the Office of Environmental Quality Control Bulletin. Copies of the EISP/N and the environmental assessment (EA) on which it was based are attached to this letter for your use. The EA provides a description of the proposed development, the changes in Land Use District boundaries that are being sought, and the existing environment which would be affected. It also summarizes the kinds of impacts that may result and indicates the kinds of additional analyses that are being conducted for the EIS.

We request that you/your organization assist us in preparing the EIS by providing comments on the proposed project as it relates to your jurisdiction and responsibility, special knowledge, or interest. It is our intention that the EIS will explore all aspects of the project's probable impacts, but we hope to devote the bulk of our effort to those issues which are of greatest concern. You could help us accomplish this by indicating in writing the specific questions, issues, and topics you believe should be addressed, the reasons why you believe the requested data and/or analyses are important, and, if applicable, the ways the information we supply will be used in the decision-making process. The more specific you can be, the greater the likelihood that we will be able to respond with satisfaction.

18-00000, 100 S. King Street, Suite 200, Honolulu, Hawaii 96813. Telephone: (808) 521-1111. Fax: (808) 521-1111.  
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LAND USE COMMISSION

Room 104, Old Federal Bldg., 335 Murchison Street  
Honolulu, Hawaii 96813 Telephone 548-4811

December 4, 1984

GEORGE R. ARIYOSHI  
Governor  
WILLIAM W. L. YUEN  
Chairman  
TEDDIE PHEL YALCUMAN  
Vice Chairman

COMMISSION MEMBERS  
Richard B. P. Chey  
Lawrence P. Chu  
Everett L. Chubbuck  
Walter H. Hume  
Robert B. Tenney  
Frederick P. Whittemore  
GORDON Y. FURUTAKA  
Executive Director

CHAPTER 343, HAWAII REVISED STATUTES  
ENVIRONMENTAL IMPACT STATEMENT  
PREPARATION NOTICE FOR MAUNA LAHI RESORT

Project Location: Kalahuihua'a, 'Anaocho'omalu, Maikoloa and  
Lalaalio, South Kohala  
County of Hawaii  
THK 6-8-01: Portion of Parcel 22, 6-8-22: Portion  
of Parcel 1, and 6-9-01: 15, Third Division  
Applicant: Mauna Lani Resort, Inc.  
Accepting Agency: Land Use Commission, State of Hawaii  
Proposed Actions: Redistricting 654 acres of land, 486 acres from  
the Agricultural to Urban District and 168 acres  
from Conservation to Urban.  
Determination: EIS required.

Ms. Letitia Uyehara, Director  
Office of Environmental Quality Control  
550 Halekaunila Street, Room 301  
Honolulu, HI 96813

Dear Ms. Uyehara:

Subject: Environmental Impact Statement Preparation Notice  
for a State Land Use District Boundary Amendment

In accordance with Section 1:31, subsection C, of the Regulations  
of the Environmental Quality Commission, we are filing an Environmental  
Impact Statement Preparation Notice for a State Land Use District  
Boundary Amendment request involving conservation districted lands and  
a copy of the Environmental Assessment.

Sincerely,

GORDON Y. FURUTAKA  
Executive Officer

GVF:gn  
Attachments  
cc: EQC w/attachments  
Benjamin Kudo w/attachment  
Belt, Collins & Associates w/attachment

I. Description of the Proposed Project

Mauna Lani Resort, Inc. is proposing to construct a second 18-hole golf course, provide additional land for residential development around the new golf course, provide a public beach park, permanently accommodate support facilities that have been constructed within the Agricultural District under the Special Permit process, allow for relocation of an existing hotel site at Honoka'ope Bay, and allow for a decrease in the resort's overall density. The proposed changes require expansion of the current Urban District and use of some of the Conservation District land leased from the State of Hawaii.

II. Description of the Affected Environment

The Mauna Lani Resort site is located between the Puako Beach Lots and the Waikoloa Beach Resort along the South Kohala shoreline; it is designated as a "major resort" in the Hawaii County General Plan. Two-thirds of the Resort site is composed of barren lava with little or no soil cover. Most of the site has a hot, arid, desert-like climate. Gulches at the site are normally dry with surface runoff occurring only during heavy rainfall.

Except within the boundaries of the existing golf course and landscaped areas, vegetation is limited to kiawe and scrub brush in areas where lava does not dominate completely. No rare or endangered species of flora or fauna have been observed on the project site.

Archaeological work has been carried out at the Mauna Lani Resort site. The area is rich in archaeological remains. Archaeological preserves have been set aside following guidelines set forth in a management plan for archaeological resources at the Resort, which has been approved by the County.

III. Major Impacts

Implementation of the revised master plan would involve substantial grading, vegetation removal, new construction and other changes to the existing environment on several hundred acres of land. The potential exists for significant effects, including the following:

- o Transformation of the terrain due to grading, importation of soil and landscaping;
- o Change in the visual character of some of the physical environment from barren lava and scrub vegetation to landscaped areas and resort and residential uses;

- o Airborne dust and noise during the construction period;
- o Withdrawal of brackish water for golf course irrigation, with potential impact on groundwater flow near the coastline and on salinity levels;
- o Changes in species composition of flora and fauna;
- o Impacts on archaeological sites that can be mitigated by further research and/or preservation;
- o Improved access to and upgrading of Puako petroglyphs;
- o Improved public access to the shoreline;
- o Increased use of available potable water supplies, as well as public utilities and services;
- o Increased short-term and long-term employment;
- o Increased personal income and business activity;
- o Increased demand for housing; and
- o Increased government revenues and expenditures.

IV. Determination and Supporting Reasons

In conformance with Subsection 1:31 of the State Environmental Impact Statement Regulations (Significance Criteria and Procedures), the Land Use Commission of the State of Hawaii has determined that an environmental impact statement will be prepared in accordance with Chapter 343, HRS.

The proposed resort development has the potential to have significant impacts on the environment because (1) of the extent of lands proposed to be reclassified from Conservation to Urban (168 acres) and (2) the subject Conservation District lands partially abut the shoreline, a potentially sensitive area.

V. Agencies Consulted in Making Assessment

Public agencies and other interested parties will be consulted during the preparation of the EIS.

VI. Parties to be Consulted for the Preparation of the EIS

The agencies and organizations listed below will be sent copies of the EIS Preparation Notice (EISPH) and asked to comment on the project.

Federal Agencies

U.S. Army Corps of Engineers, Pacific Ocean Division  
U.S. Department of Agriculture, Soil Conservation Service  
U.S. Department of Commerce, National Marine Fisheries Service-Honolulu  
U.S. Department of Energy  
U.S. Department of Health, Education, and Welfare  
U.S. Department of Housing and Urban Development  
U.S. Department of the Interior  
Fish and Wildlife Service  
Geological Survey, Water Resources Division  
U.S. Department of Labor, Occupational Safety & Health Administration  
U.S. Department of Transportation  
Federal Aviation Administration  
U.S. Coast Guard  
U.S. Environmental Protection Agency, Region IX - San Francisco

State Agencies

Department of Accounting and General Services  
Department of Agriculture  
Department of Budget and Finance  
Department of Defense  
Department of Education  
Department of Hawaiian Home Lands  
Department of Health  
Department of Labor and Industrial Relations  
Department of Land and Natural Resources  
Department of Planning and Economic Development  
Department of Social Services and Housing  
Department of Taxation  
Department of Transportation  
Office of Environmental Quality Control  
Office of the Governor  
Office of Hawaiian Affairs

Congressional Representatives

The Honorable Daniel K. Inouye  
The Honorable Spark M. Matsunaga  
The Honorable Daniel K. Akaka  
The Honorable Cecil Heftel

State Legislators

Senator Richard Henderson  
Senator Richard H. Matsuura  
Senator Malama Solomon

Representative Virginia Isbell  
Representative Andrew Levin  
Representative Robert Lindsey  
Representative Wayne Metcalf  
Representative Harvey Tajiri  
Representative Dwight Takamine

Hawaii County

Mayor - Dante K. Carpenter  
Department of Public Works  
Department of Parks and Recreation  
Department of Water Supply  
Department of Research and Development  
Fire Department  
Office of Housing and Community Development  
Safety Coordinator  
Civil Defense Agency  
Finance Department  
Hawaii Redevelopment Agency  
Planning Department  
Police Department

Hawaii County Council

James L.K. Dahlberg  
Frank De Luz, III  
Takashi Doelingo  
Robert Herkes  
Lorraine Jitchaku  
Russell Kokubun  
Merle K. Lai  
Spencer Kalani Schutte  
Stephen K. Yamashiro

Public Utilities

Hawaii Electric Light Company  
Hawaiian Telephone  
Gasco Inc., Hawaii Division

Community Organizations and Other Public Interest Groups

Hawaii Hotel Association  
Hawaii Leeward Planning Conference  
Kohala Community Association  
Life of the Land  
Moku Loa Group, Hawaii Chapter Sierra Club  
Ma Ala Hele  
Puako Community Association  
Waimea Hawaiian Civic Club  
Waimea-Kawaihae Community Association  
West Hawaii Committee



DEPARTMENT OF THE ARMY  
U. S. ARMY ENGINEER DISTRICT, HONOLULU  
FT SHAFTER, HAWAII 96858-3440

RECEIVED

JAN 24 1985

ELI, COLLINS & ASSOCIATES

January 21, 1985

Ms. Anne L. Mapes  
Belt, Collins and Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Dear Ms. Mapes:

Thank you for the opportunity to review and comment on the EIS Preparation Notice for Mauna Lani Resort Expansion, South Kohala, Hawaii. The following comments are offered:

a. Any work in tidal waters, tidal pools and/or adjacent wetland may require a Department of the Army permit.

b. The 100-year tsunami inundation limits in the project vicinity are shown in the attached flood insurance rate map for the South Kohala area (Enclosures 2-7). The 100-year tsunami elevation at the site location ranges from 5-8 feet mean sea level, depending upon proximity to the coast. The 100-year flood has a one percent chance of being equalled or exceeded in any given year. The zone designations are defined in Enclosure 1.

While tsunami inundation is of primary concern in this area, shallow flooding along Puako Beach Drive should be considered (see Enclosure 3).

c. The EIS preparation notice does not address the unique anchialine ponds located on the project site. The ponds are found in only two places within the United States, namely the Kona-Kohala coast and near Ahiki Bay, Maui. Given the rare occurrence of these ponds, a discussion in the EIS should include identification of the species found in the ponds, assessment of the impact of project on the ponds and species, and description of any mitigative measures and alternatives to protect the ponds. The EIS should also assess the cumulative impact of project on the anchialine ponds of the Kona-Kohala coast.

d. The EIS should detail the archaeological reconnaissance survey and fully describe the details of the management plan prepared by Science Management Inc. A follow-up intensive archaeological site survey may be required and recommended in the reconnaissance survey. Early coordination with the State Historic Preservation Officer is advised.

e. Cumulative impacts on public facilities such as transportation, recreation and water supply should be discussed in the EIS.

f. Public access and beach access should be detailed. For example, public access routes and public parking should be shown on the maps.

g. The EIS should discuss why the alternative of resiting the hotel at Honokaope Bay was denied by the County.

h. Hawaiian humpback whales and green sea turtles are known to be offshore. These species are federally listed as endangered and threatened, respectively. As a result, the EIS must address the impacts of the project on these species. We suggest early coordination with the National Marine Fisheries Service.

i. Page III-8. The statement, "All reefs appear to be unaffected by shoreline development to date," needs to be clarified. The artificial beach fronting Mauna Lani Bay Hotel has resulted in the accumulation of sand deposits offshore on the reefs which has affected the marine life.

Sincerely,

Kisuk Cheung  
Chief, Engineering Division

Enclosures

**BETH COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

April 10, 1985  
85-607

Mr. Kisuk Cheung  
Chief, Engineering Division  
Department of the Army  
U.S. Army Engineer District, Honolulu  
Fort Shafter, Hawaii 96858

Dear Mr. Cheung:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 21, 1985 regarding the Environmental  
Impact Statement Preparation Notice for the proposed revised development plan for  
Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing  
the Draft Environmental Impact Statement (DEIS) which is expected to be filed in  
May. You will be sent a copy of the DEIS when it is available. We look forward to  
your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:lf

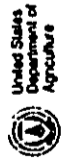
cc: Mauna Lani Resort, Inc.

Honolulu 4951 Kalia Street Honolulu Hawaii 96815 Telephone: (808) 531-1100 Telex: 1031012 BUCS  
Washington, 1411 14th Street, N.W. International Building Washington, D.C. 20004 Telephone: (202) 462-1100

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JAN 10 1985

CELL. CODES : 45502415



Soil Conservation Service

P.O. Box 50004  
Honolulu, Hawaii  
96850

January 9, 1985

Ms. Anne L. Mapes  
Belt Collins & Associates  
606 Coral Street  
Honolulu, HI 96813

Dear Ms. Mapes:

Subject: Environmental Assessment - Mauna Lani Resort Expansion  
South Kohala, Hawaii

We have reviewed the subject document as requested.

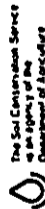
As is recognized in the assessment, blowing dust and dirt during construction will be a major problem. The following procedures are recommended to minimize this problem:

1. The golf course irrigation lines should be laid after shaping the lava, but before hauling in topsoil. This will allow for irrigation of the fill material to reduce blowing soil.
2. Each fairway and green should be vegetated as soon as grading and filling have been completed.
3. Shaping done along the shoreline could result in critical erosion problems if they are not shaped correctly and immediately seeded or planted.

Thank you for the opportunity to review this document.

Sincerely,

*Francis C. H. Lum*  
FRANCIS C.H. LUM  
State Conservationist



BELT COLLINS  
& ASSOCIATES  
Engineering - Planning  
Landscape Architecture

Mr. Francis C.H. Lum  
State Conservationist  
Soil Conservation Service  
U.S. Department of Agriculture  
P.O. Box 50004  
Honolulu, Hawaii 96850

Dear Mr. Lum:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 9, 1985 regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS) which is expected to be filled in May. You will be sent a copy of the DEIS when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:lif

cc: Mauna Lani Resort, Inc.





U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE  
Southwest Region  
Western Pacific Program Office  
P. O. Box 3830  
Honolulu, Hawaii 96812

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F.F.A. 30

REV. QUINN & ASSOCIATES

January 31, 1985

F/SWRI:JJN

Belt, Collins and Associates  
ATTN: Anne L. Hayes  
600 Coral Street  
Honolulu, Hawaii 96813

Dear Ms. Hayes:

Subject: EIS Preparation Notice, Mauna Lani Resort  
Expansion, South Kohala, Hawaii.

The National Marine Fisheries Service (NMFS) has reviewed the subject EIS preparation notice for expansion of the existing Mauna Lani Resort in South Kohala, Hawaii. We offer the following comments for your consideration in preparing the project EIS.

The proposed expansion of Mauna Lani Resort as outlined in the subject document mainly consists of redistricting approximately 650 acres from Agriculture and Conservation to Urban. In addition a number of resort support facilities are proposed for construction. Descriptions of proposed changes and construction are very general, consequently it is difficult for us to assess potential impacts on those resources for which we share responsibility.

Basically our concerns center on proposed development activities (dredging, filling, beach restoration) in coastal waters of the Mauna Lani Resort. The EIS should detail those activities planned for coastal waters and describe the marine environment and fishery resources which potentially will be impacted.

NMFS is also concerned with the potential alteration of the unique anchialine pools found along the Kona and South Kohala coasts of Hawaii. We suggest those pool complex existing within the expansion area be mapped and the biota and habitat values assessed. The developer should make every effort to avoid filling or altering in any way those pools identified as being of high value.

A statement is made in Section 3.4.3 Marine Environment (page III-8) of the Environmental Assessment that "no rare or endangered species were observed at Mauna Lani Resort." We wish to point out that two listed species under NMFS jurisdiction do occur in coastal waters of the resort. These are the threatened green turtle (*Chelonia mydas*), found year round, and the endangered humpback whale (*Megaptera novaeangliae*), which occurs seasonally in nearshore waters.

Thank you for the opportunity to review the proposed expansion activities at this early stage.

Sincerely yours,

*Doyll E. Gates*  
Doyll E. Gates  
Administrator

cc: F/SWR, Terminal Is., CA  
F/MA, Washington, D.C.  
Corps of Engineers, Hawaii  
FMS, Honolulu

**BEIT, COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

April 10, 1985  
85-623

Mr. Doyle E. Gates, Administrator  
National Marine Fisheries Service  
Southwest Region  
Western Pacific Program Office  
U.S. Department of Commerce  
P.O. Box 3830  
Honolulu, Hawaii 96812

Dear Mr. Gates:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 31, 1985 regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS). As you pointed out in your letter, the proposed changes and construction at Mauna Lani Resort are described in general terms in the Environmental Assessment. While some additional information regarding the development plan will be included in the DEIS, detailed site plans for the many parcels which make up the resort are not available at this early stage in the development process.

At this point, Mauna Lani Resort, Inc. is not proposing any coastal modification. If any changes are sought at a later date, the resulting probable impacts will be addressed as part of the normal permitting and approval process. At such time, you would have the opportunity to review the project and provide your comments.

The DEIS is expected to be filed in May and you will be sent a copy when it becomes available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:lf

cc: Mauna Lani Resort, Inc.

Honolulu: 608 Coral Street, Honolulu, Hawaii 96813, Telephone (808) 531-5161, Telex BEITH 74 80074  
Singapore: 111 Orchard Road, #12-06, International Building, Singapore 0923, Telephone 235 6870, Telex RS 50464 RCI 51N

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JAN -7 1985

BILL COLLINS & ASSOCIATES

Engineering - Planning  
Architecture

April 10, 1985  
85-603



UNITED STATES  
DEPARTMENT OF ENERGY  
P.O. BOX 50168  
HONOLULU, HAWAII 96850

January 4, 1985

Mr. John W. Shupe, Director  
U.S. Department of Energy  
P.O. Box 50168  
Honolulu, Hawaii 96850

Dear Mr. Shupe:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Ms. Anne L. Mapes  
Bill, Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Dear Ms. Mapes:

Thank you for providing me the opportunity to study the Environmental Assessment for the Mauna Lani Resort project. A rapid review of this document suggests that there will be no significant energy impacts associated with this project, so there are no specific questions or critical issues which the Department of Energy wishes to raise.

One suggestion that I would like to present for your consideration -- which I imagine is already under review by your company -- is maximum use of renewable energy resources and energy efficient designs in all aspects of the development. An excellent current reference on the potential of the renewable technologies was released this week by the Hawaiian Electric Company, entitled "Alternate Energy Development Efforts."

Sincerely yours,

*John W. Shupe*

John W. Shupe  
Director

Thank you for your letter of January 4, 1985 regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS) which is expected to be filed in May. You will be sent a copy of the DEIS when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*

Anne L. Mapes

ALM:llf

cc: Mauna Lani Resort, Inc.

Hawaiian Electric Company, Honolulu, Hawaii, 96813, Telephone: 808-531-2000, Telex: 808-531-2000  
Newspaper: Bill Collins & Associates, International Building, Suite 606, 606 Coral Street, Honolulu, Hawaii 96813



U.S. Department of Housing and Urban Development  
Honolulu Area Office, Region IX  
300 Ala Moana Blvd., Room 3318  
Honolulu, Hawaii 96850

January 15, 1985

Ms. Anne L. Mapes  
Belt Collins & Associates  
606 Coral Street  
Honolulu, HI 96813

Dear Ms. Mapes:

SUBJECT: Environmental Impact Statement Preparation Notice  
Mauna Lani Resort Expansion, South Kohala, Hawaii

The development of a major resort destination area at the scale proposed for Mauna Lani creates many jobs. Most of these jobs are oriented to provide support services to the hotel and the residential areas to be developed.

The expansion of employment opportunities at this development and other resort areas in the area may require additional housing units to accommodate persons and families who wish to work in the area.

The assessment of employee housing needs, number of units, prices and location for the entire development would be useful to governmental agencies concerned with land use and housing programs.

XII-13

**BELT, COLLINS  
& ASSOCIATES**  
Engineering - Planning  
Landscape Architecture

Mr. Robert K. Fukuda  
Manager, 9.25  
U.S. Dept. of Housing & Urban Development  
Honolulu Area Office, Region IX  
300 Ala Moana Boulevard, Room 3318  
Honolulu, Hawaii 96850

Dear Mr. Fukuda:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 14, 1985 -- Letter No. 85-17 in your reference system -- regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS). We plan to address the issue of employee housing needs to the extent practicable at this stage of planning. The number of employee housing units needed, as well as their general location, can be projected given the current proposed development. However, we feel that your concern about housing prices can be more adequately addressed in future housing studies as individual projects are implemented at Mauna Lani Resort.

The DEIS for Mauna Lani Resort expansion is expected to be filed in May and you will be sent a copy when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,  
*Anne L. Mapes*  
Anne L. Mapes

ALM:if

cc: Mauna Lani Resort, Inc.  
Peat, Marwick, Mitchell & Co.

Honolulu 606 Coral Street, Honolulu, Hawaii 96813 Telephone (808) 521-5363 Telex RELUH 743472  
Singapore 301 Orchard Road, #12-06, International Building Singapore 0521 Telephone 235 6870 Telex RS 50464 BC 1572

April 10, 1985  
85-627

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JAN 17 1985

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT



United States Department of the Interior

FISH AND WILDLIFE SERVICE  
100 ALA MOANA BOULEVARD  
P. O. BOX 50157  
HONOLULU, HAWAII 96811

RECEIVED

ES  
ROOM 6307  
JAN 1 1983

Belt, Collins, and Associates  
Attn: Anne L. Mapes  
606 Coral Street  
Honolulu, Hawaii 96813

Re: Environmental Impact Statement Preparation Notice  
and Environmental Assessment (EA) for the Mauna  
Lani Resort Expansion, South Kohala, Hawaii

Dear Ms. Mapes:

We appreciate this opportunity to comment in advance of the proposed expansion of the Mauna Lani resort. We have reviewed the referenced documents and offer the following comments for your consideration.

It is our understanding that the proposed resort expansion includes redistricting 486 acres of agricultural to urban and 168 acres from Conservation to Urban districts, developing a second 18-hole golf course, developing a public beach park, accommodating support facilities that have been constructed within the Agricultural District, relocating Hotel 4 at Honokaope Bay, and reducing the density within the residential and hotel areas. The magnitude of the development would remain within the 3,000-room hotel and 3,182 residential unit County limit.

Our concerns are focused on the potential impacts of these facilities on coastal water quality and nearshore marine resources. Specifically, we suggest that the EIS fully evaluate the effects of increased shoreline access and activity on nearshore fisheries; the impacts of increased effluent discharge; and potential loss and/or degradation of anchialine pools, wetlands, and its effects on anchialine organisms and migratory shorebirds.

The EA states that the results of a 1981 biological assessment and 1983 baseline study found "no observed changes in the chemical or biological character of the offshore environment" that were attributable to the development of the resort. The EIS would be greatly enhanced if the results of the 1981 and 1983 studies were included as appendices. The EIS should also discuss the drainage designs for containing surface runoff.



Save Energy and You Serve America!

To the best of our knowledge, there are no Federally listed endangered or threatened plant species at the affected sites. We expect, however, several native coastal plant species to be found in the area. It is our understanding that a botanical survey is currently being conducted.

Pg. III-7-8 states that there are no reports of the Hawaiian hoary bat (*Lasiurus cinereus semotus*) being seen in the South Kohala coastal area. However, on September 1984, a dead Hawaiian hoary bat was found on the grounds of the Sheraton Royal Waikoloa (An Avifaunal and Feral Mammal Survey of Waikoloa Resort Property, Hawaii, P. Brunet, Director, Museum of Natural History). Additional information regarding use of the area by the Hawaiian hoary bat may be available from the State of Hawaii Division of Forestry and Wildlife.

Pg. III-8 The scientific name for the feral goat should be Capra hircus Linnaeus.

Pg. III-8 3.4.3 Marine Environment states, "No rate or endangered species were observed at Mauna Lani Resort." It is unclear whether this refers to marine species only or to both marine and terrestrial organisms. We suspect that the Federally listed threatened green sea turtle (*Chelonia mydas*) and the Federally listed endangered hawksbill turtle (*Eretmochelys imbricata*) and the humpback whale (*Megaptera novaeangliae*) utilize the offshore areas. Based on the results of Bruner's survey of Waikoloa, it is likely that the Federally listed endangered Hawaiian hoary bat occasionally visits the proposed affected areas. This statement should be clarified.

Based on the Fish and Wildlife Service's National Wetland Inventory maps and the results of an aquatic survey of the Kona coast ponds (J.A. Maciolek and R.B. Brock, Aquatic Survey of the Kona Coast Ponds, Hawaii Island, 1974), it appears that both anchialine pools and estuarine-like wetlands are present between Pauoa Bay and the existing Mauna Lani Bay Hotel, along Haawa Point, and on the south side of Honokaope Bay. Moreover, Maciolek and Brock have identified these pools (Lahuipuaa complex) as "pond sites of significant aquatic natural value." It appears from Figure II-2, Proposed Master Plan Mauna Lani Resort, that the Hotels 1, 2, 3, and the beach club are sited along the anchialine pools that stretch between Pauoa Bay and the existing resort. It is unclear from Figure II-2 what the design siting of these facilities will be and whether they will impact this anchialine pool complex.

The Service suggests that the Lahuipuaa anchialine pool complex be mapped and a biological assessment conducted. This will be valuable in determining alternative sites for the proposed hotels and beach club that could avoid the pools.

The anchialine pool habitat is restricted to sections of the Kona and South Kohala coasts of the Big Island and around Cape Kinau on Maui. Many of the organisms utilizing these pools,

particularly the crustaceans, are unique to Hawaii and are restricted to these anchialine pools. In accordance with our National Mitigation Policy, the Service considers the anchialine pools to be a Resource Category 1 habitat. Resource Category 1 habitats are considered to be of high value for the evaluation species and are unique and irreplaceable on a national basis or in the ecoregion section. The mitigation goal for such habitats is no loss of existing habitat value (Federal Register, Vol. 46, No. 14, January 23, 1981).

The Service believes that the most desirable alternative regarding the anchialine pools and the proposed Mauna Lani resort expansion is for the developer to avoid filling in or otherwise modifying the anchialine pools. This strategy would have many advantages for the developer. It may significantly reduce the time between site planning and ground-breaking by avoiding or expediting the permitting process, by reducing opposition to the project, and by limiting the number of controversial issues that will need discussion and resolution in the Environmental Impact Statement. Besides protecting a unique biological resource, the pools would provide a natural esthetic amenity to the resort. Because the proposed expansion is at the conceptual stage, design alternatives that avoid impacting the anchialine pools could be considered. The Service would be happy to assist the developer and their agents in identifying possible alternatives that would avoid the anchialine pools.

If the proposed resort expansion cannot be sited so as to avoid the anchialine pools and requires that some of the pools be modified, the Service may recommend that some form of in-kind habitat compensation be provided. This compensation could include designating key on-site anchialine pool habitats to be preserved in perpetuity and/or the preservation of other important anchialine pool habitats along the Kona/South Kohala coast.

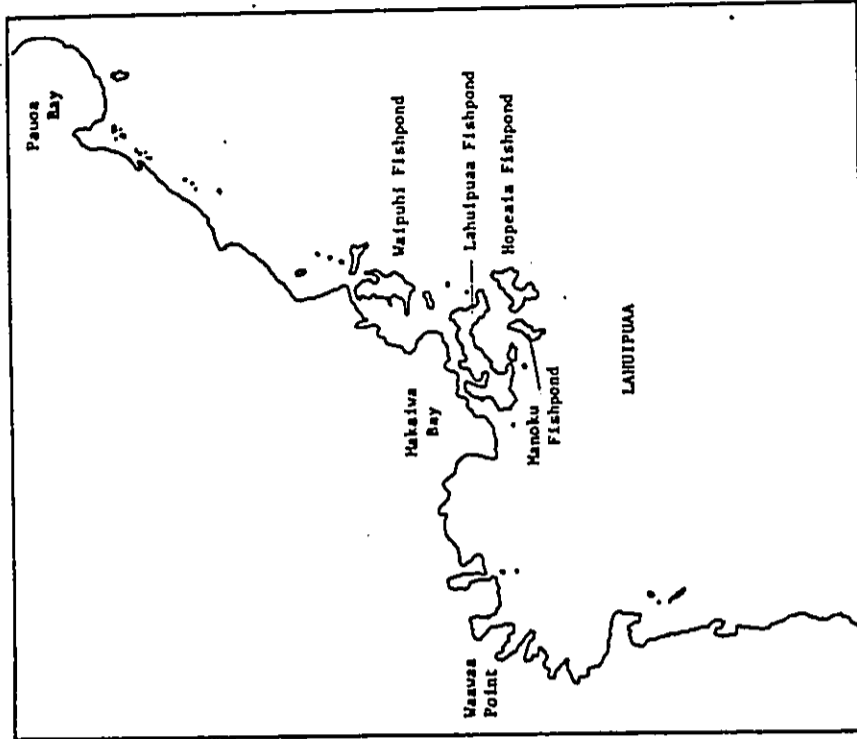
We appreciate this opportunity to comment.

Sincerely yours,

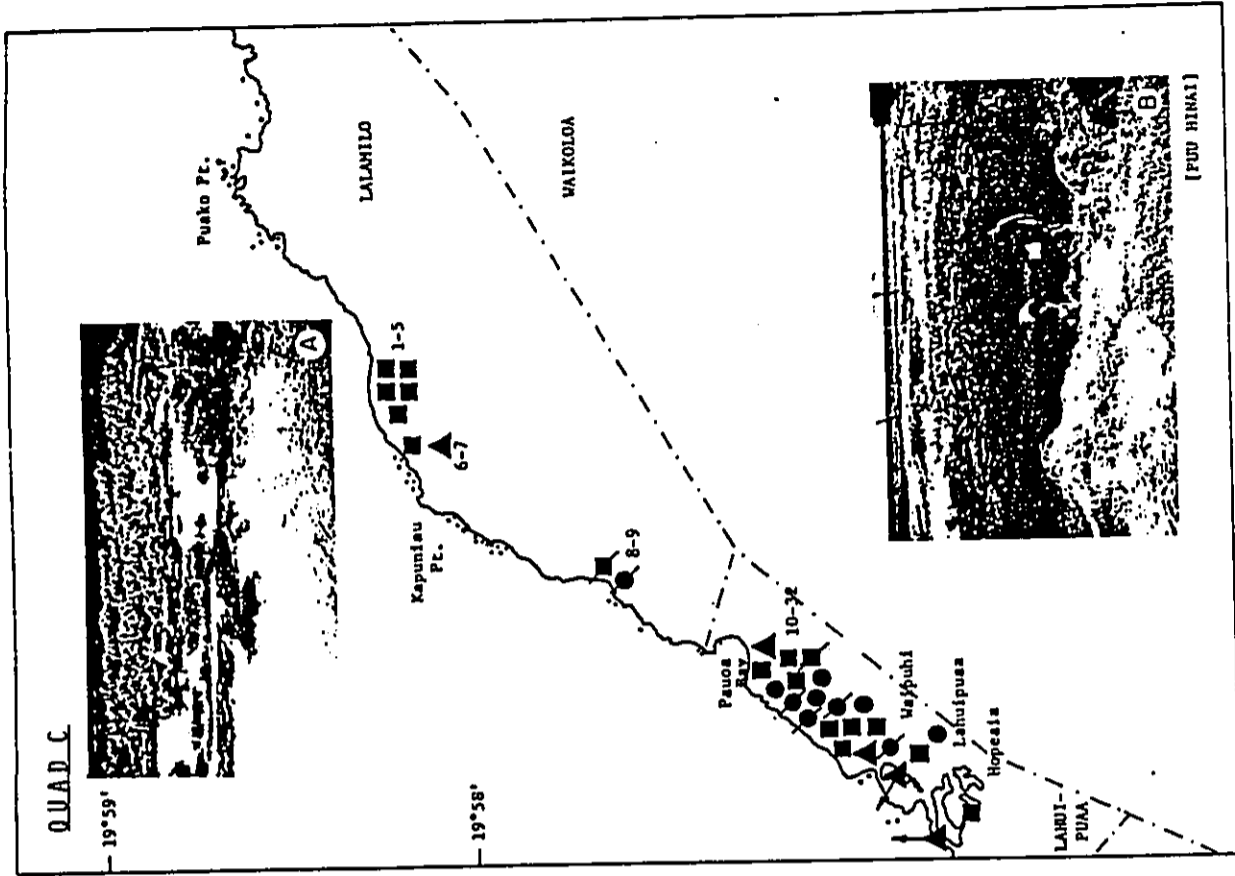
*Ernest Kosaka*  
Ernest Kosaka  
Project Leader  
Office of Environmental Services

Enclosures

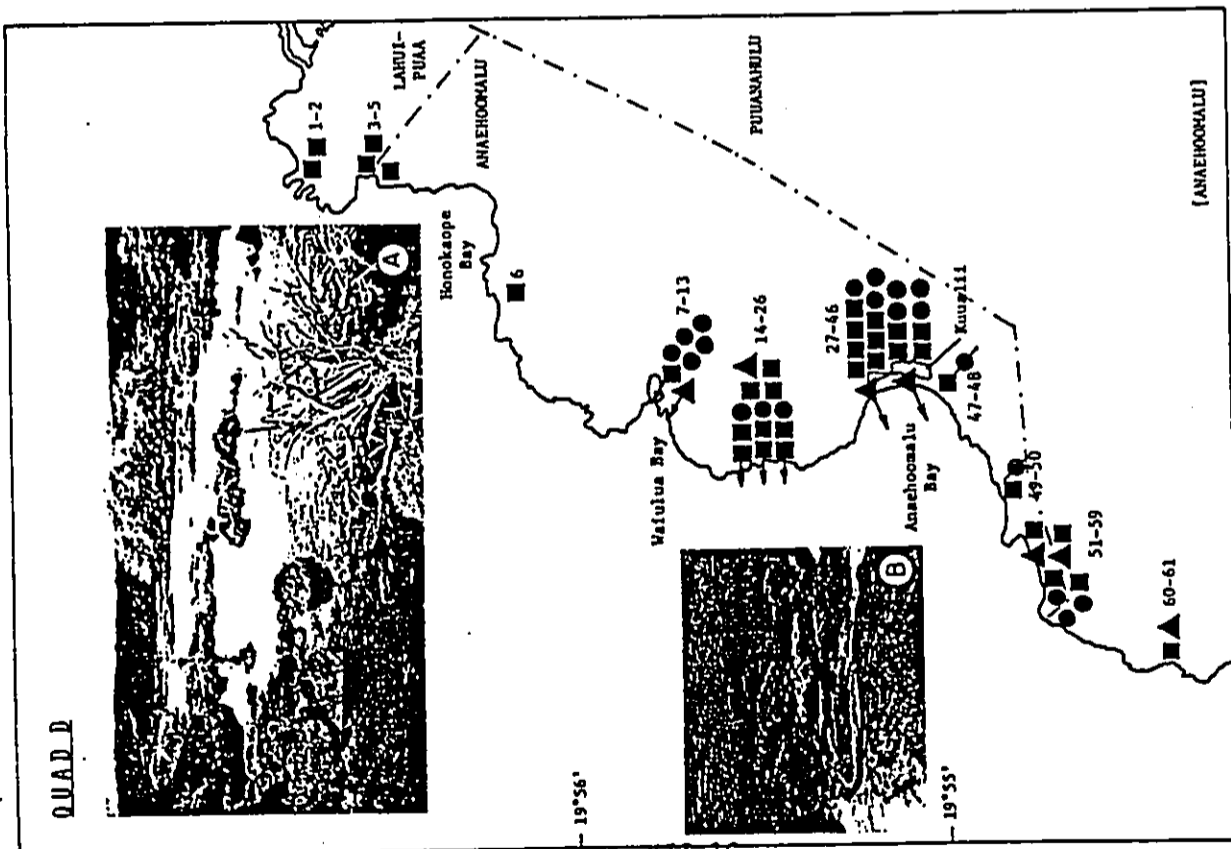
- cc: RD, FWS, Portland, OR (Alii)
- ERA, San Francisco
- JAC
- Aake Lee, ACOE
- RMFG - 10/27
- Mauna Lani Resorts



APPENDIX F, continued. Important Kona coast pond sites: ponds of Lahuipuaa Land Division, South Kohala District. Scale = 1:12,000 (1 cm = 120 m).



25



27

X11-16

**BILL COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

April 10, 1983  
83-626

Mr. Ernest Kosaka  
Project Leader  
Office of Environmental Services  
Fish and Wildlife Service  
U.S. Department of the Interior  
P.O. Box 50167  
Honolulu, Hawaii 96850

Dear Mr. Kosaka:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 19, 1983 regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS). We are cognizant of your particular concern for the anchialine ponds on Mauna Lani lands. At this time, Mauna Lani Resort, Inc. does not plan to alter the ponds. However, it is possible that some pond modification may be desired when site development plans are prepared. If this should occur, we will solicit your comments.

The DEIS is expected to be filed in May and you will be sent a copy when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:if

cc: Mauna Lani Resort, Inc.

XII-17

Honolulu: 4001 Kalia Street, Honolulu, Hawaii 96817 Telephone: (808) 521-5161, Telex: 0411174 BLDZ  
Singapore: 801 Orchard Road #1215, International Building, Singapore 0923 Telephone: 215-1420 Telex: RS 9164-10 FIN



MAY 15 1978

RECEIVED  
JAN 14 1985



United States Department of the Interior

GEOLOGICAL SURVEY  
Water Resources Division  
P.O. Box 50166  
Honolulu, Hawaii 96850

SRI (HHS) : 470241

January 10, 1985

GROUNDWATER RECHARGE AND COASTAL DISCHARGE  
FOR THE NORTHWEST COAST OF THE ISLAND OF HAWAII:  
A COMPUTERIZED WATER BUDGET APPROACH

by

Brian Y. Kanehiro  
Frank L. Peterson

Technical Report No. 110

July 1977

Project Completion Report  
for

NORTHWEST HAWAII GROUNDWATER BUDGET AND COASTAL DISCHARGE

OWRT Project No.: A-067-HI  
Grant Agreement No.: 14-31-0001-6012  
Project Period: 15 September 1975 to 31 December 1977  
Principal Investigators: L. Stephen Lau and Frank L. Peterson

The programs and activities described herein were supported in part by funds provided by the United States Department of the Interior as authorized under the Water Resources Act of 1964, Public Law 88-379; and the Water Resource Research Center, University of Hawaii.

Ms. Anne L. Naples  
Belt, Collins and Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Dear Ms. Naples:

We have reviewed the Environmental Assessment for the Mauna Lani Resort, South Kohala, Hawaii and provide the following comments for your consideration:

Section 3.3.2 page III-5 last paragraph - Estimates of ground-water flow across the Mauna Lani Resort site should consider the attached reference which states that the probable average daily ground-water flow between Kiholo Bay and Puka is about 6.4 million gallons.

Section 3.7.6 and 3.7.7 page III-18 - The EIS should discuss the impact of using brackish water for golf course irrigation and treated effluent to irrigate a tree nursery on the ground water and coastal receiving water. This discussion should include the effects of nutrients, organics and viruses that are associated with treated effluent.

Sincerely,

*Stanley F. Kepustta*  
Stanley F. Kepustta  
District Chief

Attachment

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

**BILL COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

April 10, 1985  
85-616

Mr. Stanley F. Kaputka  
District Chief  
Water Resources Division  
Geological Survey  
U.S. Department of the Interior  
P.O. Box 50166  
Honolulu, Hawaii 96850

Dear Mr. Kaputka:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 10, 1985 regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS) which is expected to be filed in May. You will be sent a copy of the DEIS when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:iff

cc: Mauna Lani Resort, Inc.

Headline (containing) News (including) Hawaii (including) Mauna Lani (including) Resort (including) Expansion (including) Environmental Impact Statement (including) Preparation Notice (including) for the Proposed Revised Development Plan (including) for Mauna Lani Resort (including) South Kohala (including) Hawaii (including) 1985 (including) 616

iii

ABSTRACT

The basic objectives of this study were to determine the average annual recharge to the groundwater body and the fresh groundwater discharge at the coastlines, as well as the aquifer characteristics for an arid area located on the northwest coast of Kawai'i island between Kiholo Bay in the south and Puako in the north, and encompassing the land from the coast to approximately the 762-m (2,500-ft) elevation level. Of equal importance was the development of methodologies, namely, a computerized water budget and groundwater tidal analysis to calculate these quantities.

The probable recharge to the groundwater body in this region was computed to be  $143.83 \times 10^6$  m<sup>3</sup>/yr (38 bil gal/yr). Due to the lack of hydrologic data for the area, a range of values was determined, with the maximum average annual recharge being  $264.95 \times 10^6$  m<sup>3</sup> (70 bil gal) and the minimum being  $719.15 \times 10^3$  m<sup>3</sup> (19 bil gal). Since there are 26 km (16 miles) of coastline in this area, this implies a probable average daily flux of  $15,006$  m<sup>3</sup>/km (6.38 mil gal/mile) of coastlines.

Three different calculations were obtained for the hydraulic conductivity of the groundwater aquifer in the coastal region: two by tidal analysis, and a third based on the coastal discharge as determined by the water budget. The Vermer and Moran method of tidal analysis gave an average value for K (hydraulic conductivity times average saturated depth of aquifer) in the vicinity of 'Anasaho'omahu Bay of  $585,270$  m<sup>3</sup>/day ( $6.3 \times 10^6$  ft<sup>3</sup>/day); the method by Cox gave a value for K in the same area of  $1,027$  m/day ( $3,369$  ft/day). The coastal flux method gave a value for K of  $2,771$  m/day ( $9,092$  ft/day).

**BILL COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

April 10, 1985  
85-616

Mr. Stanley F. Kaputka  
District Chief  
Water Resources Division  
Geological Survey  
U.S. Department of the Interior  
P.O. Box 50166  
Honolulu, Hawaii 96850

Dear Mr. Kaputka:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 10, 1985 regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS) which is expected to be filed in May. You will be sent a copy of the DEIS when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:llf

cc: Mauna Lani Resort, Inc.

Revisions 04/11/85 read: Revised Environmental Impact Statement (EIS) for the Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii. Prepared by Bill Collins & Associates, Inc., 1011 Kalia Road, Honolulu, Hawaii 96813. Telephone: (808) 551-1111. Fax: (808) 551-1112.

iii

ABSTRACT

The basic objectives of this study were to determine the average annual recharge to the groundwater body and the fresh groundwater discharge at the coastlines, as well as the aquifer characteristics for an arid area located on the northwest coast of Hawaii's island between Kiholo Bay in the south and Puako in the north, and encompassing the land from the coast to approximately the 762-m (2,500-ft) elevation level. Of equal importance was the development of methodologies, namely, a computerized water budget and groundwater tidal analyses to calculate these quantities.

The probable recharge to the groundwater body in this region was computed to be  $143.83 \pm 10^6$  m<sup>3</sup>/yr (38 bil gal/yr). Due to the lack of hydrologic data for this area, a range of values was determined, with the maximum average annual recharge being  $264.95 \pm 10^6$  m<sup>3</sup> (70 bil gal) and the minimum being  $719.15 \pm 10^6$  m<sup>3</sup> (19 bil gal). Since there are 26 km (16 miles) of coastline in this area, this implies a probable average daily flux of  $15,006$  m<sup>3</sup>/km (6.38 mil gal/mile) of coastlines.

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U.S. Department of Transportation  
Federal Aviation Administration

11/15/85 10:15 AM

AIRPORTS DISTRICT OFFICE  
BOX 50244  
HONOLULU, HI 96850-0001  
Telephone: (808) 546-7129

BILL COLLINS  
& ASSOCIATES  
Engineering - Planning  
Landscape Architecture

April 10, 1985  
85-607

January 21, 1985

Ms. Anne L. Mapes  
Bell, Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Dear Ms. Mapes:

We have reviewed the Environmental Assessment (EA) for the Mauna Lani Resort, South Kohala, Hawaii submitted on December 18, 1984 (received January 11, 1985).

The development described in the EA will not affect any existing or known future airports. However, we note that the length of the runway at Keahole Airport mentioned on page III-20 should be 6,500 ft. not 6,000 ft. Also, two of the three departing mainland flights refuel at Kahului, Maui in addition to the one at Hilo.

Thank you for the opportunity to review this EA.

Sincerely,

HENRY A. SUMIDA  
Airports District Office Manager

Mr. Henry A. Sumida  
Airports District Office Manager  
Federal Aviation Administration  
Airports District Office  
U.S. Department of Transportation  
(J. Box 50244  
Honolulu, Hawaii 96830

Dear Mr. Sumida:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 21, 1985 regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS) which is expected to be filed in May. You will be sent a copy of the DEIS when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

Anne L. Mapes

ALM:if

cc: Mauna Lani Resort, Inc.

This document contains neither recommendations nor conclusions of the FAA. It is the property of the FAA and is loaned to your agency; it and its contents are not to be distributed outside your agency.



U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
REGION NINE

Hawaii Division  
Box 50206  
Honolulu, Hawaii 96850

December 26, 1984  
HDA-III  
[574]

BELL, COLLINS  
& ASSOCIATES  
Engineering • Planning  
Landscape Architecture

April 10, 1985  
85-601

Ms. Anne L. Mapes  
Bell Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

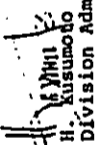
Mr. Heloshi Kusumoto  
Division Administrator  
Federal Highway Administration  
Region Nine, Hawaii Division  
U.S. Department of Transportation  
P.O. Box 50206  
Honolulu, Hawaii 96850

Dear Ms. Mapes:

Subject: Environmental Impact Statement Preparation Notice  
Mauna Lani Resort Expansion, South Kohala, Hawaii

Construction of the added hotel units and residential units may impact traffic using Queen Kaahumanu Highway, (FAP-19). This impact should be coordinated with the State Department of Transportation and addressed in the EIS.

Sincerely yours,

  
H. Kusumoto  
Division Administrator

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of December 26, 1984 -- Letter No. HDA-HIS741 in your reference system -- regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS) which is expected to be filed in May. You will be sent a copy of the DEIS when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

  
Anne L. Mapes

ALM:jf

cc: Mauna Lani Resort, Inc.

2  
611  
4-113

US Department  
of Transportation  
United States  
Coast Guard



Commander (dpl)  
Fourteenth Coast Guard District

Prince Kūniūnui  
Federal Building  
300 Ala Moana Blvd.  
Honolulu, HI 96813-2861  
Phone

16475  
Serial No. 5/039  
27 December 1984

Ms. Anne L. Mapes  
Belt, Collins & Associates  
606 Coral St.  
Honolulu, HI 96813

Dear Ms. Mapes:

The Coast Guard has reviewed the environmental assessment for the proposed expansion of Mauna Lani Resort and has determined that this project will have no effect on programs for which we have responsibility. We therefore have no comments to provide nor areas of concern which we would like to see addressed in the EIS.

Thank you for the opportunity to comment.

Sincerely,

J. F. MILBRAND  
Commander, U. S. Coast Guard  
District Planning Officer  
by direction of Commander  
Fourteenth Coast Guard District

BELT, COLLINS  
& ASSOCIATES  
Engineering • Planning  
Landscape Architecture

April 10, 1985  
85-592

Commander J.F. Milbrand  
U.S. Coast Guard District Planning Officer  
United States Coast Guard  
300 Ala Moana Boulevard  
Honolulu, Hawaii 96850

Dear Commander Milbrand:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of December 27, 1984 -- Letter No. 16475, Serial No. 5/039 in your reference system -- acknowledging receipt of the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort. While your agency had no comments to make on this matter, we do appreciate the time you and your staff spent reviewing the document.

It is expected that the Draft Environmental Impact Statement (DEIS) for the project will be filed in May. We look forward to your further participation in the EIS process and to any comments you may have following your review of the DEIS.

Sincerely,

Anne L. Mapes

ALM:mf

cc: Mauna Lani Resort, Inc.

Honolulu: 1641 Coral Street, Honolulu, Hawaii 96813. Telephone: (808) 521-5161. Telex: 8111117410474  
Singapore: 141 Orchard Road #12 05, International Building, Singapore 0921. Telephone: 215 1471. Telex: 85 50444 BCT15M

RECEIVED

STATE OF HAWAII  
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES  
DIVISION OF PUBLIC WORKS  
LETTER NO. (H) 10006.5

BILL COLLINS  
& ASSOCIATES  
Engineering - Planning  
Landscape Architecture

April 10, 1985  
85-599

Ms. Anne L. Mapes  
Bill, Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Dear Ms. Mapes:

Subject: Environmental Impact Statement Preparation Notice  
Mauna Lani Resort Expansion, South Kohala, Hawaii

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

Very truly yours,

*Teuane Tomiaga*  
TEUANE TOMIAGA  
Acting State Public Works Engineer

CT:jk

Mr. Teuane Tomiaga  
Department of Accounting and General Services  
Division of Public Works  
State of Hawaii  
P.O. Box 119  
Honolulu, Hawaii 96810

Dear Mr. Tomiaga:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 10, 1985 -- Letter No. (P)1006.5 in your reference system -- acknowledging receipt of the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort. While your agency had no comments to make on this matter, we do appreciate the time you and your staff spent reviewing the document.

It is expected that the Draft Environmental Impact Statement (DEIS) for the project will be filed in May. We look forward to your further participation in the EIS process and to any comments you may have following your review of the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:ff

cc: Mauna Lani Resort, Inc.

Honolulu, Hawaii 96813  
Department of Accounting and General Services, Division of Public Works, Room 1119, State Capitol Building, Honolulu, Hawaii 96813  
Telephone: 535-2679, Telefax: 535-2679

ROBERT A. JAYSON  
DIRECTOR

HONOLULU PUBLIC EMPLOYEES' ASSOCIATION  
1400 KALANOAHI AVENUE, SUITE 200  
HONOLULU, HAWAII 96813  
PUBLIC EMPLOYEES' ASSOCIATION  
OFFICE OF THE PUBLIC EMPLOYEES'



STATE OF HAWAII  
DEPARTMENT OF BUDGET AND FINANCE  
STATE CAPITOL  
HONOLULU, HAWAII 96813

December 28, 1984

RECEIVED  
JAN 2 1985

BEI, COLLINS & ASSOCIATES

BEI, COLLINS & ASSOCIATES

BEI, COLLINS & ASSOCIATES

DIVISION:  
PLANNING AND LAND DEVELOPMENT  
AND DESIGN SERVICES  
ELECTRONIC DATA PROCESSING  
PLANNING

BEI, COLLINS  
& ASSOCIATES  
Engineering • Planning  
Landscape Architecture

April 10, 1985  
85-596

Mr. Jensen S.L. Hee, Director  
Department of Budget and Finance  
State of Hawaii  
P.O. Box 130  
Honolulu, Hawaii 96810

Dear Mr. Hee:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Ms. Anne L. Mapes  
Beit, Collins and Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Dear Ms. Mapes:

Thank you for the opportunity to comment on the proposed Mauna Lani Resort Expansion at South Kohala, Hawaii. With regard to the jurisdiction and responsibilities of this department, the project will have no impact.

XII-24

Thank you for your letter of December 28, 1984 acknowledging receipt of the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort. While your agency had no comments to make on this matter, we do appreciate the time you and your staff spent reviewing the document.

It is expected that the Draft Environmental Impact Statement (DEIS) for the project will be filed in May. We look forward to your further participation in the EIS process and to any comments you may have following your review of the DEIS.

Very truly yours,

*Jensen S. L. Hee*  
JENSEN S. L. HEE

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:ll

cc: Mauna Lani Resort, Inc.

Honolulu 681 Coral Street Honolulu Hawaii 96813 Telephone (808) 531-5101 Telex 0111124 HAWAII  
Honolulu 1400 Kalanoihi Avenue Honolulu Hawaii 96813 Telephone (808) 531-5101 Telex 0111124 HAWAII



RECEIVED  
JAN 2 - 1985

BEI, COLLINS & ASSOCIATES  
ALBERT T. BEI  
DIRECTOR  
3949 DIAMOND HEAD ROAD, HONOLULU, HAWAII 96816



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

BEI, COLLINS & ASSOCIATES  
Engineering • Planning  
Landscape Architecture

April 10, 1985  
85-595

HIENG

BeI, Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Major Jerry M. Matsuda  
Department of Defense  
Office of the Adjutant General  
State of Hawaii  
3949 Diamond Head Road  
Honolulu, Hawaii 96816

Dear Major Matsuda:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of December 31, 1984 acknowledging receipt of the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort. While your agency had no comments to make on this matter, we do appreciate the time you and your staff spent reviewing the document.

It is expected that the Draft Environmental Impact Statement (DEIS) for the project will be filed in May. We look forward to your further participation in the EIS process and to any comments you may have following your review of the DEIS.

*Albert H. Matsuda*  
for JERRY M. MATSUDA  
Major, HANG  
Contr & Engr Officer

Yours truly,

Sincerely,  
*Anne L. Mapes*  
Anne L. Mapes

AL:mlf  
cc: Mauna Lani Resort, Inc.

Environmental Impact Statement Preparation Notice  
Mauna Lani Resort Expansion, South Kohala, Hawaii

Thank you for providing us the opportunity to review your proposed project, Mauna Lani Resort Expansion Environmental Impact Statement.

We have completed our review and have no comments to offer at this time.

Honolulu 480-F road Street, Honolulu, Hawaii 96811 Telephone: (808) 531-5303 Telex: 081110743474  
Singapore: 481-B Road, #22-03, International Building, Singapore 0521 Telephone: 215-6871 Telex: 855044 IN 151N

RECEIVED

JAN 29 1985

PROJECT OFFICE  
MAIL OFFICE  
P. O. BOX 11  
CANALE MAP 1612

PROJECT OFFICE  
MAIL OFFICE  
P. O. BOX 11  
CANALE MAP 1612



STATE OF HAWAII  
DEPARTMENT OF HAWAIIAN HOME LANDS

HONOLULU, HAWAII 96813

January 28, 1985

PROJECT OFFICE  
MAIL OFFICE  
P. O. BOX 11  
CANALE MAP 1612

PROJECT OFFICE  
MAIL OFFICE  
P. O. BOX 11  
CANALE MAP 1612

Anne L. Hapes  
Reit, Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Dear Ms. Hapes:

SUBJECT: EIS Preparation Notice  
Hauna Lani Resort Expansion

We have reviewed the Environmental Assessment for the proposed land use changes at the Hauna Lani Resort and would appreciate additional information on the following:

1. Employment  
An increase in short-term and long-term employment is indicated. Relative to present and projected employees, can you provide more details, such as:
  - a) the ratio of workers to the number of hotel and residential units;
  - b) work force profiles relative to type of positions;
  - c) required skills, salary/wage ranges; and
  - d) geographic areas from which employees are drawn.

As an agency charged with programs to benefit native Hawaiians, we are interested in knowing the number of current employees and the percentage whose ancestry is at least one-half Hawaiian. What is the expected increase in employment of native Hawaiians as a result of the proposed project?

Anne L. Hapes  
Page Two  
January 28, 1985

2. Housing:

An increased demand for housing is indicated, but the Environmental Assessment does not specify the numbers of employee housing that would be needed, nor where or how they would be provided. Please give more details relative to offerings of employment and housing within the proposed project, as they many have a bearing on our programs for developing residential homestead lots in S. Kohala for native Hawaiians.

3. Service/Light Industrial:

The proposal shows 110.9 acres for service/light industrial uses. Please clarify the types of uses that are planned within this category, and the timeframe and means under which the activities will be implemented. Your plans could impact the scope and timing of our planned light industrial projects in the Kawahae area.

Please send your comments and questions to Mr. Joe Chu, Planner, of our Land Management Division at 548-2686.

Thank you for the opportunity to participate in this project.

Sincerely yours,

*Georgiana K. Padeken*  
Georgiana K. Padeken, Chairman  
Hawaiian Homes Commission

GRP:RF:JC:eh

April 10, 1985  
85-623

Ms. Georgiana K. Padeken, Chairman  
Page two

April 10, 1985  
85-623

Ms. Georgiana K. Padeken, Chairman  
Hawaiian Homes Commission  
Department of Hawaiian Home Lands  
State of Hawaii  
P.O. Box 18779  
Honolulu, Hawaii 96805

Dear Ms. Padekens

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 28, 1985 regarding the Environmental  
Impact Statement Preparation Notice for the proposed revised development plan for  
Mauna Lani Resort.

The comments that you provided are valuable to us in preparing the Draft EIS  
(DEIS) which is expected to be filed in May. Most of the issues and concerns that you  
raised will be addressed in the DEIS in as much detail as possible given the current  
stage of planning. However, some concerns cannot be addressed in more detail until  
individual projects are developed. These include the following (as presented in your  
letter).

- i. Employment
- b) "Work force profiles relative to type of positions."  
Detailed information is not currently available, but perhaps could be the subject  
of a future survey of resort employees.
- c) "Required skills, salary/wage ranges."  
Industry-wide averages will be used to estimate wages in the EIS analysis.  
Required skills of resort workers for facilities to be designed and built in the  
future probably cannot be addressed in detail in an EIS that is prepared during  
the early stages of planning. Again, this might be an area of concern that can be  
addressed in a more detailed labor study performed closer to the time when  
resort facilities will be hiring.

"As an agency charged with programs to benefit native Hawaiians, we are  
interested in knowing the number of current employees and the percentage  
whose ancestry is at least one-half Hawaiian. What is the expected  
increase in employment of native Hawaiians as a result of the proposed  
project?"

I spoke with Joe Chu of your Land Management Division on March 12, 1985 and  
informed him that, in conformance with Federal law, no statistics regarding the  
ethnicity of current Mauna Lani Resort employees are available. In the absence  
of such statistics, we agreed that an estimate provided by the personnel manager  
of the Mauna Lani Bay Hotel would be used for the EIS and that such estimate  
would be deemed an adequate way of addressing the question.

2. Housing

"Details relative to offerings of employment and housing."

The EIS will contain statistics concerning projected employment and housing. As  
for offerings of housing, more analysis will be done and further projections made  
as the Mauna Lani Resort project progresses. We will be soliciting your  
comments and suggestions at that later time.

We will send you a copy of the DEIS when it is available and look forward to your  
further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:llf

cc: Mauna Lani Resort, Inc.  
Feat, Marwick, Mitchell & Co.

RECEIVED  
JAN 25 1985

1985

MIL COLLINS & ASSOCIATES  
1100 KALANIAN'OLELE BLVD., SUITE 200  
HONOLULU, HAWAII 96813



STATE OF HAWAII  
DEPARTMENT OF HEALTH  
P. O. BOX 3216  
HONOLULU, HAWAII 96811

IN REPLY, PLEASE REFER TO  
EPW50

January 22, 1985

Ms. Anne L. Mapes  
Belt, Collins & Associates  
606 Coral St.  
Honolulu, Hawaii 96813

Dear Ms. Mapes:

Subject: Request for Comments on Environmental Impact Statement Preparation  
Notice for Mauna Lani Resort Expansion, S. Kohala, Hawaii

Thank you for allowing us to review and comment on the subject environmental impact statement preparation notice. We submit the following comments on the proposed project:

Drinking Water

It is our understanding that Mauna Lani Resort, Inc. has a commitment of 2.3 mgd of potable water from the Hawaii Department of Water Supply's Lalemi Wells A, B, C, and D. Well D is still under construction. In addition, MLR plans to develop five future wells on Parker Ranch land. Brackish water is currently being used to irrigate the existing golf course, and brackish water will probably be used for future golf courses. With this understanding, the Drinking Water Program has several comments to offer.

Please be advised that Section 11-10-29 of Chapter 20, Title 11, Administrative Rules, requires all new sources of potable water serving public water systems to be approved by the Director of Health prior to their use to serve potable water. Such approval is based primarily upon the satisfactory submission of an engineering report which adequately addresses all concerns as set down in Section 11-20-29. The engineering report must be prepared by a registered professional engineer and bear his or her seal submittal. In addition, there are three certifications which may be submitted along with the engineering report. These are the Professional Engineer Certification, Declaration of Covenants, and Operation and Maintenance Certification. Section 11-20-30 requires that new or substantially modified distribution systems for public water systems be approved by the Director of Health. Such approval depends upon the submission of plans and specifications for the project prior to construction, and demonstration that the new or modified portions of the system are capable of delivering potable water in compliance to all maximum contaminant levels as set down in Chapter 20 once the distribution system or modification is completed.

Cross-connection between potable water lines and nonpotable irrigation lines and potential backflow should be considered in the Environmental Impact Statement for the Mauna Lani Resort Complex. The existence of two systems so closely intermingled increases the potential for cross-connection of the two systems, and increases the danger

Ms. Anne L. Mapes  
January 22, 1985  
Page 2

of contamination of the potable water system through backflow or backpressure. It has been the experience of the Department that such interconnections are often initiated by individuals attempting to boost low pressure, or who are not aware that there is a difference between the two systems. The owner and/or supplier of water must ensure that all potential for human exposure to the nonpotable water will be eliminated and be held responsible for any cross-connections between the potable and nonpotable systems.

I hope that these comments will be helpful in determining significant issues which should be addressed in the Environmental Impact Statement for this project. Should you have any questions regarding Chapter 20, please contact the Drinking Water Program at 548-2235.

Wastewater Treatment

The Environmental Impact Statement should address the effect of Chapter 37, Private Wastewater Treatment Works and Individual Wastewater Systems, on the project. It should also discuss whether the proposed changes will be adequately served by the existing sewage system.

