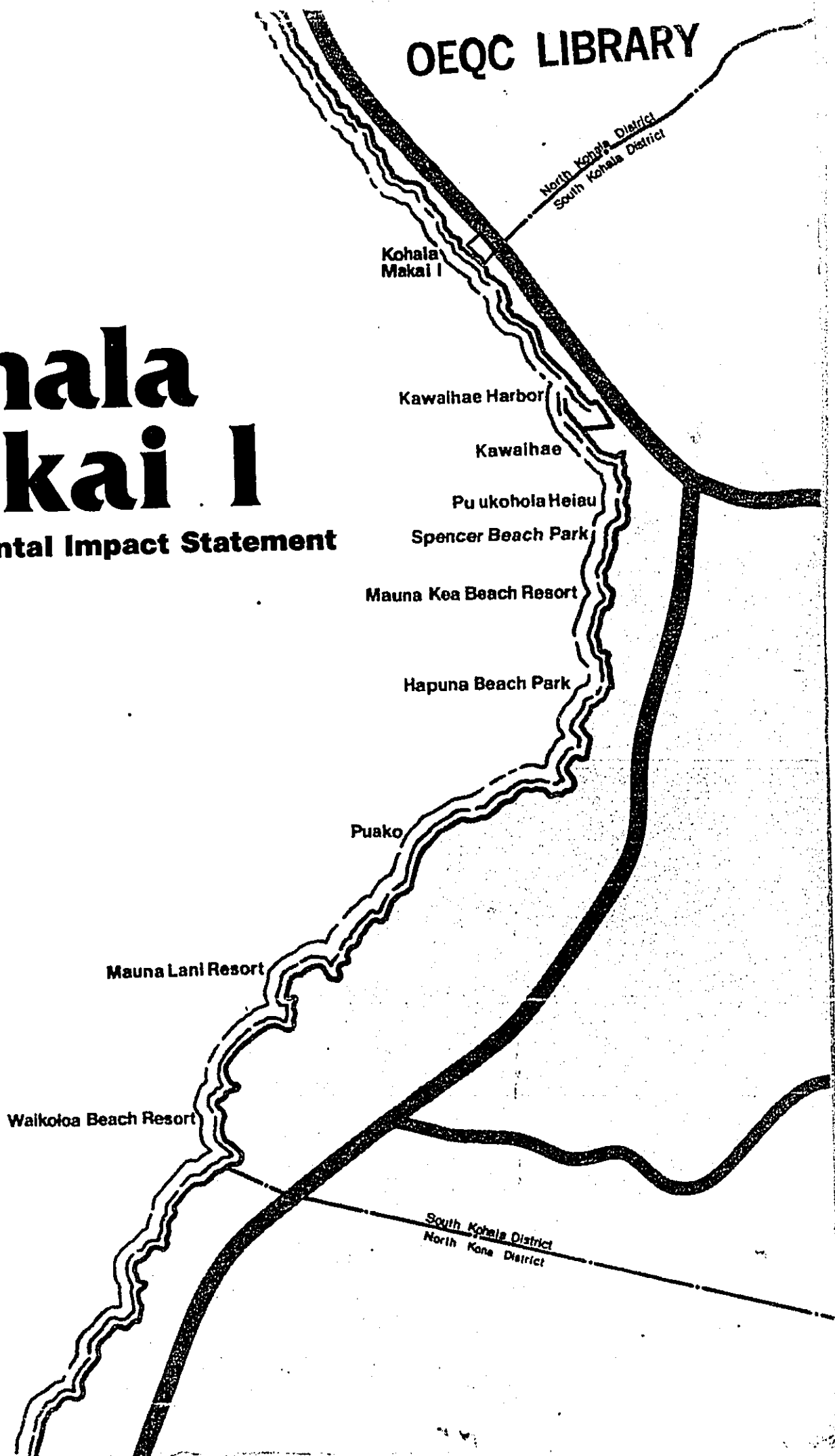


Revised

Kohala Makai I

Environmental Impact Statement



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ENVIRONMENTAL IMPACT STATEMENT
FOR THE PROPOSED
KOHALA MAKAI I
RESIDENTIAL DEVELOPMENT

For Submission To: Hawaii County Planning Department

Prepared For: Kohala Makai I, A Limited Partnership
By: Belt, Collins & Associates



James R. Bell, Principal
April 1982

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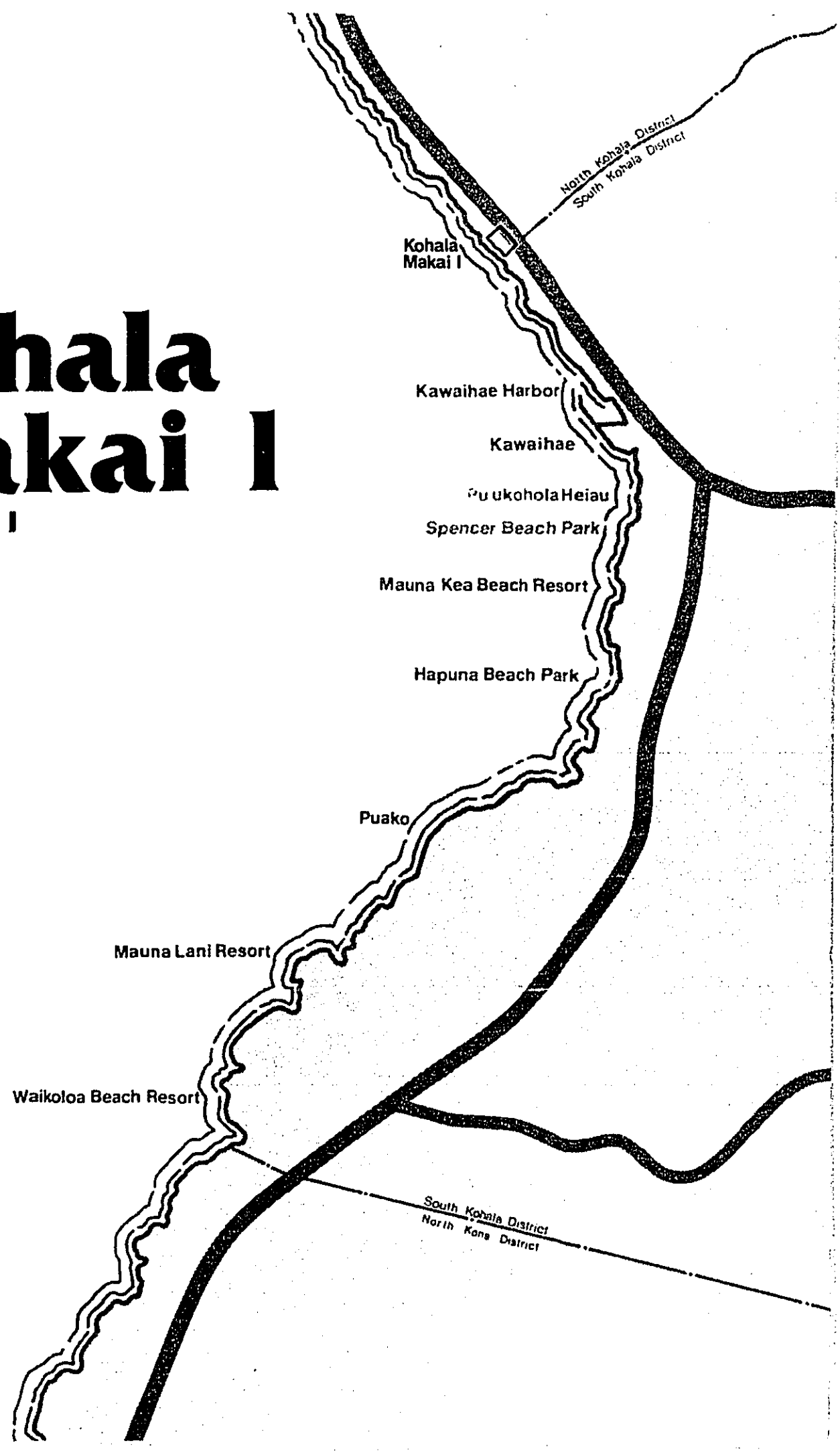
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Kohala Makai I

Chapter I



CHAPTER I

SUMMARY

PROJECT DESCRIPTION

Kohala Makai I, a Limited Partnership, proposes to develop a multi-family residential project on a 38-acre oceanfront site near Kawaihae on the Kohala coast of the Island of Hawaii. The site relates geographically, visually, climatically, socially and economically with Kawaihae and the resort region developing to the south. The site is located on the North/South Kohala district boundary line approximately two miles from Kawaihae. The site is within 15 miles of major urban services and facilities in Waimea.

Land uses near the 38-acre site include resort, industrial, residential, and agricultural developments. Resort uses include the three major South Kohala resorts of Mauna Kea, Mauna Lani, and Waikoloa. Industrial uses include the Kaei Hana II industrial subdivision and Kawaihae Harbor. The site is also near Kawaihae Village, a 67-unit residential project, and Kohala Estates, an agricultural subdivision located just mauka of the site, across Akoni Pule Highway.

The proposed Kohala Makai I development would consist of approximately 450 multi-family residential units. The development would offer a variety of one-, two-, and three-bedroom units. Adequate parking for units would be provided as well as a maximum amount of usable open space. Buildings would not exceed three stories. The development would include extensive landscaping to enhance the site and to lessen the potential visual impact of the buildings. Recreation facilities such as tennis courts, swimming pools, and picnic areas would be developed on-site. The proposed gross density of the development would be about 12 units per acre.

CHAPTER I

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The proposed Kohala Makai I development would consist of approximately 450 multi-family residential units. The development would offer a variety of one-, two-, and three-bedroom units. Adequate parking for units would be provided as well as a maximum amount of usable open space. Buildings would not exceed three stories. The development would include extensive landscaping to enhance the site and to lessen the potential visual impact of the buildings. Recreation facilities such as tennis courts, swimming pools, and picnic areas would be developed on-site. The proposed gross density of the development would be about 12 units per acre.

PROPOSED ACTION

The landowners, Kohala Makai I, propose an amendment to the Hawaii County General Plan. The amendment would re-designate the land use for the site shown on the General Plan Land Use Pattern Allocation Guide Map from "extensive agriculture" to "medium density" urban.

PROJECT RATIONALE

A market report, Market and Economic Impact Analysis for the Proposed Kohala Makai I Condominium, was prepared by Hastings, Martin, Chew & Associates, Ltd. (December 1980) to project condominium demand and supply in the region of the proposed development. The consultants, after examining the location, setting, and intended nature of the proposed project judged that the site would have favorable marketing potential. Further, based on a regional survey of planned condominium projects, they stated (p. 27) that "while it is possible that some of the planned condominium projects will be completed, it is highly unlikely that all possible and planned condominium projects will be completed on schedule. Therefore, based on the foregoing projections, we conclude that there would be sufficient demand to support the development of a condominium project at the Kohala Makai I site."

PHYSICAL IMPACTS OF THE PROPOSED PROJECT

Physical impacts of the proposed project were analyzed and the relative magnitude of those impacts on the site and on the region were assessed. The assessment looked at what physical changes to the environment might result from the proposed medium-density residential land use. Although the various environmental elements were analyzed separately, there are overlapping features which show the interrelationships of many of the environmental factors in the area.

Physiography and Geology

No significant adverse impacts are expected. Some alterations to the existing landforms would result from grading for building sites and roadways. The project's location is in the lowest volcanic risk zone of the island.

Residential units would be built outside the designated tsunami inundation zone for the site. The site's steep, rocky coastline minimizes the possibility of extensive run-up.

Soils

Development of the proposed project would not result in the loss of valuable agricultural land. Soil studies conducted by the U.S. Department of Agriculture, Soil Conservation Service and the University of Hawaii, Land Study Bureau show that the site has little potential for agriculture. During construction of the project a small increase in soil erosion could occur. However, erosion control measures would be taken during construction and once landscaping is established, erosion would be reduced below current levels.

Historic/Archaeological Resources

An archaeological survey of the project site (Rosendahl; July 1980) found nothing of significance. The remains and artifacts that were found were judged to have minimal significance in terms of potential for research, interpretation, or preservation. However, DLNR recommended that detailed mapping and test excavations be performed prior to the start of construction.

Flora and Fauna

A survey of the vegetation on the project site (Earthwatch; July 1981) found no rare or endangered species. Common weedy exotics predominate. The proposed project would impact existing vegetation during construction. Once construction is completed, re-planting and the introduction of new plant species would provide more vegetative diversity on the site.

No rare or endangered species were found on the project site in an avifaunal and mammal survey (Bruner; July 1981). For the short term, the project would disrupt wildlife through the temporary loss of vegetation during construction. For the long term, development of the area would provide a greater diversity of vegetative cover and would lead to some alteration of avifaunal composition.

Marine Environment

A marine survey (Dollar; July 1981) of the nearshore waters off the project site found no rare or unique marine life that might be substantially impacted by the proposed project. The nearshore marine community contains a rich and stable marine ecosystem. The greatest potential for impact on the marine life would be from runoff and sedimentation during construction. However, soil loss would be minimized by erosion control measures; sediment which does reach the water would tend to settle in sandy areas, rather than on coral or other benthic species. Therefore, no adverse environmental impacts are expected.

Traffic

The other planned and proposed projects in the North/South Kohala Districts would increase traffic levels on the regional highway network above roadway capacities on most sections by the year 2000. The Kohala Makai I project would proportionately add very little to the traffic levels. Highway improvements would be necessary without the project but development of Kohala Makai I would create a need for improvements at an earlier date.

Air Quality

The short-term impact of the project on air quality would occur during construction. Because the area is susceptible to soil erosion from wind, mitigation measures to limit wind erosion during construction would need to be employed. A long-term impact on the ambient air quality would occur from vehicular traffic generated by project and the electrical power demand of the project. Due to the projected traffic growth in the region from other planned development, ambient air quality standards violations may occur in the vicinity of roadways unless highway improvements are made to forestall traffic congestion. Kohala Makai I-related traffic by itself would not cause any significant adverse impacts on air quality but would contribute to the potential problem. Meeting the power demand of the project would probably result in an increase in emissions from power generating plants but since these must meet State and Federal emission and ambient air quality standards, no adverse impacts are expected.

Sonic Environment

The large increase in traffic which will result from other development in the region is likely to cause noise levels within 100 feet of major roadways to rise above the accepted standard of 65 L_{dn} for residential areas. Kohala Makai I traffic would further increase noise levels, but by insignificant amounts. Construction noise impacts of the project are not expected to be significant. However, since the project itself probably would be built in stages, noise mitigation measures would be needed to avoid adverse impacts on occupied units.

Visual Environment

The visual environment of the project area would, to an extent, be impacted by the development of the proposed residential units. However, the buildings would be low-rise (not more than three stories) and the site extensively landscaped. Since the highway runs in a deep cut along half of the site's frontage, and a landscape buffer would be planted along the highway, views toward the ocean would not be available from the highway section fronting the site. The plant materials on the site would add color and diversity to the views of the area's landscape.

Water Resources

The project would place a moderate demand on water resources in the region. The landowners would probably connect to the County water system and plan to participate in water development and water system improvement programs for the region. Kohala Makai I has an understanding with Kohala Estates that if its water source is developed and excess capacity results, the excess could be made available to Kohala Makai I.

Sewage Treatment and Disposal

The proposed development would require a private sewage treatment plant. The effluent would be disposed of in exfiltration wells or by use for irrigation. The treatment facilities and disposal method would comply with State Department of Health and Hawaii County Department of Public Works regulations.

Drainage

The development area is not within any major flood plain. Natural drainage channels on the site would not be substantially altered and runoff from the site would be conveyed to them. Although runoff quantities would be increased due to the construction of impermeable surfaces no adverse effects are anticipated. Since the capacities of the natural drainageways are larger than peak discharge rates and the increase from the project would not raise the total runoff volume through the gullies substantially, no flooding on the site would result. There is no danger of downstream flooding either as the site is at the makai end of the drainage basins in which it lies.

SOCIO-ECONOMIC IMPACTS OF THE PROPOSED PROJECT

The socio-economic impacts of the proposed project were assessed for the local as well as the regional area. New residents in the area associated with the proposed project would place a marginal additional demand on public facilities, utilities, and services in the region. The development would moderately stimulate the economy of the region through increased employment opportunities and through expenditures it would generate. Summarized below are the project's anticipated socio-economic impacts.

Demographic Characteristics

The proposed Kohala Makai I development would increase the population in the region by an estimated 1,145 persons. The population impact attributable to the proposed project really includes only those persons living in it who are not dependent upon local employment. Residents of the development attracted to the region by the employment opportunities generated by the planned resort developments would be living elsewhere if not at Kohala Makai I. Thus, it does not cause this portion of the population growth. However, at this time the demographic characteristics of the project's residents is not known, and so, to be conservative, all project-related population changes have been ascribed to it.

Housing Impacts

The project would result in increased housing choices for middle- and upper middle-income homebuyers and decrease pressure to develop housing on prime agricultural land. The project would not provide housing for lower-income residents, although by increasing the number of dwelling units, some lower-priced housing may be made available as present owners upgrade when buying new homes. If construction and operational employment opportunities created by the project are not filled by the locally available labor force, additional housing would be required in the region.

Local and Regional Economics

The overall impact of the proposed development on the economy of the region and on the State and County government is expected to be favorable. The development would create a number of construction jobs with the majority of workers likely to be from the region. For the long term, the development would also offer permanent employment for persons associated with the operation, security, and maintenance of the project. The project would also result in indirect jobs created by the purchases of the project's employees. Beneficial impacts on business in Waimea, Kawaihae, and North Kohala would result from retail spending increases due to these direct and indirect jobs. While government revenues and expenditures would both be increased by the proposed development, it is not possible to determine the precise amounts at this time. However, revenues are expected to exceed expenditures attributable to the project.

Impact on Nearby Land Uses

Development pressures on nearby agriculturally designated land which is privately owned would tend to increase as a result of the Kohala Makai I project. County policies and regulations would be a strong counter to these pressures. The extensive holdings of the state and the Department of Hawaiian Home Lands would be affected less by the pressures to urbanize.

Public Facilities, Services and Utilities

Schools. Schools in the region would be able to accommodate the additional children generated by the development. Based on the number of bedrooms per unit, expected household characteristics, and demographic trends, the number of children living in the project would be small.

Health Care Facilities. Adequate acute-care medical facilities and personnel exist in the region to serve persons from the development needing medical attention. Specialized care may become more available in the area as the population grows.

Fire and Police Protection. The project would marginally increase the need for additional police and fire protection services. Facilities and personnel will need to be augmented to adequately serve the other planned developments in the region as the existing police and fire protection services in the area are operating nearly at capacity.

Recreational Facilities. On-site recreational amenities and facilities would be provided for residents within the development. These would minimize the impact that additional full-time and part-time residents might have on recreation facilities in the region. Large increases in the region's park acreage will be required by the population growth which the resorts there are expected to stimulate.

Solid Waste Facilities. The proposed project would add only marginally to the need for solid waste disposal facilities. Existing County solid waste facilities are inadequate at this time to accommodate anticipated solid waste loads that will be generated by other development in the area. Studies are currently being conducted by the County to determine a suitable location for a new landfill site. The new landfill should be operational before the completion of this project (Sugiyama; August 1981).

Electrical Power. The distribution line for electricity for the Kohala Makai I project would tap the existing transmission line which was erected to service Kohala Estates. The two to three million kilowatt hours per year of

electricity the project would use could be provided without constructing new generating facilities, but a new electrical substation may be required on the project site.

Telephone System. To serve the project site a new telephone cable would be installed on the poles carrying the electric lines.

RELATIONSHIP TO EXISTING PUBLIC LAND USE PLANS, POLICIES, AND CONTROLS

The proposed project is generally consistent with the objectives of State and County policy plans. The proposed development is compatible with the urban district designation of the site by the State Land Use Commission. The project is not presently in conformance with the County land use plans, and this EIS is being submitted as partial fulfillment of the County requirements for amendment of the Land Use Pattern Allocation Guide map of its General Plan. Rezoning of the parcel would also be required.

ALTERNATIVES

Within the context of the objective of the landowners, the only viable alternatives to the proposed project are variations in density, i.e. slight increases or decreases in the number of residential units. Sale of the property would most likely result in a future request similar to the present proposal.

UNRESOLVED ISSUES

Present unresolved issues associated with the proposed project involve details of design and layout, including access; the erosion control measures which will be used during construction; the necessity of further archaeological work; the sewage effluent disposal method; certain public utilities, services, and facilities (most notably water service); and the County land use plan for the region. These issues are resolvable and will be resolved prior to development of the property.

Kohala Makai I

Chapter II



CHAPTER II
DESCRIPTION OF THE PROPOSED ACTION

STATEMENT OF OBJECTIVES

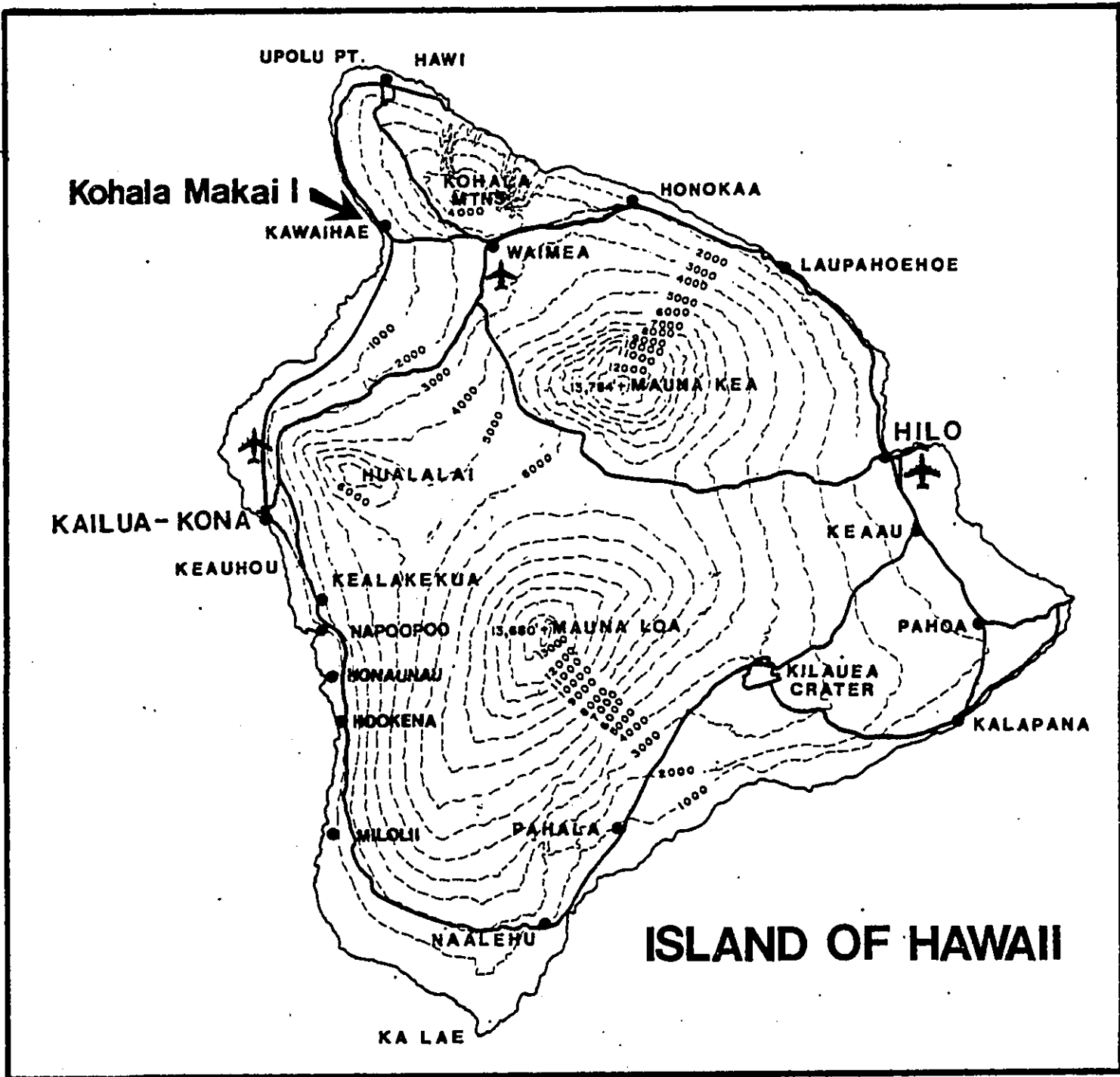
The landowners, Kohala Makai I, a Limited Partnership, are proposing a 450-unit multi-family residential project which would capitalize on the site's location, and the natural climatic, scenic, and recreational features of the Kawaihae Bay region. The project is close to Kawaihae and the major resort areas of South Kohala and is well suited for a development in which individual purchasers would own units for permanent or vacation residences. The project would be marketed as a "quality" multi-family development that would have local, state, and international appeal. The project would be marketed primarily towards middle and upper-middle income purchasers and would not be designed to compete with luxury projects (e.g., Mauna Kea Beach) in the region. The members of the partnership are residents of Hawaii and own no other property in the area. They view the proposed project as a unique opportunity to develop their property to meet the projected need of a particular market segment while at the same time realizing a reasonable return on their investment in the property.

BACKGROUND

Location and Environmental Setting

The proposed development site is a 38.249-acre oceanfront parcel (Tax Map Key: Third Division 5-9-01:6), located about two miles north of Kawaihae immediately north of the boundary line between the North and South Kohala Judicial Districts (see Figures II-1 and II-2).

The location of the Kohala Makai I project site and its physical, visual, and climatic characteristics link it closely to the coastal resort and urban areas of South Kohala.



**KOHALA MAKAI I
EIS**



Prepared By: Belt, Collins & Associates

Figure II-1

**Location of
the Proposed
Project**

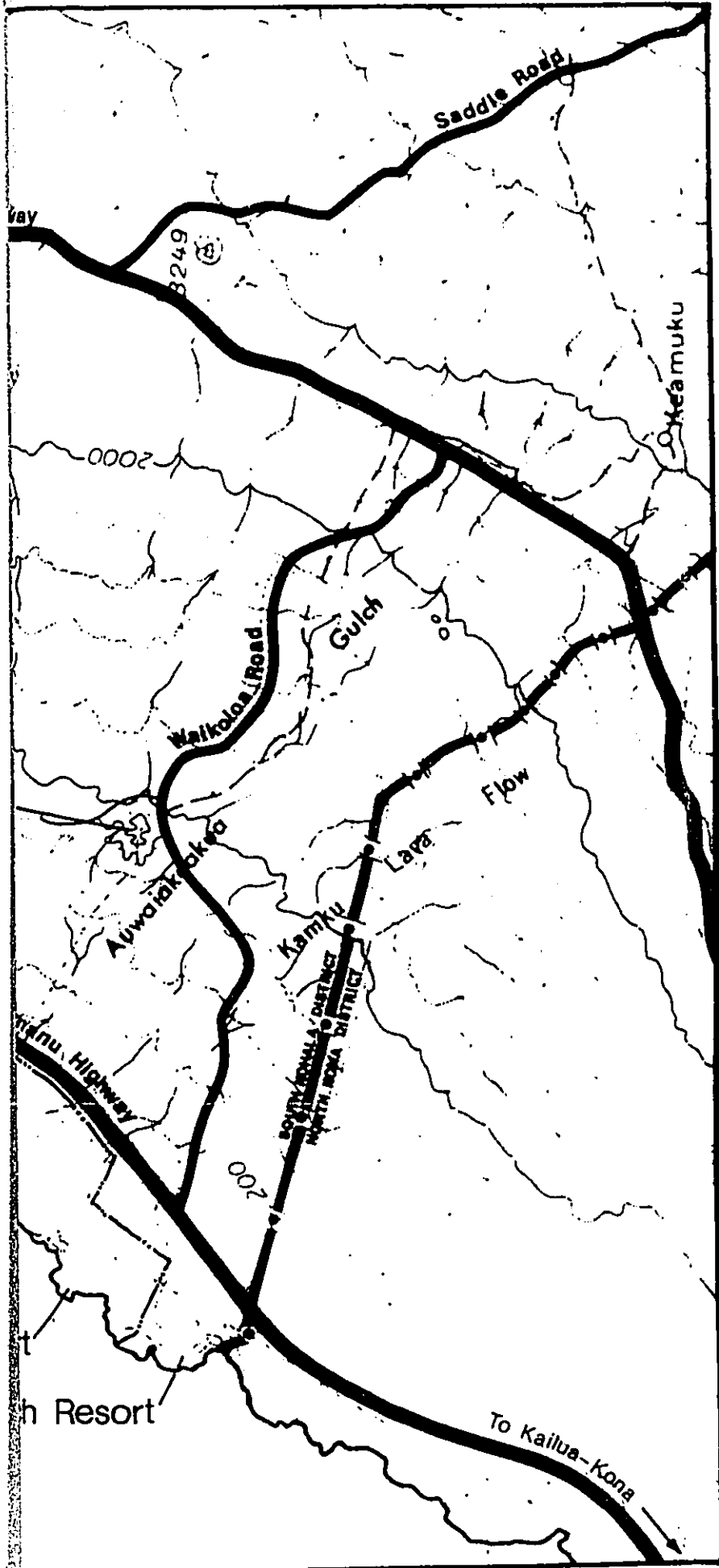


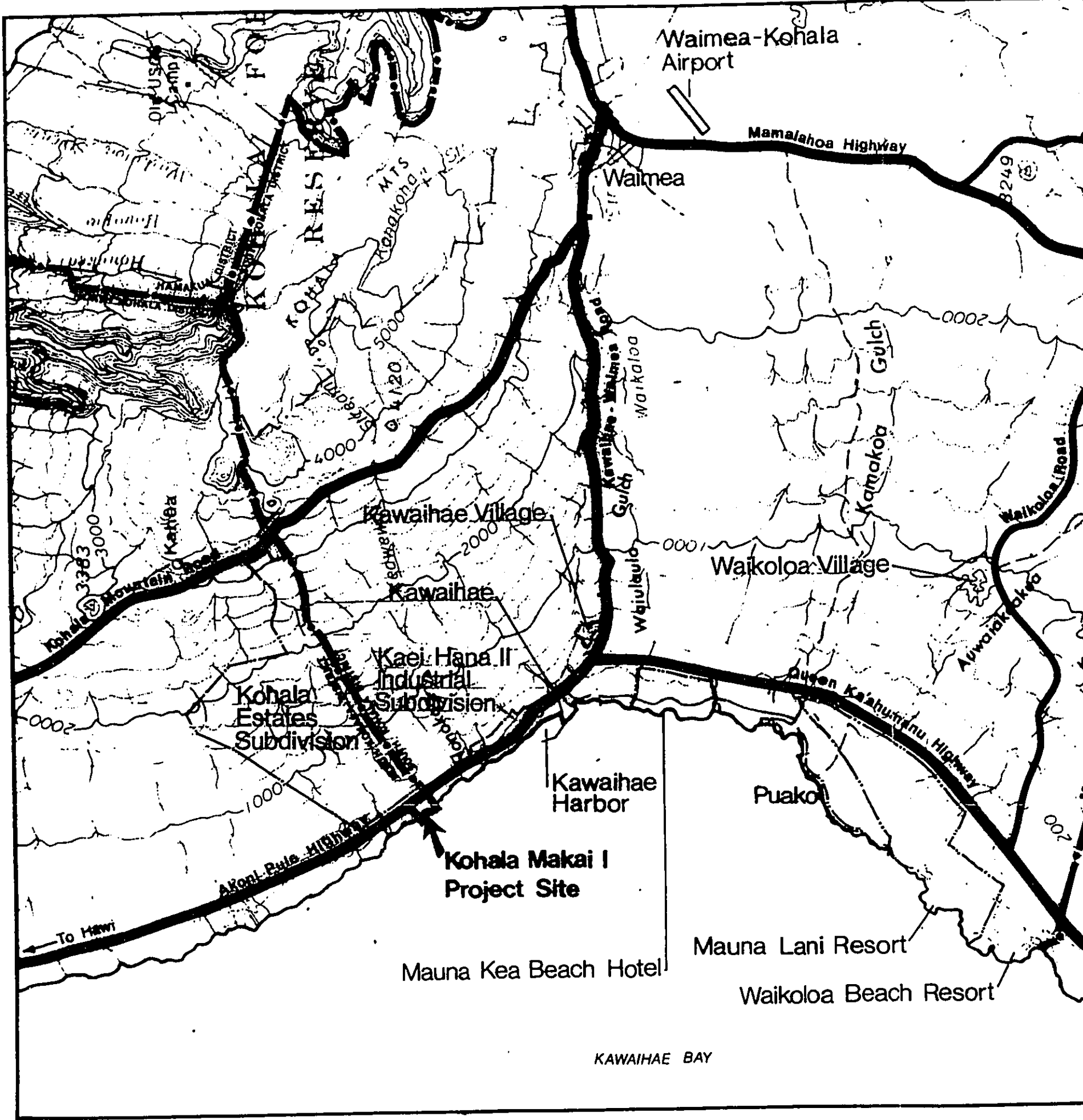
Figure II-2

Regional Location Map

KOHALA MAKAI I EIS



Prepared By: BELT, COLLINS & ASSOCIATES



Waimea-Kohala
Airport

Mamalahoa Highway

Waimea

KOHALA
RESERVE

Kawaihae Village

Kawaihae

Kaei Hana II
Industrial
Subdivision

Kohala
Estates
Subdivision

Kawaihae
Harbor

Kohala Makai I
Project Site

Waikoloa Village

Puako

Mauna Lani Resort

Waikoloa Beach Resort

KAWAIHAE BAY

To HAWAII

Akoni Pule Highway

Puuon Ka'ahumanu Highway

Waikoloa Road

Kamakoa Gulch

Kawaihae-Waimea Road

Waikulalo Gulch

Kohala Mountain Road

Kaheka

Schweizer

2000

1000

2000

4000

5000

6000

7000

8000

9000

10000

8249

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Temperatures in the coastal area of Kawaihae Bay range from an average of 76.2°F in January to 82.5°F in August, with an annual average temperature of 79.4°F. Kohala Makai I's climate is generally the same as that of all the land fronting the Kawaihae Bay.

Rainfall in the area is very sparse. Statistics between the years 1931 through 1966 show that the mean annual rainfall for the area was approximately 7.0 inches. The arid climate leaves much of the land sparsely vegetated.

Wind in the area is predominantly from the west-northwest during daylight hours. During the evening, the wind shifts and comes off the Kohala Mountains and blows from the east-southeast. The moderate winds that blow onshore during the day produce a breeze that provides relief from the warm climate. There are periods when gusty tradewinds can reach gale levels.

The topography of the site (see Figures II-3 and II-4) slopes from mauka to makai and offers magnificent views of the Kawaihae Bay coastline (see Figure II-5a). The site has a beautiful, rocky coastline (see Figure II-5b), whose elevation varies from sea level, where the drainageways on the site meet the sea, to cliffs 20 to 30 feet above the water. There are no beaches along the site's shoreline.

Access to the ocean is limited. Two jeep trails run from Akoni Pule Highway just inside the north and south boundaries of the site (see Figures II-5c and II-7) and connect with a trail that parallels the coastline about 100 feet inland with several spurs to the shore. These trails are used by area residents for access to the site and coastline.

Akoni Pule Highway, which connects Kawaihae to communities in North Kohala, forms the mauka property line of the proposed site. The southern property line of the site is delineated by a fence running mauka-makai from the coast to the Akoni Pule Highway (see Figure II-5d). The fence is on the South/North Kohala Judicial District boundary line. The northern property line of the site generally runs mauka-makai but forms about a 60-degree angle with the highway and bends slightly about 150 feet from the shoreline (see Figure II-3). The makai boundary of the site is the ocean.

The adjacent properties are: 1) Hawaiian Home Lands to the south, 2) Kahua Ranch property to the north, and 3) Kohala Estates subdivision mauka of the site across Akoni Pule Highway. Other major landowners in the area are: the State of Hawaii, Kahua Ranch and the Queen Emma Foundation (see Figure II-6).

The major developments in the region are listed below and shown on Figure II-2.

- 1) The three developing major resorts of Mauna Kea, Mauna Lani and Waikoloa;
- 2) Waikoloa Village, a residential community being developed in conjunction with Waikoloa Resort;
- 3) Kawaihae Village, a residential project built in conjunction with Mauna Kea Resort;
- 4) Puako, a State-developed residential subdivision along the coastline;
- 5) Kohala Estates, an agricultural subdivision of 5- to 20-acre lots;
- 6) Kawaihae Harbor and the commercial, industrial, and residential parcels near it;
- 7) Kaei Hana II Industrial Subdivision, located just north of the harbor, mauka of Akoni Pule Highway; and
- 8) Waimea, the major town and commercial center of the region.

The Department of Hawaiian Home Lands has had engineering plans and specifications prepared for houselots makai of the Kaei Hana II Industrial Subdivision, but is now reexamining land uses for this site and for the approximately 10,000 acres it owns between Kawaihae and the North/South Kohala boundary as well.

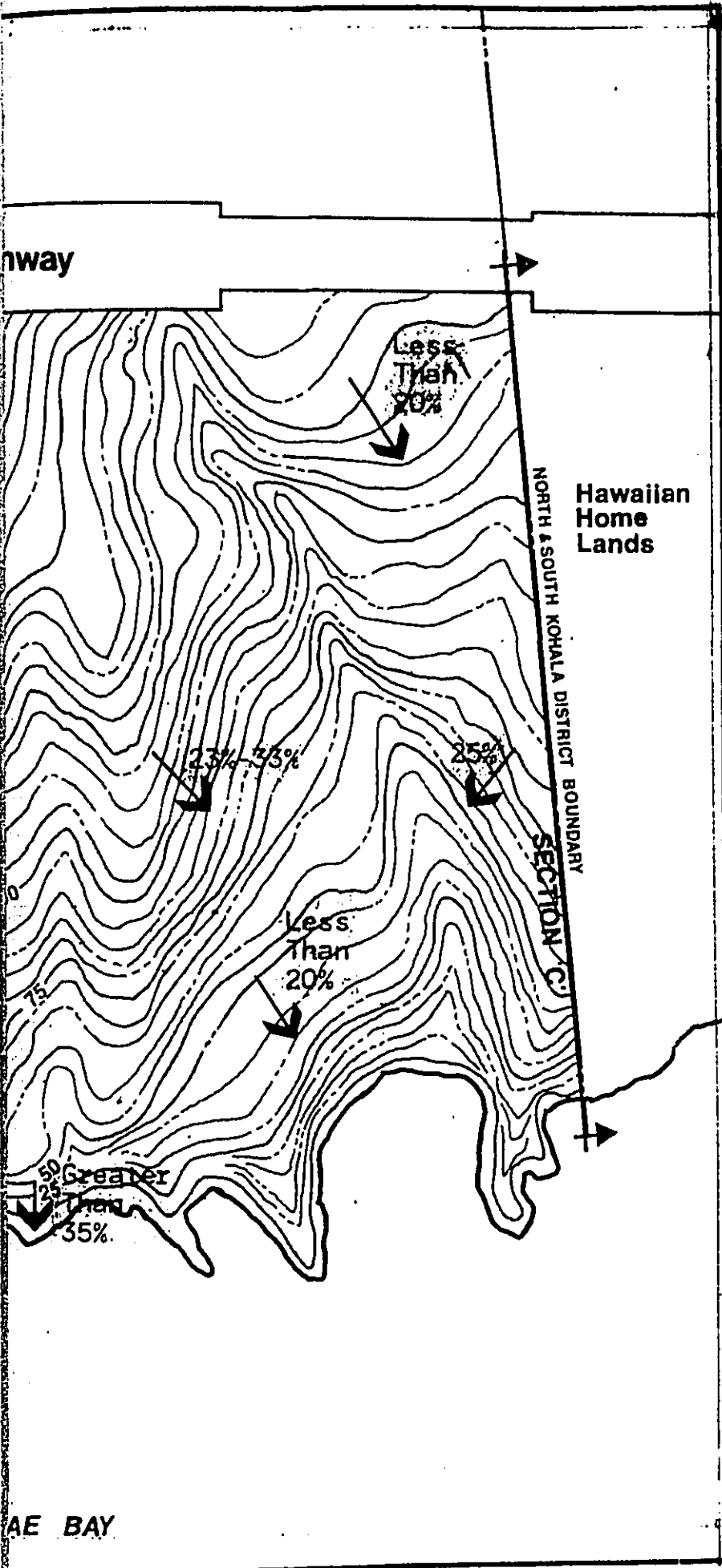






Figure II-3

Site Topography

LEGEND

-  25-ft. Contour Intervals
-  5-ft. Contour Intervals
-  Prevailing Slope
-  Section Lines (See Figure II-4)

KOHALA MAKAI I EIS

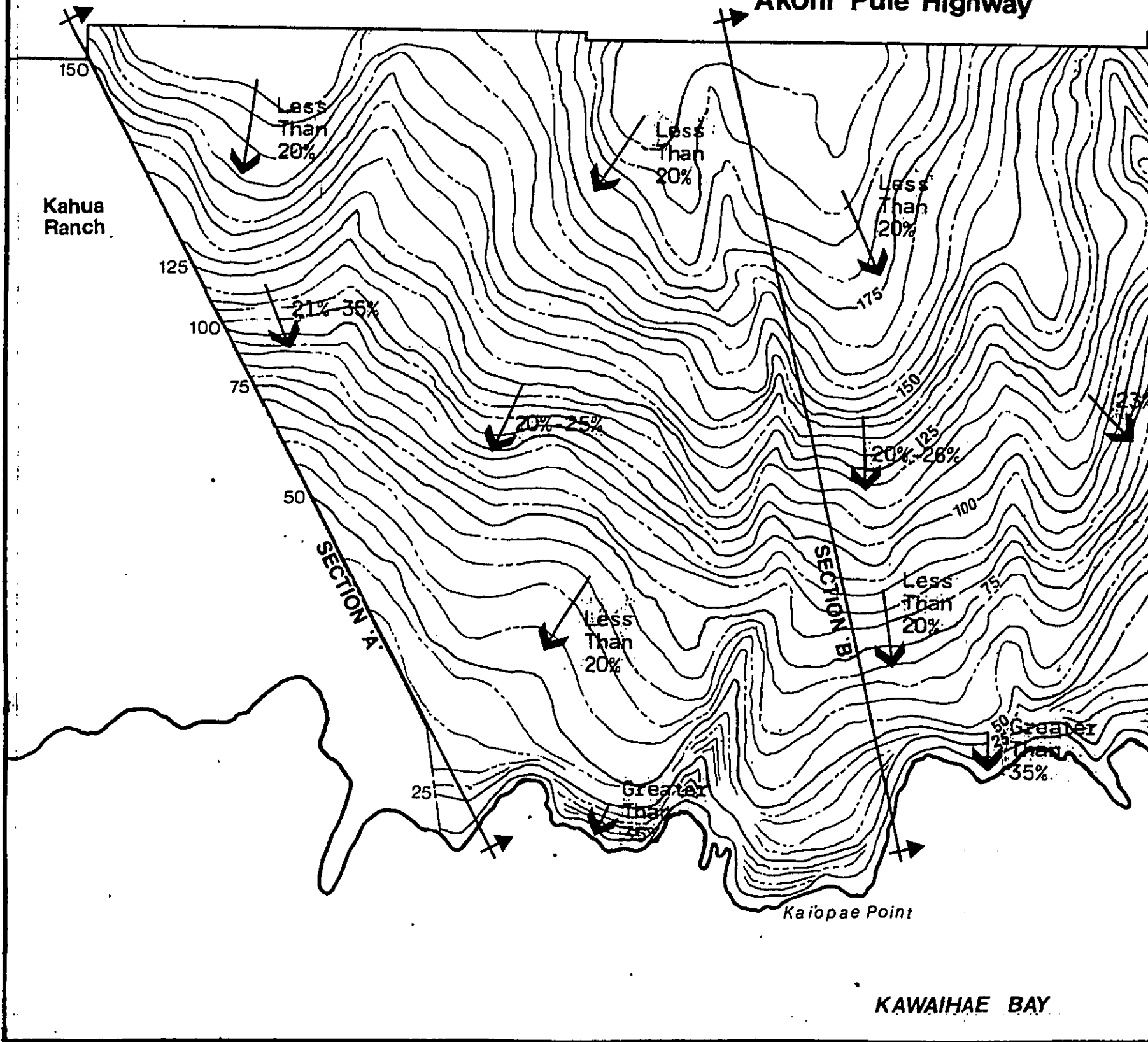


Prepared By: BELT, COLLINS & ASSOCIATES

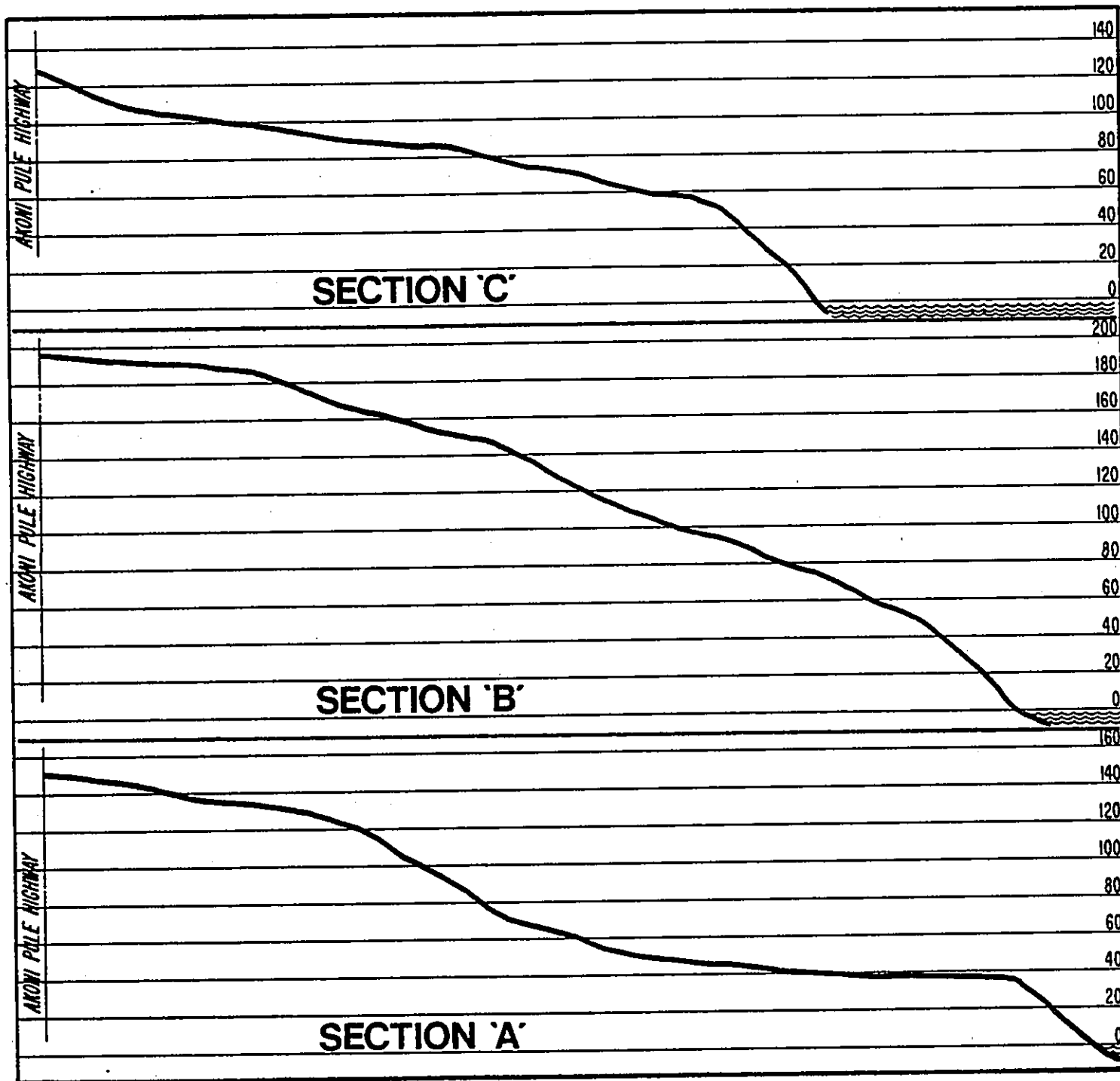
Kohala Estates
Subdivision

Akoni Pule Highway

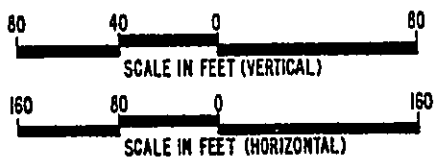
Kahua
Ranch



KAWAIIHAE BAY



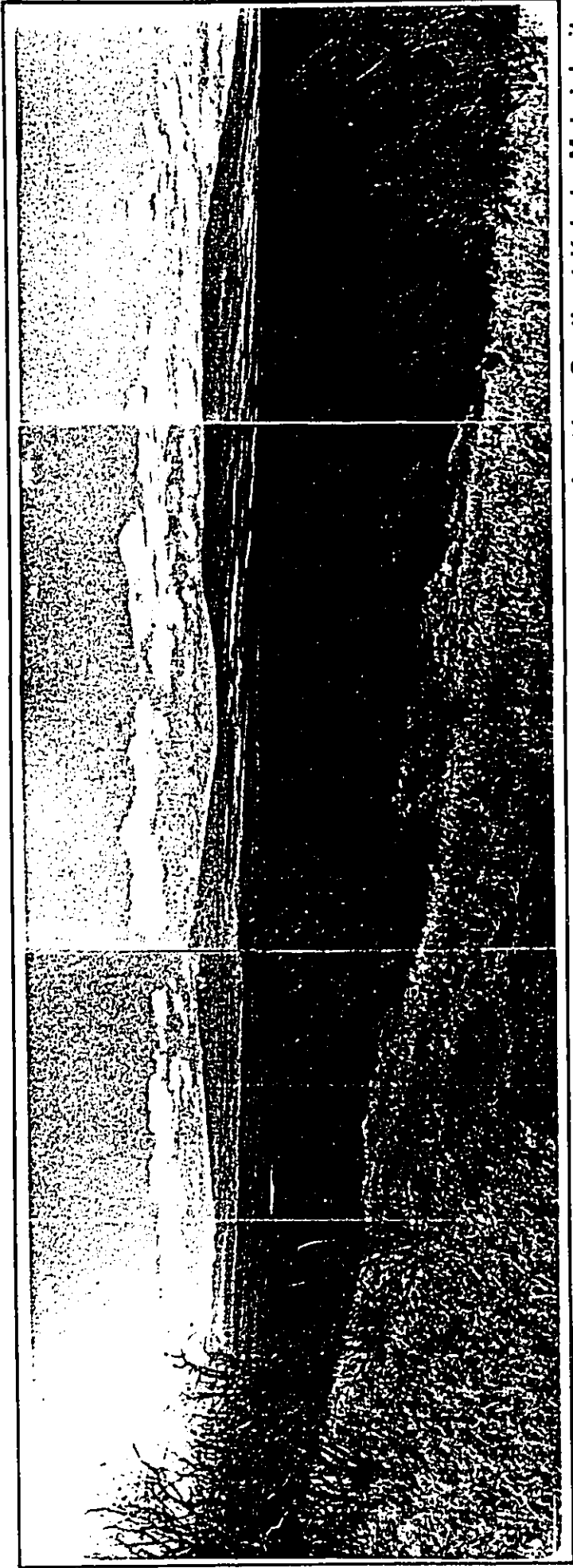
**KOHALA MAKAI I
EIS**



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Figure II-4

**Cross
Sections of
the Site**



a. Looking South at Kohala Makai I site.



b. Kohala Makai I site shoreline.



c. Jeep trail on the Kohala Makai I property.



d. Fence line on the south boundary of Kohala Makai I property.