We realize that the statements are general in nature due to preliminary plans being the sole source of discussion. We, therefore, reserve the right to impose future environmental restrictions on the project at the time final plans are submitted to this office for review.

Sincerely,

*Melvin K. Koizumi*  
MELVIN K. KOIZUMI  
Deputy Director for  
Environmental Health

cc: DHSA, Hawaii

82-11

**BELL, COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

April 10, 1985  
85-617

Mr. Melvin K. Koizumi  
Deputy Director for Environmental Health  
Department of Health  
State of Hawaii  
P.O. Box 3378  
Honolulu, Hawaii 96801

Dear Mr. Koizumi:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 22, 1985 -- referenced as EPHSD --  
regarding the Environmental Impact Statement Preparation Notice for the proposed  
revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing  
the Draft Environmental Impact Statement (DEIS) which is expected to be filed in  
May. You will be sent a copy of the DEIS when it is available. We look forward to  
your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*

Anne L. Mapes

ALM:ll

cc: Mauna Lani Resort, Inc.

RECEIVED  
JAN 10 1985



STATE OF HAWAII  
DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS  
825 MILILANI STREET  
HONOLULU HAWAII 96813

January 8, 1985

Ms. Anne L. Mapes  
Belt, Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Dear Ms. Mapes:

This is in response to your letter of December 19, 1984 regarding the environmental impact statement preparation notice for the Mauna Lani Resort Expansion.

We feel that if a substantial number of workers will be sought to staff the project, in addition to the demographic information on the Kohala population already contained in the report, you may want to address the availability of the labor supply necessary to fill the jobs that will be created. Other considerations are adequate transportation and affordable housing, and factors that affect job desirability especially in remote resort areas.

Of possible interest to you is a labor market analysis of the Kona-Kohala area produced in January, 1981 by this department's Research and Statistics Office staff. A copy has been enclosed for your perusal.

If you need more information or have any questions, please call me at 548-3150 or Frederick Pang, Chief, Research and Statistics Office at 548-7639.

Sincerely,  
*Joshua C. Apsalud*  
Joshua C. Apsalud  
Director of Labor and Industrial Relations

Enclosure

BELT, COLLINS  
& ASSOCIATES  
ENGINEERING & PLANNING  
LAW OFFICES  
1000 Kalia Road, Suite 1100

Mr. Joshua C. Apsalud, Director  
Department of Labor and Industrial Relations  
State of Hawaii  
825 Mililani Street  
Honolulu, Hawaii 96813

Dear Mr. Apsalud:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 8, 1985 regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS) which is expected to be filed in May. You will be sent a copy of the DEIS when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:iff

cc: Mauna Lani Resort, Inc.

03-114

THIS DOCUMENT IS UNCLASSIFIED DATE 08-21-2001 BY 60322 UCBAW/STP/STP

RECEIVED

JAN 30 1985

GEORGE R. JANTOSH  
DIRECTOR OF LAND AND NATURAL RESOURCES  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
STATE OF HAWAII  
HONOLULU HAWAII 96813



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
HONOLULU HAWAII 96813

Ms. Anne L. Mapes

January 30, 1985

-2-

District, South Kohala, Hawaii, 1984," prepared by the Bishop Museum. These recommendations require intensive mapping and data recovery through excavation to mitigate adverse impacts to sites in the survey area. The data recovery program recommended includes sites E2-31, E2-158, E2-159, E3-736, E3-739, and E3-740. We suggest that two copies of the report of these actions be submitted to the Department of Land and Natural Resources for review and comment in a timely manner so as to allow further recommended mitigations, if warranted, to be completed prior to the start of any construction activity. In order to ensure that significant adverse effects to the resources are avoided, we further suggest that coordination with the respective state and county agencies charged with historic preservation be initiated and continued during all mitigative activity.

We have no objections to park and recreation proposals. However, we recommend that the final refinements to the plans for the proposed public beach park and the proposed archaeological park (e.g., park master plan and construction drawings) be submitted to the Department of Land and Natural Resources for review and comment. This is to ensure that the proposed park projects are carried out as proposed and that they are consistent with the State Recreation Functional Plan.

I hope this will help you in planning this project and in fulfilling our environmental requirements.

Very truly yours,

*S. Susumu Oho*  
SUSUMU OHO  
Chairperson of the Board

Ms. Anne L. Mapes  
Belt, Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Dear Ms. Mapes:

Thank you for your letter of December 19, 1984, submitting the environmental impact statement (EIS) preparation notice for the Mauna Lani Resort expansion in South Kohala. Our primary concern is over the utilization and protection of our natural resources. In the area of the aquatic environment, we suggest that the EIS thoroughly describe the activities planned; the aquatic resources of the project site(s) and nearby areas which may be affected; existing levels of public use of these resources; and anticipated effects of the proposed activities on these resources and uses. The means which would be used to prevent, reduce, or mitigate adverse effects should be addressed.

More specifically, we suggest that the following resources be considered: anchialine ponds, beachfront, coastal waters and bottoms, and the plants and animals inhabiting them. The following uses should also be studied: fishing, squidding, gathering limu, sightseeing and photography in and under the water, sunbathing, beachcombing, swimming, surfing, and sailing. We suggest that these be discussed in light of the potential impact from landfills, soil erosion, drainage water, urban contaminants, landscaping and agricultural chemicals, wastewater disposal and nutrients enrichment, and modification to existing and customary patterns of access to the shore. This information would allow us to evaluate the potential for impacts on public benefits from aquatic resources.

We are pleased to note that you have already conducted an archaeological reconnaissance survey of the area. We concur with the recommendations reported in the document entitled, "Archaeological Reconnaissance of the Area South of Puako Petroglyph Archaeological

**BILL COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

April 10, 1985  
85-624

Mr. Susumu Ono, Chairman  
Board of Natural Resources  
Department of Land and Natural Resources  
State of Hawaii  
P.O. Box 621  
Honolulu, Hawaii 96809

Dear Mr. Ono:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 30, 1985 regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS). In particular, we plan to follow your suggestion pertaining to continued coordination with State and County agencies charged with historic preservation. Also, copies of reports on any archaeological work done at the Mauna Lani Resort site will be forwarded to your agency for timely review and comment as they become available.

The DEIS is expected to be filed in May and you will be sent a copy when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

AL:Mill

cc: Mauna Lani Resort, Inc.

Hawaiian Telephone System, Inc. - Honolulu, Hawaii - Telephone (808) 531-1111  
Sungate - Honolulu, Hawaii - Telephone (808) 531-1111



RECEIVED

JAN 11 1985

STATE OF HAWAII  
RUSSELL N. FUKUMOTO  
Executive Director



STATE OF HAWAII  
DEPARTMENT OF SOCIAL SERVICES AND HOUSING  
HAWAII HOUSING AUTHORITY  
P. O. BOX 17847  
HONOLULU, HAWAII 96817

January 5, 1984

STATE OF HAWAII  
DEPARTMENT OF SOCIAL SERVICES AND HOUSING  
HONOLULU, HAWAII

Memo

FRANKLIN Y. K. SUNN 1/10/85

To: Anne L. Mapes  
Re: 84-1940

Attached is comments from Hawaii Housing Authority on Mauna Lani Resort Expansion. We are also routing your letter and EIS Statement to our Corrections Division for comments.

RECEIVED

JAN 11 1985

MTI, COURTS & APPEALS

MEMORANDUM:

TO: Franklin Y. K. Sunn, Director  
Department of Social Services and Housing

FROM: Russell N. Fukumoto, Executive Director

SUBJECT: Environmental Impact Statement Preparation Notice.  
Mauna Lani Resort Expansion, South Kohala, Hawaii  
(DSSH Control No. 84 3759)

The Authority has reviewed subject EIS preparation notice and offer the following comments for their consideration:

1. The proposed project does not consider affordable housing for the moderate-income families which is much needed in the Kohala-Kailua-Kona area.
2. This proposed project does not address the need for employee housing. The State Housing Plan encourages the development of rental housing for employees of large businesses outside of urban areas.

We recommend that both these matters be addressed in the EIS.

Your copy is being returned should the department decide to comment on the social services aspect of this matter.

Thank you for the opportunity to comment.

*Russell N. Fukumoto*  
RUSSELL N. FUKUMOTO  
Executive Director

Attachment

**BILL COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

April 10, 1985  
85-628

Mr. Russell N. Fukumoto  
Executive Director  
Hawaii Housing Authority  
Department of Social Services & Housing  
P.O. Box 17907  
Honolulu, Hawaii 96817

Dear Mr. Fukumoto:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your memo of January 5, 1985 to Mr. Franklin Sunn regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort. Mr. Sunn transmitted a copy of the memo to me on January 10, 1985.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS). The document will address the need for additional housing in the project area as a result of resort development at Mauna Lani Resort. We recognize your concern about "affordable housing for moderate-income families which is much needed in the Kohala-Kailua-Kona area" and the need for rental housing for employees of large businesses. These concerns will be addressed in general terms in the EIS. However, specific employee housing measures are best addressed during the actual development of individual projects within the resort rather than during the current preliminary planning stages. Future analyses would more accurately reflect prevailing economic, social, and community trends and conditions.

The DEIS for Mauna Lani Resort expansion is expected to be filed in May and you will be sent a copy when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:ll

cc: Mr. Franklin Sunn  
Mauna Lani Resort, Inc.  
Peat, Marwick, Mitchell & Co.

Mauna Lani Resort Expansion (EIS) 85-628  
Kohala, Hawaii  
Prepared by Bill Collins & Associates, Inc. 10/11/84



RECEIVED  
JAN 4 1985

STATE OF HAWAII  
DEPARTMENT OF TAXATION

STATE OF HAWAII  
DEPARTMENT OF TAXATION  
P.O. BOX 259  
HONOLULU, HAWAII 96809

GEORGE A. ARNONE  
DIRECTOR

BELL, COLLINS  
& ASSOCIATES  
Engineering - Planning  
Landscape Architecture

April 10, 1985  
85-596

January 2, 1985

Ms. Anne L. Mapes  
Bell, Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Dear Ms. Mapes:

In response to your letter of December 19, 1984, we have reviewed the materials submitted regarding the proposed expansion of the Mauna Lani Resort complex.

It appears that the proposed project will have no impact upon the concerns of this agency and we therefore, offer no comments at this time.

Very truly yours,

*Herbert M. Dias*  
HERBERT M. DIAS  
Director of Taxation

Mr. Herbert M. Dias, Director  
Department of Taxation  
State of Hawaii  
P.O. Box 259  
Honolulu, Hawaii 96809

Dear Mr. Dias:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 2, 1985 acknowledging receipt of the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort. While your agency had no comments to make on this matter, we do appreciate the time you and your staff spent reviewing the document.

It is expected that the Draft Environmental Impact Statement (DEIS) for the project will be filed in May. We look forward to your further participation in the EIS process and to any comments you may have following your review of the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:iff

cc: Mauna Lani Resort, Inc.

Honolulu: 1024 Leialoi Street, Honolulu, Hawaii 96813. Telephone: (808) 531-5163. Telex: 0011110. FAX: 531-5174.  
Washington: 1415 North Capitol Street, N.W., Washington, D.C. 20045. Telephone: (202) 462-1000. Telex: 854000. FAX: 462-1000.

RECEIVED

JAN - 7 1985

BILL COLLINS & ASSOCIATES  
ENGINEERING • PLANNING  
LANDSCAPE ARCHITECTURE



STATE OF HAWAII  
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

540 HALEKUAUWA STREET  
ROOM 301  
HONOLULU, HAWAII 96813

January 2, 1985

Ms. Anne Mapes  
Bill Collins and Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Dear Ms. Mapes:

Subject: Preparation Notice for the Mauna Lani Resort  
Expansion

We have reviewed your preparation notice and suggest that  
the draft EIS contain an expanded discussion of the  
archaeological impacts of the proposed project.

Thank you for providing us the opportunity to review this  
preparation notice.

Sincerely,

*Letitia N. Uyehara*

Letitia N. Uyehara  
Director

BILL COLLINS  
& ASSOCIATES  
ENGINEERING • PLANNING  
LANDSCAPE ARCHITECTURE

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

Dear Ms. Uyehara:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 2, 1985 regarding the Environmental Impact  
Statement Preparation Notice for the proposed revised development plan for Mauna  
Lani Resort.

The comments and information that you provided are valuable to us in preparing  
the Draft Environmental Impact Statement (DEIS) which is expected to be filed in  
May. You will be sent a copy of the DEIS when it is available. We look forward to  
your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*

Anne L. Mapes

ALM:lf

cc: Mauna Lani Resort, Inc.

Mauna Lani Resort, Inc., 1111 Kalia Road, Honolulu, Hawaii 96813  
Telephone: 841-1111 (local) 811-1111, International Building, Singapore 214 (077) 4-4444 (4 lines)

SPARK M. MATSUNAGA  
MEMBER

1311 PRINCE STREET BUILDING  
HONOLULU, HAWAII 96813

RECEIVED  
CHIEF DEPUTY  
DEMOCRATIC WHIP

United States Senate

WASHINGTON, D.C. 20510

MEMBER  
COMMITTEE ON FINANCE  
COMMITTEE ON ENERGY AND  
NATURAL RESOURCES  
COMMITTEE ON LABOR AND  
HUMAN RESOURCES  
COMMITTEE ON  
VETERANS' AFFAIRS

January 23, 1985

Ms. Anne L. Mapes  
Belt, Collins & Associates  
606 Coraj Street  
Honolulu, Hawaii 96813

Dear Ms. Mapes:

Thank you for sending me a copy of the Mauna Lani Resort, Inc.'s Environmental Impact Statement Preparation Notice announcing the intention to prepare an Environmental Impact Statement.

I appreciate your offering me the opportunity to comment on these proposed changes to the existing Mauna Lani Resort in South Kohala, Hawaii. Although I have no formal comments to submit, I would like to commend your firm for developing this detailed and thorough report which assesses the impact of the proposed development at Mauna Lani.

Aloha and best wishes.

Sincerely,

*Spark Matsunaga*  
Spark Matsunaga  
U. S. Senator

April 10, 1985  
85-600

BILL COLLINS  
& ASSOCIATES  
Engineering • Planning  
Landscape Architecture

Senator Spark M. Matsunaga  
U.S. Senator, Hawaii  
109 Hart Building  
Washington, D.C. 20510

Dear Senator Matsunaga:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 23, 1985 acknowledging receipt of the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort. While you had no comments to make on this matter, we do appreciate the time you and your staff spent reviewing the document.

It is expected that the Draft Environmental Impact Statement (DEIS) for the project will be filed in May. We look forward to your further participation in the EIS process and to any comments you may have following your review of the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:iff

cc: Mauna Lani Resort, Inc.

Honolulu, Hawaii 96813  
1311 PRINCE STREET BUILDING  
HONOLULU, HAWAII 96813  
TELEPHONE: 531-1810 FAX: 531-1811

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JAN 9 1985  
COUNTY OF HAWAII

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JAN 9 1985  
COUNTY OF HAWAII



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JAN 9 1985  
COUNTY OF HAWAII

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JAN 9 1985  
COUNTY OF HAWAII

January 4, 1985

In Reply Refer  
To C-20

Mr. Stephen K. Yamashiro  
Council Chairman  
County Council  
County of Hawaii  
25 Aupuni Street  
Hilo, Hawaii 96720

Ms. Anne L. Hapes  
Belt, Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

RE: Environmental Impact Statement Preparation Notice  
Mauna Lani Resort Expansion, South Kohala, Hawaii

Your letter of December 17, 1984 (84-1940) was received  
and referred to the Council's Committee on Planning  
for study and recommendation.

When the Hawaii County Council acts on your letter, you  
will be informed as to the action taken.

*Steph*  
Stephen K. Yamashiro  
COUNCIL CHAIRMAN

Thank you for your letter of January 4, 1985 -- Letter No. C-20 in your  
reference system -- acknowledging receipt of the Environmental Impact Statement  
Preparation Notice for the proposed revised development plan for Mauna Lani Resort.  
While you did not have any comments to make on this matter, we appreciate your  
referral of the Preparation Notice to the Council's Committee on Planning for study  
and recommendation.

We expect the Draft Environmental Impact Statement (DEIS) for this project will  
be filed in May. We look forward to your further participation in the EIS process and  
to any comments you and the Committee on Planning may have on the forthcoming  
DEIS.

Sincerely,  
*Anne L. Hapes*  
Anne L. Hapes

ALM:iff  
cc: Mauna Lani Resort, Inc.

Hawaiian Telephone System, Hawaiian Telephone Company, 10101 Kalia Road, Honolulu, Hawaii 96817  
Telephone: 441-1111, 441-1112, 441-1113, 441-1114, 441-1115, 441-1116, 441-1117, 441-1118, 441-1119, 441-1120, 441-1121, 441-1122, 441-1123, 441-1124, 441-1125, 441-1126, 441-1127, 441-1128, 441-1129, 441-1130, 441-1131, 441-1132, 441-1133, 441-1134, 441-1135, 441-1136, 441-1137, 441-1138, 441-1139, 441-1140, 441-1141, 441-1142, 441-1143, 441-1144, 441-1145, 441-1146, 441-1147, 441-1148, 441-1149, 441-1150, 441-1151, 441-1152, 441-1153, 441-1154, 441-1155, 441-1156, 441-1157, 441-1158, 441-1159, 441-1160, 441-1161, 441-1162, 441-1163, 441-1164, 441-1165, 441-1166, 441-1167, 441-1168, 441-1169, 441-1170, 441-1171, 441-1172, 441-1173, 441-1174, 441-1175, 441-1176, 441-1177, 441-1178, 441-1179, 441-1180, 441-1181, 441-1182, 441-1183, 441-1184, 441-1185, 441-1186, 441-1187, 441-1188, 441-1189, 441-1190, 441-1191, 441-1192, 441-1193, 441-1194, 441-1195, 441-1196, 441-1197, 441-1198, 441-1199, 441-1200

**PRI** Gasco, Inc.  
A Public Resources, Inc. Company

**RECEIVED**  
JAN 3 1985

Home Division  
345 Kalia Road, Apt. 202  
P.O. Box 1337, Honolulu, HI 96813  
Telephone: (808) 555-0001 Telex: 743029

**BELT, COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

January 2, 1985  
Belt, Collins and Associates  
606 Coral Street  
Honolulu, HI 96813

Attention: Ms. Anne Mapes  
Gentlemen:

Subject: EISPN Mauna Lani Resort Expansion

We do not foresee significant impact within the next 10 years on our capability to provide the Mauna Lani Resort area with propane fuel.

Sincerely,  
*Alan K.C. Hee*  
Alan K.C. Hee  
Staff Engineer  
Gasco, Inc.--Hawaii Division

cc George Lee

April 10, 1985  
85-597

Mr. Alan K.C. Hee  
Gasco, Inc. - Hawaii Division  
P.O. Box 1337  
Hilo, Hawaii 96720

Dear Mr. Hee:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 2, 1985 acknowledging receipt of the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort. While your company had no comments to make on this matter, we do appreciate the time you and your staff spent reviewing the document.

It is expected that the Draft Environmental Impact Statement (DEIS) for the project will be filed in May. We look forward to your further participation in the EIS process and to any comments you may have following your review of the DEIS.

Sincerely,  
*Anne L. Mapes*  
Anne L. Mapes

ALM:HF  
cc: Mauna Lani Resort, Inc.

Honolulu 1481 Leialua Street, Honolulu, Hawaii 96813 Telephone: (808) 555-0001 Telex: 743029  
New York: 1455 Broadway, 14th Floor, International Building, New York, NY 10019 Telephone: (212) 685-1000

RECEIVED  
JAN 2 - 1985

Small text block containing recipient address and contact information.



HAWAII LEEWARD PLANNING CONFERENCE  
BELT, COLLINS & ASSOCIATES  
P.O. Box 1089, Kamuela, HI 96743

Small text block containing sender address and contact information.

December 27, 1984

Ms. Anne L. Mapes  
BELT, COLLINS & ASSOCIATES  
606 Coral Street  
Honolulu, HI 96813

Dear Ms. Mapes:

We have reviewed the Environmental Impact Statement Preparation Notice and the Environmental Assessment for the Mauna Lani Resort in South Kohala, Hawaii.

We believe that you have addressed the major issues and have nothing to add in relation to the scope of the Environmental Impact Statement. We would, however, suggest that you add to the list of State agencies to be consulted the Mauna Kea Soil & Water Conservation District; their address is as follows:

P.O. Box 1089  
Kamuela, HI 96743

Thank you for this opportunity to review the Environmental Assessment.

Sincerely,

*H. Peter L'Orange*  
H. Peter L'Orange  
President

HPL:lg

BELT, COLLINS & ASSOCIATES  
Engineering • Planning  
Landscape Architecture

April 10, 1985  
85-593

Mr. H. Peter L'Orange, President  
Hawaii Leeward Planning Conference  
P.O. Box 633  
Kaliua-Kona, Hawaii 96745

Dear Mr. L'Oranges:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of December 27, 1984 acknowledging receipt of the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort. While your organization had no comments to make on this matter, we do appreciate the time you and members of your organization spent reviewing the document.

At your suggestion, we wrote to the Mauna Kea Soil and Water Conservation District office to solicit their comments on the proposed Mauna Lani Resort expansion. Their response will be taken into consideration in preparing the Draft Environmental Impact Statement (DEIS).

It is expected that the Draft Environmental Impact Statement (DEIS) for the project will be filed in May. We look forward to your further participation in the EIS process and to any comments you may have following your review of the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:ll

cc: Mauna Lani Resort, Inc.

Small vertical text block at the bottom of the page.

Honolulu: 606 Coral Street, Honolulu, Hawaii 96813, Telephone: (808) 521-5363, Telex: B11117430474  
Singapore: 160 Orchard Road, #17-08, International Building, Singapore 0213, Telephone: 235-6870, Telex: 85 59144 BELSIN



RECEIVED

JAN 17 1985

U.S. ARMY CORPS OF ENGINEERS



NA ALA HELE

2200 KALANANĪHUI DRIVE

HONOLULU, HAWAII 96813

January 18, 1985

Belt, Collins

Page 2

January 18, 1985

Public Parks and Public Access  
Maui Lani Resort has demonstrated a welcoming attitude toward public access through extensive walking trails and ample public parking. That is indeed appreciated!

How will Honokaape Bay be accessible to the public? Will public parking be available? Will continuous shoreline trail access be extended beyond Honokaape Bay to Waialua Bay?

How large would the public park be adjacent to Peoua Bay? Will public use of sandy Peoua Bay be welcomed? The more choice, sandy swimming areas do not appear to be within the proposed public park boundaries.

Special Permits

One wonders why procedures exist for requesting State Land Use District Boundary Amendments when the County will issue Special Permits that allow permanent land uses such as a sewage treatment plant. This amounts to approval given after-the-fact. The LUC is in the position of having no other choice but to approve. How can a sewage treatment plant be moved after its construction?

Density and Golf Course

The objective of maintaining lower development densities with no increase in the total number of units is appealing. Would that intent be binding upon those who purchase properties bordering Mauna Iani's fairways?

The 18 hole golf course to the north and mauka of the Puako Petroglyphs would not offer the "ocean-fronting" experience that appears to be so popular and in demand. How "unique" and "quality" would that course be?

Mahalo for your time.

Sincerely,

Deborah Chang Abred  
President, Na Ala Hele

cc: U. S. Army Corps of Engineers

Belt, Collins & Associates  
606 Coral St.  
Honolulu, HI 96813

Dear Sirs:

Re: Environmental Assessment for the Maui Lani Resort, South Kohala, Hawaii  
Thank you for requesting Na Ala Hele's participation in the EIS study process.

Questions and concerns at this time are:

Anchialine Pools

The Environmental Assessment does not mention the anchialine pools found on the lands to be affected. A January 1985 examination of the pools located within the existing golf course and accessible through the public shoreline trail sadly reveals the absence of the endemic ope'ope'ula (*Halocardina rubra*). Common "guppy" fish have been introduced to the pools and the encrusting algae, once a grayish white, is now reddish brown. These pools were once pristine habitats for endemic flora and fauna.

One anchialine pool located mauka of Honokaape Bay remains pristine. Investigation into how such delicate pools can be retained despite surrounding construction and resort activities is essential. Massive filling in of ponds located at Waialua Bay, site of the highest concentration of anchialine pools in the state, is currently being proposed by the developers of the Hyatt Regency. The more destruction of these habitats, the greater likelihood that unique flora and fauna will be pushed to endangered species status. That would not be in the best interest of Hawaii's residents and visitors.

Historic

Na Ala Hele plans to revisit a shoreline area that appears to have quite a concentration of "hollows" built into the "e'a" for the purpose of salt making and food storage. The area is approximately mauka of the southern extreme of Maui Lani Resort's shoreline property. I have examined it only once and need to better define its location.

The Puako Petroglyph Field is intended to be a future public park. It is essential to formalize how the area will be maintained and secured to prevent vandalism of the petroglyphs. What role will the State of Hawaii have in the development of this historic treasure on state-owned lands?

**BILL COUINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

April 10, 1985  
85-609

Ms. Deborah Chang Abreu  
President  
Na Ala Hele  
P.O. Box 1572  
Kealahou, Hawaii 96750

Dear Ms. Abreu:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 18, 1985 regarding the Environmental  
Impact Statement Preparation Notice for the proposed revised development plan for  
Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing  
the Draft Environmental Impact Statement (DEIS) which is expected to be filed in  
May. You will be sent a copy of the DEIS when it is available. We look forward to  
your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:ll

cc: Mauna Lani Resort, Inc.

Mauna Lani Resort, Inc., 1000 Mauna Lani Drive, Suite 100, Wailea, Hawaii 96751  
Telephone: (808) 255-2100 • Telex: 255-2100 • Fax: (808) 255-2101



# University of Hawaii at Manoa

Environmental Center  
Crawford 317 • 2550 Campus Road  
Honolulu, Hawaii 96822  
Telephone (808) 940-7261

January 18, 1985  
PN:0039

Ms. Anne L. Mapes  
Belt Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Dear Ms. Mapes:

Preparation Notice  
Environmental Impact Statement  
Mauna Lani Resort Expansion  
South Kohala, Hawaii

The Environmental Center has briefly reviewed the above cited document with the assistance of David Welch, Anthropologist; Jacquelin Miller and Juliane Mansur, Environmental Center. Most of the critical issues to be addressed in the EIS have been identified in this preliminary document and we assume that they will be expanded where necessary for the EIS. We can offer some additional information on two topics: tsunami runup and archaeological impacts.

### Tsunamis

The tsunami runup height suggested for design (p. III-6) is the 12-foot runup height of the 1946 tsunami at Kawaihae. Consideration should be given to the use, instead, of the 100-foot tsunami runup height (nearshore) estimated by the Corps of Engineers that is the basis for the horizontal extent of 100-year tsunami inundation as shown on Federal Flood Insurance Program maps.

### Archaeology

Several concerns have been identified by our reviewers with regard to the archaeological significance of the area which should be addressed in the EIS for this project. As noted in the EIS determination by the Land Use Commission the project will involve impacts to archaeological sites on the property and will involve improved access to the Puako petroglyphs.

Patrick Kirch directed a Bishop Museum survey of the Mauna Lani resort lands in 1973. While, according to the preparation notice, Kirch estimated that 80 percent of the sites on the property had been located, it should be noted that not all areas were covered with equal intensity during that survey. Unfortunately, Kirch's report does not state which areas received what intensity of coverage. Last October, David Welch (UH

Ms. Anne L. Mapes

-2-

January 18, 1985

Archaeologist), directed an intensive survey of the conservation district zone which Mauna Lani is requesting be rezoned to permit resort expansion. In this 168 acre area, in which Kirch's survey had not been covered intensively during Kirch's survey. This was clearly an area which had not been covered intensively during Kirch's survey. Other areas for which development is now planned may likewise have received only light coverage in earlier surveys. We would therefore recommend a more intensive archaeological survey of the other areas to be developed to aid in the planning of the mitigation measures to be taken in regard to the archaeological properties on the resort.

The planned development of the conservation district will result in improved access to the main petroglyph complexes in the Puako Petroglyph Archaeological Field. While this will have the positive effect of allowing the public to view this fascinating site, accompanying this will be easier accessibility by those who would vandalize these sites. The utter defacement of the petroglyphs at Olowau on Maui within 5 years in the late 1970's, after knowledge of their location became publically well known, attests to the unfortunate effects that such access can have. We would hope that the EIS will address this problem. Mauna Lani Resort in coordination with the State Historic Preservation Office should develop some type of plan that will help to provide protection for these archaeological features, which have been placed on the National Register of Historic Places.

The conservation district itself is primarily an open aa lava field and kiawe forest on shallow soil. The archaeological sites are all small, primarily shelters, and no petroglyphs were observed in the area. As long as the mitigation plan recommended in the report prepared by David Welch is carried out, the archaeological value of these sites will have been adequately protected.

Mauna Lani Resort has shown a past commitment to a program of mitigation of adverse impacts through data recovery or preservation of archaeological sites. The implementation of these suggestions will help improve the quality of the mitigation plan for the new phase of development.

We appreciate the opportunity to comment on this document and look forward to reviewing the Draft EIS.

Yours truly,

Doak C. Cox  
Director

cc: DEQC  
David Welch  
Jacquelin Miller  
Juliane Mansur

**BILL COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

April 10, 1985  
85-612

Mr. Doak C. Cox, Director  
Environmental Center  
University of Hawaii at Manoa  
Crawford 317  
2550 Campus Road  
Honolulu, Hawaii 96822

Dear Mr. Cox:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 18, 1985 -- Letter No. PNI-0039 in your reference system -- regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS) which is expected to be filed in May. You will be sent a copy of the DEIS when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

XII-44

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

AL:mlf

cc: Mauna Lani Resort, Inc.

Bill Collins & Associates, 1500 Kalia Road, Honolulu, Hawaii 96813. Telephone: 535-1111. Telex: 85111. FAX: 535-1111. Bill Collins & Associates, 1500 Kalia Road, Honolulu, Hawaii 96813. Telephone: 535-1111. Telex: 85111. FAX: 535-1111.

December 21, 1984  
84-1978

Mr. Jack K. Suwa, Chairman  
Department of Agriculture  
1928 S. King Street  
Honolulu, Hawaii 96814

Dear Mr. Suwa:

Environmental Impact Statement Preparation Notice  
Mauna Lani Resort Expansion, South Kohala, Hawaii

Mauna Lani Resort, Inc. is proposing several changes to the existing Mauna Lani Resort in South Kohala, Hawaii. These changes include the construction of a second 18-hole golf course and a public beach park, a reduction in the density of residential development by spreading the units over a larger area, and the relocation of an existing hotel site. In addition, it is seeking to eliminate the need for Special Use Permits for existing and proposed support facilities. In order to implement these proposed changes, the petitioner has asked that the Urban District containing the resort be increased by approximately 65% acres. In addition, it is seeking a new lease and Conservation District Use Permit allowing about 40 acres of land north of Paoua Bay leased from the State to be used for two golf holes and a public beach park.

An Environmental Impact Statement Preparation Notice (EISPN) announcing the intention to prepare an EIS in accordance with Chapter 343, Hawaii Revised Statutes, was published in the December 8, 1984 issue of the Office of Environmental Quality Control Bulletin. Copies of the EISPN and the environmental assessment (EA) on which it was based are attached to this letter for your use. The EA provides a description of the proposed development, the changes in Land Use District boundaries that are being sought, and the existing environment which would be affected. It also summarizes the kinds of impacts that may result and indicates the kinds of additional analyses that are being conducted for the EIS.

We request that you/your organization assist us in preparing the EIS by providing comments on the proposed project as it relates to your jurisdiction and responsibility, special knowledge, or interest. It is our intention that the EIS will explore all aspects of the project's probable impacts, but we hope to devote the bulk of our effort to those issues which are of greatest concern. You could help us accomplish this by indicating in writing the specific questions, issues, and topics you believe should be addressed, the reasons why you believe the requested data and/or analyses are important, and, if applicable, the ways the information we supply will be used in the decision-making process. The more specific you can be, the greater the likelihood that we will be able to respond with satisfaction.

This document contains neither recommendations nor conclusions of the U.S. Environmental Protection Agency. It is the property of the U.S. Environmental Protection Agency and is loaned to your agency; it and its contents are not to be distributed outside your agency.

Mr. Jack K. Suwa, Chairman  
Page two

December 21, 1984  
84-1978

In addition to identifying any particular concerns you may have regarding the proposed expansion, we would appreciate it if you would answer the following questions relative to your department's activities and/or responsibilities in the area. The information you provide will be used to assess the potential impacts of the proposed project.

1. The soil and land types within the expansion site at Mauna Lani Resort identified by the Soil Conservation Service (SCS) are a'ala flows (rLV), pahoehoe lava flows (rLW), rock land (rRO), beach areas (Bh), and Kamakoa very fine sandy loam (KGC). Of these, only the Kamakoa soil has seen some agricultural use: sugarcane (1900-1913), cattle and pigs, alfalfa on a small portion of the site (1924-1931). The SCS rates the agricultural suitability of the soil as "Class III", which encompasses soils with severe limitations that reduce the choice of plants, require special conservation practices, or both. The University of Hawaii Land Study Bureau's master productivity rating for the Kamakoa soil is "E", the lowest of their scale. In light of the above, we conclude that there are no viable agricultural uses for the expansion site that should be explored in the EIS as an alternative to the proposed project. Is our assumption correct?
2. It is our understanding that the project site is not on land designated as being of agricultural significance, according to the Agricultural Lands of Importance to the State of Hawaii (ALISH) classification system. Is this correct?

As you probably know, the Environmental Impact Statement Regulations stipulate that a written response to requests for comments be made within 30 days of their receipt. It is our hope that you will make every effort to respond within this time period so that no issues are given short shrift simply because they are raised belatedly.

If all goes as planned, it is expected that the EIS will be available in May 1985. At that time the document will be circulated for public review and comment.

If you have any questions regarding the project or the kinds of input which would be most helpful to us in preparing the EIS, please call me at 521-5361. I will be happy to provide any additional information and guidance I can.

Sincerely,

*Anne L. Mapes*

Anne L. Mapes

AL:Mill

Attachment

GEORGE B. ARIVUSIII  
GOVERNOR

RECEIVED  
JAN 21 1985  
DEPARTMENT OF AGRICULTURE

JACK K. SMUA  
CHAIRMAN, BOARD OF AGRICULTURE  
SUZANNE D. PETERSON  
DEPUTY TO THE CHAIRMAN

State of Hawaii  
DEPARTMENT OF AGRICULTURE  
1428 So. King Street  
Honolulu, Hawaii 96814

Mailing Address:  
P. O. Box 22154  
Honolulu, Hawaii 96822

January 21, 1985

Ms. Anne L. Hapes  
Belt, Collins and Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Dear Ms. Hapes:

Subject: Environmental Impact Statement Preparation  
Notice (EISP) for the Mauna Lanai Resort  
Expansion, South Kohala, Hawaii  
THK: 6-8-22: 1; 6-8-1:22; 6-9-1:15

This is in response to your letter of December 21, 1984, requesting the comments of the Department on the subject EISP.

We note that the document is found attached in its entirety as an exhibit (Exhibit 3) to a petition for an amendment to the State Land Use District boundary filed with the State Land Use Commission (Docket No. A84-583). A copy of our comments on the petition (dated December 6, 1984) is attached.

You will find that the questions you pose in your letter are answered in our response to the petition. Please note that the additional concerns found in our response also apply to the subject EISP. In summary, these concerns include:

- Any adverse impacts on water well users in the region resulting from the withdrawal of groundwater for the proposed project.
- Clarification of the relationship among the economic and residential development components of the County of Hawaii's Kona Regional Plan and the North Kohala Community Development Plan, and the proposed project.

Should you have any further questions, please contact our Planning and Development Office at 548-7133.

Sincerely,

*Jack K. Smua*  
JACK K. SMUA  
Chairman, Board of Agriculture

Attachment

December 6, 1984

MEMORANDUM

To: Mr. Kent M. Keith, Director  
Department of Planning and Economic Development

Subject: Petition for an Amendment to the State Land Use District Boundaries  
Use District Boundaries  
A84-583 (Mauna Lanai Resort, Inc.)  
Agricultural and Conservation to Urban Resort/Residential Community  
THK: 6-8-22: 1; 6-8-01: 22  
South Kohala, Hawaii  
Acres: 654

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

According to the petition, the petitioner seeks approval of the proposed district reclassification to expand the existing resort area according to their master plan. We note that the proposed reclassification largely conforms to the General Plan Land Use Pattern Allocation Guide Map.

Our analysis of the subject properties indicate relatively poor agricultural suitability. Approximately 10 acres in the area adjacent to the existing sewage treatment plant are classified as "Other Important" agricultural lands according to the Agricultural Land Use Importance to the State of Hawaii (ALISH) system. The remaining petitioned lands are not classified according to the ALISH system. The Soil Conservation Service Soil Survey indicates that the relevant soils have minimal agricultural potential, and the Land Study Bureau Detailed Land Classification similarly indicates poor agricultural productivity potential for the subject lands.

Thus, the properties do not meet the generally understood definitions of "important agricultural lands".

To our knowledge, the only intensive agricultural use within or in the immediate vicinity of the subject properties is the petitioner's coconut/field stock nursery situated next to the sewage treatment plant.

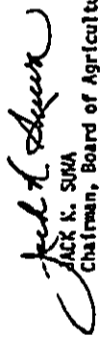
Mr. Kent H. Keith  
Page -2-  
December 6, 1984

We note that the primary source of potable water will be from existing and proposed wells on State-owned lands in Lānai and on Parker Ranch lands (Exhibit I, page III-18). Irrigation water for existing and future golf courses will be from brackish water sources.

One concern we have is whether the proposed withdrawal of water for the proposed project will have any adverse effect upon other well water users in the affected region.

The proposed development will create additional employment opportunities. However, the petition does not state how many jobs will be created or if employee housing will be made available. It appears to us that the operation of four or more additional hotels and a wide range of ancillary activities would result in the creation of a substantial number of jobs. This may have a significant impact on the residential communities in the Kawaihae, Waikoloa, North Kohala, Waimea, Hilo, and Kona areas. One of the impacts that could be addressed at the time of hearing is the relationships among the economic and residential development components of the Kona Regional Plan, the North Kohala Community Development Plan, and the proposed development.

Thank you for the opportunity to comment.

  
JACK K. SUWA  
Chairman, Board of Agriculture

cc: Hawaii County Planning Department

**BILL COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

Mr. Jack K. Suwa  
Chairman, Board of Agriculture  
Department of Agriculture  
State of Hawaii  
1428 South King Street  
Honolulu, Hawaii 96814

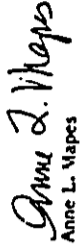
Dear Mr. Suwa:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 21, 1985 regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS) which is expected to be filed in May. You will be sent a copy of the DEIS when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

  
Anne L. Mapes

ALM:lf

cc: Mauna Lani Resort, Inc.

April 10, 1985  
85-607

December 21, 1984  
84-1979

Mr. Francis M. Hatanaka  
Acting Superintendent of Education  
Department of Education  
State of Hawaii  
1390 Miller Street  
Honolulu, Hawaii 96813

Dear Mr. Hatanaka:

Environmental Impact Statement Preparation Notice  
Mauna Lani Resort Expansion, South Kohala, Hawaii

Mauna Lani Resort, Inc. is proposing several changes to the existing Mauna Lani Resort in South Kohala, Hawaii. These changes include the construction of a second 18-hole golf course and a public beach park, a reduction in the density of residential development by spreading the units over a larger area, and the relocation of an existing hotel site. In addition, it is seeking to eliminate the need for Special Use Permits for existing and proposed support facilities. In order to implement these proposed changes, the petitioner has asked that the Urban District containing the resort be increased by approximately 65% acres. In addition, it is seeking a new lease and Conservation District Use Permit allowing about 40 acres of land north of Pauoa Bay leased from the State to be used for two golf holes and a public beach park.

An Environmental Impact Statement Preparation Notice (EISP/N) announcing the intention to prepare an EIS in accordance with Chapter 343, Hawaii Revised Statutes, was published in the December 8, 1984 issue of the Office of Environmental Quality Control Bulletin. Copies of the EISP/N and the environmental assessment (EA) on which it was based are attached to this letter for your use. The EA provides a description of the proposed development, the changes in Land Use District boundaries that are being sought, and the existing environment which would be affected. It also summarizes the kinds of impacts that may result and indicates the kinds of additional analyses that are being conducted for the EIS.

We request that you/your organization assist us in preparing the EIS by providing comments on the proposed project as it relates to your jurisdiction and responsibility, special knowledge, or interest. It is our intention that the EIS will explore all aspects of the project's probable impacts, but we hope to devote the bulk of our effort to those issues which are of greatest concern. You could help us accomplish this by indicating in writing the specific questions, issues, and topics you believe should be addressed, the reasons why you believe the requested data and/or analyses are important, and, if applicable, the ways the information we supply will be used in the decision-making process. The more specific you can be, the greater the likelihood that we will be able to respond with satisfaction.

1000 Ala Moana Blvd., Suite 1000, Honolulu, Hawaii 96813  
Telephone: (808) 551-1111  
Telex: 840101  
Facsimile: (808) 551-1112

Mr. Francis M. Hatanaka  
Page two

December 21, 1984  
84-1979

In addition to identifying any particular concerns you may have regarding the proposed expansion, we would appreciate it if you would answer the following questions relative to your department's activities and/or responsibilities in the area. The information you provide will be used to assess the potential impacts of the proposed project.

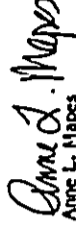
1. What public elementary, intermediate and secondary schools would serve students from the residential development within the proposed expansion? Does the Department have any plans to expand educational facilities in the area? If so, please describe them.
2. What is the current enrollment, design capacity and the projected enrollment for the 1985-2000 period for each of the above schools?
3. How much space is available at existing or currently proposed facilities to accommodate increased enrollment?
4. What student generation rates (by grade level categories) would the Department use for relatively high-priced multifamily and single-family units at Mauna Lani Resort? Do these rates include all students or only those attending public schools?

As you probably know, the Environmental Impact Statement Regulations stipulate that a written response to requests for comments be made within 30 days of their receipt. It is our hope that you will make every effort to respond within this time period so that no issues are given short shrift simply because they are raised belatedly.

If all goes as planned, it is expected that the EIS will be available in May 1985. At that time the document will be circulated for public review and comment.

If you have any questions regarding the project or the kinds of input which would be most helpful to us in preparing the EIS, please call me at 521-5361. I will be happy to provide any additional information and guidance I can.

Sincerely,

  
Anne L. Mapes

ALL:mf

Attachment



CELESTE & ASSOCIATES  
CONSULTANTS

Francis Hatanaka  
Superintendent  
of Education

RECEIVED  
JAN 08 1985



STATE OF HAWAII  
DEPARTMENT OF EDUCATION  
P O BOX 2184  
HONOLULU HAWAII 96810

STATE OF HAWAII

January 3, 1984

Ms Anne L. Mapes  
Belt, Collins & Assoc.

January 2, 1984  
Page 2

Should there be any further questions, please call Mr. Howard Lau at the  
Facilities Branch, phone 737-4743.

Sincerely,

FRANCIS H. HATANAKA  
Superintendent of Education  
FHH:th

cc Mr. Vernon Honda  
Hawaii District

Ms Anne L. Mapes  
Belt, Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Dear Ms Mapes:

Subject: EIS Preparation Notice  
Mauna Lani Resort Expansion, South Kohala, Hawaii

This is in response to your inquiry on the potential impact of the subject  
expansion.

1. Kohala High and Elementary School will be serving the students from your  
residential development. There are no plans at the present time to ex-  
pend the existing educational facilities.
2. Current enrollment at Kohala High and Elementary School is 738 K-12  
students. The design enrollment is 630 and current capacity is 850  
students. We do not anticipate that enrollment in the 1985-2000 range  
will exceed the rated capacity of the school.

3. Current capacity exceeds current enrollment by 112 students.

4. Student generation factors per 100 units for relatively high-priced resi-  
dential units at Mauna Lani are:

Multi-Family Units	K-6	7-8	9-12
Single Family Units	.02	.01	.01
	.02	.01	.01

For your information, our earlier response to the Department of Planning and  
Economic Development on your Petition No. A84-583 stated that the project will  
have a negligible enrollment impact on our Kohala High and Elementary School.

XII-49

AN EQUAL OPPORTUNITY EMPLOYER

**BILL COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

April 10, 1985  
85-602

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

Dear Mr. Hatanaka:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 2, 1985 regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS) which is expected to be filed in May. You will be sent a copy of the DEIS when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Stapes*  
Anne L. Stapes

ALM:if

cc: Mauna Lani Resort, Inc.

Honolulu 96804 • State of Hawaii • First-Class • Registered Professional Engineer • License No. 10111 • 1984  
Sincerely, Anne L. Stapes, Environmental Planning, Mauna Lani Resort, South Kohala, Hawaii 96804

Mr. Kent Keith, Director  
Dept. of Planning & Economic Development  
Kamamalu Building  
250 S. King Street  
Honolulu, Hawaii 96813

Dear Mr. Keith:

Environmental Impact Statement Preparation Notice  
Mauna Lani Resort Expansion, South Kohala, Hawaii

Mauna Lani Resort, Inc. is proposing several changes to the existing Mauna Lani Resort in South Kohala, Hawaii. These changes include the construction of a second 18-hole golf course and a public beach park, a reduction in the density of residential development by spreading the units over a larger area, and the relocation of an existing hotel site. In addition, it is seeking to eliminate the need for Special Use Permits for existing and proposed support facilities. In order to implement these proposed changes, the petitioner has asked that the Urban District containing the resort be increased by approximately 654 acres. In addition, it is seeking a new lease and Conservation District Use Permit allowing about 40 acres of land north of Pahoia Bay leased from the State to be used for two golf holes and a public beach park.

An Environmental Impact Statement Preparation Notice (EISPAN) announcing the intention to prepare an EIS in accordance with Chapter 343, Hawaii Revised Statutes, was published in the December 5, 1984 issue of the Office of Environmental Quality Control Bulletin. Copies of the EISPAN and the environmental assessment (EA) on which it was based are attached to this letter for your use. The EA provides a description of the proposed development, the changes in Land Use District boundaries that are being sought, and the existing environment which would be affected. It also summarizes the kinds of impacts that may result and indicates the kinds of additional analyses that are being conducted for the EIS.

We request that you/your organization assist us in preparing the EIS by providing comments on the proposed project as it relates to your jurisdiction and responsibility, special knowledge, or interest. It is our intention that the EIS will explore all aspects of the project's probable impacts, but we hope to devote the bulk of our effort to those issues which are of greatest concern. You could help us accomplish this by indicating in writing the specific questions, issues, and topics you believe should be addressed, the reasons why you believe the requested data and/or analyses are important, and, if applicable, the ways the information we supply will be used in the decision-making process. The more specific you can be, the greater the likelihood that we will be able to respond with satisfaction.

Mr. Kent Keith, Director

Page two

December 24, 1984  
84-1989

In addition to identifying any particular concerns you may have regarding the proposed expansion, we would appreciate it if you would answer the following questions relative to your department's activities and/or responsibilities in the area. The information you provide will be used to assess the potential impacts of the proposed project.

1. Do you foresee any possible conflicts between the proposed expansion and the goals, objectives and policies of the Hawaii State Plan? If so, please describe them.
2. Do you foresee any possible conflicts with the objectives and policies of the State's Coastal Zone Management Program? If so, please describe them.
3. Finally, do you foresee any possible conflicts between the proposed project and the guidelines set forth in the State Functional Plans, specifically in the State Tourism Plan? If so, again, please describe them.

As you probably know, the Environmental Impact Statement Regulations stipulate that a written response to requests for comments be made within 30 days of their receipt. It is our hope that you will make every effort to respond within this time period so that no issues are given short shrift simply because they are raised belatedly.

If all goes as planned, it is expected that the EIS will be available in May 1985. At that time the document will be circulated for public review and comment.

If you have any questions regarding the project or the kinds of input which would be most helpful to us in preparing the EIS, please call me at 521-3361. I will be happy to provide any additional information and guidance I can.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:lf

Attachment



**RECEIVED**

**DEPARTMENT OF PLANNING  
AND ECONOMIC DEVELOPMENT**

PLANNING DIVISION  
1500 KALANOAULI BOULEVARD  
HONOLULU, HAWAII 96813

FEBRUARY 12, 1985

REF. NO. P-1054

Ms. Anne L. Mapes  
Page 2  
February 12, 1985

Hawaii State Plan and State Functional Plans, we appreciate your efforts to assess the relationship of the proposed project to these plans. However, we feel that it is the responsibility of the preparer of the EIS to assess and describe the relationship in the EIS. The EIS should also assess the relationship of the proposed project to the relevant objectives and policies of the Hawaii Coastal Zone Management Program.

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

Very truly yours,

*Murray S. Tomil*  
Kent M. Keith

cc: Office of Environmental Quality Control

Ms. Anne L. Mapes  
Belt, Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Dear Ms. Mapes:

SUBJECT: EIS Preparation Notice for Mauna Lani Resort Expansion,  
South Kohala, Hawaii

We have reviewed the subject preparation notice and have the following comments.

The environmental impact statement should thoroughly address the impacts of the proposed development on shoreline and offshore resources. In this particular case, public access to the shoreline, archaeological/historical resources, and ocean water quality would be primary areas of concern. Particular attention should be given to show why 168 acres of shoreline property should be removed from the protection of the Conservation district.

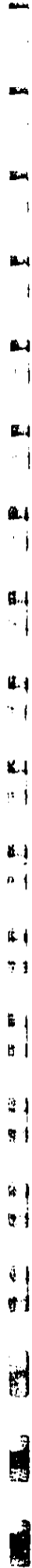
The problem of infrastructure, particularly the availability of water and sewer facilities should be related to the phasing and quantity of development. Current needs should be quantified as well as anticipated increases related to the proposed development plan.

Documentation should be provided to show the location of archaeological/historical sites based on past and current surveys as well as probable impacts to these sites based on the proposed development.

The Environmental Assessment mentions a "preliminary market study performed by Ming Chew Associates." A market study should be provided to show the need for the proposed reclassification in light of the proposed expansions of the Mauna Kea Resort and the Maikoloa Resort. The supply and demand for hotel units, resort condominium units, golf courses, commercial space, etc., in the area should be discussed. In addition to this, the problem of employee housing for the proposed development should be resolved.

With regard to your questions requesting our input on the compatibility of the proposed project to the objectives and policies of the

X 1 52



**BILL COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

April 10, 1985  
85-611

Mr. Kent M. Keith, Director  
Dept. of Planning & Economic Development  
State of Hawaii  
P.O. Box 2359  
Honolulu, Hawaii 96804

Dear Mr. Keith:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of February 12, 1985 -- Letter No. P-1034 in your reference system -- regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS) which is expected to be filed in May. You will be sent a copy of the DEIS when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:ll

cc: Mauna Lani Resort, Inc.

XII-53

Hawaiian Cultural Museum Honolulu Hawaii Telephone: (808) 531-1311 Telex: H01111 HAWAII  
Magazine: 1001 Kalia Road #1210, International Building Honolulu HI 96813 Telephone: (808) 531-1311 Telex: H01111 HAWAII

December 24, 1984  
84-1993

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

Dear Mr. Yamasaki:

Environmental Impact Statement Preparation Notice  
Mauna Lani Resort Expansion, South Kohala, Hawaii

Mauna Lani Resort, Inc. is proposing several changes to the existing Mauna Lani Resort in South Kohala, Hawaii. These changes include the construction of a second 18-hole golf course and a public beach park, a reduction in the density of residential development by spreading the units over a larger area, and the relocation of an existing hotel site. In addition, it is seeking to eliminate the need for Special Use Permits for existing and proposed support facilities. In order to implement these proposed changes, the petitioner has asked that the Urban District containing the resort be increased by approximately 624 acres. In addition, it is seeking a new lease and Conservation District Use Permit allowing about 40 acres of land north of Pauoa Bay leased from the State to be used for two golf holes and a public beach park.

An Environmental Impact Statement Preparation Notice (EISPM) announcing the intention to prepare an EIS in accordance with Chapter 343, Hawaii Revised Statutes, was published in the December 8, 1984 issue of the Office of Environmental Quality Control Bulletin. Copies of the EISPM and the environmental assessment (EA) on which it was based are attached to this letter for your use. The EA provides a description of the proposed development, the changes in Land Use District boundaries that are being sought, and the existing environment which would be affected. It also summarizes the kinds of impacts that may result and indicates the kinds of additional analyses that are being conducted for the EIS.

We request that you/your organization assist us in preparing the EIS by providing comments on the proposed project as it relates to your jurisdiction and responsibility, special knowledge, or interest. It is our intention that the EIS will explore all aspects of the project's probable impacts, but we hope to devote the bulk of our effort to those issues which are of greatest concern. You could help us accomplish this by indicating in writing the specific questions, issues, and topics you believe should be addressed, the reasons why you believe the requested data and/or analyses are important, and, if applicable, the ways the information we supply will be used in the decision-making process. The more specific you can be, the greater the likelihood that we will be able to respond with satisfaction.

Mauna Lani Resort, Inc., 1000 Hanaula, Mauna Lani, Kapaemahu, HI 96731, Kona, Hawaii, Hawaii  
Mauna Lani Resort, Inc., 1000 Hanaula, Mauna Lani, Kapaemahu, HI 96731, Kona, Hawaii, Hawaii

In addition to identifying any particular concerns you may have regarding the proposed expansion, we would appreciate it if you would answer the following questions relative to your department's activities and/or responsibilities in the area. The information you provide will be used to assess the potential impacts of the proposed project.

1. The two-lane Queen Ka'ahumanu Highway has been designed so that additional lanes can be added within the existing 300-foot wide right-of-way. Will additional lanes be needed in the near future and does the Department have any plans for road widening? If so, please describe the planned improvements and give us the proposed construction time period.
2. Does the State have traffic projections for Queen Ka'ahumanu Highway? If so, what are they to the year 2000?
3. Does the Department keep a record of traffic accidents that may have occurred on Queen Ka'ahumanu Highway during the past few years? If so, please provide the data or indicate where we may obtain it.
4. Is your staff aware of any specific traffic or roadway characteristics in the vicinity of the project area that should be taken into account in our analysis of the potential impacts of the proposed expansion? If so, please indicate what they are.
5. What is the status of planned and proposed improvements for Keāhole Airport? Does your Department foresee any problems with the airport as to capacity or types of aircraft it can handle? If there are areas of concern, please indicate what they are.

As you probably know, the Environmental Impact Statement Regulations stipulate that a written response to requests for comments be made within 30 days of their receipt. It is our hope that you will make every effort to respond within this time period so that no issues are given short shrift simply because they are raised belatedly.

If all goes as planned, it is expected that the EIS will be available in May 1985. At that time the document will be circulated for public review and comment.

If you have any questions regarding the project or the kinds of input which would be most helpful to us in preparing the EIS, please call me at 521-5161. I will be happy to provide any additional information and guidance I can.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:lf

Attachment

GEORGE R. ANTONIO  
GOVERNOR

RECEIVED  
FEB 7 1985

WAYNE J. YAMASAKI  
DIRECTOR



SEIL, COLLINS & ASSOCIATES

DEPUTY DIRECTORS  
JOHNATHAN R. SHIMADA, Ph.D.  
WALTER M. HO  
GERRIT D. SOON  
AGNES VICENT

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
100 HONOLULU AVENUE, 15TH FLOOR  
HONOLULU, HAWAII 96813

February 4, 1985

STP 8.10457

Ms. Anne L. Mapes  
Page 2  
February 4, 1985

STP 8.10457

Ms. Anne L. Mapes  
Belt, Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Dear Ms. Mapes:

Environmental Impact Statement  
Preparation Notice  
Mauna Lani Resort Expansion  
South Kohala, HI  
TRK: 6-8-01: 22, 6-8-22: 1, 6-9-01: 15

We have reviewed the preparation notice and recommend that a traffic impact analysis be conducted to address the project's impacts upon Queen Kaahumanu Highway. The findings of this analysis and the measures required to mitigate any significant impacts should be presented in the EIS.

To assist you in this study, the following responses are provided in the same numerical order as your request:

1. There are no plans to widen Queen Kaahumanu Highway in the near future.
2. The 1995 and 2005 average daily traffic projected for the highway between Keahole and Hapuna are 3400 and 4300 vehicles per day, respectively.
3. Traffic accident reports may be obtained from the Highways Division's Traffic Branch located at 865 Punchbowl Street.
4. High speed traffic on Queen Kaahumanu Highway should be considered in the design of the access roads.

5. A master plan for Keahole Airport will be initiated this year. This study will evaluate the airport's capacity and will propose a development plan for airfield and terminal projects.

We trust we have satisfactorily addressed your concerns. We will be pleased to review the EIS when it becomes available.

Very truly yours,

*Wayne J. Yamasaki*  
Wayne J. Yamasaki  
Director of Transportation

**BELT, COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

April 10, 1985  
83-616

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

Dear Mr. Yamasaki:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of February 4, 1985 -- Letter No. STP 8.10437 in your reference system -- regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS) which is expected to be filed in May. You will be sent a copy of the DEIS when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:ll

cc: Mauna Lani Resort, Inc.

Honolulu 1414 Coral Street, Honolulu, Hawaii 96813 Telephone (808) 521-5161 Telex: 081111723174  
Singapore 141 Orchard Road #1214c, International Building, Singapore 1921 Telephone 215 1870 Telex 8351464 BK 15114



December 26, 1984  
84-2001

**BELT, COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

Ms. Patricia G. Engelhard, Director  
Department of Parks & Recreation  
Hawaii County  
23 Aupuni Street  
Hilo, Hawaii 96720

Dear Ms. Engelhard:

Environmental Impact Statement Preparation Notice  
Mauna Lani Resort Expansion, South Kohala, Hawaii

Mauna Lani Resort, Inc. is proposing several changes to the existing Mauna Lani Resort in South Kohala, Hawaii. These changes include the construction of a second 18-hole golf course and a public beach park, a reduction in the density of residential development by spreading the units over a larger area, and the relocation of an existing hotel site. In addition, it is seeking to eliminate the need for Special Use Permits for existing and proposed support facilities. In order to implement these proposed changes, the petitioner has asked that the Urban District containing the resort be increased by approximately 624 acres. In addition, it is seeking a new lease and Conservation District Use Permit allowing about 40 acres of land north of Pauoa Bay leased from the State to be used for two golf holes and a public beach park.

An Environmental Impact Statement Preparation Notice (EISP/N) announcing the intention to prepare an EIS in accordance with Chapter 343, Hawaii Revised Statutes, was published in the December 8, 1984 issue of the Office of Environmental Quality Control Bulletin. Copies of the EISP/N and the environmental assessment (EA) on which it was based are attached to this letter for your use. The EA provides a description of the proposed development, the changes in Land Use District boundaries that are being sought, and the existing environment which would be affected. It also summarizes the kinds of impacts that may result and indicates the kinds of additional analyses that are being conducted for the EIS.

We request that you/your organization assist us in preparing the EIS by providing comments on the proposed project as it relates to your jurisdiction and responsibility, special knowledge, or interest. It is our intention that the EIS will explore all aspects of the project's probable impacts, but we hope to devote the bulk of our effort to those issues which are of greatest concern. You could help us accomplish this by indicating in writing the specific questions, issues, and topics you believe should be addressed, the reasons why you believe the requested data and/or analyses are important, and, if applicable, the ways the information we supply will be used in the decision-making process. The more specific you can be, the greater the likelihood that we will be able to respond with satisfaction.

In addition to identifying any particular concerns you may have regarding the proposed expansion, we would appreciate it if you would answer the following questions relative to your department's activities and/or responsibilities in the area. The information you provide will be used to assess the potential impacts of the proposed project.

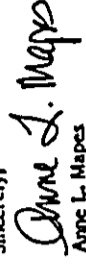
1. The proposed Mauna Lani Resort expansion includes the construction of a public shoreline beach park with a comfort station, beach showers, picnic facilities and parking. The park will allow convenient access to the shoreline and to the Puako Petroglyph area. Is the proposed location for the park acceptable to your department?
2. Do you foresee any potential conflicts between the proposed resort and residential uses and the public's use of the beach park? If so, please describe them and indicate ways in which they might be avoided.
3. Do you have any data regarding the number of persons who currently use the shoreline areas of the project site and the types of activities in which they engage? If so, please provide us with the information.

As you probably know, the Environmental Impact Statement Regulations stipulate that a written response to requests for comments be made within 30 days of their receipt. It is our hope that you will make every effort to respond within this time period so that no issues are given short shrift simply because they are raised belatedly.

If all goes as planned, it is expected that the EIS will be available in May 1985. At that time the document will be circulated for public review and comment.

If you have any questions regarding the project or the kinds of input which would be most helpful to us in preparing the EIS, please call me at 521-5361. I will be happy to provide any additional information and guidance I can.

Sincerely,

  
Anne L. Mapes

ALM:llf

Attachment

RECEIVED  
JAN 8 1985



DEPARTMENT OF PARKS & RECREATION  
COUNTY OF HAWAII  
January 4, 1985  
Dante K. Carpenter, Mayor  
Patricia Engelhard, Director

BILL COLLINS  
& ASSOCIATES  
Engineering - Planning  
Landscape Architecture

April 10, 1985  
85-603

Ms. Patricia Engelhard, Director  
Department of Parks and Recreation  
County of Hawaii  
25 Aupuni Street  
Hilo, Hawaii 96720

Dear Ms. Engelhard:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lanai Resort, South Kohala, Hawaii

Thank you for your letter of January 4, 1985 regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lanai Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS) which is expected to be filed in May. You will be sent a copy of the DEIS when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:ll

cc: Mauna Lanai Resort, Inc.

Ms. Anne Mapes  
Bill Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Subject: EIS Preparation Notice For Mauna Lanai Resort Expansion  
South Kohala, Hawaii

We have reviewed the subject report and have no adverse comments to offer. As a matter of clarification, the County beach parks listed in Chapter III-20 are Kona, Kona, and Mahukona. In response to your specific questions (page two of cover letter) we offer the following comments:

1. Locating the proposed beach park adjacent to Puako Petroglyph area will improve access to both resources;
2. Potential conflicts between the proposed resort/residential uses and public's use of the beach park can be avoided through an effective public informational program, such as an interpretive program for shorelines and pond resources;
3. We have no data regarding specific members of persons who currently use the project's shoreline area. We do know that the area is or was used for fishing, diving, and other shoreline recreational activities.

If we can be of further assistance, please do not hesitate to contact us.

Thank you for the opportunity to comment on the proposed expansion project.

*Pat Engelhard*  
PATRICIA ENGELHARD  
Director

PKH:jk

25 AUPUNI STREET • HILO, HAWAII 96720 • TELEPHONE 961-8311

Handwritten text at the bottom of the page, possibly a routing slip or administrative notes.

December 24, 1984  
84-1992

Mr. Hugh Ono, Chief Engineer  
Department of Public Works  
Hawaii County  
25 Aupuni Street  
Hilo, Hawaii 96720

Dear Mr. Ono:

Environmental Impact Statement Preparation Notice  
Mauna Lanai Resort Expansion, South Kohala, Hawaii

Mauna Lanai Resort, Inc. is proposing several changes to the existing Mauna Lanai Resort in South Kohala, Hawaii. These changes include the construction of a second 18-hole golf course and a public beach park, a reduction in the density of residential development by spreading the units over a larger area, and the relocation of an existing hotel site. In addition, it is seeking to eliminate the need for Special Use Permits for existing and proposed support facilities. In order to implement these proposed changes, the petitioner has asked that the Urban District containing the resort be increased by approximately 624 acres. In addition, it is seeking a new lease and Conservation District Use Permit allowing about 40 acres of land north of Pauoa Bay leased from the State to be used for two golf holes and a public beach park.

An Environmental Impact Statement Preparation Notice (EISP/N) announcing the intention to prepare an EIS in accordance with Chapter 343, Hawaii Revised Statutes, was published in the December 8, 1984 issue of the Office of Environmental Quality Control Bulletin. Copies of the EISP/N and the environmental assessment (EA) on which it was based are attached to this letter for your use. The EA provides a description of the proposed development, the changes in Land Use District boundaries that are being sought, and the existing environment which would be affected. It also summarizes the kinds of impacts that may result and indicates the kinds of additional analyses that are being conducted for the EIS.

We request that you/your organization assist us in preparing the EIS by providing comments on the proposed project as it relates to your jurisdiction and responsibility, special knowledge, or interest. It is our intention that the EIS will explore all aspects of the project's probable impacts, but we hope to devote the bulk of our effort to those issues which are of greatest concern. You could help us accomplish this by indicating in writing the specific questions, issues, and topics you believe should be addressed, the reasons why you believe the requested data and/or analyses are important, and, if applicable, the ways the information we supply will be used in the decision-making process. The more specific you can be, the greater the likelihood that we will be able to respond with satisfaction.

Mr. Hugh Ono, Chief Engineer  
Page two

December 24, 1984  
84-1992

In addition to identifying any particular concerns you may have regarding the proposed expansion, we would appreciate it if you would answer the following questions relative to your department's activities and/or responsibilities in the area. The information you provide will be used to assess the potential impacts of the proposed project.

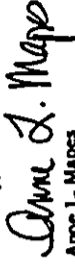
1. What are the existing waste loads being handled at the Waimea and Kailua-Kona sanitary landfills? Please indicate the solid waste generation factors (pounds per person or unit) used by your department to project solid waste disposal loads.
2. What is the status of the new sanitary landfill being considered in the vicinity of Puuanahulu and when is it proposed to be operational? Are alternate sites still under consideration? If so, where are they?

As you probably know, the Environmental Impact Statement Regulations stipulate that a written response to requests for comments be made within 30 days of their receipt. It is our hope that you will make every effort to respond within this time period so that no issues are given short shrift simply because they are raised belatedly.

If all goes as planned, it is expected that the EIS will be available in May 1985. At that time the document will be circulated for public review and comment.

If you have any questions regarding the project or the kinds of input which would be most helpful to us in preparing the EIS, please call me at 521-5361. I will be happy to provide any additional information and guidance I can.

Sincerely,

  
Anne L. Mapes

AL:Mill  
Attachment



DEPARTMENT OF PUBLIC WORKS

COUNTY OF HAWAII - 25 ALUPOI STREET - HILO, HAWAII 96720 - TELEPHONE 961-8327

BEIT, COLLINS & ASSOCIATES  
Engineering - Planning  
Landscape Architecture

January 11, 1985

JAN 15 1985

BEIT, COLLINS & ASSOCIATES

MS ANNE L. MAPES  
BEIT COLLINS & ASSOCIATES  
606 CORAL STREET  
HONOLULU HI 96813

SUBJECT: MAUNA LANI RESORT EXPANSION  
ENVIRONMENTAL ASSESSMENT

Thank you for the opportunity to review the Environmental Assessment.  
The following are our comments.

-FIGURE II-2 The new proposed Master Plan doesn't include a road stub out to the Waikoloa Beach Resort. Should Mauna Lani Resort decide to dedicate their roads to the County of Hawaii, such a stub out will be required.

-FIGURE II-2 The new road alignment south from Kaniku Drive through the proposed golf course crosses the King's Trail. The previous alignment, Fig. II-1, did not cross the trail.

-FIGURE II-3 The Flood Area shown differs from that on the County of Hawaii Flood Insurance Rate Maps. Please show the location of the firm areas: A0, A2 and A5 on this figure.

-SECTION 2.7.7, Page III-18 The Waimea Landfill was closed in December, 1984. The compactors at the transfer station are now taken to our landfill in Kailua-Kona. This revision should be made.

Should you have any questions, please contact Robert Yanabu, 961-8327 at our Bureau of Plans and Survey.

*Robert Yanabu*  
ROBERT Y. ONO  
Chief Engineer

cc: Planning Department  
Mayor  
Plans and Surveys

April 10, 1985  
85-615

Mr. Hugh Y. Ono, Chief Engineer  
Department of Public Works  
County of Hawaii  
25 Alupoi Street  
Hilo, Hawaii 96720

Dear Mr. Ono:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 11, 1985 regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS) which is expected to be filed in May. You will be sent a copy of the DEIS when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:mf

cc: Mauna Lani Resort, Inc.

Honolulu (606 Coral Street) Honolulu, Hawaii 96813, Telephone (808) 521-5161, Telex: RL11174 K3274  
Singapore: 142 Orchard Road #12-08, International Building, Singapore (602) Telephone 235 6870, Telex: 85 50664 IK151N

December 26, 1988  
88-2002

Mr. William H. Sewake  
Managing Engineer  
Department of Water Supply  
Hawaii County  
25 Aupuni Street  
Hilo, Hawaii 96720

Dear Mr. Sewake:

Environmental Impact Statement Preparation Notice  
Mauna Lani Resort Expansion, South Kohala, Hawaii

Mauna Lani Resort, Inc. is proposing several changes to the existing Mauna Lani Resort in South Kohala, Hawaii. These changes include the construction of a second 18-hole golf course and a public beach park, a reduction in the density of residential development by spreading the units over a larger area, and the relocation of an existing hotel site. In addition, it is seeking to eliminate the need for Special Use Permits for existing and proposed support facilities. In order to implement these proposed changes, the petitioner has asked that the Urban District containing the resort be increased by approximately 654 acres. In addition, it is seeking a new lease and Conservation District Use Permits allowing about 40 acres of land north of Paoua Bay leased from the State to be used for two golf holes and a public beach park.

An Environmental Impact Statement Preparation Notice (EISP/N) announcing the intention to prepare an EIS in accordance with Chapter 343, Hawaii Revised Statutes, was published in the December 8, 1988 issue of the Office of Environmental Quality Control Bulletin. Copies of the EISP/N and the environmental assessment (EA) on which it was based are attached to this letter for your use. The EA provides a description of the proposed development, the changes in Land Use District boundaries that are being sought, and the existing environment which would be affected. It also summarizes the kinds of impacts that may result and indicates the kinds of additional analyses that are being conducted for the EIS.

We request that you/your organization assist us in preparing the EIS by providing comments on the proposed project as it relates to your jurisdiction and responsibility, special knowledge, or interest. It is our intention that the EIS will explore all aspects of the project's probable impacts, but we hope to devote the bulk of our effort to those issues which are of greatest concern. You could help us accomplish this by indicating in writing the specific questions, issues, and topics you believe should be addressed; the reasons why you believe the requested data and/or analyses are important, and, if applicable, the ways the information we supply will be used in the decision-making process. The more specific you can be, the greater the likelihood that we will be able to respond with satisfaction.

Mr. William H. Sewake  
Page two

December 26, 1988  
88-2002

In addition to identifying any particular concerns you may have regarding the proposed expansion, we would appreciate it if you would provide water usage rates for our use in the analysis of potential impacts. What average rates do you consider appropriate applied to hotel rooms (gallons/unit/day), single-family and multifamily units (gallons/unit/day), and landscaped areas (gpd/acre)?

As you probably know, the Environmental Impact Statement Regulations stipulate that a written response to requests for comments be made within 30 days of their receipt. It is our hope that you will make every effort to respond within this time period so that no issues are given short shrift simply because they are raised belatedly.

If all goes as planned, it is expected that the EIS will be available in May 1989. At that time the document will be circulated for public review and comment.

If you have any questions regarding the project or the kinds of input which would be most helpful to us in preparing the EIS, please call me at 521-5361. I will be happy to provide any additional information and guidance I can.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:llf

Attachment

RECEIVED

JAN 11 1985

BELT, COLLINS & ASSOCIATES

DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII

42 AUPUNI STREET • HILO, HAWAII 96720



January 10, 1985

Ms. Anne L. Mapes  
Belt, Collins & Associates  
606 Coral Street  
Honolulu, HI 96813

ENVIRONMENTAL IMPACT STATEMENT  
PREPARATION NOTICE  
MAUNA LANI RESORT EXPANSION  
FILE: BA-6-001-0002

We have no objections to the proposed resort expansion provided the developer continues to pursue needed water development to meet projected water demands that are based on actual consumption trends.

As you know, through participation in the construction of the Lalamilo Water System, the developer was allotted 1.0 million gallons per day (mgd) of water. An additional deep well source currently under construction will increase the allotment to 2.3 mgd.

Generally, the Department uses 600 gallons per day per unit as a maximum daily water demand figure for hotels, single-family, residential, and multi-family residential developments. However, actual usage will vary depending on rainfall conditions and individual requirements. Due to high landscape irrigation demands, several thousand gallons per unit may be required. An in-depth study of the water usage of Mauna Lani Resort should be conducted to determine actual demand requirements for the different types of uses. Actual demand figures should be utilized to project potential demands for future proposed expansion.

Thank you for the opportunity to comment on the subject Environmental Impact Statement preparation notice.

*William Sewake*  
H. William Sewake  
Manager

QA

... Water brings progress...

BELT, COLLINS  
& ASSOCIATES  
Engineering • Planning  
Landscape Architecture

Mr. H. William Sewake, Manager  
Department of Water Supply  
County of Hawaii  
25 Aupuni Street  
Hilo, Hawaii 96720

Dear Mr. Sewake:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 10, 1985 regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS) which is expected to be filed in May. You will be sent a copy of the DEIS when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:lf

CC: Mauna Lani Resort, Inc.

Honolulu 1415 Coral Street, Honolulu, Hawaii 96813. Telephone: (808) 521-5161. Telex: BH11174 BQ474  
Singapore: 111 Orchard Road, #1214, International Building, Singapore 0723. Telephone: 215 14371. Telex: RS 91804 IK 151N

December 24, 1984  
84-1994

Mr. Francis Smith, Fire Chief  
Fire Department  
Hawaii County  
23 August Street  
Hilo, Hawaii 96720

Dear Mr. Smith:

Environmental Impact Statement Preparation Notice  
Mauna Lanai Resort Expansion, South Kohala, Hawaii

Mauna Lanai Resort, Inc. is proposing several changes to the existing Mauna Lanai Resort in South Kohala, Hawaii. These changes include the construction of a second 18-hole golf course and a public beach park, a reduction in the density of residential development by spreading the units over a larger area, and the relocation of an existing hotel site. In addition, it is seeking to eliminate the need for Special Use Permits for existing and proposed support facilities. In order to implement these proposed changes, the petitioner has asked that the Urban District containing the resort be increased by approximately 650 acres. In addition, it is seeking a new lease and Conservation District Use Permit allowing about 40 acres of land north of Paoua Bay leased from the State to be used for two golf holes and a public beach park.

An Environmental Impact Statement Preparation Notice (EISPN) announcing the intention to prepare an EIS in accordance with Chapter 343, Hawaii Revised Statutes, was published in the December 8, 1984 issue of the Office of Environmental Quality Control Bulletin. Copies of the EISPN and the environmental assessment (EA) on which it was based are attached to this letter for your use. The EA provides a description of the proposed development, the changes in Land Use District boundaries that are being sought, and the existing environment which would be affected. It also summarizes the kinds of impacts that may result and indicates the kinds of additional analyses that are being conducted for the EIS.

We request that you/your organization assist us in preparing the EIS by providing comments on the proposed project as it relates to your jurisdiction and responsibility, special knowledge, or interest. It is our intention that the EIS will explore all aspects of the project's probable impacts, but we hope to devote the bulk of our effort to those issues which are of greatest concern. You could help us accomplish this by indicating in writing the specific questions, issues, and topics you believe should be addressed, the reasons why you believe the requested data and/or analyses are important, and, if applicable, the ways the information we supply will be used in the decision-making process. The more specific you can be, the greater the likelihood that we will be able to respond with satisfaction.

Mr. Francis Smith, Fire Chief  
Page two

December 24, 1984  
84-1994

In addition to identifying any particular concerns you may have regarding the proposed expansion, we would appreciate it if you would answer the following questions relative to your department's activities and/or responsibilities in the area. The information you provide will be used to assess the potential impacts of the proposed project.

1. Mauna Lanai Resort, Inc. is currently working with your department on regional fire protection improvements. Do you foresee any problems with the proposed expansion? If so, please describe them and indicate any measures that might be taken to avoid or remedy them.
2. Please provide a description of the Waimea fire station: the primary service area, staffing, equipment and hours of operation.

As you probably know, the Environmental Impact Statement Regulations stipulate that a written response to requests for comments be made within 30 days of their receipt. It is our hope that you will make every effort to respond within this time period so that no issues are given short shrift simply because they are raised belatedly.

If all goes as planned, it is expected that the EIS will be available in May 1985. At that time the document will be circulated for public review and comment.

If you have any questions regarding the project or the kinds of input which would be most helpful to us in preparing the EIS, please call me at 521-5361. I will be happy to provide any additional information and guidance I can.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:lll

Attachment

RECEIVED

JAN 9 1985



HAWAII COUNTY FIRE DEPARTMENT  
466 KINOOLE STREET, HILO, HAWAII 96720

FRANCIS E. SMITH  
FIRE CHIEF  
DON COLOMA  
DEPUTY FIRE CHIEF

BHIL COLLINS  
& ASSOCIATES  
Engineering • Planning  
Landscape Architecture

April 10, 1985  
85-604

DAANTE K. CARPENTER  
MAYOR

January 8, 1985

Ms. Anne L. Mapes  
Belt, Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Dear Ms. Mapes:

Subject: Environmental Impact Statement Preparation Notice  
Mauna Lani Resort Expansion, South Kohala, Hawaii

The Hawaii County Fire Department harbors no objections to the proposed expansion plans at Mauna Lani Resort, South Kohala, provided the new development includes the following:

- (1) Dedication of approximately one acre of land for future fire station use.
- (2) Adherence to all provisions of current Fire and Building Codes.
- (3) Meet requirements of the Planning and Water Departments.

The Fire Department is presently working with the Mauna Lani management regarding a proposed fire station site to be tentatively located on the north portion of the property adjacent to the intersection of Puako Road and Highway 19. Management also expressed the desire to form a volunteer fire company in the interim, which we endorse and will be assisting.

Present protection for the area is provided by the 24-hour station at Waimea where six personnel are on duty manning one engine, one tanker, and an emergency medical unit. This crew is supplemented by volunteers from Puako and Waikoloa and a paid Fire Equipment Operator from Kawahae.

Should the need arise, additional engines and a ladder truck would be dispatched from Kailua-Kona.

Sincerely,

*Francis E. Smith*  
FRANCIS E. SMITH  
FIRE CHIEF

FES/mo

Mr. Francis E. Smith, Fire Chief  
Hawaii County Fire Department  
466 Kinoole Street  
Hilo, Hawaii 96720

Dear Mr. Smith:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 8, 1985 regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS) which is expected to be filed in May. You will be sent a copy of the DEIS when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:llf

cc: Mauna Lani Resort, Inc.

Honolulu 1001, local 5083; Hilo 96720, 466 Kinoole Street, Hilo, HI 96720; Kailua-Kona, HI 96741, 1011 Kailua-Kona, HI 96741; International Building, Waipahoehoe, HI 96791; Telephone: 1-808-933-2400



Mr. A. Lono Lyman, Director  
Planning Department  
Hawaii County  
25 Aupuni Street  
Hilo, Hawaii 96720

Dear Ali:

Environmental Impact Statement Preparation Notice  
Mauna Lani Resort Expansion, South Kohala, Hawaii

Mauna Lani Resort, Inc. is proposing several changes to the existing Mauna Lani Resort in South Kohala, Hawaii. These changes include the construction of a second 18-hole golf course and a public beach park, a reduction in the density of residential development by spreading the units over a larger area, and the relocation of an existing hotel site. In addition, it is seeking to eliminate the need for Special Use Permits for existing and proposed support facilities. In order to implement these proposed changes, the petitioner has asked that the Urban District containing the resort be increased by approximately 654 acres. In addition, it is seeking a new lease and Conservation District Use Permit allowing about 40 acres of land north of Pauoa Bay leased from the State to be used for two golf holes and a public beach park.

An Environmental Impact Statement Preparation Notice (EISP/N) announcing the intention to prepare an EIS in accordance with Chapter 343, Hawaii Revised Statutes, was published in the December 8, 1984 issue of the Office of Environmental Quality Control Bulletin. Copies of the EISP/N and the environmental assessment (EA) on which it was based are attached to this letter for your use. The EA provides a description of the proposed development, the changes in Land Use District boundaries that are being sought, and the existing environment which would be affected. It also summarizes the kinds of impacts that may result and indicates the kinds of additional analyses that are being conducted for the EIS.

We request that you/your organization assist us in preparing the EIS by providing comments on the proposed project as it relates to your jurisdiction and responsibility, special knowledge, or interest. In particular, we would appreciate receiving your comments on the expansion within the framework of the Hawaii County General Plan and County zoning. It is our intention that the EIS will explore all aspects of the project's probable impacts, but we hope to devote the bulk of our effort to those issues which are of greatest concern. You could help us accomplish this by indicating in writing the specific questions, issues, and topics you believe should be addressed, the reasons why you believe the requested data and/or analyses are important, and, if applicable, the ways the information we supply will be used in the decision-making process. The more specific you can be, the greater the likelihood that we will be able to respond with satisfaction.

Mr. A. Lono Lyman, Director  
Page two

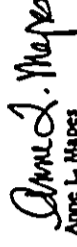
December 26, 1984  
84-2000

As you probably know, the Environmental Impact Statement Regulations stipulate that a written response to requests for comments be made within 30 days of their receipt. It is our hope that you will make every effort to respond within this time period so that no issues are given short shrift simply because they are raised belatedly.

If all goes as planned, it is expected that the EIS will be available in May 1985. At that time the document will be circulated for public review and comment.

If you have any questions regarding the project or the kinds of input which would be most helpful to us in preparing the EIS, please call me at 521-5361. I will be happy to provide any additional information and guidance I can.

Sincerely,

  
Anne L. Mapes

AL:mlf

Attachment



RECEIVED  
FPA, 1985

PLANNING DEPARTMENT

25 AUGUST STREET • HILA, HAWAII 96720  
(808) 935-2222

ELL, COLLINS & ASSOCIATES

DANTE K. CARPENTER  
Mayor

ALBERT LONO LYMAN  
Deputy Mayor

ILIMA A. PIHANALA  
Deputy Director

January 24, 1985

Ms. Anne L. Mapes  
Belt, Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Dear Ms. Mapes:

Environmental Impact Statement Preparation Notice and  
Environmental Assessment  
Mauna Lani Resort Expansion, South Kohala, Hawaii  
TMK: 4-8-01:Portion 22; 4-8-22:Portion 1

Thank you for the subject submittals and your letter of  
December 26, 1984. Our comments at this stage are:

- Chapter 3.6, Social and Economic Conditions. A detailed assessment of the impact of development on housing needs, including potential in-migrations should be included. On page IV-5, the report states that the development "... would result in new demand for employee housing. In light of the scale of the overall development, the limited availability of affordable housing and the limited public transportation, this issue requires further analysis.
- The prospect of an improved beach and attendant facilities to be developed and maintained by the applicant north of Pauoa Bay needs some clarification. Would access to both the park and the archaeological area be privately controlled; and if so, what restrictions, if any, would be imposed on the general public's access to the beach? How many parking spaces would be available to the public?
- With regard to the Land Use District classification boundary changes being requested by the applicant, we offer the following:

Ms. Anne L. Mapes  
Page 2  
January 24, 1985

- Agriculture to Urban. The 486-acre portion presently has an "Alternate Urban Expansion" designation in the County General Plan, signifying that should the present urban area be developed fully and according to plan, the Alternate Urban Expansion area could be the next urban area, should the need arise and be justified. Based on the extent of the current urban development improvements completed at Mauna Lani, the request for this change appears to be appropriate. The narrow strip to the south of the 486-acre portion is one which we consider to be a minor adjustment within the overall resort development frame.
  - Conservation to Urban. The intent of the General Plan designation of Open for the area along the shoreline and fronting Honokaope Bay, which coincides with the State Land Use Conservation District, is to ensure the preservation of open space--especially oceanfront land. Before commenting on the request to substitute the existing two resort-designated general locations for a single one (shown on the proposed master plan as "hotel 4, 33.4 acres"), we would like to know what uses are planned for the adjacent areas: G (23.5 acres); Y (19.5 acres); V (22.0 acres); W (23.7 acres); and X (10.6 acres).
- We have noted the questions raised in the January 11, 1985, letter from the Department of Public Works and concur with them.
  - We will have further comments and findings as subsequent application processes (district boundary changes, Conservation District Use, Zoning, EMA permit, etc.) are submitted and reviewed.

Sincerely,

*Albert Lono Lyman*  
ALBERT LONO LYMAN  
Planning Director

DT/ALL:gs

**BILL COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

April 10, 1985  
85-610

Mr. Albert Lono Lyman, Director  
Planning Department  
County of Hawaii  
25 Aupuni Street  
Hilo, Hawaii 96720

Dear Mr. Lyman:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 24, 1985 regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS) which is expected to be filed in May. You will be sent a copy of the DEIS when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:if

cc: Mauna Lani Resort, Inc.

Mauna Lani Resort, Inc. (Kohala) 1000 S.W. 1st Ave. Hilo HI 96720  
Mauna Lani Resort, Inc. (Maui) 1111 W. International Building, Suite 210, Hilo HI 96720

December 26, 1984  
84-1995

Mr. Guy Paul, Police Chief  
Police Department  
Hawaii County  
25 August Street  
Hilo, Hawaii 96720

Dear Mr. Paul:

Environmental Impact Statement Preparation Notice  
Mauna Lani Resort Expansion, South Kohala, Hawaii

Mauna Lani Resort, Inc. is proposing several changes to the existing Mauna Lani Resort in South Kohala, Hawaii. These changes include the construction of a second 18-hole golf course and a public beach park, a reduction in the density of residential development by spreading the units over a larger area, and the relocation of an existing hotel site. In addition, it is seeking to eliminate the need for Special Use Permits for existing and proposed support facilities. In order to implement these proposed changes, the petitioner has asked that the Urban District containing the resort be increased by approximately 639 acres. In addition, it is seeking a new lease and Conservation District Use Permit allowing about 40 acres of land north of Pauoa Bay leased from the State to be used for two golf holes and a public beach park.

An Environmental Impact Statement Preparation Notice (EISP/N) announcing the intention to prepare an EIS in accordance with Chapter 343, Hawaii Revised Statutes, was published in the December 8, 1984 issue of the Office of Environmental Quality Control Bulletin. Copies of the EISP/N and the environmental assessment (EA) on which it was based are attached to this letter for your use. The EA provides a description of the proposed development, the changes in Land Use District boundaries that are being sought, and the existing environment which would be affected. It also summarizes the kinds of impacts that may result and indicates the kinds of additional analyses that are being conducted for the EIS.

We request that you/your organization assist us in preparing the EIS by providing comments on the proposed project as it relates to your jurisdiction and responsibility, special knowledge, or interest. It is our intention that the EIS will explore all aspects of the project's probable impacts, but we hope to devote the bulk of our effort to those issues which are of greatest concern. You could help us accomplish this by indicating in writing the specific questions, issues, and topics you believe should be addressed, the reasons why you believe the requested data and/or analyses are important, and, if applicable, the ways the information we supply will be used in the decision-making process. The more specific you can be, the greater the likelihood that we will be able to respond with satisfaction.

This document contains information that is confidential and proprietary to the Office of Environmental Quality Control. It is intended for the use of the recipient only and should not be distributed to other persons without the express written consent of the Office of Environmental Quality Control.

Mr. Guy Paul, Police Chief  
Page two

December 26, 1984  
84-1995

In addition to identifying any particular concerns you may have regarding the proposed expansion, we would appreciate it if you would answer the following questions relative to your department's activities and/or responsibilities in the area. The information you provide will be used to assess the potential impacts of the proposed project.

1. We understand that both the Waimea and Kapa'au Police Stations were constructed relatively recently and that there is room in both buildings for additional staff. Do you foresee a need to add staff or to extend operations as a result of proposed development in the Kohala Coast Resort Region or as a result of the proposed Mauna Lani Resort expansion?
2. Do you foresee any special problems in serving the proposed expansion area? If so, please describe them and indicate measures to avoid or remedy them.
3. Would you please give a brief comparison of crime characteristics and rates in South Kohala with those in the rest of the Island of Hawaii? Please describe any changes in the crime characteristics of South Kohala that you might expect from the expansion of Mauna Lani Resort.

As you probably know, the Environmental Impact Statement Regulations stipulate that a written response to requests for comments be made within 30 days of their receipt. It is our hope that you will make every effort to respond within this time period so that no issues are given short shrift simply because they are raised belatedly.

If all goes as planned, it is expected that the EIS will be available in May 1985. At that time the document will be circulated for public review and comment.

If you have any questions regarding the project or the kinds of input which would be most helpful to us in preparing the EIS, please call me at 521-5361. I will be happy to provide any additional information and guidance I can.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

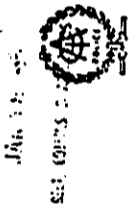
AL:mlf

Attachment



**POLICE DEPARTMENT**  
 COUNTY OF HAWAII  
 349 KAPIOLANI STREET  
 HILO, HAWAII 96720

**RECEIVED**



OUR REFERENCE  
 YOUR REFERENCE

January 16, 1985

SUT A PAUL  
 CHIEF OF POLICE  
 WAYNE G. CARVALHO  
 DEPUTY CHIEF

Ms. Anne L. Mapes  
 January 16, 1985  
 Page 2

Should you need any further information, please let me know.

*Sut A Paul*  
 SUT A. PAUL  
 CHIEF OF POLICE

Ms. Anne L. Mapes  
 Belt, Collins & Associates  
 606 Coral Street  
 Honolulu, Hawaii 96813

GAP/sf  
 Enc.

Re: Environmental Impact Statement Preparation Notice  
Mauna Lani Resort Expansion, South Kohala, Hawaii

This acknowledges your letter of December 26, 1984, requesting information on the effect of the proposed Mauna Lani Resort expansion on the police.

You are correct in your observation that both the Waimea and Kapaau Police stations were constructed rather recently and that there is room in both buildings for additional staff. We foresee that additional staffing will be needed as proposed developments in the Kohala coast region produce an increased population that will result in greater police workload.

As these developments reach completion, there will be a shift in frequency of criminal and traffic incidents to the Kohala coast region. This shift may necessitate the establishment of a police substation there which would require capital costs as well as the necessary additional personnel and equipment.

Enclosed is a table showing the distribution of uniformed police personnel within Hawaii County as well as the distribution of crime and traffic workload indicators. You will see that the Waimea district (which includes the Mauna Lani Resort area) is at a staffing level about equal with its present criminal and traffic workloads. The North Kohala district has a staffing level higher than its criminal and traffic workloads presently warrant, but, the factors of location and distance require this.

XII-69

**REILLY COLLINS  
& ASSOCIATES**  
Engineering & Planning  
 Architects - Planners - Engineers

April 10, 1985  
 83-606

Mr. Guy A. Paul, Chief of Police  
 Police Department  
 County of Hawaii  
 349 Kapiolani Street  
 Hilo, Hawaii 96720

Dear Mr. Paul:

Environmental Impact Statement (EIS) for the Proposed  
 Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of January 16, 1985 regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS) which is expected to be filed in May. You will be sent a copy of the DEIS when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*  
 Anne L. Mapes

ALM:lf

cc: Mauna Lani Resort, Inc.

CRIME-TRAFFIC  
HAWAII COUNTY  
JULY 1, 1983 - JUNE 30, 1984

<u>DISTRICT</u>	<u>POPULATION</u>	<u>PERCENTAGE POPULATION</u>	<u>UNIFORMED PERSONNEL</u>	<u>% UNIF. PERSONNEL</u>	<u>INDEX CRIMES</u>	<u>% INDEX CRIMES</u>	<u>TRAFFIC ACCIDENTS</u>	<u>% TRAFFIC ACCIDENTS</u>
S. HILO	44,740	44.3	97	39.1	2131	45.6	1064	48.0
N. HILO	1710	1.7	12	4.8	34	.7	63	2.8
HAMAKUA	5310	5.3	17	6.8	128	2.7	76	3.4
N. KOHALA	3430	3.4	11	4.4	66	1.4	42	1.9
WAIMEA	6410	6.3	17	6.8	242	5.2	149	6.7
KONA	22,180	22.0	55	22.1	1375	29.4	521	23.5
KAU	3370	3.3	15	6.0	110	2.3	59	2.7
PUHA	13,850	13.7	25	10.0	592	12.7	243	11.0
TOTAL	101,000*	100%	249	100%	4678	100%	2217	100%

\*1983 Estimates

BELI, COLLINS  
& ASSOCIATES  
Engineering • Planning  
Landscape Architecture

December 21, 1984  
84-1980

Mr. Gerald Rothstein  
76-123 Royal Poinciana Drive  
Kailua-Kona, Hawaii 96740

Dear Mr. Rothstein:

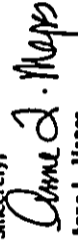
Environmental Impact Statement Preparation Notice (EISP/N)  
Mauna Lani Resort Expansion, South Kohala, Hawaii's

Attached are copies of the EISP/N and the environmental assessment (EA) for the above project which you requested in your phone call to me yesterday.

According to the Environmental Impact Statement (EIS) Regulations, you have 30 days after receipt of this letter in which to give us in writing your comments on the proposed project. These comments will be taken into consideration during the preparation of the EIS.

Should you have any further questions regarding the project, please call me at 521-5361.

Sincerely,



Anne L. Mapes

ALM:lf

Attachment

XII-71

**BILL COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

Hawaii Electric Light Company, Inc.  
1200 Kilauea Avenue  
Hilo, Hawaii 96720

Gentlemen:

Environmental Impact Statement Preparation Notice  
Mauna Lanai Resort Expansion, South Kohala, Hawaii's

Mauna Lanai Resort, Inc. is proposing several changes to the existing Mauna Lanai Resort in South Kohala, Hawaii. These changes include the construction of a second 18-hole golf course and a public beach park, a reduction in the density of residential development by spreading the units over a larger area, and the relocation of an existing hotel site. In addition, it is seeking to eliminate the need for Special Use Permits for existing and proposed support facilities. In order to implement these proposed changes, the petitioner has asked that the Urban District containing the resort be increased by approximately 654 acres. In addition, it is seeking a new lease and Conservation District Use Permit allowing about 40 acres of land north of Pauoa Bay leased from the State to be used for two golf holes and a public beach park.

An Environmental Impact Statement Preparation Notice (EISP/N) announcing the intention to prepare an EIS in accordance with Chapter 342, Hawaii's Revised Statutes, was published in the December 8, 1984 issue of the Office of Environmental Quality Control Bulletin. Copies of the EISP/N and the environmental assessment (EA) on which it was based are attached to this letter for your use. The EA provides a description of the proposed development, the changes in Land Use District boundaries that are being sought, and the existing environment which would be affected. It also summarizes the kinds of impacts that may result and indicates the kinds of additional analyses that are being conducted for the EIS.

We request that you/your organization assist us in preparing the EIS by providing comments on the proposed project as it relates to your jurisdiction and responsibility, special knowledge, or interest. It is our intention that the EIS will explore all aspects of the project's probable impacts, but we hope to devote the bulk of our effort to those issues which are of greatest concern. You could help us accomplish this by indicating in writing the specific questions, issues, and topics you believe should be addressed; the reasons why you believe the requested data and/or analyses are important, and, if applicable, the ways the information we supply will be used in the decision-making process. The more specific you can be, the greater the likelihood that we will be able to respond with satisfaction.

In addition to identifying any particular concerns you may have regarding the proposed expansion, we would appreciate it if you would answer the following questions relative to your department's activities and/or responsibilities in the area. The information you provide will be used to assess the potential impacts of the proposed project.

Revised: 10/14/84 • Revised: 10/20/84 • Hawaiian Islands • Telephone: (808) 521-1301 • Telex: H11113 • Fax: 521-1302  
Address: 2015 South Beach Road, Suite 210, International Building, Honolulu, HI 96826 • Telephone: 521-1301 • Telex: H11113 • Fax: 521-1302

1. Please briefly describe the existing electrical generation and transmission system serving the Mauna Lanai Resort. Are there any plans to expand or change the system regardless of the proposed Mauna Lanai Resort expansion? If so, please describe the changes and indicate when they would be made.
2. Can the existing electric system, as planned, accommodate the proposed expansion? If not, what improvements to the system must be made to adequately service the expanded resort?
3. We are interested in determining the extent to which Mauna Lanai Resort would use non-renewable resources to obtain electric power. Please indicate your projection of the percentage of power generated in 1990, 1995 and 2000 that would be obtained from various sources (burning bagasse, fossil fuels, etc.).
4. Please indicate energy conservation features that might be suitable for Mauna Lanai Resort and the extent to which they may lower energy consumption.
5. If you have other concerns related to the proposed Mauna Lanai Resort expansion or if there are other conditions of which we should be aware, we would appreciate knowing about them.

As you probably know, the Environmental Impact Statement Regulations stipulate that a written response to requests for comments be made within 30 days of their receipt. It is our hope that you will make every effort to respond within this time period so that no issues are given short shrift simply because they are raised belatedly.

If all goes as planned, it is expected that the EIS will be available in May 1985. At that time the document will be circulated for public review and comment.

If you have any questions regarding the project or the kinds of input which would be most helpful to us in preparing the EIS, please call me at 521-5361. I will be happy to provide any additional information and guidance I can.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:tfj  
Attachment



**BELT, COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

January 7, 1985  
85-30

ILWU Local 142  
Hawaii Division  
100 West Lanikaula  
Hilo, Hawaii 96720

Gentlemen:

Environmental Impact Statement Preparation Notice  
Mauna Lani Resort Expansion, South Kohala, Hawaii

As requested by Representative Dwight Takamine's office, we are writing to solicit your comments on the above project.

Mauna Lani Resort, Inc. is proposing several changes to the existing Mauna Lani Resort in South Kohala, Hawaii. These changes include the construction of a second 18-hole golf course and a public beach park, a reduction in the density of residential development by spreading the units over a larger area, and the relocation of an existing hotel site. In addition, it is seeking to eliminate the need for Special Use Permits for existing and proposed support facilities. In order to implement these proposed changes, the petitioner has asked that the Urban District containing the resort be increased by approximately 65% acres. In addition, it is seeking a new lease and Conservation District Use Permit allowing about 40 acres of land north of Paoua Bay leased from the State to be used for two golf holes and a public beach park.

An Environmental Impact Statement Preparation Notice (EISP/N) announcing the intention to prepare an EIS in accordance with Chapter 303, Hawaii Revised Statutes, was published in the December 8, 1984 issue of the Office of Environmental Quality Control Bulletin. Copies of the EISP/N and the environmental assessment (EA) on which it was based are attached to this letter for your use. The EA provides a description of the proposed development, the changes in Land Use District boundaries that are being sought, and the existing environment which would be affected. It also summarizes the kinds of impacts that may result and indicates the kinds of additional analyses that are being conducted for the EIS.

We request that you/your organization assist us in preparing the EIS by providing comments on the proposed project as it relates to your jurisdiction and responsibility, special knowledge, or interest. It is our intention that the EIS will explore all aspects of the project's probable impacts, but we hope to devote the bulk of our effort to those issues which are of greatest concern. You could help us accomplish this by indicating in writing the specific questions, issues, and topics you believe should be addressed, the reasons why you believe the requested data and/or analyses are important, and, if applicable, the ways the information we supply will be used in the decision-making process. The more specific you can be, the greater the likelihood that we will be able to respond with satisfaction.

Honolulu, 1440 Central Expressway, Honolulu, Hawaii 96813 Telephone: (808) 521-5101 Telex: H11111-243474  
Singapore: 301 Orchard Road #1216, International Building Singapore-0921 Telephone: 215 1870 Telex: 45 44644 HRTSIN

ILWU Local 142  
Page two

January 7, 1985  
85-30

As you probably know, the Environmental Impact Statement Regulations stipulate that a written response to requests for comments be made within 30 days of their receipt. It is our hope that you will make every effort to respond within this time period so that no issues are given short shrift simply because they are raised belatedly.

If all goes as planned, it is expected that the EIS will be available in May 1985. At that time the document will be circulated for public review and comment.

If you have any questions regarding the project or the kinds of input which would be most helpful to us in preparing the EIS, please call me at 321-5361. I will be happy to provide any additional information and guidance I can.

Sincerely,

  
Anne L. Mapes

ALM:llf  
Attachments

**BETH COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

January 2, 1985  
85-10

Mr. Gene Aguiar, Chairman  
Mauna Kea Soil & Water Conservation District  
Department of Land and Natural Resources  
State of Hawaii  
P.O. Box 1089  
Kamuela, Hawaii 96743

Dear Mr. Aguiar:

Environmental Impact Statement Preparation Notice  
Mauna Lani Resort Expansion, South Kohala, Hawaii

At the suggestion of the Hawaii Leeward Planning Conference, we are writing to solicit your comments on the above project (see attached letter of December 27, 1984).

Mauna Lani Resort, Inc. is proposing several changes to the existing Mauna Lani Resort in South Kohala, Hawaii. These changes include the construction of a second 18-hole golf course and a public beach park, a reduction in the density of residential development by spreading the units over a larger area, and the relocation of an existing hotel site. In addition, it is seeking to eliminate the need for Special Use Permits for existing and proposed support facilities. In order to implement these proposed changes, the petitioner has asked that the Urban District containing the resort be increased by approximately 65% acres. In addition, it is seeking a new lease and Conservation District Use Permit allowing about 40 acres of land north of Pauoa Bay leased from the State to be used for two golf holes and a public beach park.

An Environmental Impact Statement Preparation Notice (EISPN) announcing the intention to prepare an EIS in accordance with Chapter 343, Hawaii's Revised Statutes, was published in the December 8, 1984 issue of the Office of Environmental Quality Control Bulletin. Copies of the EISPN and the environmental assessment (EA) on which it was based are attached to this letter for your use. The EA provides a description of the proposed development, the changes in Land Use District boundaries that are being sought, and the existing environment which would be affected. It also summarizes the kinds of impacts that may result and indicates the kinds of additional analyses that are being conducted for the EIS.

We request that you/your organization assist us in preparing the EIS by providing comments on the proposed project as it relates to your jurisdiction and responsibility, special knowledge, or interest. It is our intention that the EIS will explore all aspects of the project's probable impacts, but we hope to devote the bulk of our effort to those issues which are of greatest concern. You could help us accomplish this by indicating in writing the specific questions, issues, and topics you believe should be addressed, the reasons why you believe the requested data and/or analyses are important, and, if applicable, the ways the information we supply will be used in the decision-making process. The more specific you can be, the greater the likelihood that we will be able to respond with satisfaction.

Mauna Kea Soil & Water Conservation District, Department of Land and Natural Resources, State of Hawaii, P.O. Box 1089, Kamuela, Hawaii 96743. Telephone: (808) 885-4100. Fax: (808) 885-4101.

Mr. Gene Aguiar, Chairman  
Page two

January 2, 1985  
85-10

As you probably know, the Environmental Impact Statement Regulations stipulate that a written response to requests for comments be made within 30 days of their receipt. It is our hope that you will make every effort to respond within this time period so that no issues are given short shrift simply because they are raised belatedly.

If all goes as planned, it is expected that the EIS will be available in May 1985. At that time the document will be circulated for public review and comment.

If you have any questions regarding the project or the kinds of input which would be most helpful to us in preparing the EIS, please call me at 521-5361. I will be happy to provide any additional information and guidance I can.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

AL:mlt

Attachments

cc: Hawaii Leeward Planning Conference  
Mauna Lani Resort, Inc.

XII-74

RECEIVED

Mauna Kea Soil and Water Conservation District  
Box 1089 Kapa'au, Hawaii 96743

**BEIT, COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

April 10, 1985  
85-613

February 14, 1985

Ms. Anne L. Mapes  
Beit Collins & Associates  
606 Coral Street  
Honolulu, HI 96813

Dear Ms. Mapes:

Subject: Environmental Assessment  
Mauna Lani Resort Expansion  
South Kohala, Hawaii

The Mauna Kea Soil and Water Conservation District reviewed your document as requested at our monthly meeting on 2/13/85 and we are in concurrence with Mr. Francis Lum's statement.

Thank you for the opportunity to review this document.

Sincerely,

*Gene Aguiar*  
Gene Aguiar, chairman  
Mauna Kea SMCD

Mr. Gene Aguiar, Chairman  
Mauna Kea Soil & Water Conservation District  
Box 1089  
Kapa'au, Hawaii 96743

Dear Mr. Aguiar:

Environmental Impact Statement (EIS) for the Proposed  
Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of February 14, 1985 regarding the Environmental Impact Statement Preparation Notice for the proposed revised development plan for Mauna Lani Resort.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS) which is expected to be filed in May. You will be sent a copy of the DEIS when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:llf

cc: Mauna Lani Resort, Inc.

CONSERVATION DEVELOPMENT SELF GOVERNMENT

Honolulu (41) Local Street Honolulu Hawaii 96813 Telephone (808) 521-5411 Telex: 10 4111-24 01122  
San Francisco 401 (The Embarcadero) 812 The International Building San Francisco 94102 Telephone: 215-74701 Kapa'au, HI attached to MMS

**CHAPTER XIII**  
**COMMENTS AND RESPONSES REGARDING**  
**THE DRAFT ENVIRONMENTAL IMPACT STATEMENT**

The Draft Environmental Impact Statement (DEIS) for the Revised Master Plan for Mauna Lani Resort was submitted to the Environmental Quality Commission on May 20, 1985. Letters commenting on the EIS were received from the agencies and organizations listed below. Their comment letters and the responses to these are reproduced on the following pages.

**Federal Agencies**

Department of the Army, U.S. Army Engineer District, Honolulu . . . . .	XIII-3
Headquarters, Naval Base Pearl Harbor . . . . .	XIII-7
U.S. Department of Agriculture, Soil Conservation Service . . . . .	XIII-8
U.S. Department of Commerce, National Marine Fisheries Service . . . . .	XIII-9
U.S. Department of Housing and Urban Development. . . . .	XIII-10
U.S. Department of the Interior, Fish and Wildlife Service . . . . .	XIII-12
U.S. Department of the Interior, Geological Survey . . . . .	XIII-14
U.S. Department of Transportation, Federal Aviation Adminis- tration . . . . .	XIII-15
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DEPARTMENT OF THE ARMY  
U. S. ARMY ENGINEER DISTRICT, HONOLULU  
FT. SHAFTER, HAWAII 96838

June 12, 1985

MAIL ROOM

RECEIVED

JUN 17 1985

MAIL ROOMS & ASSOCIATES



Ms. Esther Ueda  
State of Hawaii  
Land Use Commission  
335 Merchant Street, Rm. 104  
Honolulu, Hawaii 96813

Dear Ms. Ueda:

Thank you for the opportunity to review and comment on the Draft EIS for Mauna Lani Resort, Kalahuipua'a, South Kohala, Hawaii. The following comments are offered:

a. Suggest the Commission consider zoning anchialine pond areas for conservation in order to provide some protection of the resource.

b. Although a Department of the Army permit is not required at this time, we would encourage pond preservation, replacement or rehabilitation as part of any plans to fill or excavate anchialine ponds on Mauna Lani Resort.

c. Page IV-1. The elevation of Mauna Kea is 13,796 feet.

d. Page IV-11. On Maui, the anchialine ponds occur within the Natural Area Reserve.

e. Suggest the preparer of the draft EIS check for the proper scientific nomenclature. For example, genus and species names in Tables IV-1.4 and IV-1.5 should be underlined as was done for Table IV-1.6. Only genus and species names are underlined, never "var.", "sp.", or "spp." (DEIS, pages IV-31 to IV-32). Genus name is capitalized; species name is not. Common group names derived from family names, e.g. "holocentrid", are neither capitalized nor underlined (DEIS, page IV-23). Spelling and other possible errors should be checked.

f. Page IV-18. The use of the term "statistically significant" to characterize a decrease in native species should be documented by proper statistical analysis. It is not clear whether such analysis was accomplished.

-2-

g. Page IV-23. Change "butterfish" to "butterflyfish".

h. Pagination should be checked between pages IV-30 and IV-38.

i. Section 1.10.1. The document indicates that Mauna Lani Resort has adopted interpretive and management plans to preserve and display sites (S.M.I., 1982) but no clear statement exists of what the plan involves. There is also no indication of whether sites identified after 1981/1982 (e.g. Welch 1984) will be covered by the Plan within this section.

j. Section 1.10.1.3. There are several references to particularly significant sites (e.g. 400, 401, 404, etc.) but no location map or plan is given except Figure IV-5, which has no site identification numbers.

k. Section 1.10.1.4. The interpretive and management program section sounds good but appears to be wholly limited to a few areas only. What is to happen to those sites which are not part of the Preserve? Is that addressed within the program? These may also contain significant and/or important data.

l. Section 1.10.1.5. The EIS indicates that 8 sites were identified during this survey; however, only 7 sites are described. A discussion is warranted to clarify this matter. In addition, the reference to site locations on Figure IV-6 could not be found.

m. Section 1.10.2. We are pleased to see that Mauna Lani Resort recognize the need for future surveys and the inherent problems with the previous surveys; however, the EIS should clarify what is meant by undertaking intensive surveys at the appropriate time. Who will decide when it is appropriate; who will assess the need to undertake this intensive survey; and will this be implemented with qualified cultural resource scientists?

n. Section 1.10.2. The reference to specific mitigation measures contained in previous reports which will be adhered to is too vague and should be discussed.

o. Generally, the discussion of the cultural resources is sketchy and needs more descriptive detail and backup.

XIII-3

p. The EIS should address the cumulative impacts on the anchialine ponds. Since these are rare resources found in very few parts of the world, any loss of a few ponds may be significant. The problem becomes aggravated when other landowners such as Waikoloa are also proposing developments which will affect the ponds. Consequently, the EIS should discuss any loss of these ponds in terms of a cumulative impact.

q. We would like to request a copy of the final EIS when it is available.

Sincerely,

Kisuk Cheung  
Chief, Engineering Division

Copies furnished:

Mr. Roger Harris, Project Planner  
Mauna Lani Resort  
PO Box 4959  
Kawaihae, Hawaii 96743-4959

Ms. Anne L. Mapes  
Belt Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

XIII-4

**BELT, COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

July 3, 1985  
85-1199

Mr. Kisuk Cheung  
Chief, Engineering Division  
Department of the Army  
U.S. Army Engineer District, Honolulu  
Fort Shafter, Hawaii 96858

Dear Mr. Cheung:

Environmental Impact Statement (EIS) for the  
Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your comments of June 12, 1985 on the Draft Environmental Impact Statement for the proposed revised master plan for Mauna Lani Resort, addressed to Ms. Esther Ueda, Executive Officer of the State of Hawaii Land Use Commission. We appreciate the time you and your staff spent reviewing the document. Following are our responses to your comments in the order that they appear in your letter.

**Comments (a)** Suggestion that the Commission consider zoning anchialine pond areas for conservation to provide some protection of the resource.

**Response:** This comment addresses two concerns: (1) the desirability of Conservation designation of pond areas, and (2) the Land Use Commission's role in redistricting ponds now in the Urban district to the Conservation district.

(1) The major fishponds at Mauna Lani Resort (Lahaiipa'a, Manolou, Hopeala, and Waipuhā ponds) are in the Conservation district; the land around them is designated Urban. All of the ponds at Mauna Lani Resort are under Corps of Engineers jurisdiction. At this time, no changes to the ponds are planned. If changes are contemplated in future, Department of the Army (DOA) planning and permits will be required. If no DOA permit is obtained, the ponds will remain in their current condition. Based on the foregoing, Mauna Lani Resort, Inc. does not deem it necessary to designate more ponds at Mauna Lani Resort Conservation at this time.

(2) In June 1985, Chapter 205, Hawaii Revised Statutes, was amended. It is no longer appropriate for the Land Use Commission to initiate a petition for a change in the boundary of a district.

**Comments (b)** Pond preservation, replacement or rehabilitation as part of plans to fill or excavate anchialine ponds on Mauna Lani Resort.

**Response:** As stated previously, the applicant recognizes the requirement for a DOA permit, should future plans warrant it. On page IV-19, the EIS states: "Should current plans change and future development of a specific site require the modification of a pond (or ponds) or other shoreline feature, Mauna Lani Resort, Inc. would need to seek a Department of the Army permit..."

It is Mauna Lani Resort policy to create new ponds where appropriate to complement the natural environment. The applicant has created a pond in front of the Mauna Lani Terrace condominiums and enhanced two others; it intends to create two ponds by the two golf holes in the Conservation district by Paoua Bay, and perhaps others as the second golf course and individual parcels are developed.

Comments (c) The elevation of Mauna Kea.

Responses: The "13,797 feet" figure shown on page IV-1 of the DEIS has been changed to 13,796 feet.

Comments (d) On Maui, the anchialine ponds occur within the Natural Area Reserve.

Responses: The word "Preserve" has been changed to "Reserve" in the EIS.

Comments (e) Proper scientific nomenclature.

Responses: The EIS has been modified to reflect your comments on proper scientific nomenclature.

Comments (f) Documentation of the term "statistically significant" in characterizing a decrease in native species.

Responses: The 1985 study by Dr. Richard Brock, "Aquatic Survey of the Anchialine Pond System at Lahupuaa, Kona, Hawaii," states that statistical analysis had been performed. The paired T test was used (level of significance: 0.001 and 4 degrees of freedom) to arrive at the conclusion. The text in the EIS will be changed accordingly.

Comments (g) Proper spelling of "butterflyfish."

Responses: The word "butterfish" has been changed to "butterfly fish."

Comments (h) Pagination between pages IV-30 and IV-38.

Responses: According to our office copies of the DEIS, the pagination is correct.

Comments (i) Absence of a clear statement of what the interpretive and management plan for Mauna Lani Resort entails, and whether sites identified after 1981/82 are covered under the plan.

Responses: Section 1.10.1 of the report that you mention is the introductory paragraph to the subsequent subsections which present more detailed information. See subsection 1.10.1.4 for a description of the interpretive and management plan. The plan includes a section on the history and background of the Kalahupua'a area, four sections on the areas to be preserved, and text for an interpretive leaflet.

As to sites identified after 1981/82, the plan specifies: "During the development phase of Mauna Lani Resort, new archaeological sites may be located. All newly located sites will be mapped, photographed and recorded. Copies of these records will be forwarded to the State Historic Preservation Office and the County of Hawaii Planning Department" (Science Management, Inc., January 1982:36). Guidelines are provided for specific treatment of different types of newly located sites. Mauna Lani Resort, Inc. intends to update the 1982 plan as additional sites are located and analyzed.

Comments (j) Location map with site identification numbers for significant archaeological sites.

Responses: Figure IV-5 has been changed to include identification of relevant sites.

Comments (k) The incorporation of archaeological sites that are not part of the preserves into the interpretive and management program.

Responses: The interpretive and management plan covers all resources on Mauna Lani Resort lands. Some archaeological sites are deemed unsuitable for inclusion in the interpretive plan and are generally unmarked by signs; they are simply preserved untouched, following plan guidelines. "Interpreting a site calls attention to it and consequently the site is almost certain to suffer some damage from pedestrian traffic and, perhaps, from vandals. As protective measures intended to decrease the possibility of the public damaging a site become more effective, the quality of a visitor's experience at a site declines... Many of the sites we have chosen to interpret are quite stable and involve little risk of damage. Others, however, are much more fragile and the impacts of pot hunters and pedestrians on these will be monitored as specified..." (ibid.:4)

Comments (l) Number of archaeological sites identified during the 1984 survey.

Responses: Eight sites were identified during the survey; the description of one site (Site E3-737) was inadvertently omitted from the DEIS, but will be included in the EIS.

Comments (m) Need to undertake intensive archaeological surveys.

Responses: Statements as to the undertaking of intensive surveys, should they be required during the development of individual project sites, will be amplified in the EIS. The applicant intends to coordinate with the State Historic Preservation Officer and the Hawaii County Planning Department throughout all stages of development.

Comments (n) Discussion of specific mitigation measures.

Responses: Mitigation measures include intensive mapping, data recovery and preservation of archaeological sites. Mitigation measures for sites not in currently Urban designated land will be discussed in the EIS. Mitigation measures for sites in Urban classified land have been discussed elsewhere in detail (earlier surveys and the Science



Management interpretive and management plan of 1982). A site by site analysis of mitigation measures is deemed inappropriate in the current EIS. The discussion of cultural resources in the final EIS will be expanded to include text addressing your concerns.

Comment: (o) Need for more detailed discussion of cultural resources.

Response: Cultural resources on Mauna Lani Resort lands have been discussed extensively elsewhere; the reports are of public record. Sites of major significance are already preserved; they are not located in lands that Mauna Lani Resort is seeking to have reclassified Urban, nor are they located in Conservation lands north of Pauoa Bay where the applicant proposes to develop a public shoreline park and two golf holes.

Comment: (p) Cumulative impacts on anchialine ponds, taking into consideration other proposed development on the Kohala coast.

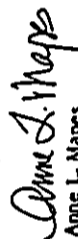
Response: Mauna Lani Resort, Inc. is aware of Transcontinental Development Co.'s application to the Department of the Army for a permit to fill anchialine ponds at the Hyatt Regency Waikoloa Hotel site at Waikoloa Beach Resort. This will be recognized in the EIS.

As stated in the DEIS and above, the applicant has no current plans to alter any ponds on Mauna Lani Resort lands. Moreover, Mauna Lani Resort, Inc. intends to create new ponds so that the total square footage of anchialine ponds and fishponds will increase, although the exact location and configuration of the ponds are presently unknown. Mauna Lani Resort, Inc. feels that its resort projects will not reduce the total inventory of ponds in the State of Hawaii.

It is recognized that pond management will be required to preserve the unique character of some ponds as natural environments. The difficulty of this task is also recognized, in the face of expected increased human activity in the vicinity of these environments. Mauna Lani Resort, Inc. will participate in efforts to protect these unique environments.

Changes to the final EIS will be made based on your comments and our responses above. You will be sent a copy of the final document when it becomes available, as requested.

Sincerely,

  
Anne L. Mapes

ALM:lf

cc: Mauna Lani Resort, Inc.



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

REPLY REFER TO  
9510  
SER 002B/945  
29 MAY 1985

BELT, COLLINS  
& ASSOCIATES  
Engineering • Planning  
Landscape Architecture

July 3, 1985  
85-1186

Ms. Esther Ueda  
State of Hawaii Land Use Commission  
335 Merchant Street, Room 104  
Honolulu, Hawaii 96813

Dear Ms. Ueda:

DRAFT ENVIRONMENTAL IMPACT STATEMENT  
MAUNA LANI RESORT

The Draft EIS for the Mauna Lani Resort has been reviewed and the Navy has no comments to offer. Since we have no further use for the EIS, the EIS is being returned to the Office of Environmental Quality Control, by copy of this letter.

Thank you for the opportunity to review the EIS.

Sincerely,

HENRY J. RINNERT  
Captain, CEC, U. S. Navy  
Facilities Engineer  
By direction of the Commander

Enclosure

Copy to:  
Mr. Roger Harris, Project Planner  
Mauna Lani Resort  
P.O. Box 4959  
Kapaeha, Hawaii 96743-4959

Ms. Anne L. Mapes  
Belt Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Office of Environmental Quality Control

Captain Henry J. Rinnert  
Facilities Engineer  
Department of the Navy  
Headquarters, Naval Base, Pearl Harbor  
Box 110  
Pearl Harbor, Hawaii 96860-5020

Dear Captain Rinnert:

Environmental Impact Statement (EIS) for the  
Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii

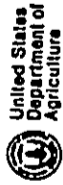
Thank you for your letter of May 29, 1985 to Ms. Esther Ueda, Executive Officer of the State of Hawaii Land Use Commission -- Letter No. 9510, Ser 002B/945 in your reference system -- acknowledging receipt of the Draft Environmental Impact Statement for the proposed revised master plan for Mauna Lani Resort. While your agency had no comments, we do appreciate the time you and your staff spent reviewing the document.

Sincerely,

Anne L. Mapes  
Anne L. Mapes

ALM:ll

cc: Mauna Lani Resort, Inc.



Soil Conservation Service

P.O. Box 50004  
Honolulu, Hawaii  
96850

**RECEIVED**  
JUN 13 1985  
BELT, COLLINS & ASSOCIATES

June 12, 1985

Ms. Esther Ueda  
Land Use Commission  
State of Hawaii  
335 Merchant St., Room 104  
Honolulu, HI 96813

**BELT, COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

July 3, 1985  
85-1192

Mr. Francis C.H. Lum  
State Conservationist  
Soil Conservation Service  
U.S. Department of Agriculture  
P.O. Box 50004  
Honolulu, Hawaii 96850

Dear Mr. Lum:

Subject: Draft EIS - Revised Master Plan for Mauna Lani Resort  
South Kohala, Hawaii, May 1985

We reviewed the subject document and have no further comments other than those noted in our letter of January 9, 1985, regarding the environmental assessment.

Thank you for the opportunity to review this document.

Sincerely,

*Wm H Mann*  
FRANCIS C.H. LUM  
State Conservationist

cc: Mr. Roger Harris, Project Planner  
Mauna Lani Resort  
P.O. Box 4959  
Kawaihae, HI 96743-4959

Ms. Anne L. Mapes  
Belt Collins & Associates  
606 Coral Street  
Honolulu, HI 96813

Environmental Impact Statement (EIS) for the  
Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii

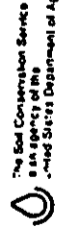
Thank you for your letter of June 12, 1985 to Ms. Esther Ueda, Executive Officer of the State of Hawaii. Land Use Commission acknowledging receipt of the Draft Environmental Impact Statement for the proposed revised master plan for Mauna Lani Resort. While your agency had no comments, we do appreciate the time you and your staff spent reviewing the document.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

AL:mill

cc: Mauna Lani Resort, Inc.



(50)

U.S. GOVERNMENT PRINTING OFFICE: 1983-10-890110

Honolulu, 440 Ala Moana Street, Honolulu, Hawaii 96813. Telephone (808) 521-5301. Telex: H111174 HNDZ.  
Washington, 1415 North Capitol Street, N.W., Washington, D.C. 20548. Telephone: 215-4470. Telex: HNS 50914 HNDZ.

XIII-0



U.S. DEPARTMENT OF COMMERCE  
 NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
 NATIONAL MARINE FISHERIES SERVICE  
 Southwest Region  
 Western Pacific Program Office  
 P. O. Box 3830  
 Honolulu, Hawaii 96812

June 4, 1985  
 F/SWR1:JJI

Belt, Collins and Associates  
 ATTN: Anne L. Mapes  
 600 Coral Street  
 Honolulu, Hawaii 96813

Dear Ms. Mapes:

Subject: Draft Environmental Impact Statement (DEIS)  
 for the Proposed Expansion of Mauna Lani Resort,  
 South Kohala, Hawaii.