Figure: II-5

Existing Views

KOHALA MAKAI I EIS

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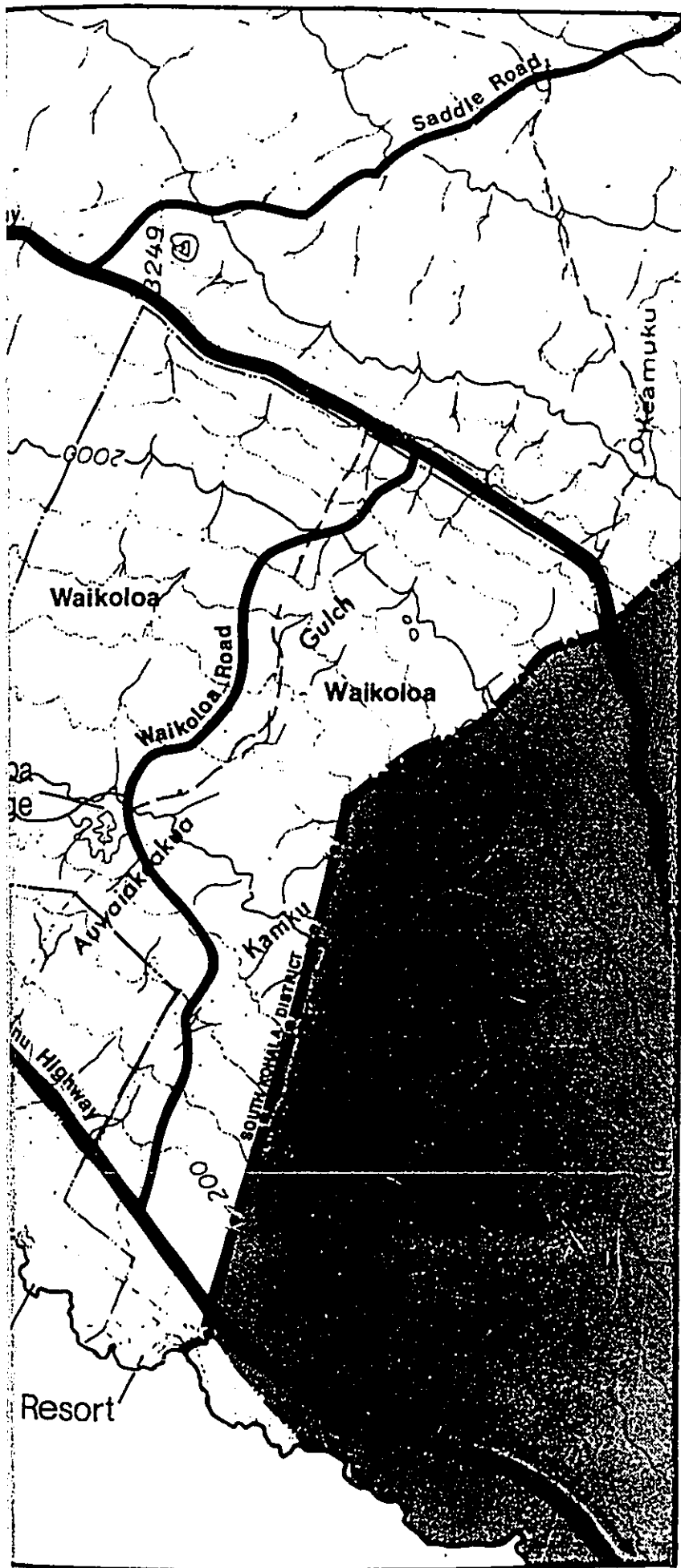





Figure II-6

Generalized Land Ownership

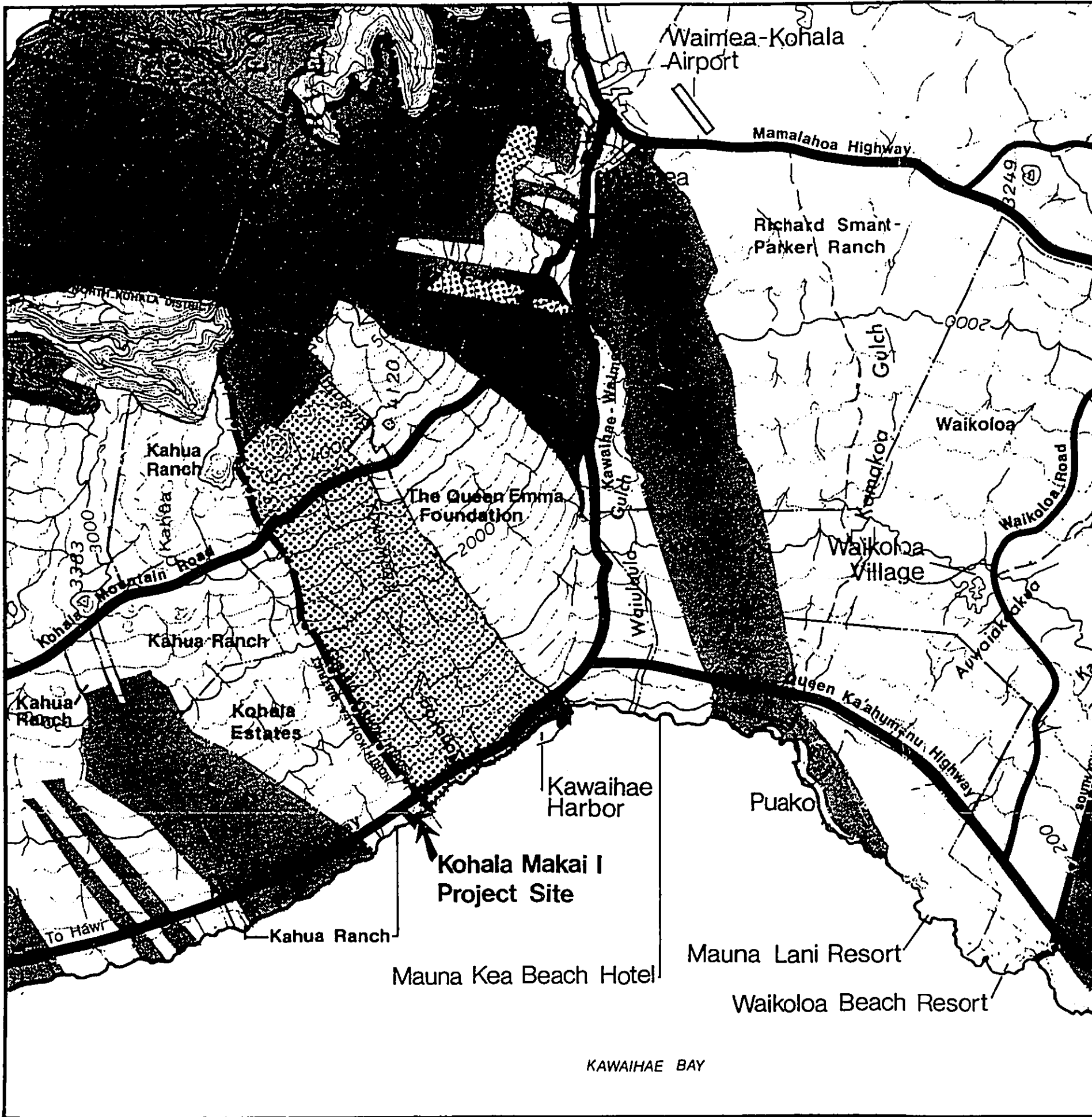
LEGEND

-  State of Hawaii
-  Hawaiian Home Lands
-  Private landowners

KOHALA MAKAI I EIS



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Land Use Designations - State and County

The proposed project site is classified urban by the State of Hawaii Land Use Commission. In the 1969 State Land Use Commission's review of its district regulations and boundaries, approximately 135 acres of land immediately north of the North/South Kohala district boundary line and makai of Akoni Pule Highway, including the Kohala Makai I parcel, were reclassified to urban from agriculture. The land was classified urban to allow its development as a resort area. The Kohala Makai I property was purchased from Kahua Ranch by the Hilton Head Company of Hawaii, Inc. under an agreement of sale, and subsequently sold to Kohala Makai I, a Limited Partnership, in 1979 under a sub-agreement of sale.

In considering the urban reclassification request in 1969, the State Land Use Commission foresaw extensive urban development in the Kawaihae area. The State of Hawaii Land Use Districts and Regulations Review (Eckbo, Dean, Austin & Williams; August 15, 1969) indicates a number of urban development proposals were submitted to the Commission for review at the time. Mauna Kea, Mauna Lani, and Waikoloa resorts as well as Kawaihae Harbor were viewed as the impetus for residential, commercial, and industrial growth in the area. The Commission designated urban districts in a generally linear pattern along the coastline in the Kawaihae Bay area. The State urban districts in the area extend along the coast between the extensive State-owned land north of Hilton Head Company's land and the major State lands south of Waikoloa Resort. Beyond these urban-designated lands the State Land Use Commission placed the coastal areas in its conservation district.

The County of Hawaii General Plan currently designates the proposed development site as extensive agriculture and open space. The developers, Kohala Makai I, are seeking a General Plan amendment of the extensive agriculture designation to a medium density urban designation. The amendment would, if approved, redesignate the site on the current Land Use Pattern Allocation Guide (LUPAG) map for the area. The open space designation would remain. Since the width of the open space corridor along the coastline is not precisely determined by the LUPAG map or the open space policies of the General Plan, the boundary would have to be set during the zoning change process. Presently, the site is zoned "unplanned" by the County of Hawaii.

SITE OPPORTUNITIES AND CONSTRAINTS

There are a number of opportunities and constraints associated with the proposed project site. Some of these are listed below.

Slope

As shown in Figure II-3, Site Topography, and Figure II-7, Site Opportunities and Constraints, major portions of the site contain readily developable areas with slopes of less than 20 percent. Some relatively steep slopes (from 20 to 30 percent) may be developable, also. For the most part, slopes steeper than 30 percent are usually not recommended as building areas or require special planning and engineering considerations for development.

The topography of the site offers opportunities for excellent views from most parts of the site. The views represent one of the most marketable amenities of the site.

Natural Drainage Channels

Two major and two minor drainageways, or gullies, are located on the proposed development site (see Figure II-7). The major ones are defined as those which extend mauka of the site; i.e., they channel runoff from a larger area under Akoni Pule Highway and through the site. The four gullies would be kept in open space as natural drainageways for the site.

Potential Tsunami Inundation Area

The height of a tsunami with a 100-year recurrence interval is approximately ten feet at the shoreline of the site. The area which would be inundated by such a tsunami is shown on Figure II-7. Because of the cliffs at the site's coastline and the sloping terrain behind the cliffs, only a small portion of the site is subject to tsunami inundation. All development would occur outside of this zone.

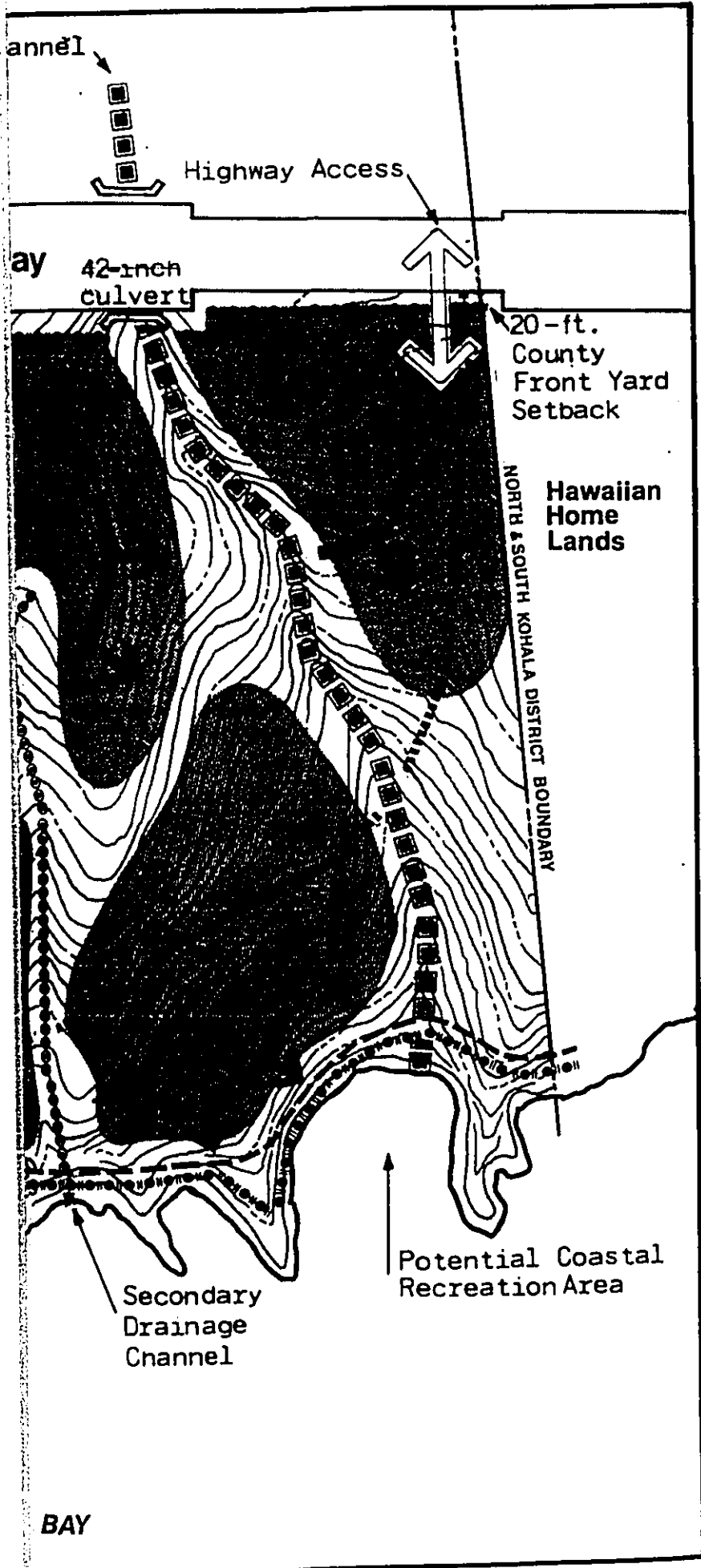


Figure II-7

Site Opportunities & Constraints

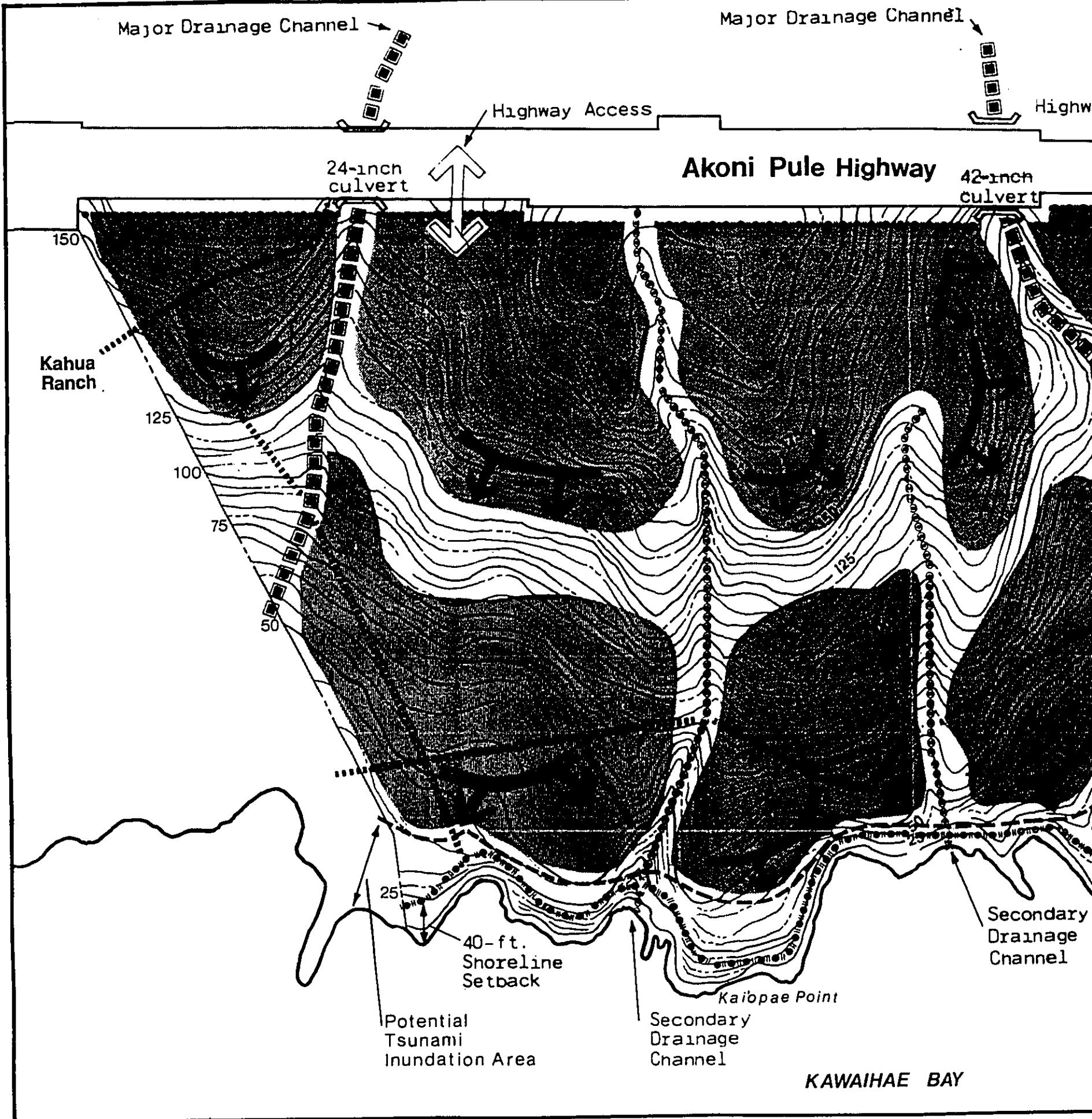
LEGEND

- ← Views
- Potential development areas
- 5-ft. Contour Intervals
- 25-ft. Contour Intervals
- Existing Jeep Trails

KOHALA MAKAI I EIS



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Front Yard Setback

The County setback requirement from the Akoni Pule Highway right-of-way (the front property line) is 20 feet (Article 5, Section 7, Hawaii County Zoning Code).

Shoreline Setback

The State and County shoreline setback requirement for the site is 40 feet inland from the shoreline as certified by a registered land surveyor and confirmed by the Chairman of the Board of Land and Natural Resources. The shoreline survey would be performed later in the permitting process.

Special Management Area (SMA)

The proposed site is entirely within the SMA which extends from Akoni Pule Highway to the shoreline. Any development within the site would be subject to the Special Management Area Rules and Regulations of the County of Hawaii.

CONCEPTUAL LAND USE PLAN

Based on the site opportunities and constraints noted above, a conceptual land use plan was prepared (see Figure II-8). The plan recognizes various site opportunities and constraints in providing for view opportunities, open space, recreation areas, and proposed public access to the shoreline. Natural drainageways and steep slope areas are preserved. The shoreline was deemed to be an environmentally sensitive area of the site, and a significant setback is indicated. Ingress and egress to the proposed development from Akoni Pule Highway would be from one or both of the two State-designated access points. The road system in the development would use 18- to 20-foot wide private roadways designed to minimize grading. The conceptual plan also indicates extensive landscaping between Akoni Pule Highway and residential areas near the highway. A proposed package sewage treatment plant shown on the plan is in an area of the site that should have minimal impact on the residential units. Landscaping would screen it from the view of residents or travellers on the highway.

TECHNICAL CHARACTERISTICS

Density

The proposed Kohala Makai I project would consist of approximately 450 units on a 38-acre parcel and thus have a gross density of about 12 units per acre. This density would allow for low-rise buildings with adequate parking, landscaping and other amenities.

Type of Units

The proposed project would consist of multi-family units arranged in clusters to maximize open space and to ensure views of the coastline from each unit. For the purposes of this EIS the following assumptions on the mix, type, and size of the units were used:

| | <u>Approx. Mix</u> | <u>Unit Type</u> | <u>Unit Size</u> | <u>Number</u> | <u>Building Area Total Square Feet</u> |
|--------|------------------------|----------------------|----------------------|---------------|--|
| | 20% | 1 bdr. @ | 1,000 s.f. = | 90 = | 90,000 s.f. |
| | 70% | 2 bdr. @ | 1,200 s.f. = | 315 = | 378,000 s.f. |
| | <u>10%</u> | 3 bdr. @ | 1,600 s.f. = | <u>45</u> = | <u>72,000 s.f.</u> |
| TOTALS | 100% | | | 450 | 540,000 s.f. |

Individual buildings would not exceed three stories in height. Parking would be in carports incorporated into the building design to allow for a maximum amount of "green" open space. Parking would be provided in accordance with Hawaii County requirements.

Phasing

The proposed project, after receiving necessary government approvals and permits, should be completed within a three- to five-year period assuming no unforeseen construction delays. After acceptance of a site plan, a phasing schedule for the project would be submitted to the County.

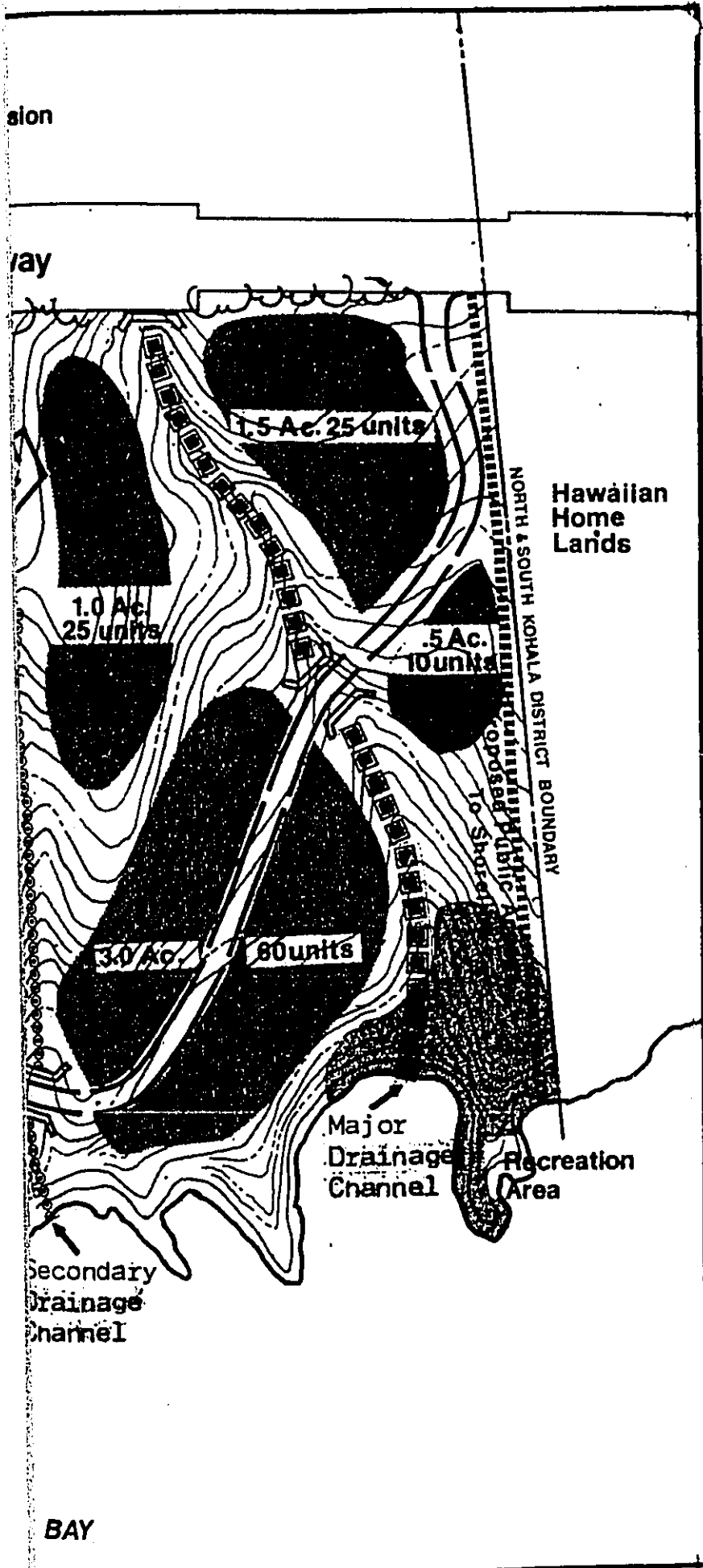


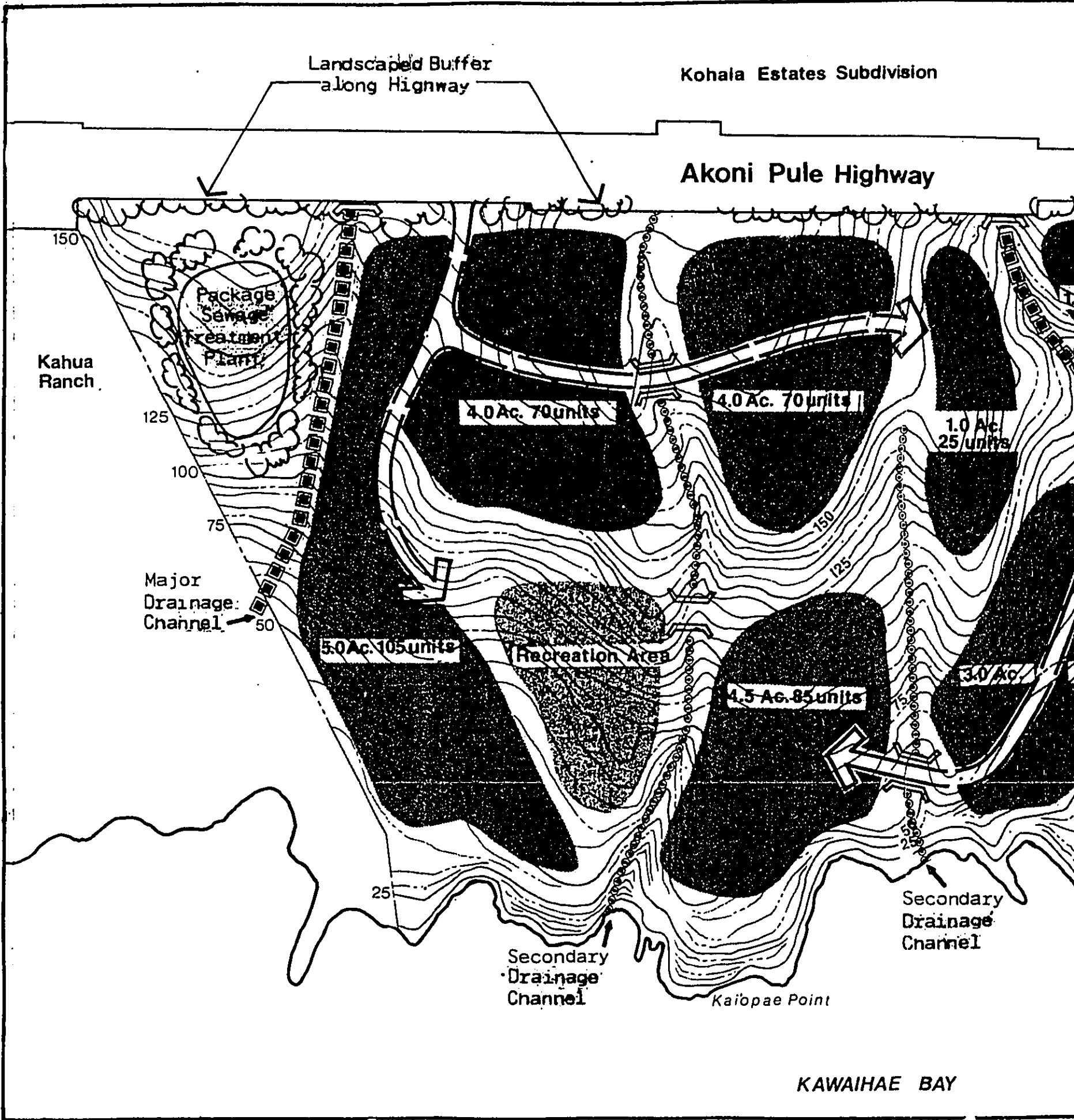
Figure II-8

Conceptual Land Use Plan

KOHALA MAKAI I EIS



Prepared By: BELT, COLLINS & ASSOCIATES



Access

Access to the development would be from one or both of the two access points on Akoni Pule Highway permitted by the State Department of Transportation (September 2, 1964). The first access is 32 feet wide and is immediately north of the site's southern property line. The second access is 60 feet wide and about 1,300 feet north of the first access. This access point would be the primary entry to the development. The intersections would be designed to State standards. The width of the right-of-way of Akoni Pule Highway across the top of the parcel ranges between 80 and 140 feet.

The landowners would provide public access as required by the County. This access would comply with the rules, regulations, and policies of the County of Hawaii.

Landscaping

Landscaping on the proposed development site would serve several functions. Landscaping would be utilized to help stabilize steeper slopes, preventing excessive runoff and possible erosion problems. It would provide shade, attract birdlife, and screen undesirable views. Landscaping would also be used to enhance the aesthetic quality of the open spaces, buildings, parking and recreation areas by creating a pleasant tropical setting.

Amenities

The proposed development would include a number of on-site amenities for recreation use by Kohala Makai I residents. These might include tennis courts, a swimming pool, picnic areas, and ocean access. Public access to the shoreline would also be provided as stated above.

Off-site Infrastructure

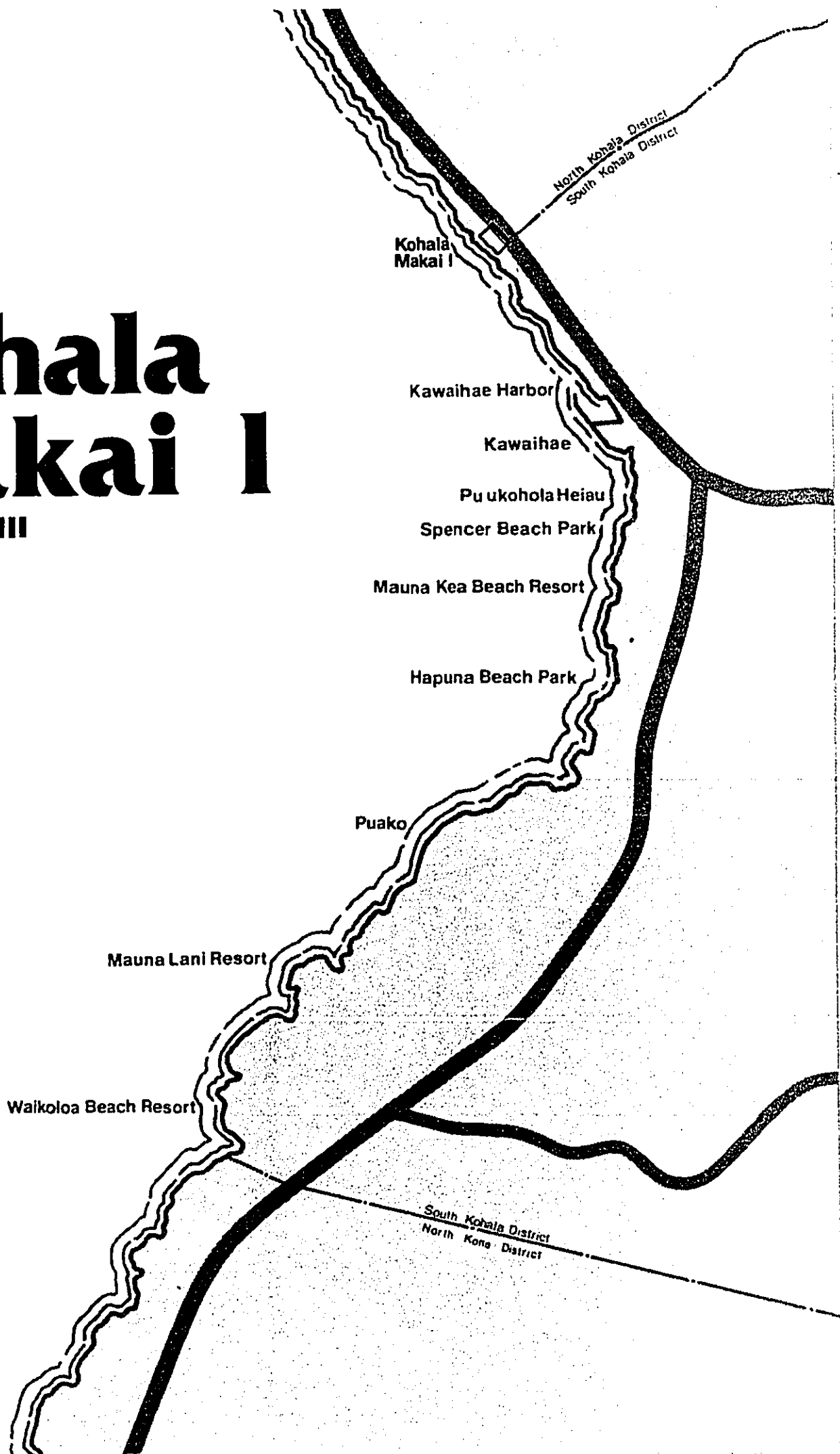
The proposed development would need certain off-site infrastructure. While overhead telephone and electric lines do service the Kohala Estates subdivision just mauka of the site, their capacities are not adequate to provide the

service the proposed 450-unit development is expected to need. Therefore extra lines and perhaps an electrical substation would be required. The development would also have to be connected to an off-site water system. The sewage effluent disposal system may be constructed on nearby land. Depending upon what improvements the State Department of Transportation requires, the intersections of the access roads and Akoni Pule Highway may involve off-site work. These issues are discussed in more depth in Chapters IV and V.

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HONOLULU, HAWAII

Kohala Makai I

Chapter III



CHAPTER III
PROJECT RATIONALE

Introduction

The market study* (Hastings, Martin, Chew & Associates, Ltd.; December 1980) prepared for the proposed Kohala Makai I development analyzed the effective market demand in the region. The study examined projected visitor and residential demand, compared it to planned new developments in the region, and concluded that at the expected completion of the project demand for condominium visitor and residential units in the region would be significant. The report states on page 27:

The favorable outlook is largely due to the current absence of existing condominium development commitments in any of the planned Kohala Coast resorts. Taking into account only one committed project in the region, at Waikoloa Village, the demand projection allows for the absorption of an additional 1,700 to 2,130 units by 1985 and an additional 3,110 to 3,460 units by 1990, a total of 4,810 to 5,590 units.

The assumptions and conclusions of the market study were utilized to develop the conceptual land use plan for the site. The conceptual plan provided the basis for the analysis of the project's impacts.

Market Area and Demand

The overall attractiveness of any given location for visitor and residential accommodations depends on a number of factors. The regional factors that make the Kohala coast attractive for visitor development are its excellent climate and accessibility to ocean-related recreation opportunities. Capitalizing on a beautiful natural setting, the Mauna Kea Beach Hotel has proven the attractiveness of the region as a tourist destination area. The market study points

*Because of its length, The Market and Economic Impact Analysis for the Proposed Kohala Makai I Condominium was not included as an appendix to this EIS. However, copies have been filed with the Hawaii County Planning Department and the State's Environmental Quality Commission.

out that the Kohala Makai I site shares many attributes (e.g., favorable climate, appealing scenic and topographic features, and access to ocean-related recreation) with the resort developments to the south. The relatively secluded nature of the site should make it attractive to owner occupants and other residents who do not wish to live in a resort area. The site is easily accessible and is as close to the urban facilities in Waimea as other developments in the coastal area.

Visitor Accommodation Demand

The expected distribution of projected visitor accommodations, for the period 1980 to 1990, shows that the Kohala region may be able to capture 70 to 90 percent of anticipated visitor accommodation demand in Hawaii County for areas outside of Hilo and Kona (Hastings, Martin, Chew & Associates, Ltd.; December 1980:12). Assuming an average of 80 percent, demand in the Kohala coast region is projected to result in a need for about 1,360 new units from 1980 to 1985, and an additional 1,900 units from 1985 to 1990 (see Table III-1).

The proposed project would be utilized for both full-time residences and long-stay visitor accommodations. Based upon the experience of other resort regions, the market study projects that the demand for condominium units in the Kohala coast region could exceed the demand for hotel room accommodations in the near future. Visitor condominium units offer a number of advantages over hotel accommodations such as: (a) greater privacy and less formality; (b) more space; (c) kitchen facilities (which results in cost savings for larger groups); (d) wider market appeal (depending on price, amenities, etc.); (e) investment potential from rental income; and (f) investment flexibility for the owner in that units can be used for short- or long-term rental.

Table III-2 shows, for the neighbor islands, the percentages of visitors staying in hotels and condominiums as well as the estimated breakdown of visitor units actually occupied. The table shows that Maui has experienced the highest percentage of visitors staying in condominiums. As the market study points out, this statistic may be indicative of a relatively mature resort destination area. The table also shows Hawaii County having the lowest

Table III-1. Estimated Demand for New Visitor Accommodations in the Kohala Coast Resort Region: 1980-1990.¹

| | <u>1980-1985</u> | <u>1985-1990</u> | <u>1980-1990</u> |
|--|------------------|------------------|------------------|
| Projected Additional Occupied Unit Demand In Areas Outside Hilo and Kona (Rounded) | 1,700 | 2,380 | 4,080 |
| Percent Attracted to the Kohala Coast Resort Region | 80% | 80% | 80% |
| Estimated Additional Occupied Unit Demand, Kohala Coast Resort Region | 1,360 | 1,900 | 3,260 |

¹ Includes both hotels and condominiums available for visitor use.

Source: Hastings, Martin, Chew & Associates, Ltd. (December 1980:14).

Table III-2. Visitor Place of Stay and Inventory of Visitor Accommodations Actually Occupied on the Islands of Maui, Kauai, and Hawaii: January - July 1980.

| <u>Percent of Visitors Who Stay In:</u> | <u>Maui</u> | <u>Kauai</u> | <u>Hawaii</u> | <u>Neighbor Island Average</u> |
|--|-------------|--------------|---------------|--------------------------------|
| Hotels | 55.0% | 79.0% | 88.0% | 70.0% |
| Condominiums | <u>45.0</u> | <u>21.0</u> | <u>12.0</u> | <u>30.0</u> |
| Total ¹ | 100.0% | 100.0% | 100.0% | 100.0% |
| | | | | |
| <u>Inventory of Visitor Accommodations</u> (Occupied Units) | | | | |
| Hotels | 57.0% | 80.7% | 89.5% | 71.9% |
| Condominiums | <u>43.0</u> | <u>19.3</u> | <u>10.5</u> | <u>28.1</u> |
| Total ¹ | 100.0% | 100.0% | 100.0% | 100.0% |

¹ Totals rounded to 100.0 percent by adjusting for the small percentage of visitors who stay in private homes and other accommodations.

Source: Hastings, Martin, Chew & Associates, Ltd. (December 1980:16).

percentage of visitors staying in condominium units. Overall, about 70 percent of the visitors to the neighbor islands stayed in hotels and about 30 percent in condominiums.

The overall mix of hotel rooms to condominium units in the Kohala region is forecast to be about 75 percent hotel rooms and 25 percent condominium units between 1980 and 1985 and, about 70 percent hotel rooms and 30 percent condominiums by 1990 (Hastings, Martin, Chew & Associates, Ltd.; December 1980:17). In order to determine the estimated demand in the region for both unit types, ratios determined from prior West Maui and North Kona resort region studies were plotted and projected to the year 2000. The projected ratios were then used to convert estimates of hotel room demand to condominium unit demand, including condominium units likely to be used as visitor accommodations. The result shows that visitor demand for Kohala coast resort accommodations would total 2,030 hotel rooms and condominium units by 1985. Of these, 1,460 are estimated to be hotel rooms and 570 condominium units. By 1990, the total demand is projected to be 4,890 units with 3,260 for hotel room use and 1,630 for condominium units (Hastings, Martin, Chew & Associates, Ltd.; December 1980:17).

Residential Accommodation Demand

Recently, the cost of housing and high mortgage interest rates have lessened the possibility of home ownership for many. The market study points out that in order to respond to the continued demand for home ownership, lenders and government have instituted various programs and policies. It is hoped that, in the near future, more favorable interest rates along with private and government mortgage programs will help to make more units affordable for a broader spectrum of the population.

A projection of household incomes in North and South Kohala presented in the market study shows that resort condominium units priced at over \$140,000 could be afforded by approximately 300 households, about 9 percent of all households in the Kohala region in 1985. "By 1990, the total would increase to 495 households or about 11 percent of all market area households" (Hastings, Martin, Chew & Associates, Ltd.; December 1980:25).

Some buyers of the Kohala Makai I units are projected to be residents of North and South Kohala. Other full-time residential occupants would likely come from other areas of the island of Hawaii, other islands, and from national or international markets. Initially about 70 percent of the units are expected to be occupied by full-time residents with the remaining 30 percent occupied part-time by owners or visitors (Hastings, Martin, Chew & Associates, Ltd.; December 1980:35). In the final stage, full-time occupancy could increase to about 90 percent.

Market Demand Conclusions

Even if all the planned condominium developments are constructed, unmet demand for residential and visitor-oriented condominiums is projected at 600 to 1,030 units in 1985, increasing to 1,470 to 1,820 units by 1990 (Hastings, Martin, Chew & Associates, Ltd.; December 1980:27). The number of units proposed for the Kohala Makai I development would fall within this projected range of unmet demand. Hence the study concluded that there would be a market for the Kohala Makai I project if high-quality planning and design are maintained.

The issue of the possible effect of the proposed Ohana Housing law was raised in the EIS review process. Hastings, Martin, Chew & Associates have responded that they believe passage of this law would only slightly impede the housing demand for the proposed project, given the difference between it and Ohana housing in terms of such things as location, amenities, and price.

Hastings, Martin, Chew & Associates, Ltd. has analyzed the possible impact that passage of the proposed County time-sharing ordinance might have on the marketability of the Kohala Makai I project. In their opinion "the net impact would be nil, or at worst, a modest lengthening of the marketability period," since there would be a compensating effect that could offset the loss of short-term rental use completely. They explain the effect as follows (Hastings, Martin, Chew & Associates, Ltd.; April 2, 1982):

While the ordinance limits the potential for short-term vacation rental of units outside of designated resort or hotel property, it concomitantly enhances the financial potential for short-term vacation rental units within resort and hotel areas. Normally,

residential apartment units in resort and hotel areas are sources of units for long-term rentals as well as for short-term. If the ordinance directs the short-term rental market demand to resort and hotel areas, the financial attractiveness of such use in such areas will be increased. As more demand is directed to these short-term rental units, achievable occupancies would increase. As occupancy levels increase, rates increase and short-term rental returns begin to exceed long-term rental returns. Investor owners of residential apartment units in resort and hotel areas would then be motivated to remove their units from the long-term rental inventory and shift to more rewarding short-term rentals. Removing these units from the long-term rental inventory would increase the demand for long-term rental units outside the resort and hotel designated areas. As such, the investor owner that might have planned to use units in Kohala Makai I for short-term rental use, would find increased financial benefits from renting the unit on a long-term basis. Thus, the motives for purchase would likely be sustained.