The National Marine Fisheries Service (NMFS) has reviewed the subject DEIS for the Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii. We understand the DEIS has been prepared to support a State Land Use District boundary amendment petition and does not involve actual construction activities associated with the proposed resort expansion. The following comments are offered for your consideration.

We are pleased to note that the DEIS contains the letter prepared by NMFS (dated January 31, 1985) commenting on the EIS Preparation Notice. As stated in this letter, our primary concerns center on proposed construction activities (i.e. dredging, fillings, beach restoration) in coastal waters and within the unique anchialine pool complex found in the region of the Mauna Lani Resort. Additionally, we listed several threatened or endangered species under NMFS jurisdiction which occur in nearshore waters of the area. It should be noted that one of these species, the threatened green turtle (*Chelonia mydas*), has been introduced to several of the six large fishponds found on the Mauna Lani Resort site at Makena Bay.

NMFS concerns have been addressed to our satisfaction in the subject generic DEIS. However, it should be made clear that prior to any direct development activities "in or affecting navigable waters" the applicant will be required to obtain a Department of the Army Permit through the U.S. Army Corps of Engineers. In addition, a Federal EIS may also have to be prepared and submitted for review.

Sincerely yours,  
  
 Doyle E. Gates  
 Administrator

cc: F/SWR, Terminal Is., CA  
 F/NA, Washington, D.C.  
 FMS, Honolulu  
 EPA, Region IX (P-5)  
 Hawaii State Div. of  
 Aquatic Resources

BELT, COLLINS  
 & ASSOCIATES  
 Engineering • Planning  
 Landscape Architecture

July 3, 1985  
 85-1196

Mr. Doyle E. Gates, Administrator  
 U.S. Department of Commerce  
 National Oceanic and Atmospheric Administration  
 National Marine Fisheries Service  
 Southwest Region  
 Western Pacific Program Office  
 P.O. Box 3830  
 Honolulu, Hawaii 96812

Dear Mr. Gates:

Environmental Impact Statement (EIS) for the  
 Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your comments of June 4, 1985 on the above project. We appreciate the time you and your staff spent reviewing the Draft Environmental Impact Statement (DEIS). Following are our responses to specific concerns raised in your letter.

Comments: The introduction of the threatened green turtle (*Chelonia mydas*) to the Mauna Lani Resort fishponds.

Responses: On June 7, 1985, I phoned John Naughton of your staff to clarify the statement made in your letter. Mr. Naughton said that National Marine Fisheries Service staff verified the sighting of green turtles in the fishponds about a year ago. On June 7, I also spoke with Dr. Richard Brock, who performed a survey of the Mauna Lani Resort ponds in February 1985. Dr. Brock said that he made only a cursory inspection of the fishponds during that survey. He did not see any green turtles, but does not rule out their possible current presence in the fishponds. Mauna Lani Resort, Inc. has since confirmed that there are five turtles living in the fishponds.

Comments: The necessity of obtaining a Department of the Army (DOA) Permit through the U.S. Army Corps of Engineers prior to direct development activities "in or affecting navigable waters."

Responses: Mauna Lani Resort, Inc. has no current plans for such development activities. Should plans change, the applicant recognizes that a DOA Permit may be required and that "a Federal EIS may also have to be prepared and submitted for review."

Sincerely,  
  
 Anne L. Mapes

ALM:ll  
 cc: Mauna Lani Resort, Inc.

Honolulu 441 Coral Street, Honolulu, Hawaii 96813 Telephone (808) 521-5461 Telex: 111111ZANATA  
 Singapore 111 Churchill Road #1218, International Building, Singapore 1723 Telephone 755 6870 Telex: RS 90444 IM UNM

U.S. Department of Housing and Urban Development  
Honolulu Area Office, Region IX  
300 Ala Moana Blvd., Room 3318  
Honolulu, Hawaii 96850



June 17, 1985

Ms. Anne L. Mapes  
Belt Collins & Associates  
606 Coral Street  
Honolulu, HI 96813

Dear Ms. Mapes:

SUBJECT: Draft Environmental Impact Statement (DEIS)  
Revised Master Plan for Mauna Lani Resort  
South Kohala, Hawaii

We have reviewed the subject DEIS that proposes to develop approximately 1,430 acres of land in South Kohala with 3,000 hotel rooms, 1400-1800 low-rise multi-family units; 140 to 160 houses and house lots; 2 golf courses and 61 to 76 acres for commercial use and auxiliary services.

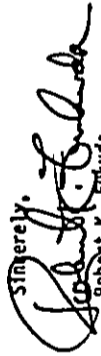
The following comments are submitted for your consideration:

1. Page I-1, Paragraph 2, line 8 should read --- Two golf courses in lieu of ... two golf holes.
2. We understand that the water supply and distribution system for the area will be public. However, the waste water treatment plant and underground connection system is privately operated.

Should HUD-FHA programs be considered in future developments, the private sewer system must comply with HUD Handbook 4075.12 REV.

We appreciate the opportunity to review the EIS and look forward to receiving a copy of the Final EIS.

cc:  
D. James

Sincerely,  
  
Robert K. Fukuda  
Manager, 9.25

BELT, COLLINS  
& ASSOCIATES  
Engineering • Planning  
Landscape Architecture

85-248

RECEIVED

JUL 19 1985

BELT, COLLINS & ASSOCIATES

July 3, 1985  
85-1198

Mr. Robert K. Fukuda, Manager, 9.25  
U.S. Department of Housing and Urban Development  
Honolulu Area Office, Region IX  
300 Ala Moana Boulevard, Room 3318  
Honolulu, Hawaii 96850

Dear Mr. Fukuda:

Environmental Impact Statement (EIS) for the  
Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of June 17, 1985 -- Letter No. 85-248 in your reference system -- acknowledging receipt of the Draft Environmental Impact Statement for the proposed revised master plan for Mauna Lani Resort. We appreciate the time you and your staff spent reviewing the document. Following are our responses to your two comments.

Comments: Your letter states: "Page I-1, Paragraph 2, line 8 should read -- Two golf courses in lieu of ... two golf holes."

Responses: The following sentence in the text of the DEIS is correct: "Mauna Lani Resort, Inc. has also submitted a Conservation District Use Application (CDUA) to the State Board of Land and Natural Resources for permission to construct two golf holes and a public shoreline park and to establish the Puako Petroglyph Archaeological Park on a portion of the 773 acres that it leases from the State of Hawaii."

A CDUA is not needed to construct the remaining 16 holes of the new golf course, which are already in Urban designated lands or in lands for which Urban designation is being requested of the State Land Use Commission. See Figures II-5 and II-6 for the siting of the two golf holes in the Conservation District.

Comments: In the case of HUD-FHA housing programs, private sewer systems must comply with HUD Handbook 4075.12 REV.

Responses: As stated in the Draft Environmental Impact Statement, "The Mauna Lani Resort, as the other Kohala coast resorts, is served by a privately-operated wastewater treatment plant and underground connection system. The system was constructed by Mauna Lani Resort, Inc., which continues to operate the facility." (page IV-117)

Mauna Lani Resort is a planned resort community with a large proportion of hotel and residential units in the luxury category. Therefore, HUD-FHA programs are unlikely to be considered for individual residential projects on-site. However, should the wastewater treatment plant serve any future Mauna Lani Resort residential projects supported by HUD-FHA programs, the applicant will comply with any relevant HUD-FHA regulations then required and make any changes to the plant as needed. In

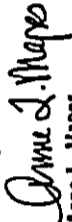
Honolulu Area Office, Honolulu, Hawaii 96850, Telephone (808) 521-5163, Telex: H111174 HVTZ  
Singapore: Maitichit Road #1218, International Building, Singapore 1723, Telephone 25518701, Telex: MS 50444 JH PUN

July 3, 1985  
85-1198

Mr. Robert K. Fukuda, Manager, 9.25  
Page two

a phone conversation with Frank Johnson of your staff on June 21, 1985, I was informed that the aforementioned HUD Handbook #075.12 REV. has been cancelled and therefore need not be considered.

Sincerely,

  
Anne L. Mapes

ALM:lll

cc: Mauna Lanai Resort, Inc.

XIII-11



United States Department of the Interior

FISH AND WILDLIFE SERVICE

300 ALA MOANA BOULEVARD  
P. O. BOX 50157  
HONOLULU, HAWAII 96850

BEIL COLLINS & ASSOCIATES

AN ENVIRONMENTAL FIRM

ES

Room 6307

JUN 24 1985

Ms. Esther Ueda  
State of Hawaii Land Use Commission  
335 Merchant Street, Room 104  
Honolulu, Hawaii 96813

JUN 21 1985

Re: Draft Environmental Impact Statement (DEIS) for the Revised  
Master Plan for the Mauna Lani Resort, South Kohala, Hawaii

Dear Ms. Ueda:

The U.S. Fish and Wildlife Service has reviewed the referenced  
DEIS and offers the following comments for your consideration.

General Comments

The DEIS adequately describes the anchialine pond, nearshore  
marine, botanical, and wildlife resources in the affected area.  
The section on the anchialine pond resources is particularly  
interesting because it documents the decrease in the endemic  
anchialine shrimp fauna in certain ponds with the introduction of  
exotic fish.

Specific Comments

a. Section 1.6. Page IV-11. "Category 2" should be  
replaced by "Resource Category 1."

b. Section 1.6. The Final EIS should include an update on  
the status of the anchialine pond shrimps. The Service recently  
requested that the shrimps Metabetaeus lohena, Procaris  
hawaiiensis, and Palaeomonella burnsi be placed on the annual  
Invertebrate Notice of Review update as Category 2 species. A  
Category 2 rating is for those species which probably should be  
listed as endangered or threatened, but for which sufficient  
information is not presently available to biologically support a  
proposed rule. The shrimp Halocaridina rubra was referred to  
the National Marine Fisheries Service since the shrimp is  
commercially sold. Only H. rubra and M. lohena have been  
recorded from the Mauna Lani Resort area.

For your information, the term "Resource Category 1"  
refers to a habitat designation category under the Service's  
Mitigation Policy while the term "Category 2" refers to a  
species' endangered or threatened status under the Endangered  
Species Act.



Save Energy and You Save America!

Summary Comments

The purpose of the DEIS is to support a request to redesignate  
168 acres of land from Conservation to Urban. This boundary  
change would allow Hotel 4 to be constructed at Honokaope Bay.  
An anchialine pond is located at this site and may be affected  
by the proposed hotel construction.

The Service recommends that the zoning change for this site be  
held in abeyance until a regional policy dealing with the  
anchialine pond resources can be formulated. This policy will  
guide development in coastal areas that contain anchialine ponds.  
The Service looks forward to assistance from the Mauna Lani  
Resort in this policy formulation in the near future.

We appreciate this opportunity to comment.

Sincerely yours,

Ernest Kosaka

Project Leader  
Office of Environmental Services

cc: RD, FWS, Portland, OR (AHR)  
NMFS - WPO  
EPA, San Francisco  
HDF&H

HDAR  
Mauna Lani Resort, Mr. Roger Harris  
Belt, Collins, and Associates, Ms. Anne Hapes  
CE, Mike Lee

BELT, COLLINS  
& ASSOCIATES  
Engineering • Planning  
Landscape Architecture

July 2, 1985  
85-1204

Mr. Ernest Kosaka, Project Leader  
Office of Environmental Services  
Fish and Wildlife Service  
U.S. Department of the Interior  
P.O. Box 50167  
Honolulu, Hawaii 96850

Dear Mr. Kosaka:

Environmental Impact Statement (EIS) for the  
Proposed Expansion of Mauna Lanai Resort, South Kohala, Hawaii

Thank you for your comments of June 21, 1985 on the Draft Environmental Impact Statement (DEIS) for the proposed revised master plan for Mauna Lanai Resort, addressed to Ms. Esther Ueda, Executive Officer of the State of Hawaii Land Use Commission. We appreciate the time you and your staff spent reviewing the document.

Comments: Replacement of "Category 2" to "Resource Category 1."

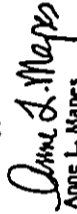
Response: "Category 2" on page IV-II of the DEIS will be changed to "Resource Category 1" in the final EIS.

Comments: Update on the status of the anchialine pond shrimps.

b. The final EIS will include an update based on the information you provided in your letter.

The other, more general comments in your letter will be considered in the preparation of the final EIS.

Sincerely,

  
Anne L. Mapes

ALM:llf

cc: Mauna Lanai Resort, Inc.





United States Department of the Interior

GEOLOGICAL SURVEY  
Water Resources Division  
P.O. Box 50166  
Honolulu, Hawaii 96850

May 28, 1985

Ms. Esther Ueda  
State of Hawaii Land Use Commission  
335 Merchant Street Room 106  
Honolulu, Hawaii 96813

Dear Ms. Ueda:

Subject: Draft EIS for Mauna Lani Resort  
Kalahaupua'a, South Kohala, Hawaii

The staff of the U.S. Geological Survey, Water Resources Division, Hawaii District Office, has reviewed the above report and has no comments to make at this time.

We appreciate the opportunity to review this document and we are returning it for your future use.

If we can be of further service, please don't hesitate and call us at 546-8331.

Sincerely,

*Stanley F. Kupustka*  
Stanley F. Kupustka  
District Chief

Enclosure

cc: Mr. Roger Harris, Project Planner, Mauna Lani Resort, Kawaihae, HI  
Ms. Anne L. Mapes, Belt Collins & Associates, Honolulu, HI

BELT, COLLINS  
& ASSOCIATES  
Engineering • Planning  
Landscape Architecture

Mr. Stanley F. Kupustka  
District Chief  
U.S. Department of the Interior  
Geological Survey  
Water Resources Division  
P.O. Box 50166  
Honolulu, Hawaii 96850

Dear Mr. Kupustka:

Environmental Impact Statement (EIS) for the  
Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of May 28, 1985 to Ms. Esther Ueda, Executive Officer of the State of Hawaii Land Use Commission acknowledging receipt of the Draft Environmental Impact Statement for the proposed revised master plan for Mauna Lani Resort. While your agency had no comments, we do appreciate the time you and your staff spent reviewing the document.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:llf

cc: Mauna Lani Resort, Inc.

Honolulu 10th Floor, 10th Street, Honolulu, Hawaii 96813 Telephone: (808) 521-5400 Telex: 0010101240020  
Singapore: 801 Chuan Road #1210 International Building Singapore 115 Telephone: 225 6870 Telex: 835000010 UN



U.S. DEPARTMENT OF TRANSPORTATION  
 FEDERAL HIGHWAY ADMINISTRATION  
 REGION NINE  
 Hawaii Division  
 Box 50206  
 Honolulu, Hawaii 96850

FOR THE  
 STATES  
 DISTRICT  
 COLLEGE  
 AND  
 FEDERAL GOVERNMENT  
 IN REPRESENTATION TO  
 HEC-HI

BELL, COLLINS  
 & ASSOCIATES  
 Engineering - Planning  
 Landscape Architecture

July 3, 1985  
 85-1187


Ms. Anne L. Mapes  
 Bell Collins & Associates  
 606 Coral Street  
 Honolulu, Hawaii 96813

Dear Ms. Mapes:

Subject: Draft Environmental Impact Statement (DEIS) for the Proposed  
 Expansion of Mauna Lanai Resort, South Kohala, Hawaii

The Federal Highway Administration has no comments on the subject document.

Sincerely yours,

  
 H. Kusumoto  
 Division Administrator

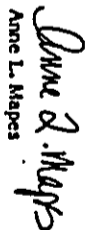
Mr. H. Kusumoto  
 U.S. Department of Transportation  
 Federal Highway Administration  
 Region Nine  
 Hawaii Division  
 Box 50206  
 Honolulu, Hawaii 96850

Dear Mr. Kusumoto:

Environmental Impact Statement (EIS) for the  
Proposed Expansion of Mauna Lanai Resort, South Kohala, Hawaii

Thank you for your letter of June 3, 1985 -- Letter HEC-HI in your reference system -- acknowledging receipt of the Draft Environmental Impact Statement for the Proposed revised master plan for Mauna Lanai Resort. While your agency had no comments, we do appreciate the time you and your staff spent reviewing the document.

Sincerely,

  
 Anne L. Mapes

ALM:ll

cc: Mauna Lanai Resort, Inc.

X111-16



U.S. Government  
Department of Transportation  
Federal Aviation  
Administration

May 29, 1985

AIRPORTS DISTRICT OFFICE  
BOX 50244  
HONOLULU, HI 96850-0001  
Telephone: (808) 546-7129

BELL, COLLINS  
& ASSOCIATES  
Engineering • Planning  
Landscape Architecture

July 3, 1985  
85-1195

Ms. Anne L. Mapes  
Bell, Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Dear Ms. Mapes:

We have reviewed the Draft Environmental Impact Statement (DEIS) for the Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii submitted on May 24, 1985.

The development described in the DEIS will not affect any existing or known future airports. However, we note that Waimea-Kohala Airport at Kamuela is no longer served by Hawaiian Airlines as noted on page IV-79. We also note the Keahole Airport handled 1,297,830 passengers in 1984.

Thank you for the opportunity to review this DEIS.

Sincerely,

*David J. Welhouse*  
DAVID J. WELHOUSE  
Planning Engineer

Henry A. Sumida  
Airports District Office Manager

Mr. David J. Welhouse  
Planning Engineer  
Federal Aviation Administration  
U.S. Department of Transportation  
Airport District Office  
Box 50244  
Honolulu, Hawaii 96850-0001

Dear Mr. Welhouse:

Environmental Impact Statement (EIS) for the  
Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii  
Thank you for your comments of May 29, 1985 on the above project. We appreciate the time you and your staff spent reviewing the Draft EIS.

The EIS will be revised to incorporate your comment that the Waimea-Kohala Airport at Kamuela is no longer served by Hawaiian Airlines as noted on page IV-79 of the Draft Environmental Impact Statement. Also, we will update the passenger count at Keahole Airport to 1,297,830 for 1984, as noted in your letter.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:llr

cc: Mauna Lani Resort, Inc.

X1111-15

U.S. Department  
of Transportation  
United States  
Coast Guard



Command (dp1)  
Fourteenth Coast Guard District

Prince Kalahelele  
Federal Building  
300 Ala Moana Blvd.  
Honolulu, Hawaii 96850  
Phone: (808) 546-2861

16475  
Serial No. 5/129  
MAY 30, 1985

Ms. Esther Ueda  
State of Hawaii Land Use Commission  
335 Merchant Street, Room 104  
Honolulu, Hawaii 96813

Dear Ms. Ueda:

The Fourteenth Coast Guard District has reviewed the draft revised final Environmental Impact Statement, for the Mauna Lani Resort, South Kohala, Hawaii and has no objection or constructive comments to offer at the present time.

Sincerely,

J. F. MILBRAND  
Commander, U. S. Coast Guard  
District Planning Officer  
By direction of Commander,  
Fourteenth Coast Guard District

copy to: (1) Roger Harris, Project Planner  
(2) Belt Collins & Associates

BELT, COLLINS  
& ASSOCIATES  
Engineering • Planning  
Landscape Architecture

July 3, 1985  
85-1188

Commander J.F. Milbrand  
District Planning Officer  
U.S. Coast Guard  
Fourteenth Coast Guard District  
300 Ala Moana Boulevard  
Honolulu, Hawaii 96850

Dear Commander Milbrand:

Environmental Impact Statement (EIS) for the  
Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of May 30, 1985 to Ms. Esther Ueda, Executive Officer of the State of Hawaii Land Use Commission -- Letter No. 16875, Serial No. 5/129 in your reference system -- acknowledging receipt of the Draft Environmental Impact Statement for the proposed revised master plan for Mauna Lani Resort. While your agency had no comments, we do appreciate the time you and your staff spent reviewing the document.

Sincerely,

Anne L. Mapes

ALM:llf

cc: Mauna Lani Resort, Inc.

11 11 85

BELT, COLLINS & ASSOCIATES

**BELT, COLLINS & ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

(P) 1329.5

July 3, 1985  
85-1209

JUL 1 1985

Mr. Teuane N. Tominaaga  
State Public Works Engineer  
Department of Accounting & General Services  
Public Works Division  
1151 Punchbowl Street  
Honolulu, Hawaii 96813

Ms. Esther Ueda  
State of Hawaii Land Use Commission  
335 Merchant Street, Room 104  
Honolulu, Hawaii 96813

Dear Ms. Ueda:

Subject: Draft EIS for Mauna Lani Resort  
We have reviewed the subject document and have no comments to offer.

Very truly yours,

*Teuane Tominaaga*  
TEUANE TOMINAGA  
State Public Works Engineer

CT:jk  
cc: Mr. Roger Harris  
Ms. Anne L. Mapes

Environmental Impact Statement (EIS) for the  
Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of July 1, 1985 -- Letter (P) 1329.5 in your reference system -- acknowledging receipt of the Draft Environmental Impact Statement for the proposed revised master plan for Mauna Lani Resort. While your agency had no comments, we do appreciate the time you and your staff spent reviewing the document.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

AL:mlf

cc: Mauna Lani Resort, Inc.

Honolulu 4100 Coral Street, Honolulu, Hawaii 96813 Telephone: (808) 521-5363 Telex: H1111124 HAWAII  
Singapore 401 Orchard Road #1208, International Building, Singapore 0711 Telephone: 7354270 Telex: RS 91804 HAWAII

GEORGE R. ARIYOSHI  
GOVERNOR



JACK K. SUWA  
CHAIRPERSON, BOARD OF AGRICULTURE  
SUSANNE D. PETERSON  
DEPUTY TO THE CHAIRPERSON

State of Hawaii  
DEPARTMENT OF AGRICULTURE  
1428 So. King Street  
Honolulu, Hawaii 96814

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

June 20, 1985

MEMORANDUM

To: Ms. Esther Ueda, Executive Officer  
Land Use Commission

Subject: Draft Environmental Impact Statement (DEIS)  
for Mauna Lani Resort (HLR)

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

Our previous comments on the Environmental Impact Statement Preparation Notice (January 21, 1985; DEIS, page XII-46) indicated two major areas of concern.

The present and planned potable water sources, along with quantities available and the MLR's requirements are discussed (DEIS, page IV-116). What impact this groundwater withdrawal will have on water availability from nearby water sources for other uses should also be detailed.

We note the DEIS states that the MLR plan is generally consistent with the Hawaii County General Plan (DEIS, page V-25). The DEIS also reviews relevant sections of the North Kohala Community Development Plan and the Kona Regional Plan as they relate to the MLR (DEIS, page V-27). The DEIS (pages IV-68 to 72) states that "operational employee housing" needs are expected to be met on the open market but that some would be "provided by or supported by MLR." We note that housing studies will be undertaken when each hotel site is developed. Specific information on the amount and location of housing and the impact this may have on surrounding communities and agricultural lands should be provided.

Thank you for the opportunity to comment.

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

cc: Mr. Roger Harris, Mauna Lani Resort  
Ms. Anne L. Mapes, Belt, Collins & Associates  
OEQC

**BELT, COLLINS  
& ASSOCIATES**

Engineering - Planning  
Landscape Architecture

Mr. Jack K. Suwa, Chairman  
Board of Agriculture  
State of Hawaii  
Department of Agriculture  
1428 South King Street  
Honolulu, Hawaii 96814

Dear Mr. Suwa:

Environmental Impact Statement (EIS) for the  
Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your comments of June 20, 1985 on the Draft Environmental Impact Statement (DEIS) for the proposed revised master plan for Mauna Lani Resort, addressed to Ms. Esther Ueda, Executive Officer of the State of Hawaii Land Use Commission. We appreciate the time you and your staff spent reviewing the document. Following are our responses to your comments.

Comments: Impact of MLR groundwater withdrawal on water availability from nearby water sources for other uses.

Response: Groundwater withdrawal to accommodate planned facilities at Mauna Lani Resort is expected to have potential impacts on nearby water sources; these potential impacts will be discussed in the final EIS.

Comments: Amount and location of operational employee housing and the impact on surrounding communities and agricultural lands.

Response: Specific information on the amount and location of future employee housing is not currently available. It is expected, however, that housing will be located in the Kohala, Honokaa, Waimea, Waikoloa, and Kona areas. Employee housing to be provided by Mauna Lani Resort, Inc. is expected to be required as part of County zoning conditions for hotel sites.

It is anticipated that some agricultural lands in the region will be converted to urban use to accommodate employee housing. Most likely there will be only slight impact on highly productive agricultural land, more on marginal agricultural lands. The loss of agricultural lands will be minimal in comparison to the acreage of lands in agricultural production in the region.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:jif

cc: Mauna Lani Resort, Inc.

Honolulu 14th Street Honolulu Hawaii 96811 Telephone (808) 521-5161 Telex 081111748422  
Singapore 141 Orchard Road #1218 International Building Singapore 215 (6870) Telex 8534444 BK SIN

OFFICE OF THE SUPERINTENDENT



STATE OF HAWAII  
DEPARTMENT OF EDUCATION

P. O. BOX 2208  
HONOLULU, HAWAII 96810

OFFICE OF THE SUPERINTENDENT

May 30, 1985

FRANCIS M. HATANAKA  
SUPERINTENDENT

*FM*

**BELT, COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

July 3, 1985  
85-1193

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

Dear Mr. Hatanaka:

Ms. Letitia H. Uyebara, Director  
Office of Environmental Quality Control  
550 Halekaunila Street, Room 301  
Honolulu, Hawaii 96813

Dear Ms Uyebara:

SUBJECT: Draft EIS for Mauna Lani Resort  
Kalahui'pua'a South Kohala, Hawaii

Environmental Impact Statement (EIS) for the  
Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of May 30, 1985 to Ms. Letitia Uyebara, Director of the Office of Environmental Quality Control acknowledging receipt of the Draft Environmental Impact Statement for the proposed revised master plan for Mauna Lani Resort. While your agency had no comments, we do appreciate the time you and your staff spent reviewing the document.

The Department of Education has no additional comments to offer on the subject EIS.

We do thank you, however, for the opportunity to review the project.

Sincerely,

*Francis M. Hatanaka*

Francis M. Hatanaka  
Superintendent

Sincerely,

*Anne L. Mapes*

Anne L. Mapes

ALM:ll

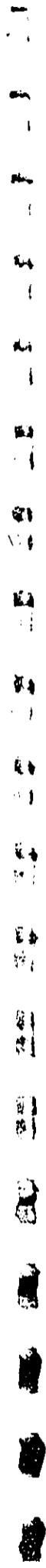
cc: Mauna Lani Resort, Inc.

FMH:j1

cc: V. Honda, OES  
K. Mizuba, Hawaii Dist.

AN EQUAL OPPORTUNITY EMPLOYER

Honolulu 4085 (Local) Street Honolulu Hawaii 96813 Telephone: (808) 531-5300 Telex: 081011740122  
Singapore: 4011 (Local) Street International Building Singapore 1721 Telephone: 251 6271 4-4-85 51104111 (M)



OFFICE OF THE ATTORNEY GENERAL  
STATE OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF HEALTH  
P. O. BOX 3229  
HONOLULU, HAWAII 96813

RECEIVED  
MAY 29 1985  
BILL CLAYTON, E. ASSOCIATES

CHARLES G. CLARK  
DIRECTOR OF HEALTH

IN REPLY, PLEASE REFER TO  
EPH-85

Ms. Esther Ueda  
June 21, 1985  
Page 2

Ms. Esther Ueda  
State of Hawaii Land Use Commission  
335 Merchant St., Room 104  
Honolulu, Hawaii 96813

Dear Ms. Ueda:

Subject: Request for Comments on Draft Environmental Impact Statement  
(EIS) for Mauna Lanai Resort, Kalahouipa'a, S. Kohala, Hawaii

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

Wastewater

Any future expansion of the wastewater facility must conform to Chapter 342, HRS.

Drinking Water

The discussion on page IV-117 regarding potable water appropriately describes the current use and future demand for potable water if the development were to be built as proposed. The discussion can be improved by providing a discussion on:

- a. the general location of the proposed new wells; and
- b. who will be responsible for the proposed well construction and operation.

The above information will be useful to assess any possible groundwater contamination cases, as well as assess operational cost to the government sector should the water system be operated by the county government.

In addition to the above information on agency approvals, pages 1-8 and 1-9 should include our requirements for reviewing new drinking water system improvements.

The Department of Health is vested with the responsibility to assure that public water systems in the State are providing water which is in compliance with the State's drinking water regulations known as Chapter 20, Title II, Administrative Rules, and are in compliance with all other applicable terms and conditions of Chapter 20. A public water system is defined as a system serving 25 or more individuals at least 60 days per year or having a minimum of 15 service connections. In the event that the new well is intended to serve these minimum numbers of persons or service connections, please be advised that the well and distribution system will be subject to the terms of Section II-20-29 and Section II-20-30 of Chapter 20 respectively.

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

Section II-20-30 requires that new or substantially modified distribution systems for public water systems be approved by the Director of Health. Such approval depends upon the submission of plans and specifications for the project prior to construction and the demonstration that the new or modified portions of the system are capable of delivering potable water in compliance to all maximum contaminant levels as set down in Chapter 20 once the distribution system or modification is completed.

In the event that the proposed well is solely intended to serve irrigation or other nondomestic purposes, or if the proposed well will not serve the minimum number to qualify as a public water system as defined earlier, then the new well and distribution system are not subject to Chapter 20 requirements. However, if at some point in the future, the decision is made to use the water for potable purposes, or if the system expands to meet the minimum service population or number of service connections, the source and distribution system will be subject to Section II-20-29 and Section II-20-30 respectively prior to their use to serve the new public water system.

We realize that the statements are general in nature due to preliminary plans being the sole source of discussion. We, therefore, reserve the right to impose future environmental restrictions on the project at the time final plans are submitted to this office for review.

Sincerely,

MELVIN K. KOIZUMI  
Deputy Director for  
Environmental Health

cc: Mr. Roger Harris  
Ms. Anne L. Mapes  
DHEA, Hawaii



**BELL, COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

July 3, 1985  
85-1205

Mr. Melvin K. Koizumi  
Deputy Director for Environmental Health  
Department of Health  
State of Hawaii  
P.O. Box 3378  
Honolulu, Hawaii 96801

Dear Mr. Koizumi:

Environmental Impact Statement (EIS) for the  
Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your comments of June 21, 1985 on the Draft Environmental Impact Statement (DEIS) for the proposed revised master plan for Mauna Lani Resort, addressed to Ms. Esther Ueda, Executive Officer of the State of Hawaii Land Use Commission. We appreciate the time you and your staff spent reviewing the document.

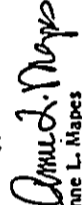
**Comments:** The general location of proposed new potable water wells and responsibility for their construction and operation.

**Responses:** The well sites chosen run in a north south direction at about the 1,100 to 1,200-foot elevation extending from Lalamilo "B" well to Kamaoka Gulch. All wells will be built by the developer to Department of Water Supply standards and dedicated to that agency.

**Comment:** Need to include requirements for reviewing new drinking water system improvements on list of agency approvals.

**Response:** The list of necessary approvals and permits in the final EIS will include Department of Health approvals.

Sincerely,

  
Anne L. Mapes

ALM:if

cc: Mauna Lani Resort, Inc.

Honolulu: 605-4-1111, Honolulu: 605-4-1111, Telephone: (808) 521-5101, Telex: H11111 24 85174  
Singapore: 41111111 Road #12196, International Building, Singapore 051111, Telephone: 2-15-14070, Telex: RS 511111 1R 1511R

July 3, 1985  
85-1197

**BELT, COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

Mr. Joshua C. Agsalud, Director  
Department of Labor and Industrial Relations  
State of Hawaii  
825 Milliani Street  
Honolulu, Hawaii 96813

Dear Mr. Agsalud:

Environmental Impact Statement (EIS) for the  
Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of June 7, 1985 acknowledging receipt of the Draft Environmental Impact Statement for the proposed revised master plan for Mauna Lani Resort. We appreciate the time you and your staff spent reviewing the document and your department's offer of assistance during future hiring for individual projects at the resort.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:lf

cc: Mauna Lani Resort, Inc.

RECEIVED  
JUL 11 1985



**BELT, COLLINS & ASSOCIATES**  
JOSHUA C. AGSALUD  
DIRECTOR  
ROBERT C. GILKEY  
DEPUTY DIRECTOR

STATE OF HAWAII

DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS  
825 MILLIANI STREET  
HONOLULU, HAWAII 96813

June 7, 1985

Ms. Anne L. Mapes  
Belt, Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Dear Ms. Mapes:

The Department of Labor and Industrial Relations has received the draft environmental impact statement (DEIS) for the proposed Mauna Lani Resort (MLR) expansion in South Kohala. We realize the impact such a large project like MLR will have on demands for human resources during both the construction period as well as the operational period. The department will be happy to assist in recruiting job applicants to fill these demands through our various employment and training agencies.

Thank you for providing us the opportunity to review the revised master plan.

Sincerely,  
*Joshua C. Agsalud*  
Joshua C. Agsalud  
Director of Labor and  
Industrial Relations

XIII-23



RECEIVED  
JUN 21 1985

DEPARTMENT OF PLANNING  
AND ECONOMIC DEVELOPMENT

HAWAIIAN BLDG. CO. 1001 KALANANĀ'ŪHOU BL. HONOLULU, HAWAII 96813  
MAILING ADDRESS: PO BOX 2208 HONOLULU, HAWAII 96813-2208

GEORGE R. ARYPOOR  
DIRECTOR  
LENT M. LEVIN  
DEPUTY DIRECTOR  
ALBERT E. EDWARDS  
DEPUTY DIRECTOR  
DAVID L. HARRIS  
DEPUTY DIRECTOR  
JAMES AND POLY DEVELOPMENT DIVISION  
IN CHARGE OF THE  
KOREAN TRADE ZONE DIVISION  
PLANNING DIVISION  
RESEARCH AND ECONOMIC ANALYSIS DIVISION  
OFFICE OF THE  
ADMINISTRATIVE SERVICES OFFICE  
REGISTRATION OFFICE

Ref. No. P-1868

June 18, 1985

Ms. Esther Ueda  
Land Use Commission  
State of Hawaii  
335 Merchant Street  
Room 104  
Honolulu, Hawaii 96813

Dear Ms. Ueda:

Subject: Draft EIS for Mauna Lani Resort, South Kohala, Hawaii  
We have reviewed the subject draft EIS and have the following comments to offer for your consideration and action.

- 1) The draft EIS has not adequately assessed the relationship of the proposed project to the Hawaii State Plan, Part I (Goals, Objectives and Policies) and Part III (Priority Directions). We do not believe the index reference provided on page V-12 represents an attentive effort to review relevant policy statements and describe how specific proposed actions are supportive or contrary to adopted State policy statements pursuant to Chapter 226, HRS, as amended.
- 2) The draft EIS gives a brief description of the project schedule on page 11-27. It states that the golf course expansion, the proposed public beach park north of Hotel Site 2/3, most of the infrastructure and a substantial number of resort and residential units are expected to be complete within ten years. The draft EIS should address the issue of incremental districting as provided in Section 6-2 of the State Land Use Regulations.
- 3) The draft EIS states on page IV-68 that the projected number of employees who may be expected to require new housing will increase from about 150 in 1990 to over 500 in the year 2000 under either the existing or revised master plan. It states that demand would be greatest from off-island in-migrants. According to page IX-1, Mauna Lani Resort, Inc., is presently working with the Hawaii County Housing Authority, the County Planning Department, and the County Council to develop and implement an employee housing action plan. The draft EIS should elaborate on this action plan and coordinate with the State Hawaii Housing Authority.

Ms. Esther Ueda  
Page 2  
June 18, 1985

4) With regard to Hawaii Coastal Zone Management Program, we have the following comments to offer.

Recreational Resources

The draft EIS indicates that mauna-waka public access will be provided at each end of the Mauna Lani Resort with connecting lateral access along the shoreline. The revised master plan proposes a beach park near Pauoa Bay. It also proposes access with parking at Honokaa'ope Bay, the purpose of which is unclear at this time. Since a "future beach club" is indicated in the plan (Figure 11-9), it is not clear whether the parking and access is for an existing beach or for the proposed beach club.

In addition, since the proposed public beach park near Pauoa Bay appears to be the major public facility, we believe that adequate public parking space should be assured. The draft EIS indicates that 12 stalls will be provided, with 17 additional spaces provided at some unspecified time in the future. Additional spaces would appear to be necessary to accommodate the public at both the proposed shoreline and archaeological parks.

Historic Resources

Recent archaeological surveys have identified significant sites in those areas proposed for resort expansion. We, therefore, recommend that proposals for restoration and park management be coordinated with the State Historic Preservation Officer.

Coastal Erosion

The draft EIS addresses impacts on ancillary pools, fish ponds, and nearshore waters from runoff and siltation during and after construction. The impacts were assessed principally by inference from those of earlier construction activity in the area. In-site assessments, particularly those reported by Dollar, should be provided as reference documents for the final EIS.

In general, we find that the draft EIS addresses the potential impacts of the proposed activity on identified coastal resources, with the exception of those noted above. Given the caveat on page I-4 to the effect that "only the difference in effects between the two plans" is of consequence to decision makers, the discussion of alternatives to the proposed action is very limited. A discussion of CEQA policies relating to economic use and the management or development among the alternatives, for example, would be helpful to decision makers on land use planning and regulatory matters.

**BELT, COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

July 3, 1985  
85-1201

Mr. Kent M. Keith, Director  
Department of Planning and Economic Development  
State of Hawaii  
P.O. Box 2339  
Honolulu, Hawaii 96804

Dear Mr. Keith:

Environmental Impact Statement (EIS) for the  
Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your comments of June 18, 1985 on the Draft Environmental Impact Statement for the proposed revised master plan for Mauna Lani Resort, addressed to Ms. Esther Ueda, Executive Officer of the State of Hawaii Land Use Commission. We appreciate the time you and your staff spent reviewing the document. Following are our responses to your comments in the order that they appear in your letter.

**Comments:** Relationship of the proposed project to the Hawaii State Plan, Part I (Goals, Objectives and Policies) and Part III (Priority Directions).

**Response:** The final EIS will review relevant policy statements and describe how the proposed project relates to these statements.

**Comments:** Incremental districting, as provided in Section 6-2 of the State Land Use Regulations.

**Response:** The issue of incremental districting will be addressed more fully in the final EIS.

**Comments:** Operational period employee housing demand.

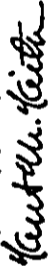
**Response:** As stated in the DEIS, "Mauna Lani Resort, Inc. is presently working with the Hawaii County Housing Authority, the County Planning Department, and the County Council to develop and implement an employee housing action plan." (page IX-1). Mauna Lani Resort, Inc. has also held talks with the State Hawaii Housing Authority, although specific action has not yet been discussed.

Mauna Lani Resort, Inc.'s housing action plan is centered around the goal of working toward increasing the supply of housing in the region. The final EIS will contain a discussion of Mauna Lani's proposed course of action concerning housing.

**Comments:** Hawaii Coastal Zone Management Program, Recreational Resources: public parking at Honokaaope Bay and at Pauoa Bay.

Thank you for the opportunity to provide these comments.

Very truly yours,



Kent M. Keith

cc: OEQC  
Roger Harris, Mauna Lani Resort  
V. Anne Hayes

Ms. Esther Ueda  
Page 3  
June 18, 1985

Mr. Kent M. Keith, Director  
Page two

July 3, 1985  
85-1201

**Response:** With regard to your comment on parking and access at Honoka'ope Bay (in Figure II-9), see page II-11 for a statement on public parking and access. The future beach club will have parking associated with it, separate from the public parking. Please note that Figure II-9 is a schematic concept plan that shows only the general placement of planned amenities, including 20 public stalls at Honoka'ope Bay.

With regard to your comment on the need for additional parking spaces at the public shoreline park near Pauoa Bay, the current plan provides for 29 stalls. Should it become apparent that parking is inadequate to accommodate visitors to the beach park, 11 additional stalls will be constructed by Mauna Lani Resort, Inc. The 29 stalls at Pauoa Bay are planned to accommodate the public at the shoreline park. Separate parking for 8 vehicles will be provided near the entrance to the petroglyph field, north of the mauka end of the two golf holes proposed for the leased land north of Pauoa Bay. Thus, total planned parking in the area amounts to 40 stalls for public use.

In the long term, should more parking be required, ample space for such use is available near the public shoreline park.

**Comments:** Hawaii Coastal Zone Management Program, Historic Resources: coordination of restoration and park management with the State Historic Preservation Officer.

**Response:** Your recommendation that proposals for restoration and park management be coordinated with the State Historic Preservation Officer will be followed. Contact with the State Historic Preservation Officer has already been initiated with regard to the management of cultural resources at Mauna Lani Resort.

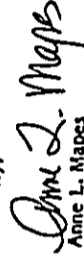
**Comments:** Hawaii Coastal Zone Management Program, Coastal Ecosystems: impacts of runoff and siltation, as reported in studies of the area.

**Response:** As requested, copies of previously completed studies used in the preparation of the DEIS will be transmitted to your department for use in reviewing the final EIS.

**Comments:** CZM policies relating to economic use and the management of development.

**Response:** The discussion of CZM policies in the final EIS will include the "no-project" alternative. Other alternatives will not be considered; these are alternatives that were considered but rejected as infeasible (see Chapter III: Alternatives to the Proposed Action).

Sincerely,

  
Anne L. Mapes

ALM:llf

cc: Mauna Lani Resort, Inc.

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HONOLULU, HAWAII 96813

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HONOLULU, HAWAII 96813

**BELT, COLLINS & ASSOCIATES**  
Engineering - Planning  
Landscape Architecture

**STATE OF HAWAII**  
DEPARTMENT OF TRANSPORTATION  
HONOLULU, HAWAII 96813

June 18, 1985

Ms. Esther Ueda  
State of Hawaii Land Use Commission  
335 Merchant Street, Room 104  
Honolulu, Hawaii 96813

Dear Ms. Ueda:

Mauna Lani Resort Draft EIS  
South Kohala, Hawaii  
TMK: 6-8-01: For.22  
6-8-22: For.1

Following are our comments on the statement for the Mauna Lani Resort:

1. The EIS recognizes the need for but does not specifically identify the improvements proposed for the Mauna Lani Drive-Queen Kapiolani Highway intersection.
2. Whatever intersection improvements are proposed, these must be coordinated with the Highways Division.
3. Due to a lack of funding, the costs of the intersection improvements relative to the proposed resort shall be borne by the developer.
4. It should be noted that contrary to the last sentence of page IV-89, the Highways Division does not foresee the availability of funds to widen the Queen Kaahumanu Highway. In this regard, the developer may wish to expand upon the anticipated impacts of his entire resort community on adjacent highway facilities.

Very truly yours

*Wayne J. Yamasaki*  
Wayne J. Yamasaki  
Director of Transportation

July 3, 1985  
85-1200

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

Dear Mr. Yamasaki:

Environmental Impact Statement (EIS) for the Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your comments of June 18, 1985 on the above project, addressed to Ms. Esther Ueda, Executive Officer of the State Land Use Commission. We appreciate the time you and your staff spent reviewing the Draft EIS.

The EIS will be revised to incorporate the following:

- Comments: Identification of improvements proposed for the Mauna Lani Drive-Queen Kapiolani Highway intersection.
- Responses: Possible improvements to the intersection will be identified in the EIS. However, the specific improvements to be implemented cannot be precisely characterized during this early planning stage.

The EIS will also reflect your concern for coordination with the Highways Division in planning intersection improvements, the allocation of costs of the intersection improvements, and the lack of available Highways Division funds to widen Queen Kaahumanu Highway.

Sincerely,  
*Anne L. Mapes*  
Anne L. Mapes

ALM:HF

cc: Mauna Lani Resort, Inc.

Ms. Esther Ueda  
June 20, 1985  
Page 2

LETITIA N. UYEHARA  
DIRECTOR  
TELEPHONE NO.  
348-9113

1985  
JUN 20 1985

LETITIA N. UYEHARA  
DIRECTOR



STATE OF HAWAII  
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

240 HALEKULUWA STREET  
ROOM 301  
HONOLULU, HAWAII 96813

June 20, 1985

Ms. Esther Ueda  
Executive Director  
Land Use Commission  
335 Merchants Street, Room 104  
Honolulu, Hawaii 96813

Dear Ms. Ueda:

Subject: Draft EIS for Mauna Lani Resort

We have reviewed the Mauna Lani Resort draft EIS and offer the following comments.

1. The Mauna Lani Resort site includes a number of anchialine ponds which contain unique aquatic life forms. Significant degradation of the anchialine ponds have taken place since 1972. Several of the ponds identified in 1972 could not be located in 1985. This indicates that adequate precautions have not been taken to preserve the anchialine ponds and further degradation of the ponds will take place if the expansion of Mauna Lani Resort is allowed without the adoption of mitigating measures.
2. We understand that there are a vast number of archaeological artifacts in the area and some sites will be destroyed as a result of the expansion of the resort. We suggest that the Department of Land and Natural Resources' Historic Sites Division be contacted to resolve any questions and problems relating to archaeology prior to the commencement of the project.

Should you have any questions regarding our comments, please do not hesitate to call.

Sincerely,

*Letitia N. Uyehara*  
Letitia N. Uyehara  
Director

cc: Roger Harris, Mauna Lani Resort  
Anne Mapes, Belt, Collins & Associates

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

**BELL, COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

July 3, 1985  
85-1206

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

Dear Ms. Uyehara:

Environmental Impact Statement (EIS) for the  
Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your comments of June 20, 1985 on the Draft Environmental Impact Statement (DEIS) for the proposed revised master plan for Mauna Lani Resort, addressed to Ms. Esther Ueda, Executive Officer of the State of Hawaii Land Use Commission. We appreciate the time you and your staff spent reviewing the document.

**Comments:** Mitigation measures to avoid degradation of anchialine ponds at Mauna Lani Resort.

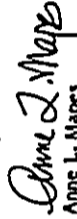
**Response:** We recognize that the biological uniqueness of some of the ponds has decreased due to the introduction of two exotic fish species. In his report, Dr. Richard Brock states that the apparent loss of some of the ponds between 1972 and 1985 is probably due to observer error during either survey as well as to natural infilling. Mauna Lani Resort, Inc. states that none of the ponds surveyed in 1972 had been filled in as a result of construction activity.

With increased development and improved public access to the ponds, there will be increased opportunity for the introduction of exotic species. To avoid adverse impact, mitigation measures will be considered, including those proposed by Brock: eradication of unwanted species, reseedling of ponds with desired species, the creation of new anchialine ponds, and implementation of an educational plan for residents and visitors.

**Comment:** Consultation with the Department of Land and Natural Resources, Historic Sites Division.

**Response:** The Department of Land and Natural Resources, Historic Sites Division has determined that archaeological studies completed to date are adequate for informational purposes. It is probable that sites not yet identified will be located as planning work continues at Mauna Lani Resort. When such sites are found, the developer will contact both the State Historic Sites Division and the Hawaii County Planning Department. The course of action to be taken will then be decided collectively.

Sincerely,

  
Anne L. Mapes

ALM:llf  
CC: Mauna Lani Resort, Inc.

Honolulu 4001 Leialoi Street, Honolulu, Hawaii 96813. Telephone: (808) 531-1111. Telex: 381111. FAX: 531-1112.  
Singapore: 4011 Leialoi Road #1718. International Booking: Singapore 275-1211. Telex: 3811111111.



1000 BELT COLLINS & ASSOCIATES



COUNTY COUNCIL

County of Hawaii  
Hawaii County Building  
Hilo, Hawaii 96721

June 3, 1985

Ms. Anne Mapes  
Belt, Collins and Associates  
606 Coral Street  
Honolulu, HI 96813

Thank you for the opportunity to comment on the proposed expansion of Mauna Lani Resort. The expansion proposes to develop the resort at a lower density and with more recreational amenities. This requires an increase in the State Land Use Urban District boundary from 778.5 to 1,432 acres.

Recreational amenities play an integral part in attracting visitors to a resort development. The increase in recreational amenities include a second golf course, a public shoreline park, and additional open space and recreational areas. Mauna Lani Resort, Inc. is seeking to enhance its reputation as a resort centered around golf.

The development of luxury properties along the South Kohala coastline has changed the complexion of the area into a major resort destination. These developments will result in substantial increases in employment opportunities and economic activities for the communities of West Hawaii. Further, these developments would expand the County's economic base by providing recreational opportunities and stimulating housing development and general business activities.

Past experience with Mauna Lani Resort, Inc. have shown that the developers are committed to project designed to protect the environment and preserve archeological and historic sites. The caliber of this commitment will also give the South Kohala properties the recognition which may promulgate further developments.

We believe that the project is in consonance with the type of development the Council has envisioned for the area. In closing, I would like to express my support for the proposed expansions to Mauna Lani Resort.

Stephen K. Yamashiro  
Council Chairman

BELT, COLLINS  
& ASSOCIATES  
Engineering • Planning  
Landscape Architecture

July 3, 1985  
85-1194

Mr. Stephen K. Yamashiro  
Council Chairman  
County Council  
County of Hawaii  
Hawaii County Building  
Hilo, Hawaii 96720

Dear Chairman Yamashiro:

Environmental Impact Statement (EIS) for the  
Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your comments of June 3, 1985 on the Draft Environmental Impact Statement for the proposed revised master plan for Mauna Lani Resort. We appreciate the time you and other Council members spent reviewing the document and the expression of your favorable support for the project.

Sincerely,

Anne L. Mapes

ALM:hl

cc: Mauna Lani Resort, Inc.

Honolulu: 606 Coral Street, Honolulu, Hawaii 96813, Telephone: (808) 521-5161, Telex: 0310174 BMTZ  
Singapore: 1415 North Canal Road, #12-106, International Building, Singapore 19271, Telephone: 215-6870, Telex: RS 50344-1 B ININ

*Handwritten mark*

2111 COLLINS & ASSOCIATES  
Dante K. Carpenter, Mayor  
Patricia Engelhard, Director

DEPARTMENT OF PARKS & RECREATION  
COUNTY OF HAWAII



BELL, COLLINS  
& ASSOCIATES  
Engineering • Planning  
Landscape Architecture

July 3, 1985  
85-1190

June 4, 1985

Ms. Esther Ueda  
State of Hawaii Land Use Commission  
335 Merchant Street, Room 104  
Honolulu, HI 96813

Subject: Draft EIS for Mauna Lani Resort  
Kalahaupua'a, South Kohala, Hawaii

We have been involved in the review of the various planning phases of the project and have had our concerns/comments resolved.

Thank you for the opportunity to review the final draft of the EIS.

*Pat Engelhard*  
Pat Engelhard  
Director

PE:GM:al

cc: Mr. Roger Harris  
Ms. Anne Mapes

(EIS being returned to Office of Environmental Quality Control)

Ms. Pat Engelhard, Director  
Department of Parks and Recreation  
County of Hawaii  
25 August Street  
Hilo, Hawaii 96720

Dear Ms. Engelhard:

Environmental Impact Statement (EIS) for the  
Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of June 4, 1985 to Ms. Esther Ueda, Executive Officer of the State of Hawaii Land Use Commission acknowledging receipt of the Draft Environmental Impact Statement for the proposed revised master plan for Mauna Lani Resort. While your agency had no comments, we do appreciate the time you and your staff spent reviewing the document.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:iff

cc: Mauna Lani Resort, Inc.

Honolulu District Office  
Simpson Building, Honolulu, Hawaii 96813  
Telephone: (808) 521-5411 Telex: H111174 HAWA  
Singapore: 141 Orchard Road, #17-18, International Building, Singapore 0211 Telephone: 215 1630 Telex: RS 9144 HAWA

100% COPY



DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII  
28 AUPUNI STREET • HILO, HAWAII 96720

July 3, 1985  
85-1186

BELT, COLLINS  
& ASSOCIATES  
Engineering • Planning  
Landscape Architecture

Mr. H. William Sewake, Manager  
Department of Water Supply  
County of Hawaii  
29 Aupuni Street  
Hilo, Hawaii 96720

Ms. Esther Ueda  
State of Hawaii Land Use Commission  
315 Vercham Street, Room 104  
Honolulu, HI 96813

DRAFT ENVIRONMENTAL IMPACT STATEMENT  
MAUNA LANI RESORT EXPANSION

We have no additional comments to the subject document.

Dear Mr. Sewake:  
  
Environmental Impact Statement (EIS) for the  
Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of May 29, 1985 to Ms. Esther Ueda, Executive Officer of the State of Hawaii Land Use Commission acknowledging receipt of the Draft Environmental Impact Statement for the proposed revised master plan for Mauna Lani Resort. While your agency had no comments, we do appreciate the time you and your staff spent reviewing the document.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

H. William Sewake  
Manager

QA

cc - Mr. Roger Harris, Mauna Lani Resort  
Ms. Anne L. Mapes, Belt, Collins & Associates

ALM:iff

cc: Mauna Lani Resort, Inc.

... Water brings progress...

Honolulu 16th Canal Street, Honolulu, Hawaii 96813 Telephone (808) 521-5161, Telex 0111174 B4274  
Singapore 841101/102 Road #12 The International Building Singapore 215 6870 Telex 015444 B4 1574

JAYE K. CARPENTER  
S.A.



FRANCIS E. SMITH  
FIRE CHIEF  
DOH COLOMA  
DEPUTY FIRE CHIEF

BELT, COLLINS  
& ASSOCIATES  
Engineering • Planning  
Landscape Architecture

July 3, 1985  
85-1189

May 30, 1985

Mr. Francis E. Smith, Chief  
Hawaii County Fire Department  
466 Kinooole Street  
Hilo, Hawaii 96720

Dear Mr. Smith:

Ms. Anne L. Mapes  
Belt, Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Dear Ms. Mapes:

Subject: Draft Environmental Impact Statement (DEIS) for the  
Proposed Expansion of Mauna Lanai Resort, South Kohala, Hawaii

The Hawaii County Fire Department's concerns are adequately addressed in  
the DEIS. We have no further comments at this time.

Thank you for giving us the opportunity to review it.

Sincerely,

*Francis E. Smith*  
FRANCIS E. SMITH  
FIRE CHIEF

FES/rd

Environmental Impact Statement (EIS) for the  
Proposed Expansion of Mauna Lanai Resort, South Kohala, Hawaii

Thank you for your letter of May 30, 1985 acknowledging receipt of the Draft  
Environmental Impact Statement for the proposed revised master plan for Mauna Lanai  
Resort. While your agency had no comments, we do appreciate the time you and your  
staff spent reviewing the document.

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:ll

cc: Mauna Lanai Resort, Inc.

COPY

PLANNING DEPARTMENT  
28 AUPUNI STREET

COUNTY OF HAWAII  
HILA, HAWAII

RECEIVED  
JUN 24 1985

EJL, COLUINS & ASSOCIATES

June 21, 1985

Ms. Esther Ueda  
State Land Use Commission  
335 Merchant Street, Room 104  
Honolulu, Hawaii 96813

Dear Ms. Ueda:

Thank you for the opportunity to review this draft EIS. Our comments, referenced by page, follow:

Page II-11, Item 3.2.2.3. The provision, and recent inclusion on all maps of the public shoreline accesses, the shoreline trail, and the proposed development of public parks facilities for both the north and south ends of the resort development are noteworthy inclusions in this draft EIS.

Page II-11, Item 3.2.2.4. It is noted that there has been a change in the description of the park site from "public beach park" to "public shoreline park." The change is a more accurate description.

Page IV-19, Item 4.10. We make special note that Mauna Lani plans to continue the policy of preserving and in some cases enhancing the anchialine ponds on the property.

Page IV-72, Item 2.2.4.2. There is a need to justify the statement that "long term housing needs are expected to be met on the open market and through employee housing provided by or supported by Mauna Lani Resorts."

Page IV-112, Item 6.1. Public school facilities can become overcrowded by the addition of even a handful of students since the number of students per classroom are strictly limited by law. Additionally, the Department of Education (DOE) will very likely have to provide public transportation or cash subsidies for the

Ms. Esther Ueda  
Page 2  
June 21, 1985

bussing of public school students to and from school daily. We note that the DOE was not included in the distribution of this draft EIS and we believe the school projections portrayed in this document need to be reviewed by that agency.

Page IV-115, Item 6.4. A development occurring after the printing of this draft EIS is the offer by the Kohala Coast Resort Association to fund the full construction of a new 24-hour fire station and fire fighting equipment (except emergency medical service vehicle) on land described in this section. The County would be responsible for all personnel and administrative and operational costs. Funding would be through the floating of bonds by the County wherein retirement (repayment) of the bond would be by the association.

Page IV-115, Item 6.4. It would be appropriate to assess the direct, indirect and tertiary impacts of the project with respect to population, housing, and labor force availability. These are presently incomplete and should be revised.

The population considered is on-site residents and visitors while the off-site impact is limited to projected in-migrants who will be working at the resort. Secondary and tertiary population impacts are not indicated. This approach does not account for the significant impact that a resort of this magnitude will have on the growth of West Hawaii. The workers employed, whether local in origin or otherwise, will all reside on the island as will their dependents. From this group there will also be associated a demand for housing which is not sufficiently addressed in the draft.

Sincerely,

  
ALBERT LONO LYMAN  
Planning Director

D:rlv/ls

cc: Roger Harris  
/Anne Hapes

**BELT, COLLINS  
& ASSOCIATES**  
Engineering • Planning  
• Landscape Architecture

July 5, 1985  
85-1208

Mr. A. Lono Lyman, Director  
Planning Department  
County of Hawaii  
25 Aupuni Street  
Hilo, Hawaii 96720

Dear Mr. Lyman:

Environmental Impact Statement (EIS) for the  
Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your comments of June 21, 1985 on the Draft Environmental Impact Statement (DEIS) for the proposed revised master plan for Mauna Lani Resort, addressed to Ms. Esther Ueda, Executive Officer of the State of Hawaii Land Use Commission. We appreciate the time you and your staff spent reviewing the document.

**Comments:** Long term housing needs to be met on the open market and through employee housing provided by Mauna Lani Resort, Inc.

**Responses:** As stated in the DEIS, Mauna Lani Resort, Inc. expects to have housing studies performed as each hotel site is developed, to more accurately estimate employee housing needs given current market conditions.

**Comment:** DOE review of school projections in the DEIS for Mauna Lani Resort.

**Responses:** The DOE was sent copies of both the EIS Preparation Notice and the Draft EIS; the agency responded to both. Superintendent Francis Hatanaka's response of January 3, 1985 to the Preparation Notice (see copy of letter in the DEIS, page XII-49) contained coefficients which were used by Peat, Marwick, Mitchell & Co. to project the number of additional students expected as a result of development at Mauna Lani Resort. Mr. Hatanaka had no further comments after his department's review of the Draft EIS. During the preparation of the DEIS, Peat, Marwick staff also contacted the Facilities Branch and the Student Information Services Branch of the DOE. The educational facilities analysis is partially based on the information thus obtained.

**Comments:** The likelihood of public transportation or cash subsidies to be provided by DOE to bus public school students to and from school.

**Responses:** I called Mr. Herbert Watanabe of the Hawaii District Office of the DOE on June 28 to inquire about DOE policy concerning transportation of public school students. Mr. Watanabe confirmed that students living one mile or more from the nearest public school are provided transportation to and from school if the students have access to an established bus route. Parents of those who do not are reimbursed for car mileage. Details are contained in the final EIS.

770 Kihuna Rd., Coastal Street, Hilo, Hawaii 96721 Telephone: (808) 933-5301, Ext. 1111/1173/1174  
1000 Kihuna Rd., 8th Fl., International Building, Singapore 11711 Telephone: 215 6070 Telex: KX 93344 RIF HN

Mr. A. Lono Lyman, Director  
Page two

July 5, 1985  
85-1208

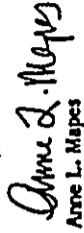
**Comments:** Funding by the Kohala Coast Association for the construction of a new 24-hour fire station.

**Responses:** The description you provide in your letter will be included in the final EIS.

**Comments:** Direct, indirect, and tertiary impacts of development at Mauna Lani Resort with respect to population, housing, and labor force availability.

**Responses:** The final EIS will address the direct, indirect, and induced impacts of development on labor force availability, population and employee housing requirements for both construction period and operational employment.

Sincerely,

  
Anne L. Mapes

AL:MHF

cc: Mauna Lani Resort, Inc.



**POLICE DEPARTMENT**  
 COUNTY OF HAWAII  
 349 KAPIOLANI STREET  
 HILO, HAWAII 96720

**RECEIVED**  
 JUN 7 1985  
 BELT, COLLINS & ASSOCIATES



GUY A. PAUL  
 CHIEF OF POLICE  
 WALTER C. CARROLL  
 DEPUTY CHIEF

July 3, 1985  
 85-1191

OUR REFERENCE  
 YOUR REFERENCE

June 5, 1985

Ms. Anne L. Mapes  
 Belt, Collins & Associates  
 606 Coral Street  
 Honolulu, Hawaii 96813

XIII-36

RE: Draft Environmental Impact Statement (DEIS) for the  
 Proposed Expansion of Mauna Lani Resort, South Kohala,  
 Hawaii

The copy of the DEIS for the above project has been reviewed  
 and from the police standpoint, we foresee no adverse effects  
 from the requested land use.