Moreover, resort residential apartment units have traditionally been occupied by a number of full-time residents, both owner-occupants and long-term renters. Since the ordinance will tend to direct a greater proportion of short-term renters to resort and hotel areas, the ambience and character of such areas could become less desirable to owner-occupants and long-term renters who might then seek housing still within the region, but not specifically within resort or hotel designated areas. Therefore, there might be a tendency for owner-occupants and long-term renters to also contribute to the potential demand for units in a project such as Kohala Makai I.

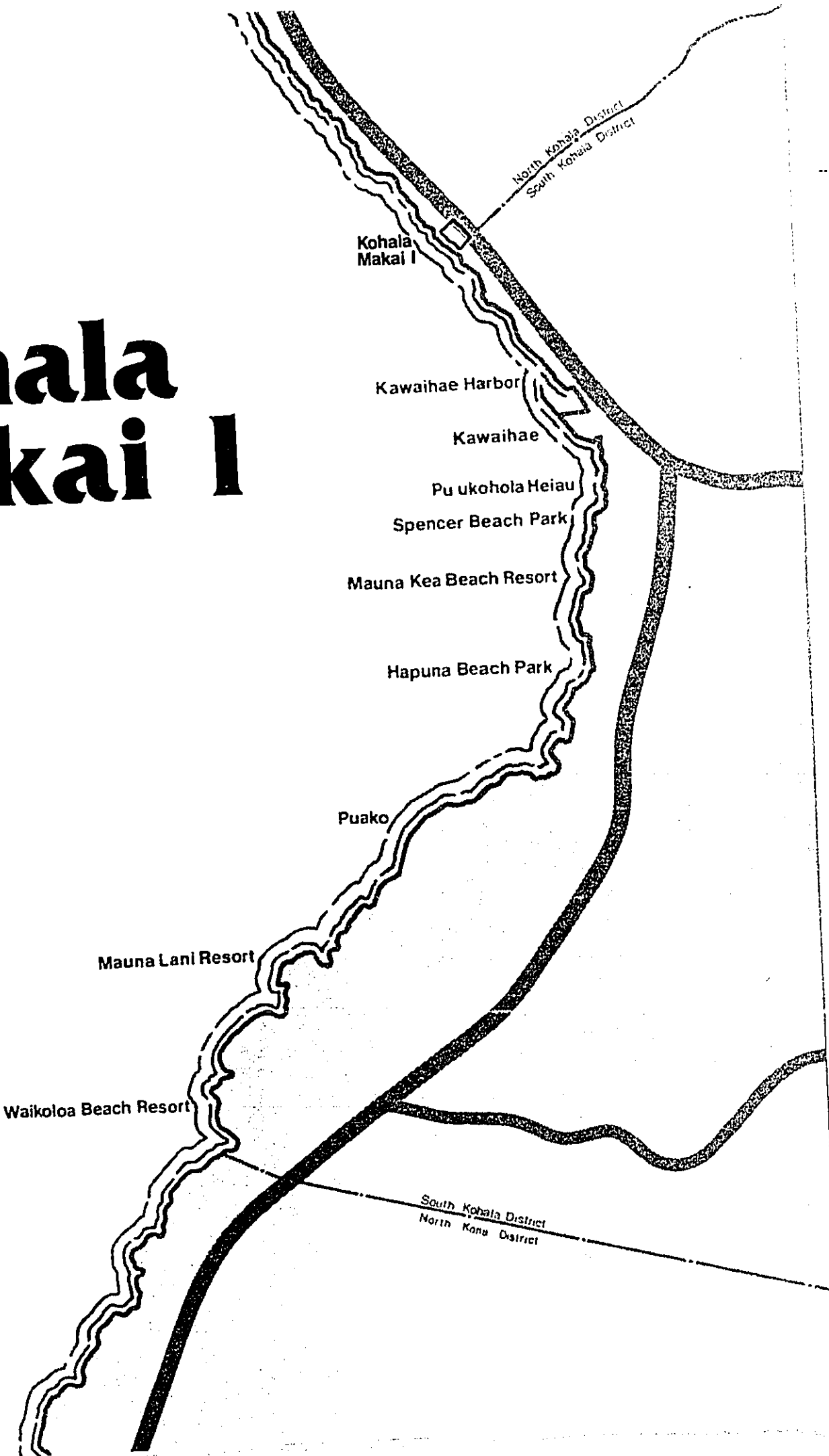
All of these potential market shifts could . . . compensate for the loss of short-term occupancies from visitor use. Therefore, we conclude that the likely impact of the proposed timeshare/vacation rental ordinance would be to increase the share of long-term residential occupancies as an offset to the decrease in short-term visitor use, and possibly a slight increase, if at all, in the marketability period.

Means to Attain Long-Term Residential Use

The projection of resident and visitor percentages in the market study was based on the experience of Hastings, Martin and Chew, Ltd. with similar projects which had used conventional marketing strategies and sales agreements. Kohala Makai I, Limited Partnership intends to pursue other means besides conventional practices to achieve largely long-term residential, rather than visitor, use of the units in the project. For the first ten days half of the units must be available only to owner-occupant purchasers under Chapter 514A, Hawaii Revised Statutes (HRS). The provisions of this chapter require lending institutions to "take all reasonable steps necessary to determine that the individual, in fact, intends to become an owner-occupant of

Kohala Makai I

Chapter IV



CHAPTER IV
PHYSICAL IMPACTS OF THE PROPOSED PROJECT

Introduction

This chapter examines the various physical impacts of the proposed development. Generally, the proposed development would not involve any substantial adverse impacts on the physical environment. The chapter is divided into 12 sections, each of which covers a specific element of the physical environment. Each section discusses the existing physical environment of the development area and surrounding region and then analyzes the possible impacts of the proposed development in terms of one such element. Where necessary, mitigation measures that would lessen the potential impact of the development on that element are outlined. Although each section of the chapter is analyzed separately, there are obviously a number of overlapping factors between the various elements of the environment. Since the physical plans for the project are still at the conceptual stage, the quantitative measurements of impacts are, at best, estimates of the relative magnitude of change the project may entail.

PHYSIOGRAPHIC AND GEOLOGIC IMPACTS

General Description of the Area and the Site

The island of Hawaii is made up of five volcanoes. The proposed Kohala Makai I development would be constructed on the leeward flank of Kohala Mountain fronting Kawaihae Bay. Kohala Mountain, which forms the northern portion of the island, is the eroded remnant of a huge shield volcano that was built up from the ocean floor by innumerable flows of predominantly olivine basalt. The Kohala volcano has been inactive for tens of thousands of years.

The proposed project site lies between sea level and elevation 200 feet. See Figure II-3 for a topographic map of the site and Figure II-4 for three mauka-makai profiles. The site's overall slope is moderate, averaging about 14

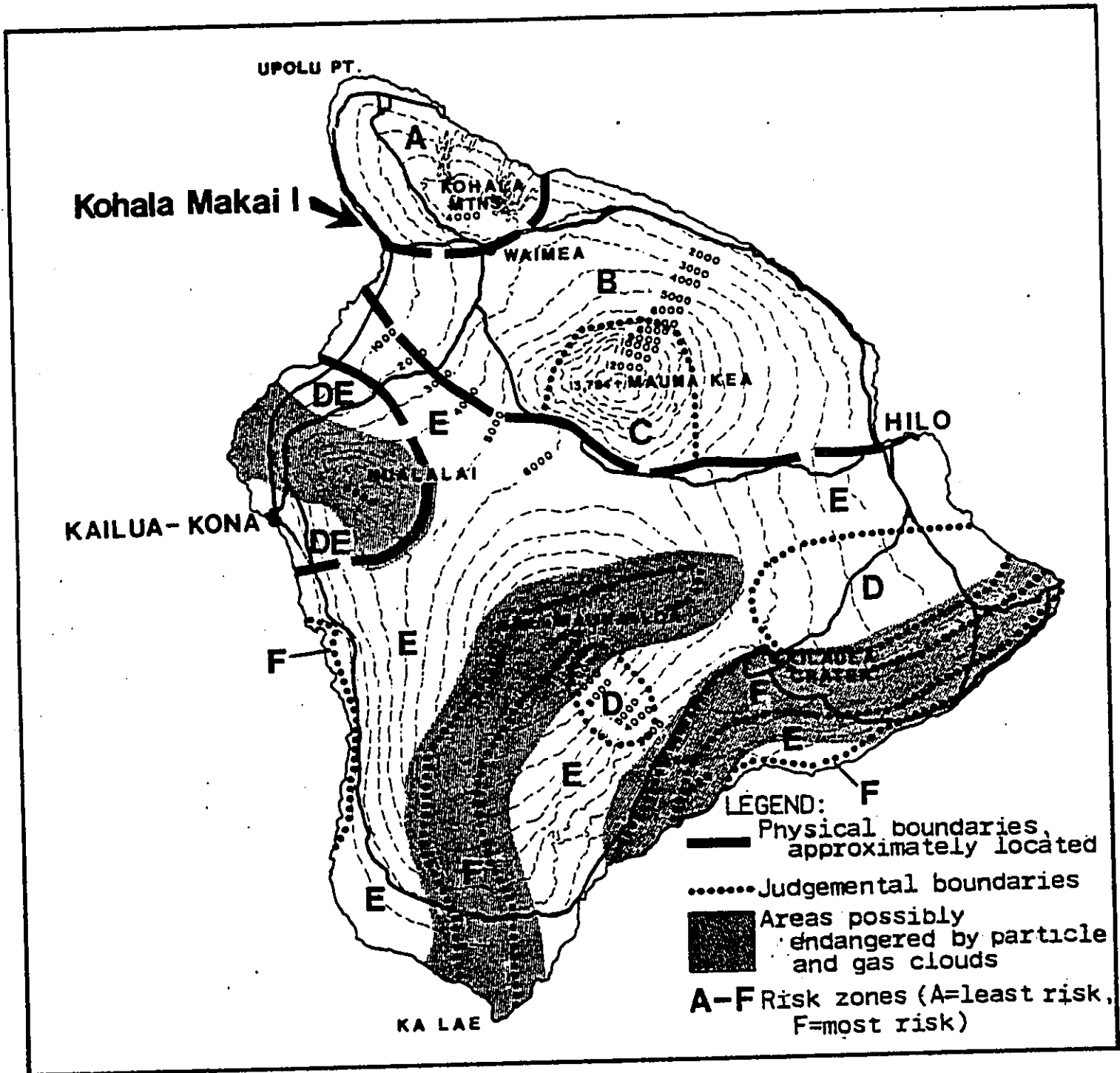
percent, although there are steeper areas, especially in the gullies which transect the property and along the shoreline.

Anticipated Impacts

The changes to the existing landforms are expected to be slight. The development would be designed to fit the topography of the site. The most level areas would be chosen for building sites, but grading would be necessary for building pads and roads. Major physiographic features, such as the gullies, would not be affected, and natural drainage patterns would not be significantly altered. Constructing mid- or high-rise buildings rather than the proposed low-rise structures could decrease the impacts of landform changes because fewer building sites would be required for the same number of residential units. However, the visual impacts would be greater, as the buildings would be visible at a greater distance.

Since Kohala Mountain is the most volcanically inactive area of the island, the project's relative susceptibility to damage from volcanic activity is low. The project site lies in the area of lowest risk from the hazards of lava-flow burial, falling volcanic fragments, and subsidence or surface rupture due to volcanic activity (Mullineaux and Peterson; 1974:31, 37, 43, 46). Figure IV-1 shows the zones of overall relative risk from volcanic hazards on Hawaii Island. The proposed project site is within the 'A' risk zone, which is the lowest on a scale of 'A' to 'F'. The figure also shows that the area is not considered endangered by particle and gas clouds. Thus, building on this site does not involve unreasonable exposure of life and property to volcanic hazards.

Earthquakes occur frequently on Hawaii Island. However, the majority of these tremors are relatively minor and are associated with the rapid underground movement of magma within the island's volcanos. The major earthquakes that have been experienced have resulted from the movement of rock masses along fault zones. This has more frequently occurred near the southern part of the island. However, damage has also been caused by tremors in the north (Mullineaux and Peterson; 1974:48). Because of this, the Hawaii County Building Code classifies the entire island as a Zone 3 area. This is the highest



**KOHALA MAKAI I
EIS**

Figure IV-1

**Zones of Overall
Relative Risk from
Volcanic Hazards**

0 6 12 24
SCALE IN MILES

Prepared By: BELT, COLLINS & ASSOCIATES

earthquake hazard classification in Hawaii; Zone 4 classifications are given to areas like San Francisco and Los Angeles which are over major faults. The code specifies building structural standards, which must be followed in all new construction, to withstand the expected earthquake forces. Adherence to these standards should mitigate the risks from this geologic hazard.

Tsunamis are another hazard of geologic origin that affect Hawaii Island. Wave run-up has generally been lower along the Kohala coast than most other areas of the Big Island. The inland boundary line of the potential 100-year tsunami inundation zone on the Kohala Makai I parcel is shown on Figure II-7. It should be noted that the boundary line is based on the U.S. Department of Housing and Urban Development, Flood Insurance Program preliminary map (April 1980), but since the base map for the figure and the HUD map show very different shorelines, the line is very approximate. The flood insurance maps were prepared for HUD by the U.S. Army Corps of Engineers, using the U.S. Geological Survey quad map (1:24,000 scale) for this area (Tamashiro; November 18, 1981). Since the contour interval on this map is 40 feet, elevations between sea level and 40 feet must be interpolated. The flood insurance map states that the base flood elevation along the coastal portion of the property is nine feet above mean sea level. Since most of the coastline has cliffs higher than nine feet, the 100-year tsunami inundation zone probably does not extend as far inland as the interpolated line on the flood insurance map indicates. In any case, it is planned that all development would be set back from the tsunami inundation area. Therefore, no impact on the project from tsunamis is expected. Clarification of the exact boundary of the 100-year tsunami inundation zone would be made after detailed topographic mapping of the site is performed at a later stage in the review process.

SOILS IMPACTS

Description

The soil on the proposed project site is classified by the U.S. Department of Agriculture Soil Conservation Service (December 1973) as Kawaihae very rocky very fine sandy loam. The Kawaihae series consists of excessively drained, medium-textured soils developed from volcanic ash. Kawaihae soils have a

surface layer of dark reddish-brown, very fine sandy or very rocky loam. The substratum is weakly developed volcanic ash underlain by pahoehoe lava, generally at a depth of about 33 inches. There are significant areas of rock outcrops. The erosion hazard for these soils is considered high.

Land Productivity Potential

The Agricultural Lands of Importance to the State of Hawaii map does not classify the proposed project area as prime, unique, or other important agricultural land. This is due, in part, to lack of rainfall (Hawaii, State of, Department of Agriculture; November 1977). A letter from the Department of Agriculture (see Appendix F) stated that the area of the proposed project site was "not conducive to agricultural development" and that they would have no objections to a request for a medium-density urban designation for the site (Farias; March 24, 1980).

The U.S. Department of Agriculture, Soil Conservation Service (SCS) has given the site's soil type a capability class rating of VI's. This rating indicates that the soil is not suited for any agricultural use other than pastureland, because the soil is shallow, droughty, and stony.

The University of Hawaii Land Study Bureau (1965) classified the land on the project site as type E93. The Land Study Bureau indexed all the land in the State on a scale from 'A' to 'E', with 'A' having the most productive potential and 'E' having the least productive potential. Land type E93 has the lowest productive potential for all types of agriculture (including grazing).

The soils on the project site have little commercial agricultural potential. The arid nature of the area and rocky characteristics of the soil limit agricultural use of the land to pastureland; even for this it is not very productive. Thus, development of this land would not adversely impact the agricultural productivity or potential productivity of the County.

Erosion Potential and Mitigation

The soil on the site is highly susceptible to wind or water erosion when exposed. Average annual rainfall on the site is very low. Although heavy rains can occur, the area the site lies in has the lowest erosive rainfall rating in the state (U.S. Department of Agriculture, Soil Conservation Service; March 1981). Because the rainfall is so low, erosion from wind is the potentially greater hazard; however, winds in the area are generally light (see Table IV-7). Erosion control measures would be used to minimize soil loss during construction. The following structural and non-structural measures may be used.

Temporary Sediment Basin. During the construction period a sediment basin could be constructed to hold runoff long enough for the sediment to settle. Water would be released at a slow rate to prevent further erosion.

Diversions. A temporary channel could be constructed across sloping land either along the contour or at a predetermined grade to intercept surface runoff before it gains sufficient volume and velocity to cause erosion. Water is collected and moved laterally along the diversion at a nonerosive velocity to a stable outlet where it may be safely released.

Slope Protection Structures. A lined channel (chute, etc.) or a conduit could be used to carry runoff water down the face of steep slopes.

Fibrous Netting Material. A close-weave heavy fiber netting on steep slopes could be used to control erosion and conserve moisture during establishment of vegetative cover.

Incremental Development. The amount of land to be cleared at any one time could be restricted. Erosion would also be minimized by not building during rainy periods.

Minimize Grading. Wherever possible, deep cuts and fills which may alter the natural drainage pattern would be avoided.

Mulching. As soon as rough grading is completed the ground could be covered with mulch or grass. This helps prevent wind and water erosion.

Watering. If water is available at the site during the early development stage, the ground could be wetted to control wind erosion.

Once the project is completed it is expected that erosion would be less than at present. This would be due to several factors. Areas of irrigated landscaping would hold the soil better than the present sparse vegetation. The slopes would be shorter, and therefore the erosive force of the water less, where buildings are constructed. There would be no erosion from hard-surfaced areas. Runoff from these areas would be collected and slowed to reduce erosion at its discharge point.

IMPACTS ON HISTORIC/ARCHAEOLOGICAL RESOURCES

Description

In order to assess the impacts that the proposed project might have on the archaeological/historic resources of the area, an archaeological reconnaissance survey was conducted in July 1980, by Dr. Paul H. Rosendahl. His report is attached as Appendix A.

Previous archaeological work in the area did not locate any significant sites within the project area. In his report, Rosendahl notes that before the construction of the Akoni Pule Highway, Soehren (1964) recorded three potentially significant sites. Two of these three sites were destroyed during the construction of the highway. The third site identified by Soehren, a rectangular walled enclosure, may be the disturbed site Rosendahl located in the northern corner of the property, which is listed in Rosendahl's report as Feature C.

Rosendahl's reconnaissance survey identified eight features that seemed to indicate cultural activity at one time. These were listed as two modified outcrops, two walled shelters, a surface artifact and midden concentration, a pavement/foundation, a cairn, and a small cache or cupboard. No obvious

cultural deposits were observed at any site and only a few portable cultural remains were noted. The cairn and the cache/cupboard are believed to be recent features. Descriptions and a map of these sites may be found in Appendix A.

Value of Sites

The report concludes that none of the cultural remains identified by the survey are of very high quality. It states:

The limited archaeological remains found within the bounds of the Kohala Makai I development site are judged to have only the most minimal significance in terms of research, interpretive, or preservation potential. Reasons for this evaluation include the generally poor condition of the remains, the lack of substantial structural remains, the general paucity of associated portable cultural materials--midden or artifacts, and the absence of cultural deposits with potential for excavations.

The recording of the features present completed during the reconnaissance survey constitute adequate preservation of the minimal archaeological data present, and no further archaeological work of any kind is believed to be necessary or justified.

Despite this assessment of the value of the features on the site, the State Department of Land and Natural Resources (DLNR) has expressed concern because the proposed project is near two archaeological complexes--the Waiaka'ilio Bay complex and the Kahua 2 complex. They believe that "features associated with these known complexes may be located on the subject property" (letter from DLNR dated September 2, 1981).

Anticipated Impacts and Mitigation Measures

While development of Kohala Makai I would probably result in the loss of archaeological features on the site, their loss was not considered significant, given Rosendahl's evaluation of them. Additional archaeological work on the project site was not proposed since the features were not expected to yield substantial information.

However, DLNR recommends that detailed mapping and selected test excavations be done and a report of this work sent to their office for review. DLNR's main concern is to have records available for future researchers (Kam; November 20, 1981). No research design for the additional work they are requesting was suggested. Thus, exactly what kind of further archaeological work might be conducted, or how such work could be made useful to future researchers needs to be resolved. Further clarification of this issue would be sought during later steps of the approval process.

In any case, if unanticipated sites or remains are encountered during the construction period, appropriate State and County officials would be notified, and decisions regarding work to be conducted would be made in conjunction with them.

Besides the direct impact of the loss of archaeological resources on the site, the project might have an indirect impact on nearby archaeological resources. The Kahua 2 complex is about 500 feet north of the Kohala Makai I site and the Waiaka'ilio Bay complex is over 3,000 feet north. The proposed project would introduce more people into the area, which might result in archaeological resources being altered or destroyed, intentionally or unintentionally.

One way to mitigate this indirect impact might be to provide residents of Kohala Makai I with general information on the value and nature of archaeological sites along the Kohala Coast. This would deter unintentional damage to sites while not providing details about nearby sites which would induce exploration of the area.

IMPACTS ON FLORA AND FAUNA

Description of Flora

Due to the arid climate of the Kawaihae region, the variety of vegetation (flora) on the proposed project site is generally meager. It consists primarily of kiawe and exotic grasses. A vegetation survey was conducted in July 1981, by Earthwatch, Environmental Resource Investigators. Their report is included in the EIS as Appendix B.

The field study identified and classified existing site vegetation "cover types" based on vegetative structure, floristic composition, and habitat association. The three major cover types cited were: open scrub grassland, coastal woodland, and rocky shore. See Table IV-1 for a summary of cover type species and characteristics. Open scrub grassland is the predominant cover type on the site; it is characterized by gently rolling topography covered with dry grasses and kiawe (Prosopis pallida) trees and shrubs. Kiawe is an exotic plant species that thrives in arid environments. A few 'ilima (Sida cordifolia) shrubs were also observed in the open scrub grassland.

The coastal woodland zone supports denser stands of kiawe trees and shrubs which form a closed canopy. This zone encompasses both the coastal flats and the lower sections of the gullies where groundwater is more available. The shade of the trees also contribute to a moister soil there. As a result, the coastal woodland zone contains a greater variety of understory species than the open scrub grasslands.

However, at the time the survey was undertaken, the effects of a regional drought could be detected in the floristic composition of the site. The lack of rainfall had killed a substantial segment of the flora on the site. The vegetative cover of the rocky shore was especially sparse.

In summary, weedy exotics dominate the site. There are only three native Hawaiian species on the site: the indigenous 'ilima and hi'aloa and the endemic pa'u-o-hi'i-'aka. There are no known rare or endangered species on the proposed project site.

Anticipated Impacts on Vegetation

Construction activities would destroy much of the existing vegetation. Introduced landscaping would alter the floristic composition of the site. Despite the extensive changes, this cannot be considered an adverse impact. In fact, it would be a "significant improvement of visual and environmental quality" (Earthwatch; July 1981:13), since most of the existing species are common exotics.

Table IV-1. Summary of Vegetation Cover Types on the Kohala Makai I Site.

| <u>Cover Type</u> | <u>Characteristics</u> | <u>Important Plant Species</u> |
|-------------------------|---|---|
| 1. Open Scrub Grassland | Gently rolling dry grasslands with scattered trees and shrubs; thin and rocky soils. | Kiawe (<u>Prosopis pallida</u>) trees and shrubs; buffel-grass (<u>Cenchrus ciliaris</u>) feathery pennisetum (<u>Pennisetum setosum</u>), 'ilima (<u>Sida cordifolia</u>), hi'aloa (<u>Waltheria americana</u>), pa'u-o-hi'i-'aka (<u>Jaquemontia sandwicensis</u>). |
| 2. Coastal Woodland | Dense thickets of kiawe shrubs and trees, 25-35 ft. in height. Herb layer shaded with sparse understory of grasses and forbs. | Kiawe, buffelgrass, feathery pennisetum, nettle-leaved goosefoot (<u>Chenopodium murale</u>). |
| 3. Rocky Shore | Low volcanic sea cliffs and boulder beaches with small, very scattered patches of vegetative cover. | Australian saltbush (<u>Atriplex semibaccata</u>), pa'u-o-hi'i-'aka, nettle-leaved goosefoot, small kiawe shrubs. |

Source: Earthwatch (July 1981:6)

Possible Mitigation Measures

As shown above, no significant adverse impacts on vegetation are anticipated due to the proposed project. However, Earthwatch's suggestions that native species adapted to dry environments be incorporated into the landscaping and that the shoreline cover be maintained in its natural state are ways for the project to provide beneficial impacts. Also, since the above conclusion was based on a survey conducted during drought conditions, another should be conducted after a rainy period when detailed site plans are available. This review would insure that no significant plant species, which may have been dormant, will be overlooked.

Description of Fauna

No rare or endangered avifaunal or mammal species have been observed on the site. A field survey conducted by Philip Bruner in July 1981 (see Appendix C) found few migratory and exotic bird species on the site; this was probably due to the season and also the drought conditions which prevailed. Most migratory birds depart Hawaii during the summer months and thus only two wandering tattlers (Heteroscelus incanus) were observed at the time of the survey. From late August to early May, tattlers and ruddy turnstones (Arenaria interpres) would be common. Another migratory species which is often seen in the region during the winter months is the golden plover (Pluvialis dominica). This species forages in open grasslands, while the previous two frequent the shoreline. Because of the drought and the resultant decrease in available food supply, the number of resident exotic species and the number of individuals in most of these species was lower than usual. See Table IV-2 for a listing of the resident exotic bird species observed, along with notes on their habitat preference and relative abundance. Relatively few gamebird species were observed in the area. No indigenous birds were observed by Mr. Bruner. However, the Hawaiian owl, called pueo (Asio flammeus sandwichensis), has been observed in other nearby coastal areas. The only evidence of mammals in the area were tracks of cats and dogs and the sighting of a mongoose (Herpestes auropunctatus).

Table IV-2. Relative Abundance and Habitat Preference of Resident Exotic Birds at Kohala Makai I Site.

| <u>Common Name</u> | <u>Scientific Name</u> | <u>Habitat</u> ¹ | <u>Abundance</u> ² |
|---------------------|----------------------------------|-----------------------------|-------------------------------|
| Gray Francolin | <u>Francolinus pondicerianus</u> | G,K,E | U |
| Japanese Quail | <u>Coturnix coturnix</u> | G,K,E | U |
| Barred Dove | <u>Geopelia striata</u> | K,E, | A |
| Spotted Dove | <u>Streptopelia chinensis</u> | K,E, | U |
| Barn Owl | <u>Tyto alba</u> | K,G, | R=1 |
| Common Myna | <u>Acridotheres tristis</u> | K | R=8 |
| Japanese White-eye | <u>Zosterops japonica</u> | K,G | U |
| Northern Cardinal | <u>Cardinalis cardinalis</u> | K | C |
| House Sparrow | <u>Passer domesticus</u> | K,G,E | R=4 |
| Warbling Silverbill | <u>Lonchura malabarica</u> | G,K | U |

¹ Habitat = Area most frequented. Most preferred or utilized portions of habitat listed first.

G = Grassland
 K = Kiawe thickets
 E = Edge of roads

² Abundance = Number of times observed during survey or frequency on eight-minute counts.

A = Abundant (more than 50 recorded on walking census or average number on eight-minute count greater than 10)
 C = Common (25 to 50 recorded on walking census or average number on eight-minute count 5 to 10)
 U = Uncommon (10 to 25 recorded on walking census or average number on eight-minute count less than 5)
 R = Rare (less than 10 recorded on walking census; may or may not have been recorded on eight-minute counts)

Source: Bruner (July 1981).

Anticipated Impacts on Wildlife

Development of the proposed site would alter avifaunal composition and abundance. For the short term, the loss of vegetation in the area associated with construction would cause wildlife (primarily exotic bird species) to seek other habitats nearby. However, residential development, with its greater diversity of vegetation, would ultimately provide a broader range of habitats for wildlife. New species not now present in the area may become established. However, only those species which can live in proximity to man would prosper. Gamebird populations would decline due both to reduction of their natural habitat and to the cats and dogs which would accompany development.

Possible Mitigation Measures

Retention of as much of the natural vegetation of the site as possible would assist in minimizing the impacts on the gamebirds. Disruption of the shoreline and buffer zone of kiawe trees should be avoided as they are the most important foraging and nesting areas for the present bird populations.

IMPACTS ON THE MARINE ENVIRONMENT

Introduction and Study Methodology

In order to more thoroughly assess the possible impacts of the proposed development on adjoining waters, a comprehensive study of the nearshore marine environment was undertaken by Steven Dollar, a marine biologist at the University of Hawaii. The study had three objectives (Dollar; June 1981:1-2). The first was to establish qualitative and quantitative baseline information to accurately characterize the present marine ecosystem. This included identification of rare or valuable marine resources. The second objective was to establish permanent benchmark stations so that future quantitative monitoring could be performed and compared to the baseline information to assess the impacts of the development. The study's third objective was to provide an estimate of the impacts on the marine environment that might result from the proposed project.

The first step of the marine study involved a reconnaissance survey of the reef area along the entire 1,200-foot coastline of the project site as well as several hundred additional yards to the north. Three representative stations were selected for more detailed study. One station was located off the northern end of the project site while another station was located off the southern end; a third station was located approximately 500 feet north of the first and served as a control. Quantitative and qualitative marine biological data was collected at depths of 15, 30, and 60 feet for each of the stations. A replicating phototranssect technique was employed at each station at each depth. The photographic information thus obtained was used to supplement and confirm the species lists and cover estimates compiled by the diver.

The findings of the marine study are summarized below. The full study is attached as Appendix D.

Description of the Physical Environment

Bottom Topography. The major topographic features of the shoreline are the lava headlands alternating with bays containing rounded boulder beaches. The headlands continue under water as flat-topped, steep-sided, finger-like projections covered with coral. The zone of boulders stretches out to about the 10-foot depth contour. In between the basaltic projections are narrow sand channels or flat basaltic platforms covered with live and dead coral. At depths of approximately 20 to 60 feet, the underwater terrain is characterized by wide flat areas of coral growth broken up by mounds and a range of ridges perpendicular to the shoreline. The edge of this zone is about the 70-foot depth contour where the bottom topography slopes steeply to a flat sand bottom.

Bottom Composition. The three materials (not including coral) that form the majority of the benthic substrata are solid limestone, basalt rubble, and sand. There are large and approximately equal amounts of basalt and limestone substrata in the shallow (15-foot depth) zone. At depths between 30 and 60 feet, bare basalt is uncommon, but the limestone substrata, composed of dead coral skeletal remains, cover approximately one-third of the bottom. Within the reef area, sand bottoms are limited to a few small pockets of coarse

basaltic and calcareous sands. Beyond the reef, the bottom is entirely covered with fine white calcareous sand.

Sediment and Wave Stress. Because the Kohala coast is sheltered from trade-wind waves by Hawaii Island and from North Pacific winter storm waves by other islands (especially Maui), "the wave climate in the study region is among the least stressful in the entire Hawaiian archipelago" (Dollar; July 1981:9). Since the water in the area of the proposed project is very clear year-round, and since there are almost no terrigenous sediments visible on the ocean bottom, there appears to be little stress on the benthos from sediment.

Descriptions of Marine Biological Populations

The combination of physical parameters described above (abundance of solid substrata, low wave stress, and low sedimentation or suspension of soil particles) is ideal for the development of coral reefs and associated organisms. The field investigations disclosed no zonation patterns for the coral, other benthic invertebrate, fish, or algal species, either with respect to depth or horizontally along the coast.

Reef Coral Community. Coral species assemblages can be accurate indicators of natural or man-induced environmental stresses. Corals are also important components of the marine environment since they support other species by providing food and shelter.

The amount of coral cover on the reef offshore of the Kohala Makai I site is very high, with a mean value of about 50 percent--"approximately twice the coral cover (of) the average Hawaiian reef" (Dollar; July 1981:13). The species diversity is extremely low, however, with two species, Porites lobata and Porites compressa, accounting for over 99 percent of the coral cover. Only six other coral species were encountered during field investigations. Porites spp. are generally the most successful competitor on Hawaiian reefs. They can monopolize the substrata and grow over other coral species where stable conditions conducive to their growth occur. The reef in this area appears to be a very stable environment, largely due to the infrequency of large-scale wave disturbances or changes in water quality. The contention

that this reef is in a stable climax stage is supported by the absence of areas dominated by Pocillopora meandrina. Pocillopora is known as a "fugitive species" because it can grow in areas too harsh for other coral species. If an environment is stressful, this species is abundant. But Pocillopora meandrina was only infrequently observed in this area, and many colonies were being overgrown by Porites spp. The high coral cover and low species diversity in the reef off the Kohala Makai I site are evidence of a very stable reef system.

Benthic Invertebrates. The macroinvertebrate fauna of the surveyed area was found to be relatively abundant and diverse compared to other Hawaiian reefs. This is probably due both to the environmental stability of this reef system and to the diversity of habitats it offers. The species found living on the hard ocean floor were primarily echinoderms, especially sea urchins and sea stars. The most conspicuous, because of its large size (up to one foot in diameter), is the crown-of-thorns starfish Acanthaster planci. This species feeds only on living coral, and many coral colonies on this reef were found dead due to its predations. Sponges and hydroids were among the other epifaunal species observed. Sea cucumbers and mollusks live in regions of dead coral rubble and sand. Lobsters, oysters, hydroids, and sponges were observed in ledges and caves. See the complete marine study (Appendix D) for a comprehensive list of species observed along with estimates of abundance for each.

Reef Fish. It seems that the very stable environment and complex physiography of the reef in this area has allowed highly specialized fish-habitat relationships to develop. This, in turn, has led to a great diversity and abundance of fish. The survey recorded 71 species in the reef off the Kohala Makai I site. The size of the individual fish seemed small, however, in comparison to those among the reefs a few miles north. Since this was true especially of those species considered good food species--goat fish, squirrel fish, and parrot fish--the difference could be related to fishing pressures, which are greater here than along the more isolated coast to the north.

Macrobenthic Algae. There are only a few species of seaweed in this area, and they are sparsely distributed. The most abundant species found was a coral

line alga (Porolithon ankodes), which is evident as a dense pinkish crust on exposed basalt and limestone surfaces. Foliose algae species occurred only rarely in this area. These species are most often found in recently disturbed environments, rather than stable coral-dominated environments such as the one off the coast of the proposed Kohala Makai I site.

Anticipated Impacts on the Marine Environment

The value of the marine environment off the coast of the Kohala Makai I site was rated very highly by Dollar (July 1981:17) due to its high coral cover, unusually complex topography, calm and clear water, and rich faunal populations. His study indicates that the marine ecosystem has evolved under very stable and benign environmental conditions.

The concern is that such a community might be subject to relatively large changes if physical conditions were altered beyond the narrow, normal range. The question, then, is what changes to the physical environment are likely to occur as a result of the Kohala Makai I development.

The proposed project does not involve any direct physical or chemical modifications to the nearshore environment. The development would not affect wave stress conditions, which are the primary determinants of reef community structure. No sewage effluent would be discharged into coastal waters. The major area of concern is the increased sediment loads which would occur as a result of land clearing and grading operations. As discussed in the Soils Impacts section of this chapter, the soil is susceptible to erosion when exposed, but erosion control practices, especially mulching, can effectively limit soil loss. As long as these practices are used during construction, the sedimentation rate should not increase enough to affect the marine community. Dollar also noted that the land-derived sediment would tend to settle in areas where sands have accumulated, and thus not adversely impact the coral and other epifaunal species.

Another indirect impact may result from the development of Kohala Makai I. Because a public access trail would be provided on the site, an increase in the number of people fishing in this area may occur and lead to a decline in

the fish population. The area is presently exploited by both shoreline fishermen and boat-borne divers. The present fishing pressure seems already to have resulted in the depletion of large individuals among the fish species. Therefore, there may be little incentive for additional numbers of fishermen to use this area.

TRAFFIC IMPACTS

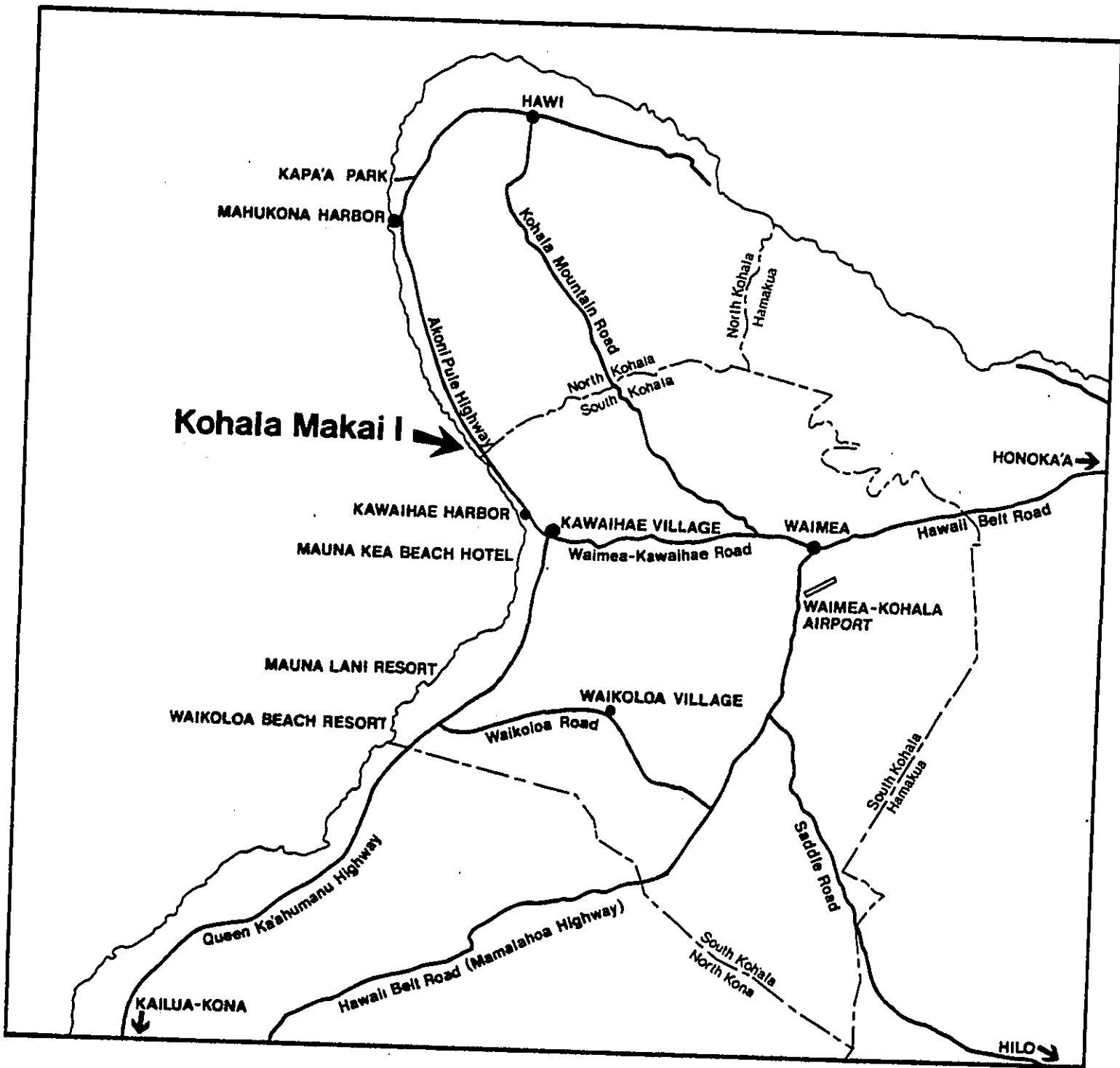
Introduction

Construction and operation of Kohala Makai I would generate increased traffic volumes on the major roadways of North and South Kohala. This section of the report

- o characterizes present traffic volumes;
- o projects changes in traffic likely to occur without the proposed project;
- o develops estimates of the amount of traffic that would be generated by Kohala Makai I;
- o compares projected traffic volumes under different conditions with the estimated capacities of the affected roadways; and
- o discusses the significance of project-related traffic impacts.

Existing Highway Network

The Kohalas are served by five major roadways (see Figure IV-2). The oldest of these, Mamalahoa Highway, is the main perimeter road around much of the island. It connects the town of Waimea with the Hamakua coast to the east and the Kona districts to the south. Two other highways, the Kohala Mountain Road and the Waimea-Kawaihae Road, link Waimea with North Kohala and the South Kohala coast, respectively. All of these are older facilities with numerous curves, occasionally steep grades, and relatively narrow pavements. Two



**KOHALA MAKAI I
EIS**

0 1 2 4
SCALE IN MILES



Prepared By: BELT COLLINS & ASSOCIATES

Figure IV-2

**Regional
Highway
Network**

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

newer roads, Queen Ka'ahumanu Highway and Akoni Pule Highway, provide high-speed access along the coast from Kawaihae to Kailua-Kona and to North Kohala.

The proposed Kohala Makai I project is situated on the makai side of Akoni Pule Highway (also known as Kawaihae-Mahukona Highway) approximately two miles north of Kawaihae. The highway is owned and maintained by the State of Hawaii Department of Transportation. Completed in 1969, it is a two-lane, limited access highway which links Kawaihae with Mahukona Harbor and the North Kohala communities. The actual width of the highway is between 30 and 40 feet including shoulders, but the right-of-way width of Akoni Pule Highway is a minimum of 80 feet along most of its length. This means there is sufficient allowance for expansion of the highway without additional land acquisition.

At present, the owners of the Kohala Makai I site have approval for access onto the highway at two points (see Figure II-7). One right-of-access is 32 feet wide, located at the southern end of the property. The other approved access point is located approximately 400 feet south of the parcel's northern boundary. It is 60 feet wide, and is the only right-of-way with sufficient width to accommodate an access road built to modern highway standards.

The schematic site plan for the proposed project indicates that the two access points would be used. However, in view of the limited width of one of the two approved access points, an increase in the width of the access might be required. Moreover, given the costs that would be incurred in providing two sets of acceleration/deceleration lanes, there is some doubt as to whether both access points would actually be used. Because of this, the impact analysis in this section assumes the presence of but a single entrance/exit road for Kohala Makai I. It should be noted that this assumption is a "conservative" one in that it tends to produce higher intersection volumes than would have been the case if we assumed the presence of two access roads serving the site.

Existing Traffic Volumes and Highway Capacities

Given the nature of the proposed Kohala Makai I project and the likely travel patterns of its occupants, it is expected that three roadways--Akoni Pule

Highway, the portion of the Waimea-Kawaihae Road between Kawaihae and Queen Ka'ahumanu Highway, and Queen Ka'ahumanu Highway itself--would be most affected by project-related traffic. From the point of view of their susceptibility to congestion, it is the intersections along these routes that are most critical. In view of this, and of the difficulty in accurately predicting impacts farther afield, our traffic analysis focused on these three roadways.

Existing traffic volumes at selected locations near the Kohala Makai I site are shown in Table IV-3. At no point does the number of vehicle trips exceed 3,000 per day, and the highest hourly volume is the very modest 284 vehicles per hour recorded on Queen Ka'ahumanu Highway just south of the Mauna Kea Beach Hotel entrance road.

When existing traffic volumes are compared with the estimated capacity of the roadways, it becomes apparent that the highways in the area are operating far below their capacity (see Table IV-4). This, in turn, indicates that traffic volumes would have to increase dramatically before significant congestion would develop.

Traffic Generated by Kohala Makai I

The Kohala Makai I project would begin generating traffic as soon as construction starts. However, the level of construction traffic that would be generated is well below the volumes that would be produced once development is completed and the units are occupied. Hence, this discussion focuses solely on the period after the proposed project is fully occupied.

Data assembled by the Arizona Department of Transportation (1976), the Institute of Transportation Engineers (1976), the State of Hawaii, and traffic studies conducted by Belt, Collins & Associates suggest that condominiums of the type proposed for Kohala Makai I will generate approximately 6.5 vehicle-trips per occupied unit per day.

Roadways are typically designed to accommodate the 30th-highest hourly volume that is expected in the design year. As a rough approximation, we may take

Table IV-3. Existing Traffic Volumes at Selected Locations.

| Location | 24-Hour Total | | A.M. Peak Hour | | P.M. Peak Hour | | | |
|--|---------------|---------------|----------------|---------------|----------------|---------------|-----|-----|
| | Northbd. | Southbd. | Northbd. | Southbd. | Northbd. | Southbd. | | |
| | or Eastbd. | or Westbd. | or Eastbd. | or Westbd. | or Eastbd. | or Westbd. | | |
| Queen Ka'ahumanu Highway ¹ at Waimea-Kawaihae Road | 2,818 | 1,292 | 1,526 | 43 | 175 | 264 | 148 | 116 |
| Waimea-Kawaihae Road 0.1 mile east of Queen Ka'ahumanu Highway ¹ | 2,372 | 1,089 | 1,283 | 27 | 146 | 224 | 113 | 111 |
| Waimea-Kawaihae Road 0.1 mile west of Queen Ka'ahumanu Highway ¹ | 2,112 | 1,076 | 1,036 | 85 | 72 | 196 | 83 | 113 |
| Akoni Pule Highway (State Route 270) 0.2 mile ² south of Kapa'a Park Road | 1,043 | 529 | 514 | 11 | 84 | 95 | 67 | 28 |
| Queen Ka'ahumanu Highway: south leg of intersection with Mauna Kea Beach Hotel Entrance Road ³ | n.a. | n.a. | n.a. | n.a. | n.a. | 284 | 170 | 114 |

¹ Data from State of Hawaii Department of Transportation traffic count made April 28 & 29, 1980 at traffic count station 11-E.

² Data from State Department of Transportation traffic count made in April 1980 at traffic count station 12-E.

³ Data from traffic count conducted by Belt, Collins & Associates on July 28, 1981.

Source: Belt, Collins & Associates

Table IV-4. Comparison of Existing Traffic Volume with Estimated Capacity on Selected Roadway Segments.

| Road Segment | Existing Peak-Hour Traffic (in veh./hr.) | Estimated ⁴ Capacity (in vph) | Existing Volume to Capacity (v/c) ratio |
|---|--|--|---|
| 1. Queen Ka'ahumanu Highway: Northbound Approach to Junction with Waimea-Kawaihae Road | 148 ¹ | 885 | 0.17 |
| 2. Waimea-Kawaihae Road: Westbound Approach to Junction with Queen Ka'ahumanu Highway | 111 ¹ | 756 | 0.15 |
| 3. Waimea-Kawaihae Road: Eastbound Approach to Junction with Queen Ka'ahumanu Highway | 83 ¹ | 430 | 0.19 |
| 4. Akoni Pule Highway (State Route 270) 0.2 mile South of Kapa'a Park Road | 95 ² | 1,600 | 0.06 |
| 5. Queen Ka'ahumanu Highway at Northbound Approach to Intersection with Mauna Kea Beach Hotel Entrance Road | 170 ³ | 550 | 0.31 |

¹ From State Department of Transportation data reported in Table IV-3. It represents one-way traffic in the approach lane.

² Two-way traffic; reported in this form because highway capacity calculations for two-way, two-lane roadways do not take into account directionality. It is based on State DOT data reported in Table IV-3.

³ One-way traffic; based on traffic counts made by Belt, Collins & Associates on July 28, 1981.

⁴ Estimates made using Highway Capacity Manual (Highway Research Board; 1965) methodology and treating the intersection as though it were signalized.

Source: Belt, Collins & Associates

this to be equivalent to the average peak-hour volume during the busiest month of the year. The estimated average occupancy rate for the Kohala Makai I project during that time period is 88 percent (from Table V-1). Hence, it is expected that the proposed project would generate an average of 2,575 one-way vehicle-trips per day during the peak month (6.5 trips per day per occupied unit x 450 units x 0.88 occupancy factor). Based on the projected location of jobs, scenic attractions, and commercial and recreational facilities that occupants of Kohala Makai I might frequent, it is estimated that 75 percent of these trips would utilize roadways south of the project's entrance and 25 percent would be towards the north.

Existing peak-hour traffic at the State Department of Transportation's traffic count stations listed in Table IV-3 (i.e., Stations 11-E and 12-E) ranges from 9.1 to 9.4 percent of the 24-hour total. This is the same peaking factor as observed in a study of the Princeville area of Kauai; a slightly higher peak-hour percentage, 9.5 to 10.0 percent, has been recorded near the Kalua Koi Resort on Molokai. In view of the above, this analysis assumed that peak-hour traffic would amount to 9.5 percent of the 24-hour traffic.

Traffic counts from roads serving projects similar to those being developed in North and South Kohala were analyzed to determine if there was any consistent pattern with respect to directionality. It was found that during the peak period on roads intersecting main highways, directional splits ranged from 50:50 (i.e., the same number of vehicles traveling in each direction) to 35:65 (i.e., approximately twice as many moving in one direction as the other). For the purposes of this study, the peak-hour directional split was assumed to be 60:40.

Changes in Traffic Unrelated to Kohala Makai I

Kohala Makai is not the only project that has been proposed for the Kohala area that would affect regional traffic volumes. On the contrary, large-scale resort and residential developments have already been approved at Waikoloa, Mauna Lani, and Mauna Kea Beach. Moreover, a major resort development (1,500 hotel rooms, 3,200 condominium units, and 500 detached residences) has also been proposed for a site four miles north of Kohala Makai I (see Belt, Collins

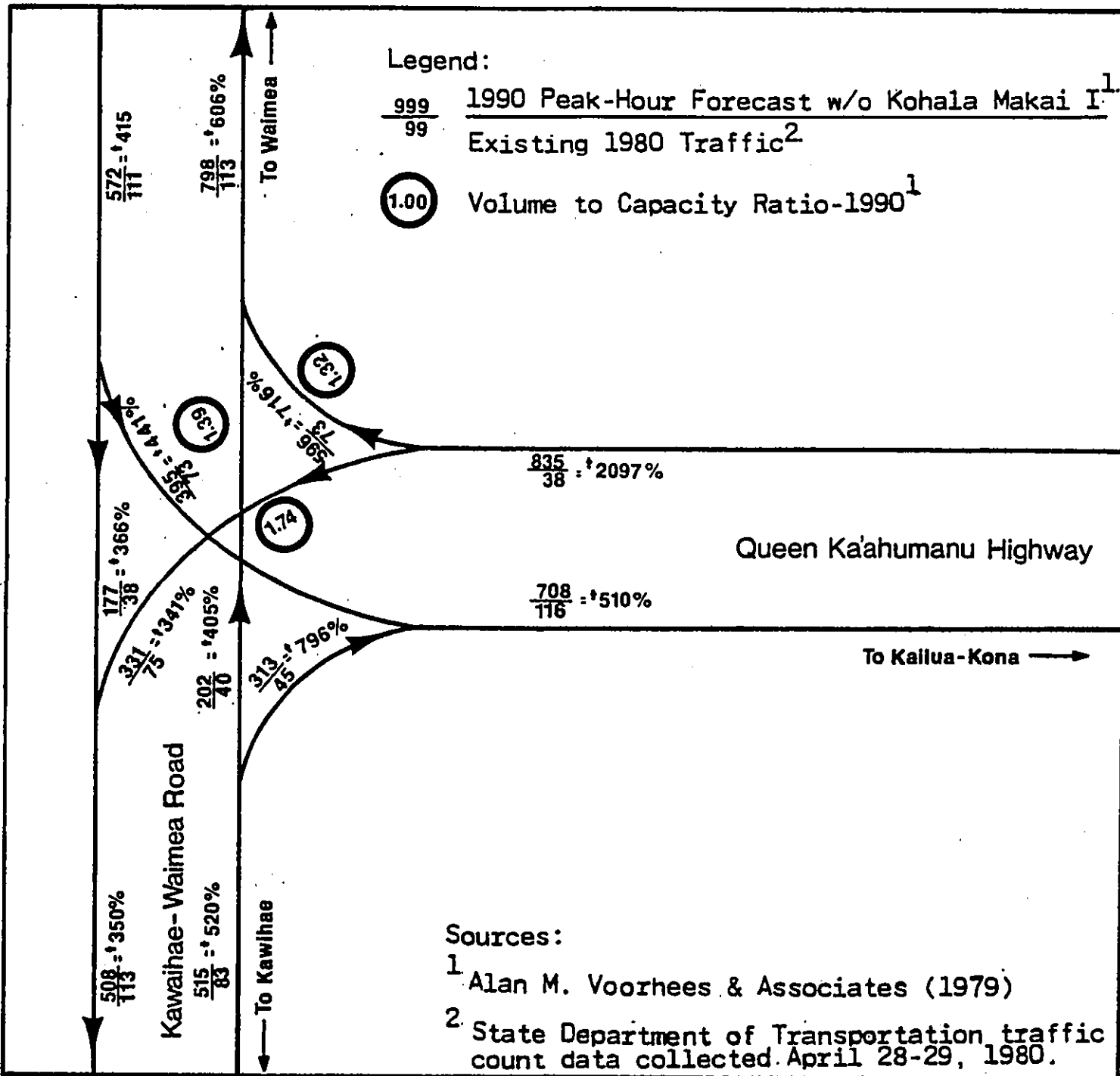
& Associates; September 1981). Altogether, it is expected that already-planned and proposed development within the region could triple the resident population, alter travel patterns, and dramatically increase vehicular traffic on the roads that would be impacted by Kohala Makai I.

An analysis of future traffic patterns in the area, undertaken in conjunction with the Environmental Impact Statement for the first phase (5.3-MGD capacity) of the Lalamilo Water System (whose development scenario did not include the Kohala Makai I project) found that the number of vehicles trying to use Queen Ka'ahumanu Highway and the Waimea-Kawaihae Road would increase dramatically by 1990 (see Figure IV-3). The 1990 peak-hour traffic on Akoni Pule Highway north of the Kawaihae industrial area has been estimated at about 600 vehicles per hour; this is 500 higher than at present (Hawaii, State of, Department of Land and Natural Resources; March 1980).

The 1990 figures cited above for "non-Kohala Makai I" traffic can be combined with the trip generation estimates derived for the completed Kohala Makai I project to arrive at traffic estimates for that year. However, there are a number of approved and proposed projects in the Kohala area which will continue to grow beyond that date. Hence, land use decisions that have already been made are likely to generate continuing growth at least through the end of the century. Moreover, there is one major project, the Mahukona Resort, proposed for a site along Akoni Pule Highway four miles north of Kohala Makai I that would (if implemented) also add substantially to existing traffic. Vehicles from Kohala Makai I must share the roadways with those from these other developments now underway even though it may be completed first. Hence, it is also desirable to look beyond the next ten years at things as they would be if all currently planned units are actually constructed.

Traffic Impact of the Kohala Makai I Project

Kohala Makai I Plus Existing Traffic. Were Kohala Makai I completed today (early 1982), the project would have little adverse effect on the flow of traffic. As shown in Table IV-5, it would:



**KOHALA MAKAI I
EIS**



Prepared By: BELT, COLLINS & ASSOCIATES

Figure IV-3

**Without Project
Peak - Hour
Traffic: 1990**

Table IV-5. Peak-Hour Traffic At Selected Locations: Existing Plus Kohala Makai I.

| Location | Estimated Capacity (vph) ¹ | Existing Volume (vph) ² | From Kohala Makai I (vph) | Total Traffic (vph) | v/c |
|--|---------------------------------------|------------------------------------|---------------------------|---------------------|------|
| 1. Akoni Pule Highway 0.1 Mile North of Kohala Makai I Entrance Road: Two-Way | 1,600 | 100 | 60 | 160 | 0.10 |
| 2. Akoni Pule Highway 0.1 Mile South of Kohala Makai I Entrance Road: Two-Way | 1,600 | 100 | 185 | 285 | 0.18 |
| 3. Waimea-Kawaihae Road 0.1 Mile West of Queen Ka'ahumanu Highway: Eastbound Lane | 430 | 83 | 75 | 158 | 0.37 |
| 4. Waimea-Kawaihae Road 0.1 Mile East of Queen Ka'ahumanu Highway | 756 | 111 | 38 | 149 | 0.20 |
| 5. Queen Ka'ahumanu Highway 0.1 Mile South of Waimea- Kawaihae Road: Northbound Lane | 885 | 148 | 72 | 220 | 0.25 |

¹ From Table IV-4.

² From Table IV-3.

Source: Belt, Collins & Associates

- o Increase peak-hour traffic by 60 vehicles north of the project site and 185 south of it, leaving open stretches of Akoni Pule Highway south of the project at less than a fifth of their estimated capacity (i.e., with a volume/capacity (v/c) ratio of only 0.18).
- o Not cause congestion at the intersection of the project access road and Akoni Pule Highway (the projected v/c ratio is 245/400, or 0.61);
- o Increase peak-hour traffic through the intersection of the Waimea-Kawaihae Road and Queen Ka'ahumanu Highway by approximately 175 vehicles per hour leaving the most heavily travelled approach at less than 40 percent of its estimated capacity.

In short, were the traffic generated by Kohala Makai I to be viewed in light of existing conditions, it could easily be accommodated by the existing highway system.

Kohala Makai I Plus Other Approved Development Through 1990. As discussed above, the addition of Kohala Makai I traffic to existing traffic levels would not cause significant adverse impacts on traffic flow if no other new traffic sources were present. However, significant additional development has been planned and approved for South Kohala coastal areas between Kawaihae and Anaeho'omalu Bay. Construction of these units will substantially increase vehicular traffic on Queen Ka'ahumanu Highway, Akoni Pule Highway, and the Waimea-Kawaihae Road by the time Kohala Makai I is completed (about 1990). As shown by the v/c ratios in excess of 1.00, this combined traffic, i.e., existing trips plus trips from other development in the region during the 1980s, will exceed the existing roadway capacity (see Table IV-6). Hence, highway improvements will be needed even if Kohala Makai I is not developed. Problems will be serious at the intersection of Queen Ka'ahumanu Highway and the Waimea-Kawaihae Road and at all of the resort access road/highway junctions on Queen Ka'ahumanu Highway.

The proposed Kohala Makai I project would increase traffic volumes and exacerbate the projected capacity deficit (compare the last two columns of Table IV-6). While its contribution to the problem would be modest, it would

Table IV-6. Projected Peak-Hour Traffic Volumes and Highway Capacities in 1990: Without and With Kohala Makai I.

| Location | Approach | Estimated Capacity (in vph) ¹ | Projected Volume w/o Kohala ₂ Makai I | Projected Volume (vph) with Kohala ₃ Makai I | Projected "v/c" Ratio w/o Kohala Makai I | Projected "v/c" Ratio with Kohala Makai I |
|---|--|--|--|---|--|---|
| 1. Akoni Pule Highway 0.5 Mile North of Kohala Makai I | Two-way | 1,600 | 600 | 600 | 0.38 | 0.41 |
| 2. Akoni Pule Highway 0.5 Mile South of Kohala Makai I | Two-way | 1,600 | 600 | 785 | 0.38 | 0.49 |
| 3. Akoni Pule Highway at Kohala Makai I Entrance Road | Movements in and out of Entrance Rd. | 235/800 ⁴ | n.a. | 146/75 ⁴ | n.a. | .62/.09 ⁴ |
| 4. Waimea-Kawaihae Rd. at Queen Ka'ahumanu Highway | Left turn to Kawaihae Left turn to Kona Right turn to Waimea Right turn to Kona | 190 285 450 475 | 331 395 596 313 | 403 395 596 358 | 1.74 1.39 1.32 0.66 | 2.12 1.39 1.32 0.75 |
| 5. Queen Ka'ahumanu Hwy. | | | | | | |
| o At Mauna Kea Beach Resort | Left turn to Kawaihae Left turn to Resort Right turn to Kona | 55 205 220 | 92 37 51 | n.c. n.c. n.c. | 1.67 0.18 0.23 | n.a. n.a. n.a. |
| o At Mauna Lani Resort | Left turn to Kawaihae Left turn to Resort Right turn to Kona | 100 150 275 | 467 182 292 | n.c. n.c. n.c. | 4.67 1.21 1.06 | n.a. n.a. n.a. |

¹ Computed from data contained in Table III-41 of the Lalamilo Water System (DOWALD, March 1980).

² From Figure III-10, page III-120, of the Lalamilo Water System EIS (DOWALD, March 1980).

³ Increase in traffic estimated by Belt, Collins & Associates based on factors described in text.

⁴ Figures are for crossing traffic and right turn traffic, respectively.

Source: Belt, Collins & Associates

certainly not help matters. As a result, some type of action would need to be taken on Queen Ka'ahumanu Highway at an earlier date if Kohala Makai I is developed than if it is not. It is worth noting that Akoni Pule Highway, including the proposed Kohala Makai I project's intersection with it, would continue to provide satisfactory levels of service through 1990.

Kohala Makai I Plus Other Planned Development Through the Year 2000. The figures presented above are for the year 1990, the year that Kohala Makai I would be completed. However, continuing development of other projects that are already underway, have been approved but are not yet initiated, or are in the planning stages will almost certainly continue to generate traffic growth on the region's highways well beyond that date. The various South Kohala resorts (Mauna Kea Beach, Mauna Lani, and Waikoloa) will necessitate widening of Queen Ka'ahumanu Highway and signalization of major intersections, construction of the proposed new road link between Waimea and the Kohala Coast, and numerous other improvements. The proposed Mahukona Resort project might, in conjunction with large-scale South Kohala resort development and its attendant secondary growth, eventually create a need to improve Akoni Pule Highway as well. At the very least it would be necessary to signalize the Kohala Makai I/Akoni Pule Highway intersection. At worst it could require construction of additional lanes.

Summary of Mitigation Measures

As indicated in the preceding discussion, Kohala Makai I by itself would not cause any significant adverse impacts on traffic flow. However, when the project is taken together with the other development that is proposed for North and South Kohala, it becomes apparent that the area could experience serious congestion if no mitigation measures are taken. This holds true whether or not Kohala Makai I is developed.

A number of steps can be taken to improve the situation, but nearly all of them are beyond the control of the prospective developers of Kohala Makai I. They include:

- o widening Queen Ka'ahumanu Highway to four lanes;

- o installation of traffic signals at major intersections;
- o construction of the planned new highway linking Waimea with Queen Ka'ahumanu Highway; and
- o improvements to Akoni Pule Highway, including adding traffic lanes if both planned South Kohala resorts and the proposed Mahukona Resort are constructed.

AIR QUALITY IMPACTS

The proposed Kohala Makai I development would affect air quality on and around the project site in three distinct ways. First, and most importantly, it would increase vehicular traffic and, therefore, atmospheric concentrations of pollutants typically produced by internal combustion engines. Second, construction activity, especially site clearing and grading, would disturb the soil and reduce the groundcover; as a result, airborne particulate levels may be expected to increase temporarily. Finally, the increased population would lead to a rise in the demand for and generation of electrical power. As a consequence, emissions from the island's power plants may increase as well. The approximate magnitude and significance of these effects are discussed below. Preceding that is a brief review of available meteorological and air quality data which are pertinent to an understanding of the potential air quality impacts of the Kohala Makai I project.

Existing Air Quality and Meteorology

Air Quality. The area around the Kohala Makai I site is largely rural and undeveloped at this time. The harbor and industrial areas at Kawaihae a few miles to the south contain no heavy industry which would constitute potential stationary sources of air pollutants. Existing highways carry relatively low traffic volumes, and there is no agricultural burning in the vicinity. The nearest electrical power generating plants are at Waimea and Keahole, twelve and twenty-eight miles away, respectively; moreover, even these are only small diesel units that operate just a few hours a day during periods of peak

demand. In view of this, and of Hawaii Island's mid-ocean location, existing air quality is believed to be excellent.

The nearest State Department of Health air quality sampling station is situated in Hilo, some 60 miles away on the island's windward side. Despite the fact that this station is situated in the island's largest city, the air quality there appears to be good, further substantiating conclusions reached above regarding the Kohala Makai I project site.

At present the worst periods of air pollution experienced in Hawaii County are due to the infrequent and unpredictable eruptions of Kilauea and Mauna Loa volcanoes. The emissions from these eruptions have not been fully characterized with respect to potential contaminants, but it is known that they produce high particulate levels and sulfur- and mercury-laden gases.

Meteorology. A wind rose showing the direction and frequency of winds in the vicinity of Kawaihae on an annual basis is presented in Table IV-7. It indicates that winds blow from the west and west-northwest approximately 40 percent of the time and from the opposite direction, east and east-southeast, about 30 percent of the time. An examination of hourly data reveals that the east and east-southeast winds generally occur during nighttime, early morning, and evening hours; west and west-northwest winds predominate during the daytime. This pattern is evidence that a strong land-seabreeze regime dominates air movement in the area. U.S. Army Corps of Engineer's data (see Table IV-7) indicate that winds are never over 24 miles per hour, but other observers have noted that the occasionally gusty tradewinds often reach gale levels (Kohala Community Association; February 16, 1982).

Impact of Project-Related Traffic

The normal procedure for assessing the air quality impacts of project-related traffic involves:

- (1) determining existing traffic volumes and calculating roadway capacities;

Table IV-7. Windrose for Kawaihae.

| <u>Direction</u> | <u>Calm</u> | <u>1 - 2</u> | <u>3 - 7</u> | <u>8 - 18</u> | <u>19 - 24</u> | <u>>24</u> | <u>All Speeds</u> |
|-------------------|-------------|--------------|--------------|---------------|----------------|--------------------|-----------------------|
| N | | .0005 | .0008 | .0000 | .0000 | .0000 | .0013 |
| NNE | | .0082 | .0092 | .0008 | .0000 | .0000 | .0182 |
| NE | | .0034 | .0209 | .0003 | .0000 | .0000 | .0246 |
| ENE | | .0362 | .0671 | .0367 | .0085 | .0000 | .1485 |
| E | | .0042 | .0040 | .0005 | .0000 | .0000 | .0087 |
| ESE | | .0412 | .0948 | .1052 | .0196 | .0000 | .2608 |
| SE | | .0048 | .0320 | .0092 | .0000 | .0000 | .0460 |
| SSE | | .0079 | .0048 | .0040 | .0000 | .0000 | .0166 |
| S | | .0040 | .0021 | .0000 | .0000 | .0000 | .0061 |
| SSW | | .0008 | .0021 | .0003 | .0000 | .0000 | .0032 |
| SW | | .0003 | .0011 | .0003 | .0000 | .0000 | .0016 |
| WSW | | .0016 | .0050 | .0003 | .0000 | .0000 | .0069 |
| W | | .0098 | .0235 | .0045 | .0000 | .0000 | .0378 |
| WNW | | .0476 | .2201 | .0962 | .0000 | .0000 | .3638 |
| NW | | .0011 | .0029 | .0000 | .0000 | .0000 | .0040 |
| NNW | | .0135 | .0132 | .0008 | .0000 | .0000 | .0275 |
| All Directions | .0246 | .1849 | .5036 | .2589 | .0280 | .0000 ¹ | 1.0000 |

¹ Other observers in the area have noted that the occasionally gusty tradewinds often reach gale levels (Kohala Community Association; February 16, 1982).

Source: U.S. Army Corps of Engineers as reported in Morrow (February 1979).

- (2) forecasting changes in traffic that will occur independent of the proposed project, i.e., that would be produced by other development, by changes in the highway network, or by alterations in driving habits;
- (3) estimating the amount of additional traffic that would be produced at critical locations by the proposed project;
- (4) using the projected traffic volumes, meteorological data, and information regarding the physical layout and capacity of available roadways to model expected pollutant concentrations; and comparing the projected concentrations with ambient air quality standards to determine whether the standards will be met.

The first and third of these tasks are relatively straightforward, and a comprehensive discussion of roadway characteristics and existing and Kohala Makai I-related traffic may be found in the "Traffic Impact" section of this chapter. However, as explained in that discussion, forecasting changes in traffic volumes that will occur as a result of other approved and proposed developments in the area is much more difficult. With respect to its implications regarding the adequacy of the existing roadway network, it is also much more significant.

All of the existing roadways that would be affected by the proposed project are two-lane facilities. They have capacities of 2,000 vehicles per hour or less. Past analyses of the air quality impacts of traffic on such roadways strongly suggest that, given the composite emission rates that are expected in 1990, violations of ambient air quality standards in that year are unlikely to occur so long as the traffic volumes do not exceed highway capacities. This conclusion holds even under the worst possible meteorological conditions for areas where existing air quality is reasonably good (see, for example, Morrow, 1980). It assumes that there will be no further relaxation in Federal motor vehicle emission standards, a condition which cannot be guaranteed at this time. Conversely, ambient air quality standards are quite likely to be violated when the number of vehicles attempting to use such a facility exceeds its capacity.

Because of this relationship, the volume:capacity ratio is a reasonably accurate indicator of the presence or absence of potential air quality problems in the vicinity of Kohala's highways in 1990. When it is less than 1.0, no air quality standard violations are to be expected; when it is 1.0 or greater, the resulting traffic congestion is likely to produce pollutant concentrations in excess of standards. This point is central to an understanding of Kohala Makai I's air quality effects. It also means that the total traffic volume that is projected is of critical importance.

As discussed in the "Traffic Impact" section of this report, if Kohala Makai I were completed today, traffic on the region's roadways would remain well below their capacity. Based on the preceding discussion, we may take this to mean that no air quality standards would be violated.

However, the situation is radically different if we consider planned and proposed development elsewhere in the region as well. By 1990, traffic on several roadway segments would be in excess of capacity. By 2005, the year in which all currently planned and proposed development would be finished, projected traffic volumes would exceed capacity nearly everywhere. Clearly, highway work ranging from spot improvements, to signalization, to the construction of additional lanes would be required.

These physical changes to the highway system would significantly alter their operating characteristics and capacities, but, until design plans are available, it is impossible to quantify the effects. Without being able to quantify capacity we cannot project vehicle:capacity ratios. This, in turn, prevents us from accurately determining traffic-related air quality effects. Hence, at this time our conclusions must be limited to the following observations:

- o While traffic from Kohala Makai I would not cause any significant adverse effects on air quality by itself, it would generate additional trips on roadways where congestion is already projected. This, in turn, would contribute to potential air quality problems.

- o So long as highway improvements keep roadway capacity ahead of demand, air quality standards are likely to be met. Should implementation of the highway improvement program lag behind development, air quality problems may occur.

Construction Dust

Because of the region's arid climate and relatively high percentage of silt and clay-size particles in the soil, construction of Kohala Makai I could significantly raise atmospheric particulate concentrations in the surrounding area. A study for the U.S. Environmental Protection Agency, for example, estimated that particulate emissions are 1.2 tons per acre per month from "medium" construction projects in semi-arid climates on soils having moderate (about 30 percent) silt content (Morrow; May 1978:13). The study did not provide information regarding the effect of such things as prevailing wind speeds, type of groundcover, kinds of construction techniques and equipment used, just a few of the myriad of factors that would influence particulate emissions at Kohala Makai I. Hence, it is impossible to determine exactly what atmospheric particulate levels would prevail during construction. However, both theoretical models and practical experience with the soil type present suggest that considerable attention will need to be paid to the control of dust raised by wind and construction activities during development of the project.

Twice-daily watering, establishment of temporary groundcover, and the use of soil binders are among the techniques that can be used to control particulate emissions. Other methods that may prove effective at limiting dust problems are the installation of irrigated landscaping, confining all major grading/earthmoving activities to the period before any of the project's units are occupied, and limiting major earthmoving activities to days with the least wind erosion potential.

Electrical Power Generation

Kohala Makai I would draw power from the Hawaii Electric Light Company's (HELCO) power grid. HELCO, in turn, obtains it from three primary sources:

CORRECTION

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

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Electrical Power Generation

Kohala Makai I would draw power from the Hawaii Electric Light Company's (HELCO) power grid. HELCO, in turn, obtains it from three primary sources:

(i) its own fossil fuel-fired generating plants; (ii) bagasse-fired boilers at various sugar mills; and (iii) the recently commissioned geothermal power station in Puna. The HELCO system operates as an integrated network. Because of this it is difficult to isolate the effect that Kohala Makai I would have on it. However, if we presume that the company attempts to operate its least efficient units (i.e., those with the highest operating costs) only when they are absolutely needed, it appears that the proposed project would have the effect of increasing emissions from its older fossil-fired units. All of these are required by law to meet State and Federal emission and ambient air quality standards. Hence, no significant adverse impact is expected despite the likely increase in total emissions.

Over the long run, increases in energy demand such as are produced by Kohala Makai I might provide the incentive for HELCO to modernize more of its facilities and/or obtain more of its energy from less-polluting sources such as OTEC and geothermal. Such a trend would eventually lead to a decrease in power plant emissions and a consequent improvement in air quality.

SONIC IMPACTS

Introduction

Previous studies have shown that already-approved development in Kohala will increase traffic and traffic noise substantially over the next twenty years (see, for example, Hawaii, State of, Department of Land and Natural Resources, April 1980 and Belt, Collins & Associates, September 1981). They indicate that there is a strong likelihood that this development alone will cause noise levels along major road corridors to exceed the accepted standard of 65 L_{dn}. To determine the extent to which Kohala Makai I might further increase noise levels, the acoustical engineering firm of Darby-Ebisu & Associates, Inc. was commissioned to prepare a detailed analysis of project-related noise effects. Their entire report is reproduced in Appendix E of this report. The study's most important conclusions are summarized below.

Noise Descriptors and the Relationship of Noise to Land Uses

Many different ways of measuring and characterizing sound have been developed. The "day-night sound level" or L_{dn} has been accepted as the single best description of community noise levels (U.S. Department of Housing and Urban Development; 12 July 1979). In calculating L_{dn} , the noise levels occurring between 10 p.m. and 7 a.m. are increased by 10 dB prior to computing a 24-hour average sound level.

Table IV-8 portrays the typical sound levels in different kinds of residential neighborhoods. There is a consensus among federal agencies that 65 L_{dn} is the maximum acceptable ambient noise level at the sites of residential units.

Table IV-8. Values of Yearly Day-Night Average Sound Levels (L_{dn}) Typical of Various Types of Residential Neighborhoods.

| Type of Area | Average L_{dn} (in dB) |
|-----------------------------|--------------------------|
| Rural (undeveloped) | 35 |
| Rural (partially developed) | 40 |
| Quiet Suburban | 45 |
| Normal Suburban | 50 |
| Urban | 55 |
| Noisy Urban | 60 |
| Very Noisy Urban | 65 |

¹ Values shown are for areas where there are no well-defined sources of noise other than the usual transportation noise.

Source: National Research Council (1977).

Existing Noise Environment

Darby-Ebisu & Associates, Inc. (July 1981:4) estimated that existing noise levels on the site are 62 L_{dn} at 50 feet from the centerline of the highway in a direct line of sight; at the same distance, but with shielding provided by the highway cuts, they estimated that noise levels are about 50 L_{dn} . At the center of the site traffic noise levels are much lower, probably in the range

of 32 to 40 L_{dn} . Traffic noise is even less at the shoreline, but, due to the surf, overall noise levels there are between 50 and 65 L_{dn} .

Existing traffic-generated noise levels in the urban areas of Hawi and Kawaihae at 50 feet from the streets were calculated to be about 61 L_{dn} (Darby-Ebisu & Associates, Inc.; July 1981:4). The present noise level along the Akoni Pule Highway corridor was estimated to be approximately 62 L_{dn} by Darby-Ebisu & Associates, Inc. Both of these easily meet the Federal 65 L_{dn} criteria.

Construction Noise

Construction noise from the project would vary greatly over the development period. At its worst, i.e., during site preparation, average sound levels at a distance of 50 feet might average as high as 84 dB(A) during working hours. These would be confined to a relatively short period of time at any one location. Once the roadways, site preparation, and foundation work is completed, noise levels would be lower by 15 to 20 dB(A) (Bolt, Beranek, and Newman, December 1971:19).

The Kohala Makai I site is bounded on the north and south by undeveloped land and by Akoni Pule Highway on the east. The only nearby development which might be affected by construction noise from the project is the Kohala Estates subdivision immediately mauka of the highway. This is a low-density, agriculturally-zoned project with large lots. As a result, there is only one parcel situated close enough to Kohala Makai I to be significantly affected by construction noise from it. No house has been built on this 89-acre lot as yet, but the location of the waterline easement which serves it suggests that any house built on it would be at least 400 feet above Akoni Pule Highway. Sound attenuation over this distance would be on the order of 15 to 20 dB(A). Hence, even during the noisiest phases of construction, Kohala Makai I would not have a significant impact on surrounding uses.

The greatest potential for adverse construction noise impacts is within the Kohala Makai I project itself, since it would probably be built in several phases. There, the units completed and occupied first would have to endure

noise from construction of subsequent phases of the project. To mitigate the potential adverse noise impacts, the site development work (the noisiest of construction activities) could be scheduled so that it is completed prior to occupancy of adjacent residential units. Noise-controlled construction equipment could also be used.

Vehicular Noise

Noise Levels in 1990. As a result of traffic increases generated by development elsewhere in the region, noise levels measured 50 feet from the centerline of Akoni Pule Highway between Kawaihae and Hawi are expected to rise from their present 62 L_{dn} to 68.8 L_{dn} in 1990. This is higher than the Federal criteria of 65 L_{dn} . Hence, complaints may be received from persons residing close to the highway. If these are to be forestalled, it may be necessary to take some steps outlined in the discussion of mitigation measures found later in this section.

As indicated in the "Traffic Impacts" section of this report, Kohala Makai I would increase peak-hour traffic on Akoni Pule Highway south of the project by about 185 vehicles per hour. Calculations by Darby-Ebisu and Associates (December 3, 1981) indicate that these changes would raise the L_{dn} by 0.5 and 1.2 L_{dn} units north and south of the project, respectively. The increase is so small as to be undetectable by the human ear. Hence, while the estimated noise levels with the Kohala Makai I project are higher than those forecast without it, they would not substantially affect the mitigation measures needed to insure that noise levels along the highway remain at or below the 65 L_{dn} Federal criteria.

Year 2000 Noise Levels. The traffic volumes on Akoni Pule Highway in the year 2000 would be increased over the 1990 level by continuing development at the planned South Kohala resorts and possibly by the proposed Mahukona Resort. However, there are so many unknowns regarding development approvals, construction schedules, trip routes, and possible highway improvements that it is impossible to characterize traffic patterns in that year sufficiently for a detailed noise analysis. However, the relationships between traffic volume, average highway speeds, and traffic noise are such that a reasonable understanding of potential impacts is possible.

Traffic noise is directly proportional to both the number of automobiles and the average highway speed. However, as the traffic volume on a particular roadway increases, average speeds tend to decrease. Hence, as the traffic volume on Akoni Pule Highway begins to approach capacity, the increase in noise one would expect from the greater number of vehicles tends to be offset by a decrease in the amount of noise due to lower operating speeds. The net effect of these two forces is to create an upper limit of about 71 L_{dn} 50 feet from the centerline along open stretches of road. In the towns of Hawi and Kawaihae, the lower operating speeds possible are expected to set an upper limit of about 68 L_{dn} on traffic noise levels. Based on the preceding, it can be seen that year 2000 noise levels with Kohala Makai I would be no more than 1.2 L_{dn} unit higher than they would be without it; in all probability the increase would be even less. Once again it is apparent that the noise increase caused by the proposed project would be insignificant.

Mitigation Measures

Conventional noise mitigation measures such as noise barriers, sound insulation of certain buildings, and reduction of speed limits in urban areas may achieve the necessary noise reductions for existing housing that is close to major roads. Future highway improvements made in response to traffic growth should take noise impacts into account. To minimize impacts realignment around towns, rather than improving existing roads through them, should be considered.

To avoid noise impacts on future residential developments (including Kohala Makai I) wide buffer zones along Akoni Pule Highway should be maintained. Other noise mitigation measures can be incorporated into the design of projects along this highway. With a detailed topographic survey of a site and the adjacent highway geometry, residential structures can be located out of the line-of-sight of the highway, thereby utilizing the topography to reduce traffic noise. A noise barrier could also be used to break the line-of-sight. Various architectural treatments can be used to reduce noise in the interior of units to the desired level if it is not feasible to attenuate exterior noise to this level.

VISUAL IMPACTS

The Kawaihae-Mahukona (Akoni Pule) Highway and Kai'opae Point are listed in the Hawaii County General Plan (Hawaii, County of; 1971:42) as examples of natural beauty. Kai'opae Point is one of the coastal headlands on the site. It is distinctive in being an open, sloping area bounded by high, steep sea cliffs. Akoni Pule Highway is one of the few roads on the island which are listed in the "Natural Beauty" section of the General Plan. Its distinction is that it runs through 20 miles of presently undeveloped, open countryside and affords highway travellers scenic vistas of the ocean.

Since views in this area are extensive due to the sloping terrain and scarcity of vegetation, the project would be visible to travellers on the highway north and south of the site. However, the buildings would be low-rise and the grounds extensively landscaped, including a landscaping buffer along the highway. As a result, the buildings' surfaces would be hidden and softened by the plants. At the same time, the color (green rather than the present ochre), density (lush instead of sparse), and variety (many species rather than just a few) of the landscape plantings will distinguish it from the surrounding vegetation. Whether or not this contrast will be perceived by viewers as an intrusion or as a welcome relief depends upon individual preferences.

Persons in vehicles passing the site could find their views towards the ocean affected by the proposed roadside landscaping and by the three-story buildings expected to be developed. The extent to which mauka-makai view planes would be disturbed depends upon the exact site layout that is used. However, the fact that about half of the site's highway frontage is through a cut which already prevents any views of the ocean together with the presence of gullies where no development will occur suggests that a layout which preserves most of the existing visual amenities is possible. Moreover, the landscaping along the highway could provide a diversion that would help offset the loss of a few moments of ocean views. Detailed analysis of the visual impacts of the project cannot be performed until architectural and siting decisions are made. This can be done at the design review stage.

The dramatic coastline of Kai'opae Point would not be altered, as a buffer zone of open space would be preserved along the shore. The view mauka would be altered by development on the site, but landscaping would provide a more diverse and verdant backdrop than the sparse existing vegetation. Thus, the impact on views of, and from, Kai'opae Point is not expected to be highly adverse.

The development would be visible to boaters along the coast as well as to travellers on the highway. Again, although the visual character of the site would be changed, the view could be improved or degraded depending on the design implemented as well as the aesthetic values of the viewer. Users of the shorefront would probably not be able to see the development while near the water's edge due to the steep cliffs along the coast.

IMPACTS ON WATER RESOURCES

Regional Water Sources

There is currently no water service to the Kohala Makai I site. The developers plan to connect to the County's South Kohala water system. Discussions have been held between the County of Hawaii Department of Water Supply and Kohala Makai I, Limited Partnership. The agreement reached is that if the developer pays for the extension of the water system from Kawaihae to the site, plus a charge equivalent to the project's share of source development costs, as well as its share of costs for possible improvements to the water system in Kawaihae, the project would be allowed to connect to the County water system.

The Lalamilo wells in that system would probably be the primary source of water to Kohala Makai I. The developers of Kohala Makai I would work with County officials to expand the system, if required. Two freshwater wells, transmission and distribution lines, and a 1.0 million gallon reservoir have been developed for the Lalamilo system (see Figure IV-4). The \$3.5-million cost of this increment comes from a \$1.0-million appropriation by the State Legislature and the rest from Hawaii County-issued general obligation bonds. Mauna Kea Properties, Inc. and Mauna Lani Resort, Inc., acting in joint

venture will make payments to the County equivalent to the bond payments due and administrative costs. About two-thirds of the supply capacity of wells B and C with 1.0 million gallons a day (MGD) of the 1.44-MGD defined capacity, is committed to the joint-venture developers but full usage must be made of it within a 10-year period. A third freshwater well, well A, now under construction should boost the system's capacity to 2.30 MGD. The entire cost of development for Well A, estimated at \$700,000 is being assumed by Mauna Kea Properties, Inc. and Mauna Lani Resort, Inc. The County has agreed to commit 100 percent of the water from this well to the joint-venture developers, provided they use it within five years. Remaining portions of the planned system (well D, three brackish wells, reservoirs and pipelines) are not funded at this time. Ultimately, the capacity of the Lalamilo water system is expected to reach 5.3 MGD.

A groundwater source has been located on the Kohala Estates subdivision. An exploratory well was drilled and tested by Water Resources International, Inc. Appendix G is a copy of their final report on groundwater development for Kohala Estates. It concludes:

"The pump test confirmed that there is an excellent high grade source of ground water in the area explored. Based upon information available, a well field at this location should yield 2 to 3 million gallons per day..."

This groundwater source could, if developed, provide potable water to Kohala Estates immediately mauka of the proposed project. Kohala Makai I has an understanding with Kohala Estates that if its water source is developed and excess capacity results, the excess could be used by Kohala Makai I. Since connection to the County water system seems probable, this alternative is now unlikely to be pursued. The existing Kohala Estates water system is shown in Figure IV-4. The lines are not connected to the exploratory well. Currently Kohala Estates transport water from the County system to their own storage tanks at their own expense.

Anticipated Impacts

Maximum (peak) water demand for Kohala Makai I would be approximately 0.27 MGD. This figure is based on the County of Hawaii Department of Water Supply

criteria that maximum daily demand be based on 600 gallons per unit per day. However, a more realistic figure for average daily consumption is 400 gallons per unit per day (Belt, Collins & Associates; January 1980:13). Accordingly, the average consumption of the development would be approximately 0.18 MGD at 100 percent occupancy (450 units x 400 gallons/day).

This amount of water would marginally increase the demand on the regional water supply. However, no adverse impacts on groundwater resources are expected since the Lalamilo system's ultimate 5.3-MGD capacity could easily accommodate the project's water use rate. All but 0.44 MGD of the 2.3 MGD capacity of wells A, B, and C is presently committed to Mauna Kea Properties, Inc. and Mauna Lani Resort, Inc.; in addition, the County Department of Water Supply has a list of requests for service connections whose total demand in 1979 was estimated to be 0.55 MGD (Hawaii, State of, Department of Land and Natural Resources; March 1981: I-12). Therefore, further development of wells, transmission lines, and storage tanks would probably be necessary before the site could be connected to the Lalamilo Water System. The developers of Kohala Makai I expect to participate in the financing of these facilities.

Mitigation Measures

The following are measures which will be considered by the developers to minimize demand on the region's water resources:

- o drip irrigation systems for certain landscaped areas within the proposed development area;
- o plant materials that thrive on little water;
- o an automatic irrigation system which can be adjusted to be optimally effective by delivering the proper amount of water in evening or early morning hours, thus minimizing evapo-transpiration and over-irrigation of the planted areas; and
- o water-efficient plumbing systems and water-saving devices that would more effectively utilize water in residential units.

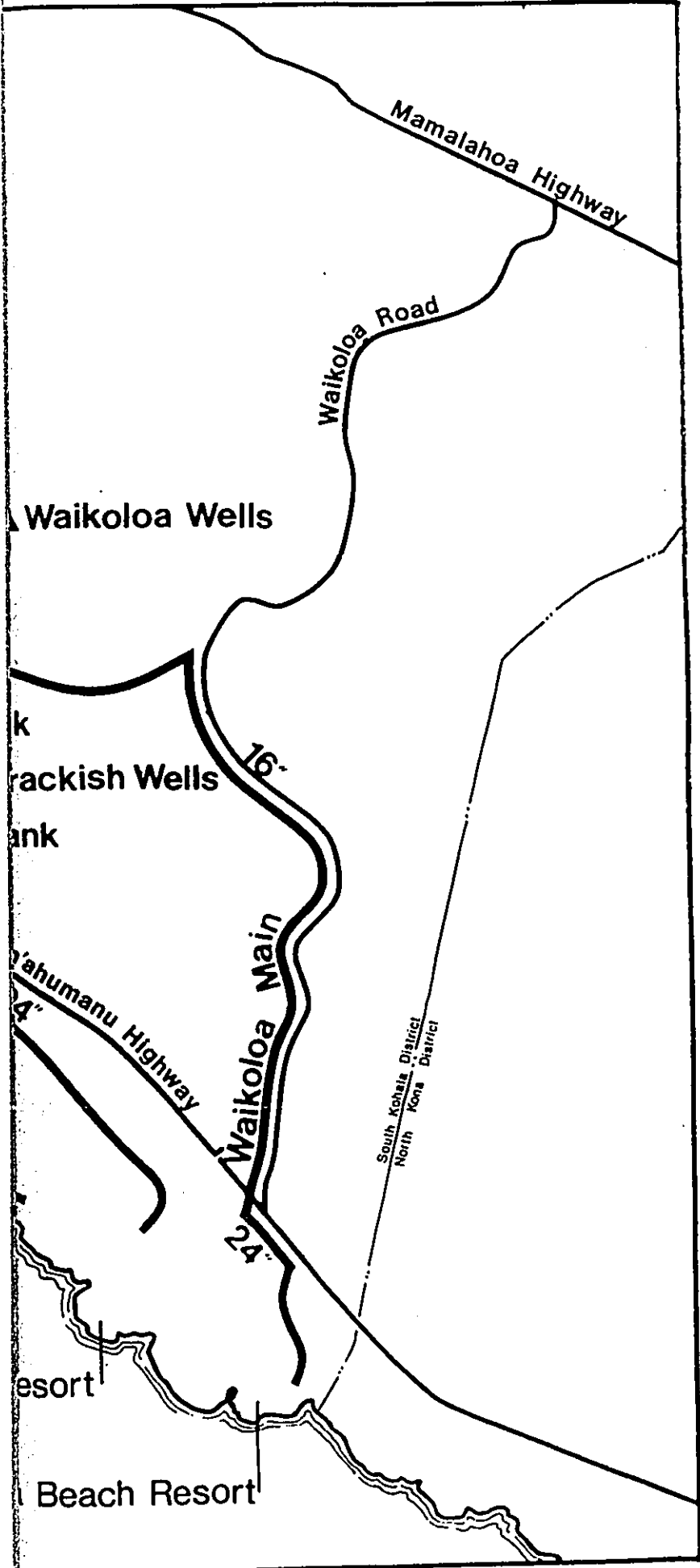


Figure IV-4

Regional Water Systems

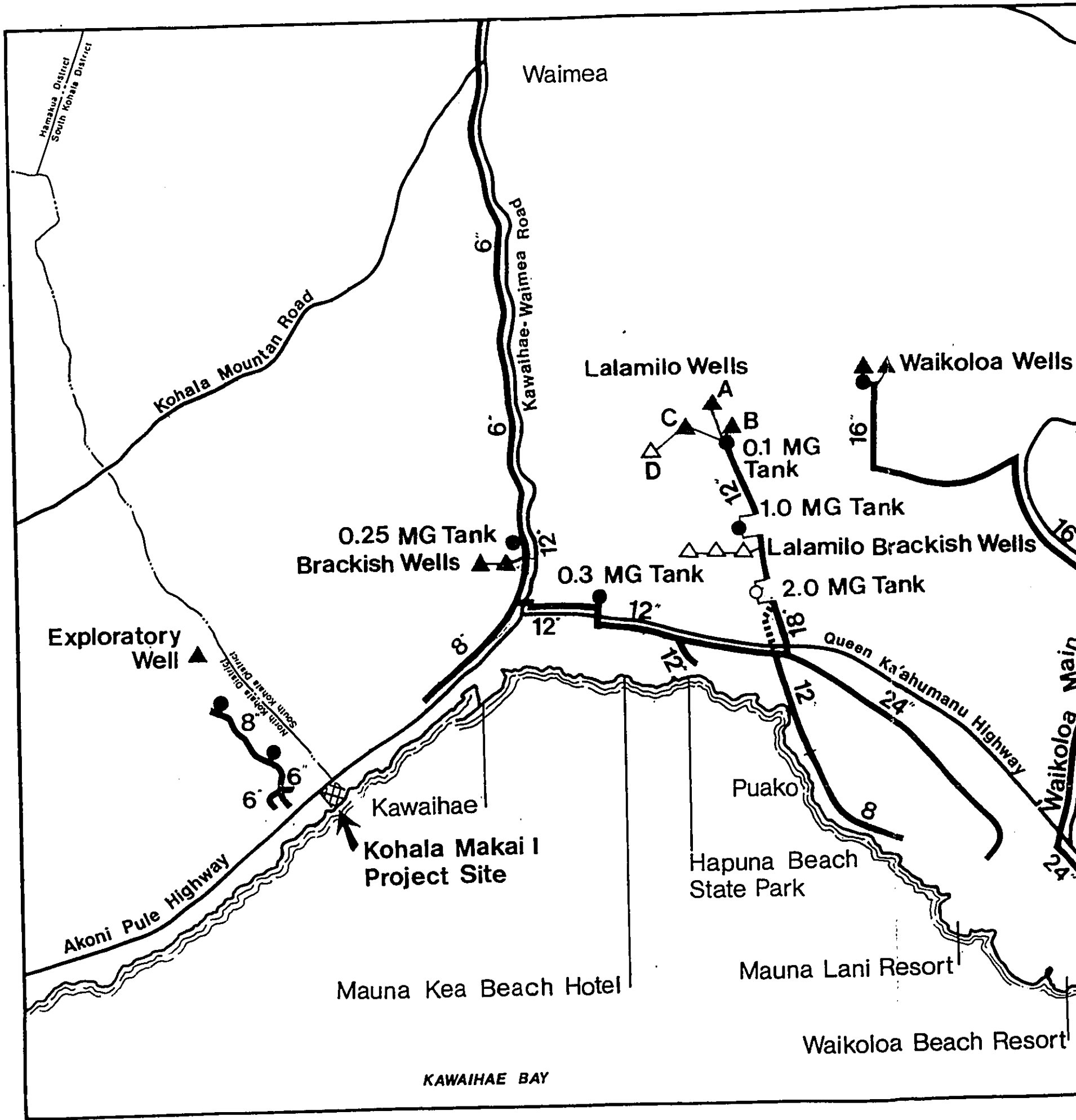
LEGEND

- Existing Main
- Future Main
- ▲ Existing Well
- △ Future Well
- Existing Tank
- Future Tank

KOHALA MAKAI I EIS



Prepared by: BELT, COLLINS & ASSOCIATES



Hamakua District
South Kohala District

Waimea

Kohala Mountain Road

Kawaihae-Waimea Road

Lalamilo Wells

Waikoloa Wells

A B
C D
0.1 MG Tank

0.25 MG Tank
Brackish Wells

1.0 MG Tank

0.3 MG Tank

Lalamilo Brackish Wells

2.0 MG Tank

Exploratory Well

8" 6" 6" 8"

8"

12"

12"

12"

18"

Queen Ka'ahumanu Highway

Waikoloa Main

Akoni Pule Highway

Kawaihae

Kohala Makai I Project Site

Puako

Hapuna Beach State Park

Mauna Kea Beach Hotel

Mauna Lani Resort

Waikoloa Beach Resort

KAWAIHAE BAY

SEWAGE TREATMENT AND DISPOSAL IMPACTS

Presently, there are no municipal sewage systems or sewage treatment facilities near Kohala Makai I site. Most residential units in the region rely primarily on private cesspools. Public health regulations prohibit the use of cesspools for any development of a density greater than eight persons per acre. Thus the proposed development would rely on an on-site, private sewage treatment plant, with effluent disposal facilities either on-site or within a reasonable distance from the project site.