*Guy A. Paul*  
 GUY A. PAUL  
 CHIEF OF POLICE

cc: S. Kohala Police

**BELT, COLLINS  
 & ASSOCIATES**  
 Engineering • Planning  
 Landscape Architecture

Mr. Guy A. Paul, Chief  
 Police Department  
 County of Hawaii  
 349 Kapiolani Street  
 Hilo, Hawaii 96720

Dear Mr. Paul:

Environmental Impact Statement (EIS) for the  
 Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your letter of June 3, 1985 acknowledging receipt of the Draft  
 Environmental Impact Statement for the proposed revised master plan for Mauna Lani  
 Resort. While your agency had no comments, we do appreciate the time you and your  
 staff spent reviewing the document.

Sincerely,

*Anne L. Mapes*  
 Anne L. Mapes

ALM:iff

cc: Mauna Lani Resort, Inc.

Honolulu 676 Kalia Street Honolulu, Hawaii 96813 Telephone: (808) 521-5101 Telex: 10111740324  
 Singapore 111 Orchard Road #1201 International Building Singapore 215 (077) Telex: RS 916410151N



# University of Hawaii at Manoa

Environmental Center  
Crawford 317 • 1350 Campus Road  
Honolulu, Hawaii 96822  
Telephone (808) 944-7381

June 24, 1985

RE:0416

Ms. Esther Ueda  
Land Use Commission  
335 Merchant Street, Room 104  
Honolulu, Hawaii 96813

Dear Ms. Ueda:

Draft Environmental Impact Statement  
Mauna Lani Resort  
Kalaheipua'a, South Kohala, Hawaii

XIII-37

The above cited Draft EIS for the development of a resort hotel complex at South Kohala, Hawaii, has been reviewed with the assistance of David Welch, Anthropology; Jacquelin Miller and Wallington Yee, Environmental Center. Since the due date for comments on this DEIS occurred on a Saturday, we requested and received an extension to today's date for submittal of our comments.

In general, our reviewers have found this document to be well written and quite comprehensive. In particular, we were pleased to note the incorporation of our comments, submitted during the consultation period, in the body of the document. So often comments submitted during the preparation stage are merely responded to by separate letter, a procedure which greatly weakens the purpose of the consultation period.

It is a pleasure to review a draft EIS where the letter and intent of the EIS system has been so thoughtfully pursued.

The following reflect the specific comments provided by our reviewers.

### Historic and Archaeological Resources (section IV-39 to IV-45)

The draft EIS appears to address satisfactorily the potential impacts on archaeological sites in the proposed development area. The document reports accurately the results and recommendations of the survey that was conducted for Mauna Lani Resort last fall by David Welch and the Environmental Center suggestions submitted during the EIS preparation stage. We are pleased to note that the Draft EIS states that further archaeological surveys will be conducted as specific site plans become available and that security will be provided for the Puako petroglyphs when they are opened for easier public access. As long as these steps, and those recommended in the Science Management, Inc. preservation plan, are carried out, the adverse impacts to sites in the area will be mitigated and those sites of greatest value will be preserved.

AN EQUAL OPPORTUNITY EMPLOYER

Ms. Esther Ueda

-2-

June 24, 1985

### Hotel Sites (p. II-11)

The Draft EIS notes that the original plans for the Mauna Lani Resort called for a hotel to be located along the southern side of Honokaaope Bay. However, when the State Land Use District Boundary Review was completed in 1974 only a portion of the site was included in the Urban District. In evaluating the relative impacts of the requested land use changes from conservation to urban, it would be helpful to have a brief accounting of the rationale for the existing conservation land use designation.

### Natural Hazards (p. IV-7)

In reviewing our previous comments regarding the discussion of runoff, we note an incorrect reference to "the 100-foot tsunami runoff height", the sentence should have read, "the 100-year tsunami runoff height". The response to our comments, as provided in the Draft EIS reflects the correct interpretation of our comments and is quite thorough.

We appreciate the opportunity to comment on the Draft EIS and hope you will find our comments useful in preparing the Final EIS.

Yours truly,

*Doak C. Cox*  
Doak C. Cox  
Director

cc: OEQC  
Roger Harris  
Anne L. Mapes  
David Welch  
Jacquelin Miller  
Wallington Yee



**BELT, COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

Mr. Doak C. Cox, Director  
Environmental Center  
University of Hawaii  
Crawford 317  
2550 Campus Road  
Honolulu, Hawaii 96822

Dear Mr. Cox:

Environmental Impact Statement (EIS) for the  
Proposed Expansion of Mauna Lani Resort, South Kohala, Hawaii

Thank you for your comments of June 24, 1985 on the Draft Environmental Impact Statement (DEIS) for the proposed revised master plan for Mauna Lani Resort, addressed to Ms. Esther Ueda, Executive Officer of the State of Hawaii Land Use Commission. We appreciate the time you, David Welch, Jacquelin Miller, and Wellington Yee spent reviewing the document.

**Comment:** Conservation land use designation of lands on the southern side of Honokaaope Bay.

**Response:** In South Kohala, the original 1964 land use district boundaries ran along the King's Trail through lava lands. The areas seaward of the trail were designated Conservation, as they were undeveloped and scenic. Gradually, these areas were planned for resort uses and brought into the Urban district at Puako, Mauna Lani Resort, and Waikoloa. The southern section of the Honokaaope Bay area is the only section between Mauna Lani Resort and Waikoloa that remains in the Conservation district even though the entire area is designated for low density urban resort uses in the County General Plan. Over the years, there has been no public access to or use of this area. The current plan will ensure that the public will have access to the scenic shoreline at Honokaaope Bay. There is much Conservation district scenic shoreline outside this resort region which will likely remain in the district well into the future, both to the south and north of the coastal resorts in South Kohala.

**Comment:** Tsunami runup height.

**Response:** The EIS will be corrected to read: "the 100-year tsunami runup height."

Sincerely,

*Anne L. Mapes*  
Anne L. Mapes

ALM:if

cc: Mauna Lani Resort, Inc.

Honolulu 448 Canal Street, Honolulu, Hawaii 96811 Telephone: (808) 531-5101 Telex: 011111 24 04374  
Singapore 1111111111 Road #12 06 International Building Singapore 011111 Telephone: 215 16870 Telex: 931111 11 1111



**University of Hawaii at Manoa**

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

18 June 1985

**BELL, COLLINS  
& ASSOCIATES**  
Engineering • Planning  
Landscape Architecture

Mr. Edwin T. Murabayashi  
EIS Coordinator  
University of Hawaii at Manoa  
Water Resources Research Center  
Holmes Hall 283  
2540 Dole Street  
Honolulu, Hawaii 96822

Ms. Esther Ueda  
State of Hawaii Land  
Use Commission  
335 Merchant Street, Room 104  
Honolulu, Hawaii 96813

Dear Ms. Ueda

**SUBJECT:** Draft Environmental Impact Statement, Revised Master Plan  
for Mauna Lanai Resort, South Kohala, Hawaii, May 1985

We have reviewed the subject IEIS and offer the following comment. In  
Sec. 6.6 (p. IV-117-118), it is stated that treated wastewater effluent is  
used only for tree irrigation. In the future when effluent flow increases  
beyond the needs of the nursery, what will be done with the surplus? And  
what will be the environmental impact resulting from this action?

Thank you for the opportunity to comment. This material was reviewed  
by WREC personnel.

Sincerely,  
*Edwin T. Murabayashi*  
Edwin T. Murabayashi  
EIS Coordinator

ETM:jm

cc: Roger Harris  
Anne Mapes

Proposed Expansion of Mauna Lanai Resort, South Kohala, Hawaii

Thank you for your comments of June 18, 1985 on the Draft Environmental  
Impact Statement for the proposed revised master plan for Mauna Lanai Resort,  
addressed to Ms. Esther Ueda, Executive Officer of the State of Hawaii Land Use  
Commission. We appreciate the time you and your staff spent reviewing the  
document.

**Comment:** Use of future increased volumes of treated wastewater effluent flow.

**Response:** It is expected that increased effluent flow will be mixed with brackish  
water to irrigate the Mauna Lanai Resort golf courses. How this will be done and  
potential impacts will be addressed in the final EIS.

Sincerely,  
*Anne L. Mapes*  
Anne L. Mapes

ALM:ll

cc: Mauna Lanai Resort, Inc.

Honolulu 661 Canal Street, Honolulu, Hawaii 96813 Telephone (808) 531-5461 Telex 301111-719422  
Singapore 421101 Road, #1218, International Building, Singapore-0521 Telephone 215-6870 Telex 83264 IK HAW

AN EQUAL OPPORTUNITY EMPLOYER

*Ming Chew Associates*

*Consulting Real Estate Economists*

**Market Analysis  
for  
Mauna Lani Resort**

**South Kohala District, Island of Hawaii  
State of Hawaii**

Prepared for

**Mauna Lani Resort, Inc.  
Mauna Lani Resort, Island of Hawaii**

November 1984

**Appendix A**

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Qualifications of the Consultant and the Firm

**I. ASSIGNMENT AND SUMMARY**

**A. Assignment**

Our assignment has been to prepare a market analysis for the Mauna Lani Resort, located in the Kohala Coast Resort Region, District of South Kohala, County of Hawaii (Island of Hawaii), State of Hawaii. The results of this analysis are to be used to assist in land use planning and to aid in preparing a petition to the Hawaii State Land Use Commission for reclassification of selected lands.

**B. Approach**

Our approach has been to identify the primary markets that could be served by the entire resort. General economic trends were assessed, and projections made of likely visitor arrivals for the State and County. These projections in turn were converted into demand estimates for total transient accommodations, hotel rooms, resort multifamily units (units in resort multifamily projects), resort subdivision houselots, golf course demand, commercial land use and resort support facilities.

The demand estimates were compared with existing and planned supply to formulate marketability conclusions for Mauna Lani Resort, taking into account its development philosophy of uncompromising quality.

**C. Summary of Findings and Conclusions**

1. The entire Kohala Coast Resort Region has been designated by the State of Hawaii and County of Hawaii in their various plans as a major resort area. Excellent climate, white sand beaches, accessibility and the present concentration of high-amenity, masterplanned, controlled-environment luxury and super-luxury resorts, combine to make Kohala Coast potentially the highest-quality resort region in the State.
2. Revisions are being proposed to the master development plan for Mauna Lani Resort to respond to a higher-than-anticipated golf course demand, and to better accommodate the lower development densities dictated by its development philosophy.

3. After two flat years for the State visitor industry in 1980 and 1981, visitor arrivals to the State increased 8 percent in 1982 and another 3 percent in 1983.

4. The County of Hawaii visitor industry as a share of state-wide activity declined from 1971 to 1982, before rebounding slightly in 1983. The estimated number of westbound visitors to the Island, the primary source of the County's visitor industry patronage, declined from 1978 to 1981 before reversing the decline in 1982 and continuing to rebound in 1983.

5. Despite the County-wide trends, visitor industry activity on the Kohala Coast has been spirited. Within the last three years, two high-amenity resorts opened championship golf courses and luxury or super-luxury hotels. As a result, in 1983, the number of transient accommodation units in North and South Kohala exceeded the number in Hilo for the first time. Also in 1983, North and South Kohala's share of the Island's occupied units reached 22 percent, twice the estimated 11 percent recorded in 1980.

5. Continued development of high-quality resort amenities and accommodations, direct flights from the U.S. Mainland west coast to Ke-hole Airport by United Airlines, cooperative advertising for the Kohala Coast Resort Region between the existing resorts and United Airlines (the largest carrier of westbound visitors to Hawaii), programs to promote neighbor island destinations by Japan Air Lines (the largest carrier of eastbound visitors to Hawaii) and increased promotions and marketing efforts by the new facilities on the Kohala Coast are expected to expand basic demand to the Region.

7. We estimate that net additional demand for transient accommodations in North and South Kohala in excess of the February 1984 inventory would be 2,200 units by 1990, 4,500 by 1995 and 6,500 by 2000.

8. Projected net additional demand for hotel units in Mauna Lani Resort would be 400 by 1990, 700 by 1995 and 900 by 2000. Published daily rates of \$200+ are recommended.

9. Estimated net additional demand for low-rise resort multifamily units in Mauna Lani Resort would be 400 units in 1990, 800 in 1995 and 1,400 to 1,800 in 2000. Achievable average fee simple prices are estimated to range from \$350,000 to \$550,000 per unit in 1984 dollars.
10. New resort subdivision houselot demand for Mauna Lani is projected to be 25 lots in 1990, 50 in 1995 and 70 to 90 in 2000. Achievable fee simple lot prices are estimated to average from \$250,000 to \$450,000.
11. Demands, numerically equivalent to the houselot forecasts, are projected to exist for detached house and lot packages in Mauna Lani. This would be 25 homes in 1990, 50 in 1995 and 70 to 90 in 2000. Prices for the fee simple house and lot packages are projected to average from \$600,000 to \$1,000,000+ in terms of 1984 dollars.
12. The net additional demand for golfing activity in Mauna Lani Resort is projected to be about 51,000 annual rounds in 1990. This amount of play is not likely to be accommodated by other courses in the region. Thus, another high-quality championship golf course would be needed by the time the next hotel begins operations, and this second golf course is projected to be at its capacity by 1990. By 1995, we estimate that additional demand for golf would reach 92,000 annual rounds, and reach 128,000 to 158,000 rounds by 2000. This indicates that a third golf course would be at capacity by 1995, and a fourth by 2000.
13. Commercial land use demand is projected to be 5 acres in 1990, 10 acres in 1995 and 16 to 21 acres in 2000.
14. Auxiliary support uses would require an additional 15 acres by 1990, 30 by 1995 and 45 to 55 by 2000.
15. Table I-1 summarizes our marketability conclusions for Mauna Lani Resort. The projected estimates represent cumulative demand in excess of the existing February 1984 inventory.

Table I-1  
PROJECTED MARKETABILITY (1)  
MAUNA LANI RESORT  
Kohala Coast Resort Region  
County of Hawaii, State of Hawaii  
1990-2000

	Projected Marketability		
	1990	1995	2000
HOTEL ROOMS	400	700	900-1,100
LOW-RISE MULTIFAMILY UNITS			
Higher-Quality	100	200	400-500
Mid-Quality	150	300	500-600
Lower-Quality	150	300	500-700
Total	400	800	1,400-1,800
HOUSELOTS			
Higher-Quality	5	10	10-15
Mid-Quality	8	15	20-25
Lower-Quality	12	25	40-50
Total	25	50	70-90
HOUSE AND LOT			
Higher-Quality	5	10	10-15
Mid-Quality	8	15	20-25
Lower-Quality	12	25	40-50
Total	25	50	70-90
TOTAL (ROOMS/UNITS/LOTS)	850	1,600	2,440-3,080
GOLF ROUNDS, ANNUAL	51,000	92,000	128,000-158,000
COMMERCIAL, ACRES	5	10	16-21
AUXILIARY SERVICES, ACRES	15	30	45-55

(1) Cumulative demand in excess of February 1984 inventory.

SOURCE: Ming Chew Associates

## II. DESCRIPTION OF THE REGION

The entire Kohala Coast Resort Region, which is situated along the coast of the District of South Kohala, has been designated by the State of Hawaii and County of Hawaii in their various plans as a major resort region. The region contains three very high quality masterplanned resorts. The Mauna Kea Resort (Mauna Kea Beach Hotel and Golf Course) began operations in 1965. Golf courses in Waikoloa Beach Resort and Mauna Lani Resort, as well as the Sheraton Royal Waikoloa Hotel started operations in 1981. The Mauna Lani Bay Hotel opened in 1983.

The locations of these projects relative to the subject property are shown on the facing Regional Map.

The State of Hawaii consists of eight major and 124 minor islands having a total land area of approximately 6,425 square miles. Hawaii County (Island of Hawaii) has an area of approximately 4,038 square miles, and contains 63 percent of the State's total land area. Hawaii County comprises nine judicial districts: North and South Kohala, North and South Kona, Hamakua, Ka'u, Puna and North and South Hilo. The magnitude of this island, and the wide range of topography and climate, offer environments more diverse than those of any of the other islands within the State.

The District of South Kohala is located on the northwest coast of the Island of Hawaii and includes topography ranging from white sand beaches to the Kohala Mountains and a portion of Mount Mauna Kea's lower leeward slope. The District of South Kohala has two distinct physical environments: the Waimea highland, which is characterized by green rolling hills used for diversified agriculture, and the coastal area from Kawaihae to Anahoomalu Bay which consists of an arid plain of large lava flows, sharply contrasting with white sand beaches and bright aquamarine bays.

Over a ten-year period from 1960 to 1970, the population of the South Kohala District increased by 50 percent to 2,310, and represented the largest rate of population change of any district in the County. By 1980, the population had doubled to 4,607. The basic population and commercial center within the South Kohala District is Waimea where a variety of small businesses cater mainly to local farming and ranching, and serve the local population.

The primary industries within this area are cattle ranching, diversified agriculture and tourism. More recently in Waimea, a small scientific community has formed to support

the numerous astronomy observatories on Mount Mauna Kea, and educational activities centered around Hawaii Preparatory Academy and the Parker School are expanding.

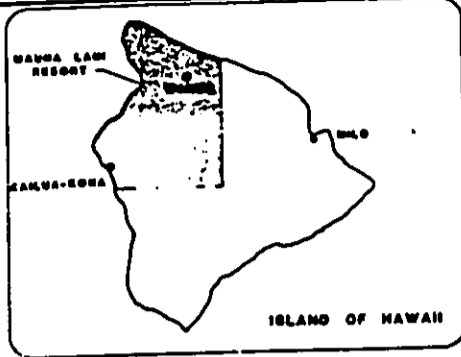
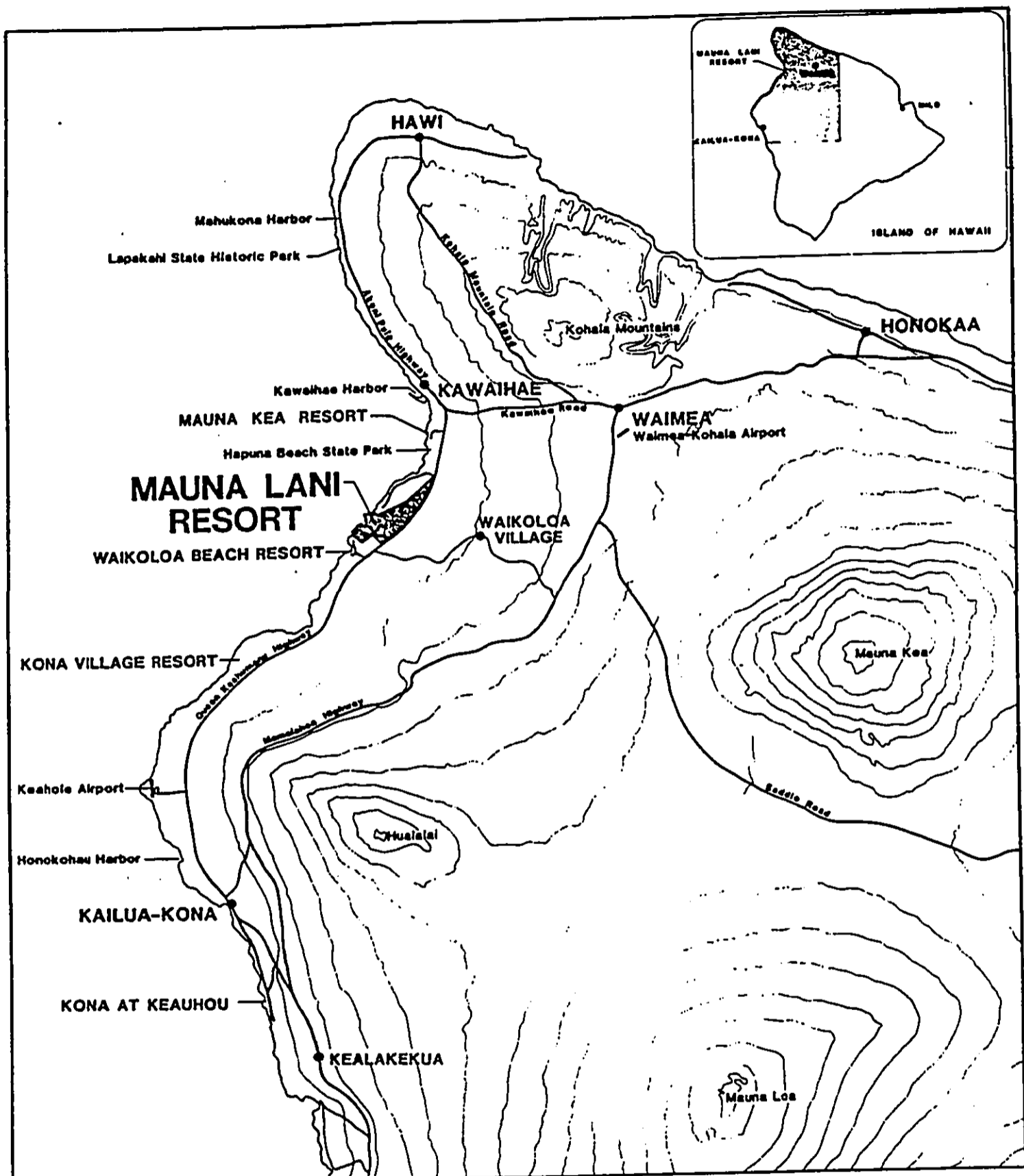
Although the upper plains are best suited for intensive cultivation and grazing, the makai or coastal plains are too dry and barren for agriculture use. The coastal plain is, however, an excellent area for resort development with year-round sunny climate (the average of nine inches of rainfall make the Kohala Coast the sunniest, driest and warmest region in the State), white sand beaches and clear, safe swimming water. This combination of features is recognized as an absolute requisite for successful resort development in Hawaii.

Access to the District is mainly by the Queen Kaahumanu Highway which opened in 1975 and connects Kailua-Kona with Kawaihae (the only deep water harbor in West Hawaii County). The high-speed road which extends 33 miles was completed at a cost of \$16 million. This coastal highway, part of the Island's Belt Highway System, vastly increases accessibility to the South Kohala District from Ke-ohole Airport, the major airport for West Hawaii County. This unique open-air terminal, located about 20 miles south of the subject property, began operations in July 1970. In September 1983, it began handling direct flights by United Airlines from the U.S. Mainland west coast.

The Waimea-Kohala Airport, at an elevation of 2,700 feet, is the highest airport in the State. This air terminal handles only a limited number of scheduled charter flights and private aircraft. Service by Princeville Airways to Waikoloa using an airstrip near Waikoloa Beach Resort began in the latter part of 1984.

Kawaihae Harbor, which is located just a few miles north, is the second deep water port on the island. This marine facility, completed in 1959, serves industrial, recreational and commercial sport fishing activities. Industries supporting this harbor are grain elevator and storage silos, oil tanks and a freight warehouse. A boat marina is part of this harbor complex.

A wide range of natural and man-made recreational diversions and scenic attractions are located throughout the South Kohala District. The white sand beaches situated on the arid, leeward shore are popular throughout the State. The two major public recreation areas are Hapuna Beach State Recreation Area and the Samuel H. Spencer Beach Park. Hapuna is 65 acres in size, and is the major water-oriented



Prepared by: BELT, COLLINS & ASSOCIATES



Figure I  
**REGIONAL MAP**  
Kohala and Kona, Hawaii



### III. DESCRIPTION OF THE PROJECT

#### A. Overall Development Concept

Mauna Lani Resort, Inc. and its parent organizations view development of Mauna Lani Resort as a long-term commitment to create a preeminent world-renowned, luxury destination resort. Its development philosophy is to be "uncompromising" in its pursuit of quality. Given the total project size of 3,200 acres, it is apparent that development objectives are based more on strategic long-term considerations than on short-term returns.

The development concept for Mauna Lani Resort envisions a very low density, low profile theme incorporating resort, residential, recreational and supporting facilities with exceptionally high-quality standards to justify its desired world renown image.

The entire 3,200-acre Mauna Lani Resort site lies ocean-side of the Queen Kahumahu Highway. It contains three miles of shoreline, including three separate bays which form focal points for resort clusters consisting of hotels, residential and recreational facilities. In addition to the low-density facilities envisioned, the exclusive and private character of Mauna Lani would be enhanced by retaining open space areas, including scenic and historic resources. The Kalahuipua'a fishpond complex and historic sites and trails would still be retained in open space for public access and enjoyment.

#### B. Existing Master Plan

The existing master plan was prepared for a portion of the resort containing about 780 acres. This area has the general shape of a one-half mile radius semicircle, with the existing Mauna Lani Bay Hotel and Mauna Lani Terrace at its center.

This 780-acre area is designated Urban in the State Land Use Classification System. County permits and zoning would allow construction of about 3,000 hotel rooms, 3,200 resort residential units, commercial and recreational facilities.

The existing master plan was prepared to encompass a self-contained resort within the Urban District boundary. It includes possible sites for several hotels and numerous multifamily projects. Supporting recreational amenities would consist of one 18-hole championship golf course, a tennis club and a beach club.

recreation area in the County with an exceptionally attractive and wide white sand beach. Spencer Park, near Kawaihae Harbor, has an area of approximately 13 acres and a smaller sandy beach. Both of these recreation facilities permit surfing, swimming, picnicking, skin diving, limited camping and boating. In addition to these major areas, several other beach areas are available including the Anaaohoomalu Bay at the Waikoloa Beach Resort and Puako Beach.

Other major recreational activities or sports include wild game hunting including pheasant, wild boar and Bighorn sheep. Deep sea fishing along the Kona and Kohala coasts produce world records for marlin and tuna. Horseback riding and hiking are two other activities offered in this area. A skeet and trap range opened recently in Waikoloa Village and plans are also underway there for a polo field. Annual rodeos are held at Waikoloa Village.

The U.S. National Park Service recently established the Puukohola Heiau National Historic Site as the third National Park facility on the Island, and as only the fourth National Park facility in the State. This site contains two major heiaus near Kawaihae and also includes an historic house previously used by John Young, who was made a full chief by King Kamehameha, and who was governor of the Island of Hawaii from 1802 to 1812.

All of the resorts on the Kohala Coast have begun major marketing efforts. Some promotional activities have been coordinated with matching funds from United Airlines (the largest carrier of westbound visitors to Hawaii). In addition, Japan Air Lines (the largest carrier of eastbound visitors to Hawaii) has begun programs to promote neighbor island destinations. As a result, the promotional efforts for the Resort Region, which previously had been limited to the efforts of the Mauna Kea Resort, will be greatly expanded.

Moreover, the availability of alternative and complementary facilities should, in turn, result in greater "cumulative attraction" for the entire region. Expanded tourism activity in the region will increase the exposure of all existing resorts.

To date, the facilities that have been built include the award-winning 18-hole Championship Francis H. I'i Brown Golf Course, the 351-room super-luxury Mauna Lani Bay Hotel, the 80-unit Mauna Lani Terrace condominium project, a historic park and a network of trails around the ancient fishponds and along the shoreline.

Other facilities planned for the near future include the proposed 116-unit first increment of the Mauna Lani Point condominium project to be completed in 1986, a tennis club to be open by the end of 1985, and the beachclub scheduled for completion in 1986.

Current county zoning designations for the parcels within the 780 acres included in the existing master plan allow gross densities of 35 to about 44 rooms per acre on hotel sites, and 15 to 29 units per acre for multifamily residential sites. An amendment to a Special Management Area (SMA) use permit allows development of a total of about 3,000 hotel rooms, 3,200 multifamily residential units, and associated resort uses on the 780-acre site.

#### C. Proposed Master Plan

The new master plan proposes to expand the development boundaries to permit construction of another golf course, reduce development densities, accommodate support facilities, improve the quality of selected sites, and finally, to allow for more efficient linking of this phase of development with subsequent phases when they occur. The proposed master plan is shown in the facing illustration.

Experience now indicates that with just one 351-room hotel in operation and just one 80-unit residential project completed, the existing golf course already reaches its desired maximum capacity during peak periods. Thus, additional high-quality championship golf courses would be needed to accommodate the demand projected to be generated by new hotels and residential projects in order to still maintain the preeminence of Mauna Lani Resort and to enhance its marketability.

In the same vein of adhering to the Resort's development philosophy, market experience also indicates that the development densities permitted by existing zoning are too intense to permit achieving Mauna Lani Resort's desired premiere world-renowned image. It is likely, therefore, that projects developed at such high densities would neither attract the types of clientele nor

permit building the types of properties needed to justify the types of sales prices necessary to achieve such an image.

Development of additional golf courses also increases the aesthetic amenities of the resort as well as opens additional sites to accommodate the currently permitted resort units at much lower densities. Expanding the number of sites increases the opportunities for creating specialized development themes throughout the resort.

Unlike planning for the initial 780-acre plan, the proposed master plan would make more efficient, linking the resort land uses with subsequent increments when they are needed.

Regarding resort support facilities, the existing sewage treatment plant, resort offices, warehouse, storage and contractors' yards have been constructed on land within the State Agricultural District using the Special Permit process. The proposed master plan would expand the Urban District boundary to include these facilities and eliminate the need for continuance of the Special Permits.

QUEEN KAAMUANU HIGHWAY

To Kailua-Kona

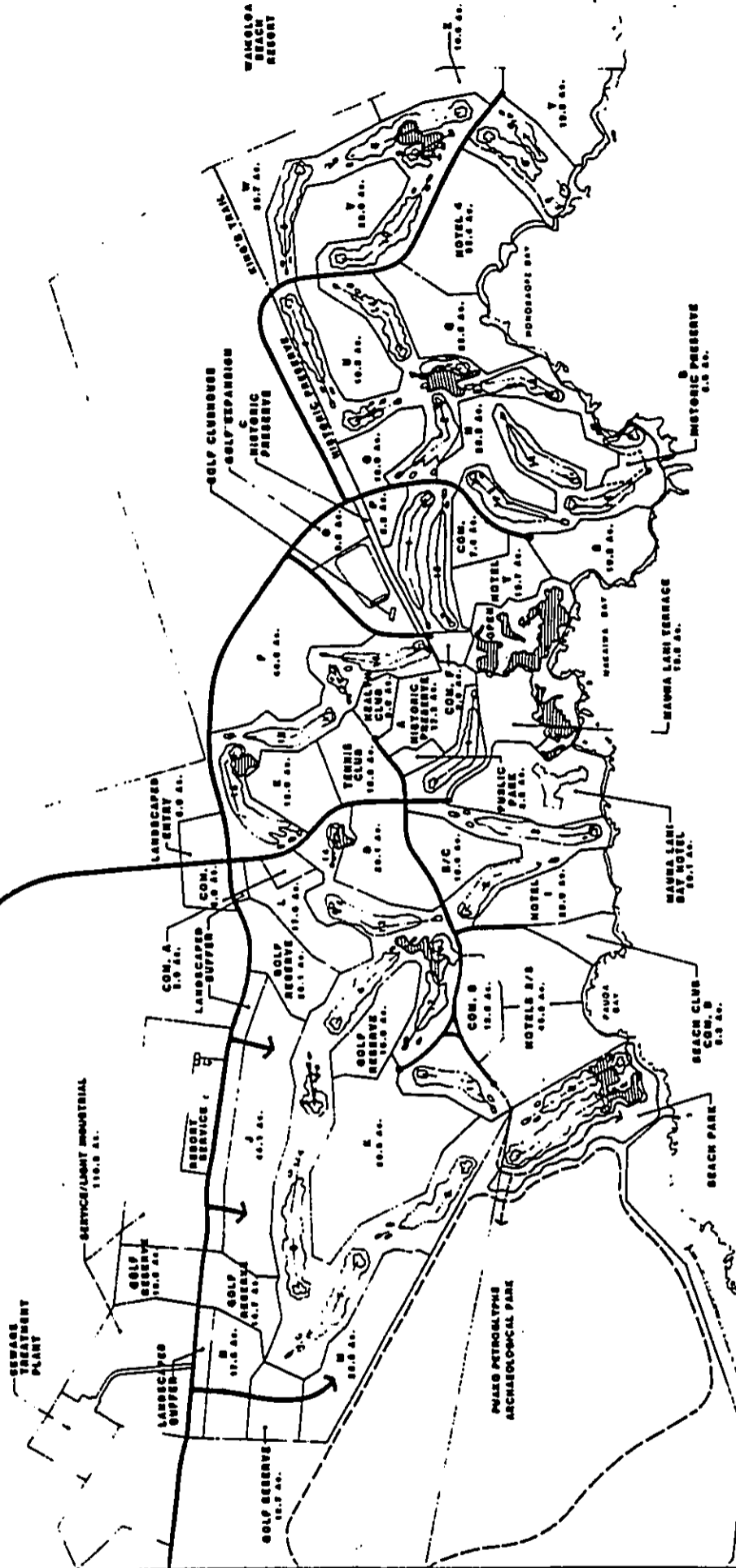
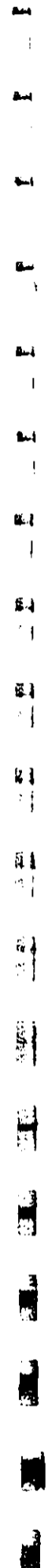


Figure 11  
**PROPOSED  
 MASTER PLAN**  
**MAUNA LANI RESORT**  
 South Kohala, Hawaii

NOTE: Lettered labeled sites are resort residential uses.

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 FEET

Prepared by: BELT, COLLINS & ASSOCIATES



IV. STATE OF HAWAII TOURISM

A. Visitor Count

From 1950 to 1970, the number of visitors to the State of Hawaii staying overnight or longer increased at a compounded rate of 20 percent per year. The rate of increase slowed to 9.5 percent per year from 1970 to 1979. Activity was essentially flat for 1980 and 1981, and then increased 7.8 percent during 1982. In 1983, the number of overnight or longer visitors increased by 3.0 percent. These trends are shown in Table IV-1.

B. Visitor Expenditures

Visitor expenditures are estimated to be the largest source of income to the State, contributing about one-third of the State product. Visitor expenditures have increased from about \$595,000,000 in 1970 to an estimated \$4,000,000,000 in 1983.

C. Inventory of Visitor Accommodations

About 90 percent of the visitors to Hawaii staying overnight or longer have been accommodated in hotels, apartment-hotels or condominium apartments rented on a short-term basis.

Most of the State's 62,448 visitor units are located in Waikiki, on the island of Oahu. This resort district is considered to be the major gateway for the visitor industry in the State.

However, since the early 1960's, the visitor industry has expanded faster outside of Waikiki than within. In 1970, 62 percent of the State's transient accommodations were located in Waikiki. By February 1984, the share had dropped to 52 percent. Over this period of time, only 44 percent of the new inventory was added inside Waikiki, and most of the new inventory has been added on the neighbor islands.

The 456-room Halekulani in Waikiki, which restarted operations on October 1, 1983, and the 576-unit Waikiki Hobron are recent major additions to the visitor plant inventory.

The 600-unit Maile Court (formerly the Mandarin Tower), the 140-unit Waikiki Beach Tower condominium apartments and the 136-unit Westbury condominium apartments were

Table IV-1  
VISITOR TRENDS  
State of Hawaii  
1950 - 1983

Year	Overnight and Longer Visitors	Annual Percentage Increase	Westbound Visitors	Eastbound Visitors
1950	46,583	--	N.A.	N.A.
1960	296,517	--	250,795	45,722
1970	1,746,970	14.4	1,326,135	420,835
1971	1,818,944	4.1	1,430,325	388,619
1972	2,244,377	23.4	1,782,737	461,640
1973	2,630,952	17.2	2,067,861	563,091
1974	2,786,489	5.9	2,184,620	601,869
1975	2,829,105	1.5	2,207,417	621,688
1976	3,220,151	13.8	2,551,601	688,550
1977	3,433,667	6.6	2,763,312	670,355
1978	3,670,309	6.9	3,030,999	639,310
1979	3,960,531	7.9	3,139,455	821,076
1980	3,934,504	(0.7)	3,046,132	888,372
1981	3,934,623	0.0	2,974,791	959,832
1982	4,242,925	7.8	3,278,525	964,400
1983	4,368,105	3.0	3,396,115	971,990

N.A. - Not Available

SOURCE: Hawaii Visitors Bureau, Annual Research Report.

completed in Waikiki during early 1984. Many of these units are likely to be made available for visitor accommodations.

Currently under construction are the 56-unit Seaside Surf apartments in Waikiki, the 300-room Makana Prince in the Makana Resort on Maui, the 64-unit Hanalei Plantation overlooking Hanalei Bay on Kauai and the 312-room Sheraton Princeville in the Princeville Resort on Kauai.

In addition, plans have been announced for construction of a 375-room hotel at Kaia Point in the Kaluakoi Resort on Molokai. More recently, announcements were made of plans to build a 350-room hotel in the Hapuna Beach Resort to be developed adjacent to the Mauna Kea Resort, and of plans to build the 1,260-room Hyatt Regency Waikoloa Hotel in the Waikoloa Beach Resort. These latter two hotels would be developed in the Kohala Coast Resort Region of the island of Hawaii.

#### D. Occupancy and Room Rate Trends

The occupancy rate of Hawaii's transient accommodations is a key indication of market conditions. That is, the occupancy rate provides a measure of the market relationships between demand and supply. Table IV-2 shows how occupancies have vacillated from 1970 to 1983 among the visitor facilities on each island. The variability indicates differing conditions for the many resort districts.

Most districts experienced soft market conditions about 1971, as large amounts of inventory were added compared to smaller increases in visitor arrivals. Then, visitor activity increased relative to new supply, and occupancies increased through about 1978. After that, conditions declined; although, the markets on Oahu and Maui appear to have begun rebounding in 1981.

As seen in Table VI-3, average room rates in Hawaii have increased continually since 1972 despite fluctuations in occupancies. This probably reflects inflationary effects as well as increasing quality of the transient accommodations.

#### E. Selected Visitor Characteristics

From 1970 through 1982, many visitor characteristics, even after excluding the effects of the military Rest and Recuperation (R&R) program, appear to be changing.

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Table IV-2  
PERCENTAGE OCCUPANCY OF HOTEL ROOMS  
State of Hawaii by Island  
1970 - 1983

Year	Waikiki/Oahu	Hawaii	Kauai	Maui
1970	74.1	68.3	58.0	66.7
1971	58.9	63.5	57.9	70.1
1972	70.0	61.9	67.7	70.6
1973	81.5	62.3	75.9	76.5
1974	82.0	61.2	78.1	74.6
1975	78.3	59.9	77.2	72.3
1976	82.6	57.6	76.8	74.8
1977	81.2	61.0	80.6	76.9
1978	82.1	65.0	83.3	80.4
1979	77.1	62.0	76.5	73.0
1980	71.7	52.7	69.0	66.2
1981	73.9	44.9	62.7	70.3
1982	77.7	44.0	57.5	73.9
1983	76.6	44.7	57.2	75.2

SOURCE: Hawaii Visitors Bureau, Annual Research Reports, 1970-1980; Fannell Kerr Forster, 1981-1983.

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Table IV-3  
HOTEL OCCUPANCY AND  
AVERAGE DAILY ROOM RATES  
State of Hawaii  
1972 - 1983

Year	Occupancy (%)	Average Daily Room Rate
1972	70.2	\$ 19.80
1973	78.1	21.56
1974	78.4	24.12
1975	75.2	27.43
1976	76.8	29.52
1977	76.7	34.28
1978	80.6	38.49
1979	73.7	44.41
1980	67.8	47.28
1981	68.2	49.73
1982	70.5	51.87
1983	69.7	54.78

For example, after increasing to 47 percent during the mid-1970's, the percentage of persons traveling on organized tours in 1982 decreased to below 20 percent, the lowest level since the mid-1960's; party size has increased continually; median age declined to where it is below 40 years; slightly fewer stayed less than seven and slightly more stayed 7-12 days, but the average stay has changed very little; and pleasure travel increased slightly.

The share of visitor arrivals from the U.S. mainland dropped from 98.1 percent in 1970 to 86.7 percent in 1982, but rebounded to 89.8 percent in 1983.

The percentage of first time visitors dropped from 67.2 percent in 1970 to 49.6 percent in 1983, and repeat visitors increased, particularly those visiting for the fourth or more time. This was the first year in which first time visitors represented less than half of the westbound visitors.

The proportion of visitors whose occupations were professional, technical, business, managerial and officials has increased sizeably, as did the proportion of retirees.

A significant change has also occurred in the type of accommodations being used. In 1983, 26.2 percent of respondents indicated they intended to stay in a "Condominium" or "Hotel and Condominium", up from 0.8 percent in 1970 who indicated they intended to stay in a "Rented Home or Apartment". The percentage staying in all other categories of accommodations dropped, including those staying with friends and relatives.

Finally, the median family income of visitors has increased consistently over the years, in part reflecting inflationary effects. The estimated median family income of visitors in 1982, the latest data available, was \$39,000, more than double the \$18,300 estimated for 1970.

F. Hawaii Visitor Industry Forecast

It is difficult to forecast trends and economic activities which grow at the startling rates experienced by the Hawaii visitor industry until 1979, and then level off for two years before increasing again. There are, however, several factors which appear significant regarding past growth, and likely to influence future prospects, including:

SOURCE: Pannell Kerr Forster

1. Economic growth on the U.S. Mainland.
2. High employment levels, resulting in high levels of disposal income.
3. Overall population growth.
4. General increases in vacation and leisure time.
5. Economic expansion in the Far East.
6. Greater interest in long distance travel.
7. Gains in transportation technology.
8. Greater fare competition.

During the 1960's, all of these factors favored long distance travel, and Hawaii shared in the benefits of these trends.

However, in the 1970's, economic conditions became more cyclical. Sharp increases in crude oil prices contributed to high inflation rates as well as the cost of long distance travel. As a result, the trend of visitor arrivals in Hawaii became more variable, and in 1980 and 1981 was essentially flat.

The slowdown in visitor activity generated several responses. A major promotional program was initiated, and the State Government approved a supplemental appropriation of about \$1,000,000 for increased industry promotion and advertising. Further, the marketing efforts of the Hawaii Visitors Bureau (HVB) have become more active. All of these factors helped boost the number of overnight visitors to the State eight percent for 1982 over 1981, and another three percent in 1983.

The State has prepared population and employment projections upon which it has based a number of its plans, and which it recommends for planning purposes. The "most likely" projection is based upon the estimate that the number of overnight and longer visitors would increase at the rate of 5 percent per year from 1980 to 1985, 4 percent per year from 1985 to 1990, 3 percent per year from 1990 to 1995, and 2 percent per year from 1995 to 2000. Current activity is below this projection due to essentially no growth for 1980 and 1981. However, the importance of tourism increasingly will be recognized and in our opinion the State and community

will increase their support of the industry. Even so, we believe that the State's projections are slightly optimistic, and show our own forecasts in Table IV-4.

Occupancy levels usually reflect the relationship of demand to supply forces. In light of a forecast of increased visitations and a slacking of supply, occupancy rates appear to be headed for further increases. Pressures resulting from increased demands are measured in terms of price levels. That is, as market pressures increase, average room rates also gain. Now that occupancy rates are recovering, room rates appear to be increasing more.

Thus, the combined forces of continually increasing demand and lack of corresponding new supply will create additional pressures in the State transient accommodations market, resulting in both increased occupancies and higher average daily room rates.

Since few hotel rooms are being constructed to meet rising demand, resort multifamily units have been utilized increasingly as transient accommodations.

Table IV-4 FORECAST OF OVERNIGHT VISITORS  
State of Hawaii  
1980 - 2000

Year	Westbound	Eastbound	Total
1980	3,046,000	888,000	3,934,000
1985	3,950,000	1,050,000	5,000,000
1990	4,600,000	1,400,000	6,000,000
1995	5,000,000	1,700,000	6,700,000
2000	5,200,000	1,800,000	7,000,000

SOURCE: Ming Chew Associates

V. COUNTY OF HAWAII VISITOR INDUSTRY

A. Visitor Count

The number of visitors to the neighbor islands in general has increased faster than to the State as a whole due to extensive promotion of neighbor island destinations, more repeat visitors who visited Waikiki initially and who now prefer neighbor island amenities for their return visits, additional recreational facilities to attract visitors, more facilities available to accommodate them, and more recently, direct flights from the U.S. Mainland west coast to Maui and Kona.

Table V-1 shows the proportion of westbound visitors to Hawaii staying overnight or longer who indicated their intention to visit the neighbor islands. The proportions shown represent all westbound visitors staying overnight and longer, including those destined to Hawaii and those traveling beyond Hawaii. As seen, the proportion intending to visit the Big Island of Hawaii increased from 37.1 percent in 1970 to a high of almost 40 percent in 1971, before beginning an almost continuous decline to 21.5 percent in 1982. In 1983, the proportion increased slightly to 21.7 percent. In contrast, the proportion intending to visit Maui increased almost continuously from 37.3 percent in 1970 to 50.0 percent in 1983. The share of visitations to Kauai on the other hand, generally peaked at 36.0 percent in 1971, and has gradually declined since.

The HVB provides estimates of Japanese visitors to the State and to the Big Island of Hawaii. Assuming that ten percent of the other eastbound visitors visited the Big Island, we estimate that the percent of total eastbound visitors to the Big Island ranged from 16 to 19 percent between 1977 and 1983.

Applying these factors to the historical levels of tourism to the State resulted in our estimate of visitors to the Big Island shown in Table V-2. As seen, estimated westbound visitors almost doubled from 511,000 in 1970 to 955,000 by 1978, before declining to 675,000 in 1982. By 1983, the number of westbound visitors is estimated to have rebounded to 739,000. The number of eastbound visitors to the Big Island has increased almost continuously from 1977, when the first estimates were made.



Table V-1 ESTIMATED NEIGHBOR ISLAND VISITORS(1)  
State of Hawaii  
1970 - 1983

Year	Estimated Percentages	
	To Hawaii	To Kauai
1970	37.1	34.3
1971	39.8	36.0
1972	39.2	34.8
1973	36.7	31.2
1974	36.8	29.8
1975	37.3	30.7
1976	34.1	29.2
1977	32.2	28.4
1978	31.5	29.0
1979	28.5	27.3
1980	25.9	26.6
1981	22.6	25.3
1982	21.5	25.3
1983	21.7	21.1

(1) Westbound visitors staying overnight and longer, including visitors destined to Hawaii and those traveling beyond Hawaii, and a pro rata share of non-respondents.

SOURCE: Hawaii Visitors Bureau, Annual Research Reports; Ming Chew Associates.

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Table V-2 VISITOR ESTIMATES AND FORECASTS  
County of Hawaii  
1970 - 2000

Year	Westbound		Eastbound(1)		Both Directions(2)	
	Percent of State	Estimated Visitors	Percent of State	Estimated Visitors	Percent of State	Estimated Visitors
1970	37.1	511,000	--	--	--	--
1971	39.8	569,000	--	--	--	--
1972	39.2	699,000	--	--	--	--
1973	36.7	759,000	--	--	--	--
1974	36.8	804,000	--	--	--	--
1975	37.3	823,000	--	--	--	--
1976	34.1	870,000	--	--	--	--
1977	32.2	890,000	18	118,000	18	1,008,000
1978	31.5	955,000	19	121,000	19	1,076,000
1979	28.5	895,000	19	156,000	19	1,051,000
1980	25.9	789,000	16	142,000	16	931,000
1981	22.7	675,000	17	163,000	17	838,000
1982	21.5	704,000	18	174,000	18	878,000
1983	21.7	739,000	18	171,000	18	910,000
Forecast:						
1985	24.0	948,000	21	220,000	21	1,168,000
1990	27.0	1,242,000	23	320,000	23	1,562,000
1995	30.0	1,500,000	25	425,000	25	1,925,000
2000	32.0	1,664,000	27	486,000	27	2,150,000

(1) Estimates based upon surveys of Japanese visitors and the assumption that ten percent of other Eastbound visitors visit Hawaii County. Estimated to be 18 percent in 1983.

(2) Westbound only until 1977.

SOURCE: Hawaii Visitors Bureau, Annual Research Reports and Japanese Visitor Opinion Surveys; Ming Chew Associates.

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The table also shows our forecasted capture of the State market to 2000. Although the share of westbound visitors has declined during the last several years, we anticipate that the proportion of westbound visitors to Hawaii County will continue the rebound experienced in 1983, and increase to 32.0 percent by 2000. This assessment reflects anticipated efforts to divert tourism from Waikiki and Oahu to the neighbor islands, preference for neighbor island amenities by the increasing number of repeat visitors to the State, the recent addition of new visitor facilities on the island, direct flights from the U.S. Mainland west coast to Kona by United Airlines and its increased promotional efforts to stimulate travel to the neighbor islands. As seen from the table, we expect the number of westbound Big Island visitors to increase from an estimated level of 739,000 in 1983 to 1,664,000 by 2000.

An increasing proportion of eastbound visitors is also expected to visit Hawaii County for the same reasons indicated for westbound visitors. In this case though, Japan Air Lines, the major eastbound air carrier, has increased its promotional efforts to stimulate travel to the neighbor islands as a new travel experience. As a result, the number of eastbound visitors to the island is expected to increase from 171,000 in 1983 to 486,000 by 2000. Combined eastbound and westbound travel to the island is projected to increase from 910,000 in 1983 to 2,150,000 by 2000.

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#### B. Characteristics of Hawaii County Tourism

The Big Island of Hawaii contains a variety of features, many unique, which has made it a very popular place for sightseeing. For example, the island has the two highest peaks in the State, two of the few active volcanoes in the nation, massive lava fields, the only producing coffee industry in the United States, the largest orchid industry in the country, the largest working ranch in the nation, black sand beaches, white sand beaches, lava rock coastlines, state and national historical parks, rain forests, waterfalls, deserts and a number of historical areas.

In March 1984, Mauna Loa erupted for the first time since 1975. Less than a week later, Kilauea erupted. It had been over 100 years since these two volcanoes had concurrent eruptions.

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The popularity of the Big Island for sightseeing is reflected by selected attendance figures. For example, the Hawaii Volcanoes National Park recorded the largest attendance among attractions in the State in 1982, except for the National Memorial Cemetery in Punchbowl Crater on Oahu. Actually, the Big Island contains three of the State's four national park system facilities: the Hawaii Volcanoes National Park, Puuhonua O Honoanau National Historical Park (City of Refuge) and the Puukohola Heiau National Historical Site. The reported 1,900,000 visits to the Hawaii Volcanoes National Park is greater than the level of tourism estimated to the island, suggesting that attendance at the park includes multiple visits, visits by local residents, visits by residents of other islands and trips by visitors who decided to visit the Park after arriving in the State.

According to HVB surveys, the average stay of westbound visitors intending to visit the Big Island was 3.6 days in 1982, up from 2.9 days in 1970.

A number of destination resort areas with self-contained recreation facilities have been developed on the Big Island. These include the Mauna Kea Resort, Mauna Lani Resort and Waikoloa Beach Resort in the Kohala Coast Resort Region, Kona Village at Kaupulehu and Keauhou Resort which is situated south of Kailua-Kona. Limited development has occurred at C. Brewer's Sea Mountain at Hinole.

Although there are only limited recreational facilities in either Hilo or Kailua-Kona, these two areas historically have contained most of the visitor plant facilities on the island. The next table, Table V-3, shows the distribution of transient accommodations on the island, and Table V-4 shows occupied units calculated from average occupancy figures provided by the HVB and Pannell Kerr Forster. From 1970 to 1983, the total number of transient accommodation units in the county increased from 3,486 to 7,149, a gain of 105 percent. Occupied rooms increased only 61 percent during the same period from an estimated 2,182 occupied units in 1970 to 3,509 occupied units in 1983. Meanwhile, tourism to the State in both directions increased by 149 percent, indicating that the County of Hawaii did not achieve its proportional share of growth as measured by occupied rooms. In fact, the rate of increase in occupied rooms kept just slightly ahead of the 45 percent gain in westbound visitors to the island, the major component of demand for transient accommodations.

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Table V-3  
DISTRIBUTION OF TOTAL  
TRANSIENT ACCOMMODATIONS (1)  
County of Hawaii  
1970 - 1983

Year	Hilo		Kona		Kohala(2)		Other(2)		County	
	Units	% of County	Units	% of County	Units	% of County	Units	% of County	Units	% of County
1970	1,345	38.6	1,752	50.3	-	-	389	11.1	3,486	100.0
1971	1,547	36.5	2,306	54.4	-	-	388	9.1	4,241	100.0
1972	1,817	37.9	2,582	53.8	-	-	397	8.3	4,796	100.0
1973	1,782	34.0	3,009	57.5	-	-	443	8.5	5,234	100.0
1974	1,850	34.6	3,055	57.1	-	-	443	8.3	5,348	100.0
1975	2,167	35.9	3,423	56.6	-	-	455	7.5	6,045	100.0
1976	2,130	35.9	3,331	56.1	-	-	468	8.0	5,929	100.0
1977	1,957	32.6	3,543	59.0	-	-	502	8.4	6,000	100.0
1978	1,954	32.1	3,637	59.7	-	-	502	8.2	6,093	100.0
1979	1,954	33.2	3,437	58.4	-	-	498	8.4	5,889	100.0
1980	1,944	29.0	4,193	62.5	483	7.2	85	1.3	6,705	100.0
1981	1,762	24.6	4,249	59.3	1,078	15.0	78	1.1	7,167	100.0
1982	1,648	22.1	4,397	58.8	1,342	18.0	82	1.1	7,469	100.0
1983	1,194	16.7	4,448	62.2	1,422	19.9	85	1.2	7,149	100.0

(1) HVB Visitor Plant Inventory data for February of following year.  
(2) Kohala data included with "Other" until 1980.

SOURCE: Ming Chew Associates

Table V-4  
DISTRIBUTION OF OCCUPIED  
TRANSIENT ACCOMMODATIONS (1)  
County of Hawaii  
1970 - 1983

Year	Hilo		Kona		Kohala(2)		Other(2)		County	
	Units	% of County	Units	% of County	Units	% of County	Units	% of County	Units	% of County
1970	907	41.5	1,014	46.5	-	-	261	12.0	2,182	100.0
1971	847	37.6	1,134	50.4	-	-	269	12.0	2,250	100.0
1972	1,076	39.7	1,355	50.1	-	-	277	10.2	2,708	100.0
1973	1,139	38.4	1,529	51.6	-	-	296	10.0	2,964	100.0
1974	1,101	34.3	1,763	55.0	-	-	342	10.7	3,206	100.0
1975	1,109	34.3	1,781	55.2	-	-	338	10.5	3,228	100.0
1976	929	28.9	1,911	59.6	-	-	369	11.5	3,209	100.0
1977	1,113	30.4	2,167	59.2	-	-	383	10.4	3,663	100.0
1978	1,094	28.0	2,430	62.2	-	-	385	9.8	3,909	100.0
1979	1,017	28.0	2,239	61.7	-	-	375	10.3	3,631	100.0
1980 (3)	731	23.4	1,994	63.9	351	11.2	45	1.5	3,121	100.0
1981 (3)	734	22.3	2,069	63.0	442	13.5	40	1.2	3,285	100.0
1982 (3)	635	19.2	2,002	60.6	621	18.8	43	1.3	3,301	100.0
1983 (3)	579	16.5	2,122	60.5	764	21.8	44	1.2	3,509	100.0

(1) Average of monthly occupancy rates reported by HVB applied to monthly HVB Visitor Plant Inventory data.  
(2) Kohala data included with "Other" until 1980.  
(3) Occupancy rates estimated by HVB, Pannell Kerr Forster and Ming Chew Associates.

SOURCE: Ming Chew Associates

Beginning in 1981 with the completion of the Sheraton Royal Waikoloa Hotel in the Waikoloa Beach Resort, the share of transient accommodations outside Kona and Hilo (predominantly the Kohala Coast Resort Region) increased sizeably. By February 1983, with the opening of the Mauna Lani Bay Hotel in the Mauna Lani Resort, the proportion of units essentially on the Kohala Coast began to approach that in Hilo. By February 1984, as a result of continued removal of units in the Hilo inventory for other uses, the number of transient accommodation units in North and South Kohala exceeded for the first time the number in Hilo. In fact, Table V-4 shows that by 1982, the number of occupied units essentially on the Kohala Coast had already approximated the number of occupied units in Hilo.

Much of the visitor plant in Hilo and Kona had been oriented toward group travelers which represented as high as 47 percent of westbound visitors to the State in 1974. By 1983, the share of group travelers had declined to slightly less than 19 percent.

The seasonality of tourism to the Island can be observed from the monthly occupancy rates shown in Table V-5. Occupancies in Kona have exceeded those in Hilo since about 1975. This trend reversed in March 1984 as visitors rushed to Hilo to view eruptions by Kilauea Volcano and Mauna Loa. Based upon earlier surveys conducted by the HVB, occupancies for visitor accommodations located outside Hilo and Kona have been generally higher than the island-wide averages.

Almost all visitors to the Island arrive by air. Until recently, Hilo was the State's only other gateway outside of Honolulu served directly by overseas airlines. Early in 1983, United Airlines began flying from the U.S. Mainland west coast directly to Maui's Kahului Airport. In September 1983, United began flying directly from the west coast to Ke-ahole Airport, which serves Kona and the Kohala Coast. General Lyman Field, Ke-ahole, and Waimea-Kohala Airport, serving Waimea and Kohala, can accommodate the DC-9 and Boeing 737 inter-island jet aircraft. Moreover, General Lyman Field in Hilo is capable of accommodating Boeing 747 and other wide-bodied aircraft. More interisland flights including those of scheduled commuter airlines serve Kona than the other two airports. Princeville Airways began service to Waikoloa in the latter part of 1984 using an airstrip situated on an abandoned roadway.

Table V-5 OCCUPANCY IN TRANSIENT ACCOMMODATIONS  
County of Hawaii  
1972 - 1984

	(Percent)			Island Of Hawaii
	Kona	Hilo		
1972	56	65		59
1973	61	63		62
1974	58	63		60
1975	59	56		58
1976	58	52		56
1977	63	49		58
1978	69	52		64
1979	65	45		58
1980	59	34		51
1981	49	35		45
1982	47	38		44
1983	47	39		45
January	46	33		42
February	62	39		55
March	54	39		50
April	40	42		41
May	40	31		37
June	46	38		44
July	47	40		45
August	52	47		50
September	39	46		41
October	57	40		51
November	48	39		45
December	39	37		39
1984				
January	54	43		51
February	74	66		72
March	67	72		68
April	50	60		52
May	51	50		51
June	49	53		50
July	50	65		54

SOURCE: Pannell Kerr Forster

## VI. MARKET ANALYSIS FOR TRANSIENT ACCOMMODATIONS

The demand for transient accommodations in Hawaii has expanded dramatically due to rapid growth of State tourism. Furthermore, each delineated market segment now has grown sufficiently to support a wide variety of accommodations, as well as recreation and amusement facilities.

Long distance travel is a component of the leisure market, and is dependent upon the availability of large amounts of discretionary leisure time and discretionary income, both of which have been increasing over recent years due to economic growth worldwide (despite short temporary setbacks), expanding population and increasing interest in travel. Furthermore, improvements in transportation technology have reduced travel time so that areas considered remote in the past are now readily accessible. Aircraft technology and airline deregulation have also reduced costs, permitting large numbers of persons previously constrained by financial requirements to travel greater distances. By both expanding the geographic dimensions of the market and reducing travel costs, transportation improvements have substantially broadened the market area from which patronage can be drawn.

However, larger market area dimensions have also multiplied the number of tourist destinations vying for travelers and their expenditures; thus, competition for visitors and patronage has intensified. The extent of the competition has increased the difficulty of creating an effective market image to attract visitors from the expanded market area.

The transient accommodations market is highly segmented with each specific segment having different requirements. This allows operators to either focus attention on capturing a narrow segment of the market, or attempt to appeal to all segments, but with a potential loss of efficiency.

Market segmentation also allows facilities catering to different categories of patrons to co-exist in an area so long as each segment is of an economic size. Increasing the amount of facilities in a single locale adds to its cumulative attraction. Increasing the overall attraction of an area increases the likely draw to the area and makes more viable each of the entities operating therein. Thus, variety, quality and quantity of both amenities and facilities are all very important when trying to merchandise transient accommodations to broad market segments.

## A. Methodology

Market analysis is accomplished by comparing factors of demand with factors of supply. First, the patterns of historical demand are evaluated, and then Statewide demand projected. State demand is delineated after analyzing the relative attractions of each island, and its respective resort regions. The current and anticipated supply of competitive facilities is compiled and differentiated to compare with the delineated demand. Differences between supply and demand are used to identify the prospects for new developments.

In order to delineate demand by regions within the State, a current and anticipated inventory of facilities in each competitive resort region is tabulated. Based upon the envisaged "cumulative attraction" of the subject region or proposed project relative to competing regions or projects, subjective estimates of potential market capture are made. Market potential is then determined by measuring imbalances between anticipated supply conditions and delineated forecasts of demand.

## B. Supply Factors

Until recently, there were only two large concentrations of transient accommodations on the Island of Hawaii, Hilo and Kona. The Kohala Coast Resort Region, however, in just a few years has become one of the Island's major destination areas, and now exceeds Hilo in terms of the number of transient units available.

### 1. Hilo Supply

Hilo's role in Big Island tourism historically has been to accommodate overnight visitors beginning or concluding their visit to the Island. Tourism received a boost when General Lyman Field was expanded to handle direct flights from the U.S. Mainland, making Hilo the State's second gateway or departure point after Honolulu. Major stimulation occurred also in 1968 and 1969 when a "hotel row" began developing along Banyan Drive. Since then, nearly all major hotels have also been built there.