Planned System

Average sewage flows were assumed to be 80 percent of water use. Taking the average per unit water consumption figure of 400 gallons per day (gpd), sewage flows would average 320 gpd for each unit or 144,000 gpd for the development. The collection system and treatment and disposal facilities would have to be designed to handle peak flows, and would be subject to County and State public health standards and regulations.

With small, private sewage facilities the low population base creates a high peaking factor. This, in turn, makes a smoothly-operating system more costly because flow rates generally must be equalized with surge tanks or other equipment. A well-trained plant operator is also essential for an effective sewage treatment and disposal system. It is expected that an activated sludge wastewater treatment process would be used to provide at least a secondary level of treatment. Two options for disposal of the treated effluent are being considered--exfiltration wells and use of effluent for irrigation.

The treatment plant would be located in the northeast corner of the site, separated by a gully from the residential units (see Figure II-8). Landscaping would be used to screen the facility. Sewage would be collected by a system of gravity and force mains and carried to the treatment plant. Exfiltration wells for effluent disposal could be drilled on-site. Further engineering studies and tests, including detailed soil analysis, would have to be performed to determine the viability of this option. Another possibility is to use treated effluent for irrigation. Based on an application rate of

approximately two inches per week, a quarter-acre holding pond of a five-foot depth and an area of about 20 acres would be required for this alternative. The site could accommodate the holding pond, but not the 20-acre irrigation area. Also State regulations do not allow irrigation with effluent in residential areas. Therefore, an agreement with adjacent landowners or acquisition of another parcel would be required.

Sludge disposal from the plant facility would be handled through sludge digestion and dewatering facilities (drying beds). These sludge beds dry 'wet' sludge generated from the treatment process. Because of the dry climate of the area, sludge beds should work efficiently. After drying, the resultant 'sludge cakes' would either be disposed of at a landfill site or would be made available as compost for farmers in the area.

All treatment and disposal methods would be subject to State and County approval.

Anticipated Impacts

The sewage treatment and disposal system will meet all Federal, State, and County water quality and public health standards. Hence, the impact on the County and its residents is not expected to be significant. Possible areas of concern that will be explored before seeking the required Department of Health permits include: the reliability of a small private plant, especially in terms of the maintenance it receives; the tendency of well disposal systems to clog if plant malfunctions result in a high solid content of the effluent; and the possibility of groundwater or coastal water contamination in the event of a failure. Further discussions would be held with State and County officials to determine how these potential problems can best be avoided.

While no final conclusions can be reached until additional studies have been completed, two important factors suggest that the risks associated with a sewage treatment plant situated in this location are small. First, the groundwater beneath the potential injection well location is too saline (more than 2,500 parts per million chloride) to be considered as a possible drinking water source. Second, the rapid mixing which occurs along the shoreline

insures that any treated effluent that might eventually seep into coastal waters would be diluted immediately. Because of this, it appears that a properly designed and operated sewage treatment plant would not adversely affect coastal waters.

The sewage treatment plan process and location would be designed to minimize impacts from sewage odors, both for residents of Kohala Makai I and for those in Kohala Estates. The proposed activated sludge wastewater treatment process is generally the least offensive treatment process in terms of smell. And locating the plant in the northeast corner of the project site takes advantage of the prevailing wind directions. The wind comes predominantly from the west-northwest during the day, and from the east-southeast at night. Thus, at night odors would be blown across Kahua Ranch's vacant property directly north of the project site. Odors from the treatment plant could reach the near corner of the large parcel in the southeast corner of the Kohala Estates development during the day. However, given the agricultural zoning of the parcel, its impact would probably be minor.

DRAINAGE IMPACTS

Planned Facilities

The conceptual land use plan recognizes the current drainage pattern in the area and does not involve alterations to it. Unless stormwater gutters and drainage inlets are required by the County, the development drainage system would probably consist of swales and ditches discharging runoff into the natural drainageways on the site.

Anticipated Impacts

The proposed project would significantly alter the hydrologic characteristics of the Kohala Makai I site. Nevertheless, for reasons outlined below, flooding from storm runoff is not expected to be a problem. Potential changes in the quality of storm water (primarily increased sediment loads) are discussed in the "Soils Impacts" section of this chapter.

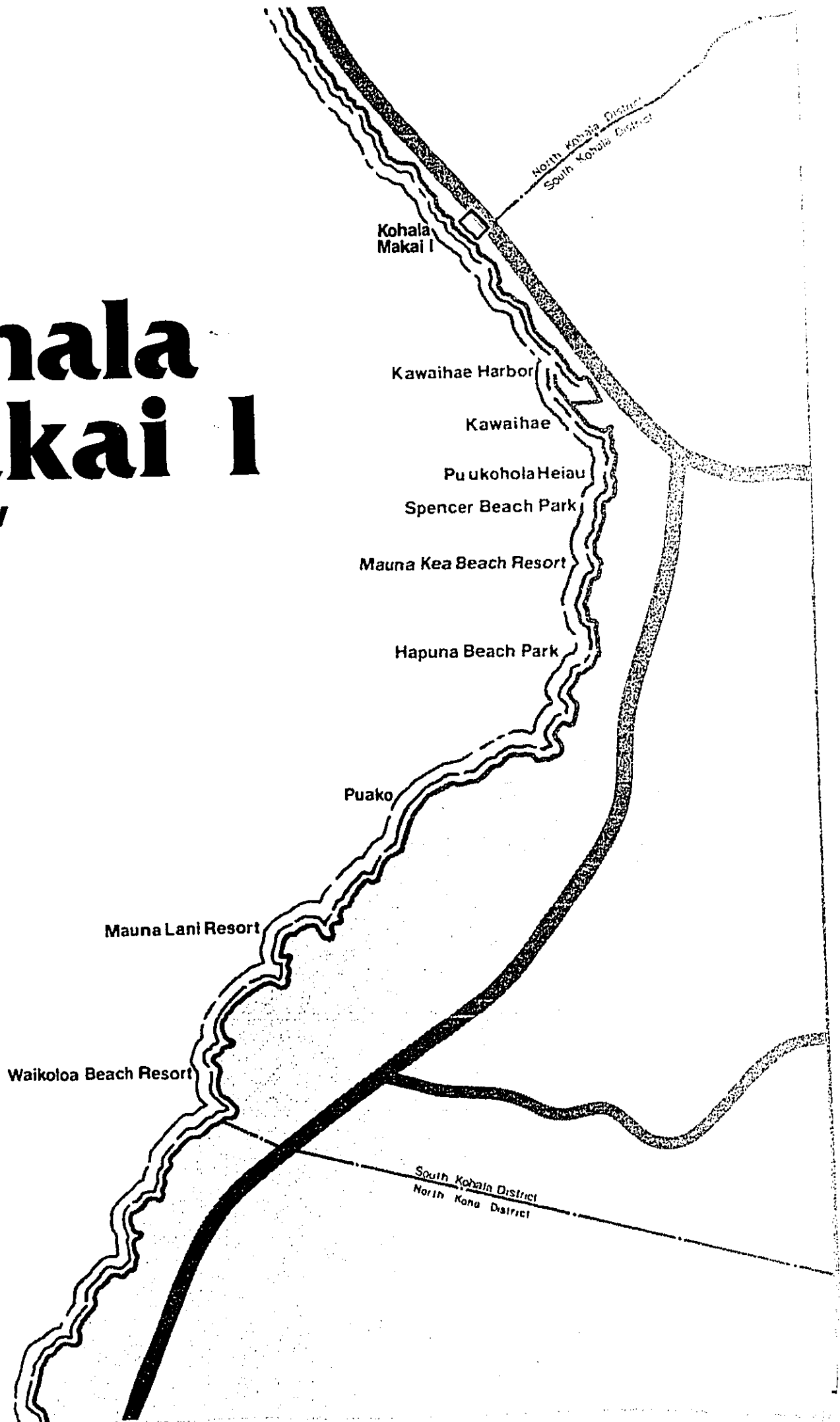
Construction of roads, parking areas, and building pads would significantly increase the proportion of the site covered with impermeable surfaces. At the same time, the increased vegetative cover in landscaped areas would tend to retard runoff from and increase percolation on these areas. While these two changes are partially offsetting, it is expected that the net effect of the project will be to increase runoff from the 38-acre site resulting from the 50-year storm by as much as 30 cubic feet per second.

There are three major reasons why no significant adverse impacts are expected as a result of this increase. First, the site constitutes less than 20 percent of the watershed into which it is located; furthermore, the hydrologic characteristics of the remaining tributary area are unlikely to change for the foreseeable future. Hence, while runoff from Kohala Makai I would rise substantially as a result of the proposed development, this would affect total runoff in the drainageways by a relatively small amount. Second, the capacities of the gullies far exceed present peak discharge rates. This means that the expected increase could be accommodated without flooding. Finally, the site is at the downstream end of the drainage basins in which it lies. Hence, increased runoff from the site cannot lead to downstream flooding.

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

Kohala Makai I

Chapter V



CHAPTER V
SOCIO-ECONOMIC IMPACTS OF THE PROPOSED PROJECT

Introduction

The previous chapter examined the physical impacts related to the development of the proposed project. In this chapter, the project's socio-economic impacts are examined. Unlike the major resorts now being developed in South Kohala, Kohala Makai I is aimed primarily at residents rather than at visitors. To the extent that the persons who reside there are different, on the average, than the area's present population, the proposed project could contribute to changes in the demographic make-up of the Kohala population. This, in turn, has social and political implications; it would also affect the level of public services required and the amount of public revenues available to pay for them. The remainder of this chapter explores the nature of these changes and assesses the ability of the region's public facilities and services to support them.

DEMOGRAPHIC CHARACTERISTICS

Existing Situation

The 1980 Census confirmed that the neighbor island counties have grown at a faster rate than Oahu. The Census figures for Hawaii County show that population increased from 63,468 in 1970 to 92,053 in 1980. This amounts to a 45-percent increase over the past ten years, or an average of 3.8 percent growth per year. Districts having the greatest percentage increases were: North Kona (184.5%), Puna (128%), South Kohala (99.4%), and South Kona (47.7%). North Hilo and North Kohala recorded population decreases.

In the late 18th century, at the time of the arrival of Captain Cook, the island of Hawaii contained approximately 40 percent of the total population of the Hawaiian Islands. For the next ninety years, the island was the most populous in the Hawaiian chain although the population dropped from an estimated 120,000 to less than 20,000 in that period. The population grew

steadily from about 1876 to 1930, in response to the development of large-scale agriculture.

In the thirty-year period between 1930 and 1960, the population on the island of Hawaii decreased again. Mechanization of the sugar industry and expanded economic opportunities on Oahu and elsewhere were the primary impetus for the out-migration during that period. The large out-migration between 1950 and 1960 occurred mainly in the 20 to 24 year-old age group. The overall effect of this out-migration of young people on the demographic structure of the County was to increase the median age from 24.7 years in 1950, to 27.4 years in 1960 and 28.9 years in 1970.

An examination was made of the demographic characteristics of South and North Kohala and Hawaii County based on the 1970 census data since detailed information from the 1980 census is not yet available. It showed that, proportionately, slightly more persons 55 years and over, and 19 years and younger reside in North Kohala than in South Kohala. In South Kohala, the population percentage for persons between 20 and 44 years of age is greater than in North Kohala or the County as a whole. The higher percentage is probably due to tourism-related employment opportunities that exist in South Kohala. The ethnic composition of the two regions differs dramatically. According to the 1970 Census, the percentages of Caucasians and Hawaiians in South Kohala are significantly greater than they are in either North Kohala or the County. North Kohala's Filipino ethnic group is proportionately much larger than South Kohala's or the County's. In both regions, the percentage of ethnic Japanese residents is lower than the County average.

The disparities in age, sex, and ethnic distribution noted above are rooted in the socio-economic development and physical characteristics of the regions. The settled areas of North Kohala are on the wet side of the district where the climate fostered the production of sugarcane. Since this type of agriculture is labor-intensive plantation settlements developed here. Labor for the plantations was largely imported. Two of the major ethnic groups now present in North Kohala, the Japanese and Filipinos, migrated to the area during different historical periods to work in its sugar industry.

Most of South Kohala experiences relatively drier weather than the settled areas of North Kohala. The primary economic activity in the region has historically been ranching. The ranches were not as labor intensive as the plantations in North Kohala, and their owners preferred not to import laborers. Therefore more employees have been part-Hawaiians and Caucasians.

District population figures from the 1980 census (U.S. Census Bureau; February 2, 1981) are available. They show that North Kohala's population declined to 3,249 from the 3,326 reported living there in 1970. This two percent drop in population is related to the limited new job openings in the area, as well as the closure of the Kohala Sugar Company. The drop contrasts with the 45-percent growth in resident population in Hawaii County between 1970 and 1980 (63,500 to 92,200) and the nearby 100-percent increase in South Kohala's population in that period (2,310 to 4,607).

Anticipated Population Impacts

The proposed development would, based on the number of planned residential units, increase the population in the region by an estimated 1,145 persons. As Table V-1 indicates, this would be the average population of the project based on 90 percent of the units housing permanent residents, and 10 percent being used by transients. The resident population would be 1,110 of the 1,145 de facto population. This represents an increase in the resident population of the North and South Kohala Districts of about 15 percent over the 1980 Census figures.

As shown in Table V-1, Kohala Makai I's contribution to the transient population of the region would be quite small, particularly in view of the very large number of visitors who would be present in the nearby South Kohala resorts. Its contribution to the resident population would be more substantial. However, to the extent that it simply constitutes housing for persons attracted to Kohala by employment opportunities elsewhere in the region, it would not be the primary cause of population growth. Only insofar as it is occupied by retirees or persons who are not dependent upon local employment would the project result in a population higher than would otherwise be the case.

Table V-1. Projected Resident and Transient Population of the Kohala Makai I Development.

| <u>Occupancy Assumptions</u> | <u>Population</u> | | <u>Total (de facto)</u> |
|------------------------------|-------------------|------------------|-------------------------|
| | <u>Resident</u> | <u>Transient</u> | |
| Initial Stage ² | 865 | 100 | 965 |
| Final Stage ³ | 1,110 | 35 | 1,145 |
| 100-Percent Occupancy | 1,170 | 130 | 1,300 |

¹ Estimates are based on the following assumptions:

| <u>No. of Bedrooms</u> | <u>No. of Units</u> | <u>No. of Bedrooms</u> | <u>Avg. Persons Per Bedroom</u> | <u>Est. Pop. @ 100% Occupancy</u> |
|------------------------|---------------------|------------------------|---------------------------------|-----------------------------------|
| 1 | 90 | 90 | 2.0 | 180 |
| 2 | 315 | 630 | 1.5 | 945 |
| 3 | 45 | 135 | 1.3 | 175 |
| ALL | 450 | 855 | 1.6 | 1,300 |

² Initial-stage occupancy factor was calculated as follows:

| <u>Occupant Type</u> | <u>% Units</u> ⁴ | <u>% Occupancy Rate</u> ⁵ |
|------------------------|-----------------------------|--------------------------------------|
| Part-time User | 30 | 25 |
| Full-time Resident | 70 | 95 |
| Weighted average = 74% | | |

³ Final-stage occupancy factor was calculated as follows:

| <u>Occupant Type</u> | <u>% Units</u> | <u>% Occupancy Rate</u> ⁵ |
|------------------------|----------------|--------------------------------------|
| Part-time User | 10 | 25 |
| Full-time Resident | 90 | 95 |
| Weighted average = 88% | | |

⁴ Hastings, Martin, Chew & Associates, Ltd. (December 1980:35).

⁵ Belt, Collins & Associates (December 17, 1980:6)..

Source: Compiled by Belt, Collins & Associates.

At this time it is impossible to predict exactly what the split between employed persons and retirees would be. Hence, to avoid underestimating potential impacts, we have treated all project-related population changes as though they were caused by the development of Kohala Makai I. However, many (probably most) of the persons who reside there will come in response to employment opportunities created by other projects. Since these people would come even if Kohala Makai I were not developed, their in-migration is not truly caused by the project, and the figures given here overestimate the actual magnitude of the project's demographic effects.

HOUSING IMPACTS

Existing Situation

The total number of housing units in Hawaii County increased from 18,118 units in 1960 to 18,972 in 1970; by 1980 there were an estimated 34,222 units. The 80-percent increase in housing units over the past decade is nearly double the rate of population increase measured in the County over the same period.

The North Kohala district experienced a 20-percent increase in housing between 1970 and 1980 even though the population declined. During the same period, South Kohala experienced a 150-percent increase in housing units compared to a 100-percent population increase (Hawaii State Census Statistical Areas Committee; September 27, 1981:5). In 1970, North Kohala contained approximately five percent of the total housing units in Hawaii County. In 1980, the proportion dropped to approximately three percent of the County total. The proportion of total housing units in South Kohala over the same decade increased from four percent to approximately six percent of the island's total.

Anticipated Impacts

Housing impacts of the project were analyzed by Hastings, Martin, Chew & Associates, Ltd. Their study (December 1980:44) concluded:

Housing impacts are related to the ultimate use of the planned units and the need for employee housing. In this context, the Kohala Makai I condominiums will have an impact on housing in the Kohala region. Based on earlier projections, the 500 to 550* unit project could provide at least 350* units which would be used as full-or part-time residences. The project could be the first quality oceanfront condominium in the region, thus offering expanded housing choices to those who can afford units in the project.

The site's potential for excellent views and privacy could be translated into a very attractive residential living environment. The availability of this housing alternative for the middle and upper income groups who reside or who subsequently move to the region, could reduce demand for scarce agricultural properties there. Thus, although the project is not anticipated to provide housing for lower income residents (except in co-operative rental arrangements), the addition of these units could relieve some pressure on the region's agricultural house lots and overall housing supply. Assuming that local residents who purchase in Kohala Makai are upgrading, the housing that they vacate then becomes available for purchase or rent by less affluent households. This "filtering down" process ultimately makes available housing for lower-income households.

The project's construction labor force would not create unusual housing needs unless the workers must migrate to the region. If this is the case, additional housing may be needed since there appear to be few vacant units in the region. Land has been designated for employee housing at Waikoloa Village, but no development plans have been announced.

* Note: The project is now planned to be 450 units, which would result in at least 315 units being used as residences.

LOCAL AND REGIONAL ECONOMICS

Existing Situation

The number of visitors arriving in the State declined slightly in 1980. The downturn has continued through the first three quarters of 1981. Visitor arrivals on the Big Island have fallen significantly more than the statewide average. Of the eight transpacific airlines that once served Hilo, only United Airlines remains, and the frequency of service has been greatly reduced. Despite these recent statistics, more resort facilities are planned for Hawaii. All of them are on the island's west coast.

While tourism declined on the Big Island during the past few years, agricultural production experienced significant gains over the same period. Hawaii County had agricultural receipts which totaled \$146.9 million in 1979, a third of the State total; receipts from diversified agriculture amounted to almost 45 percent of the State total (First Hawaiian Bank; April 1981). The biggest gains in agriculture were achieved by macadamia nut growers. Other significant economic gains were achieved in flowers and nursery products, coffee, fruits, and vegetables.

Anticipated Impacts

The primary short-term economic impact of Kohala Makai I would be construction-related employment opportunities. Hastings, Martin, Chew, & Associates, Ltd. (December 1980) estimate that construction of the types of units proposed for Kohala Makai I require an average of one man-year (i.e., one worker for one year) per unit. This figure is based on information obtained through interviews with contractors and construction managers. Applying this factor to the 450 units that are proposed for Kohala Makai I gives an estimated 450 construction worker man-years for the entire project. The number of persons actually on-site at any given time will fluctuate according to scheduling, construction methods, general contractor's operating procedures, and the size and scope of subcontracting services utilized. However, assuming a development time frame of five to six years, this translates into an average construction employment of 75 to 90 persons.

Secondary, indirect off-site employment opportunities would be generated in support of the direct employment. Based on a 0.15 indirect jobs-to-construction-job ratio (Hastings, Martin, Chew & Associates, Ltd.; December 1980:38), average annual indirect employment is estimated to be 12 to 15 persons.

General contractors for large-scale projects on the neighbor islands may be off-island firms capable of achieving economies of scale. However, typically, to minimize housing and travel costs, general contractors employ as many local subcontractors and as much of the local labor force as possible. We might expect, then, that most of the construction jobs created through the

development of this project would be filled by workers residing on the island of Hawaii.

Long-term, direct on-site employment would be generated by the operation and maintenance of the development. Based on a "direct jobs per unit" factor of 0.15 (Hastings, Martin, Chew, & Associates, Ltd.; December 1980:39), the Kohala Makai I project would create about 70 jobs; indirect jobs would add another 10 jobs, bringing the total long-term employment impact to 80 jobs.

The proposed development would affect government and business revenues within the region as well as the State. The short-term impact of the development would be in real personal income from construction-related employment. In 1978 dollars, total personal income attributable to construction of the proposed development is projected at \$6.66 million with about another half million dollars in personal income due to the indirect jobs created by construction employment (based on factors from Hastings, Martin, Chew, & Associates, Ltd.; December 1980:43). Once it is fully developed, Kohala Makai I is expected to generate, through direct and indirect jobs, personal income of about \$700,000 per year (in 1978 dollars).

The impact of retail spending, with regards to resident and visitor spending in the region, would be limited to basic convenience items. In this context, retail businesses in Waimea, Kawaihae, and North Kohala should directly benefit from the proposed development. However, retail spending for more significant items (e.g., durable goods) would probably impact established retail centers located in Kailua-Kona and Hilo. Since retail expenditures for convenience goods typically represent about 20 percent of gross income (Hastings, Martin, Chew, & Associates, Ltd.; December 1980:43), increased retail spending generated by permanent employment within the region would be about \$140,000. The cumulative total retail area that may be required to support employment-generated, resident, and visitor expenditures is estimated at about 21,000 square feet at project completion (based on factors from Hastings, Martin, Chew, & Associates, Ltd.; December 1980:44).

The proposed development would generate revenues for the County while at the same time requiring government facilities and services. Certain costs

associated with infrastructure would be borne by the developer. Other indirect and less tangible costs associated with public services (e.g. additional policemen that would be needed to service the development) are difficult to assess or measure. The project should not be considered as a single entity but within the regional context of other urban development.

The economic impact study for the project (Hastings, Martin, Chew, & Associates, Ltd.; December 1980) attempted to quantify the overall fiscal impact of the proposed development through a systematic benefit-cost analysis of additional government revenues and expenditures that would be incurred. Both residential and visitor population fiscal impacts were measured in terms of 1977 dollars; the analysis was based upon 1977 revenue and cost relationships. Specific revenue calculations could only be made for the visitor population of the project. The analysis followed the basic methodology utilized in the public sector benefit-cost analysis of the State Tourism Study (Hawaii, State of, Department of Planning and Economic Development; February 1978). For County-level impacts, the following equation was used:

$$R = (VE) \times (Q) \times (R/Y)$$

Where: R = increased government revenues
VE = increased visitor expenditures
Q = visitor expenditures to resident income conversion factor
R/Y = revenue to income ratio

For the analysis, VE was based on an average annual spending estimate. The value for Q of .63 was derived from the report The Impact of Tourism on the Hawaiian Economy: an Input-Output Analysis (Hawaii, State of, Department of Planning and Economic Development; December 1975). The R/Y ratio of .048 was based on historic tax data for Hawaii between 1970 and 1979. A benefit-cost ratio equal to or in excess of 1.0 would indicate a beneficial situation for the County.

The direct and indirect economic effect of the development should result in a benefit-cost ratio in excess of 1.0. The market study (Hastings, Martin, Chew, & Associates, Ltd; December 1980:49) states in regard to the impact of the visitor population of the project:

From a broad County government fiscal standpoint, the proposed development would be beneficial. Given the assumptions, which, in our opinion, are extremely conservative with respect to visitor spending, the increases in County government revenues are calculated to range from between 95 percent to over 190 percent above the calculated increases in County government expenditures. [See Table V-2.]

For 1977, fiscal expenditures were estimated at \$472.95 per resident at the County level and \$1,540.20 per resident at the State level. A measure of the specific fiscal benefits which might accrue from revenues generated through increased income, general excise, gasoline, and property taxes was not detailed in the study because of the uncertainty of projecting resident incomes and place of origin and property values. However, revenues generated by taxes should exceed expenditures by the government attributable to the project by a substantial amount.

IMPACT ON NEARBY LAND USES

Development at the Kohala Makai I site would tend to increase pressures to urbanize adjacent agriculturally designated and zoned land which is privately owned. A rise in land values of agricultural lots, which could result from speculative buying of parcels despite agricultural designations, may adversely affect the viability of agricultural use. This could lead to applications for further subdivision and/or rezoning of agricultural lots. However, existing County policies and regulations regarding agricultural land would act as a strong counter to these pressures.

The large parcels of nearby land owned by the State and the Department of Hawaiian Home Lands would be affected less by these pressures to urbanize. Most of these parcels are under long-term leases to Kahua Ranch and, thus, are expected to remain in use as pastureland.

IMPACTS ON PUBLIC FACILITIES, SERVICES, AND UTILITIES

Existing public facilities in the vicinity of the proposed project are shown on Figure V-1. Were Kohala Makai I the only project proposed for the area, an assessment of its impacts could be relatively straightforward. Unfortunately, this is not the case. The population growth that will accompany large-

Table V-2. Visitor-Generated Benefit/Cost Ratios: Hawaii County Government Fiscal Impact of the Proposed Kohala Makai I Project.

| <u>Direct and Indirect Effect</u> | <u>Case I¹</u> | <u>Case II²</u> |
|-----------------------------------|---------------------------|----------------------------|
| Benefits | \$99,300 | \$149,000 |
| Costs | \$50,900 | \$ 50,900 |
| Benefit-Cost Ratio | 1.95 | 2.93 |

¹ Case I is based on visitor expenditures of \$49.97 per day.

² Case II is based on visitor expenditures of \$75.00 per day.

Source: Hastings, Martin, Chew, & Associates, Ltd. (December 1980:47).

scale resort development expected in South Kohala over the next ten years will necessitate significant expansion of existing public facilities/services even if Kohala Makai I is not constructed. Hence, the effects produced by the proposed project will be of an incremental nature, i.e., they would require a marginal increase in the scale of actions that would be required anyway. Moreover, to the extent that persons residing at Kohala Makai I are attracted by employment opportunities related to nearby resort development, the residential development that is proposed would accommodate, rather than cause, population growth.

Schools

Existing Facilities. The North/South Kohala area is served by three public and four private schools. North Kohala students attend Kohala High/Elementary School (kindergarten through 12th grade). In South Kohala, the Waimea Elementary/Intermediate School serves grades kindergarten through nine. Students from South Kohala in grades 10 to 12 are bused to Honoka'a High. Hawaii Preparatory Academy (grades 1-12) and the Parker School (grades 7-12) are private schools located in Waimea. There is also a Montessori school in Waimea for kindergarten and first grade. Kohala Mission School is a private school in Hawi for grades 1 through 8.

Anticipated Impacts. The State Department of Education (DOE) projects the development would generate between 5 to 20 kindergarten through 12th grade students that would attend public schools (Clark; June 8, 1981). DOE assumed that the students from the development would attend Kohala High/Elementary School, which is located about 16 miles away, although the school in Waimea is slightly closer (about 14 miles distance). The DOE indicated that the students generated by the project could be accommodated by Kohala High/Elementary School.

Although there would apparently be no impact on school facilities or staff in serving students from the proposed project, there would be an impact on the public school bus system. Additional buses would not be needed, but current scheduling and routing of buses would have to be altered to accommodate school children living in the development.

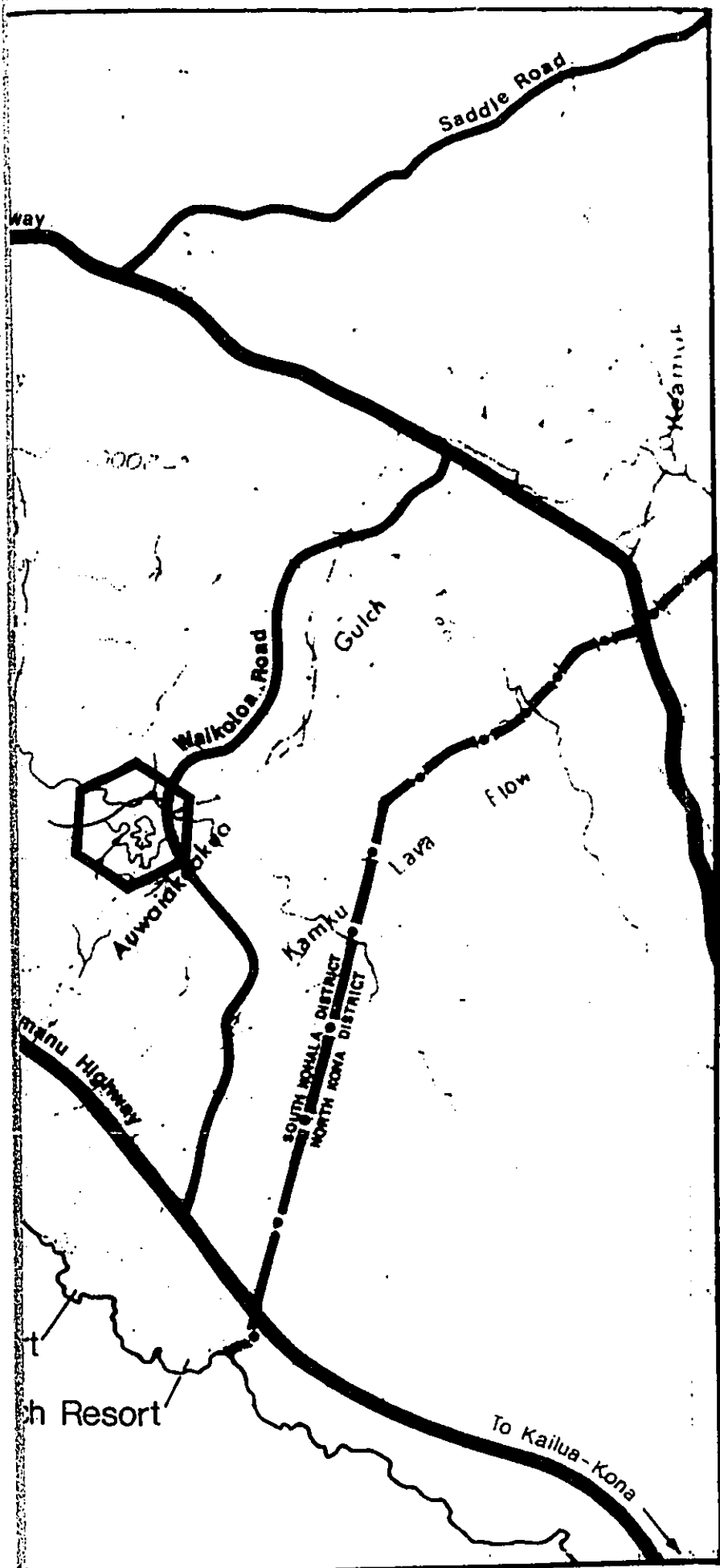





Figure V-1 Existing Public Facilities

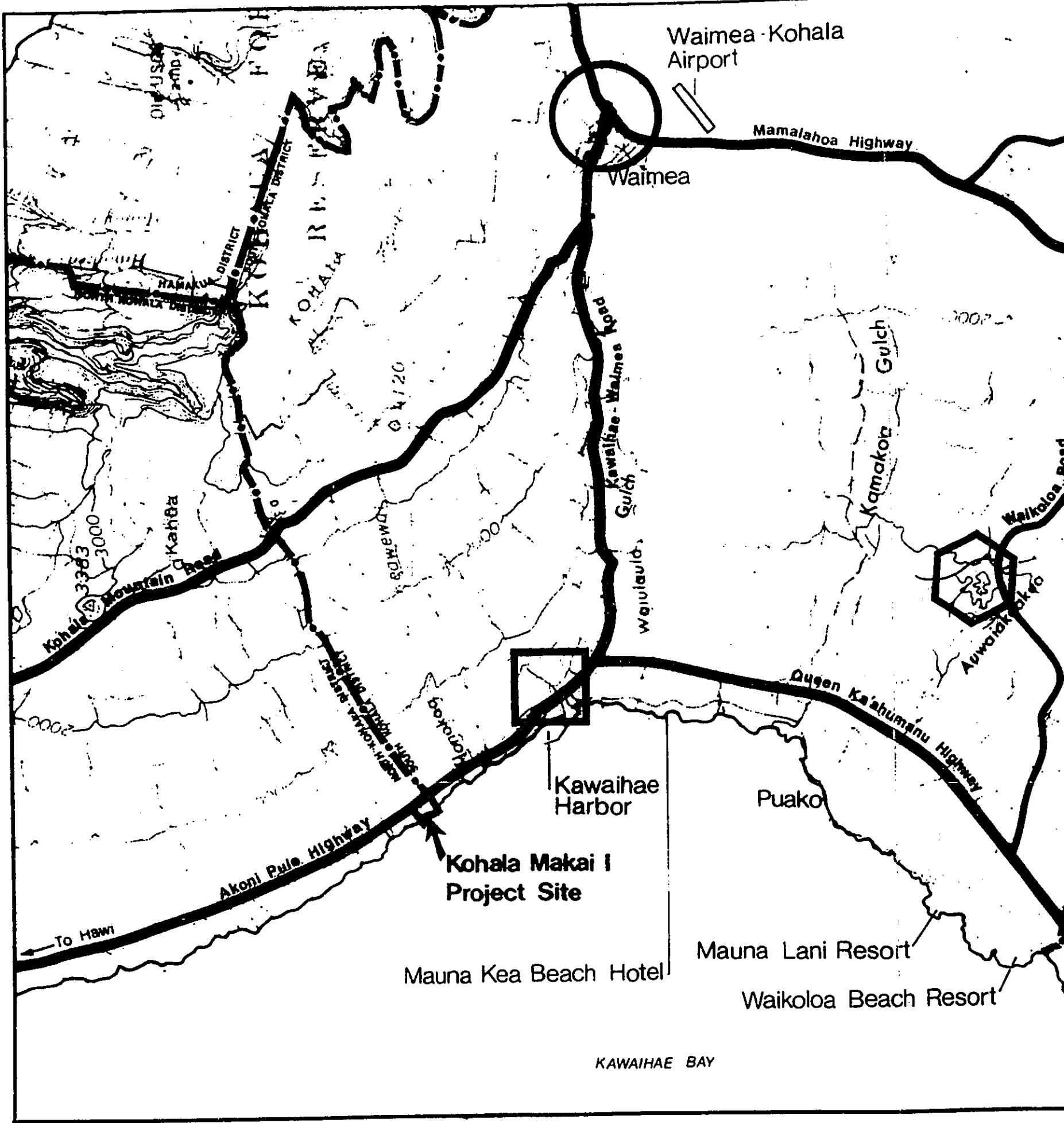
LEGEND

-  **WAIIMEA**
 - Waiimea Civic Center
 - Police station
 - Medical center
 - Library
 - Museums
 - High schools, private
 - Intermediate schools, public & private
 - Elementary school, public & private
 - Community Theater
 - Post office
 - Horse arena and race track, private
 - Fire station
-  **KAWAIIHAE**
 - Deep-water harbor
 - Small-boat harbor
 - Emergency fire unit
 - Post office station
-  **WAIKOLOA VILLAGE**
 - Post office station

KOHALA MAKAI I EIS



Prepared By BELT COLLINS & ASSOCIATES



KAWAIHAE BAY

Health Care Facilities

Existing and Planned Services and Facilities. There are three medical facilities currently available to North/South Kohala residents and visitors: Kohala Hospital near Hawi, Honoka'a Hospital in Honoka'a, and the Lucy Henriques Medical Center in Waimea. Kohala Hospital and Honoka'a Hospital are administered by the State Department of Health. The Lucy Henriques Medical Center is a privately owned, non-profit facility. The present service capabilities, operating levels, and figures for facility utilization for the two hospitals are outlined in Table V-3.

Kohala Hospital provides medical, obstetric, pediatric, pathology, and radiology services. It also offers skilled and intermediate nursing care. The ambulance and emergency room are available on a 24-hour basis. Facilities include 26 beds, 6 bassinets, a delivery room, and a pharmacy. There are presently 36 staff positions, with one part-time and two full-time physicians. There are no plans for expansion of services or the facilities.

Currently the Honoka'a Hospital has 35 beds, an emergency room, major and minor operating rooms, delivery rooms, and a laboratory. The doctors at the Lucy Henriques clinic in Waimea and the plantation infirmary in Honoka'a refer their patients there. Basically the same services are provided as at Kohala Hospital; in addition, operations are performed at Honoka'a Hospital. As originally built, with large wards in a wooden building, Honoka'a Hospital could not meet Medicare and Medicaid certification requirements. Fireproofing and remodelling was done to bring the structure into compliance. However, due largely to the inefficient space utilization which resulted, the State Department of Health has planned a new Honoka'a Hospital on the same parcel, just mauka of the present building. They expect to turn the present facility over for use as a skilled nursing unit or out-patient public health facility. The new hospital is planned to accommodate a small amount of growth in the region resulting from the consolidation of sugar plantations and new macadamia nut orchards in the area (Thompson; March 27, 1981).

Table V-3. Present Service Capabilities and Operating Levels of Hospitals Serving North/South Kohala: Fiscal Year 1980.

| | <u>Kohala Hospital</u> | | <u>Honoka'a Hospital</u> | |
|----------------------------|------------------------|------------------------|--------------------------|------------------------|
| | <u>Acute Care</u> | <u>Skilled Nursing</u> | <u>Acute Care</u> | <u>Skilled Nursing</u> |
| Beds | 16 | 10 | 27 | 8 |
| Admissions | 100 | 6 | 530 | 17 |
| Ave. Daily Census | 0.7 | 10.5 | 7.7 | 6.9 |
| Ave. Length of Stay (days) | 2.6 | 549.3 | 5.3 | 147.6 |
| Occupancy Percentage | 4.2% | 105.3% | 29% | 86% |

Examples of Facility Utilization

| | | |
|-----------------------|-------|-------|
| Outpatient Visits | 2,344 | 2,411 |
| Emergency Room Visits | 816 | 799 |
| Operations | n.a. | 138 |
| Deliveries | n.a. | 88 |
| Radiological Exams | 1,589 | 2,000 |
| Anesthesia | 70 | 141 |

¹ All figures are for the fiscal year ending June 30, 1980.

Source: Data obtained from State of Hawaii, Department of Health, County/State Hospital Administration Office.

The Lucy Henriques Medical Center is the most modern of the three facilities, in both equipment and building design. However, it is not certified to operate as a hospital. Patients can be treated there and kept in the clinic's two holding beds for 24 hours at the most. In addition to the two beds, there are four physicians' offices, two dentists' offices, and an examination room. Fluoroscopy and X-ray services are available. The emergency room is open 8 AM to 9 PM, Monday through Friday and from 8 AM Saturday to 9 PM Sunday.

Anticipated Impacts. The administrator of Kohala Hospital expects that "the facility and health care services will grow and develop according to the growth, demand and needs of the population" (Issacs; August 19, 1981). It is not possible to predict precisely what demands the proposed development might place on the existing health care services and facilities. However, because a large percentage of the occupants of the development are expected to be elderly, the increase in demand for medical services would probably be disproportionate to the growth in population caused by the proposed project. Given the statistics shown in Table V-3, it appears that facilities for acute care are more than adequate to handle any increase in demand caused by the development. This is true despite the fact that Kohala Hospital is redesignating some acute care beds to long-term, skilled nursing beds, due to the low occupancy of its acute care beds.

The present population of the North/South Kohala region is too small to support medical specialists. The growth in population caused by the proposed project as well as other planned development may help to attract specialists to set up practices in the area. Thus, medical services could be available in the region that residents must now travel to Hilo or Kailua-Kona to obtain.

Police Protection

Present Facilities and Staffing. Two stations are maintained by the Hawaii County Police Department in the North/South Kohala area--one in Waimea, and the other in Kapa'au. The Waimea station was constructed in 1975, and the Kapa'au station was built in 1973. Both have sufficient space to handle substantial staffing increases.

Personnel figures for these stations, current as of March 1981, are:

Kapa'au

1 Captain
2 Sergeants
9 Police Officers
1 Secretary/Stenographer

Waimea

1 Captain
1 Lieutenant
2 Sergeants
13 Police Officers
1 Secretary/Stenographer

Based on 1980 population figures, there are about four police officers per 1,000 residents.

Anticipated Impacts. The population growth induced by the proposed project would increase the demand for police services. According to Police Chief Guy Paul, the number of extra personnel which might be required to service Kohala Makai I cannot be estimated until demographic information regarding the project's residents is available (Paul; August 5, 1981). Such data is not yet available.

If the present police officer/resident population ratio were to be maintained, the 1,110-person increase in the resident population expected to result from the development of Kohala Makai I (see Table V-1) would lead to a staffing increase of about four police officers. However, the increase in demand for police services may not rise in direct proportion to the increase in population. Economies of scale could be realized as the population grows. On the other hand, population growth has sometimes been correlated with increased crime, which requires increased staffing. It is impossible to determine which of these two forces would be most influential in the case of Kohala Makai I. It is fairly certain that the proposed project by itself would not necessitate the construction of additional police facilities. However, considering all the development planned for South Kohala, such facilities may eventually be required, and the Kohala Makai I project might hasten the day these additional facilities would be necessary. The project's impacts could be minimized by providing for security personnel and equipment within the development.

Fire Protection

Existing Facilities. The only fire station within the North/South Kohala region which is manned on a 24-hour, year-round basis is in Waimea, 14 miles from the site. The station has a crew of five firemen and is equipped with a pumper, water tanker, and rescue van. The Waimea station handles rescue operations and emergency medical services as well as fire protection. Other fire protection for the area is provided by one-truck stations in Kawaihae and Kapa'au operated eight hours a day and supplemented by volunteers; a one-truck, volunteer fire company in Puako, and single fire trucks operated by volunteers at Waikoloa Village and the Mauna Kea Beach Hotel.

Given the limited equipment, volunteer staffing, and part-time operation of the fire stations closest to the Kohala Makai I site, the quality of fire protection service must be considered low.

Anticipated Impacts. To provide adequate service in the Kawaihae area, nine rotating fire fighter positions providing 24-hour coverage, a 1,000-gpm capacity triple combination pumper, and a 3,500-square foot building on a new site would be required (Smith; July 10, 1981). Studies for expansion of fire protection services in the area are underway. The already-planned resort developments have been the impetus for such studies. Kohala Makai I would probably not require greater increases in Fire Department facilities and/or staffing than would already be necessitated by the South Kohala resort developments.

Mitigation Measures. The structures and the water supply system of the proposed development would be designed to meet fire codes and fire protection standards. This would include provision of the necessary water hydrants. In order to reduce the need for fire protection services, sprinkler and fire/smoke detection systems could be installed in units, and periodic inspection of potential fire hazard areas (e.g., electrical connections) conducted.

Recreation Facilities

Existing Situation. Existing County, State, and Federal park and recreational facilities in North and South Kohala are listed in Table V-4. Their locations are indicated on Figure V-2.

An analysis of existing park acreage, district population figures, and the standards reported in the County of Hawaii Recreation Plan shows that park and recreational facilities are adequate in North Kohala, but that the South Kohala District does not meet the recommended standards for park acreage (Belt, Collins & Associates; September 1981:V-85).

Anticipated Impacts. If the recommended standards for recreation facilities are to be met, about six acres of Group 1 parks (defined as community/neighborhood-type parks) and about 11 acres of Group 2 parks (regional parks, including beach parks) would be required for residents of Kohala Makai I.

The conceptual land use plan indicates two recreational areas within the site. The proposed recreation areas would cover approximately five acres of the site. This would cover most of the Group I park requirements.

The population living in the proposed project would add to the usage of existing Group 2-type parks and recreation facilities in the region, especially the beach parks. Development of large amounts of additional regional park acreage will be required not only by the population increases of this development but also by the increases accompanying planned resort developments in South Kohala.

Water Supply

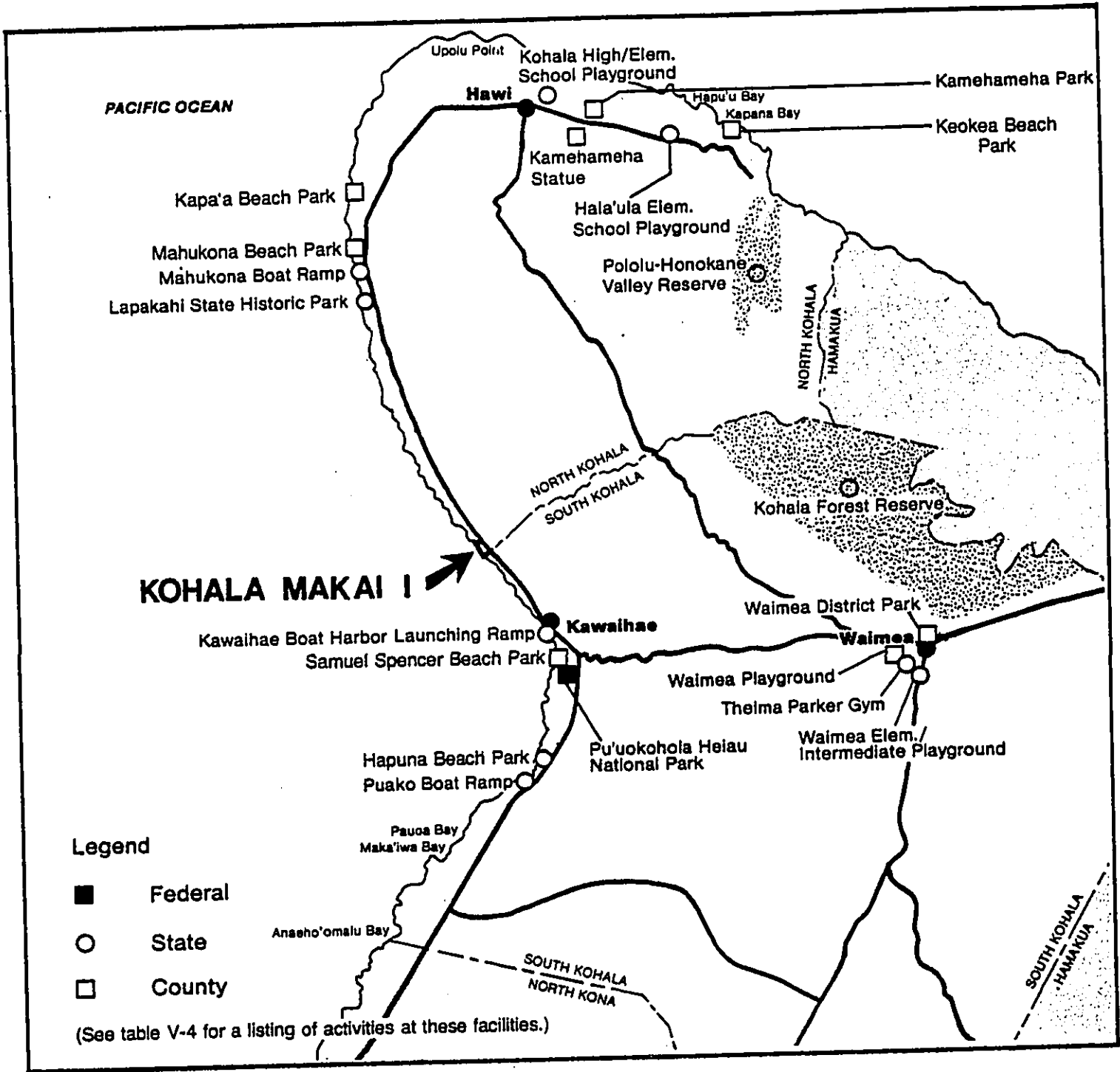
The developers of Kohala Makai I propose to connect to the County's Lalamilo Water System. The impacts of the project on the public water system as well as impacts on regional water resources are discussed under the heading "Impacts on Water Resources" in Chapter IV.