The visitor pattern in Hilo consists mainly of sightseeing and a stay of only one night, despite the fact that the Island's most popular sightseeing attractions are within a radius of 30 miles. These sights include the Hawaii Volcanoes National Park,

Kalapana Black Sand Beach, orchid nurseries, macadamia nut factories, Rainbow and Akaka Falls, Boiling Pots and the Lyman Museum.

The major cause of this visitor pattern is probably the lack of the "sun, surf and sand" requisite of Hawaii resort regions. The high incidence of rainfall, 134 inches per year or almost 0.4 inches average per day, results in a low probability of sunny days for outdoor activity. High quality swimming beaches are also lacking. Hilo is, on the other hand, an aesthetically attractive area with its quaint setting, floral variety and rich vegetation. Nonetheless, by most standards, Hilo does not qualify as a destination resort area.

In fact, with decreasing group travel, Hilo has experienced sharp declines in visitor activity. The number of accommodations has been reduced as a result of conversions to office and other uses. United Airlines recently terminated its direct flights from the U.S. Mainland to Hilo, flying instead directly to Maui and directly to Keahou Airport in Kona. The flights from Kona to Los Angeles return through Hilo.

A breakdown of Hilo's visitor plant inventory by price range indicates that the largest proportion of rooms, 64 percent, are priced in the published rate range of \$30 to \$49 per night for superior rooms, double occupancy.

## 2. Kona Supply

Kona's tourism role traditionally has been to accommodate sightseeing vacationers and those desiring rest and relaxation. It also served kamainas who sought a reprieve from the pace of Honolulu. As such, most of the accommodations were rather modest. Passive recreation was promoted and the amount of active recreation facilities was limited. Few of the transient accommodations contained a full range of resort amenities.

As tourism expanded, the character of the visitor to Kona, and Kona itself, changed. Recently, destinations such as Keahou Resort and Kona Village Resort have developed outside Kailua Town. Keahou Resort contains more active recreational amenities and more extensive entertainment.

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Keahou itself now contains 42 percent of all transient accommodations in Kona. A new shopping center, resort houselet subdivision and golf course extension are currently under construction.

There is a broad spread of accommodations with published prices ranging from under \$30 per night for double occupancy, to an estimated \$150 to \$280 per night room rate at the Kona Village Resort (where actual prices range from \$225 to \$360 for double occupancy including all meals on the full American plan). Most of the recent developments contain more amenities than the older ones and are also priced higher. The largest proportion, 36 percent, of the hotel accommodations have published rates of \$75 to \$99 per night for double occupancy. Apartment hotels indicate a similar pattern except that the largest proportion, 45 percent, is in the \$50 to \$74 range. Together, 95 percent of the accommodations in Kona have published rates of \$30 to \$99.

## 3. North and South Kohala Supply

The supply of transient accommodations in North and South Kohala consists, essentially, of those contained in the resorts located in the Kohala Coast Resort Region.

Even though it contains the world renowned Mauna Kea Resort, the entire Kohala Coast Resort Region is only beginning to be fully recognized as a major destination resort region.

The Region has the lowest recorded rainfall in the State and therefore, the highest proportion of sunny days. It has white sand beaches with calm swimming water, attractive views of the ocean and the four major land masses on the Island including both Mauna Kea and Mauna Loa, and Haleakala on the Island of Maui. These characteristics of "sun, surf and sand" have led to the recent development of Waikoloa Beach Resort and Mauna Lani Resort in very close proximity to each other and to the Mauna Kea Resort which commenced operations in 1965 as a free-standing destination resort hotel and golf course. The Sheraton Royal Waikoloa Hotel began operations in late 1981, and the Mauna Lani Bay Hotel opened in February 1983.

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All of the hotel rooms in the three resorts on the Kohala Coast are in or above the luxury category with published rates of \$100 and above.

4. Summary of Accommodations

Table VI-1 summarizes the number and location of transient accommodations on the Big Island by price range. Projects which are HVB members or which are managed by HVB members contain a total of 5,996 units. More than half of these units are located in Kona. The next largest concentration is in North and South Kohala, followed closely by the number in Hilo.

The preponderance of units in Hilo have published rates between \$30 and \$74, whereas the range in Kona is between \$30 and \$99. For Kohala, the predominant range of published room prices is \$100 and over with the largest number in the \$200+ category. Moreover, the Kohala Coast Resort Region contains 92 percent of the units on the Island with published room rates over \$100. The relative rates are indicative of the character of the areas and the general images these major areas have created for themselves.

C. Demand Factors

In prior chapters, visitor forecasts were made for the State and delineated into projections for Hawaii County. As shown earlier, State tourism is projected to grow at the rate of 2.8 percent per year from 1983 to 2000, and County tourism at 5.2 percent per year during the same period.

Underlying these projections, particularly the higher County growth rate, is the assumption the Kohala Coast Resort Region will continue to experience substantial resort development within the next 17 years. The addition of resort facilities will enhance the competitive posture of the Region relative to other parts of the Island, and of the Island relative to others in the State. The Region itself must compete directly with other State resort regions, just as the Mauna Kea Beach Hotel has for a number of years.

Table VI-1  
SUMMARY OF PRIMARY TRANSIENT  
ACCOMMODATIONS BY PRICE RANGE (1)  
County of Hawaii  
1984

District or Region	Units (2)	Less than \$30- \$49	\$30- \$49	\$50- \$74	\$75- \$99	\$100- \$149	\$150- \$199	\$200+	Estimated Average Published Rate
Hilo	1,126	20	720	386	-	-	-	-	\$ 47
of total 19%									
Kona	3,514	79	1,089	808	1,440	3	-	95	\$ 69
of total 59%									
Kohala	1,273	-	29	40	-	543	-	661	\$173
of total 21%									
Ka'u/ Volcano	83	13	37	33	-	-	-	-	\$ 47
of total 1%									
Total	5,996	112	1,875	1,267	1,440	546	-	756	\$ 87
Percent Distri- bution	100%	2%	31%	21%	24%	9%	-	13%	

(1) Published rates for double occupancy superior for hotels and one-bedroom units for apartment/townhouses per night; rents may apply to studio units or cottages which were only type available.  
(2) Includes projects which are HVB members or which are managed by HVB members.

SOURCE: Ming Chew Associates

Thus, in order to delineate our County demand forecasts, we evaluated the potential attraction of the Kohala Coast Resort Region relative to other regions in the State.

1. Comparison of Region With Other State Regions

Although a large number of areas in the State have relatively large concentrations of resort amenities, we have limited our comparison mainly to neighbor island, master planned resort communities with controlled environments, and the Kona resort region on the Big Island. Kona was included although it lacks swimming beaches since it is the most potentially competitive area on the island.

From Table VI-2, it can be seen that the major neighbor island resort regions competing with the Kohala resort region are Maui and Kona.

Of the neighbor islands, Maui contains the largest number of transient accommodations, accounting for about one-half of the inventory not on Oahu. West Maui alone, from Lahaina to Kapalua, contains 8,021 units, or more than on either the island of Hawaii or the island of Kauai. The resort region from Maalaea to Hana also has extensive facilities. Much of the attraction of Maui has resulted from the quantity, quality and diversity of activities and amenities including extensive sandy beaches and golf courses, as well as over a decade of coordinated promotion of Maui as a resort destination area.

The second largest resort region on the neighbor islands is Kona on the island of Hawaii. However, except for the number of boat harbors, the amount of recreational amenities such as golf courses in this region is relatively limited, particularly in relationship to the inventory of accommodations.

At present, North and South Kohala contain about 1,422 transient accommodations. Almost 900 of these units have been added within the last three years with the construction of Waikoloa Beach Resort and Mauna Lani Resort. Each of these resorts also added a championship golf course to the two that already existed, giving this area four championship courses in close proximity, as many as now exists in the West Maui resort region.

Table VI-2  
DISTRIBUTION OF NEIGHBOR ISLAND  
TRANSIENT ACCOMMODATIONS BY  
MAJOR RESORT REGIONS  
State of Hawaii  
1984

	Transient Accommodation Units(1)	Golf Courses (2)
<u>Hawaii:</u>		
North and South Kohala (3)	1,422	4
Kona	4,448	1 (4)
Other (Including Hilo)	1,279	5 (two 9-hole)
Total	7,149	
<u>Maui:</u>		
West Maui (Lahaina, Kaanapali, Napili, Kihei-Wailea-Makena Other (Including Kahului)	8,021 3,901 577	4 3 2
Total	12,499	
<u>Molokai:</u>	627	2 (one 9-hole)
<u>Kauai:</u>		
Mauia-Kapaa Poipu Hanalei Other (Including Lihue)	2,186 1,541 742 844	1 1 1 (27 Holes) 2 (one 9-hole)
Total	5,313	

- (1) As of February 1984.
- (2) Open to the public.
- (3) Mainly the Kohala Coast Resort Region
- (4) Existing 18-hole course currently being expanded to 27 holes.

SOURCE: Ming Chew Associates



Combining this popular sport with a large number of tennis courts, excellent swimming beaches, good boating and diving facilities, and nearby marinas will enhance the recreation orientation of this destination area. Other recreation will include trail riding and equestrian activities, hunting, skeetshooting and even skiing on Mauna Kea. A polo field has been proposed at Waikoloa Village. Passive recreational and educational activities include inspecting petroglyphs at Waikoloa and Puako, traversing the King's Trail, visiting Puukohola Heiau National Historic Site, Lapakahi State Historic Park, King Kamehameha's birthplace and other historic sites along the coast and in Waimea. Sightseeing in other parts of the island is facilitated by the high-speed belt highway to Hilo and the Hawaii Volcanoes National Park, or to Kona and the airport at Keahole.

Thus, the prospects are very good that the available "sun, surf and sand", complementary accommodations and recreational facilities, good accessibility and luxury and "super-luxury" quality of the three existing beach resorts will combine to make the Kohala Coast Resort Region one of the most attractive and certainly the highest quality destination area in the State.

#### 2. Forecast of Island Demand

Tourism forecasts for the island were converted to projections of transient accommodations demand by estimating the average stay, multiplying by the number of visitors to calculate visitor-days, dividing by the average party size to obtain average occupied room days, and then dividing by the number of days in the year to obtain the average daily number of occupied rooms.

Table VI-3 shows these results delineated by westbound, eastbound and intrastate travelers. As seen, total room demand in terms of occupied units was estimated to be 3,600 units in 1983. Compared to the reported visitor plant inventory of 7,149 units, the overall occupancy of the island of Hawaii for 1983 would have been about 50 percent. The demand is projected to increase to 5,000 occupied units by 1985, 8,000 units by 1990, 11,400 units by 1995 and to 14,600 units by 2000.

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#### 3. Delineation of Island Demand by Sub-area

The pattern of occupancy in visitor facilities for different sub-areas was analyzed to aid in allocating the projected island-wide demand. Although total visitor plant inventory reflects the level of building activity in each sub-area, the trends in occupied units more adequately reflects the competitive position of each resort district.

The relative role of Hilo has been declining since at least 1970. Until about 1980, this decline was offset by a corresponding increase by Kona. In general, the relative role of all other areas, including the Kohala Coast, was stable from 1970 until 1980. Since 1981, however, the relative position of the Kohala Coast has increased rapidly. By the end of 1983, the number of both total and occupied units in North and South Kohala, mainly the Kohala Coast Resort Region, exceeded the number in Hilo.

Table VI-4 shows our projections of both occupied room and total room demand by resort region for the Island.

We project that the demand for occupied units in Hilo will increase from 579 units in 1983, and to 1,300 by 2000. Nonetheless, we anticipate that Hilo's relative market position will continue to decline. Assuming a 70 percent occupancy rate, the demand for total units is projected to increase from 800 in 1983 to 1,900 in 2000, compared to the current inventory of 1,194 units.

The demand for occupied units in Kona is expected to reverse the decline that began in 1978. The relative share of occupied units in Kona will continue to decline though, as Kohala is projected to gain very rapidly both in terms of the number of occupied units and market share on the island.

As seen in Table VI-4, the demand for transient accommodations in Kona is projected to increase from 3,000 units in 1983, to 9,800 in 2000. In North and South Kohala, it is projected to increase from 1,100 units in 1983, to 7,900 in 2000. Thus, both regions are expected to experience about the same numerical increase in demand. However, when

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Table VI-3

FORECAST OF TRANSIENT ACCOMMODATION DEMAND  
County of Hawaii  
1983 - 2000

	1983	1985	1990	1995	2000
<b>Westbound:</b>					
Visitors	739,000	948,000	1,242,000	1,500,000	1,664,000
Average Stay, Nights	3.1	3.3	4.0	4.5	5.0
Visitor - Nights	2,291,000	3,128,000	4,968,000	6,750,000	8,320,000
Average Party Size	1.9	1.9	1.9	1.9	1.9
Occupied Rooms	3,300	4,500	7,200	9,700	12,000
<b>Eastbound:</b>					
Visitors	171,000	220,000	320,000	425,000	486,000
Average Stay, Nights	0.3	0.4	0.8	1.5	2.0
Visitor - Nights	51,000	88,000	256,000	638,000	972,000
Average Party Size	1.6	1.6	1.6	1.6	1.6
Occupied Rooms	100	200	400	1,100	1,700
<b>Local:</b>					
Visitors	100,000	120,000	170,000	250,000	375,000
Average Stay, Nights	1.5	1.5	1.5	1.5	1.5
Visitor - Nights	150,000	180,000	255,000	375,000	562,000
Average Party Size	1.7	1.7	1.7	1.7	1.7
Occupied Rooms	200	300	400	600	900
<b>Total:</b>					
Visitors	1,010,000	1,288,000	1,732,000	2,175,000	2,525,000
Average Stay, Nights	2.5	2.6	3.1	3.6	3.9
Visitor - Night	2,492,000	3,396,000	5,479,000	7,763,000	9,854,000
Average Party Size	1.9	1.9	1.9	1.9	1.9
Occupied Rooms	3,600	5,000	8,000	11,400	14,000

SOURCE: Ming Chew Associates.

Table VI-4  
PROJECTION OF TRANSIENT ACCOMMODATION DEMAND BY RESORT REGION  
County of Hawaii  
1983 - 2000

	Hilo	Kona	Kohala	Other	Total County
<b>Occupied Units:</b>					
1983	579	2,122	764	44	3,509
1985	700	2,800	1,400	100	5,000
1990	1,000	4,200	2,500	300	8,000
1995	1,100	5,700	4,100	500	11,400
2000	1,300	6,900	5,500	900	14,600
<b>Estimated Total Demand at 70% Occupancy:</b>					
1983	800	3,000	1,100	100	5,000
1985	1,000	4,000	2,000	200	7,200
1990	1,400	6,000	3,600	400	11,400
1995	1,600	8,100	5,900	700	16,300
2000	1,900	9,800	7,900	1,300	20,900
<b>Visitor Plant Inventory:</b>					
February 1984	1,194	4,448	1,422	85	7,149

SOURCE: Hawaii Visitors Bureau, Visitor Plant Inventory, February 1984; Ming Chew Associates.

compared to existing supply, Kohala is projected to need 6,600 additional units, while Kona would need only 5,300 additional units by 2000.

In general, it appears that the three major resort districts are currently over-supplied at present. By 1985, demand is projected to exceed supply by about 600 units in North and South Kohala. However, Kona and Hilo appear to be adequately supplied until sometime after 1985.

#### D. Estimated Marketability of Transient Accommodations

##### 1. Demand

Projections in the preceding chapter reflect that a demand would exist in North and South Kohala for another 600 units by 1985, 2,700 units by 1990, 4,500 units by 1995 and 6,500 units by 2000.

We believe that most of the demand will be satisfied in the Kohala Coast Resort Region within Waikoloa Beach Resort, Mauna Lani Resort and the lands being developed by Mauna Kea Properties, Inc. Waikoloa can be categorized as a luxury resort, whereas the Mauna Kea and Mauna Lani Resorts could be classified as "super-luxury" resorts. These distinctions are due in part to the image that has been promoted, types and quality of facilities developed, development densities and clientele attracted. Published room rates at Waikoloa are also lower than at the "super-luxury" resorts.

Although increased demand will have to be accommodated throughout North and South Kohala, the largest portion would probably be attracted to the Kohala Coast Resort Region. Due to the lack of other facilities outside the coastal area, we estimate that 70 to 90 percent of the projected new demand in North and South Kohala would likely be accommodated in Waikaloa, Mauna Lani and Mauna Kea Properties' projects.

At present, Mauna Lani Resort accounts for 30 percent of the accommodations in North and South Kohala, and 29 percent of the hotel rooms. Since the Mauna Lani Bay Hotel has been in operation only a relatively short period of time, its share of occupied rooms is less. Nonetheless, we consider

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its market experience to be very good, and anticipate that the hotel will achieve a mature level of operations in about 1986.

We further anticipate that the quality of product provided in Mauna Lani will continue to be of "super-luxury" quality, or at least of a quality generally higher than the average for the North and South Kohala Districts. As a result, we estimate that Mauna Lani, because of the higher prices associated with such higher quality, would capture slightly less than a pro rata share of the increased demand projected for North and South Kohala.

We estimate that Mauna Lani Resort could capture about 25 percent of the projected new transient accommodations demand for North and South Kohala through 1995. Because of the large number of beachfront and oceanfront sites in Mauna Lani and the diminishing number of comparable quality sites in the remainder of the resort region, we project that its capture could increase to 25 to 30 percent by the year 2000. These capture rates would result in demand estimates of 600 units by 1990, 1,100 units by 1995 and 1,600 to 2,000 units by 2000.

##### 2. Anticipated Supply

The most recent major addition to the supply of transient accommodations on the Kohala Coast has been the 351-room Mauna Lani Bay Hotel, completed in February 1983.

The 80-unit Mauna Lani Terrace super-luxury low-rise condominium apartments adjacent to the Mauna Lani Bay Hotel were completed in December 1983. Also, one unit of the 23-unit, first increment of the 40-unit ultra-luxury The Villas at Mauna Kea near the Mauna Kea Beach Hotel was completed in 1983, and the remainder of the first increment in 1984. The last 17 units are scheduled to be completed beginning in October 1984. We anticipate that a few of the Mauna Lani Terrace units and a few of the Villas at Mauna Kea units will be made available for transient use. Construction has commenced on the 66-unit first increment of the luxury 114-unit Shores at Waikoloa on an 11.4-acre site in Waikoloa Beach Resort next to the golf clubhouse.

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Plans have been announced for the 1260-room Hyatt Regency Waikoloa Hotel on 60 acres in the Waikoloa Beach Resort, with a possible completion date of late 1987.

Mauna Lani Point, a 198-unit super-luxury condominium project, is scheduled for development on a 30-acre site generally surrounding Fairway 5 of the Championship Francis H. I'i Brown Golf Course, with the first increment of 116 units scheduled for completion in about 1986. The Estates at Mauna Kea, the next project in the Mauna Kea Resort, would contain an estimated 26 units on about 51 acres and is projected for completion in 1987.

Plans have also been announced for the proposed development of Hapuna Beach Resort immediately to the south and to the east of Mauna Kea Resort. This project would be similar in quality to the Mauna Kea Resort and contain a resort hotel, beach and tennis club, championship golf course and resort residential uses. Present plans anticipate commencement of detailed design in 1986.

#### 3. Occupancy Rates

The preceding demand analysis was based upon an overall occupancy of 70 percent among all transient accommodations, including both hotel units and resort multifamily units. In arriving at this average rate, we have estimated that hotels would operate at slightly higher occupancy rates, and multifamily units would operate at somewhat lower rates. Multifamily unit buyers tolerate lower than economic occupancy rates since many of the purchases are influenced by tax-benefit considerations.

#### 4. Room Rates

Room rates will be a function of competition, the image and the relative attraction of the project, locational features, and type and quality of facilities developed.

Earlier discussion of the transient accommodations market in the Kohala Coast Resort Region indicated that the preponderance of the inventory was characterized as luxury or super-luxury. The Sheraton Royal Waikoloa Hotel is characterized as a luxury

project compared to the super-luxury Mauna Kea Beach Hotel and the Mauna Lani Bay Hotel. Due to the geographic positioning of the proposed Hapuna Beach Resort, we anticipate that its quality would be at least that of a luxury resort and probably be closer in quality to its neighbor, the Mauna Kea Resort.

Table VI-1 on Page 34 had shown that almost all of the rooms in North and South Kohala have published daily room rates of \$100 or more for double occupancy, superior rooms. The \$100 to \$149 category is used here to indicate the luxury category, and includes the 543 rooms in the Sheraton Royal Waikoloa Hotel. The \$200+ category indicates the super-luxury category, and includes 310 rooms in the Mauna Kea Beach Hotel and 351 rooms in the Mauna Lani Bay Hotel.

With the predominant share of rooms in the luxury and super-luxury categories, much of the product marketing will be directed toward similar market segments. With the aggregate promotional effort directed at a relatively narrow market segment, we believe that basic demand for luxury and super-luxury product will be expanded. Until recently, we estimate that tens of thousands of dollars had been spent annually to advertise the area through the efforts of one hotel. During the last few years, millions of dollars have been spent by the resorts and hotels. We estimate that millions of dollars soon will be expended annually to promote the Kohala Coast Resort Region. This concentration of promotional programs will likely modify the historical patterns of tourism activity on the Big Island. In the future, we anticipate that a larger segment of the Big Island's market will consist of the luxury and super-luxury components, largely destined to the Kohala Coast. This shift in market characteristics began with the completion of the Sheraton Royal Waikoloa Hotel and has been accentuated by each major development since.

Thus, it is likely that a disproportionate share of the future market potential would be the luxury and super-luxury components.

As such, we estimate that the next hotel at Mauna Lani should be in the same super-luxury category as Mauna Lani Bay Hotel. This is needed to help

achieve a "critical mass" in Mauna Lani of super-luxury facilities and attractions required for market recognition as a preeminent resort.

VII. MARKET ANALYSIS FOR RESORT MULTIFAMILY UNITS

A. Market Indicators

Resort multifamily units serve a number of purposes and are purchased for a number of motives. They may be used by the owner as a primary residence, used on a short-term basis as transient accommodations, rented on a long-term basis to year-round residents, or used occasionally as a second or vacation home by owners and their guests. These possible uses in turn, are influenced among other things by such factors as the location of the project, the character of its surroundings, and how the project is promoted and sold.

It is likely that resort multifamily units could be made available for short-term rental purposes. Since there is a general lack of housing in the Kohala Coast compared to the relatively rapid rate of economic activity, some of the units would likely be utilized by full-time residents, too.

In general, the composite of these typical uses are reflected in historical multifamily unit sales data. However, this particular analysis is complicated by the lack of historical data in the immediate market area. Multifamily projects developed outside the three coastal resorts are not directly comparable to properties within the resorts. Further, each resort has sales experience for only one project.

The experience of resort multifamily unit sales in Kona is not directly comparable either, due to the different characteristics of the Kona resort district. For example, Kona does not possess white sand beaches or extensive golfing activities, and in general has more passive visitor activities than does the Kohala Coast.

Resort projects on Maui appear to be somewhat more comparable in terms of beaches, climate and recreational amenities. On the other hand, even though there are three master-planned resorts on Maui and one more under construction, they are not located essentially adjacent to each other so that the planning, development, character, and aesthetics of the entire resort region can be controlled, as on the Kohala Coast.

Despite these differences, the limited data in the Kohala Coast Resort Region and the sales experiences in Kona and on Maui provide indicators that have aided us in formulating our conclusions.

1. Kohala Sales Activity

(a) Mauna Lani Terrace

This fee simple project fronting an old Hawaiian fishpond and a newly created lagoon, consists of 80-units on a 13.3-acre site, resulting in an average development density of 6 units per acre.

Prices at Mauna Lani Terrace were from \$275,000 to \$345,000 for the 18 one-bedroom units, \$355,000 to \$555,000 for the 54 two-bedroom units and \$705,000 to \$895,000 for the 8 three-bedroom units. The average unit price initially was about \$450,000.

Sales began in August 1982 and construction was completed in 1983. By October 1984, only four units remain unsold. Two resales have occurred, at prices 12 and 18 percent higher than their original prices.

A buyer analysis indicated that most of the purchasers were California residents. About 80 to 85 percent of the buyers had visited Kohala before and were familiar with the Mauna Kea Beach Hotel.

(b) The Villas at Mauna Kea

The Villas at Mauna Kea consists of a 40-unit leasehold one-story project on a 29.9-acre site surrounded by fairways of the Mauna Kea Beach Golf Course and overlooking the Mauna Kea Beach Hotel. Its development density is 1.3 units per acre. Sales of 23 units in the first increment began in early 1983, and by the end of the year, all had been sold. By October 1984, four units in the second increment had sold. Prices of the two-bedroom units ranged from \$800,000 to \$1,250,000 and the four-bedroom unit in the first increment was priced at \$1,225,000. The average price in Increment 1 was about \$975,000.

(c) The Shores at Waikoloa Beach Resort

Sales of the first 66-unit increment of the 114-unit The Shores at Waikoloa Beach Resort began in January 1984. By October 1984, about half of the initial increment had been reported sold or reserved.

The project will occupy an 11.4-acre fairway site and be located near the golf clubhouse.

Prices range from \$175,000 for a one-bedroom unit to \$560,000 for three-bedroom duplex units. The average price of units in the first increment is about \$310,000.

(d) The Estates at Mauna Kea

This very high-quality, low-density, one-story leasehold project, currently in the design stage, is proposed for development within the Mauna Kea Resort. Planned are 4 detached and 22 duplex units on a site containing 51.6 acres. Selling prices are expected to be higher than prices for the Villas.

(e) Mauna Lani Point

Current plans for this project envision 198 super-luxury condominium apartment units developed in two increments, on a site which surrounds Fairway 5 of the Francis H. I'i Brown Golf Course. Its quality is to be similar to that of Mauna Lani Terrace, and with slightly higher prices.

In addition to these projects, preliminary plans have been announced for two retirement home projects in Waikoloa Village.

Resort homes usually develop in proximity to hotels, as return visitors often choose to retire in the locale or to at least acquire property for their own use. Because of their ease of maintenance and relative security, multifamily units have become a very popular means of responding to this type of demand. Although the Mauna Kea Beach Hotel has been operating since 1965, no luxury units had been offered for sale in the Kohala Coast Resort Region until 1982.

Thus, pent-up demand existed in the region. In fact, it is our opinion that Mauna Lani Terrace and the Villas at Mauna Kea were absorbed mainly by pent-up demand generated by the multiple return guests of the Mauna Kea Beach Hotel.

2. Multifamily Unit Activity in Other Resort Regions

Due to the limited availability of multifamily unit activity in the Kohala Coast Resort Region, market activities and conditions in other resort regions were studied in order to aid in estimating the Kohala Coast market potential. The three other regions investigated were Kona, West Maui (Lehaina to Kapalua) and Kihei-Makena (Maalaea, Kihei, Wailea and Makena).

First, the visitor plant inventory (that is, the inventory of accommodations available to visitors for transient use) in North and South Kohala and the other three resort regions was delineated into hotel units and multifamily units. The results, presented in Table VII-1, show that the proportion of multifamily units in the inventory of transient accommodations has increased steadily in West Maui and Kona. By 1984, this proportion appeared to be approaching 50 percent as an equilibrium level. On the other hand, the proportion of multifamily units in Kihei-Makena was relatively higher in 1970, and appears to be reaching an equilibrium level higher than in Kona or West Maui.

North and South Kohala are just beginning to include multifamily units as a significant part of their inventory of transient accommodations.

Table VII-2 shows the trends in the proportion of multifamily units in each resort region available for transient accommodations. This proportion has generally ranged between 50 and 60 percent in West Maui. In Kihei-Makena, the proportion has dropped to between 40 and 50 percent, with a trend toward the lower part of the range. The proportion of multifamily units in Kona used for transient accommodations has vacillated, but since 1980, has trended upward and appears to be leveling between 40 and 50 percent. In Kohala, the share of multifamily units in transient use has increased, and by 1984 was increasing very rapidly.

Table VII-1

PERCENT OF MULTIFAMILY UNITS IN TOTAL VISITOR PLANT INVENTORY OF SELECTED RESORT REGIONS State of Hawaii 1970-1984

	West Maui	Kihei-Makena	Kona	North and South Kohala
1970	21%	47%	1%	0%
1975	42	75	9	5
1980	48	62	15	11
1984	50	71	38	12

SOURCE: Hawaii Visitors Bureau, Visitor Plant Inventory (February of indicated years); Ming Chew Associates

Table VII-2

PERCENT OF MULTIFAMILY UNITS IN TRANSIENT USE OF SELECTED RESORT REGIONS State of Hawaii 1970-1984

	West Maui	Kihei-Makena	Kona	North and South Kohala
1970	50%	98%	28%	0%
1975	64	47	26	18
1980	52	44	21	21
1984	59	44	45	28

SOURCE: Hawaii Visitors Bureau, Visitor Plant Inventory (February of indicated years); Ming Chew Associates

B. Projected Demand for Resort Multifamily Units in North and South Kohala

The proportion of multifamily units in the visitor plant inventory and the proportion of total multifamily units used as transient accommodations were projected for North and South Kohala based upon the preceding analyses. These projections were then applied to the projections of total transient accommodations made earlier.

Our analysis indicated that the share of multifamily units trended toward 50 percent for both Kona and West Maui, and we estimated that the visitor plant mix in Kohala would approach about the same level.

However in 1984, the proportion was only 12 percent on the basis of total transient accommodations and 10 percent on the basis of estimated transient units actually needed. We projected that the share of multifamily units would increase gradually to 15 percent in 1985, 25 percent in 1990, 35 percent in 1995 and 45 percent in 2000. These factors were applied to projected total demand for transient accommodations to delineate the demand for hotel units and multifamily units.

Then, we projected that the proportion of multifamily units used as transient accommodations would increase from about 28 percent in 1984 to 50 percent in 1985, and remain at that level to 2000. That is, we estimate that beginning in 1985, the number of multifamily units projected to be needed for transient accommodations would be about half of the total multifamily units. Thus, the total projected number of multifamily units would be two times the number needed for transient accommodations. These results are shown in Table VII-3.

The table also shows the projected net demand in excess of the actual 1984 inventory. As seen, we estimate that a surplus of hotel units exists in North and South Kohala at present. This condition should reverse by 1985. At that time, we project there would be a net new demand for 400 hotel units and 200 multifamily units for transient use over and above the existing February 1984 inventory. Thereafter, projected net new demand for both types of transient accommodations would continue to increase.

Table VII-3 FORECAST OF MULTIFAMILY UNIT DEMAND NORTH AND SOUTH KOHALA County of Hawaii 1983-2000

Gross Demand Forecast	Delineation of Projected Transient Accommodations Demand				Projected Total MP(1) Unit Demand	
	Total Trans. Units	Hotel Units	MP Units	MP Units	MP in Trans. Use	Projected Total Units
1983	1,100	904	1,000	104	100	400
1985	2,000	85	1,700	15	300	600
1990	3,600	75	2,700	25	900	1,800
1995	5,900	65	3,800	35	2,100	4,200
2000	7,900	55	4,300	45	3,600	7,200
Actual Units in 1984(2)	1,400		1,300		100	400
Net Demand Forecast(3)						
1983	(300)		(300)		0	0
1985	600		400		200	200
1990	2,200		1,400		800	1,400
1995	4,500		2,500		2,000	3,800
2000	6,500		3,000		3,500	6,800

(1) Multifamily  
(2) February 1984, recounded.  
(3) Gross demand forecast, less actual units in February 1984.

SOURCE: Ming Chew Associates



C. Projected Demand for Multifamily Apartment Units in Mauna Lani Resort

1. Number of Units

Earlier, we estimated that Mauna Lani Resort should capture 25 percent of the potential demand for transient accommodations in North and South Kohala through 1995, increasing to 25 to 30 percent by the year 2000. We estimate also that this factor would be applicable for both hotel and multifamily unit demand.

Applying this capture rate to the North and South Kohala demand projections produces the results shown in Table VII-4.

2. Price of Units

Our projections of achievable prices for resort multifamily units in Mauna Lani Resort have been based largely on the prices achieved for properties in the three existing resorts. Table VII-5 shows selected characteristics of these projects.

In general, the properties in the Mauna Kea Resort are the lowest in height and density, smallest in number, largest in area and even though they are leasehold projects, are by far the highest in price.

Mauna Lani Terrace is a relatively low density project which fronts a lagoon and old Hawaiian fishpond. It contains eighty units, and has an average density of 6.0 units per acre. The project contains 1-, 2-, and 3-bedroom units with an overall average unit size of 1,800 square feet, including lanais. The overall average selling price was about \$450,000.

The Shores at Waikoloa Beach Resort occupies a fairway site and will contain 114 1-, 2-, and 3-bedroom units and have an average density of 10.0 units per acre. The overall average size of the units will be about 2,000 square feet and the average price for units in the first increment is about \$310,000.

In making our projection of achievable unit prices for multifamily units in Mauna Lani Resort, we have taken a number of factors into account. They

Table VII-4

FORECAST OF HOTEL AND MULTIFAMILY UNIT DEMAND  
MAUNA LANI RESORT  
Kohala Coast Resort Region  
County of Hawaii, State of Hawaii  
1990-2000

Net Increase From 1984(1)	Projected Transient Accommodations Demand		MF Units For Other Uses	Total MF Units For Trans. Accom. and Other Uses
	Total(2)	Hotel Units(3)		
1990	600	400	200	400
1995	1,100	700	400	800
2000	1,600-2,000	900-1,100	700-900	1,400-1,800

(1) February 1984.

(2) Estimated to be 25 percent of North and South Kohala transient accommodations demand through 1995, and then 25 to 30 percent in the year 2000.

(3) Estimated to be 30 percent of North and South Kohala hotel demand through 1995, and then 30 to 35 percent in the year 2000.

SOURCE: King Chew Associates

include the very high-quality development theme for Mauna Lani, variety of development sites, quantity and variety of existing and planned resort activities and overall planning flexibility. Thus, while maintaining the overall development theme of super-luxury quality, Mauna Lani also could be very responsive to and could accommodate a broader range of market needs. Further, its quantity and variety of resort activities provides Mauna Lani with the opportunity to actually induce or create increments of potential market demand.

The extensive ocean and beach frontage in Mauna Lani add to its ultimate potential attraction. Also important is the concentration of planned activities around existing and beachfront hotels and their facilities and services. As a result, hardly any site in the current development plan is farther than one-half mile, or about a ten-minute walk, from any potential beachfront hotel site.

In addition to proximity to beaches, the extent of planned activities also creates the possibility for developing projects with specialized orientations. For example, projects adjacent to the planned tennis club might be oriented and marketed to tennis enthusiasts. Other sites near the existing or planned clubhouses might be developed with golf and country club memberships in mind.

Projects that are developed around special themes can use those themes as major attractions for marketing purposes. With such additional amenities, these projects might be developed at higher densities or with smaller unit sizes, and still sustain the overall quality of Mauna Lani. Projects without special themes or features would have to depend upon their intrinsic quality and aesthetics to support Mauna Lani's super-luxury image.

In preparing our forecasts, we have divided our demand estimates into three categories of relative quality, labeled higher-quality, mid-quality and lower-quality. In general, the existing Mauna Lani Terrace project is an example of what we have designated as mid-quality. The category labeled lower-quality, would include projects with specialized themes and probably contain smaller units at higher densities. The higher-quality category, as

Table VII-5  
SELECTED RESORT MULTIFAMILY  
PROJECT CHARACTERISTICS  
Kohala Coast Resort Region  
County of Hawaii, State of Hawaii

Project	Frontage	Height	Density un./ac.	Number of Units	Average Size Sq.Ft.(1)	Average Price
<u>Mauna Kea Resort</u>						
The Villas	Golf Fairway	1-Story	1.3	40	4,000(2)	\$975,000(LH)(2)
The Estates(3)	Golf Fairway	1-Story	0.5	26	4,700	\$1,500,000+(LH)
<u>Mauna Lani Resort</u>						
Mauna Lani Terrace	Lagoon	3-Story	6.0	80	1,800	\$450,000
Mauna Lani Point(3)	Golf Fairway	2-Story	6.0	198	1,800	\$500,000
<u>Waikoloa Beach Resort</u>						
The Shores	Golf Fairway	1-, 2-, 3-Story	10.0	114	2,000(2)	\$310,000(2)
<u>Proposed Hapuna Beach Resort(4)</u>						
The Bluffs	Ocean	2-Story	4	150	2,500	\$650,000 - \$700,000(LH)
Other Projects	Golf Fairway	2-Story	5	Various	2,000	\$400,000 - \$450,000(LH)

(LH) - Leasehold  
(1) Includes lanai and deck areas.  
(2) Increment 1.  
(3) Preliminary data.  
(4) Estimated preliminary characteristics and prices.

SOURCE: Hing Chew Associates

Table VII-6 FORECAST OF MULTIFAMILY DEMAND  
 MAUNA LANI RESORT  
 Kohala Coast Resort Region  
 County of Hawaii, State of Hawaii  
 1990-2000

	1990		
	Higher-Quality	Mid-Quality	Lower-Quality
Net Unit Demand(1)	100	150	150
Average Unit Price, 1984 \$	\$550,000	\$450,000	\$350,000
Average Unit Size, Sq. Ft.	2,200	1,800	1,400
Average Density, Units/Acre	4	5	6
	1995		
	Higher-Quality	Mid-Quality	Lower-Quality
Net Unit Demand(1)	200	300	300
Average Unit Price, 1984 \$	\$550,000	\$450,000	\$350,000
Average Unit Size, Sq. Ft.	2,200	1,800	1,400
Average Density, Units/Acre	4	5	6
	2000		
	Higher-Quality	Mid-Quality	Lower-Quality
Net Unit Demand(1)	400-500	500-600	500-700
Average Unit Price, 1984 \$	\$550,000	\$450,000	\$350,000
Average Unit Size, Sq. Ft.	2,200	1,800	1,400
Average Density, Units/Acre	4	5	6

(1) In Excess of February 1984 Actual Supply.  
 SOURCE: King Chew Associates

currently envisioned, would represent properties of a generally higher quality than the existing Mauna Lani Terrace.

Table VII-6 shows the projected demand for multi-family units at Mauna Lani Resort delineated by relative quality. As seen, the forecast of potential market demand is about equally divided among the three categories of units, with slight preferences for the mid- and lower-quality categories. By 1990, the additional 400 units projected to be in demand are divided into 100 units in the higher-quality category, 150 in the mid-quality category and 150 in the lower-quality category. Delineation of the 800 additional units by 1995 results in 200, 300 and 300 units, respectively, in the higher-, mid- and lower-quality categories. By 2000, the distribution would result in projected additional demand for 400 to 500 higher-quality units, 500 to 600 mid-quality units and 500 to 700 lower-quality units, for a total additional demand of 1,400 to 1,800 multi-family units.

Associated characteristics that we believe are appropriate for the three quality categories are also shown in Table VII-6. In general, we estimate that characteristics of the mid-quality units would approximate those of the existing Mauna Lani Terrace units. That is, the average price would be \$450,000 (in 1984 dollars) and the unit size would be about 1,800 square feet. We estimate the average density should be about 5 units per acre, or slightly lower than that achieved at Mauna Lani Terrace. As indicated in Table VII-6, appropriate characteristics for higher-quality units would be a average unit price of \$550,000 (in 1984 dollars), a average unit size of 2,200 square feet and an average density of 4 units per acre. Estimated characteristics for the lower-quality category are an average unit price of \$350,000 (1984 dollars), unit size of 1,400 square feet and average density of 6 units per acre.

These estimated average characteristics are projected to be appropriate through 2000.

VIII. MARKET ANALYSIS FOR RESORT SUBDIVISION HOUSELOTS

Resort subdivision houselots are part of the variety of choices available to potential buyers seeking to purchase resort properties. Just as with resort multifamily properties, resort houselots respond to the market demands both for vacation homes and investment properties, and for permanent residences. Moreover houselots may be improved with houses shortly after purchase, or they may be held for many years before being improved. Thus, this segment consists not only of the demand for houselots, but also of the demand for house and lot packages.

A. Market Indicators

Currently, the only resort subdivision houselots in the Kohala Coast Resort Region are located in the Mauna Kea Resort. They are located in The Fairways at Mauna Kea South which contains 33 lots and The Fairways at Mauna Kea North with 32 lots.

Fairways South consists of lots ranging in size from 10,000 to 15,000 square feet. The lots are surrounded by extensive open area so that the overall density of the project is slightly less than 0.5 lots per acre, or one lot per two overall acres. The lots were offered initially in the early 1970's and have all been sold on a leasehold basis. Two-thirds of the lots are improved and other homes are being planned. About 25 percent of the completed houses are occupied full-time.

Fairways North lots contain a minimum of 22,000 square feet. These are clustered, with each cluster surrounded by extensive open space. The project's overall density is about 0.8 lots per acre, or one lot per about 1.2 acres. The leasehold lots were offered for sale beginning in late 1982 for prices ranging from \$175,000 to \$500,000, or an average price of \$365,000. To date, 12 lots have been reported sold.

Urban subdivision lots are available in Waikoloa Village several miles from the coastal resorts. Although some lots front the Waikoloa Village Golf Course or have ocean views, these are not considered comparable to the resort subdivision houselots envisioned in the proposed Hapuna Beach Resort.

B. Projected Demand for Houselots

Our demand analysis has been based upon the experience of the Mauna Kea Resort, and the results of a study which evaluated the marketability of The Villas and The Fairways at Mauna Kea North. (1) As part of the study, persons who had indicated an interest in properties at Mauna Kea were asked what type of property they would be most interested in purchasing. Twenty percent indicated a houselot or a detached house and lot. Eighty percent indicated a multifamily unit. Thus, the number of respondents interested in a detached-type unit amounted numerically to 25 percent of the number indicating an interest in a multifamily unit.

One deterrent to buying a lot is the burden of having to design and build a home. In fact, of the survey respondents indicating an interest in a detached unit, only one-third were interested in buying a lot, and two-thirds were interested in purchasing a "detached house and lot." Applying a factor of one-third to the 25 percent, indicates that about 8 percent of those interested in multifamily units might be interested in a resort subdivision houselot. Our experience indicates that the demand for luxury subdivision houselots of the very high quality envisioned at Mauna Kea will be mainly from return visitors who previously had visited the resort. In the case of Mauna Kea Resort, where the hotel had operated for many years before properties were available for purchase, the actual factor might be higher than 8 percent. In the case of Mauna Kea Resort, however, the ratio is probably slightly lower than 8 percent due to the limited number of return visitors to date.

These considerations are reflected in the forecast of Mauna Kea subdivision houselot demand shown in Table VIII-1. As seen, we estimate that demand for resort subdivision houselots would appropriate 7 percent of the multifamily unit demand. Further, we believe that the proportion of lot buyers will decrease in the future as other products become more available. As

(1) "Marketability and Feasibility Analyses for the Proposed Villas at Mauna Kea and Fairways at Mauna Kea II (now renamed);" Hastings, Martin, Chew & Associates, Ltd.; March 1981.

Table VIII-1  
**FORECAST OF SUBDIVISION  
HOUSELOT DEMAND  
MAUNA LANI RESORT**  
Kohala Coast Resort Region  
County of Hawaii, State of Hawaii  
1990-2000

	Projected Total Multifamily Unit Demand(1)	Estimated Ratio of Resort Houselot Demand	Estimated Resort Houselot Demand
1990	400	0.07	25
1995	800	0.06	50
2000	1,400- 1,800	0.05	70-90

(1) Increase from February 1984.

SOURCE: Ming Chew Associates

such, we project that the ratio of related demand will decline to about 6 percent in 1995 and about 5 percent in 2000.

Based upon the projected demand for multifamily units indicated earlier, these ratios would result in an estimated demand for 25 houselots in Mauna Lani in 1990, 50 in 1995 and 70 to 90 in the year 2000.

C. Projected Prices for Houselots

The Fairways North and South have very low densities of 0.5 and 0.8 units per acre, which project an image of exclusivity and privacy. In keeping with the very high quality, super-luxury image being created for Mauna Lani, some subdivision projects could be developed in the resort at densities equivalent to, or less than, those achieved in Fairways North and South.

However, the variety of possible subdivision sites and potential for locating them close to or in conjunction with special activities would permit expanding the range of quality and thereby respond to a greater range of market demands. Thus, our projection of subdivision houselot demand, just as with the multifamily unit demand, has been divided into three relative categories of quality. Similarly, as with the multifamily demand, the categories are labeled higher-quality, mid-quality and lower-quality.

Table VIII-2 delineates the projected demand, and shows associated price and density characteristics. Estimated prices for the mid-quality lots were based upon current sales prices at Fairways North. We envision that this category of subdivision houselots would have a slightly higher density of 1 unit per acre versus 0.8 units per acre at Fairways North. Also, topography of the Mauna Lani lots is likely to be flatter and without the extensive panoramic views of the ocean, although mountain views would be equivalent. On the other hand, we have assumed that this factor would be offset by creation of onsite amenities such as water features and gardens. The major adjustment, however, is the anticipated sale of Mauna Lani lots in fee simple versus the leasehold sales of Fairways North. Based upon these factors, we estimate that subdivision houselots in the mid-quality category with an average density of one lot per acre could achieve sales prices averaging about the same as Fairways North, or about \$350,000 per fee simple lot. Higher-quality lots with a density of 0.5 or fewer lots per acre are projected to achieve average prices of

Table VIII-2 FORECAST OF SUBDIVISION HOUSELOT DEMAND  
 MAUNA LANI RESORT  
 Kohala Coast Resort Region  
 County of Hawaii, State of Hawaii  
 1990-2000

	1990			Total
	Higher Quality	Mid-Quality	Lower-Quality	
Houselot Demand	5	8	12	25
Average Lot Price, 1984 \$	\$450,000+	\$350,000	\$250,000	
Average Density, Lots/Acre	0.5 or less	1	2	

	1995			Total
	Higher Quality	Mid-Quality	Lower-Quality	
Houselot Demand	10	15	25	50
Average Lot Price, 1984 \$	\$450,000+	\$350,000	\$250,000	
Average Density, Lots/Acre	0.5 or less	1	2	

	2000			Total
	Higher Quality	Mid-Quality	Lower-Quality	
Houselot Demand	10-15	20-25	40-50	70-90
Average Lot Price, 1984 \$	\$450,000+	\$350,000	\$250,000	
Average Density, Lots/Acre	0.5 or less	1	2	

SOURCE: Ming Chew Associates

\$450,000 or more per fee simple lot. We estimate that the lower quality lots with an average density of 2 lots per acre could achieve sales prices averaging \$250,000 per fee simple lot.

D. Projected Demand for House and Lot Packages

We anticipate that a number of prospective buyers will seek pre-designed and pre-constructed houses. These buyers may want customized houses, but prefer to bypass the design and construction phases.

The survey of persons interested in properties at Mauna Kea indicated that twice as many were interested in a "house-detached house and lot" as were interested in a "house-lot." However, as the number of resort residential alternatives in the Kohala Coast resorts increase, we estimate that the relative proportion of buyers seeking a house and lot package will decline to approximately the same portion that would purchase houselots alone.

Thus, the projections appearing in Table VIII-1 would also represent, numerically, our demand estimates for house and lot packages. That is, the projected demand for house and lot packages in Mauna Lani Resort would be 25 houses by 1990, 50 by 1995 and 70 to 90 by 2000.

E. Projected Prices for House and Lot Packages

Prices for custom houses in resort areas vary widely since the houses express the individual tastes and preferences of their owners. As such, it is difficult to generalize about prices for house and lot packages.

However, in residential projects with a mix of housing types, we have found that detached houses generally sell for about one-third to one-half more than similar-sized attached multifamily units. We believe that these price differentials were influenced by affordability factors. In the case of the proposed resort properties, we project that personal preference rather than affordability will be the determining factor when choosing a particular type of unit.

Also, the variety of potential subdivision sites, the possibility of orienting selected projects toward special activities and the opportunities for creating unique environments for particular subdivision projects make even more difficult, any generalizations about price differentials between detached houses and attached units in multifamily projects. Instead, we have made

approximations of the value of detached houses that we envision being constructed, and have added those amounts to the estimated prices of the associated category of house/lot.

In the case of the higher-quality category, we estimate that the house cost would be at least \$550,000, resulting in a minimum house and fee simple lot price of \$1,000,000 in 1984 dollars. The cost of houses in the mid-quality category are projected to be approximately \$450,000, for a total house and lot package price of about \$600,000 in 1984 dollars. For the lower-quality category, average house cost is projected to be \$350,000, resulting in an estimated house and lot price of \$600,000.

These projections are shown in Table VIII-3.

Table VIII-3

FORECAST OF HOUSE AND LOT DEMAND  
MAUNA LANI RESORT  
Kohala Coast Resort Region  
County of Hawaii, State of Hawaii  
1990-2000

	1990		
	Higher Quality	Mid-Quality	Lower-Quality Total
House and Lot Demand	5	8	12 25
Average Unit Price, 1984 \$	\$1,000,000+	\$800,000	\$600,000
Average Density, Units/Acre	0.5 or less	1	2

	1995		
	Higher Quality	Mid-Quality	Lower-Quality Total
House and Lot Demand	10	15	25 50
Average Unit Price, 1984 \$	\$1,000,000+	\$800,000	\$600,000
Average Density, Units/Acre	0.5 or less	1	2

	2000		
	Higher Quality	Mid-Quality	Lower-Quality Total
House and Lot Demand	10-15	20-25	40-50 70-90
Average Unit Price, 1984 \$	\$1,000,000+	\$800,000	\$600,000
Average Density, Units/Acre	0.5 or less	1	2

SOURCE: Ming Chew Associates

IX. MARKET ANALYSIS FOR GOLF COURSE

The capacity of a golf course is determined by numerous factors, including design and how course operations are managed. The latter item may be based upon the desired image or character of the course. This, in turn is a function of player comfort and pace of play, the course condition and the quality of maintenance without interfering with the enjoyment of play and, how the course relates to associated activities. The character of a course is exemplified by the Francis H. I'i Brown Golf Course in the Mauna Lani Resort and the Mauna Kea Golf Course in the Mauna Kea Resort. These courses are well-maintained and operated to enhance the exclusive, leisurely and luxurious ambience of the respective resorts. In contrast, the character of the municipal Ala Wai Golf Course near Waikiki is one of accommodating as many golfers as possible, as a type of public service.

In many respects, it is the character of a course that determines its capacity.

Also, golf course activity exhibits monthly variations which reflect the seasonal patterns of golfing visitors who arrive mostly during winter months when adverse weather conditions prevent them from playing at home. Variations also occur for different days during the week, caused by local residents playing mostly on weekends due to weekday work schedules. Thus golf course capacity must be considered in the light of weekend and peak season activity.

There are three resort championship golf courses in the Kohala Coast Resort Region. The Mauna Kea Golf Course opened in conjunction with the Mauna Kea Beach Hotel in 1965. Then in 1981, both the Waikoloa Beach Resort Golf Course and the Francis H. I'i Brown Golf Course in the Mauna Lani Resort began operations. The start of play at the Waikoloa course coincided with the opening of the Sheraton Royal Waikoloa. On the other hand, play at Mauna Lani preceded by two years, the opening of the Mauna Lani Bay Hotel.

At present, neither the Sheraton Royal Waikoloa nor the Mauna Lani Bay Hotels have reached the level they anticipate for stabilized operations. Therefore, it is difficult in these two cases to draw definitive relationships between resort activity and demand for golf rounds. It has been possible, however, to identify such relationships from the more extensive experience of the Mauna Kea Golf Course.

A. Mauna Kea Golf Course

Table IX-1 shows the annual number of rounds played on the Mauna Kea Golf Course from 1978 through 1983. As seen, the number of rounds declined steadily from 1978 through 1982, before rebounding slightly in 1983. Prior to 1978, we understand that activity had been relatively steady at slightly over 51,000 rounds per year.

Interestingly, the decline in annual rounds followed almost exactly the decline in the number of westbound visitors intending to visit the Island of Hawaii, except for 1980 and 1981. During these two years, the decline in westbound intended visitors was greater. This suggests that the pattern of play and possibly activity at the hotel were more stable than the county-wide visitor industry in general in 1980 and 1981. Although the number of westbound visitors intending to visit the Island began increasing in 1982, play at Mauna Kea continued declining. This was due to completion in 1981 of the golf courses at both Waikoloa Beach Resort and Mauna Lani Resort. In 1983, both the number of rounds of golf at Mauna Kea and the number of westbound intended visitors increased.

Even though more play was experienced prior to the opening of other resort golf courses on the Kohala Coast in 1981, representatives of Mauna Kea have indicated that for the image and character desired of the golf course, the number of annual golf rounds should not exceed 45,000. If play at Mauna Kea continues to follow the pattern of westbound intended Island visitors, which we believe it will, the course should be at its maximum desired level of play by the end of 1985.

Once the Mauna Kea Golf Course reaches its maximum desired level of play again, we anticipate that operating policies of the course may change to restrict the number of rounds so that use of the course would be more comfortable and enjoyable for owners and guests at the Mauna Kea Resort.

Assuming that Mauna Kea activity will soon increase to its desired maximum level of 45,000 per year, and generally stabilize at about that level, it would amount to 145 annual golf rounds per room at the Mauna Kea Beach Hotel. Due to the golf course reputation developed over a number of years, many guests are at the Mauna Kea Resort largely for golf. Therefore, we believe that the ratio of golf rounds per room at the Resort is unusually high.



Table IX-1 MAUNA KEA GOLF COURSE ACTIVITY  
 MAUNA KEA RESORT  
 Kohala Coast Resort Region  
 County of Hawaii, State of Hawaii  
 1977 - 1983

Year	Annual Number of Rounds	Annual Rounds Per Room(1)	Average Daily Rounds
1978	51,100	165	140
1979	47,600	154	130
1980	47,500	153	130
1981	43,700	141	120
1982	38,800	125	106
1983	39,700	128	109

(1) At the Mauna Kea Beach Hotel

SOURCE: Mauna Kea Beach Hotel; Ming Chew Associates

B. Forecast of Mauna Lani Resort Golf Demand

At present, the number of golf rounds generated at Mauna Lani is close to that achieved at Mauna Kea. Further, if occupancy is taken into account, it is likely that when Mauna Lani Bay Hotel approaches its desired level of operations, the number of golf rounds generated per room might be similar to that generated at Mauna Kea. Thus, heavy promotion of the course may also have resulted in an unusually high ratio of golf rounds per occupied unit at present. As occupancy increases, annual golf rounds per room at the Mauna Lani Bay Hotel could approach the same level of 145 rounds per room projected for the Mauna Kea Beach Hotel.

As other facilities are developed at Mauna Lani and less total emphasis is placed on golf alone, we forecast that the average golf demand generated at the resort would actually be about one-third less than that potentially generated by Mauna Kea Beach Hotel and Mauna Lani Bay Hotel.

At one-third less golf activity, we estimate that subsequent hotels at Mauna Lani would generate 100 annual rounds per room. Thus, the 400 hotel unit demand estimated for 1990 would generate about 40,000 additional rounds of golf for that year. By 1995, hotel-generated demand would amount to an estimated 70,000 annual rounds, and by 2000, 90,000 to 110,000 annual rounds.

Multifamily units and detached homes would also generate golf activity, but probably not as much as hotels. Assuming golf activity generated by non-hotel units might be about one-fourth of that generated by hotel units in the type of resort envisioned, the non-hotel units would produce a demand of about 11,000 annual rounds of golf in 1990, about 22,000 rounds in 1995 and 38,000 to 48,000 annual rounds in the year 2000.

Thus, the total projected additional golf demand would be 51,000 annual rounds in 1990, 92,000 in 1995 and 128,000 to 158,000 in 2000.

This amount of activity could not be accommodated at the existing golf courses in the Kohala Coast Resort Region since we estimate they would already be at their desired maximum capacities. In fact, we estimate that the existing Francis H. I'i Brown Golf Course will reach its desired maximum capacity by the time the

X. MARKET ANALYSIS FOR COMMERCIAL LAND USE

existing Mauna Lani Bay Hotel and Mauna Lani Terrace, and the planned Mauna Lani Point Project reach a stabilized level of occupancy.

Therefore, in order to support the golf demand generated by planned facilities in Mauna Lani Resort, an associated 18-hole high-quality championship golf course within the resort will be needed by the time the next hotel begins operations.

Based upon demand projections, and our assumption that play on Mauna Lani golf course would likely be limited to about 45,000 annual rounds, the second course would be at capacity by 1990. By that time, plans should be well underway for a third course. By 1995, we project that even the third course would be at capacity, and that plans should then be underway for a fourth course.

Provisions should be made to efficiently link subsequent golf courses to avoid the extensive plan revisions now needed to integrate the next golf course with the existing clubhouse.

Our commercial land use demand forecast is based upon estimated visitor spending within Mauna Lani Resort. Some spending by visitors staying at Mauna Lani will occur outside the resort, but we estimate that this leakage would be more or less offset by expenditures made by persons attracted to Mauna Lani from outside the resort. Furthermore, our estimates of commercial land use demand have not included either expenditures by potential full-time residents in Mauna Lani or office space demand. Therefore, our demand projections are conservative.

A. Estimated Visitor Spending

Visitor retail spending is mainly a function of daily on-site visitors and their spending habits.

We have estimated the number of visitors based upon prior projections of transient accommodations. Even though we expect the hotels to achieve a higher occupancy than the multifamily units in transient use, to simplify our calculations, we have assumed that both types of transient accommodations would operate at 70 percent occupancy. Further, we estimate that each type would accommodate visitors with an average party size of 2 persons.

The earlier projections indicated demands for 600 transient accommodation units in 1990, 1,100 in 1995 and 1,600 to 2,000 in 2000. Table X-1 delineates these projections into hotel and multifamily units and applies occupancy rates and estimated party sizes to get projected average daily visitor censuses for each type of accommodations.

Visitor expenditures are estimated periodically by the Hawaii Visitors Bureau. The latest survey was conducted in 1983, but its results have not been tabulated or released. The most current Bureau data from the 1980 survey, is outdated.

Further, the Bureau's survey measures average expenditures, and is not appropriate for evaluating expenditures in super-luxury resorts such as Mauna Lani.

Instead, we have relied upon estimates provided on a confidential basis by operators of resorts whose experience we consider to be applicable to Mauna Lani Resort. Based upon these results, we estimate that for the quality of projects envisioned and the types of clientele

Table X-1  
**FORECAST OF POTENTIAL DAILY VISITOR EXPENDITURES OUTSIDE HOTELS MAUNA LANI RESORT**  
 Kohala Coast Resort Region  
 County of Hawaii, State of Hawaii  
 1990-2000

	<u>1990</u>	<u>1995</u>	<u>2000</u>
Average Daily Hotel Visitors	560	980	1,260-1,540
Average Daily Multifamily Unit Visitors	280	560	980-1,260
Total Average Daily Mauna Lani Visitors	840	1,540	2,240-2,800
Potential Daily Restaurant Expenditures, 1984 \$	\$8,400	\$16,800	\$29,400-37,800
Potential Daily Groceries Expenditures, 1984 \$	4,200	8,400	14,700-18,900
Potential Daily Other Retail Expenditures, 1984 \$	12,600	23,100	33,600-42,000
Total Potential Daily Expenditures, 1984 \$	\$25,200	\$48,300	\$77,700-98,700

SOURCE: Ming Chew Associates

attracted and their likely expenditure patterns, Mauna Lani Resort hotel visitors would spend an average of \$60 per day for food and beverages and \$35 per day for gifts, clothing, souvenirs and other retail items. Multifamily unit guests would spend an estimated \$30 per day for food and beverages in restaurants, \$15 per day on groceries and \$25 per day for gifts, clothing, souvenirs and other retail items.

We have assumed that all of the hotel guests' food and beverage expenditures would be captured at the hotels, and all of the multifamily unit guests' expenditures could potentially be captured elsewhere. While some hotel guests would likely eat off-premises, these expenditures would likely be offset by multifamily guests eating at the hotels. We further estimate that potential expenditures made by both hotel and multifamily unit visitors for other items outside the hotels would average \$15 per day. These factors were used to calculate the potential daily expenditures also shown in Table X-1.

**B. Commercial Land Use Demand**

Daily expenditures were converted to annual expenditures and then into estimates of commercial land use demand. This was done by first converting annual potential sales into estimated commercial sales space demand using an estimated ratio of \$350 of annual sales (in 1984 dollars) per square foot.

Relating floor space demand to corresponding land area demand involves a number of subjective considerations. Given the desired very high-quality environment for Mauna Lani, we envision a low-density, single level free-standing commercial complex. Based upon a analysis of smaller, high-quality centers, we estimate that a land use conversion factor of 5,000 square feet leasable area per acre would permit the type of ambience desired. This would allow ample land for parking, landscaping and other non-leasable common areas.

As seen in Table X-2, applying these factors results in estimated commercial land use demand for 5 acres in 1990, 10 acres in 1995 and 16 to 21 acres in 2000.

**C. Other Factors**

As mentioned earlier, these marketability estimates are considered to be conservative. First, demands based upon expenditures by full-time residents were not

Table X-2 FORECAST OF COMMERCIAL LAND USE DEMAND  
 MAUNA LANI RESORT  
 Kohala Coast Resort Region  
 County of Hawaii, State of Hawaii  
 1990-2000

	1990	1995	2000
Total Potential Daily Expenditures, 1984 \$	\$25,200	\$48,300	\$77,700-98,700
Total Potential Annual Expenditures, 1984 \$	\$9,200,000	\$17,600,000	\$28,400,000-36,000,000
Sales Volume Ratio, 1984 \$ per Sq. Ft.	350	350	350
Indicated Commercial Space Demand, Sq. Ft.	26,300	50,300	81,100-102,900
Land Use Conversion Factor, Sq. Ft. per Acre	5,000	5,000	5,000
Indicated Commercial Land Use Demand, Acres	5	10	16-21

included in our projection. In addition, we have not estimated the potential demand for office space.