Table V-4. Existing Public Recreational Facilities in North and South Kohala.

| <u>Facility</u> ¹ | <u>Area (Acres)</u> | <u>Agency</u> | <u>Activities</u> |
|---|-------------------------|---------------|---|
| <u>North Kohala:</u> | | | |
| Hala'ula School Playground | 5.0 | State | School playground activities |
| Kamehameha Park | 18.4 | County | Indoor and outdoor recreational activities |
| Kapa'a Beach Park | 26.3 | County | Skin diving, fishing, picnicking, camping |
| Kohala High/Elementary School | 4.5 | State | Playground & high school athletic activities |
| Keokea Beach Park | 7.1 | County | Limited swimming, fishing, picnicking, camping |
| Lapakahi State Historic Park | -- | State | Self-guided tour of remains of fishing village |
| Mahukona Beach Park/Boat Harbor | 3.1 | County | Swimming, skin diving, fishing, boat launching, picnicking, camping |
| Pololu-Honokane Valley Reserve | -- | State | Wilderness, hiking |
| <u>South Kohala:</u> | | | |
| Hapuna Beach Park | 65.0 | State | Swimming, surfing, camping, lodging |
| Kawaihae Boat Harbor | 10.0 | State | Marina, boat-launching ramp, fishing |
| Kohala Forest Reserve | 23,800.0 | State | Wilderness, hiking |
| Puako Boat Ramp | 0.5 | State | Fishing, boat-launching ramp |
| Pu'ukohola Heiau National Park | -- | Federal | Interpretation of historic sites |
| Samuel Spencer Beach Park | 13.4 | County | Swimming, picknicking, camping |
| Thelma Parker Gym | -- | State | County recreational programs in a State-owned facility |
| Waimea Elementary/ Intermediate School | 5.0 | State | School playground activities |
| Waimea Park | 10.5 | County | Outdoor recreational activities |
| Waimea Playground (Church row) | 2.8 | County | Open grassed area, landscaping |

¹ Names used in this table and Figure V-2 are the official names of the facilities as reported in the County of Hawaii: Recreation Plan (Hawaii, County of, Department of Parks and Recreation; 1974). Note that all parks at the shoreline are named "beach" parks even though some do not have swimmable shorelines.

Source: Hawaii, County of, Department of Parks and Recreation (1974) and (July 22, 1981), and Hawaii, State of, Department of Planning and Economic Development (December 1975).



KOHALA MAKAI I EIS



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Figure V-2

Public Recreational Facilities

Solid Waste Facilities

Existing Situation. Hawaii County does not provide refuse collection services to individual residences or businesses in the region. Instead refuse must be taken to compactor-transfer stations, landfills, or open dumps. Refuse collected by private contractors must be trucked to either the landfill in Waimea or an open dump in Hawi. The landfill in Waimea is nearly at capacity. Hawaii County is planning to close the open dump in Hawi and replace it with a compactor-transfer station. The County is currently conducting studies to locate a suitable landfill site inland from the coast somewhere between Kawaihae and the North Kona district. Currently, the County Department of Public Works estimates about 22 tons a day of solid waste are generated by North and South Kohala residents (Sugiyama; April 7, 1981).

Anticipated Impacts. Based on an average de facto population of 1,145 (see Table V-1) and a solid waste generation rate of 3.5 pounds/person/day, the proposed project is expected to produce about two tons of solid waste per day. No additional staff should be required to handle this increased tonnage. Hawaii County Department of Public Works (DPW) would determine whether an on-site compactor-transfer station would be required. Refuse from such a station would be hauled to the proposed new landfill in South Kohala. The County DPW expects that the landfill would be operational by the time Kohala Makai I is completed (Sugiyama; August 1981). Presumably, the landfill site would be chosen and designed to avoid or minimize adverse impacts.

Electrical Power

Existing Situation. Electrical power on the Island of Hawaii is provided by the Hawaii Electric Light Company (HELCO). Energy sources include fossil fuels, bagasse, and geothermal wells. The only electric lines in the area supply power to the Kohala Estates subdivision.

Anticipated Impacts. The existing transmission line to the Kohala Estates subdivision runs parallel to and 500 feet mauka of Akoni Pule Highway. Its capacity is 69 KV but because of the small amount of power now being consumed at Kohala Estates, the line is now being fed with only 12 KV. Significant

further development of Kohala Estates or of Kohala Makai I would require that the transmission voltage be raised and that a substation be constructed to step it down to 12 KV for distribution (Nakamura; March 4, 1982). A new distribution line for the Kohala Makai I project would probably tap the transmission line directly mauka of the site. The distribution line would be underground crossing the highway and on the site. The cost of the substation and of a distribution line for the Kohala Makai I project would be borne by the developer. The 450 units of the proposed project would use between two and three million kilowatt hours per year of electrical power. This is about half a percent of the power sold by HELCO in 1979 (Hawaii, State of, Department of Planning and Economic Development; November 1980:344). The increase in energy consumption could be accommodated without the construction of new generating capacity.

Mitigation Measures. A significant portion of most residential electrical bills is attributable to hot water heating (assuming electric hot water heaters are used). Given the climate of the area, it is highly probable that solar hot water systems could meet most hot water requirements for units within the development. Solar hot water systems could reduce electrical consumption in units by about 30 to 50 percent.

Telephone System

Existing Facilities. The telephone cables to the Kohala Estates subdivision are on the same poles as the electric lines. No telephone service is available to the project site.

Anticipated Impacts. The capacity of the cables to Kohala Estates is not sufficient to provide telephone service to the 450-unit project. A new overhead feeder (transmission) cable would be required, probably on existing poles from the Kawaihae switching center to the site (Saito; June 19, 1980). As with electric lines, these cables would be brought to the site from the pole directly mauka of the parcel probably crossing Akoni Pule Highway underground. The construction costs for providing telephone service are the responsibility of the utility but "the developer may be required to advance a refundable amount equal to the total estimated construction cost" (Saito; June 19, 1980).

Kohala Makai I

Chapter VI



CHAPTER VI
RELATIONSHIP OF THE PROPOSED PROJECT
TO EXISTING PUBLIC LAND USE PLANS, POLICIES, AND CONTROLS

Introduction

The various public land use plans, policies, and controls that are applicable to the Kohala Makai I development can be divided into two types: (1) policy plans, and (2) geographically specific land use plans. The discussion of the proposed project's consistency with these plans, policies, and controls follows this format.

POLICY PLANS

The Hawaii State Plan

The Hawaii State Plan, enacted by the 1978 Legislature and signed by the Governor in May 1978, consists of five basic components:

- o An Overall Theme, which sets forth principles or values which are an integral part of Hawaii's present society.
- o Goal Statements, which express desired end-states for the economy, the physical environment, and social well-being.
- o Objectives and Policies regarding population, the economy, the physical environment, facility systems, and socio-cultural advancement.
- o Implementation mechanisms designed to carry out the State Plan.
- o Priority Directions, which identify areas of statewide concern that merit immediate attention.

The State Plan's statements of objectives and policies are the most germane to a discussion of the consistency of the proposed project with the State Plan.

However, its objectives and policies are so numerous and broadly stated that a point by point analysis of each one is impractical. Instead, only those which relate most directly to the proposed project are discussed below.

Section 5(2). This objective calls for increasing economic employment opportunities on the Neighbor Islands consistent with community needs and desires.

The proposed Kohala Makai I would increase the number of jobs available to Kohala residents. The amount of direct and indirect employment growth generated by this project is indicated in Chapter V. Jobs for the community's youth has been cited as a major concern in surveys conducted in the region (Public Affairs Advisory Service; 1980). However, more jobs are expected to result from planned South Kohala resort development than would be needed by the available labor force in North and South Kohala, thus entailing in-migration. The employment opportunities of the proposed project would add to this problem.

Section 5(3). This objective calls for ensuring that adequate support services and facilities are provided to accommodate the desired distribution of future growth throughout the State.

Some support services are adequate to serve the proposed project (e.g., existing school system). The developers would provide certain support facilities (including a sewage collection, treatment, and disposal system; intersection improvements; and recreational facilities/open space. They would also participate in the extension of water, electrical, and telephone service to the site. It is expected that support services such as police and fire protection would be expanded to meet the needs not only of this project but also of other anticipated growth in the region. Given the period necessary for the development of this project, there should be sufficient time to provide adequate support services and facilities for the expected growth.

Section 6(1). This objective calls for increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawaii's people.

This project would result in both direct and indirect employment opportunities, thereby increasing the number of jobs available for area residents. The types of construction and operational jobs resulting from this project would be similar to those created by other planned development in the region.

Section 6(6). This objective calls for striving to achieve a sustained level of construction activity responsive to and consistent with, State growth objectives.

Although a small construction project of short duration, Kohala Makai I would help to sustain construction activity in Kohala.

Section 7. Objectives in this section have to do with encouraging agriculture in the state.

Kohala Makai I is currently in the State Land Use Commission's urban district. The land on which the development is proposed contains relatively infertile soils not suited for agriculture. Development of this site would not affect the viability of agriculture in the region.

Section 11. This objective calls for planning of the State's physical environment with regard to land-based, shoreline, and marine resources.

Kohala Makai I would be designed to be compatible with the existing natural features of the site. No changes to the shoreline are envisioned. Designated public access to the shoreline would conform to State and County regulations and standards. The biologically rich coastal waters adjoining Kohala Makai I would continue to be a visual and recreational resource.

Section 12. The concern of this section is for the maintenance of Hawaii's scenic and historic resources.

The archaeological study commissioned for this project indicated that no significant historic/archaeological resources occur on the site. The site plan would try to minimize the visual impacts of the project by extensive landscaping.

Section 13. This objective focuses on the maintenance of the quality of Hawaii's land, air, and water resources.

The proposed project is consistent with this section in that it would not result in significant degradation of these physical resources and is in an area that is not subject to serious threat of flooding or tsunamis. The entire island is in a zone 3 risk area for earthquakes, but appropriate construction standards would be followed to minimize threats from this hazard.

Section 14 through 18. These objectives relate to the provision of public facilities (water, waste disposal, transportation, and energy/communication) sufficient to meet the needs of a growing population.

To provide the proposed Kohala Makai I project with these public facilities the following actions would be taken. The developers of Kohala Makai I would provide a sewerage system and intersection improvements. They would participate in the provision of water service to the site. New electric power and telephone lines would have to be constructed to serve the project. There is sufficient lead time to provide service to this project prior to occupancy.

Section 19. This objective calls for greater opportunities for housing and orderly development of residential areas sensitive to community needs and other land uses.

Kohala Makai I is intended to be a high quality residential development; it is not intended to compete with "luxury" projects being developed at Mauna Kea and elsewhere. Neither would it meet the regional need for low- and moderate-cost housing. Rather, the intent of the project is to provide a choice of living environments for middle and upper-middle income residents. The project would be phased in an orderly manner consistent with provision of adequate services and utilities and responsive to market conditions. Available State Land Use Commission urban-designated land would be used for this project.

Hawaii Coastal Zone Management Plan

The Hawaii Coastal Zone Management Act (Act 188, SLH 1977) establishes State policies for any action affecting the coastal zone. The act establishes specific objectives and policies in seven broad categories. The categories, together with brief comments regarding the Kohala Makai I project's relationship to them, are summarized below.

Provision and Protection of Recreational Opportunities. The proposed project would provide a number of recreational amenities for residents. Public access to the shoreline would be provided in the development. Urbanization of the site would tend to discourage the kinds of recreational activities now occurring there which depend upon the secluded character of the area.

Protection and Restoration of Historic Resources. The archaeological surveys that have been conducted have not discovered any significant sites. Further archaeological work may be done on the site, but, in any case, if resources are discovered during construction, appropriate State and County officials would be contacted to determine what mitigation measures should be taken.

Improvement of Scenic and Open Space Areas. The project would alter the visual character of the area by introducing urban-type development in an area currently occupied only by scrub vegetation.

Protection of Coastal Ecosystems. The nearshore marine analysis conducted as part of this study indicates that the project should not adversely impact coastal ecosystems. Further engineering studies of the sewage disposal system would be undertaken to ensure this.

Provision for Coastal Dependent Economic Uses. Multi-family residential units of the type proposed are not a coastal-dependent development necessary to the State's economy. However, development of the Kohala Makai I project would not conflict with the aim of this policy to concentrate such economic uses in appropriate locations, since the site is not particularly suited for such uses.

Reduction of Coastal Hazards. Kohala Makai I would be constructed mauka of areas subject to inundation by storm waves and/or tsunamis.

Improvement of Review Process. The project is a private one that would not affect this public responsibility.

Hawaii County General Plan

The Hawaii County General Plan contains both a set of policies and land use pattern allocation guide (LUPAG) maps indicating the desired location of land uses for the entire island. Prior to 1979 there was an "alternate urban expansion" area around Kawaihae which extended to the southern boundary of the Kohala Makai I property. The County General Plan LUPAG map currently designates an area centered around Kawaihae as "alternate urban expansion." Most of the proposed Kohala Makai I site is placed in the "extensive agriculture" category, with a coastal strip designated "Open" (see Figure VI-1). It is this inconsistency between the present "extensive agriculture" designation and the proposed multi-family residential use that necessitates the amendment petition which this EIS evaluates.

Multi-family residential land use is not specifically called out on the LUPAG maps but would generally be allowed under the "medium density" urban designation. The General Plan designates medium density urban areas in four places in Kawaihae.

In developing the General Plan, Hawaii County recognized that dependence on a physically oriented land use plan would not adequately respond to the changing needs of the people. Therefore, they developed a policy plan to guide the development of the island. It is the goals, policies, and standards of the General Plan which are used as criteria in judging proposed projects, especially when amendments to the LUPAG maps are under consideration. Since these criteria are stated in general terms, it is not possible to make definitive statements regarding the project's consistency or inconsistency with them. Comprehension of the key issues is possible, however, and this section examines those of greatest public concern under the headings used in the General Plan.

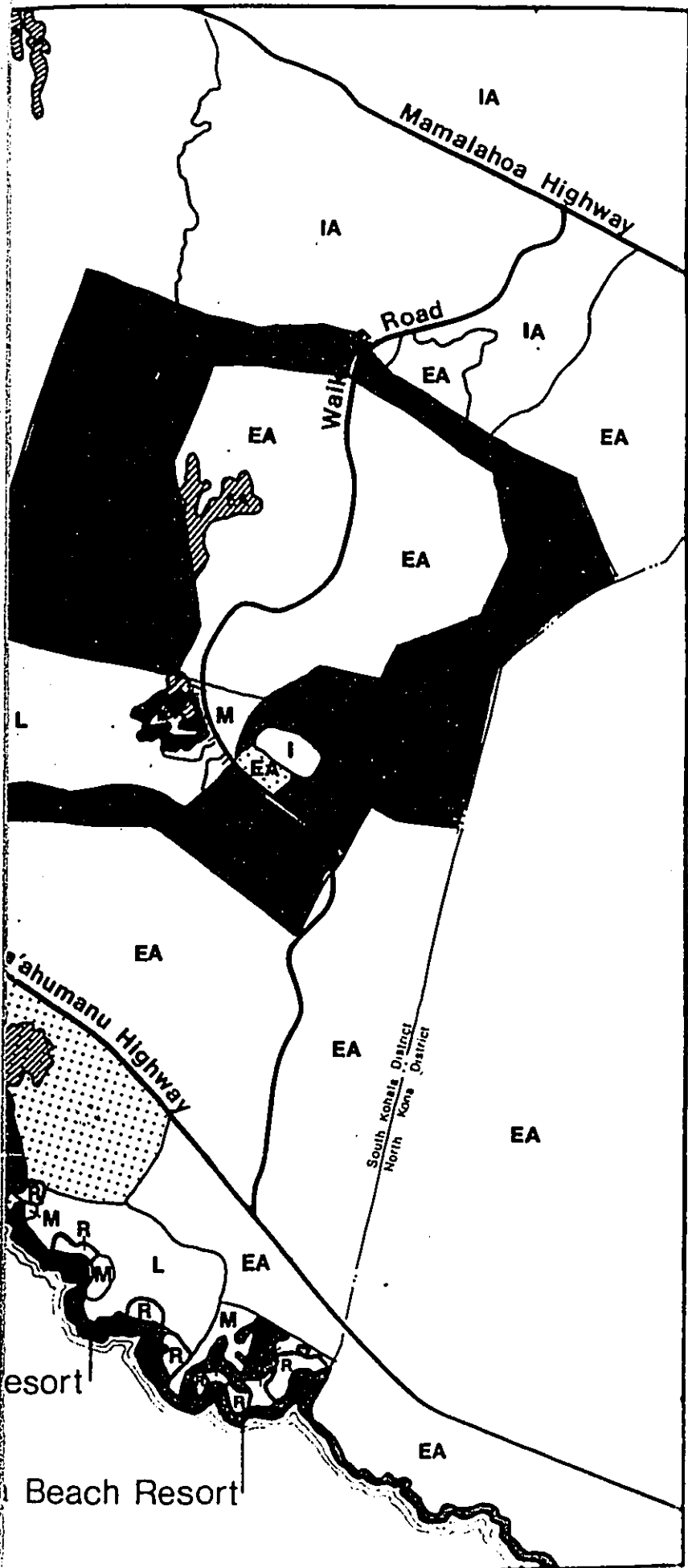


Figure VI-1.

County of Hawaii General Plan

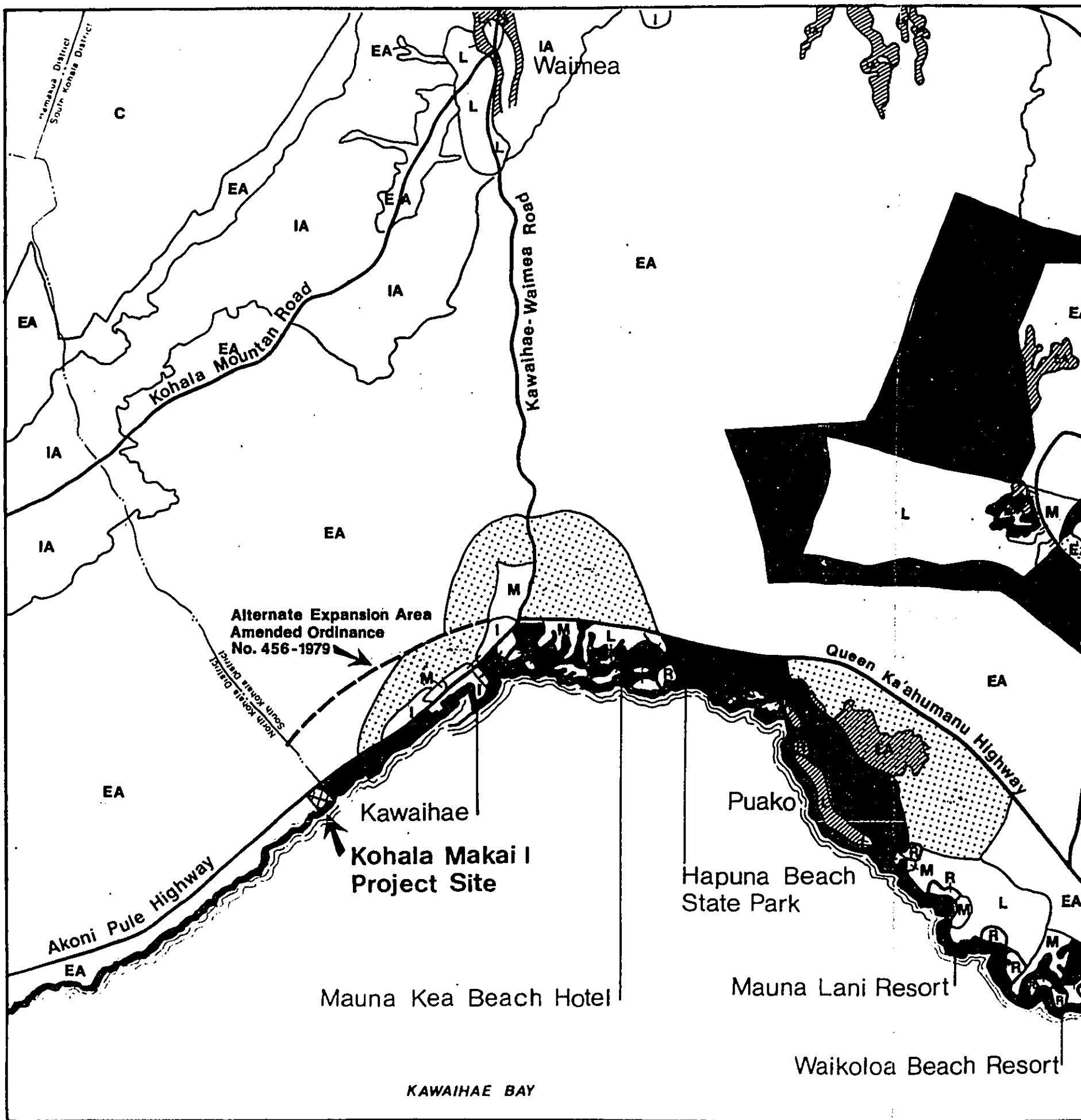
LEGEND

- M Medium density
- L Low density
- I Industrial
- IA Intensive agricultural
- EA Extensive agricultural
- R Resort
- C Conservation
- Open area
- ▨ Flood Plain
- ▤ Alternate urban Expansion (low, medium, & high density uses)

KOHALA MAKAI I EIS

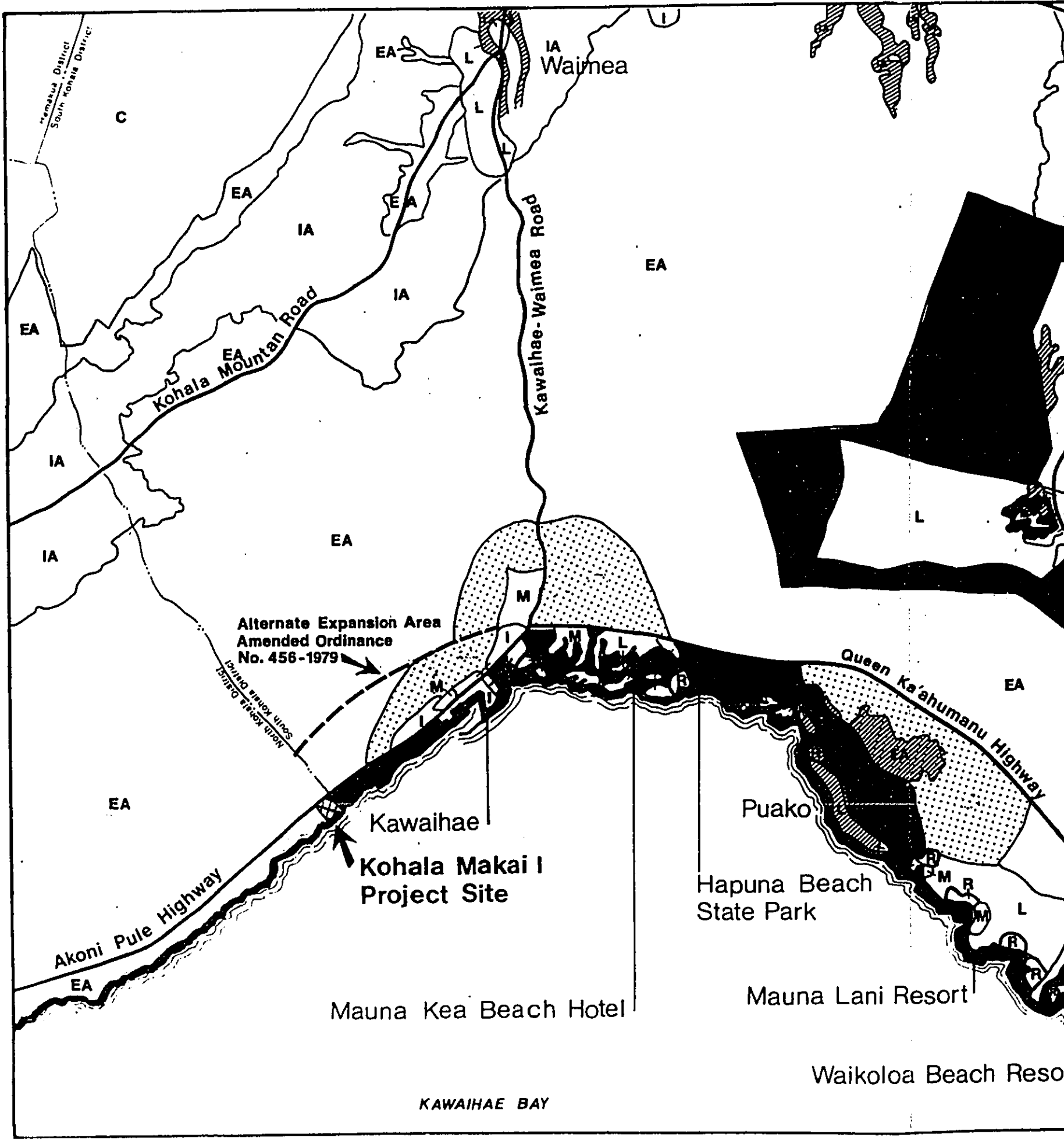


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CORRECTION

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



KAWAIHAE BAY

Environmental Quality. The main concern of this section of the General Plan is to maintain the quality of the island's environment by controlling pollution of the air, water, and soil, by establishing acceptable solid waste disposal systems, and by regulating noise levels. The environmental consequences of the proposed project are presented in this EIS.

By itself, the project is not expected to result in air, water, soil, or noise pollution. The extensive growth that is foreseen for the area would cause air quality and noise standards to be violated adjacent to major intersections, and the project would contribute to this situation. The County sanitary landfill in South Kohala would be finished by the time Kohala Makai I would be occupied. Thus, solid waste from the project would be disposed of safely.

Flood Control and Drainage. The Hawaii County General Plan identifies three major potential sources of flooding: surface runoff, high seas, and tsunamis. Because of the site topography, offshore bathymetry, and orientation of the coastline, tsunamis and storm surf do not constitute a significant hazard to the development proposed for the Kohala Makai I site.

The storm drainage system on the Kohala Makai I project would be built to meet all applicable County, State, and Federal regulations. It would have sufficient capacity to handle predicted runoff volumes including runoff from the upland watershed. Where possible, it would employ existing natural drainage channels rather than artificial conduits. Runoff and sediment loss from the site would be reduced by design features which retard surface flows and thus increase infiltration. Urbanization of the site would not cause downstream flooding problems because it is at the makai end of its drainage basins.

Historic Sites. The General Plan policy relating to historic sites that is most applicable to the proposed Kohala Makai I project is:

- o "It shall be the policy of the County of Hawaii to require developers of land either public or private to provide a historic survey prior to the clearing or development of land when there are indications that the land under consideration has historical significance."

The other policies relate to County responsibilities or the protection of significant historic sites. However, an archaeological survey of the Kohala Makai I site was conducted and no significant historic sites were discovered.

Housing. The goals listed under this element of the General Plan are:

- o Encourage safe, sanitary, and livable housing.
- o Attain diversity of socio-economic housing mix throughout the different parts of the County.
- o Formulate programs for housing.
- o Maintain a housing supply which allows a variety of choice.

The third goal listed is obviously one that only the County can implement. Attainment of the other three goals can be aided by private developers. The Kohala Makai I development would certainly provide safe, sanitary, and livable housing. It would increase the locational choices of middle and upper-middle class homebuyers. While the project itself does not provide for a diverse economic mix, it is aimed at a different economic level than existing or planned housing in North Kohala, thereby increasing the diversity of the region's housing mix.

Natural Beauty. The Kawaihae-Mahukona (Akoni Pule) Highway and Kai'opae Point are listed in this element of the General Plan as examples of natural beauty in the North Kohala District. As discussed in the "Visual Impacts" section in Chapter IV of this report, views makai from the portion of the highway adjacent to the site and views mauka from Kai'opae Point would be altered by the proposed project. The extensively landscaped grounds of the project will present a contrast to the surrounding vegetation which could be considered attractive or disruptive depending on the viewer's aesthetic predilections.

Natural Resources and Shorelines. The two policies of this element which are relevant to the proposed project are:

- o The shoreline of the island of Hawaii should be maintained for recreational, educational, and/or scientific uses in a manner that is protective of resources and is of the maximum benefit to the public.
- o The shoreline shall be protected from the encroachment of man-made improvements and structures.

The site's shoreline and off-shore marine life are the most important natural resources that could be affected by the project. As discussed in the "Impacts on the Marine Environment" and "Visual Impacts" sections of Chapter IV, the effects of the project on these resources are not expected to be adverse. An open area along the coastline would be maintained. The exact boundary of this open area and provisions for public access to the shoreline would be determined later in the permitting process.

The natural resources of land, water, air, soils, and geologic features mentioned in the introduction to this element are covered in the discussion of other elements of the General Plan (Environmental Quality, Natural Beauty, and Recreation). Flora and fauna are also mentioned as natural resources of the County of Hawaii, but surveys of the site's flora and fauna disclosed no rare or endangered species are present. Therefore, alteration of the site's floral and faunal composition is not considered an adverse impact.

Public Facilities and Public Utilities. The General Plan emphasizes the need to insure that public facilities (including recreation facilities) and utility service are available to the community. The impact that the proposed Kohala Makai I development would have on the need for public facilities and utilities is discussed in Chapter V.

Transportation. The volume of traffic generated by the proposed project would not significantly impact Akoni Pule Highway. If North Kohala experiences major growth, congestion could become a problem and improvements would become necessary.

The complete development of the planned Kohala resorts would ultimately result in congestion on the Queen Ka'ahumanu Highway and the Waimea-Kawaihae

Road. The right-of-way of the former has enough room to accommodate any necessary increase in the number of lanes. The General Plan outlines the planned realignment of the Waimea-Kawaihae Road and the construction of a bypass around Waimea Village. Again, the project's traffic impacts on these roads would not be significant except as it creates a need for improvements at a somewhat earlier date than would planned regional resort projects by themselves.

Land Use. The Multiple Residential land use section in the General Plan states as follows:

The North Kohala district has no area zoned for multiple residential use although commercial zoned areas permit high density residential development.

With people living in this district but working in the South Kohala resort area, there may be some activity in multiple residential development.

Course of Action. Appropriately zoned lands shall be allocated as the need for multiple residential development increases.

The "medium density" urban designation sought for the site is appropriate for multiple residential developments of the density proposed.

The "open space" designation along the shoreline would not be changed. Reasons for maintaining this area in open space include both the tsunami hazard and the scenic qualities of the coast.

GEOGRAPHICALLY SPECIFIC LAND USE PLANS

This category includes all those plans which designate specific geographic areas for particular land uses. It includes the State Land Use Law and the Hawaii County Zoning Ordinance.

State Land Use Law

The State Land Use District Regulations are administered by the Land Use Commission of the State of Hawaii, an independent body established by Act 187

of the 1961 State Legislature. In line with its legislative mandate (Chapter 205, Hawaii Revised Statutes), the State Land Use Commission's regulations are intended to:

"preserve, protect, and encourage the development of lands in the State for those uses to which these lands are best suited in the interest of public health and welfare of the people of the State of Hawaii." (Hawaii, State of, Land Use Commission, December 1975:38)

In accordance with these regulations, all lands in the State have been placed in one of four land use districts: urban, agriculture, conservation, and rural.

The site of the proposed Kohala Makai I project is in the State urban district. This district would allow for the development of the proposed project under its existing rules and regulations. The State land use district boundaries in the Kawaihae area are shown in Figure VI-2.

Zoning

The Kohala Makai I site falls within the County's "Unplanned" District (see Figure VI-3). The unplanned designation is applied to "areas not subjected to sufficient studies to adopt specific district classification" (County of Hawaii, Zoning Code). Under this zoning, only single-family and agricultural uses are allowed. Each single-family building site must be at least five acres, with a minimum site width of 280 feet. If the site were to be subdivided under this zoning, approximately seven lots could be developed.

Special Management Area Regulations

Following the creation of the Federal Coastal Zone Management Program and the subsequent passage of State enabling legislation, the County of Hawaii adopted rules and regulations to preserve and protect the natural resources of the coastal zone. This zone, called the "Special Management Area" (SMA) is designated on maps filed with the County of Hawaii Planning Commission. For the leeward coast of North Kohala, the Special Management Area extends from Akoni Pule Highway to the shoreline and therefore encompasses the entire project site. The SMA rules and regulations include the objectives and

policies of Chapter 205A, HRS; guidelines to be used in determining desirable uses and adequate protection of significant shoreline areas; and procedures for obtaining permits for development within these areas.

The objectives and guidelines listed below are used by the Hawaii County Planning Commission and Planning Department in deciding whether or not to approve a particular permit application. The brief comments following note the extent to which Kohala Makai I is consistent with them.

Objective 1. "Provide coastal recreational opportunities accessible to the public."

Kohala Makai I would provide improved public access to the coast. Existing recreational activities which derive value from the undeveloped nature of the site might diminish but other recreational uses of the shoreline would increase.

Objective 2. "Protect, preserve, and where desirable, restore those natural and man-made historic and pre-historic resources in the coastal zone management area that are significant in Hawaiian and American history and culture."

No significant sites were discovered during the archaeological survey that was conducted of the site.

Objective 3. "Protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources."

The coastal scenic and open space resource along the shoreline would be preserved. The project would result in a change in the visual environment from a natural to a man-made character. Landscaping will be used to mitigate the visual impact of the buildings.

Objective 4. "Protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems."

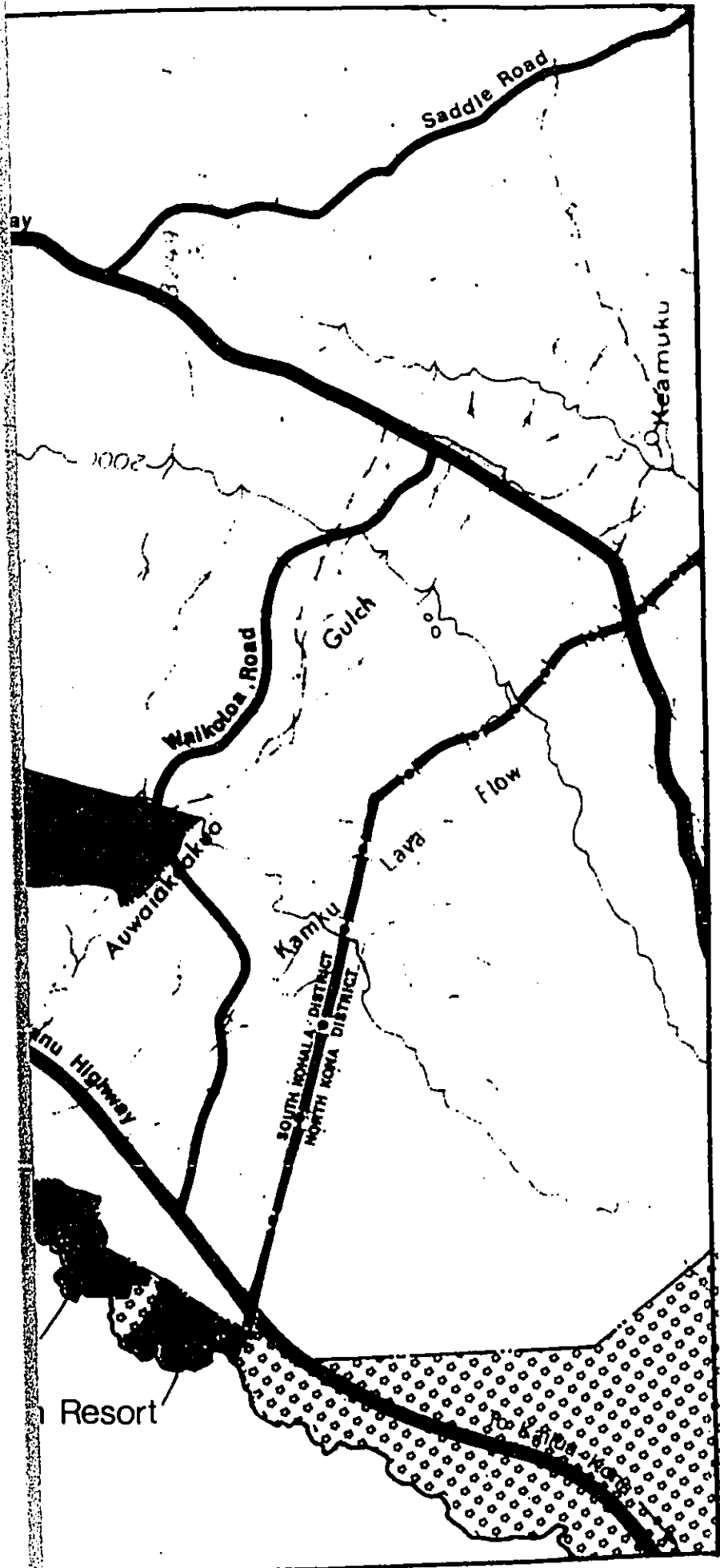





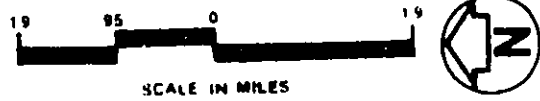
Figure VI-2

State Land Use District Boundaries

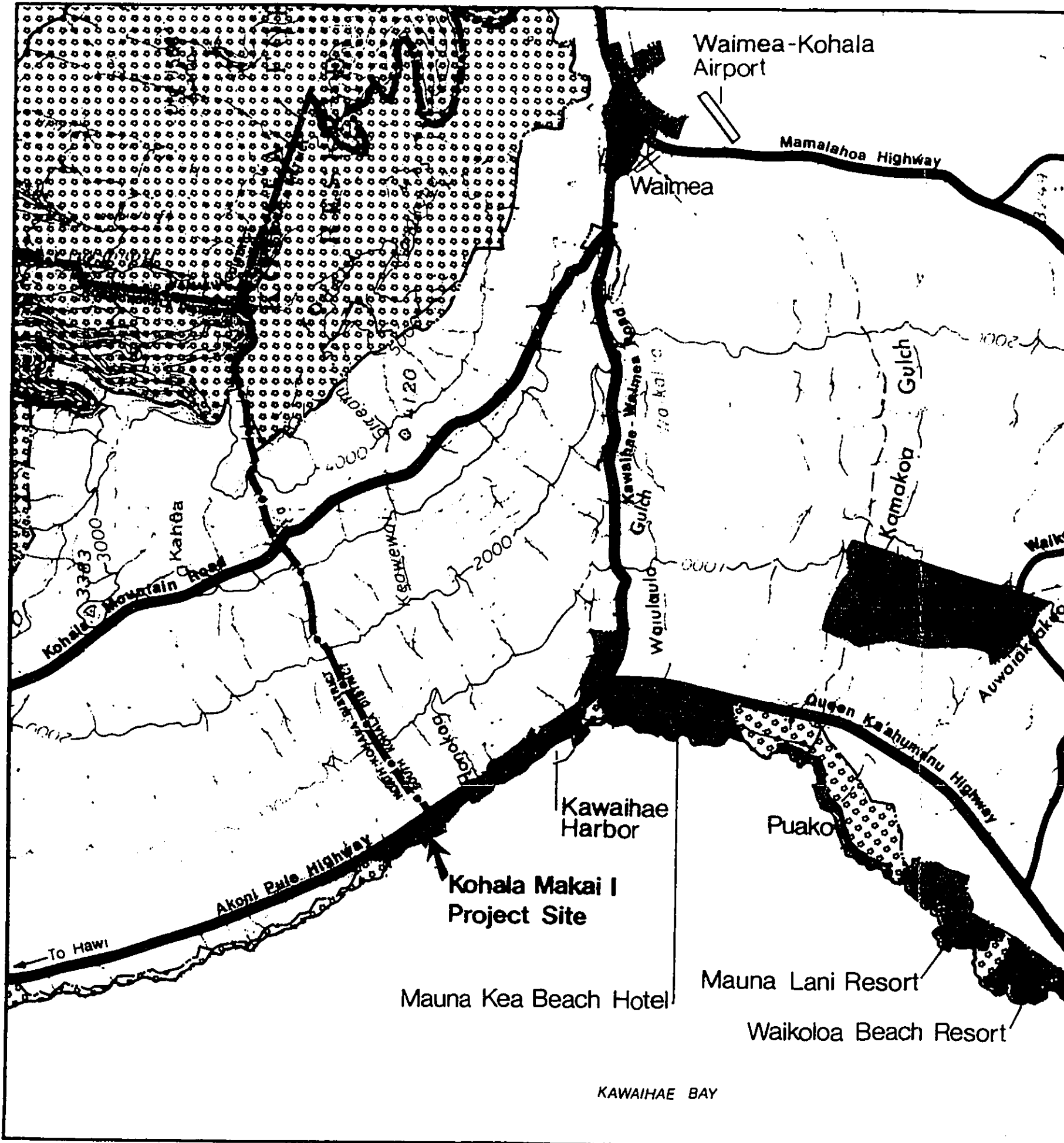
LEGEND

-  Agriculture
-  Conservation
-  Urban

KOHALA MAKAI I EIS



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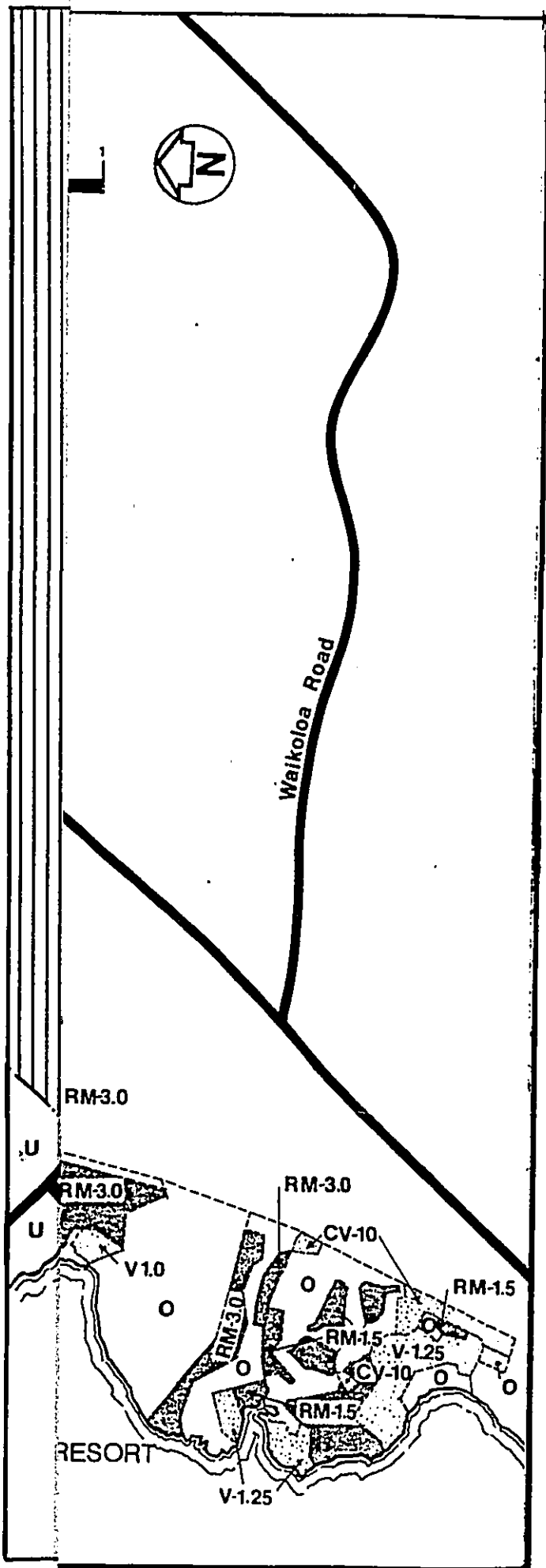


Figure VI-3

Hawaii County Zoning-South Kohala Coast

Residential

- RS-10** Single family
10,000 sf min. lot
- RS-15** Single family
15,000 sf min. lot
- RS-20** Single family
20,000 sf min lot
- RM-15** Multi-family
1,500 sf of land/unit
- RM-30** Multi-family
3,000 sf of land/unit
- RM-5** Multi-family
5,000 sf of land/unit

Commercial

- V-1.25** Resort hotel
1,250 sf of land/unit
- V-1.0** Resort hotel
1,000 sf of land/unit
- CV-10** Village commercial
10,000 sf min. lot

Industrial

- MG-1a** General industrial
1 acre minimum lot
- ML-10** Limited industrial
10,000 sf min. lot

Open

- O** Open, conservation district

Agricultural

- A-1a** Agriculture
1 acre/building site
- A-40a** Agriculture
40 acres/building site