If these two items were included, we believe that slight increments of commercial land use demand could be added to the projections shown.

XI. DEMAND FOR RESORT SUPPORT FACILITIES

In addition to the types of land uses usually associated with resort development, there are a number of auxiliary supporting uses that are needed. Already, we have indicated that existing support uses at Mauna Lani are being accommodated by special permit on lands currently in the State Agricultural District.

Some of these facilities are required for overall resort development, such as the resort developer's offices, sewage treatment plant and industrial shop areas. Other are needed for individual projects, such as warehouses to store hotel supplies. A few of these uses might be accommodated among the usual resort facilities, but most would violate the high-quality, luxurious and serene ambience of Mauna Lani if located in the vicinity of hotels or multifamily projects. In the case of hotel supply storage, ocean-front sites are too valuable for other uses than for extensive warehousing.

As Mauna Lani expands, demand for auxiliary support areas will increase. Logically, these areas should be removed from the resort core.

Our analysis indicates that approximately 25 acres are in support uses at present in Mauna Lani. Approximately 19 acres are for overall resort development use and would need to be expanded only slightly as the resort expands. About 6 acres, or about 0.014 acres per unit, appear to be project specific. Based upon our projected demand for units, we estimate that auxiliary support uses would require an additional 12 acres by 1990, 22 by 1995 and 34 to 43 by 2000.

Additional increments of demand are likely to be generated by increased construction activity and planned commercial uses. After adding small amounts for these demands, our estimates for total additional auxiliary services land use demand would be 15 acres by 1990, 30 by 1995 and 45 to 55 by 2000.

Thus, including existing auxiliary land uses, cumulative demand in 1990 would be 40 acres, 55 acres in 1995 and 70 to 80 in 2000.



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BELT, COLLINS & ASSOCIATES

Economic and Fiscal Impact Assessment of  
Planned Developments at Mauna Lani Resort  
Island of Hawaii

April 1985

Appendix B

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BELT, COLLINS & ASSOCIATES  
Economic and Fiscal Impact Assessment of  
Planned Developments at Mauna Lani Resort  
Island of Hawaii

April 1985

MAUNA LANI RESORT  
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**I - INTRODUCTION AND PROJECT DESCRIPTION**

In June 1984 Belt Collins & Associates (BCA) engaged Peat, Harwick, Mitchell & Co. (Peat Harwick) to prepare an economic and fiscal impact assessment of the expansion of the Mauna Lani Resort (Resort) on the island of Hawaii. This chapter presents the background and scope of our assistance, describes the revised master plan and summarizes the market support for proposed land uses at the Resort.

**BACKGROUND**

Mauna Lani Resort, Inc. (Mauna Lani) is requesting that the Hawaii State Land Use Commission (LUC) redesignate approximately 654 acres of Mauna Lani's lands for urban use. Together with other lands already designated for urban use, the redistricted land would enable the development of a revised master plan for the Resort. The revised master plan would include 18 additional holes of golf, relocation of a hotel site and lower density development of Resort residential units. The total development of the Resort with or without the proposed master plan revisions would be about 3,000 hotel rooms and 3,182 resort residential units.

In submitting the petition to the LUC, an Environmental Impact Statement (EIS) may be required. In this regard, your firm has engaged Peat Harwick to evaluate the economic and fiscal impacts of the proposed developments.

**SCOPE OF ASSISTANCE**

This report projects direct and indirect economic and fiscal impacts for two scenarios of the master plan for the Resort. These scenarios are:

- Existing master plan
- Revised master plan

Impacts are projected over a 15-year period (1985 to 2000) and at the potential maximum development of the Resort in terms of the following:

- Economic impacts:
  - Visitor expenditures
  - Employment
  - On- and off-resort residential population growth
  - Visitor population growth
  - Personal and household income
  - State and County of Hawaii costs and benefits
- Social and fiscal impacts:
  - Employee housing
  - Education
  - Police, health and fire protection
  - Recreation

The basis for projection of the economic and fiscal impacts of the Resort is the estimated development timetable of visitor units at the Resort. In November 1984 Ming Chew & Associates conducted a market study for the revised master plan which estimated the market support and potential absorption of visitor units at the Resort. In assessing economic and fiscal impacts under both master plans, we will rely on market assumptions as stated in the study entitled "Market Analysis for Mauna Lani Resort" conducted by Ming Chew & Associates.

**SUMMARY OF THE REVISED MAUNA LANI RESORT MASTER PLAN**

Mauna Lani Resort is a major destination resort development located on 778.5 acres of land on the South Kohala district on the island of Hawaii. Plans which have already been approved by the County of Hawaii (County) under the existing master plan would permit a maximum of 3,000 hotel rooms, 3,182 residential units and related amenities and facilities. Completed projects at the Resort include the 351-room luxury-class Mauna Lani Bay Hotel, the 80-unit Mauna Lani Terrace condominium and the 18-hole championship Francis I'i Brown Golf Course and Clubhouse.

The original master plan envisioned a world-class resort with low-density and low-profile developments combining a variety of complementary land uses.

Subsequent to statement of the Resort's original master plan, several factors have contributed to a need for revisions in order to better accommodate visitors to the Resort. These factors include:

- Emergence of the Kohala Coast as a leading luxury resort area in Hawaii. Together with Mauna Kea Resort, Waikoloa Beach Resort and Kona Village Resort, Mauna Lani Resort has earned a reputation for thoughtful, high-quality master-planned resort development. The region's excellent climate, the creation of sandy beaches and the development of a critical mass of superluxury facilities and amenities have set the tone for continued development of the highest-quality facilities in the state.
- Demonstrated demand for superluxury resort units. As demonstrated by the relatively rapid sales rate of the condominium units offered at Mauna Lani Terrace and by the projections of Ming Chew & Associates in the "Market Analysis for Mauna Lani Resort," the demand apparently exists for superluxury units at Mauna Lani Resort. By 1990 the demand for 850 hotel, multifamily and single-family lots or units is projected at the Resort; by 1995 the demand is projected for 1,600 lots or units; and by 2000, 2,440 to 3,080 lots or units would be required.
- Occasional inability of the existing Francis I'i Brown Golf Course to meet the current level of golf demand. Currently, due to the quality and challenging reputation of the existing golf course, the demand is such that local and visiting golfers have to be turned away during certain peak periods. The Resort currently has only 431 completed condominium and hotel units. With more unit completions, Ming Chew & Associates projects that a second and possibly three or four additional golf courses will be required by visitors to and residents of the Resort by the year 2000.

Thus, in order to respond to the changing conditions which have occurred since the Resort's original plans, Mauna Lani is requesting the LUC to amend the State land use district boundaries by reclassifying 654 acres of land to urban use. The reclassification would permit the Resort to implement a revised master plan.

The major objectives of the revised plan are to:

- Accommodate lower residential unit densities in order to respond to the demand for high-quality, low-density development.
- Provide for additional open space and recreational areas including the completion of a high-quality, ocean-oriented golf course to accommodate anticipated golf demand.
- Allow for the relocation of an existing hotel site to a more desirable location on Honokaape Bay.

Major differences between the two master plans are described in the following sections in terms of number of units planned, average Resort density and the quality of units.

Potential Maximum Master-Planned Units

Although the revised master plan includes the addition of 654 acres, the potential maximum number of units is planned to remain within the county-approved limits of 3,000 hotel units and 3,182 residential units. However, due to the availability of more land area and the suitability of the revised master plan from a marketing perspective, a greater number and proportion of single-family units are proposed under the revised master plan than under the existing plan, as shown in the table below:

Master-Planned Units at Completion

	Existing master plan		Revised master plan	
	Units	Percentage	Units	Percentage
Hotel units	3,000	48.5%	3,000	46.5%
Multifamily	3,032	49.0	2,942	47.5
Single-family	150	2.5	240	3.9
Total	6,182	100.0%	6,182	100.0%

A maximum of 3,000 hotel units could potentially be developed under either master plan. However, about 240 single-family units could potentially be developed under the revised master plan compared to only 150 under the existing master plan. Conversely, a maximum of 2,942 multifamily units would be developed under the revised master plan, compared to 3,032 under the existing plan.

It should be noted that although a total of 6,182 units could be developed under either master plan, this number represents the maximum developable number of units and will probably exceed the actual number of units ultimately developed at completion of the Resort. However, it is expected that the ultimate number of units developed under the existing master plan would be greater than under the revised plan due to the need to sell more units to receive the same return on investments.

Average Unit Densities

The average unit densities are calculated assuming the maximum potential number of units under the two master plans. The revised plan calls for development of 6,182 hotel and residential units on 1,432.5 acres. This compares to the same unit development on only 778.5 acres under the existing master plan. Thus, the overall Resort density is expected to decrease by almost one-half, from 7.9 units per acre under the existing plan to 4.3 units per acre under the revised plan, as shown in Exhibit I-A.

Considering hotels and residential acreage only (for hotel, multifamily and single-family units), unit densities are projected to decline from 14.0 units to 10.3 units per acre. Similarly, by type of development, hotel, multifamily and single-family unit densities are estimated to decline significantly to accommodate the lower densities dictated by the high-quality development philosophy of the Resort.

Quality of Resort Projects

The quality of the various sites and projects at Mauna Lani Resort was estimated by representatives of the Resort and BCA as determined by:

- Ocean or golf fairway frontage
- Views available to the project site
- Proximity to hotels or other recreational amenities
- Other physical site characteristics

The individual project sites were graded for quality and are summarized by type of development in Exhibit I-B. A greater percentage of the planned hotel, multifamily and single-family sites were graded of high or medium quality under the revised plan than under the existing plan. This is mainly due to the creation of "greenbelt" golf course and preserve areas and other amenities which would contribute to the scenic and economic value of the individual project sites.

In total, 69% of the project sites were graded high quality under the revised master plan compared to 63% under the existing master plan. About 15% of the sites were graded medium quality under the revised plan compared to 11% under the existing plan. By type of development, a greater percentage of the Resort's multifamily homesites are graded high or medium quality under the revised plan as compared to the existing plan.

MARKET SUPPORT FOR PROPOSED LAND USES AT MAUANA LANI RESORT

The market support for hotel, multifamily, single-family and commercial land uses at the Resort under the revised master plan has been estimated by Ming Chew & Associates in its November 1984 report, "Market Analysis for Mauna Lani Resort." This section assesses the market support for these land uses under the existing master plan in order to later compare the impacts of the two master plans.

The market support for the existing master plan is expected to be different from that under the revised master plan because of differences in the number and types of residential units "or products" that could potentially be developed.

MAUNA LANI RESORT

Quality of Resort Projects at Mauna Lani Resort

	Existing master plan Units	Existing master plan Percentage	Revised master plan Units	Revised master plan Percentage
Hotel sites (all high quality)	3,000	100.0%	3,000	100.0%
Multifamily sites:				
High quality	840	27.7	1,230	41.8
Medium quality	578	19.1	865	29.4
Low quality	1,614	53.2	847	28.8
Single-family sites:				
High quality	3,032	100.0	2,942	100.0
Medium quality	42	27.7	45	18.8
Low quality	108	72.3	70	29.2
Total:	150	100.0	240	100.0
High quality	3,882	62.8	4,275	69.2
Medium quality	686	11.1	935	15.1
Low quality	1,614	26.1	972	15.7
	6,182	100.0%	6,182	100.0%

MAUNA LANI RESORT

Average Unit Density at Potential Maximum Development

	Existing master plan		Revised master plan		Average units per acre
	Units	Acre	Units	Acre	
Hotel	3,000	124.2	3,000	144.5	20.8
Multifamily	3,032	263.0	2,942	366.1	8.0
Single-family	150	55.2	240	92.4	2.6
Amenities	-	336.1	-	829.5	-
Total	6,182	778.5	6,182	1,432.5	4.3
Gross unit density: Overall resort					7.9
Hotel and residential areas(1)					14.0

(1) Includes acreage for hotel, multifamily and single-family development only.

Potential maximum development under the existing master plan compares to the revised master plan as follows:

- Fewer single-family units (150 units under the existing master plan compared to 240 under the revised plan).
- More multifamily units (3,032 units under the existing master plan compared to 2,942 under the revised plan).
- Fewer and proportionately less multifamily units located on sites graded high or medium quality (1,418 units, or 47% compared to 2,095 units or 71%).
- Higher unit densities in hotel and residential areas, as shown in the table below:

Estimated Average Unit Densities at Potential Maximum Development

	Units per acre Existing master plan	Revised master plan
Hotel	24.2	20.8
Multifamily	11.5	8.0
Single-family	2.7	2.6
Total residential unit density	14.0	10.3

Thus, due to the different unit mix, lower quality of sites and higher unit densities of the existing master plan, the proposed units could be expected to receive a different level of market support and sales absorption than under the revised plan.

Projected Absorption of Resort Units

The absorption of proposed units under the existing master plan is based on market assumptions provided by Ming Chew & Associates in its market analysis for the revised master plan. The following factors were considered in projecting market support for Resort units under the existing master plan:

- The inventory of high-, medium- and low-quality units available to be developed compared to that under the revised master plan.
- The projected lower sales prices of the units developed under the existing plan corresponding to fewer desirable project sites and higher project densities.
- The relatively faster rate of sales absorption of lower-priced units compared to higher-priced units due to increased affordability and to the price elasticity of demand.

The market absorption of Resort units under the existing master plan is projected to occur at a faster rate than under the revised master plan. As shown in Exhibit I-C, about 890 hotel, multifamily and single-family units are projected to be absorbed by 1990 under the existing plan. This represents about 40 more units than projected by Ming Chew & Associates for the revised master plan. Similarly, by 1995 a cumulative total of about 1,680 units is projected to be demanded under the existing master plan, an increase of 80 units over the 1,600 projected under the revised master plan. By 2000, 2,960 units are projected to be required, an increase of 200 units over the 2,760 units projected under the revised master plan. Thus, due to the relatively faster rate of sales, under the existing master plan Mauna Lani Resort could be expected to reach completion under a shorter time span than under the revised master plan.

By type of unit, hotel room demand is projected to be identical under the two master plans. This is due to the fact that no major changes in product or market orientation are expected to occur since only one of the hotel sites would be changed. In contrast, condominium sales are projected to occur at a relatively faster rate under the existing plan due to the relatively lower sales prices of the units corresponding to the lower-quality sites available and higher unit densities. However, single-family lots and house and lot packages are projected to be sold at a relatively slower rate due to the higher sales prices and better-quality products available under the existing plan.

Projected Commercial Space Demand

Commercial space demand under the existing master plan is projected based on (1) assumptions provided by Ming Chew & Associates and (2) commercial space requirements necessary to serve the hotel, condominium and single-family resident and visitor populations as units are completed. These assumptions are listed as follows:

1. Transient units are defined as those available for use by visitors and are assumed to represent 100% of total hotel units and 50% of the total condominium units completed.
2. Average daily visitors are estimated based on an average of two persons per unit at an average annual occupancy level of 70% for both hotel and condominium units.
3. Average annual expenditures are estimated in 1984 dollars and are defined as expenditures which would occur in freestanding commercial shopping centers (excludes visitor expenditures in commercial areas and restaurants that are located in hotels).
4. Retail space demand is estimated based on total annual expenditures and a desired sales volume of \$350 per square foot per year for commercial space.

Based on these assumptions, the demand for commercial space under the existing master plan is projected to amount to about 28,500 square feet of space by 1990, 54,700 square feet by 1995, 102,900 square feet by 2000 and 198,500 square feet at completion, as shown in Exhibit I-D.

MAUNA LANI RESORT  
Projected Commercial Space Demand  
for the Existing Master Plan

	1990 to Completion			At potential maximum development(1)
	1990	1995	2000	
Projected unit completions:				
Hotel	400	700	1,000	3,000
Multifamily	450	900	1,850	3,032
Total	850	1,600	2,850	6,032
Projected transient units:				
Hotel	400	700	1,000	3,000
Multifamily(2)	225	450	925	1,516
Total	625	1,150	1,925	4,516
Average daily visitors(3):				
Hotel	560	980	1,400	4,200
Multifamily	315	630	1,295	2,122
Total	875	1,610	2,695	6,322
Average annual expenditures (in 1984 dollars):				
Restaurant(4)	\$ 3,449,250	6,898,500	14,180,250	23,240,280
Grocery(5)	1,724,625	3,449,250	7,090,125	11,620,140
Other retail(6)	4,790,625	8,614,750	14,755,125	34,615,140
Total	\$ 9,964,500	19,162,500	36,025,500	69,475,560
Indicated demand for commercial space (square feet), rounded(7)	28,500	54,700	102,900	198,500

- (1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.
- (2) Estimated at 50% of all multifamily units.
- (3) Estimated at 70% occupancy level at an average of two persons per room.
- (4) Estimated at \$30 per day per multifamily visitor.
- (5) Estimated at \$15 per day per multifamily visitor.
- (6) Estimated at \$15 per day per hotel and multifamily visitor.
- (7) Estimated based on a desired annual sales rate of \$350 per square foot.

MAUNA LANI RESORT  
Projected Market Absorption of Resort Units  
at Mauna Lani Resort  
1990 to Potential Maximum

	1990		1995		2000		At potential maximum development(3)	
	Existing master plan(1)	Revised master plan(2)	Existing master plan(1)	Revised master plan(2)	Existing master plan(1)	Revised master plan(2)	Existing master plan	Revised master plan
Hotel rooms	400	400	700	700	1,000	1,000	3,000	3,000
Multifamily units:								
High quality	100	100	200	200	400	450	840	1,230
Medium quality	150	150	300	300	500	550	578	865
Low quality	200	150	400	300	950	600	1,614	847
Total multifamily units	450	400	900	800	1,850	1,600	3,032	2,942
House lots:								
High quality	5	5	10	10	12	12	21	22
Medium quality	15	8	30	15	43	23	54	35
Low quality	-	12	-	25	-	45	-	63
Total house lots	20	25	40	50	55	80	75	120
House and lots:								
High quality	5	5	10	10	12	12	21	23
Medium quality	15	8	30	15	43	23	54	35
Low quality	-	12	-	25	-	45	-	62
Total house and lots	20	25	40	50	55	80	75	120
Total	890	850	1,680	1,600	2,960	2,760	6,182	6,182
Difference		40		80		200		

- (1) Estimated by Peat, Marwick, Mitchell & Co. based on the market absorption of the revised master plan as projected by Ming Chew & Associates, adjusted for site characteristics, average density and estimated sales prices of units under the existing master plan.
- (2) Ming Chew & Associates, "Market Analysis for Mauna Lani Resort," November 1984.
- (3) Based on the quality of sites available to be developed under the two master plans as estimated by Mauna Lani Resort, Inc. Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

## 11 - ECONOMIC IMPACTS

The developments proposed under either the existing or the revised master plans will impact the economy of the region by affecting visitor expenditures, employment, resident and visitor population and income to residents. This chapter summarizes the economic impact of the proposed developments at the Resort, comparing the existing and revised master plans. The Chapter also weighs the public costs and benefits of the two master plans.

REGIONAL ECONOMIC SETTING

Although the entire island of Hawaii is defined for projection purposes as the Resort's impact area, impacts will tend to be concentrated in the North and South Kohala and North Kona districts. These districts are located along the western coast of the island of Hawaii, shown in Exhibit II-A. North and South Kohala and North and South Kona may collectively be referred to as West Hawaii. A generation or two ago, the Kohala area was an agrarian community dominated by sugar plantations and pasture lands, while Kona was an area of coastal fishing villages with a handful of independent farmers on the mountain slopes. The economy of this region has changed considerably since Hawaii's statehood.

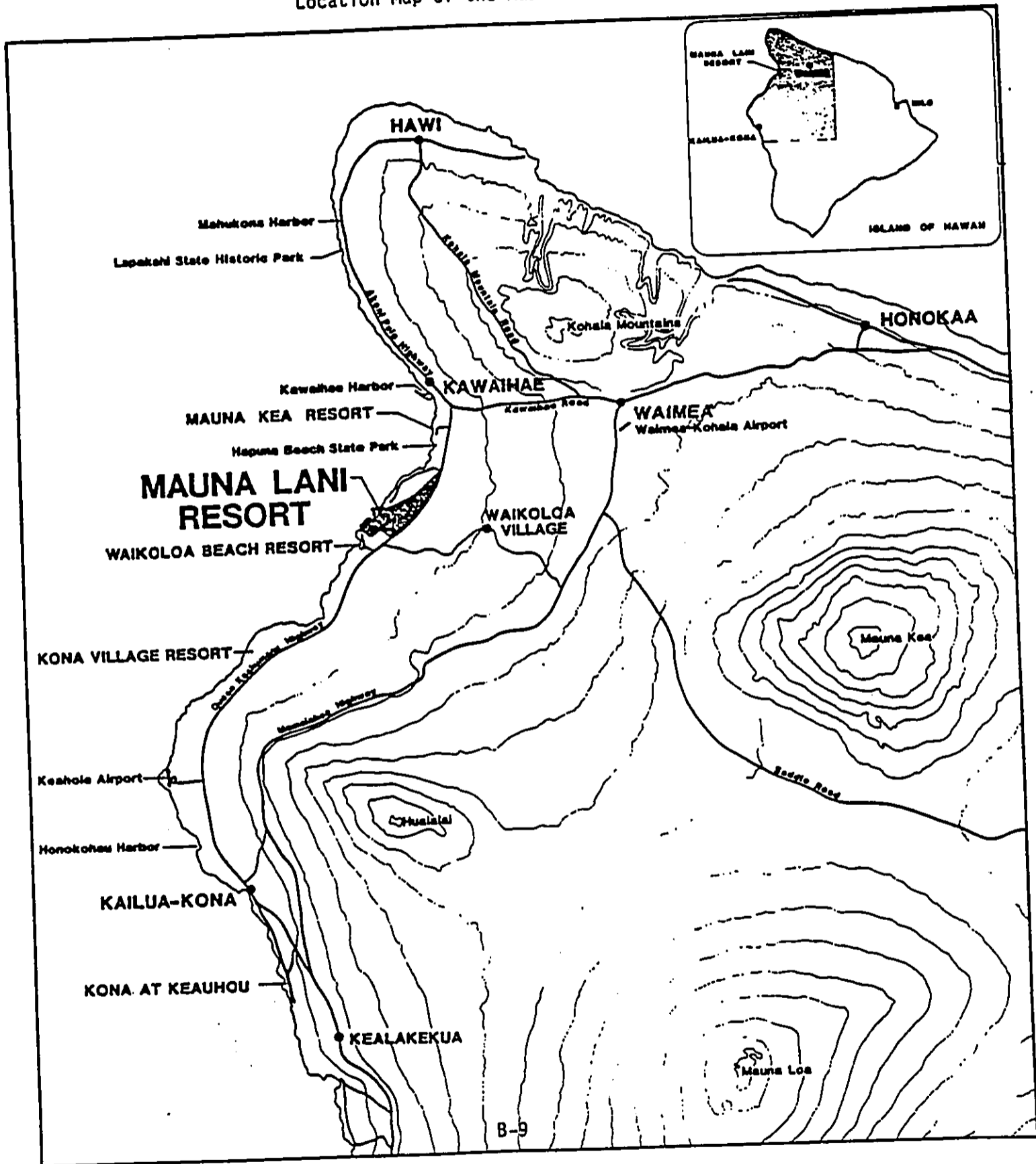
Today the region is primarily supported by its real estate and visitor industries. The Kohala and Kona districts have ideal weather conditions, a black lava coastline with scattered sandy beaches and important historical sites. Among the major visitor attractions of the region are the City of Refuge, Captain Cook monument and Kona billfishing. This section describes this region and its economic setting.

Primary Economic Activities

Under the influence of the Parker Ranch, South Kohala grew first through ranching activities. Recently, the town of Maimea has emerged as North and South Kohala's commercial center. Today Maimea is supported by truck farming, retail establishments and second home industries in addition to ranching. North Kohala was dominated by sugar production and processing until 1975 when the district's last mill closed. Because of the decline of this economic base, North Kohala has experienced significant out-migration resulting in little or no growth in total population over the past two decades. Residents that remain tend to be aging, with the share of residents over age 65 growing from 9.5% in 1970 to 13.5% in 1980. Many are still supported by ranching and small-scale agricultural and retail activities. About a third of North Kohala's population, however, is now employed in service occupations and most of these persons commute to jobs associated with North Kona and South Kohala hotels.

Coffee production and ranching provided Kona's economic base through much of this century, but it was an unsteady economy due to great fluctuations in the international coffee market. In the years following statehood and the introduction of jet service to the islands, the Kona coastline began to host an increasing number of visitors. In the 1960s and 1970s, North Kona fueled a building boom that spread to South Kohala and resulted in hundreds of new hotel and condominium units and residential dwellings.

MAUNA LANI RESORT  
Location Map of the Mauna Lani Resort



**MAUNA LANI RESORT**  
District and County  
Resident Population and Households

1970 and 1980

District	Resident population			Households 1980
	Census tracts	1970	1980	
North Kona	215, 216	4,832	13,748	4,602
South Kona	213, 214	4,004	5,914	1,853
North Kohala	218	3,326	3,249	1,022
South Kohala	217	2,310	4,607	1,483
Total region		14,472	27,518	8,960
County of Hawaii		63,468	92,053	29,237

Source: U. S. Bureau of the Census, Census of Population and Housing, 1980 and 1981.

Currently the South Kohala and North Kona districts are the heart of the island of Hawaii's visitor industry. As of October 1984 the 5,690 hotel and visitor condominium units in these two districts represented 82% of the island's total.

The availability of large parcels of land under single ownership and the establishment of horizontal property regime laws have permitted high-quality master-planned development in several resort areas along this coast. Six major resort areas currently exist in the South Kohala and North Kona districts. In South Kohala these are:

- Mauna Kea Resort
- Mauna Lani Resort
- Waikoloa Village and Waikoloa Beach Resort

And in North Kona:

- Kailua-Kona
- Keauhou Resort
- Kona Village Resort

Population

Nearly one-third of Hawaii Island's population resides in the two Kohala and two Kona districts. The resident population of these four districts was 27,518 in 1980, as shown in Exhibit 11-8. Since 1970 the resident population for the area has increased at a compounded annual rate of growth of 6.6% per year, or nearly twice the 3.8% rate of growth for the county as a whole. The North Kona district (which includes Kailua-Kona, Kona Village and Keauhou Resorts) experienced the most rapid population growth at 11% per year, followed by the South Kohala district (including the Mauna Lani, Mauna Kea and Waikoloa Resorts) at 7.1% per year. There were 8,960 households in the Kohala and Kona districts in 1980 with an average household size of 3.07 persons each.

In 1980 median ages in the region ranged from 28.8 to 32 years of age, with the relatively older populations residing in areas less impacted by the visitor industry and recent population growth, as shown in Exhibit 11-C.

As also shown in the exhibit, the median family incomes of the North and South Kona districts were higher than the county average of \$19,132, while the median incomes of the North and South Kohala districts were notably lower than the county average.

Employment Patterns

Because of the expanding visitor trade, the retail, construction and financial industries of South Kohala and North Kona have also experienced significant growth. Altogether in 1980, hotel-related industries are estimated to have accounted for 49.8% of civilian employment in South Kohala, 45.6% in North Kohala and 64.2% in North Kona as reported by the U. S. Bureau of the Census.

Also in 1980, employment and labor force participation in the Kohala and Kona districts were higher than for the county as a whole. As shown in Exhibit 11-D, labor force participation among persons aged 16 years and older was 68.2% in the region, compared to the countywide rate of 61%. Additionally, the Kohala and Kona districts' unemployment rate of 5.9% was lower than the 7% observed in the county as a whole.



MAUNA LANI RESORT  
Kona and Kohala Districts  
Employment Characteristics

1980

	North Kona (tracts 215, 216)	South Kona (tracts 213, 214)	North Kohala (tract 218)	South Kohala (tract 217)	Total region	
					Number	Percentage
Labor force participation (persons 16 years and over)	<u>72.2%</u>	<u>66.2%</u>	<u>60.2%</u>	<u>64.1%</u>	N/A	<u>68.2%</u>
Civilian unemployment rate	<u>5.3%</u>	<u>5.7%</u>	<u>9.2%</u>	<u>6.3%</u>	N/A	<u>5.9%</u>
Employed persons by occupation:						
Managerial and professional	1,462	362	187	407	2,418	18.9%
Technical, sales and administrative support	1,948	661	169	379	3,157	24.7
Service	1,486	460	421	355	2,722	21.3
Farming, forestry and fishing	491	520	175	277	1,463	11.5
Precision production, craft and repair	839	394	119	327	1,679	13.1
Operators, fabricators and laborers	<u>687</u>	<u>265</u>	<u>159</u>	<u>233</u>	<u>1,344</u>	<u>10.5</u>
Total	<u>6,913</u>	<u>2,662</u>	<u>1,230</u>	<u>1,978</u>	<u>12,783</u>	<u>100.0%</u>

N/A Not applicable.

Source: U. S. Bureau of the Census, 1980.

Exhibit II-D

Exhibit II-C

MAUNA LANI RESORT  
Median Age and Family Income  
in the Kona and Kohala Districts

District	Median age (years)	Median family income (dollars)(1)
North Kona	28.8	\$ 21,134
South Kona	30.1	20,068
North Kohala	32.0	15,719
South Kohala	29.5	17,923
County of Hawaii	29.4	19,132
State of Hawaii	28.3	22,750

(1) Income of households in 1979.

Source: State of Hawaii 1983 Data Book.

MAUNA LANI RESORT  
Cumulative Residential and  
Visitor Unit Facility Development  
at Mauna Lani Resort

1990 to Potential Maximum

Facility type	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
Hotel units	400	400	700	700	1,000	1,000	3,000	3,000
Residential units:								
Multifamily	450	400	900	800	1,850	1,600	3,032	2,942
Single-family(2)	21	26	47	59	74	104	150	240
Total residential units	471	426	947	859	1,924	1,704	3,182	3,182
Commercial space (square feet)(3)	28,500	26,300	54,700	50,300	102,900	92,000	198,500	198,500

- (1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.
- (2) Represents homes built on sold house lots as well as house and lot packages sold. Construction on sold house lots is projected at 5% within 4 years following lot sale, 30% between 5 and 9 years of lot sale, 60% between 10 and 14 years, and 100% at completion.
- (3) Net leasable square feet. From Exhibit I-D and Ming Chew & Associates, "Market Analysis for Mauna Lani Resort," November 1984.

Exhibit II-E

II-3

The occupational distributions shown in Exhibit II-D also reflect the emerging visitor industry base of West Hawaii's economy. Employment in the Kohala and Kona districts tends to be in technical, sales, administrative support and service occupations. Together, these sectors account for about 46% of the districts' employment. Managerial and professional occupations account for about 18.9% of the districts' employment, while agricultural, production- and operations-related employment each represent between 10.5% and 13.1%.

SUMMARY OF FACILITY DEVELOPMENTS

Exhibit II-E summarizes the two facility development scenarios described in Chapter I. The potential level of hotel and residential unit development is identical under the two master plans, each setting a maximum of 3,000 hotel units and 3,182 residential units. However, under the revised plan, the increased land area would permit greater single-family residential development and relatively less multifamily development. In addition, sales absorption and thus the development of multifamily units are also projected to proceed more gradually with the revisions proposed. This more gradual development would facilitate the assimilation of economic and social changes in the existing community.

Although "potential maximum" figures are shown in this and subsequent exhibits, it is unlikely that the Resort will ever construct all the hotel and residential units for which it holds approvals. Moreover, the timing of development beyond the year 2000 cannot be projected with any acceptable degree of certainty. Hence, discussions in this and the next chapter focus on effects projected up to the year 2000.

VISITOR EXPENDITURES

Expenditures in the county are expected to increase significantly due to outlays by visitors for food and drink, accommodations, gift items and other goods and services. The Hawaii Visitors Bureau (HVB) data on visitors to Hawaii indicate that the average per capita daily expenditure among non-Japanese visitors in 1984 was about \$90, whereas that for Japanese visitors was about \$234. Although visitors to Mauna Lani Resort are predominantly non-Japanese, they spend substantially more than the average westbound visitor. Based on hotel and condominium room rates at the Resort, Ming Chew & Associates' 1984 "Market Analysis for the Mauna Lani Resort," and consultation with Resort, hotel and condominium administrators at Mauna Lani Resort, the Resort's average hotel visitor is estimated to spend \$180 per day and the average visitor to a condominium unit in a visitor rental pool is estimated to spend \$115 per day. These figures were used to project direct visitor expenditures on the island in 1983 dollars.

Direct Visitor Expenditures

Under the revised plan direct expenditures are projected to amount to about \$45 million per year by 1990, and more than \$125 million per year by 2000, as shown in Exhibit II-F. Because of the fewer visitors that would be attracted under the revised plan as compared to the existing plan, direct expenditures may be expected to be about \$1 million less per year by 1990 and \$5 million less per year by 2000. However, since the relatively higher-density residential facilities to be developed under the existing plan could not be of equal quality to those envisioned under the revised plan, the differences in visitor expenditures between the two plans may be somewhat exaggerated.

Based on assessment of visitor-related developments expected to occur elsewhere along the Kohala coast, it is estimated that additional direct visitor expenditures generated at new Mauna Lani Resort facilities will constitute approximately 22% and 29% of additional direct expenditures by the years 1990 and 2000, respectively.

Indirect and Induced Visitor Expenditures

Indirect and induced expenditures are those that are generated when establishments that cater directly to visitors purchase goods or services in order to produce visitor products or when employees or proprietors of such establishments spend their earnings. In the most recently published update of the state's Input/Output model, the State of Hawaii, Department of Planning and Economic Development (DPEd) estimates that such responding generates about \$1.04 in additional sales throughout the state for every \$1.00 directly spent by a visitor.

Based on this multiplier, Exhibit II-F also shows the indirect, induced and total expenditures projected to be generated in Hawaii by visitors to planned facilities at the Resort. Under the revised plan, new facilities are projected to generate total additional annual visitor expenditures of approximately \$93 million by 1990 and \$256 million by 2000. These expenditures are projected to be slightly lower than those generated under the existing master plan due to the more gradual rate of population growth.

EMPLOYMENT IMPACT

Planned developments at Mauna Lani Resort will generate short-term employment during the construction of new facilities and long-term employment in the operation and support of those facilities. Employment effects may also be classified as being direct, indirect or induced. Direct effects are those directly supported by visitor expenditures, such as the employment at hotels and other establishments that serve visitors. Direct employment would generally be located in the County of Hawaii both at and outside of the Resort.

Indirect effects occur when directly affected establishments purchase goods or services from other businesses in order to fill new visitor demand. Induced effects are those supported throughout the state's economy when employees or proprietors directly or indirectly dependent on visitor expenditures spend their earnings.

Because of its more gradual facility development, the employment impacts of the revised plan are expected to be equal to or less than those of the existing plan throughout the projection period.

Direct Construction Employment

Construction employment projections are presented in Exhibit II-G as average annual person-years. Construction employment projections are not made beyond the year 2000 because the timing of construction activity after the year 2000 is very indefinite. It might reasonably be assumed that construction activity after 2000 would occur at a comparable or slower pace to that projected up until 2000.

MAUNA LANI RESORT

Annual Visitor Expenditures in State  
1990 to Potential Maximum  
(In 1983 dollars; millions)

Type of expenditure	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
Direct	\$ 46.4	45.4	83.4	81.4	130.3	125.4	341.0	339.2
Indirect and induced	48.2	47.2	86.7	84.7	135.5	130.4	354.6	352.8
Total expenditures(2)	\$ 94.6	92.6	170.1	166.1	265.8	255.8	695.6	692.0

(1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

(2) Projected at \$2.04 per \$1.00 direct expenditure. State of Hawaii, Department of Planning and Economic Development, The Economic Impacts of Tourism in Hawaii 1970-1980, 1983.

In the 1986 to 1990 period direct demand for construction employment is projected to total about 220 person-years per year under either plan. Although the revised plan would build fewer multifamily units, labor needs for construction of the additional golf course make its employment demand in the first period comparable to that of the existing plan. In ensuing years, however, the revised plan suggests slightly lesser demands for construction labor than does the existing plan. Construction activity under the revised plan is projected to annually require approximately 180 person-years in the early 1990s and about 300 person-years per year in the late 1990s. Under the existing plan, direct demand for construction labor is projected to total more than 330 person-years per year in the late 1990s.

Based on assessment of hotel and resort residential developments expected to occur elsewhere along the Kohala coast, it is estimated that under the revised plan, Mauna Lani Resort's direct construction labor needs would constitute approximately 27% of direct labor needs of all hotel and resort residential construction activity on the Kohala coast by 1990 and approximately 50% by the year 2000.

The types of construction jobs that will be generated by the Resort is projected based on the State of Hawaii, Department of Labor and Industrial Relations (DLIR) analyses of occupational trends within industrial classifications. Exhibit II-H shows that about 70% of construction employment may be expected to occur in skilled craft and manual labor positions. In addition, about 5% of positions may be expected to be professional or technical and about 9% managerial. Because of their higher or specialized skill requirements, the latter two categories are most likely to include greater shares of off-island workers than are the other occupational categories shown in the exhibit.

Total Construction Employment

The direct employment of construction workers at Resort projects will stimulate additional purchases of goods and services on the island of Hawaii and elsewhere in the state. In its most recent (1982) revisions to a model of the construction industry in Hawaii, DPED calculated that 2.4 full-time jobs are created in the state for every full-time job in the building construction industry. This multiplier is used to project indirect and induced labor demand from the direct demands for construction labor that were shown in Exhibit II-G.

A 1975 study of Kauai's economy suggested a regional capture rate of total indirect and induced employment amounting to about 20% of direct employment. Although the island of Hawaii's future economy may be expected to be more developed than was Kauai's economy in 1975, this figure is assumed to be appropriate due to the number of construction workers who are expected to come from off-island. (The actual share of construction employment going to off-island workers will depend on the timing of other major projects planned for the County. See discussion under construction employee housing in Chapter III.)

Exhibit II-I applies these findings to project the total employment effects of construction to the year 2000. Facility construction under the revised plan is projected to provide a total of about 530 person-years per year by 1990 and about 720 by the year 2000. In the 1986 to 1990 period about 220 person-years would be directly required by construction contractors, while another 40 would be required in positions indirectly generated elsewhere on the island. In this period about 260 person-years of work per year could be expected to be

MAUNA LANI RESORT

Direct Employment for Facility Construction

1986 to 2000

(Average annual person-years)

Facility type	1986 to 1990		1991 to 1995		1996 to 2000	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
Hotel units(1)	80	80	60	60	60	60
Multifamily units(2)	122	108	122	108	257	216
Single-family units(3)	8	10	10	13	10	18
Commercial(4)	4	4	4	3	7	6
Civil(5)	6	18	-	-	-	-
<b>Total construction employment</b>	<b>220</b>	<b>220</b>	<b>196</b>	<b>184</b>	<b>334</b>	<b>300</b>

- (1) Demand calculated at 0.5 full-time equivalent jobs per year per unit and average two-year construction period per hotel.
- (2) Demand calculated at 0.9 full-time equivalent jobs per year per unit and average 18-month construction period per project.
- (3) Demand calculated at 2.0 full-time equivalent jobs per year per unit and average one-year construction period per unit.
- (4) Demand calculated at 0.7 person-years per 1,000 square feet leasable space years. Revised plan (including additional golf course) estimated to require about 30 full-time efficient jobs per year over three years. Figures converted to rates over a five-year period. Estimates provided by Mauna Lani Resort, Inc.
- (5) For construction of infrastructural and recreational improvements, including roads, sewage treatment plant, public beach parking areas, etc. Existing plan estimated to require approximately 15 full-time equivalent jobs per year over two years.

Exhibit II-G

MAUNA LANI RESORT  
Direct Construction Employment by Class of Worker  
1986 to 2000  
(Average annual person-years)

Occupational category	1986 to 1990		1991 to 1995		1996 to 2000		Percentage distribution(1)
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	
Professional, technical and kindred	10	10	9	9	16	14	5%
Managerial	20	20	18	17	30	27	9
Crafts and kindred	116	116	103	97	177	159	53
Operative	15	15	13	12	22	20	7
Labor	38	38	35	33	58	52	17
Sales, clerical and service	21	21	18	16	31	28	9
<b>Total construction employment</b>	<b>220</b>	<b>220</b>	<b>196</b>	<b>184</b>	<b>334</b>	<b>300</b>	<b>100%</b>

(1) Based on projected 1990 distribution for the statewide construction industry, State of Hawaii, Department of Labor and Industrial Relations, Employment Outlook for Industries and Occupations 1980-1990, 1984.

Exhibit II-H

MAUNA LANI RESORT  
Direct, Indirect and Induced Construction Employment  
1986 to 2000  
(Average annual person-years)

Type of employment	1986 to 1990		1991 to 1995		1996 to 2000(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
Direct(2)	220	220	196	184	334	300
Indirect and induced:						
On island(3)	44	44	39	37	67	60
Elsewhere in state	264	264	235	221	401	360
<b>Total employment(4)</b>	<b>528</b>	<b>528</b>	<b>470</b>	<b>442</b>	<b>802</b>	<b>720</b>

- (1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.
- (2) From Exhibit II-G.
- (3) Direct employment multiplied by 0.2. Anderson, et al., Kauai Socioeconomic Profile, 1975.
- (4) Direct employment multiplied by 2.4. State of Hawaii, Department of Planning and Economic Development Hawaii Construction Model: Further Developments, 1982.

Exhibit II-I

MAUNA LANI RESORT

Projected Direct Employment for Resort Operations  
1990 to Potential Maximum

Facility type	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
Hotel(2)	480	480	840	840	1,200	1,200	3,600	3,600
Resort residential(3)	94	85	189	171	385	341	636	636
Retail(4)	143	132	274	252	516	460	993	993
Resort administration(5)	109	125	121	137	136	152	153	169
<b>Total operational employment</b>	<b>826</b>	<b>822</b>	<b>1,424</b>	<b>1,400</b>	<b>2,235</b>	<b>2,153</b>	<b>5,382</b>	<b>5,398</b>

- (1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.
- (2) Projected at 1.2 full-time equivalent jobs per hotel unit.
- (3) Projected at 0.2 full-time equivalent jobs per multifamily or single-family unit.
- (4) Projected at 1.0 jobs per 200 net leasable square feet of commercial space.
- (5) Estimated to follow growth of facility development. Category includes miscellaneous Resort employment such as Resort administration, property development, accounting, maintenance of additional golf course (revised plan only) and infrastructural facilities.

Exhibit II-J

11-6

Indirectly generated on other islands of the state. In the 1996 to 2000 period, demand under the revised plan is projected to amount to 300 direct person-years and 60 indirect and induced person-years in the county and about 360 person-years elsewhere in the state. This implies a total employment effect of approximately 720 person-years per year.

Because of its greater direct employment demands after 1990, the existing plan would generate proportionately more indirect and induced employment. As shown in the exhibit, by the year 2000 total employment demands attributable to facility construction under the existing plan is projected to number about 800 person-years per year, or about 80 more per year than under the revised plan.

Direct Operational Employment

The operation and management of the Resort's additional hotels, multifamily condominiums, single-family home developments and retail establishments will generate substantial new opportunities for long-term employment in the Kohala and Kona areas. Functions of the Resort itself (such as administration, property development, accounting and maintenance of recreational facilities) will also increase. Because of the full-service nature of the hotels envisioned, most operational employment will be in hotels.

The operational employment figures shown are stated in terms of full-time equivalent positions and not in terms of employees. A survey of luxury hotels indicated that due to part-time, temporary and casual employment, there are between 11 and 12 employees on payroll for every 10 "full-time equivalent" hotel positions. On the other hand, other sources report that because of multiple job holding in the visitor industry, every 10 jobs may be assumed to be filled by approximately 9 employees. Together these findings suggest that the number of persons required to fill future employment demands will be close to the number of full-time equivalent jobs projected.

Exhibit II-J shows that under the revised master plan, operations of new establishments proposed at the Resort would generate about 820 full-time equivalent positions by 1990, 1,400 by 1995 and 2,150 by 2000. If all units for which the Resort holds approvals were eventually built, the Resort would then employ nearly 5,400 persons, including employment at the already existing facilities.

Employment demand for the forecast years under the existing plan would be slightly greater than under the revised plan due to the former's relatively greater development of multifamily units and commercial space. In the first years of development, this difference would be negligible. However, by the year 2000, facilities operations under the revised plan would demand about 80 fewer full-time equivalent positions than under the existing plan.

Based on assessment of hotel and resort residential developments expected to occur elsewhere along the Kohala coast, it is estimated that under the revised plan, Mauna Lani Resort's direct demands for operational labor would represent approximately 20% of direct demand in hotel and resort employment on the South Kohala coast by 1990 and approximately 29% by the year 2000.

MAUNA LANI RESORT  
Direct Operational Employment by Job Classification  
1990 to Potential Maximum

Occupational Category	1990		1995		2000		At potential maximum development(1)		Percent distributions		
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Hotel(2)	Resort(2)	Commercial(3)
Management and supervisory	91	90	156	154	244	236	591	593	11%	9%	12%
Office and front desk	124	123	213	210	334	322	802	805	16	22	8
Housekeeping	235	236	402	398	621	603	1,517	1,521	32	51	-
Food and beverage	246	246	420	415	644	625	1,607	1,611	31	-	45
Building and grounds maintenance	55	55	94	93	144	140	353	354	7	12	-
Other services	75	72	139	130	248	227	512	514	3	6	35
<b>Total operational employment</b>	<b>826</b>	<b>822</b>	<b>1,424</b>	<b>1,400</b>	<b>2,235</b>	<b>2,153</b>	<b>5,382</b>	<b>5,398</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

(1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

(2) Based on a sample of 4,098 hotel industry workers. State of Hawaii Department of Health, Health Surveillance Program, 1970 to 1980.

(3) Based on market absorption projections, 50% of commercial space projected to be restaurant, 50% other retail. Retail distribution based on 1990 statewide projection for wholesale and retail industries combined. State of Hawaii, Department of Labor and Industrial Relations, Employment Outlook for Industries and Occupations, 1980-1990, 1984.

11-7

Occupational Distribution of Direct Operational Employees

Exhibit II-K distributes the projected operational employment by occupational category. It is expected that between 32% and 51% of total jobs will be created in food and beverage service positions due to the high concentration of such work in luxury hotel operations and to the mix of commercial establishments planned by the Resort. The next largest occupational category is expected to be housekeeping, a very large component of hotel and resort residential employment throughout the state. Between 9% and 12% of the Resort's total operational employment may be expected to occur in managerial or supervisory positions.

Sources of Direct Operational Employees

The recent experience of the Mauna Lani Bay Hotel and the Sheraton Royal Waikoloa Hotel has been that few employees hired were from off-island. Because of corporate policies, however, top managerial positions of full-service hotels are typically filled by outsiders. However, because of the level of resort facility development planned throughout the South Kohala area over the next few decades, it is anticipated that regional employment opportunities will grow more rapidly than will natural population increase. Hence recent in-migrants from outside of the county are projected to account for 10% of the Resort's new employees in 1990 and up to 16% by the year 2000.

From the island's existing labor pool, new employees may be (1) persons who were formerly unemployed or underemployed, (2) labor market entrants such as recent high school graduates or other previously unemployed persons and (3) persons who formerly worked somewhere else on the island.

Analyses and projection of unemployed and underemployment trends, county high school graduates, and labor force participation rates within the county suggest that the first two "available" sources of labor noted could account for about 45% of employees drawn from the island's labor pool. This available labor would include persons who move to the county for reasons other than the possibility of employment in industry segments supported by Mauna Lani Resort.

The remainder of persons hired from the local labor pool would come as turnover from other county jobs. With more of the county's employment concentrated in South Kohala, it is expected that in the future the majority of such turnover would come from jobs at other South Kohala establishments. Other employees attracted through job turnover are expected to most frequently have been employed in the North Kona area.

Exhibit II-L applies the above findings to project operational employment according to four sources of labor. The differences between the two master plans are not significant. In all periods, the largest of the labor supply components are expected to be labor market entrants or formerly unemployed or underemployed persons. This would be made possible by resident population growth through natural increase and in-migration not motivated by employment opportunities generated by the Resort. New hires who are in-migrants to the county are projected to increase from about 80 persons per year in 1990 to more than 300 per year in 2000.

MAUNA LANI RESORT  
Projected Mix of Operational Employees  
1990 to Potential Maximum

Labor supply component	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
On-island sources:								
Available labor(2)	334	333	557	548	845	814	1,937	1,943
Kohala turnover(3)	223	222	372	365	563	543	1,292	1,295
Other turnover(4)	186	185	310	305	469	452	1,076	1,080
Off-island sources(5)	83	82	185	182	358	344	1,077	1,080
<b>Total operational employment</b>	<b>826</b>	<b>822</b>	<b>1,424</b>	<b>1,400</b>	<b>2,235</b>	<b>2,153</b>	<b>5,382</b>	<b>5,398</b>

- (1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.
- (2) Unemployed and underemployed persons on-island and labor market entrants. Projected to account for 45% of on-island labor component.
- (3) Persons attracted from other work in North or South Kohala. Projected to account for 30% of on-island labor component.
- (4) Persons attracted from other work in North Kona. Projected to account for 25% of on-island labor component.
- (5) Based on off-island component of current Mauna Lani Resort employees, and on projections of employment at other area resorts, in-migrant employees projected to account for 10% of employment by 1990, 13% by 1995, 16% by 2000 and 20% by project completion.

Exhibit III-1

II-8

Total Operational Employment

Exhibit II-N summarizes the direct, indirect and induced demands for labor required by operations of the planned new facilities. Following findings of DPED's most recent study of the economic impacts of tourism in the state, a total operational employment multiplier of 1.93 is applied to the direct demand projections for hotel, resort residential and resort administration functions, and a multiplier of 1.66 is applied to retail functions. Projection of the island's share of indirect and induced employment is based on findings of the 1975 Anderson, et al., study cited previously, adjusted to reflect the island of Hawaii's greater ability to provide support goods and services to the visitor industry.

Operational employment will be slightly lower under the revised as compared to the existing master plan. By 1990 new facilities under the revised plan are projected to directly or indirectly employ about 1,550 persons in the state. Of these, approximately 1,070 persons (822 and 247) could be expected to be employed in the county. By the year 2000 planned developments at the Resort may be expected to have added more than 4,000 full-time equivalent positions to state employment, of which nearly 3,000 would be on the island of Hawaii.

In addition, estimates of the full-time equivalent workers currently employed at the Mauna Lani Bay Hotel and at the Terrace condominiums imply that the Resort would be providing a statewide total of about 2,400 full-time equivalent jobs by 1990 and about 5,000 full-time equivalent jobs by 2000.

If all units for which the Resort has county approvals were eventually completed, the Resort is projected to directly and indirectly provide employment for about 6,600 persons in the county and a total of more than 10,000 persons throughout the state.

Summary of Construction and Operational Employment Demand

Exhibit II-N summarizes the projected demand for construction and operational employment by time period and location of employment. At present there are estimated to be 440 full-time equivalent positions at the Resort, accounting for approximately 570 regional and 840 total jobs in the state (not included in the exhibit's figures).

Planned developments are projected to increase regional employment by approximately 1,300 positions in 1990 and more than 3,000 positions by the year 2000. Total regional employment demands would require about 150 fewer full-time equivalent positions under the revised as compared to the existing plan. Considering the total projected construction- and resort operational-related jobs, it is estimated that the Resort will be providing a total of nearly 5,000 full-time equivalent jobs in the state by the year 2000.

Figures shown for the Resort's "potential maximum" employment are for operational employment only since by the time of full development, all new construction activity is presumed to be complete.



MAUNA LANI RESORT  
Direct, Indirect and Induced Operational Employment  
1990 to Potential Maximum

Type of employment	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
Direct(2)	826	822	1,424	1,400	2,235	2,153	5,382	5,398
Indirect and induced:								
On-island(3)	248	247	427	420	671	646	1,615	1,619
Elsewhere in state	482	482	823	814	1,269	1,232	3,122	3,133
<b>Total operational employment(4)</b>	<b>1,556</b>	<b>1,551</b>	<b>2,674</b>	<b>2,634</b>	<b>4,175</b>	<b>4,031</b>	<b>10,119</b>	<b>10,150</b>

- (1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.
- (2) From Exhibit II-J.
- (3) Direct employment multiplied by 0.3. See discussion in text.
- (4) Direct employment except retail multiplied by 1.93, retail multiplied by 1.66. State of Hawaii, Department of Planning and Economic Development, *The Economic Impact of Tourism in Hawaii: 1970-1980, 1983*. DPED multipliers for retail uses were adjusted to reflect the mix of eating and drinking establishments and other retail uses planned for Mauna Lani's commercial areas.

Exhibit II-H

MAUNA LANI RESORT  
Total Direct, Indirect and Induced Employment  
From Construction and Resort Operations  
1990 to Potential Maximum

Location and type of employment	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
On-island:								
Direct	1,046	1,042	1,619	1,585	2,569	2,453	5,382	5,398
Indirect and induced	292	291	466	457	737	706	1,615	1,619
<b>Total on-island</b>	<b>1,338</b>	<b>1,333</b>	<b>2,085</b>	<b>2,042</b>	<b>3,306</b>	<b>3,159</b>	<b>6,997</b>	<b>7,017</b>
Elsewhere in state	748	746	1,058	1,035	1,670	1,592	3,123	3,133
<b>Total employment in state</b>	<b>2,086</b>	<b>2,079</b>	<b>3,143</b>	<b>3,077</b>	<b>4,976</b>	<b>4,751</b>	<b>10,120</b>	<b>10,150</b>

- (1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

Exhibit II-H

PROJECTED POPULATION IMPACT

New facilities will increase population at the Resort and elsewhere on the island. On any given day there will be visitors staying at the Resort's hotels and in residential units that have been put in visitor rental pools. There will also be persons residing during most or parts of each year at multi- or single-family properties at the Resort. In addition, operational employees attracted from off-island will add to the population of the region. This section discusses the on-resort and employee population impacts of the Resort's further development.

On-Resort Impact Assumptions

In order to project population impact at the Resort, assumptions must be made regarding the usage mix of residential units, and average party sizes and percentage occupancies of hotel and residential units at the Resort. In making such assumptions for Mauna Lani Resort, usage patterns and party size characteristics were considered for the Mauna Lani Terrace condominiums, Mauna Kea Resort's Villas condominiums and Fairways South single-family home subdivision, Kapalua Resort's Ironwoods condominiums and Keahou-Kona Resort's Kanaloa condominiums. We also examined findings of the Hawaii Visitors Bureau's (HVB) 1980 study of the resort condominium market and evaluated impact assumptions that have been made in studies for other resorts in the islands. These considerations lead to the assumptions presented in the following table:

Assumptions for On-Resort Population Projection

Facility and occupation types	Percentage distribution(1)	Occupancy percentage	Average party size
Hotel units	100%	75%	1.9
Multifamily units:			
Full-time residents	5	95	2.3
Part-time residents	60	30	2.6
Visitors	35	50	2.7
	100%		
Single-family units:			
Full-time residents	25	95	2.6
Part-time residents	75	30	4.0
Visitors	-	-	-
	100%		

(1) Distribution of uses within facility type.

Mauna Lani's hotels are likely to experience low occupancies initially, but after several years of operations, should be able to achieve occupancies approaching annual averages of 80%. For purposes of projection, 75% occupancy is assumed for all hotels. Hotel guests are expected to be primarily couples, and the assumed average party size of 1.9 persons per occupied room is consistent with the findings of a 1983 HVB study of westbound visitors to the county.

Because of characteristics of the luxury resort condominium market, the majority of the multifamily units at the Resort may be expected to be vacation homes used for an average of three to four months per year. About a third of multifamily units may be expected to be put in visitor rental pools, or otherwise used for short-term visitor rentals. Like hotel units, condominium units rented to visitors experience low occupancy rates initially, and only gradually establish a following. However, resort condominium units in rental pools seldom achieve occupancy rates comparable to those of hotels. This study assumes an annual average of 50% occupancy at condominium units in visitor rental pools in order to reflect the various phases of market identity that individual projects will have established during the study period. At present no condominium units at Mauna Kea, Mauna Lani or Kapalua Resorts are used as primary residences. However, it is expected that some full-time residential use of luxury condominiums will emerge with the maturation of South Kohala as a destination area.

It is assumed that the majority of single-family homes built or purchased at the Resort will be vacation homes used for an average of three to four months per year. About a quarter are expected to be occupied full time. Because they are generally expensive and owner-designed, luxurious single-family homes in resort areas are seldom used for short-term visitor rentals. At Mauna Kea Resort, a few homes in the Fairways South subdivision are now being made available for visitor use, but such units are still a minority. For purposes of projection, we assume no short-term visitor use of single-family units at Mauna Lani Resort during the study period.

Projection of On-Resort Population Impact

Exhibit 11-0 summarizes the projected effects of the two development scenarios on population at Mauna Lani Resort. By 1990 additional facility development is projected to increase the Resort's population by about 1,000 persons under either scenario. As shown in the exhibit, the majority of the on-site population generated by the Resort is expected to consist of visitors staying in hotels. By implementing the revised rather than the existing plan, there would be an average daily population of about 45 fewer persons at the Resort in 1990, about 90 fewer persons in 1995 and about 200 fewer persons in the year 2000, as shown in Exhibit 11-P. This difference in resort population under the two plans is mainly due to the slower rate of condominium sales and development under the revised master plan.

If the maximum number of approved units were eventually developed, greater density population is projected to result under the revised plan than the existing plan, due to the former plan's greater share of single-family homes. However, it is unlikely that the maximum number of approved units would ever be developed under any development scenario.

Resident Population Impact at the Resort

The number of those who are expected to reside on a full- or part-time basis at Mauna Lani Resort in condominium and single-family homes are summarized in Exhibit 11-P. Under the revised master plan, the resident population of the Resort is projected to increase from about 270 persons in 1990 to nearly 1,100 persons in the year 2000. Growth would be relatively slower than under the existing master plan.

MAUNA LANI RESORT  
Projected Resort Population  
1990 to Potential Maximum

Facility type and use	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
Hotel units (all visitors)	570	570	998	998	1,425	1,425	4,275	4,275
Multifamily units:								
Full-time residents	49	44	98	87	202	175	331	321
Part-time residents	211	187	421	374	866	749	1,419	1,377
Visitors	213	189	425	378	874	756	1,433	1,390
Total multifamily units	473	420	944	839	1,942	1,680	3,183	3,088
Single-family units:								
Full-time residents	13	16	29	36	46	64	93	148
Part-time residents	19	24	42	53	66	94	135	216
Visitors	-	-	-	-	-	-	-	-
Total single-family units	32	40	71	89	112	158	228	364
<b>Total</b>	<b>1,075</b>	<b>1,030</b>	<b>2,013</b>	<b>1,926</b>	<b>3,479</b>	<b>3,263</b>	<b>7,686</b>	<b>7,727</b>

(1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

Exhibit 11-0

MAUNA LANI RESORT  
Summary of On-Resort Population Impact  
1990 to Potential Maximum

	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
Number (cumulative):								
Resident	292	271	590	550	1,180	1,082	1,978	2,062
Visitor	783	759	1,423	1,376	2,299	2,181	5,708	5,665
De facto population	1,075	1,030	2,013	1,926	3,479	3,263	7,686	7,727
Difference		(45)		(87)		(216)		41
Compound annual rate of growth since previous period:								
Resident	N/A	N/A	15.1%	15.2%	14.8%	14.4%	N/A	N/A
Visitor	N/A	N/A	12.7	12.7	10.2	9.7	N/A	N/A
De facto population	N/A	N/A	13.4%	13.4%	11.7%	11.2%	N/A	N/A

N/A Not available.

(1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

Exhibit 11-P

MAUNA LANI RESORT  
 Projected Population Impact of  
 Direct Operational Employees and Dependents  
 1990 to Potential Maximum

In-migrant employee type	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
Managerial and supervisory: Employees(2)	30	30	52	51	81	78	195	196
Other household members(3)	60	60	103	101	161	156	390	391
	90	90	155	152	242	234	585	587
Other: Employees(4)	53	52	134	131	277	267	881	884
Other household members(5)	53	52	134	131	277	267	881	884
	106	104	268	262	554	534	1,762	1,768
<b>Total new residents</b>	<b>196</b>	<b>194</b>	<b>423</b>	<b>414</b>	<b>796</b>	<b>768</b>	<b>2,347</b>	<b>2,355</b>

- (1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.
- (2) One-third of managerial and supervisory employees shown on Exhibit II-K projected to come from off-island.
- (3) Projected at two additional persons per household.
- (4) In-migrants other than managerial or supervisory employees (from Exhibits II-K and II-L).
- (5) Projected at one additional person per household.

Exhibit II-Q

II-11

Visitor Population  
Impact at the Resort

The visitor population at the Resort is projected to outnumber Resort residents by a ratio more than two to one. As also shown in Exhibit II-P, under the revised master plan, the visitor population is projected to increase from about 760 persons in 1990 to nearly 2,200 persons by the year 2000. This visitor population growth is relatively slower than that projected under the existing master plan, under which visitor population is projected to increase from about 780 persons in 1990 to about 2,300 persons by 2000.