Unplanned

- U** Unplanned

KOHALA MAKAI I EIS

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SCALE IN MILES



Queen Ka'ahumanu Highway

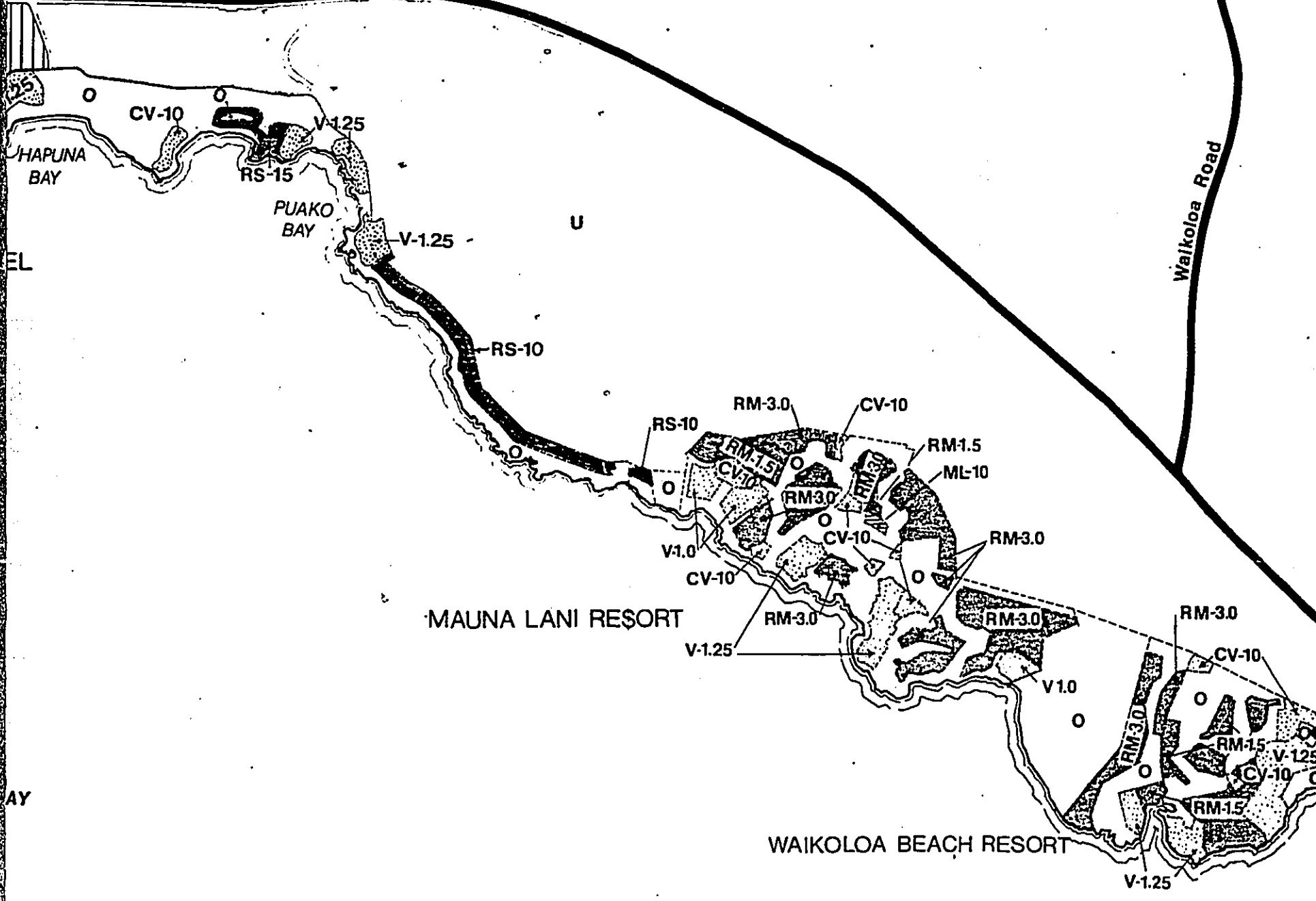
Waikoloa Road

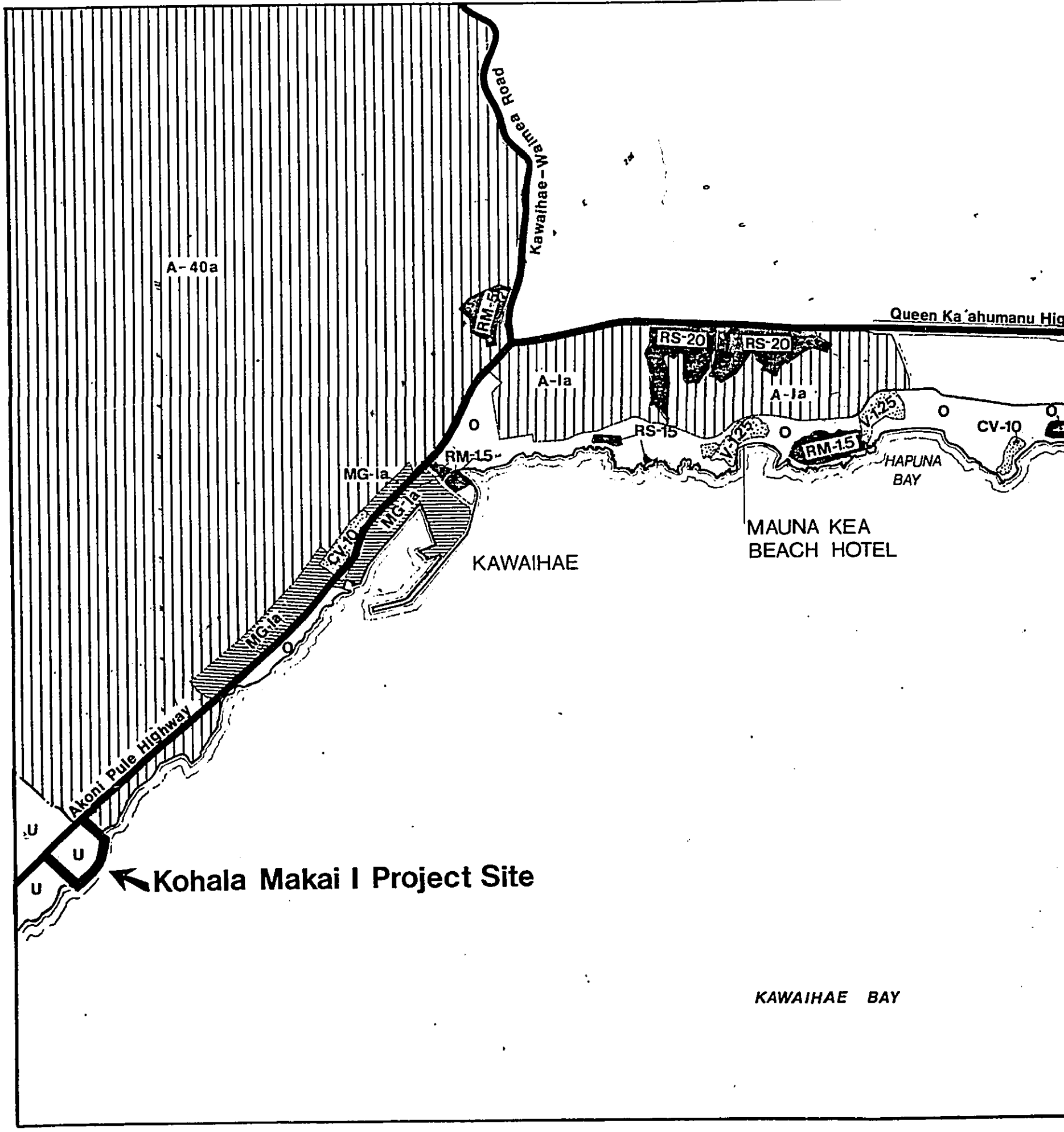
HAPUNA BAY

PUAKO BAY

MAUNA LANI RESORT

WAIKOLOA BEACH RESORT





A-40a

Kawaihae - Waimea Road

Queen Ka'ahumanu Highway

RS-20

RS-20

A-1a

A-1a

RS-15

RM-15

RM-15

CV-10

HAPUNA BAY

MG-1a

KAWAIHAE

MAUNA KEA BEACH HOTEL

Akoni Pule Highway

← Kohala Makai I Project Site

KAWAIHAE BAY

The proposed project does not involve any direct physical modifications to the nearshore environment, and natural drainageways would be retained. Erosion would be controlled during construction, and increased landscaping would help offset the increase in impervious surfaces. In general, the potential for damage to the marine environment from changes in runoff due to the proposed project is slight.

Objective 5. "Provide public or private facilities and improvements important to the State's economy in suitable locations."

This project is coastal dependent as its proximity to the ocean will be an important marketing consideration.

Objective 6. "Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, and subsidence."

The Kohala Makai I site is located in an area that is less susceptible to subsidence than most other areas of the island. No development will occur within the zones of flooding from streams, storm waves, or tsunamis. Erosion is not a major hazard in the area now, due to low rainfall, and the extensive landscaping proposed for the site would further reduce the hazard of erosion.

Objective 7. "Improve the development review process, communication, and public participation in the management of coastal resources and hazards."

Preparation of this environmental impact statement has resulted in public participation in the planning and review process, and has communicated the potential short- and long-term impacts of this proposed coastal development early in the decision-making process.

Guidelines A.1, 2, and 3. These guidelines seek to minimize alterations to any body of water, reductions in any beach or other public recreation area, and restrictions on access.

The project as proposed would not alter any body of water or reduce beach or any other public recreation area. Access to the coast would be provided.

Guideline A.4. This guideline aims at minimizing interference with views of the sea from State Highways and other scenic areas.

The Kohala Makai I project would alter the present view toward the sea from the highway. However, careful siting of buildings and proper landscaping should minimize adverse impacts.

Guideline A.5. This guideline directs authorities to minimize development which adversely affects water, scenic, or wildlife resources, or which adversely affects existing or potential agricultural uses of the land.

No significant adverse impacts on water quality, existing areas of open water, existing and potential fishing grounds, wildlife habitats, or estuarine sanctuaries are expected as a result of the Kohala Makai I project. The land is not presently used for agriculture. Its agricultural potential is limited to grazing; even for this use, the land is relatively unproductive.

Guidelines B.1, 2, and 3. These guidelines state that no development shall be approved unless it has no substantial adverse effects, is consistent with Chapter 205A HRS, and is consistent with the General Plan, zoning and subdivision codes, and other applicable ordinances.

The project by itself would create no major adverse effects; it may add to the environmental impacts projected to result from resort-related growth. The consistency of the project with Chapter 205A HRS has been discussed under the objective headings above, and its consistency with the General Plan and zoning code were reviewed earlier in this chapter. For the project to proceed, an amendment to the General Plan and a change of zone will be required. The project would conform to County subdivision and other ordinances.

Guideline C.1. Ensure that "adequate access, by dedication or other means, to publicly owned or used beaches, recreation areas, and natural reserves is provided to the extent consistent with sound conservation principles."

Public access to the shoreline will be provided by the developer of Kohala Makai I.

Guideline C.2. Ensure that "adequate and properly located public recreation areas and wildlife preserves are reserved."

The waters fronting the site and the immediate coastal area will be available for public recreation. The site is not suited for use as a wildlife preserve.

Guideline C.3. Ensure that "provisions are made for solid and liquid waste treatment disposition and management which will minimize adverse effects upon Special Management Area resources."

A sewage treatment plant would be constructed to treat liquid waste from the project. Disposal of the effluent would be by irrigation, injection wells, or other approved means. Permits for these facilities would be obtained before they could be constructed. Solid wastes would be disposed of at the County-operated and approved landfill with collection handled by private contractors.

Guideline C.4. Ensure that "alterations to existing land forms and vegetation, except crops, and construction of structures shall cause minimum adverse effect to water resources and scenic and recreational amenities and minimum danger of floods, landslides, erosion, siltation, or failure in the event of earthquake."

Kohala Makai I does not involve major alterations to existing landforms. Some changes to the existing topography due to construction of roads and buildings is anticipated. New landscaping would be introduced. These activities would not result in any increase in dangers from floods and other hazards.

Guideline C.5. Insure that "adverse environmental or ecological impacts are minimized to the extent practicable."

The project would be designed to minimize adverse impacts. Further, the multi-level review and permit process it must go through prior to development will assure that mitigation measures are made conditions to the development of Kohala Makai I.

Kohala Makai I

Chapter VII



CHAPTER VII
ALTERNATIVES TO THE PROPOSED ACTION

Introduction

Sub-part E, Section 1:42.g. of the Environmental Quality Commission's Environmental Statement Regulations requires that: "Any known alternatives for the action which could feasibly attain the objectives of the action--even though more costly--shall be described and explained as to why they were rejected."

The intent of this requirement is clear insofar as projects initiated by public agencies are concerned. Its implications for projects initiated by private organizations, such as Kohala Makai I, are not. Before formulating alternatives to the proposed project, it is first necessary to define two key phrases: (i) "objectives of the action" and (ii) "feasibly attain."

The Kohala Makai I partnership's primary reason for undertaking the proposed Kohala Makai I project is its desire to earn a reasonable return on its investment in the land. This is its "objective" in pursuing the project. As stated in the EIS Regulations, the term "feasibly attain" means practical or capable of being successfully brought about. For an action to constitute an alternative to the project now being proposed, it must have a reasonable expectation of meeting the partnership's obligations to manage its members' investments in such a way as to achieve the reasonable return objective. Thus, to constitute a viable alternative for Kohala Makai I, a proposed use must return a profit.

The regulation requirement; "...to discuss any known alternative, even though more costly," means that the EIS may not discuss only that alternative which is most profitable to the developer. Instead it must consider all alternatives that would yield a reasonable return. This fact is the basis for the discussion of the "Alternative Forms of Residential Development" found later in this chapter.

As noted above, not all of the "actions" which could be hypothesized with respect to the property are ones that could "...feasibly attain the objectives of the action", i.e., they would not provide the return on investment that is necessary. There are, however, some alternatives which cannot be dismissed and are discussed below.

Sale of the Property

In buying the property, Kohala Makai I paid a price that it believed was justified by the site's potential as a coastal residential development. To recover its investment, it would probably be necessary to sell to an individual or organization having the same intent.

In such an instance, the eventual impacts would be much the same as those described herein. Failing to do this, Kohala Makai I would probably have to sell the property at a loss to someone intending either to simply hold the property in the hope of long-term appreciation or to use it for extensive agriculture, principally grazing. This would not meet the stated objectives of the Kohala Makai I Limited Partnership.

Agricultural Use

The soils on the Kohala Makai I site are not suited to any kind of intensive agricultural use. Grazing is a possible use, but the very low rainfall makes the area relatively unproductive as rangeland. The University of Hawaii Land Study Bureau (1965), for example, rates its carrying capacity at thirty acres per animal unit year (AUY), or about nine pounds gain per acre per year. Some ranchers believe this is too low and suggest that a 10 AUY rating might be more accurate. Taking these two estimates as the possible range and combining them with (i) the 51.5 cents per pound that live range beef averaged in 1979 (U.S. Department of Agriculture, June 1980:67), (ii) an average annual weight gain of 300 pounds per range-fed animal, and (iii) the 38 acres that comprise the site, it is estimated that the Kohala Makai I site is capable of producing from \$200 to \$600 worth of beef per year.

Heady and Dillon (1961:599 to 605) report on two production function studies for dryland cattle ranching. These studies suggest that about 20 percent of the revenues in a cattle ranching operation can be attributed to the land resource. This is very close to the figure estimated by Garrod and Miklius (August 1977) for Big Island ranchers and to the 25 percent rate used by the State of Hawaii Department of Land and Natural Resources Land Management Division in establishing the upset price on leases of State-owned land. Based on this 20 to 25 percent range, it appears that the theoretical annual agricultural income that could be derived from the land resource on which the proposed Kohala Makai I would be built is \$40 to \$120 per year. Even using the lowest rate of return now considered reasonable for leasehold land (four percent), this would justify a price for the parcel of \$1,000 to \$3,000--far less than is invested in the land. In view of this, agricultural use is not an economically viable alternative to the proposed use.

The figures cited above clearly demonstrate the infeasibility of agricultural use based on economic return. The very small number of animals that could be supported on the parcel (from one to four) make it too small to support an independent ranching operation, but it might be possible to lease the land to Kahua Ranch. The ranch presently grazes cattle on leased land above Akoni Pule Highway adjacent to Kohala Estates. It might be willing to extend its activities to the Kohala Makai I site as well, although the operational difficulties associated with moving cattle across the highway and maintaining fence lines along the shore could easily make this uneconomic. At this time the possibility has not been explored with the ranch.

Alternative Types of Urban Development

Multi-family residential use is not the only use to which urban-zoned land could be put. However, given the property's location and other factors, the alternatives--industrial, institutional, or commercial--do not appear to be practical.

- o The terrain, location, and land costs rule out an industrial area capable of competing effectively with land already set aside for that purpose at Kawaihae.

- o There is insufficient population in the area to support commercial or institutional uses on the site.

Other residential development on the site, i.e. single family homes or higher density apartments, may be practical alternatives.

Alternative Forms of Residential Development

A number of alternative forms of low-density development are possible on the proposed site. The market study for Kohala Makai I concludes that: "A cluster townhouse configuration or a low-rise, two- to three-story, multi-family apartment design will promote the residential environment planned for the Kohala Makai I Condominium" (Hastings, Martin, Chew & Associates, Ltd.; December 1980:1). Within this context a range of density and building types are possible. For example, low-density condominium development at Wailea on Maui has ranged from five to eight units/acre whereas townhouse development at Mililani Town, on relatively flat land, has ranged from 12 to 15 units/acre. Two- and three-story apartment design might produce as many as 20 units/acre. Within this range of low-rise/low- and medium-density residential units, 200 to 800 units might be developed at Kohala Makai I. This range of dwelling units and types presents differing advantages as well as disadvantages to the developer of the project.

A lesser number of units would lower overall infrastructure costs and require less water and a smaller sewage treatment plant. The traffic impact would also be less. On the other hand, average unit prices would increase as the costs of developing roads, water, sewer lines, drainage facilities, and other infrastructure items would be divided among fewer buyers.

The landowner's intent is to develop a product capable of being marketed in a timely manner. Recent neighbor island experience has indicated that resort condominiums developed at low densities (i.e. five to eight units/acre) are generally luxury products. On the other hand, two- and three-story walk-up units marketed to the moderate-income range are generally on flat land and seldom, if ever, on waterfront property. The site's oceanfront land value makes it uneconomical as a location for the development of moderate-priced housing.

Therefore the reasonable alternative for Kohala Makai I to propose was a moderate-density product marketed in the middle to upper-middle price range.

Single-Family Residential Use

Single-family lot development of the site was an alternative considered in the preliminary stages of the project. The topography would reasonably accommodate about two to three single-family dwellings per acre. Therefore, the land development impacts for water use; sewage treatment and disposal, traffic, etc. for the single-family alternative would be less than those presented in this report.

On- and off-site development costs as well as recent market experience with oceanfront lots indicate a minimum per-lot sales price of \$175,000 to \$200,000 excluding house development. The market study for Kohala Makai I (Hastings, Martin, Chew & Associates, Ltd.; December 1980) indicates that approximately 30 percent of the proposed condominium units would be purchased by investors. The percentage of investors buying single-family lots would be less since they cannot be rented or depreciated. Should single-family lots be developed in lieu of the proposed project, the selling prices would be so high as to preclude most middle and upper-middle income families from ownership. Instead Kohala Makai I would have to be marketed to the very wealthy. Aside from questions regarding the depth of this market, units in this price range would do little to meet the needs of the persons at whom the existing configuration is aimed.

Hotel/Resort Use

Hotel/Resort development was also considered. A relatively small resort development has seldom proven to be profitable. Major resort projects have been and are continuing to be developed nearby along the South Kohala coast at Mauna Kea, Mauna Lani, and Waikoloa. Kohala Makai I does not have the land area, infrastructure investment, and recreation amenities necessary to attract a major hotel developer; hence, it would not be competitive with these resort areas. Therefore, this alternative was ruled out as not feasible.

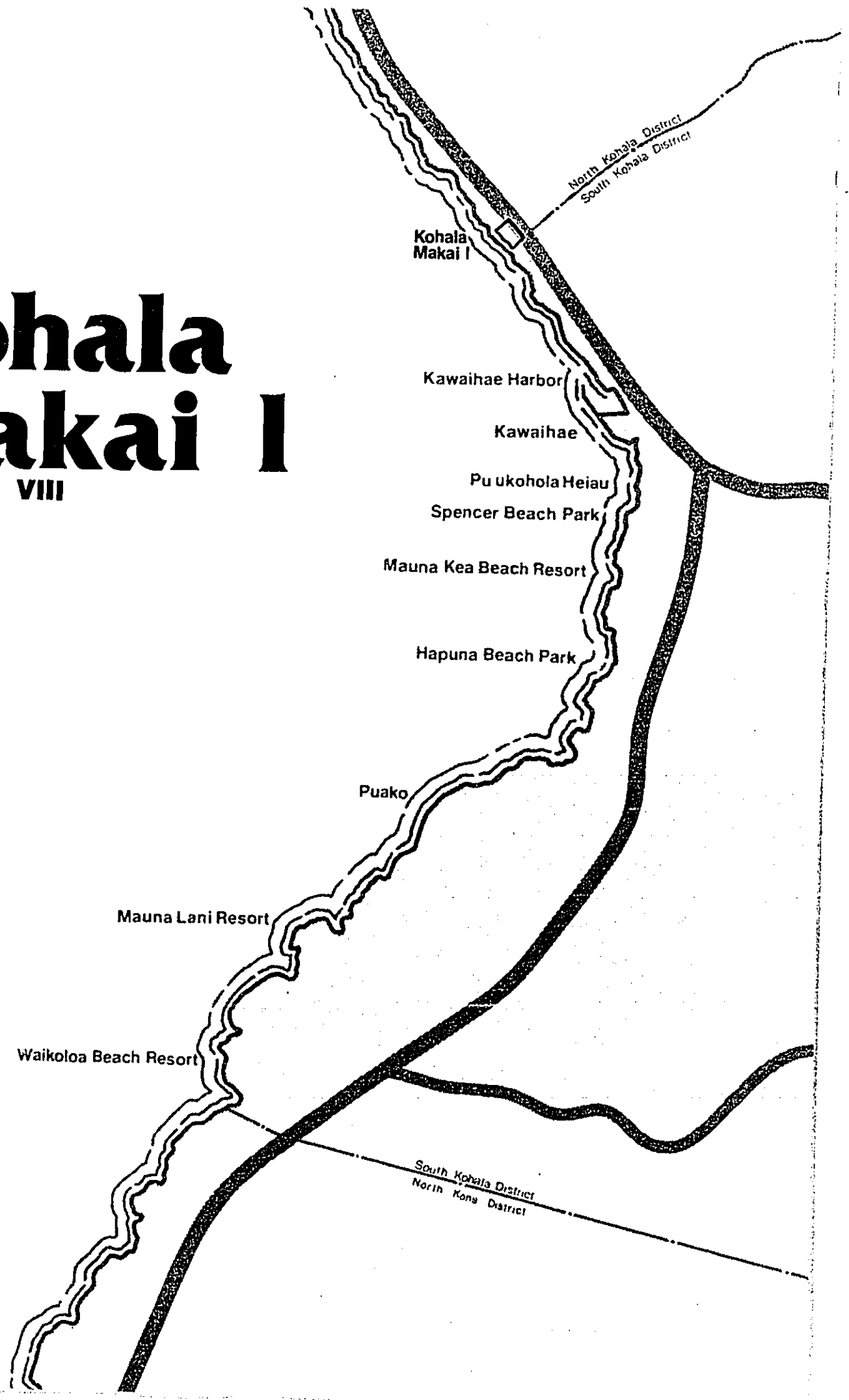
No-Project Alternative

The site could be left in its present unutilized state. However, no income would be generated by this "no-project" alternative. In this situation, the investors would need to decide whether or not they wished to forego current income on their investment in the hope that the land would appreciate over the long-term or wished instead to attempt to sell it. If the land were to be held, no immediate effects would be felt. If a decision were made to liquidate the partnership's holdings, an attempt would be made to sell it to an individual or group interested in developing it at an intensity of use that would justify a high selling price.

To the extent that the partnership is successful in its sales efforts, it is likely that subsequent owners would pursue a development policy similar to that now proposed. (If they succeed, impacts would be quite similar to those identified in this EIS). To the extent that they fail and the property sells at a lower price, additional uses may become economically feasible. Hence, a loss to the partnership could constitute an opportunity for possible subsequent developers. This opportunity could only be realized, of course, if appropriate land use designations are granted by the County.

Kohala Makai I

Chapter VIII



CHAPTER VIII
SUMMARY OF UNRESOLVED ISSUES AND LIST OF NECESSARY APPROVALS

UNRESOLVED ISSUES

Site Layout

Planning for the proposed Kohala Makai I project is still in a conceptual stage. Therefore, until detailed site plans are developed, many specifics of the design and layout will have to be resolved at later steps in the approval process. One such design specific is whether one or two intersections with Akoni Pule Highway would be constructed. There are two designated access points onto the highway from the parcel but one has a width of only 32 feet. It is not known exactly what intersection improvements would be required by the State Department of Transportation. Design and cost considerations might dictate the use of just the 60-foot-wide access point. The boundary of the open space along the shoreline, as well as provisions for public access are other details which will have to be worked out with the Hawaii County Planning Department in later stages of the review process.

Erosion Control Measures

Because detailed site plans have not yet been developed, the extent and timing of the land alterations the project would involve are not known at this time. Therefore, the exact measures which would be taken to mitigate the expected increase in erosion during the construction period are still unresolved. Possible erosion control measures are listed on page IV-6 and IV-7 of the EIS. When application is made to the Hawaii County Department of Public Works for a grading permit, an erosion control plan would be submitted for their review and approval.

Further Archaeological Work

It is not resolved whether additional archaeological work on the proposed project site is necessary. If it is determined that further investigation of

the site's archaeological features would be productive, establishment of a research design would be essential to direct the work. Discussions with appropriate State and County officials would be held to resolve these issues before construction begins.

Sewage Effluent Disposal Method

Two options are currently being considered for sewage effluent disposal--exfiltration wells or the use of effluent for irrigation. Further tests will be conducted and consultation with the State Department of Health sought to determine the best disposal option. Whichever one is chosen, all water quality and public health standards would be met.

Water and Other Public Utilities, Services and Facilities

The proposed development will require the extension of water service and certain other public utilities to the site. The developers will provide the on-site utility needs of the proposed project and will work with the County and the public utility companies to provide needed off-site utilities. The water service issue is the most important one to resolve.

The project is within a reasonable distance from public facilities and services in Kawaihae and Waimea. Some services and facilities in the region, (e.g. fire protection and recreation), as presently available, would be inadequate to serve the project's population. Expansion of public facilities and services will be required to handle the resort-related growth in the region. Some plans for improvements are being drawn up, but it is not known if they would be implemented before the completion of Kohala Makai I.

Regional Land Use Pattern

The overall pattern of land use for the region will depend on the future development of Kawaihae Harbor and the resorts along the Kohala coast. Since 1960 most development in the region has occurred in a generally linear pattern along the coastline of Kawaihae Bay. There is a crescent of urban-designated lands bounded by large blocks of State-owned land which make logical termina-

tion points for urban development. If the resort and industrial growth projected for the region occurs, substantial residential development will be needed to accommodate the accompanying population increases. Such development could continue the linear pattern of urban uses along the Kawaihae Bay coast, as parcels near the coastline are attractive to home buyers. The Kohala Makai I project would fit within this emerging regional land use pattern. The unresolved issue is where this pattern will be terminated.

On the south it seems clear the State-owned lands south of Waikoloa resort will be one terminus of the coastal urban pattern. To the north, the County has moved the alternate urban expansion area closer to the core of Kawaihae Harbor, indicating that they want the northern terminus of the urban pattern to be near Kawaihae. On the other hand, the land north of Kawaihae to the North/South Kohala District boundary is owned by the Department of Hawaiian Home Lands (DHHL), which is exempted from obtaining County zoning and other approvals for any development fulfilling the purposes of the Hawaiian Home Lands Act. Thus it is possible that the coastal development could extend to the edge of the Kohala Makai I site without County approval. Further extension of the linear coastal urban pattern to the boundary State-owned land north of the proposed project site would be subject to County approvals.

NECESSARY APPROVALS AND PERMITS

Acceptance of this environmental impact statement is only the first of many approvals that must be obtained before construction of the project could begin. Other steps in the approval process are outlined below. The many layers of review insure that the issues which remain unresolved at the present time will be satisfactorily settled before the project is granted final approval.

APPROVAL NEEDED

Amendment to Land Use Pattern
Allocation Guide Map of County
General Plan

Rezoning

APPROVING AGENCY OR BODY

County Planning Department/
County Planning Commission/
County Council

County Planning Department/
County Planning Commission/
County Council

APPROVAL NEEDED

APPROVING AGENCY OR BODY

Special Management Area Use Permit

County Planning Department/
County Planning Commission

Planned Development Permit
(if developed as a condominium)

County Planning Department/
County Planning Commission/
County Council

Plan Approval

County Planning Department

Grubbing, Grading, Excavation, and
Stockpiling Permits

County Department of Public Works

Sewage Treatment Plant
Authority to Construct & Operate
NPDES Permit

State Department of Health
State Department of Health/
U.S. Environmental Protection Agency

Approval of Private Treatment Works
Approval of Private Sewage Disposal
Systems

State Department of Health
State Department of Health,
District Health Office

National Flood Insurance Program
Conformance

County Departments of Planning
and Public Works

Water System Approvals

County Department of Water Supply/
State Department of Health

Historic Site Review

State Department of Land and Natural
Resources

Building Permit
(incl. electrical & plumbing)

County Department of Public Works

Building Plan Approval-Fire

County Fire Department

Installation of Utilities in
State Highways

State Department of Transportation

Sign Permit

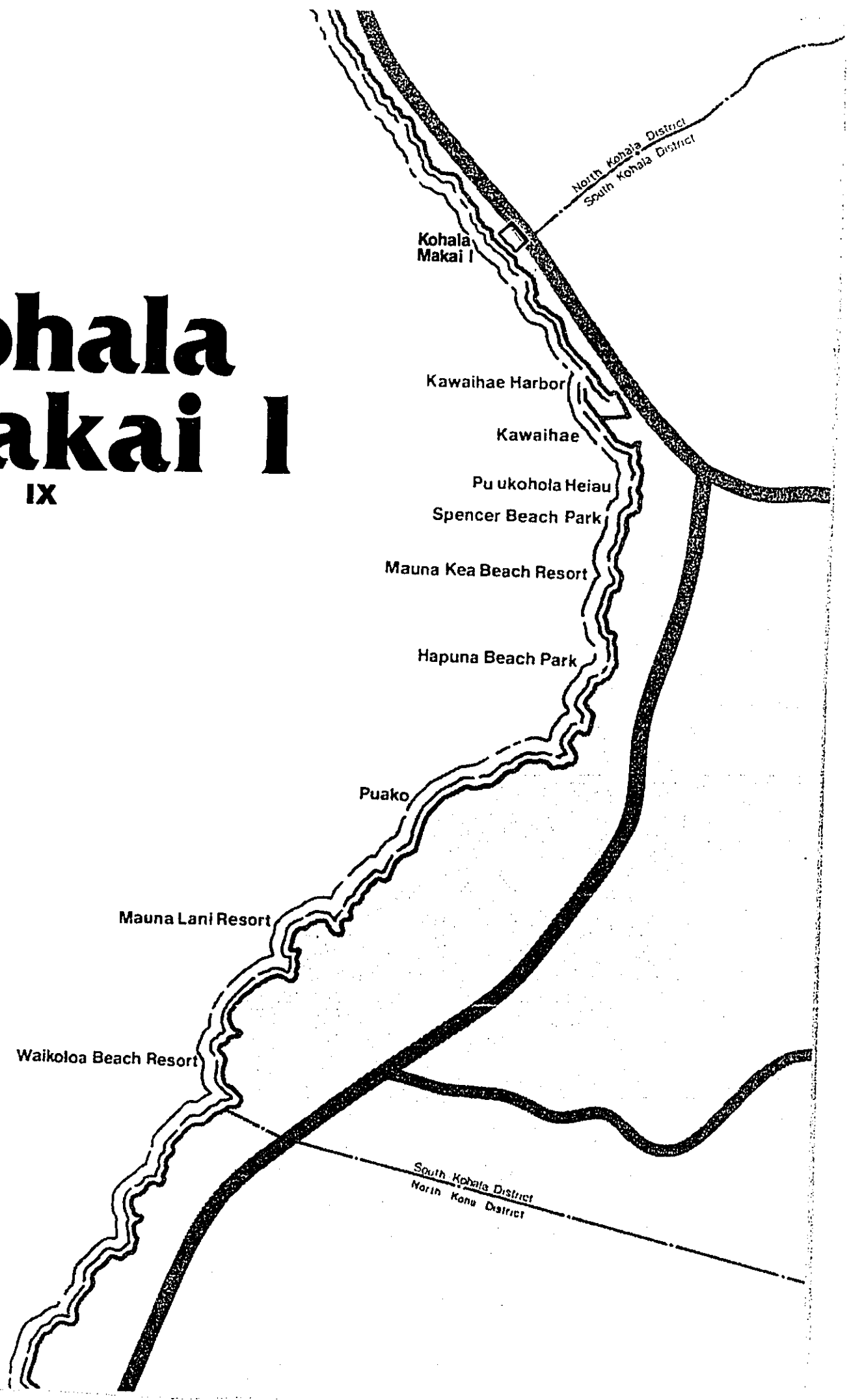
County Department of Public Works

Outdoor Lighting Permit

County Department of Public Works

Kohala Makai I

Chapter IX



CHAPTER IX
ORGANIZATIONS AND PERSONS CONSULTED
AND THOSE WHO PARTICIPATED IN THE PREPARATION OF THIS EIS

CONSULTED PARTIES

An EIS preparation notice for the proposed Kohala Makai I project was published in the August 8, 1980 edition of the Environmental Quality Commission Bulletin. In addition to the notice, specific requests for comments were sent to the organizations and persons listed below.

Federal Agencies

Department of Agriculture, Soil Conservation Service
Department of the Army Corps of Engineers
Department of the Interior, Fish and Wildlife Service

State Agencies

Department of Agriculture
Department of Budget and Finance
Department of Defense
Department of Education
Department of Health
Department of Land and Natural Resources
Department of Planning and Economic Development
Department of Social Services and Housing
Department of Transportation
Environmental Quality Commission
University of Hawaii at Manoa, Water Resources Research Center

Hawaii County Agencies

Fire Department
Police Department
Planning Department
Department of Water Supply
Department of Public Works

Public Utilities

Hawaiian Telephone Company
Hawaii Electric Light Company

Elected Officials

U.S. Congressman Daniel K. Akaka
U.S. Senator Daniel K. Inouye
U.S. Senator Spark M. Matsunaga

Community Organizations and Other Public Interest Groups

American Lung Association of Hawaii
Kohala Community Association
Moku Loa Group, Hawaii Chapter Sierra Club
Na Ala Hele

Others Requesting Consulted Party Status

Glenn R. Bauer
Martha Corcoran
Judith Graham
West Hawaii Concrete

ORGANIZATIONS AND INDIVIDUALS WHO ASSISTED IN THE PREPARATION OF THIS EIS

Belt, Collins & Associates

James Bell, Thomas Papandrew, Brian Suzuki, Perry White, Ann Yoklavich -
Planners

Cary Kondo, Ed Miyashiro - Engineers

Karen Fassler - Graphics

Lynn Fukuhara, Georgy Sakai - Word Processing

Sub-Consultants/Sub-Contractors

Phillip Bruner - Wildlife Consultant

Darby-Ebisu & Associates, Inc. - Acoustical Consultants

Steven Dollar - Marine Environmental Research Consultant

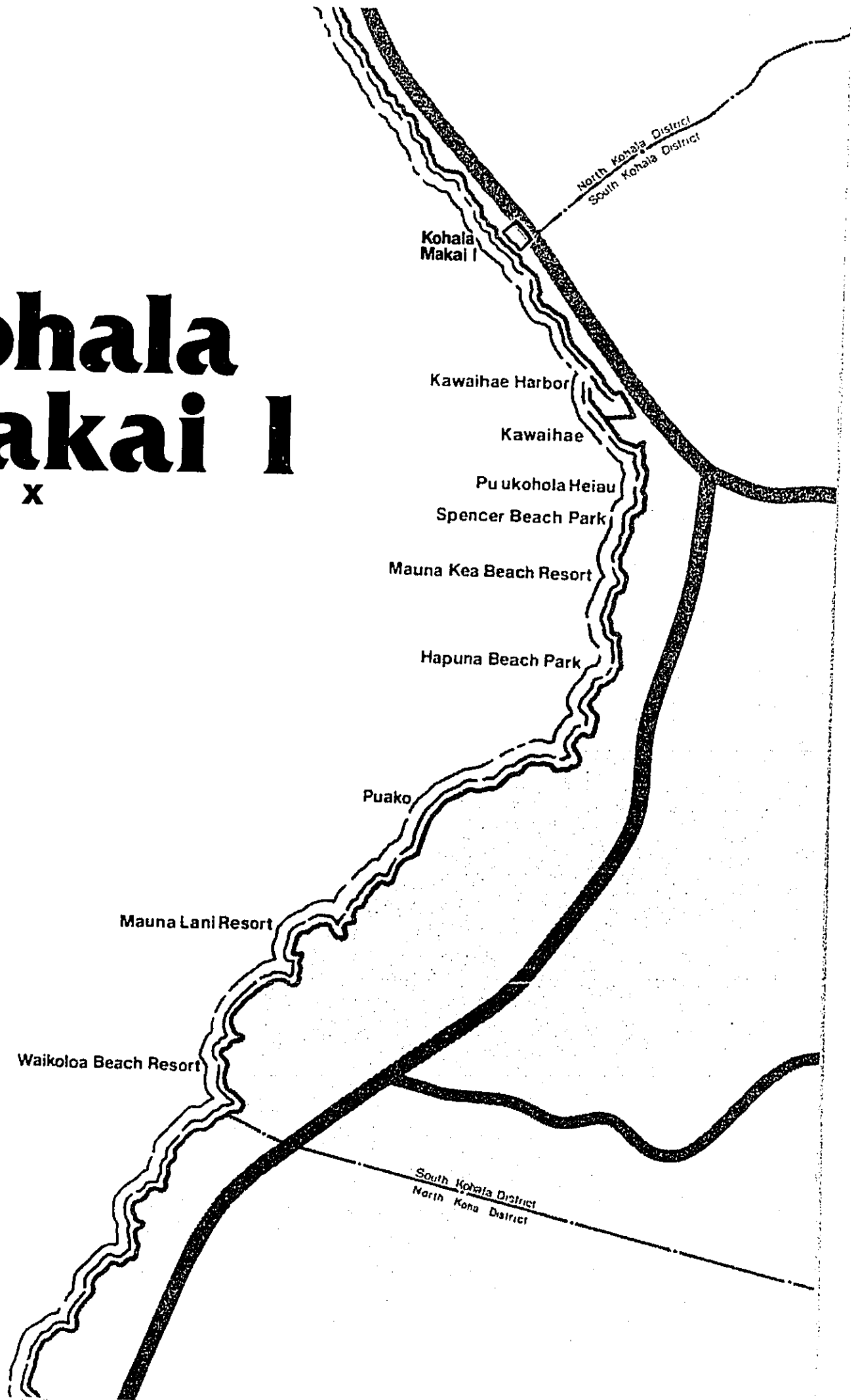
Earthwatch (Erin Hall and Margaret Elliott) - Environmental Resource Investi-
gators (Vegetation Survey)

Paul H. Rosendahl - Consulting Archaeologist

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Kohala Makai I

Chapter X



CHAPTER X
COMMENTS AND RESPONSES DURING THE CONSULTATION PERIOD

The following persons or organizations submitted comments expressing specific concerns that they wished to see addressed in the Environmental Impact Statement for the proposed Kohala Makai I project. Copies of a standard transmittal letter and the Environmental Assessment/Preparation Notice which were sent to them are reproduced first. These are followed by the copies of the comment letters received from the consulted parties together with copies of individualized responses to them.

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|--|-------------|
| Standard Transmittal Letter Requesting Comments | X-3 |
| Environmental Assessment/Preparation Notice | X-4 |
| <u>Federal Agencies</u> | |
| Department of the Army, U.S. Army Engineer District, Honolulu | X-20 |
| U.S. Department of Agriculture, Soil Conservation Service | X-23 |
| U.S. Department of the Interior, Fish and Wildlife Service | X-25 |
| <u>State Agencies</u> | |
| Department of Agriculture | X-26 |
| Department of Budget and Finance | X-28 |
| Department of Defense | X-29 |
| Department of Education | X-30 |
| Department of Health | X-31 |
| Department of Land and Natural Resources | X-32 |
| Department of Planning and Economic Development | X-34 |
| Department of Social Services and Housing | X-36 |
| Department of Transportation | X-37 |
| University of Hawaii at Manoa, Water Resources Research Center | X-38 |
| <u>County of Hawaii Agencies</u> | |
| Department of Public Works | X-39 |
| Department of Water Supply | X-40 |

Organizations

American Lung Association of Hawaii
Hawaiian Telephone Company
Hawaii Electric Light Company, Inc.
Moku Loa Group, Hawaii Chapter Sierra Club
Na Ala Hele

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Individuals

Daniel K. Akaka, United States Representative
Glenn R. Bauer
Judith Graham

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X-53

May 22, 1981
Page two

Dear :

As indicated in the Environmental Quality Commission Bulletin of August 8, 1980, Belt, Collins and Associates is in the process of preparing an Environmental Impact Statement (EIS) for the proposed Kohala Makai project in North Kohala, Hawaii. Because the proposed project may cause certain potentially significant environmental effects, including some that may be of concern to your organization, we are transmitting a copy of the Chapter 343, HRS, Environmental Assessment/Determination report prepared for the proposed project by the County of Hawaii Planning Department. The document provides a general description of the proposed action as well as a broad indication of the types of impacts that may be expected.

It should be noted at this point that although the preliminary plans for the proposed project on which the County's Environmental Assessment was based called for approximately 500 to 550 residential condominium units, we are currently exploring a number of other lower density residential alternatives as well. Residential alternatives being considered might include a variety of multi-family and single-family land uses on the proposed project site.

It is our intention to explore all aspects of the proposed project's probable effects in the EIS. However, it is essential that the bulk of our work be directed towards specific issues that are of greatest concern. We would appreciate it very much if you would help us in this task by indicating in writing specific questions, issues, and topics you believe should be addressed and the reasons why they are important to you. The more specific you can be, the better the chance that we will be able to respond satisfactorily to your concerns. It would also help us if you would cite any special sources of information you are familiar with that might be relevant to our work.

The State Environmental Quality Commission's Environmental Impact Statement Regulations stipulate that written responses to request for comments must be made within thirty days of the receipt of the request. This may be extended by the accepting agency only "upon good cause shown." It is our hope that you will make every effort to contact us within the prescribed time period.

If all goes as planned, it is expected that the draft of the Environmental Impact Statement will be available sometime in August, 1981. At that time, the document will be circulated by the Environmental Quality Commission for

review and comment. If the EIS consultation process works as we intend, all of your concerns will be adequately explored in the draft EIS. If, however, you find there are issues that have not been covered in sufficient depth, this final review process will provide you with the opportunity to have any omissions corrected.

If you have any questions regarding the project or do not fully understand the kinds of input that would be most helpful, please call me at 521-5361.

Sincerely,

Brian M. Suzuki

BMS:ghs

ENVIRONMENTAL ASSESSMENT

APPLICANT:

Kohala Makai I
Alvin T. Amaral & Robert Cole, Limited Partners
P. O. Box 98
Kahului, Maui, Hawaii 96732

APPROVING AGENCY:

County of Hawaii through the Planning Commission
and the Planning Department

CLASS OF ACTION:

General Plan Amendment

PROPOSAL:

The applicant has submitted a petition to amend the County of Hawaii General Plan Land Use Pattern Allocation Guide Map Exclusive Agriculture designation to a Medium Density Urban designation.

I. Description of the Proposed Project

Kohala Makai I, a limited partnership, proposes to construct a luxury condominium development of 500-550 units to be situated on a 38.2 acre shoreline parcel described as TMK: 5-9-01:6, Waika, North Kohala, Island of Hawaii. The project is intended as a long-term residential development.

An assessment submitted by the applicant describes the project as follows:

"The proposal calls for luxury one-, two-, and three-bedroom units, ranging in size from approximately 1,000 to 1,800 square feet. The building would be clustered, one to three stories in height. On-site amenities include swimming pools and possible tennis courts. The construction of this project would possibly be accomplished in two or more increments."

"Though the emphasis will be on swimming and tennis (and possible other racket sports included), the site design will also provide ample opportunity for more passive recreational pursuits, including picnic facilities and walking paths set within well-landscaped environment."

No detailed site design plan has been drawn as the proposal still requires a number of permits, including the General Plan Amendment now being applied for. However, the developer has stated that "The project's design will stress integration with

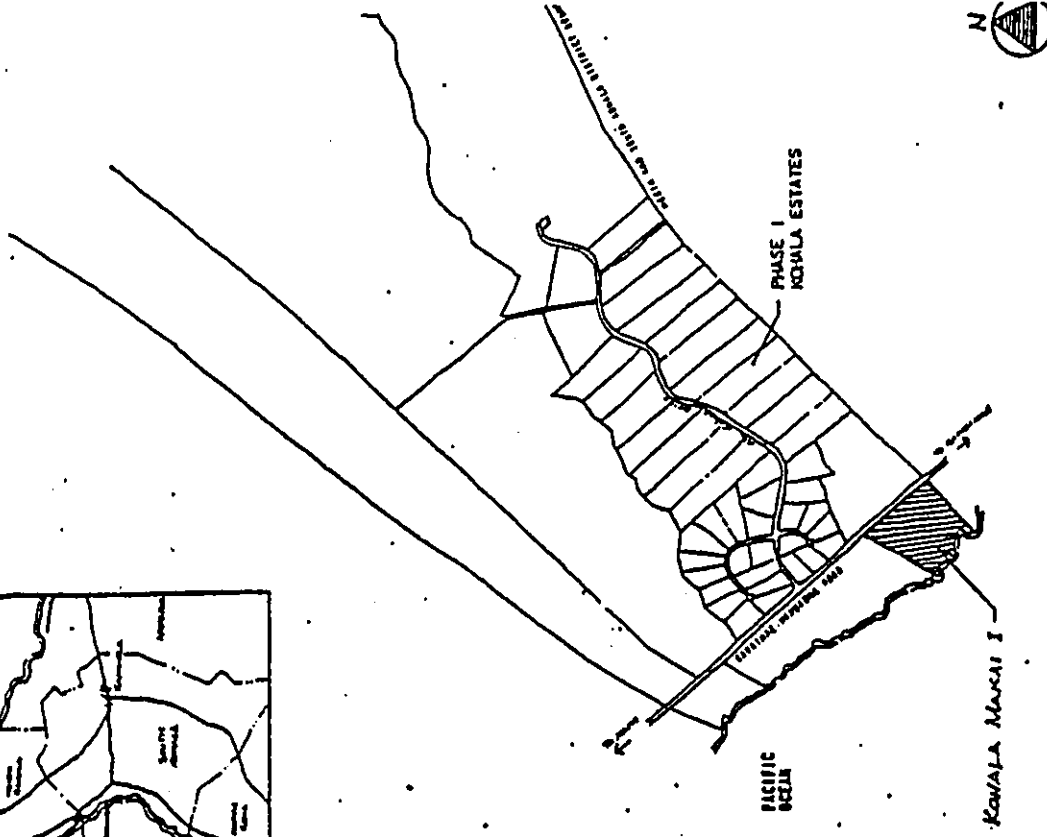
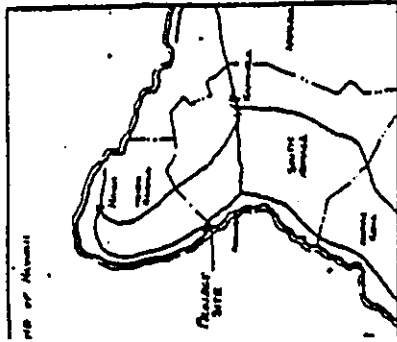
the existing landscape and will be designed to harmoniously blend with the topography and vegetation inherent to the site." "...this will be a project intended for the upper range of residential price structure, designed to attract buyers within the luxury market."