Resort Population Growth Rates

The revised plan would not only permit lower overall population impact, but would also slow population growth in the 1995 to 2000 period. During this five-year period, resident population would grow about 14.4% per annum under the revised plan compared to 14.8% per annum under the existing plan. Visitor population would also increase more slowly under the revised plan as compared to the existing plan, or at about 9.7% versus 10.2% per annum, respectively.

Visitors and residents at the Mauna Lani Bay Hotel and the Mauna Lani Terrace condominiums would add about 500 persons and 84 persons, respectively, to the de facto population totals in all time periods and under both plans.

Employee Population Impact

Further development of the Resort will also contribute to the growth of resident population on the island of Hawaii as persons move to the island in order to take employment at the Resort. Some of these in-migrant operational employees may also be expected to bring dependents, particularly if they are household heads. In order to project the total population impact of operational employees drawn from off-island, the following assumptions were made:

- One-third of the projected managerial and supervisory positions will be filled by in-migrants.
- Managerial and supervisory in-migrants will be household heads and will each be accompanied by an average of two dependents.
- Other in-migrant operational employees will be accompanied by an average of one dependent per employee.

Based on the above assumptions, it is projected that direct operational employment generated at the Resort would have stimulated the in-migration to the County of Hawaii of approximately 200 persons by 1990 and nearly 800 persons by the year 2000. Employee population impact would be slightly less under the revised plan as compared to the existing plan for facility development, as shown in Exhibit II-Q.

Total Population Impact

In summary, additional development at the Resort is projected to generate population growth (1) at the Resort, as residents and visitors to its new facilities, and (2) in the community, as in-migrant direct operational employees at the new facilities. These two components of the Resort's population impact are summarized as shown in Exhibit II-R.

Based on an assessment of hotel and resort residential projects expected to be developed elsewhere along the Kohala Coast, it is estimated that under the revised plan Mauna Lani Resort's total on- and off-resort direct population impact will represent about 24% of the regional population impact of such development in 1990 and about 33% by the year 2000.

Geographic Distribution of Additional Population

Exhibit II-S shows how the Resort's total population impact might be distributed by area of residence after some period of adjustment for household moves and new household formation. The projection is based on the observed 1988 residential distribution of Mauna Lani Resort employees and on the county population forecasts published in the Kona Regional Plan in 1982. In the latter publication, the County Department of Planning projected that West Hawaii's resident population would see a slight shift through the end of the century, with relatively more persons living in North and South Kohala.

The majority of the Resort's direct population impact may be expected to reside or be housed in North or South Kohala because of the large numbers of Resort residents and visitors and because in-migrant employees are expected to seek housing near to their place of work.

Most other employees may be expected to live in the Kona area. A minority will continue to commute from the Hamakua and Hilo areas because of family ties, the employment of other household members or other regional preferences.

INCOME IMPACT

The Resort could be expected to have a significant impact on personal and household income for residents of the county and state. The Resort's development will generate income as employee wages, salaries and fringe benefits and as income to proprietors. Direct employment income (excluding fringe benefits) is projected on the basis of average industry wages and salaries and projections of future employment demand. Estimation of the total income paid to households in the state (including wages, salaries, fringe benefits and proprietors incomes) is based on the projections of visitor expenditures in the state.

Wage and Salary Income

Exhibit II-T projects annual wage and salary income (in 1983 dollars) to be derived from new employment created at Mauna Lani Resort. In any given year, the majority of income benefits will come from operations of hotels, residential units and commercial spaces. However, up until the year 2000, construction employment is expected to contribute between 21% and 35% of direct wages and salaries.

As shown in the exhibit, wage and salary earnings derived from the Resort may be expected to increase from \$13.6 million per year by 1990 to \$29.2 million (under the revised plan) or \$30.7 million (under the existing plan) by the year 2000.

Employment earnings at the existing Mauna Lani Bay Hotel and Mauna Lani Terrace are estimated to add approximately \$4.9 million per year to the figures shown. Hence, under the revised plan, Mauna Lani Resort's direct employment by the year 2000 may be expected to generate a total of about \$34.2 million (1983 dollars) per year to the economy.

MAUNA LANI RESORT

Summary of On- and Off-Resort Population Impact  
1990 to Potential Maximum

Population	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
On-resort(2)	1,075	1,030	2,013	1,926	3,479	3,263	7,686	7,727
Off-resort(3)	196	194	423	414	796	768	2,347	2,355
Total population increase	<u>1,271</u>	<u>1,224</u>	<u>2,436</u>	<u>2,340</u>	<u>4,275</u>	<u>4,031</u>	<u>10,033</u>	<u>10,082</u>

- (1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.
- (2) From Exhibit II-P.
- (3) Direct operational employee in-migrants and their dependents, as shown in Exhibit II-Q.

MAUNA LANI RESORT  
Geographic Distribution of Total Population Impact  
1990 to Potential Maximum

Area of residence or visitation	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
North and South Kohala: On-resort(2) Off-resort(3)	1,075 127	1,030 126	2,013 279	1,926 274	3,479 541	3,263 522	7,686 1,597	7,727 1,601
Total North and South Kohala	1,202	1,156	2,292	2,200	4,020	3,785	9,283	9,328
North and South Kona(4) Hamakua and Hilo(5)	39 30	39 29	84 60	82 58	159 96	154 92	470 282	471 283
Total population impact	<u>1,271</u>	<u>1,224</u>	<u>2,436</u>	<u>2,340</u>	<u>4,275</u>	<u>4,031</u>	<u>10,035</u>	<u>10,082</u>

- (1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.
- (2) Residents and visitors to Mauna Lani Resort, as shown in Exhibit II-P.
- (3) Direct employees and their dependents expected to migrate to the County of Hawaii. Those residing in North and South Kohala projected to increase from 65% of employee in-migrants in 1990, to 68% by the year 2000.
- (4) Direct employees and their dependents expected to migrate to the County of Hawaii. North and South Kona residents projected to stabilize at 20% of employee in-migrants in all time periods.
- (5) Direct employees and their dependents expected to migrate to the County of Hawaii. Hamakua and Hilo residents projected to decline from 15% of employee in-migrants in 1990, to 12% by the year 2000.

Exhibit II-S

MAUNA LANI RESORT  
Annual Wage and Salary Income From Direct Employment  
1990 to Potential Maximum  
(In 1983 dollars; millions)

Type of employment	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
Construction(2)	\$ 4.77	4.78	4.24	4.00	7.25	6.51	-	-
Hotel and resort(3)	7.73	7.81	13.01	13.00	19.47	19.15	-	-
Commercial(4)	1.11	1.03	2.13	1.96	4.01	3.59	49.66	49.84
Total personal income	<u>\$ 13.61</u>	<u>13.62</u>	<u>19.38</u>	<u>18.96</u>	<u>30.73</u>	<u>29.25</u>	<u>57.40</u>	<u>57.58</u>

- (1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.
- (2) Average annual wage of \$21,700, reflecting a projection of 30% workers from off-island. Based on the State Department of Labor and Industrial Relations report on covered wages in the construction industry in the State and in the County of Hawaii in 1983.
- (3) Excluding tips. Hotel, resort residential, and Resort administration employment wages projected at the 1983 county hotel industry average of \$11,313.
- (4) Commercial sector wages projected at \$7,801, based on average wages in applicable retail industry classifications, weighted by the observed distribution of direct visitor-related expenditures in 1982.

Exhibit II-T

Sources: State of Hawaii, Department of Labor and Industrial Relations, Employment and Payrolls in Hawaii, 1983 and Department of Planning and Economic Development, 1983 Data Book.

Total Household Income

Because of the dispersion of indirect and induced employment effects among many industries and the lack of appropriate data, it is extremely difficult to project the income benefits of the Resort's indirect, induced or total employment effects to an acceptable level of accuracy. However, projection of total household income based on visitor expenditure levels permits a perspective on the total statewide income benefits that would result from Mauna Lani's further development.

Household income generated by visitor expenditures includes the wages, salaries, fringe benefits and proprietors income paid by establishments that sell goods and services directly to visitors. Thus household income includes the income figures shown in Exhibit II-1 for direct operational employment. In addition, household income includes proprietors' income and income generated indirectly by establishments that deal directly with visitors and by the respending of direct and indirect incomes.

DPED found that in 1980, every dollar spent by visitors to Hawaii generated a total of \$0.74 in income to households. Based on the visitor expenditures expected to be generated by the Resort's new hotels, resort residences and commercial areas, it is projected that household income resulting from these developments will be as shown in the table below:

Total Household Income From  
Visitor Expenditures Generated at  
Planned Facilities at Mauna Lani Resort

1990 to 2000

(1983 dollars; millions)

	1990	1995	2000
Existing master plan	\$ 34.3	61.7	96.4
Revised master plan	33.6	60.2	92.8

STATE AND COUNTY REVENUE  
AND EXPENDITURE ANALYSIS

The net public benefit of Mauna Lani Resort's proposals may be evaluated by comparing projections of tax revenues and expenditures attributable to additional development at the Resort. This revenue and expenditure analysis is performed first from the state and then from the county perspective.

Public Sector Revenues

Results of DPED's Input/Output model published in the 1983 Data Book indicate that visitor-related direct expenditures totaled \$4,235 million in 1982, while state and county tax revenues attributable to tourism totaled \$448 million. Based on calculations from the same source, the ratio of tax revenues to visitor-related expenditures has ranged from 0.106 to 0.111 in recent years.

Assuming that state and county tax collections will amount to \$0.11 for every \$1.00 of direct visitor expenditure, public revenues attributable to new development at the Resort are projected to be as follows:

State and County Tax Collections  
Attributable to Planned Developments  
at Mauna Lani Resort

1990 to Potential Maximum

(1983 dollars; millions)

	1990	1995	2000	At potential maximum development
Existing plan	\$ 5.10	9.17	14.33	37.51
Revised plan	4.99	8.95	13.79	37.31

The above figures represent total revenues projected to be received by both the state and county. Of this total, revenues received by the County of Hawaii are estimated based on county real property tax collections. Real property taxes are used to estimate total county tax revenues because (1) in the latest edition of Government in Hawaii, the Tax Foundation of Hawaii indicates that real property taxes account for nearly 90% of tax revenues to the County of Hawaii and (2) other sources of county taxes (liquid fuels, utility franchises and the motor vehicle weight tax) are less directly tied to the development or operations of resort facilities.

Exhibit II-U shows the calculation of real property tax revenues attributable to new facility developments at the Resort. Real property taxes generated by hotels are estimated to be proportionate to those collected at the Mauna Lani Bay Hotel (based on its 1984 assessment). Real property tax collections from planned residential units are valued according to approximate selling prices based on Ming Chew & Associates' 1984 market study. Taxes collectible on additional commercial space and on the second golf course are projected by using assessed values provided by Mauna Lani Resort representatives and by the county tax assessor for the Mauna Lani region.

Additional county tax revenues are projected to increase from \$2.22 million per year in 1990 to \$8.12 million per year in 2000 under the revised plan, and from \$2.36 million per year to \$8.81 million per year, respectively, under the existing plan. The majority of these county revenues will come from property taxes on new multifamily units at the Resort.

Tax collections from the state are estimated as the difference between total tax revenues and estimated county tax collections, as shown in Exhibit II-V. As a result, state tax collections are estimated to increase from \$2.77 million per year in 1990 to \$5.67 million per year in 2000 under the revised plan, and from \$2.74 million per year to \$5.53 million per year, respectively, under the existing plan.

MAUNA LANI RESORT  
 Projected Real Property Tax Revenues Attributable to  
 Development at Mauna Lani Resort  
 1990 to Potential Maximum  
 (In 1983 dollars; millions)

Source of property revenue	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
New revenue sources:								
Hotel units(2)	\$ .41	.41	.71	.71	1.01	1.01	3.04	3.04
Multifamily units(3)	1.72	1.52	3.44	3.07	7.08	6.12	11.60	11.26
Single-family units(4)	.14	.18	.32	.40	.50	.71	1.02	1.63
Single-family lots(5)	.06	.07	.10	.12	.11	.17	-	-
Commercial space(6)	.03	.03	.06	.05	.11	.10	.21	.21
Second golf course(7)	-	.01	-	.01	-	.01	-	.01
<b>Total revenues</b>	<b>\$ 2.36</b>	<b>2.22</b>	<b>4.63</b>	<b>4.36</b>	<b>8.81</b>	<b>8.12</b>	<b>15.87</b>	<b>16.15</b>

- (1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.
- (2) Collections projected to be proportionate to those paid at Mauna Lani Bay Hotel.
- (3) Real property taxes estimated at an assessed value of \$450,000 per unit and the current county tax rate of \$8.50 per \$1,000 assessed value.
- (4) Real property taxes estimated at an assessed value of \$800,000 per unit (including land) and the current county tax rate of \$8.50 per \$1,000 assessed value.
- (5) Real property taxes estimated at an assessed value of \$350,000 per unbuild lot and the current county tax rate of \$8.50 per \$1,000 assessed value.
- (6) Assessed value per net leasable square foot based on estimates provided by Mauna Lani Resort. Real property taxes projected at current county rate of \$8.50 per \$1,000 assessed value on buildings and \$10 per assessed value on land.
- (7) New golf course, including 20 acres located on state leased land, valued at \$5,500 per acre. Real property taxes projected at current county rate of \$10 per \$1,000 assess value.

Exhibit II-U

MAUNA LANI RESORT  
 Projected Revenues to State and Hawaii County Governments  
 Attributable to Additional Development at Mauna Lani Resort  
 1990 to Potential Maximum  
 (In 1983 dollars; millions)

	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
Revenues to county(2)	\$ 2.36	2.22	4.63	4.36	8.81	8.12	15.87	16.15
Revenues to state(3)	<u>2.74</u>	<u>2.77</u>	<u>4.54</u>	<u>4.60</u>	<u>5.53</u>	<u>5.67</u>	<u>21.64</u>	<u>21.17</u>
<b>Total revenues(4)</b>	<b>\$ 5.10</b>	<b>4.99</b>	<b>9.17</b>	<b>8.96</b>	<b>14.34</b>	<b>13.79</b>	<b>37.51</b>	<b>37.32</b>

- (1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.
- (2) Estimated as new property tax revenues, from Exhibit II-U.
- (3) Total revenues less estimated county share.
- (4) \$0.11 per \$1.00 direct visitor expenditure. State of Hawaii, Department of Planning and Economic Development, 1983 Data Book, 1983 as shown on pg. 11-12.

Exhibit II-V



MAUNA LANI RESORT

State of Hawaii Per Capita Government Expenditures

Fiscal year 1983

Function	Expenditures (000s)(1)	Service population(2)	Annual per capita expenditures(3)	
			Per resident	Per visitor
General government	\$ 115,854	1,100,900	\$ 105.24	105.24
Public safety	72,050	1,100,900	65.45	65.45
Highways	57,207	1,100,900	51.96	51.96
Natural resources	28,404	1,100,900	25.80	25.80
Health and sanitation	72,270	1,100,900	65.65	65.65
Hospitals and institutions	96,335	1,007,400	95.63	-
Public welfare	328,323	1,007,400	325.91	-
Education	690,219	1,007,400	685.15	-
Recreation	13,885	1,100,900	12.61	12.61
Utilities and other enterprises	76,856	1,007,400	76.29	-
Debt service(3)	199,213	1,100,900	194.37	36.40
Retirement and pension(3)	123,443	1,100,900	120.44	22.56
Employees health and hospital insurance(3)	21,117	1,100,900	20.60	3.86
Unemployment compensation	90,207	1,007,400	89.54	-
Grants-in-aid to counties	18,173	1,007,400	18.04	-
Urban redevelopment and housing	151,535	1,007,400	150.42	-
Cash capital improvements	11,861	1,100,900	10.77	10.77
Miscellaneous	23,696	1,007,400	23.52	-
<b>Total</b>	<b>\$ 2,190,648</b>		<b>\$ 2,137.39</b>	<b>400.30</b>

- (1) State operating expenditures for fiscal year ending June 30, 1983. Tax Foundation of Hawaii, Government in Hawaii, 1984.
- (2) Resident and de facto population estimates for the state as of January 1, 1983. Estimate prepared by Peat, Marwick, Mitchell & Co. based on unpublished State of Hawaii, Department of Planning and Economic Development, estimates for July 1, 1982 and 1983.
- (3) Allocated to residents and visitors in proportion to other State government expenditures.

Exhibit II-Y

II-15

State Revenues and Expenditures

The new visitors and new residents at Mauna Lani Resort will also require new expenditures of public resources. Visitors are seen to incur public costs in terms of public safety (such as increased needs for police and fire protection), development and upkeep of highways, recreational facilities and natural resources, health and sanitation measures and in cash capital improvements. Residents incur public costs in all the above areas, and also in education, retirement and pension funds, public welfare and other government functions.

Exhibit II-W shows state government expenditures incurred in fiscal year 1983 on behalf of residents and visitors and the estimated population who benefit from these expenditures. By dividing government expenditures by the population served for each function, state operating expenditures are estimated to have averaged \$2,137 per resident and \$400 per visitor.

Exhibit II-X uses the per capita expenditures to project additional state expenditures that would be incurred on behalf of residents and visitors at the Resort. Additional public costs to the state could amount to about \$0.9 million per year initially, and increase by the year 2000 to about \$3.2 million per year under the revised plan, or about \$3.4 million per year under the existing plan.

Exhibit II-Y compares the benefits projected to be derived from the Resort with the associated costs. Benefits are expected to exceed costs in all periods. Moreover, for the projection years, net additional revenues and the ratio of revenues to expenditures are expected to be somewhat greater for the revised than for the existing plan.

In the year 1990 the state could expect net additional revenues of about \$1.9 million per year under the revised plan, or \$1.8 million per year under the existing plan. By the year 2000 net revenues under the revised plan are projected to amount to about \$2.5 million or slightly more per year than under the existing plan. At maximum potential development, net additional revenues under the revised plan are projected to be slightly less than those under the existing plan because the former plan would imply relatively more residential and less visitor population growth. However, as noted previously, it is unlikely that maximum permitted unit densities will be constructed under either master plan.

County Revenues and Expenditures

Exhibit II-Z identifies the per resident and per visitor costs to the County of Hawaii based on the methods described for the state. In 1983 the County is estimated to have spent approximately \$546 per resident and \$493 per visitor for facilities, services and other government functions.

These figures are used to project county government expenditures necessitated by population growth stimulated by the Resort's development. Exhibit II-AA shows that new county expenditures could be slightly lower under the revised than the existing plan, due to the former's lesser population impacts.

MAUNA LANI RESORT  
 Projected State Government Expenditures Attributable to  
 Additional Population Impacts of Mauna Lani Resort  
 1990 to Potential Maximum  
 (In 1983 dollars; millions)

Population type	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
	Residents(2)	\$ .62	.58	1.26	1.18	2.52	2.31	4.23
Visitors(3)	.32	.30	.57	.55	.92	.88	2.29	2.27
<b>Total expenditures</b>	<b>\$ .94</b>	<b>.88</b>	<b>1.83</b>	<b>1.73</b>	<b>3.44</b>	<b>3.19</b>	<b>6.52</b>	<b>6.68</b>

- (1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.
- (2) Residents estimated to require \$2,140 per capita in government expenditures. See Exhibit II-W.
- (3) Visitors estimated to require \$400 per capita in government expenditures. See Exhibit II-W.

Exhibit II-X

MAUNA LANI RESORT  
 Comparison of Projected Public Revenues and  
 Expenditures to the State of Additional Development  
 at Mauna Lani Resort  
 1990 to Potential Maximum  
 (In 1983 dollars; millions)

	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
	New revenues	\$ 2.74	2.77	4.54	4.60	5.53	5.67	21.64
New expenditures	.94	.88	1.83	1.73	3.44	3.19	6.52	6.68
<b>Net additional revenues</b>	<b>\$ 1.80</b>	<b>1.89</b>	<b>2.71</b>	<b>2.87</b>	<b>2.09</b>	<b>2.48</b>	<b>15.12</b>	<b>14.49</b>
Revenue/expenditure ratio	<u>2.9</u>	<u>3.1</u>	<u>2.5</u>	<u>2.7</u>	<u>1.6</u>	<u>1.8</u>	<u>3.3</u>	<u>3.2</u>

- (1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

Sources: Exhibits II-V and II-X.

Exhibit II-Y

MAUNA LANI RESORT  
 County of Hawaii Per Capita Government Expenditures  
 Fiscal year 1983

Function	Expenditures (000s)(1)	Service population(2)	Annual per capita Expenditures	
			Per resident	Per visitor
General government	\$ 7,492	108,600	\$ 68.99	68.99
Public safety	20,822	108,600	191.73	191.73
Highways	4,999	108,600	46.03	46.03
Health and sanitation	2,688	108,600	24.75	24.75
Public welfare	1,643	101,900	16.12	-
Education	267	101,900	2.62	-
Recreation	5,337	108,600	49.14	49.14
Interest(3)	3,608	108,600	33.42	30.15
Bond redemption(3)	1,699	108,600	15.74	14.20
Retirement and pension(3)	7,421	108,600	68.75	62.01
Mass transit	1,015	101,900	9.96	-
Cash capital improvements	655	108,600	6.03	6.03
Miscellaneous	1,355	101,900	13.30	-
<b>Total</b>	<b>\$ 59,001</b>		<b>\$ 546.58</b>	<b>493.03</b>

- (1) County operating expenditures for fiscal year ended June 30, 1983. Tax Foundation of Hawaii, Government in Hawaii, 1984.
- (2) Resident and de facto population estimates for the county as of January 1, 1983. Estimate prepared by Peat, Marwick, Mitchell & Co. based on unpublished State of Hawaii, Department of Planning and Economic Development, estimates for July 1, 1982 and 1983.
- (3) Allocated to residents and visitors in proportion to other County government expenditures.

Exhibit II-2

MAUNA LANI RESORT  
 Projected County Government Expenditures Attributable to  
 Additional Population Impacts of Mauna Lani Resort  
 1990 to Potential Maximum  
 (In 1983 dollars; millions)

Population type	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
	Residents(2)	\$ .16	.15	.32	.30	.65	.59	1.08
Visitors(3)	.38	.37	.70	.68	1.13	1.07	2.80	2.78
<b>Total expenditures</b>	<b>\$ .54</b>	<b>.52</b>	<b>1.02</b>	<b>.98</b>	<b>1.78</b>	<b>1.66</b>	<b>3.88</b>	<b>3.91</b>

- (1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.
- (2) Residents estimated to require \$550 per capita in government expenditures. See Exhibit II-2.
- (3) Visitors estimated to require \$490 per capita in government expenditures. See Exhibit II-2.

Exhibit II-AA

MAUNA LANI RESORT  
 Comparison of Projected Public Revenues and  
 Expenditures to Hawaii County of Additional Development  
 at Mauna Lani Resort

1990 to Potential Maximum  
 (In 1983 dollars; millions)

	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
New revenues	\$ 2.36	2.22	4.63	4.36	8.81	8.12	15.87	16.15
New expenditures	.54	.52	1.02	.98	1.78	1.66	3.88	3.91
Net additional revenues	\$ <u>1.82</u>	<u>1.70</u>	<u>3.61</u>	<u>3.38</u>	<u>7.03</u>	<u>6.46</u>	<u>11.99</u>	<u>12.24</u>
Revenue/expenditure ratio	<u>4.4</u>	<u>4.3</u>	<u>4.5</u>	<u>4.4</u>	<u>4.9</u>	<u>4.9</u>	<u>4.1</u>	<u>4.1</u>

(1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

Sources: Exhibits II-U and II-AA.

Exhibit II-88

II-16

In Exhibit II-88, these expenditures are compared to the county revenues that were projected in Exhibit II-J. The relationship to the county of the costs and benefits of the developments planned is also expected to be favorable with slightly greater net additional revenues under the existing as compared to the revised plan during the projection period. However, the ratio of additional county revenues to additional county expenditures does not differ significantly between the two plans.

In the year 1990 net additional revenues are projected to be approximately \$1.7 million per year under the revised plan and \$1.8 million per year under the existing plan. By the year 2000 net revenues under the revised plan are projected at \$6.5 million compared to \$7.0 million under the existing plan.

Construction Employee Housing

Construction employment is temporary and so does not generate the long-term housing demands that are associated with operational employment. Contractors in South Kohala have generally found that construction workers tend to pick up slack in the short-term rental market in the Kona area. Moreover, labor agreements typically provide a rather generous subsistence allowance to construction employees, so housing affordability is not usually problematic. For instance, in the 1980 to 1982 period, the general contractor for projects under construction at Mauna Lani Resort paid monthly subsistence allowances of \$690 to hourly workers and \$800 to salaried workers. By sharing housing and/or other costs, \$800 to \$1,000 per month range.

In compliance with County Ordinance 380, Condition "Q," between November 1980 and October 1982 the Resort provided a semiannual status report concerning the housing needs of construction workers on the Mauna Lani Bay Hotel. Off-island employees averaged 32% of the construction work force for the three points observed. This percentage was greatest near the project's end, where construction activity was principally in specialty areas such as finish work, mill work and interior completion. Thus in October 1982, three months after the hotel had been topped off, 44.8% of the 250 construction workers employed at the site were from off-island. These figures are shown in the table below.

Construction Employee Housing Requirements  
Generated at Mauna Lani Resort

1981 to 1982

	Total work force	Percent of work force from		Rental housing requirements	
		off-island	houses	Rooms in houses	Units
August 1981	151	16.5%	5	17	
March 1982	301	28.0	48	37	
October 1982	250	44.8	63	47	
Average		32.0%			

Source: Mauna Lani Resort.

The future share of workers drawn from off-island will depend on the timing and location of other major construction activities in the state and the resultant competition for Hawaii Island construction workers. It is in the interests of the Resort and its contractors to maximize the employment of the local labor force since doing so mitigates against the necessity for additional subsistence payments or other housing contributions. It is also expected that with continued development, the County will develop a larger and more skilled construction labor force, thus reducing the need to bring specialized labor from off-island.

III - FISCAL IMPACTS

The further development of Mauna Lani Resort may affect community resources and public services and facilities by attracting additional residents and visitors to the area and by changing land uses at the Resort. This chapter addresses the projected impacts of the planned developments on employee housing requirements, public education, police and fire protection, health care and recreational opportunities.

EMPLOYEE HOUSING REQUIREMENTS

The previous chapter projected the demand for construction and operational employees resulting from the two plans for facility development. The projections of the previous chapter are the basis for projection of employee housing requirements. Housing demand is generated by the Resort when:

- Construction or operational employees in-migrate from outside of the County of Hawaii.
- Job-takers from within the county move in order to be closer to work.
- Job-takers from within the county establish a new household.

Workers that move within the county after taking employment at the Resort create a demand for additional housing in one area (such as in South Kohala) but also free some supply of housing elsewhere (such as in Hilo). Such movers do not create additional housing demand on the island, although they may cause a shift in demand among regions of the island. However, the methodology used for projection of the housing needs of operational employees does account for some demand from such within-county movers. This is because the long-term development of the South Kohala and North Kona districts may be associated with long-term shifts in the residential distribution of the county. Thus in some cases, movers may vacate housing in rural areas for which continued demand for housing will be less than in the past.

Two types of indirect housing demand generation are recognized but not included in the present analysis. These indirect sources of demand derive from (1) county workers whose employment is indirectly supported by the Resort's development and (2) workers that leave on-going jobs in the county in order to take employment at Mauna Lani Resort, creating indirect demand for labor at the establishments vacated. (The latter would not occur where former sources of employment are being lost, as in the sugar industry.)

A portion of those workers employed indirectly by the Resort or who refill vacated positions will also demand additional housing. Such indirect housing demand is not accounted for in the projections made because:

1. Information on the composition of a resort's indirect employment effects and on how the employee housing market is affected by chains of job turnover in a developing economy is not available.
2. Developers have not customarily been considered responsible for the potential housing requirements associated with the generation of regional economic opportunity in other industries or establishments.

MAUNA LANI RESORT

Direct Construction Employment by Origin of Worker

1986 to 2000

(Average annual person-years)

Origin of worker	1986 to 1990		1991 to 1995		1996 to 2000	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
From on-island	143	143	127	120	217	195
From off-island(1)	77	77	69	64	117	105
Total construction employment	<u>220</u>	<u>220</u>	<u>196</u>	<u>184</u>	<u>334</u>	<u>300</u>

(1) Assuming 35% of workers come from off-island.

III-3

Based on the Resort's prior experience, an average of 35% of construction workers are projected to be drawn from off-island, as shown in Exhibit III-A. Workers from off-island are expected to amount to about 80 employees on any given day in the 1986 to 1990 period, and between 100 and 120 on any given day in the 1995 to 2000 period. Numbers of off-island employees do not vary significantly between the two master plans.

The Resort's 1980 to 1982 studies found no adverse effects on the island housing market in terms of competition with island residents or visitors and no other significant problems in the housing of up to 112 off-island construction workers at a time. The provision of subsistence allowances was deemed to be effective and the most satisfactory means of handling the housing needs associated with temporary resident construction workers.

Because (1) the future supply of short-term rental accommodations in Kona and Kohala will be greater than in the past and (2) the absolute number of the Resort's future off-island labor needs are expected to be comparable to those accommodated in the regional housing market in the past, construction employee housing requirements are not projected to be problematic under either the existing or revised plans for facility development at the Resort.

The Resort's construction labor housing studies also found that among units rented from the local market, 68% were located in Kailua-Kona, 11% in Waimea, 10% in Waikoloa and the remaining 11% in Hilo, Puako or North Kohala. It is expected that with the continuation of housing subsidy allowances, temporary resident construction workers will lend strength to the rental markets in South Kohala and North Kona throughout this century.

Operational Employee Housing

Operational employee housing impact is assessed on a countywide basis. However, this section also includes discussions of potential shifts in the housing market within the county.

Projected Employees Requiring Housing

In Exhibit III-B, figures from Exhibit II-L are used to project the number of employees that may be expected to demand new housing. The largest segment is expected to be in-migrants from off-island, all of whom would require additional housing. Also, those hired from the "available labor" pool of the island might be at risk of forming new households, especially among those who are recent school leavers. It is projected that about 15% of the "available labor" component may be expected to seek housing after becoming employed at the Resort. Persons formerly employed elsewhere in Kohala are presumed to be already settled in the Kohala area, or accustomed to commuting to work. Some of this labor segment may have taken new employment in order to be closer to their place of residence. Hence, no additional housing demand is projected for the Kohala job turnover group.

Those who had previously worked elsewhere on the island may be expected to generate some in-migration into the North Kona or South Kohala areas. Since most of this group are expected to have been previously employed in Kona, the homes that movers vacate are likely to be within commuting distance of Kona and hence could serve as potential housing for employees hired to refill the jobs that are vacated. However, it is projected that 10% of this labor supply component may be expected to create additional demands for housing in the North Kona or South Kohala region in relation to the attainment of employment at the Resort.

Exhibit III-A

Projected Housing Demand

The demand for additional housing on the island of Hawaii is projected to be less than the number of employees requiring housing. This is due to households which could be expected to have more than one resort employee as well as to the doubling-up of employees within existing households on the island. Exhibit III-C projects the demand for additional housing units by class of worker. About one-third of the off-island in-migrants that were shown in Exhibit III-B could be expected to be experienced personnel brought to fill managerial or specialty positions. Such persons may be expected to be principally heads of households, thus each managerial level in-migrant is projected to generate demand for one additional home. On the other hand, experience has shown that many service employees share housing. Nonmanagerial and nonspecialty employees in need of new housing are projected to generate housing unit demand at a ratio of 1.5 employees per housing unit.

The two master plans do not differ significantly in terms of additional employee housing requirements. The cumulative demand for additional housing directly attributable to the Resort's expansion is projected to amount to about 110 units by 1990 and 370 to 380 units by the year 2000. Between 20% and 30% of this unit demand would occur among persons in managerial or specialty positions with a relatively greater ability to afford housing.

It may be expected that shares of both managerial and other employees projected to demand additional housing in the county will require assistance in satisfying this housing demand. However, due to (1) the uncertainties associated with the supply and other characteristics of the future housing market and (2) the exact timing and nature of future hotels to be developed at the Resort, it will be more appropriate to address the requirements for employee housing assistance in relation to the planning of particular hotels.

Based on an assessment of other hotel and vacation-oriented residential projects judged likely to be completed in the South Kohala coast region in the next 15 years, it is estimated that the additional employee housing demand projected to be generated by Mauna Lani Resort's further development will represent about 21% of total regional demand generated by comparable developments by the year 1990 and about 29% of total regional demand by the year 2000.

PUBLIC EDUCATION

The Resort's planned developments will increase demands on the public school system by inducing population growth and thereby increasing the number of school age children on the island. These additional students may be dependents of (1) the full-time resident owners of units at the Resort or (2) resort employees. However, Resort residents who own units could be expected to generate relatively little new demand for public education because of the small share of units expected to be occupied by full-time residents and because of the profile of expected buyers. Buyers of luxury resort units have typically completed their child rearing years and those who do have school age children most often send those children to private schools.

MAUNA LANI RESORT

Direct Operational Employees Projected to Require Additional Housing  
1990 to Potential Maximum

	1990		1995		2000		At potential maximum development(2)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
<u>Labor supply component(1)</u>								
On-island labor:								
Available labor(3)	50	50	84	82	127	122	291	291
Kohala turnover(4)	-	-	-	-	-	-	-	-
Other turnover(5)	19	18	31	30	47	45	108	108
Off-island labor(6)	83	82	185	182	358	344	1,076	1,080
Total demanding new housing	152	150	300	294	532	511	1,475	1,479

- (1) Based on figures given in Exhibit II-L.
- (2) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.
- (3) 15% new household formation projected.
- (4) Assumed to be already settled in area or accustomed to commute.
- (5) 10% demand projected.
- (6) 100% in-migrants.

Existing Services and Facilities

Public schools serving the areas in which the majority of the Resort's residents and employees are projected to live currently number as follows:

Public Schools by Area of Residence

Service region	Elementary or intermediate schools		High schools
North Kohala	1		1
South Kohala	1		1
North and South Kona	7		1
Hilo	13		2

South Kohala is also the location of two of the county's best known private schools, Hawaii Preparatory Academy (grades kindergarten through 12) and Parker School (grades 7 through 12).

Required Additional Facilities

Exhibit III-D shows projected new secondary public school students that are expected to be attributable to the Resort's expansion. The projections shown are based on student per housing unit multipliers for luxury and middle-income residences, as supplied by the Hawaii State Department of Education.

Approximately 30% of new students are expected to reside in units at Mauna Lani Resort and so would be expected to attend schools in Kohala. Other new students are expected to be dependents of hotel employees who in-migrated to or found a new household on the island. The latter are projected to be distributed according to the residential distribution of in-migrant Resort employees. About half of all new students shown are expected to be in grades kindergarten through 6; the other half in grades 7 through 12.

The impact on the public school system is expected to be slight under either master plan. Kohala district schools would be most affected, but even there additional demand would number only about 30 students by 1990 and fewer than 120 students by the year 2000. Written and oral communications from the acting superintendent of schools and other administrators from the Department of Education indicate that such levels of new student enrollments could be accommodated in existing and planned facilities in the area.

It may be expected that additional staff would eventually be required to meet the increased demand projected. The cost of such services are included in the analyses of public costs to the state presented in Chapter 11.

POLICE PROTECTION

Increased needs for police services are expected to occur because of the increases in de facto population that the Resort's expansion will incur. Much of this demand for new services is expected to be in the areas of traffic control and parking violations.

MAUNA LANI RESORT

Projected Additional Housing Unit Demand for Operational Employees, Island of Hawaii

1990 to Potential Maximum

Class of worker	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
Managerial or specialty(2)	30	30	52	51	81	78	195	196
Other(3)	81	81	165	163	300	289	853	856
Total units	111	111	217	214	381	367	1,048	1,052

(1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

(2) Projected at 1.0 employee per household.

(3) Projected at 1.5 employees per household.



Recent studies relating tourism and crime in Hawaii have shown conflicting results. Incidences of robbery are consistently linked to increased tourism, but whether or not a relationship exists between tourism and more serious crimes (such as burglary, rape, murder or assault) remains unclear. In 1984 the Kona and South Kohala police captains indicated that crimes associated with South Kohala's luxury visitor establishments were minimal and were generally thefts by hotel employees from hotel rooms or rental cars. These incidents were also most frequently handled by security officers of the resort or hotel involved.

Existing Services and Facilities

The Waimea police station provides police services for the South Kohala district, while the Kapaa Police Station serves the North Kohala area, the Kona Police Station serves North Kona, and the Ka'u Station serves South Kona. Presently the county's uniformed personnel are distributed among these areas roughly in proportion to resident population.

A total of 13 policemen are presently on the force at Waimea. This includes four ranking officers and nine patrolmen. Normally the force has 17 policemen including 13 patrol men and four ranking officers. Police staffing and workload indicators for these districts are as shown in the table below:

Police Services and Workload Indicators in the Kohala and Kona Districts and County of Hawaii

Year ended June 30, 1984

District	Percent of County resident population	Uniformed Personnel		Percent of County index crimes	Percent of County traffic accidents
		Number	Percent of County		
North Kohala	3.4%	11	4.4%	1.4%	1.9%
South Kohala	6.3	17	6.8	5.2	6.7
North Kona	22.0	55	22.1	29.4	23.5
South Kona	3.3	15	6.0	2.3	2.7
County	100.0	249	100.0	100.0	100.0

Source: County of Hawaii Police Department, 1985.

Required Additional Services

The County Police Department anticipates that the resident and visitor population growth projected for South Kohala will be accompanied by a shift in criminal and traffic incidents. This shift is expected to necessitate an expanded police force at the Waimea Police Station and may eventually necessitate a new substation on the Kohala coast. This would incur costs for personnel, equipment and capital outlays; such costs would be included in the projections of costs to the County discussed in Chapter II.

Until such time as a new station might be required, the County Chief of Police notes that the Waimea and Kapaa stations are relatively new and that each could accommodate additional staff when necessary.

MAUNA LANI RESORT

Student Generation for Hawaii County Public High and Elementary Schools Attributable to Further Development of Mauna Lani Resort

1990 to Potential Maximum

School region	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
Hilo	5	5	9	8	13	12	35	35
Kohala	33	32	65	63	124	116	284	286
Kona	6	6	12	12	21	21	59	59
<b>Total students</b>	<b>44</b>	<b>43</b>	<b>86</b>	<b>83</b>	<b>158</b>	<b>149</b>	<b>378</b>	<b>380</b>

(1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

Sources: State of Hawaii, Department of Education, 1985 and Peat, Marwick, Mitchell & Co., 1985.

#### FIRE PROTECTION

The new units at Mauna Lani Resort will also lead to increased demands for fire protection services and facilities.

#### Existing Services and Facilities

Fire protection for the South Kohala district is stationed in Waimea. The station provides 24-hour service and has a staff of six which is supplemented by volunteers from Puako and Waikoloa, and a fire equipment operator from Kawahae. The station has one engine, one 1,250-gallon tanker and an emergency medical unit. Additional engines and a ladder truck are dispatched from Kailua-Kona when needed.

#### Required Additional Services

Mauna Lani Resort is presently formulating an agreement with the County Fire Department regarding the dedication of approximately one acre of land for a future fire station. Recent discussions have considered the construction of a building by the Kohala Coast Resort Association which would be leased back to the County for a fire station and emergency medical services center. As planned, location of the new station near to the Resort would be strategic with respect to additional service requirements at Mauna Kea and Waikoloa Resorts as well as at Mauna Lani Resort. Because the new station would be within five miles of each, these South Kohala resorts would all benefit from the highest possible fire protection ratings for hotel and condominium units.

Mauna Lani Resort also proposes to form a volunteer fire company in the interim. The county fire chief reports that the developments planned at Mauna Lani Resort are not expected to be problematic to the provision of fire protection, given (1) the Resort's proposed measures and (2) that new facility development is in accordance with current fire and building codes and requirements of the County Departments of Planning and of Water.

#### HEALTH CARE

The island of Hawaii has five hospitals. Hilo Hospital is the largest, followed in descending order by Kona Hospital, Honokaa Hospital, Kohala Hospital and Ka'u Hospital. In Hilo, the Life Care Center of Hawaii also provides intermediate care, and various other medical groups on the island provide out-patient clinical services. An assistant to the Hawaii State Deputy Director of Health reports that health care services and facilities in West Hawaii need considerable upgrading with or without further development in South Kohala. The improvement of regional health care delivery capabilities should be an important concern to developers in South Kohala.

#### Existing Services and Facilities

Two state-operated hospitals exist in the Kohala area. These are the Kohala Hospital and the Honokaa Hospital. The Kohala Hospital is located in Kapaa in North Kohala and is primarily a long-term care institution. In January 1984 it had 10 acute care beds, 16 long-term beds and a regular staff of three physicians. The Honokaa Hospital has a total of 35 beds (27 for acute patients and 8 for long-term care) and 13 to 14 physicians. Most patients from the South Kohala area are taken to Honokaa Hospital because of its greater proximity.

However, neither Honokaa nor Kohala Hospitals can provide full patient services, and the existing facilities at Honokaa are considered substandard because the building is old and small. A recent study of the County of Hawaii's health care facilities concluded that replacement facilities were needed in Honokaa.

The closest health care facility considered to be "full service" is the Kona Hospital. According to records of the State Health Planning and Development Agency, Kona Hospital has a total of 79 beds, 53 of which are for acute care and 26 for long-term care. According to the State Department of Health, the Kona Hospital has an active staff of 36 physicians. An administrator in the Department of Health described Kona Hospital's resources as inadequate for the needs of even the existing regional population.

The private Lucy Henriques Medical Center in Waimea has emergency and out-patient clinical facilities with a total of 5-1/2 practicing doctors (including a half-time pediatrician). The Center has two holding beds which are used until a patient can be transferred elsewhere. The Center also has 10 specialists who are regularly associated with the clinic.

#### Required Additional Services

Development of additional facilities at the Resort may be expected to impact all four medical facilities discussed. An expanded population in the South Kohala District will eventually require additional acute care facilities. The administrator of Kona Hospital reported in February 1984 that the changing population profile of West Hawaii suggests a need for expanded services in the fields of care most needed by an older population such as in cardiovascular, orthopedic and urological care.

Likewise, an aging population and the movement of retirees to South Kohala's resort areas may be expected to eventually warrant the expansion of long-term care facilities in the region.

#### RECREATION

Mauna Lani Resort is expected to primarily affect shoreline recreational opportunities for residents, because of its beachfront location. Current uses of the beach areas near the Resort include fishing and other food gathering, diving, swimming, sunbathing, sightseeing, surfing, sailing and canoe launching. The Resort would impose no access restrictions to public beach areas and would preserve the existing shoreline trail to maintain access between public rights-of-way.

#### Existing and Planned Facilities

The OPED 1983 Data Book indicates that in 1982, the County of Hawaii had 134 county parks encompassing 1,445 acres, 18 state parks with 2,281 acres (310 of which are developed), four national parks with a total acreage of 209,224 and one national wilderness area of 9,654 acres.

However, because of the island's newness, the coasts of Hawaii Island are more often rugged than sandy. Thus, despite its large size, the island has only 29 sandy beaches and only 8 of these are improved. In comparison, Kauai, which has only 14% of Hawaii Island's land area and less than half of its resident population, has 40 sandy beaches, 18 of which are improved as noted in the 1983 Data Book.

However, because of the island's narrowness, the coasts of Hawaii Island are more often rugged than sandy. Thus, despite its large size, the island has only 29 sandy beaches and only 8 of these are improved. In comparison, Kauai, which has only 14% of Hawaii Island's land area and less than half of its resident population, has 40 sandy beaches, 18 of which are improved as noted in the 1983 Data Book.

The State Recreation Plan, Technical Reference Document by the Hawaii State Department of Land and Natural Resources noted nine golf courses on the island of Hawaii in 1980. Since this count, South Kohala has added two more golf courses, one at Mauna Lani Resort and one at Waikoloa Beach Resort. Golf courses at the three South Kohala resorts are all open to the public, subject to green fees and the availability of tee times. Preferential starting times are given to hotel guests at the three South Kohala resorts. Mauna Kea Resort also gives preferential starting times to resort property owners.

Presently the Resort includes 3.2 acres of public park land, located mauka of the Mauna Lani Bay Hotel. Under the revised master plan, a second golf course would also be available for public use at Mauna Lani Resort and the Resort would develop a large public beach park between Pauoa Bay and the Puako petroglyph area. The beach park would have comfort and picnic facilities, showers and two parking areas for a total of 29 cars.

Mauna Lani Resort has developed one public right-of-way to the shoreline fronting the Mauna Lani Bay Hotel. The Resort's agreement with the county is to provide two more public rights-of-way to the beach as its development proceeds. One would be located at the northern end of the property at Pauoa Bay and the other would be at the southern end at Honoka'ope Bay.

#### Required Additional Facilities

The Hawaii County Department of Parks and Recreation uses a ratio of five acres of developed park land per 1,000 resident population as a target criterion for existing and new developments. This ratio is noted in the County Park Dedication Ordinance, part of the County General Plan. The new park area that Mauna Lani Resort would make available to the public under the revised plan is seen to satisfy the county criterion.

The 3.2 acres of existing public park land at the Resort are considered more than adequate for the slight on- and off-resort population impacts of the Resort's development to date. Under the revised plan, the Resort would make several more acres of land available for public recreational use at the proposed beach park near Pauoa Bay. Together with the Resort's existing public park land, this contribution is expected to satisfy the County criterion given the Resort's total projected population impacts of approximately 1,200 persons by 1990 and 2,300 persons by 1995, as were shown in Exhibit II-R.

The director of the County Department of Parks and Recreation also found that the Resort's proposal under the revised plan for an additional public beach park would enhance access to both Pauoa Bay and to the existing public petroglyph preserve at Puako. It was proposed that potential conflicts between resident and visitor uses at the beach park be mitigated by an interpretive program for shoreline and pond resources.

GEORGE R. ARIYOSHI  
GOVERNOR OF HAWAII

RECEIVED  
JUL 3 1985



MAUNALANI RESORT, INC.

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
DIVISION OF STATE PARKS  
P. O. BOX 621  
HONOLULU, HAWAII 96809

SUSUMU ONO, CHAIRMAN  
BOARD OF LAND & NATURAL RESOURCES

EDGAR A. HAMASU  
DEPUTY TO THE CHAIRMAN

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FORESTRY AND WILDLIFE  
LAND MANAGEMENT  
STATE PARKS  
WATER AND LAND DEVELOPMENT

July 1, 1985

Mr. Roger Harris, Project Planner  
Mauna Lani Resorts, Inc.  
P. O. Box 4959  
Kawaihae, Hawaii 96743-4959

Dear Mr. Harris:

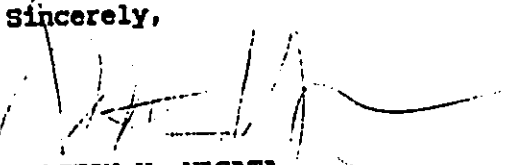
Subject: Report of Field Inspection  
Proposed Development Area  
Lalamilo, South Kohala, Hawaii  
TMK: 6-9-01:15

On June 21, 1985, Wendell Kam, staff archaeologist, met with you to conduct a field inspection of the subject area which consists of State and privately owned lands earmarked for future development by Mauna Lani Resorts.

The purpose of this inspection was to determine the adequacy, via a physical inspection, of the two previous archaeological reconnaissances of the subject area. These reconnaissances, entitled "Archaeological Reconnaissance of the Area South of the Puako Petroglyph Archaeological District, South Kohala, Hawai'i" (Welch:1984) and "Archaeological Reconnaissance Survey of Kalahuipua'a and Portions of Waikoloa, Lalamilo, and Anaeho'omalu, South Kohala, Hawaii Island" (Kirch, 1973) were determined to be adequate in identifying the various cultural resources within the project area. This determination of adequacy is also based on the recommendations of the respective studies which offer site-specific recommendations for the mitigation of the cultural resources prior to impact by the proposed development. Two copies of the results of each mitigative activity shall be submitted to our office for review and comment, which shall also occur prior to the start of any construction activity.

Due to the physical nature of the terrain, there exists the possibility that heretofore unidentified cultural resources, such as lava tubes, may be exposed during construction. In this instance, we recommend that all construction activity in the immediate area be stopped and our office be contacted at 548-7460 immediately.

Sincerely,

  
RALSTON H. NAGATA  
State Parks Administrator

Appendix C



Peat, Marwick, Mitchell & Co.  
Financial Plaza Of The Pacific  
P.O. Box 4150  
Honolulu, Hawaii 96813  
808-531-7286

July 6, 1985

Ms. Ann Mapes, Senior Planner  
Belt, Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

Dear Ms. Mapes:

This letter is in response to your request for additional information on the effects of indirect and induced employment at the planned facilities at Mauna Lani Resort (Resort). As requested, this letter first addresses the issue of labor availability with respect to the Resort's total employment impact on the island of Hawaii, including direct, indirect and induced construction and operational requirements. Following sections address the effects of the Resort's total employment impact on the island's population growth and additional housing requirements. The last section of this letter explains Peat, Marwick, Mitchell & Co.'s (Peat Marwick) understanding of the Resort's proposal for long-term future employee housing requirements.

The information contained herein is provided as a supplement to the information and materials presented in Peat Marwick's report to Belt, Collins & Associates entitled "Economic and Fiscal Impact Assessment of Planned Developments at Mauna Lani Resort," dated April 1985 (Report).

#### LABOR AVAILABILITY

Exhibit II-N of the Report indicated that the on-island employment requirements for the construction and operation of planned facility developments under the Resort's revised master plan could be expected to total approximately 1,300 persons by 1990 and 3,200 persons by the year 2000. The staffing of construction and operational employment requirements under the revised master plan are addressed here in turn.

#### Construction Employment

Direct, indirect and induced employment requirements for construction of the additional facilities planned were estimated to average between 440 and 720 person-years per year between 1986 and the year 2000, as shown in Exhibit II-I of the Report. Of these totals, between 220 and 360 average annual person-years were projected to occur on the island of Hawaii.

Appendix D



Ms. Ann Mapes  
July 6, 1985  
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As was explained in the Report, the actual share of construction-related workers coming from off-island on any given project will depend on the timing and scale of other projects under construction in the state at the time. However, it is estimated that the island of Hawaii may be able to provide an average of approximately 65% of the Resort's total construction-related labor demands on the island. The remaining approximately 35% of direct, indirect and induced positions are expected to be primarily filled by workers who will temporarily relocate from other islands during the construction of particular projects.

#### Operational Employment

Direct, indirect and induced employment requirements for operation of the additional facilities planned under the revised master plan were estimated to increase from approximately 1,550 persons in 1990, to 4,000 persons by the year 2000, as shown in Exhibit II-M of the Report. Of these totals, the impact on the island of Hawaii was estimated to increase from approximately 1,100 persons in 1990, to 2,800 persons by the year 2000, as shown in Exhibit A.

Exhibit A also shows how the projected labor requirements may be met by various sources of labor. Operational employment requirements may be satisfied by persons drawn from (1) the island's expected future work force or (2) off-island. The indirect and induced employment generated by the operation of additional facilities is expected to involve a slightly higher component of persons drawn from off-island than is direct employment because of the different nature of such support facilities. Overall, persons drawn from off-island to positions generated directly, indirectly or through induced effects of the operation of new facilities were assumed to increase from 15% of total employment in 1990, to 20% by the year 2000.

Within the island's labor force, operational employees may be drawn from (1) "available" sources of labor, including under- or unemployed persons and labor market entrants, or (2) job turnover. It was assumed that "available" sources of labor would decline from 45% of the total on-island component in 1990, to approximately 35% by the year 2000, while the share of labor coming from job turnover would increase over this period.

#### TOTAL POPULATION IMPACT

Considering total operational and construction employment and resort residents and visitors, the Resort's effect on population movement to the island of Hawaii under the revised master plan is projected to total approximately 1,500 additional persons by 1990 and 4,600 additional persons by the year 2000, as shown in Exhibit B.



Ms. Ann Mapes

July 6, 1985

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#### Sources of Additional Population

Of these totals, operations-related employees and their dependents are estimated to account for approximately 350 persons in 1990 and more than 1,200 by the year 2000.

Persons drawn from off-island for construction-related employment are assumed to reside on the island without dependents during the construction of particular projects. Construction employees from off-island, as explained previously, are estimated to account for 35% of all direct construction employment. Indirect and induced employment stimulated by construction activity on the island is estimated to generate a 25% temporary movement of persons to the island.

Projected resort residents and visitors shown in Exhibit B are as were shown in Exhibit II-P of the Report.

#### Geographic Distribution of Additional Population

The projected additional population may be expected to be distributed by geographic region of the island, as shown in Exhibit C. The majority of population impact is expected to occur in the North and South Kohala regions, reflecting the many residents and visitors to be attracted to the Resort and the anticipated increases in North and South Kohala housing stock expected to be targeted at the primary residential market.

#### EMPLOYEE HOUSING REQUIREMENTS

Factors contributing to the demand for additional housing among indirect and induced operational employees are assumed to be comparable to those affecting direct operational employees. Considering direct, indirect and induced operational employment requirements on the island under the revised master plan, it is projected that approximately 250 and 750 employees would require additional housing on the island of Hawaii by 1990 and 2000, respectively, as shown in Exhibit D.

The total demand for additional housing units on the island is estimated on the basis of (1) the operations-related employees expected to require new housing (as shown in Exhibit D) and (2) the construction-related employees temporarily housed on the island (as was shown in Exhibit B). It is projected that the Resort's development under the revised master plan will result in a demand for approximately 250 and more than 600 additional housing units on the island by 1990 and the year 2000, respectively, as shown in Exhibit E.



Ms. Ann Mapes  
July 6, 1985  
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LONG-TERM FUTURE EMPLOYEE HOUSING REQUIREMENTS

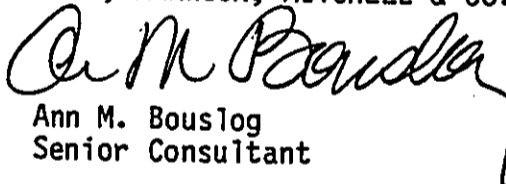
As was explained in the Report, Peat Marwick expects that the Resort will address its contributions to future employee housing requirements with respect to particular projects as they are proposed. Because future needs for additional employee housing will depend critically on the quality and size of particular projects, and on supply and demand factors in future regional housing markets, this case-by-case approach is considered the best means of assessing the Resort's appropriate future contributions to employee housing on the island. In addition, such analyses would greatly benefit from more complete information than is presently available. Specifically, there are at present very few sources of information concerning the nature and amount of interregional residential movement and housing unit demand generated by resort-related employment in developing formerly rural areas.

\* \* \* \* \*

Thank you for the opportunity to respond to the issues that have been raised concerning our Report. Please let us know if we may be of further assistance.

Very truly yours,

PEAT, MARWICK, MITCHELL & CO.

  
Ann M. Bouslog  
Senior Consultant

AMB:H  
Enc.

cc: Mr. R. Harris



MAUNA LANI RESORT

Projected Mix of Total On-Island Operational Employees

1990 to Potential Maximum

Labor supply component	1990		1995		2000		At potential maximum development(1)
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	
On-island sources:							
Available labor(2)	411	409	593	582	814	783	1,959
Regional turnover(3)	274	273	444	437	814	784	1,959
Other turnover(4)	228	227	444	437	697	672	1,679
Off-island sources(5)	<u>161</u>	<u>160</u>	<u>370</u>	<u>364</u>	<u>581</u>	<u>560</u>	<u>1,400</u>
Total operational employment	<u>1,074</u>	<u>1,069</u>	<u>1,851</u>	<u>1,820</u>	<u>2,906</u>	<u>2,799</u>	<u>7,017</u>

(1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show effects of proposed additions to existing facilities only.

(2) Unemployed and underemployed persons on-island and labor market entrants. Projected to decline from 45% of on-island labor component in 1990, to 35% by the year 2000.

(3) Persons attracted from other work in North or South Kohala. Projected to increase from 30% of on-island labor component in 1990, to 35% by the year 2000.

(4) Persons attracted from other work elsewhere on the island. Projected to increase from 25% of on-island labor component in 1990, to 30% by the year 2000.

(5) Persons attracted from off-island projected to increase from 15% of employment in 1990, to 20% by the year 2000.

MAUNA LANI RESORT

Total Island of Hawaii Population Impact Projected to Result From the Resort's Construction and Operation

1990 to Potential Maximum

Additional population source	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
Resort visitors and residents(2)	1,075	1,030	2,013	1,926	3,479	3,263	7,686	7,727
Operational employment:								
Employees(3)	161	160	370	364	581	560	1,399	1,403
Dependents(4)	197	196	432	425	678	653	1,633	1,637
Total operational employment	358	356	802	789	1,259	1,213	3,032	3,040
Construction employment:								
Direct employees(5)	77	77	69	64	117	105	-	-
Indirect and induced employees(6)	11	11	10	9	17	15	-	-
Total construction employment	88	88	79	73	134	120	-	-
Total population increase	1,521	1,474	2,894	2,788	4,872	4,596	10,718	10,767

(1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show effects of proposed additions to existing facilities only.

(2) Average daily visitors to and residents of the Resort, as shown in Exhibit II-P.

(3) Persons attracted from off-island to fill direct, indirect or induced employment on the island, as shown in Exhibit A. Expected to include persons filling approximately one-third of total managerial or specialty positions.

(4) Projected as two additional persons per managerial or specialty positions expected to be filled from off-island; one per other position expected to be filled from off-island.

(5) Construction workers from off-island estimated to represent 35% of direct employment. Such employees assumed to reside on the island temporarily and without dependents. Construction activity assumed to be complete by the time of the Resort's maximum development.

(6) Indirect and induced employment stimulated on the island by direct construction activity projected to effect a 25% temporary movement of persons to the island.

MAUNA LANI RESORT

Geographic Distribution of Total Population Impact

1990 to Potential Maximum

Area of residence or visitation	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
North and South Kohala: On-resort(2) Off-resort(3)	1,075 255	1,030 254	2,013 551	1,926 540	3,479 884	3,263 849	7,686 2,062	7,727 2,068
Total North and South Kohala	1,330	1,284	2,564	2,466	4,363	4,112	9,748	9,795
North and South Kona(4) Hamakua and Hilo(5)	133 58	132 58	214 116	208 114	339 170	320 164	606 364	607 365
Total population impact	1,521	1,474	2,894	2,788	4,872	4,596	10,718	10,767

- (1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.
- (2) As shown in Exhibit II-P.
- (3) Operational employees and their dependents living in North or South Kohala expected to increase from 65% of total in 1990, to 68% by the Resort's completion. Construction employees expected to increase from 25% of total in 1990, to 30% by the year 2000.
- (4) Operational employees and their dependents living elsewhere on the island expected to stabilize at 20% of total. Construction employees expected to decline from 70% of total in 1990, to 65% by the year 2000.
- (5) Operational employees and their dependents living in the Hamakua or Hilo areas expected to decline from 15% of total in 1990, to 12% by the Resort's completion. Construction employees expected to stabilize at 5% of total.

MAUNA LANI RESORT

Total Operational Employees Projected  
to Require Additional Housing on the Island of Hawaii

1990 to Potential Maximum

Labor supply component	1990		1995		2000		At potential maximum development(1)
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	
On-island labor:							
Available labor(2)	62	62	89	87	122	118	294
Kohala turnover(3)	-	-	-	-	-	-	-
Other turnover(4)	23	23	44	44	70	67	168
Off-island labor(5):							
Managerial(4)	36	36	62	61	97	93	234
Other(5)	125	125	309	303	484	467	1,170
Total demanding new housing	246	244	504	495	773	745	1,861
							1,867

- (1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.
- (2) New household formation projected to amount to 15% of total shown in Exhibit A.
- (3) Component assumed to consist of persons already settled in Kohala area or accustomed to commute.
- (4) Movement within the island projected to generate additional housing demand amounting to 10% of other job turnover.
- (5) All persons attracted from off-island projected to require additional housing.

MAUNA LANI RESORT

Total Additional Housing Unit Demand Projected to be Generated on the Island of Hawaii by the Resort's Construction and Operation

1990 to Potential Maximum

Housing demand component	1990		1995		2000		At potential maximum development(1)	
	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan	Existing master plan	Revised master plan
Operational employees:								
Managerial or specialty(2)	36	36	62	61	97	93	233	234
Other (3)	140	139	295	290	451	434	1,085	1,088
Total operational employees	176	175	357	351	548	527	1,318	1,322
Construction employees(4)	73	73	66	61	111	100	-	-
Total unit demand	249	248	423	412	659	627	1,318	1,322

(1) Includes existing facilities at the Mauna Lani Bay Hotel and the Mauna Lani Terrace. Other columns show proposed additions to existing facilities only.

(2) Managerial or specialty occupations estimated to represent 10% of total new employment with one-third filled from off-island. Housing unit demand projected at 1.0 managerial or specialty employee per household.

(3) Remainder of persons projected to require additional housing on the island, as shown in Exhibit D. Housing unit demand projected at 1.5 nonmanagerial or nonspecialty employee per household.

(4) Housing demand for employees temporarily resident on the island, as shown in Exhibit B, estimated at 1.2 employees per unit. Construction activity assumed to be completed by the time of the Resort's maximum development.