II. Description of the Affected Environment

A. The project site: The thirty-eight acre parcel is located immediately north of the boundary between the districts of North and South Kohala, within the ahupua'a of Waika. It is approximately three miles north of Kawaihae Harbor and lies between Akoni Pule Highway on the east and the ocean on the west.

Elevation ranges from a few feet above sea level to approximately 200 feet within a distance of approximately 1,500 feet.

Soils of the area as identified through a low intensity survey by the U. S. Department of Agriculture, Soil Conservation Service are of the Kawaihae Series. This series is described as being excessively drained extremely stony soils that formed in volcanic ash. These soils have a very thin surface layer of fine sandy loam over silt loam and loam. In the area of the subject parcel, rock outcrops occupy 10 to 12 percent of the surface. The soils are used for pasture purposes and have an overall agricultural suitability rating of VIIs.



LOCATION MAP
Scale 1" = 1500'

Exhibit I

Rainfall is estimated at ten (10) inches annually with a mean temperature of greater than 76 degrees.

In the environmental assessment submitted with the application, the developer states, "In general, the site is covered with grasses and kiawe trees, a typical vegetation pattern within the relatively arid environment of coastal South Kohala and southern portion of North Kohala. We do not expect to discover any rare or endangered animal species during the survey." The assessment however notes that floral and faunal surveys will be conducted.

No archaeological sites were identified through the Statewide Inventory conducted by the Department of Land and Natural Resources on the subject property, however, archaeological sites have been located along the coast in areas immediately to the north and south of the subject property. These include enclosures, shelter caves, house sites and platforms. In addition to the archaeological survey conducted for the Statewide Inventory, two other archeological surveys have been conducted along this coastal area in the past. (1964, 1968; see bibliography) Although sites were noted in the area, it is not clear whether any of these fall specifically within the parcel.

Although no flood drainage channels have been identified through maps for the subject parcel, a field survey of the property notes a gully cross-cutting the parcel. The topography of the parcel is varied. A ridge with steep road cuts occurs on the northern portion of the parcel. The ridge slopes steeply to the south and less

steeply towards the west. The drainage gully crosses the southern slope of the ridge in a south westerly direction. Relative level areas occur at the eastern and northern portion of the ridge. The shoreline is characterized by wave eroded basaltic cliffs overlain with soil from sea level to approximately fifteen feet high. Portions of the shoreline still show evidence of active erosion of the soil.

Kaiopee Point, which lies along the parcel coastline has been identified by the County General Plan as an example of "Natural Beauty."

The parcel is located within an area susceptible to tsunami inundation.

The proposed development falls within the Special Management Area as authorized through Chapter 205A, Hawaii Revised Statutes and Rule 9 of the County of Hawaii Planning Commission. The purpose of this designation is the protection, and management of natural resources within the coastal zone.

Coastal waters along the project site are classified A. The quality of Class A waters are intended to be maintained for water contact recreational use and aesthetic purposes. "Such waters shall be kept clean of any trash, solid materials or oils, and shall not act as receiving waters for any effluent which has not received the best degree of treatment or control practicable under existing technology and compatible with the standards established for this class."

"Soils of the leeward North and South Kohala districts include those of the Mahukona, Hawi, Puu Pa, Kamakoa and Kevalhae Series."

The coast along the North Kohala district is characterized by cliffs of lava or soil layers underlain by lava. Numerous small bays indent the coastline. These are characterized by either water-worn boulders and/or pebble (ill'ili) beaches.

The coast along the South Kohala district is similar, however it is along this coast that some embayments are formed with white sand beaches. These include pockets at Kawaihae, Hapuna, Kaunaoa, Hailea, Honokaope and Anaeho'omalu."

"Coastal waters are classified A with the exception of Kawaihae and Mahukona harbors which fall within the Class B category. A marine preserve has been established at Lapakahi State Park and a second marine preserve has been recommended for Keaweula Bay."

Both North and South Kohala have played important roles in the history of Hawaii. In particular the area is associated with the life of Kamehameha from birth through the attainment of the unification of the Island of Hawaii. Additionally, there are numerous sites associated with pre-contact fishing, farming and religious aspects of the Hawaiian culture. Post-contact period (after 1778) sites are associated with the sugar and ranching industries and with early missionary beginnings.

B. The Leeward Kohala Region: The region, which includes portions of both North and South Kohala lies within the rain and wind shadow of both the Kohala Mountains and Mauna Kea. The area is characterized by low rainfall, approximately ten (10) inches per year along the coastal section to approximately fifty (50) inches along the mauka belt road. Mean annual rainfall in the Waimea Plains area is approximately 75 inches per year.

Geologically, the area is built from volcanic flows of both the Kohala mountains, Mauna Kea and Mauna Loa.

"On the north leeward side, the geologically older Kohala Mountains have been eroded to form slopes ranging from 6% to 20%. The overall, relatively gentle slopes and rounded topography are dissected by many small, deep gulches. None of these gulches, however, retain perennial streams."

The geological substrate of the Kohala Mountains extend into the South Kohala district to Hakeahua Gulch in the ahupua'a of Kawaihae. Mauna Kea volcanic flows are present south of this gulch to and just beyond the boundary between South Kohala and North Kona in the upper inland areas and to Puako Bay along the coast. A small section of Mauna Loa flows are present in the area along the coast between Puako Bay and Anaehoomaluu Bay.

"Slopes in the leeward area of South Kohala range from 6% to 10%, and are also dissected by gulches, which though not perennial, are subject to occasional flash flooding."

III. Socio-economic setting

Although the project site is located within the North Kohala district, it lies closer to the economic activities of the South Kohala District both in terms of distance as well as through existing transportation access points and routes.

As noted earlier, the parcel lies approximately three miles from Kawaihae Harbor and commercial areas, a mile and a half from an industrial subdivision.

South Kohala had an estimated population of 3,500 in 1977.

Residential areas are located at Kawaihae Village, Puako, Waikoloa and a sizeable urban area at Kamuela (Maimea). Economic support for the communities in South Kohala is diverse in comparison to that of North Kohala. These include the traditional support from ranching, truck farming, urban commercial and governmental services. Within the past decade there has been a growth in the tourism industry, education, industrial and research sectors."

"Most of the government and urban commercial services in the South Kohala district are located in Kamuela..." "These include a library, police and fire services, a private hospital, public and private schools and district court." Commercial services include a wide range of services for both residential needs as well as the tourism market.

Additionally, general stores for convenience shopping are located at Kawaihae and Waikoloa.

Some industrial uses such as a wood chipping processing plant and bulk storage are located in the area surrounding Kawaihae Harbor.

Infrastructure

Transportation access points occur at Kawaihae, where the Harbor serves as one of two deep draft harbors on the Island of Hawaii. Airports are located at Kamuela and Keahole, approximately 16 and 31 miles, respectively, from the project site. A small craft airport is located at Upolu Point, approximately 15 miles to the north.

Access to the project site is via the Akoni Pule Highway which serves as the coastal surface link between North and South Kohala. It should however be noted that Akoni Pule Highway is a limited access highway and that the project site is limited to one access near the south boundary of the parcel. This access is limited to a width of thirty-two (32) feet.

There is no municipal water system servicing the project area. Test drilling for a private well to the northeast of the project site indicates that a potential source is available. It is the intention of the project developers to utilize this source. Although there is an existing water system servicing the Kawaihae/Puako area and a public water source and system is being developed at Lalamilo, future servicing if necessary of the project site would require extensions of lines from these systems. It is not known at this point in time whether water will be available from either of these existing and planned public water systems.

There is also no municipal sewerage system servicing the project area. The applicant has not described any method of sewerage disposal intended for the proposed development.

Telephone and electrical services are available to the project site.

Economic Setting

The economy of North and South Kohala can be geographically divided into four somewhat distinct sub-regions. First is the coastal zone of South Kohala where present and future resort activities draw upon the climate, white sand beaches, and airport access. Second is the area in proximity to Kawaihae harbor. In addition to freight transportation and storage, the Kawaihae area is presently zoned for industrial use and this use can be effectively provide the support facilities anticipated for the future growth of North and South Kohala. The third economically distinct region is centered around Waimea. This area serves as the economic hub of ranching and small scale farming in South Kohala, as well as providing a logical urban base for future growth of supportive commercial and governmental services. The fourth distinctive area is historically defined by operations of the [old] Kohala Sugar Company."

Agriculture

Recent agricultural production in North and South Kohala can be

aggregated into four major groupings: (1) former sugar can areas in North Kohala; (2) vegetable farming near Waimea in South Kohala; (3) pasture lands in both districts, generally confined to the higher elevations; and (4) about 390 acres of macadamia plantings on North Kohala lands not suitable for sugar."

"As early as 1976, there were 4 major enterprises in North Kohala engaged in innovative agricultural activities. Despite considerable governmental assistance, only one (ornamentals production) held out considerable promise, in the long run, of offering a substantial number of jobs to former sugar plantation employees."

Other innovative agricultural projects which are either in operation or being proposed for the North Kohala area within the past year have included aquaculture (prawn farms), and a tannery.

Agriculture in South Kohala basically consists of vegetable and livestock production.

Vegetables are produced in Puukapu (300 acres) and on the Lalamilo Farmlots (550 acres). A wide variety of crops are produced, but cabbage, Chinese cabbage, daikon, head lettuce, Romaine lettuce, celery and burdock are by far the most important in terms of both acreage and value."

"Most agricultural land in South Kohala is used for grazing

purposes. Operations largely involve beef cattle production, but some replacement heifers are raised for Oahu dairymen. Parker Ranch and Kahua Ranch are the major ranches, and about 53 smaller ranches typically run 40 to 60 animal units each. Much of the area is unimproved pasture, but in the higher elevations where there is a sufficient rainfall, pastures have been improved and planted.**

Tourism Industry

Although the General Plan land use designation amendment being sought is to a Medium Density Urban Designation, since the potential exists that the units may be used for short-term residential use, the existing conditions within the tourism industry within the County, and region will also be discussed.

"The Island of Hawaii has experienced positive growth in its hotel inventory. In 1965 the island had 865 hotel units, or 7% of the State's total. In 1979 there were 5,979 units on the island, accounting for 12% of the Statewide plant totals.

Traditionally, the principal visitor destination areas on the Island of Hawaii have been in Kona and Hilo. In 1969, Kona had 1,074 hotel rooms, or 49 percent of the island total while Hilo accounted for 39 percent with 850 rooms. By 1979, Kona's hotel room count had grown to 3,525 rooms, or 59 percent of the island total while Hilo had 1,956 rooms, or 33 percent of the total. Thus, while

*taken from: Draft Kohala Community Development Plan

both areas have increased the visitor plant size, Kona has improved its position relative to Hilo.

The principal remaining resort area has been the South Kohala coastal area. Currently, only the 310 unit Mauna Kea Beach Hotel and the twenty-four (24) unit Puako Beach Resort Apartment condominium are operating in this area. However, in addition to these facilities, substantial expansion along the coast has been planned for many years and in part zoned for development.

As noted in the land use section of this environmental assessment, this expansion is primarily situated within three master planned resort destination areas; the Maikoloa Beach Resort (MBR) at Aneeho'omalu, Mauna Loa Land Inc.'s at Kalahuipua'a and Mauna Kea Land Corporation's development at Ouli and Kawaihae 2nd which includes the Mauna Kea Beach Hotel.

These three developments have been designated as Major Resort areas by the County of Hawaii General Plan. This designation is applied to those areas suitable for the provision of a self-centered resort destination area which provides the basic and support facilities for the needs of the entire development. A maximum of 3,000 hotel units per area is allowable under this designation along with a maximum of 640 acres for residential use.

Thus, the General Plan would allow a maximum of 9,000 hotel units and 1,920 acres of residential uses in the three (3) major resort areas designated along the South Kohala coast.

be available for transient accommodations. Some of the units are/will be owner occupied; owner retained as a second home or rented out on long term residential basis.

On the other hand proposals for other existing General Plan Medium Density Urban, Resort and Alternate Urban Expansion Area designations in the areas of Kawaihae, Mauna Kea Beach Resort, Puako, and mauka area of Mauna Loa Land, Inc. and Waikoloa Village have not been submitted. Condominium or Multiple Family Residential use among other uses are allowable under all three General Plan designations.

Thus it is not possible to project the overall potential number of condominium units which may be allowable under existing General Plan designations; nor to estimate of these what proportion may be available for short-term or long term residential use.

" ... The Big Island's share of the tourism market has shown a decline over recent years. According to the market analysis submitted by the applicant, the island's share of westbound visitors to the State declined from 41 percent in 1968 to 32 percent in 1977. The eastbound visitor share declined from 31 percent in 1973 to 22 percent in 1977. It should be noted however that while the island's share of the State visitor market declined, in terms of westbound visitor counts, the number visiting the island increased from 412,000 to 890,000 during the years from 1968 to 1977. No data was available for 1968 eastbound visitors."

Environmental Assessment - Mahukona Properties

In addition, there is a Minor Resort area designated by the General Plan around the Mahukona Harbor area. Such a designation would allow a resort destination area with a maximum of 1,500 hotel rooms."

In terms of other transient accommodations, i.e. condominium units, there are in the Kona/Kohala region 2,084 existing units. Of these, 2,022 are located in the Kailua to Keauhou, Kona area; while the remaining 62 are located in South Kohala. More specifically, these are located at Waikoloa and Puako.

An additional 8,867 condominium units have received initial approvals and are in various stages of planning, construction and/or completion. Of these units, 6,970 are proposed for the South Kohala area. With the exception of 358 units which have been approved for Waikoloa Village, the remaining South Kohala units are to be located makai of Queen Ka'ahumanu highway at the Waikoloa Beach Resort and Mauna Loa Land's Kalahuipua'a resort developments.

1,897 units are to be located in the Kailua to Keauhou, Kona area.

In accounting for these 10, 927 existing and proposed condominium units, and in considering the overall potential for tourism accommodations, two aspects should be considered.

On the one hand not all of these condominium units are or will

be taken from: Environmental Assessment - Mahukona Properties

IV. Existing Land Use, Policies, Statutes, Patterns

The project site which is now vacant is located within the State Land Use Urban District and is zoned Unplanned by the County of Hawaii. The County of Hawaii General Plan Land Use Pattern Allocation Guide Map designates the area as Extensive Agriculture with a coastal designation of Open.

The proposed condominium development is allowable under the State Land Use Urban district classification. However, it is not permissible under any of the other land use designations.

A General Plan Land Use Pattern Allocation Guide Map Amendment from the Extensive Agriculture designation to a Medium Density Urban designation is required prior to the establishment of the proposed development. Such a petition has been submitted for which this assessment is being conducted.

The existing Extensive Agriculture designation identifies and sets aside lands which are suitable for pasture and range lands. The Medium Density Urban designation which is being sought is defined by the General Plan as "Village and Neighborhood commercial and residential and related functions (3-story commercial, multiple residential - 35 to 11.6 units per acre; single-family residential - 5.0 units per acre)."

Should the General Plan Amendment be approved, a subsequent change of zone from the Unplanned designation to a Multiple-Family zone with an appropriate density designation is then required.

The existing Unplanned (U) zoning designation applies "to areas not subjected to sufficient study to adopt specific district classification." Nevertheless, single-family residential and agricultural uses are permissible within this zoned designation.

The multiple-family residential (RM) zone designation would allow for high density residential use. "It covers areas with full community facilities and services," and "...may occupy transition areas between commercial or industrial areas and other districts of less intense land use."

Other permits which would be required are a Planned Development Permit and a Special Management Area Use Permit. Both permits require an assessment and evaluation of environmental conditions prior to the establishment of the use. The Planned Development Permit in particular require an assessment of the need for additional condominium units in relation to existing and future market conditions.

The surrounding area: Existing uses in the surrounding area includes single-family residential use to the south in the areas of Kawaihae, Puako and Lalaimilo to the northeast at Kohala Estates; ranching to the northeast at Kahua Ranch, vacant land immediately surrounding the subject parcel.

Additionally there are commercial (general store, service station and restaurant) uses and industrial uses at Kawaihae Harbor.

Resort hotels and recreational uses occur in the area between Kawaihae and Puako, and at Anaehe'omalu.

The General Plan Land Use designation for the North Kohala leeward area include a coastal band of Open, Extensive Agriculture for major portions of the slope, and an Intensive Agriculture designation for the upper elevation slopes paralleling the Kohala Mountain Road.

Additionally, there is a Resort designation at Mahukona Harbor which is surrounded by an Alternate Urban Expansion designation. This Resort/Alternate Urban Expansion designation is approximately nine miles north of the project site.

The leeward South Kohala region bears a General Plan land use pattern which is different from that of North Kohala. Although the major portions of the lower slopes are designated as Extensive Agriculture with Intensive Agriculture along the upper slopes, the coastal pattern is complex in its range of designations (see attached General Plan Land Use Pattern Allocation Guide Map).

Beginning at the boundary between North and South Kohala, the coastal area makai of Akoni Pule Highway to Kawaihae Harbor is designated Open. At Kawaihae Harbor and surrounding the harbor are

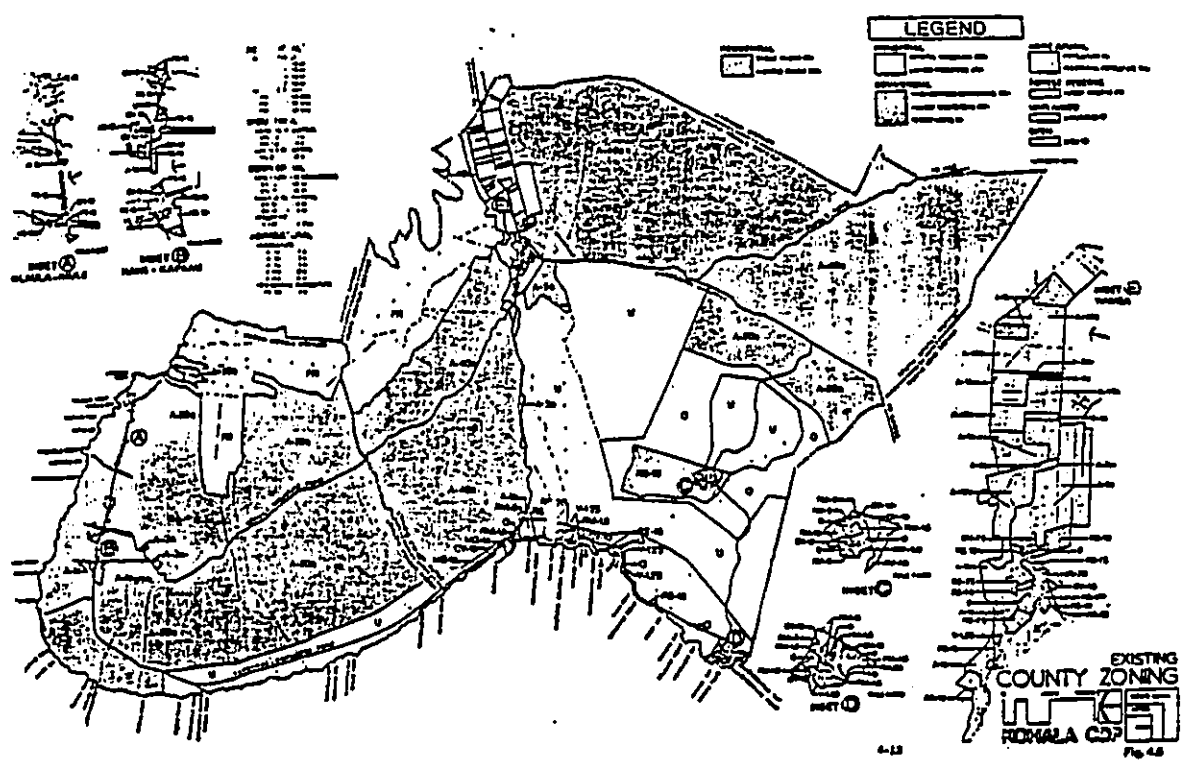
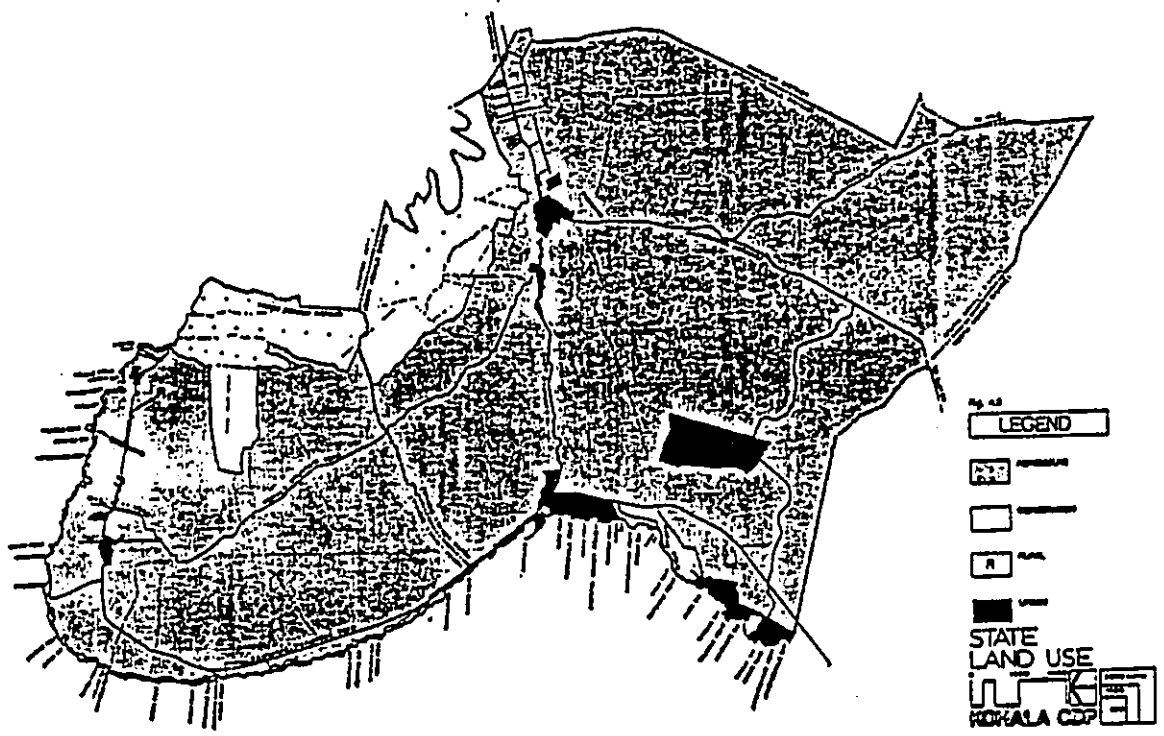
pockets of Industrial and Medium Density Urban designations. These designations are further surrounded by a semi-circular pattern of Alternate Urban Expansion and Low Density designations. The above designations are indicative of existing and future urban needs as they relate to the harbor and the resort areas to the south.

South of Kawaihae Harbor there are pockets of Resort, Medium Density Urban and Low Density Urban designations surrounded by Open Low Density Urban and/or Extensive Agriculture designations. These designations are indicative of the pattern established for planned major resort communities at Kaunaoa, Puako, Kalahuipua'a and Anaehe'omalu.

Nearly the entire leeward North Kohala lies within the State Land Use Agriculture District. Exceptions to this designation are a coastal band designated Conservation from Waikailo Bay north and a small section of Urban designation south of Waikailo Bay in Kahua ahupua'a to the boundary between North and South Kohala. The project falls within this Urban designation.

The leeward South Kohala area although largely within the Agriculture District includes Urban designations at Waikoloa, Anaehe'omalu, Kalahuipua'a, Puako and Kawaihae to Hapuna. Conservation Districts along a coastal band south of Kawaihae (see attached State Land Use Map).

Specific zoning designations are also illustrated on the accompanying zoning map. However, it should be noted that in the



area immediately surrounding the project site, the zoning designations are Unplanned, Agriculture twenty (20) acres and Agriculture (40) acres.

Multiple-Family Residential zoning designations now occur at Kawaihae, Ouli, Kalahuipua'a, Anaeho'omalu, and Waikoloa.

Land Ownership: The subject parcel is owned through a sub-agreement of sale by Kohala Makai I from Hilton Head, Inc., which in turn is under an agreement of sale from Kahua Ranch.

To the south of the subject parcel lands in the ahupua'a of Kawaihae are owned by the Hawaiian Homes Commission. To the north and east, lands are owned by Hilton Head, Inc., with the exception of some parcels within the Kohala Estates Subdivision being owned by individuals. Parcels in this subdivision are either of 5+ acres or 20+ acres in size.

V. Impact Analysis, Determination, and Informational Requirements

Although the applicant has stated that the proposed condominium project will be utilized as a long term residential development, surveys of condominium projects in coastal areas or associated with resort areas have indicated that luxury condominium units tend not to be used for long-term residential purposes (longer than 6 months).

Under this circumstance, the impact analysis was conducted from several perspectives. First of all, the analysis considered the impacts of the physical alteration to the specific site location and its environment. Second, the analysis considered impacts from the perspective of a General Plan Amendment to a Medium Density Urban designation with all of the potential permissible uses allowable under that designation. Third, the analysis considered the proposed condominium development with implications for both long term and short term residential use.

Based on the following impact analysis and the necessity for further information, a determination has been made that an Environmental Impact Statement is required.

Physical Environment:

Major adverse impacts are not anticipated to occur on the biological resources of the project site, as no particularly unique or endangered species are known or likely to be harbored within the system. The vegetation consists primarily of tree to shrub kiawe, decreasing in size and coverage in relation to distance from the coast. The kiawe is an association with other shrubs and grasses which are common to the leeward Kohala Coast. Moisture retention and erosion control values of the vegetation may be retained through landscaping, either through maintaining existing vegetation or the introduction of other plant species.

Major adverse impacts to the archaeological resources are also not anticipated to occur. Although no archaeological resources survey has been conducted for the subject proposed development, previous surveys along the coast for other purposes have not identified particularly significant features for preservation/interpretive purposes. Nevertheless, since locations of sites found in the area through previous surveys are not particularly accurate, further archaeological survey pin pointing sites should be conducted. Such sites as may be found on the parcel may be incorporated into the overall site plan if preservation is warranted or may be salvaged for research purposes; thus mitigating potential adverse impacts.

Thus, the environmental impact statement should contain information precisely locating archaeological features, an analysis of possible function, relationship or the context of these sites with others of the leeward Kohala region and/or within the context of scientific research problems. The EIS should also contain recommendations for mitigation measures, including preservation, if necessary.

Depending on the type and capacity of a sewerage treatment plant, impacts to coastal waters and marine biological resources may or may not occur. Since however no system has been described for the proposed development, it is not possible with this environmental assessment to describe potential impacts/non-impacts.

The EIS should then discuss in detail the system, since a system will be required through Department of Health regulations, proposed for the development. An analysis of potential impacts upon coastal waters should also be included.

Field inspection of the project site showed rather than an even slope from the highway to the coast, an uneven topography which is steep in areas, relatively level in others, higher in elevation along the north end of the parcel and with a gully cross-cutting the southern half of the parcel. Thus it is anticipated that the proposed 500 to 550 unit condominium project will have an impact on the existing landforms since it is likely that major earth moving will be required. These land transformations may in turn affect on-site drainage patterns.

Also since the northern half of the parcel along Akoni Pule Highway rises in a road cut significantly above the road elevation, view planes along the road from point to the north and south may be affected.

No topographical survey has been submitted for the subject parcel, therefore it is not possible to determine the extent of these impacts.

Thus the EIS should include as part of the project site description, a topographical survey conducted at contour intervals of five (5) feet. Further mauka-makai profiles from the coast to

the road right-of-way should be submitted for the north and south boundaries of the parcel and for a point approximately midway between the boundaries.

While it is understood that the project is still at the General Plan amendment stage, and therefore still at conceptual level, nevertheless some discussion should be included describing the potential impacts from land transformation activities including the potential alteration to drainage patterns. In particular, the EIS should discuss the impacts in terms of the Kawaihae soils on the parcel and the erosion hazard potential. Discussions of mitigation measures should include the alternatives of a development at lesser densities, and alternative potential building site locations and envelopes.

Against these alternative building site locations, an analysis of impacts to the view planes from points north and south of the project site along Akoni Pule Highway and from the ocean should be included.

Infrastructure:

The proposed development may have an impact upon vehicular movement along Akoni Pule Highway, especially as entry and exit points are limited to a single thirty-two foot wide access near the southern boundary. Other impact areas may be identified at the junction of Akoni Pule Highway and the Kawaihae Harbor Road, and the junction of Queen Ka'ahumanu Highway and the Haima-Kawaihae Road.

The EIS should discuss the anticipated traffic generated by the proposed development and alternative mitigation measures.

Although the developer intends to utilize a private water source and system for the proposed project as this system has not yet been constructed, water is as yet unassured. The EIS should discuss the estimated capacity, nature and quality of the source. Further, the development of this private source and system should be discussed in terms of overall improvements necessary to bring water down to the project site and an estimated timetable. The EIS should further discuss the water requirements for the proposed development and alternative sources should water from the planned private source not be available.

Other Impacts:

Other potential impacts have also been identified. The nature and degree of these impacts however are dependent on whether the condominium project is utilized as a short-term residential/resort development or as a long-term residential one. Thus in assessing these impacts, the EIS should first describe the means by which long-term residential use may be achieved, whether through marketing strategies, conditions with sales agreements, deed or association covenants, etc. The EIS may then discuss these impacts primarily in terms of long-term residential uses.

Conversely, if no means of assuring long-term residential use can be described, then the EIS should discuss these impacts

Lands south of the subject parcel and makai of Akoni Pule Highway are designated Open through the General Plan Land Use Pattern Allocation Guide Map. Further, during the recent review and revision of the General Plan Land Use Pattern Allocation Guide Map, the Alternate Urban Extension designation which extended to the boundary between North and South Kohala was reconfigured to concentrate in a semi-circular pattern closer to Kawaihae.

In discussing this revision, the Planning Department noted the Kawaihae Urban area was viewed as an area for urban support and as anchor to the planned resort areas to the south of the harbor. The proposed General Plan amendment now under consideration with the Environmental Assessment may then have potential impacts of this land use pattern. In the first instance, if used primarily as a short-term/resort residential uses, it may set a precedent for extending the urban/resort use beyond the harbor area in a further cumulatively linear pattern. On the other hand, the Medium Density Urban designation and proposed condominium use may also have the effect of constraining or limiting the geographical scope of support (industrial, commercial) function of Kawaihae area.

The EIS should then discuss the impacts of the proposed use against the possibilities of both expansion and constraints of the land use pattern for the region. Discussion of alternatives should include the possibility of other land uses allowable under a Medium Density Urban designation for the subject parcel.

primarily in relation to short-term residential/resort use with some implications for long-term residential use.

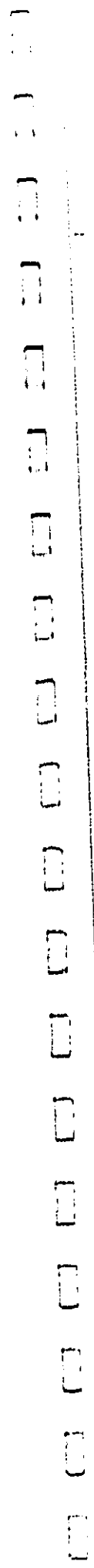
Public Facilities and Urban Services:

Depending upon the nature of the condominium project and the on-site amenities provided there may be impacts to the following public facilities and other services: Police and fire services may be impacted in particular since these services in large part must come from stations in Kapa'au, North Kohala or Waimea, South Kohala. Similar indirect impacts may be felt on recreational and educational facilities (public and private).

Depending upon the kinds of retail commercial services provided within the proposed project there may be impacts to commercial services in the communities at Kawaihae and Waimea. The EIS should describe, even on a general level, the types of commercial services which are proposed for this condominium project; then discuss the potential impacts (beneficial as well as adverse) to the communities of Kawaihae and Waimea.

Land Use Policies and Patterns:

Although the State Land Use classification for the subject parcel is Urban, nevertheless, the establishment of a condominium project and a Medium Density Urban designation north of Kawaihae will have indirect, through significant effects on land use policies and patterns.



Should the proposed project be utilized as a long-term residential development, the EIS should describe the overall existing and potential housing demand in the region by all income levels, in particular however that income bracket for which the luxury units are intended. The analysis should include discussion of both beneficial as well as adverse impacts upon housing needs. Further, these discussions should include an analysis of impacts in terms of the location of the project site with respect to other existing and/or planned urban areas and in terms of timing of the availability of the proposed units against potential demand.

Should the proposed project be primarily utilized as a resort/condominium, it is not anticipated that proposed condominiums will have a significant direct impact upon development the tourism industry in the region. Nevertheless, there are significant implications of extending this use beyond those planned areas for which a substantial number of resort/condominiums have already been approved and which as yet have not been fully developed.

The EIS should then discuss these implications both in terms of location as well as timing.



DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT SHAFTER, HAWAII 96830

RECEIVED
JUL 1 1981

PELE, COLLINS & ASSOCIATES

FDDED-TV

24 June 1981

Hr. Brian H. Suzuki
Scit, Collins & Associates
745 Fort Street
Honolulu, HI 96813

Dear Hr. Suzuki:

Thank you for your letter identifying your intent to prepare an Environmental Impact Statement (EIS) for the proposed Kohala Makai Project in North Kohala, Hawaii, and for the opportunity to review the respective Environmental Assessment (EA) for this project. Based on our review, we provide the following comments:

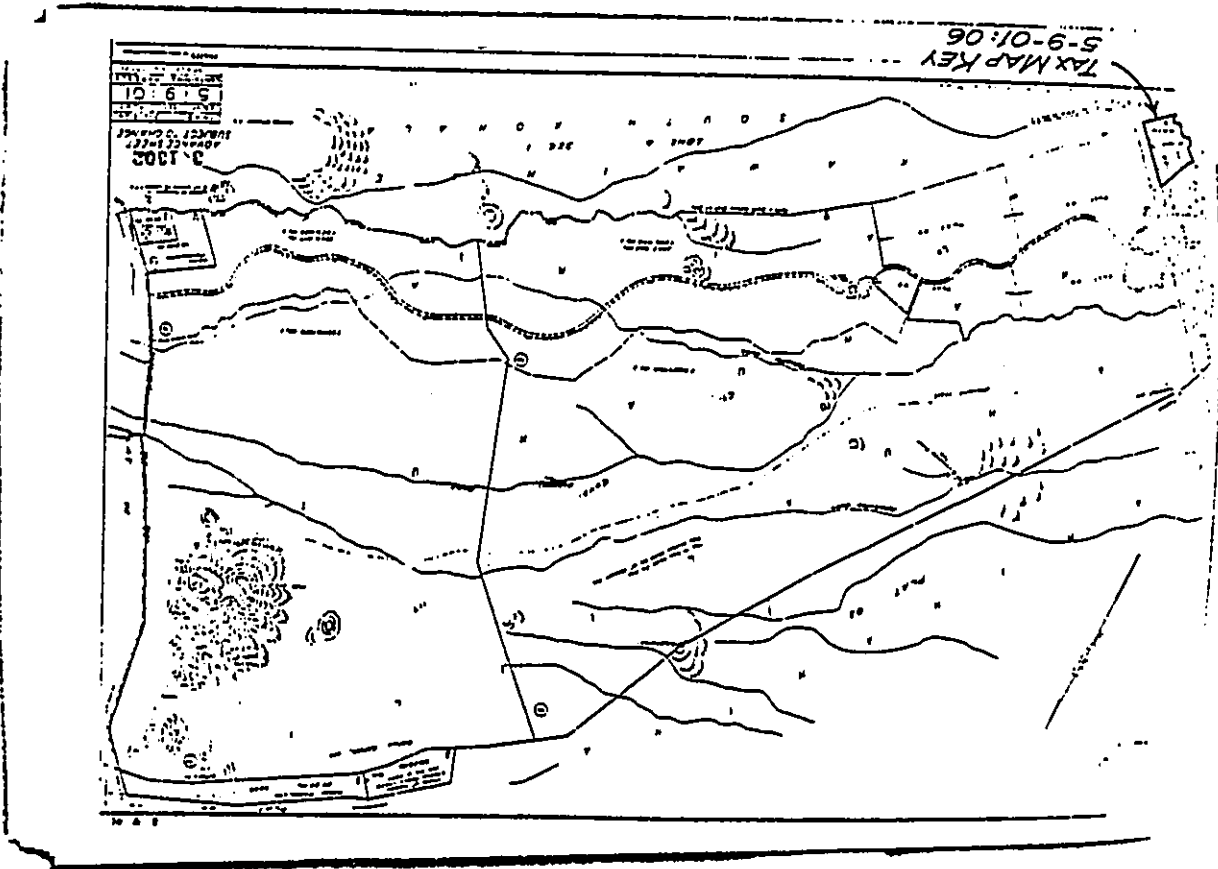
- a. No Department of the Army (DA) permit is required.
- b. A portion of the proposed development site is located in the coastal high hazard area or tsunami inundation area of Zone V15 designation, where the approximate 100-year tsunami elevation is 9 feet above the mean sea level. The 100-year event has a one percent chance of being equalled or exceeded in any given year. Most of the parcel site is not in any designated flood plain but rather in an area of minimal flooding of Zone C designation. Our evaluation of the flood hazards is based on the preliminary flood insurance study for the island of Hawaii prepared by the Federal Insurance Administration. We recommend that proposed structures be located outside of tsunami-prone areas whenever there is a practicable alternative. Any structure that is to be located in a V-numbered zone should be floodproofed by being elevated above the base flood level on adequately anchored pilings or columns. We do not recommend the use of fill for structural support.
- c. Other issues we would like to see addressed in detail in the EIS are that of the impacts of sewerage disposal to coastal waters and marine biological resources and the impacts of on-site drainage and erosion patterns due to land transformations.

We would also welcome the opportunity to review the project EIS when completed.

Sincerely,

R. H. CHIDING
Chief, Engineering Division

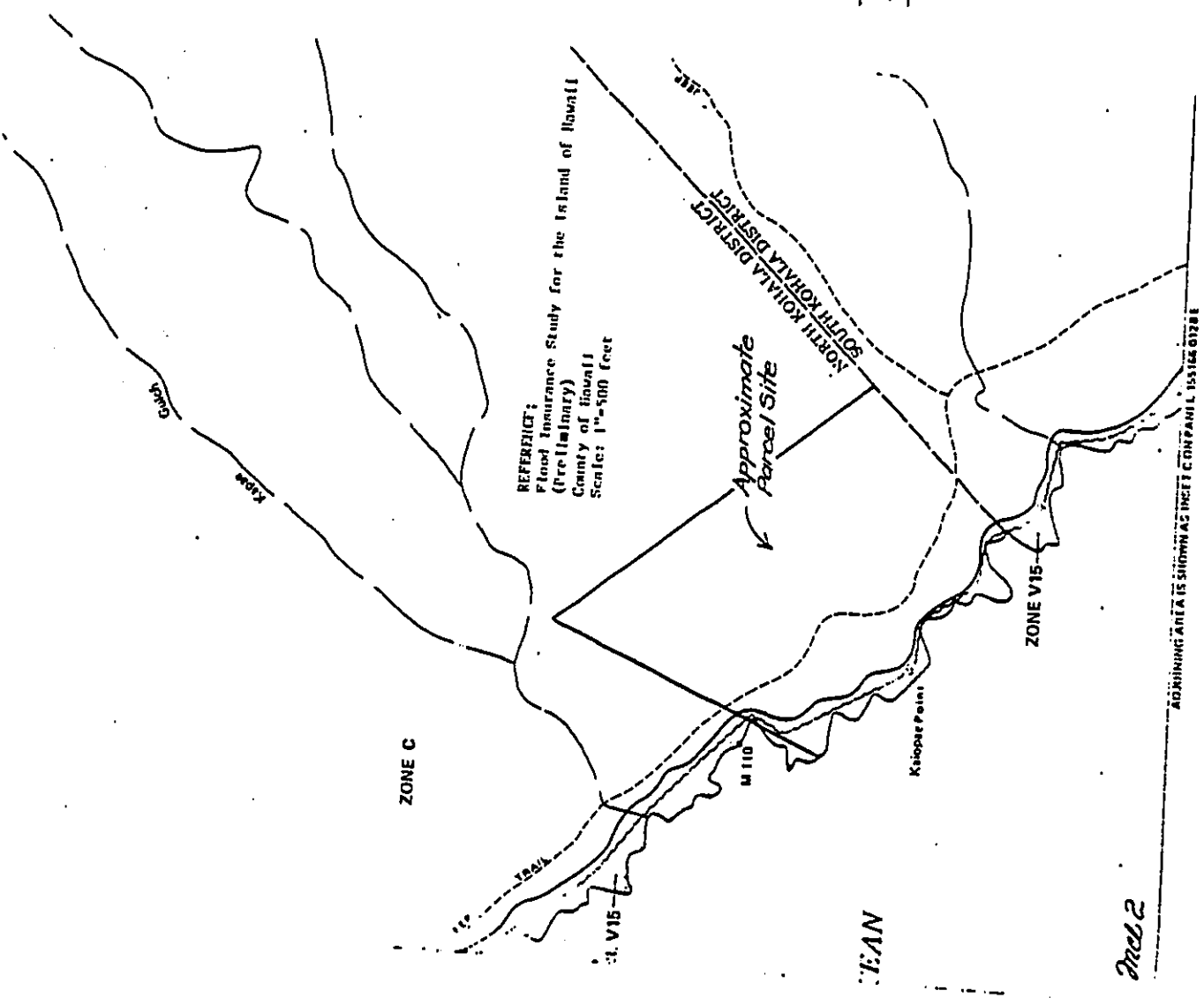
- 2 Incl
1. Tax Map Key
2. Approx Parcel Site

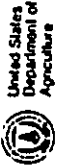


Sheet 1

EXPLANATION OF ZONE DESIGNATIONS

| ZONE | EXPLANATION |
|---------|--|
| A | Areas of 100-year flood; base flood elevations and flood hazard factors not determined. |
| AO | Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined. |
| AN | Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined. |
| A1-A30+ | Areas of 100-year flood, base flood elevations and flood hazard factors determined. |
| A99 | Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined. |
| B | Areas between limits of the 100-year flood and 300-year flood; areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Heavily shading) |
| C | Areas of minimal flooding. (No shading) |
| D | Areas of undetermined, but possible, flood hazards. |
| V | Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined. |
| V1-V10+ | Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined. |
| * | The numerals indicate the magnitude of difference between the 100-year and 10-year flood elevations. For numerals between 1-20, the difference is one half of the value; for values greater than 20, the difference is 10 less than the numeral shown. This information is used in establishing insurance rates. |
| —18— | 100-year tsunami or storm surge elevation line, with elevation in feet above mean sea level. |
| — | Zone boundary line |





Soil Conservation Service

P. O. Box 510004
Honolulu, Hawaii
96850

RECEIVED
JUN 15 1981
SOIL CONSERVATION SERVICE

June 15, 1981

Mr. Brian H. Suzuki
Belt, Collins & Associates
Fifth Floor, Hawaii Building
745 Fort Street
Honolulu, HI 96813

Dear Mr. Suzuki:

Re: General Plan Amendment - Kohala Makai I

We have reviewed the above-mentioned proposal and offer the following comments for your consideration.

The soils information presented in Section II.A. describes the general soil series. While the specific soil type on the proposed site is Kawaihae, very rocky, very sandy loam, 6-12 percent slopes, this mapping unit is underlain with hard Pahoehoe lava rock at about 33 inches. The depth of the layer ranges from 20 to 40 inches. Approximately 10 to 20 percent of the surface is made up of rock outcrops. There are five defined drainages crossing the area that have side slopes of up to 80 percent.

From the above-mentioned characteristics, the site has severe problems for grading activities, including a high erosion potential, depth to bedrock, sewage disposal and water pollution hazard during development. Landscaping will not be possible without a source of irrigation water because of the low rainfall in the area.

The last paragraph of Section I states, "The project's design will stress integration with the existing landscape and will be designed to harmoniously blend with the topography and vegetation inherent to the site." The rock outcrops, underlying Pahoehoe, and steep slopes create extremely difficult grading hazards which may require extensive blasting. This could result in a higher than expected amount of alteration of the existing landscape. Wind and water erosion hazards are very high because of the high winds in the area and the extensive grading that may be required. Previous grading and excavation work immediately to the south suffered severe wind erosion and dust problems that were extremely difficult to control. Even when adequate water for sprinkling was available dust was a problem. At present there is no source of water at the proposed site.

The vegetation adapted to and presently found on the site consists of buffelgrass and kiawe trees, neither of which lend themselves to landscaping purposes. Without a source of irrigation water, there is little possibility of establishing other types of vegetation.

Mr. Brian H. Suzuki

2

The potential for sediment pollution of the ocean is also very high. The maximum distance to the ocean from any point on the site is approximately 1,200 feet. The maximum distance to any defined channel is 350 feet. The soil in the area is one of the more erosive types on the Big Island. When this is added to the fact that there are five defined drainages crossing the site, the possibility of water pollution and potential limiting problems after grading need to be considered.

In view of the severe problems and limitations related to the soils and topography and lack of water on the site, we recommend that the following items be fully discussed in the environmental impact statement:

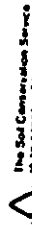
1. The amount of grading that would be needed because of slopes, rock outcrops, and underlying rock.
2. The low rainfall (5-10 inches per year) and the lack of an irrigation water source.
3. The high risk of erosion and sedimentation into receiving waters and erosion control measures to be used.
4. Potential risk of flooding after grading.
5. The severe limitations of the site for sewage disposal.

For more specific information, we suggest that you contact Mr. Edwin J. Sprague, District Conservationist at our Kameela Field Office. He is located in Room 6 of the Kameela Office Center, telephone 885-4107. His mailing address is: P.O. Box 1089, Kameela, HI 96743.

Sincerely,

JACK P. KAMAIZ
State Conservationist

cc: Jack Sprague, DC, Kameela FO



The Soil Conservation Service
is an agency of the

SCS-AS-1
2/79



Belt, Collins & Associates
 A division of Lynn Associates, Incorporated
 Engineers - Planners - Landscape Architects - Architects

945 Hahaione Hwy, 7th Floor, Honolulu, HI 96813 Telephone: (808) 531-2341 Telex: 12218732

July 27, 1981
 81AJ-394

Mr. Jack P. Kanalz
 United States Dept. of Agriculture
 Soil Conservation Service
 P.O. 5004
 Honolulu, Hawaii 96850

Dear Mr. Kanalz:

Proposed Kohala Makai I Environmental Impact Statement

At this time we wish to acknowledge receipt of your comments in regards to the proposed Kohala Makai I Environmental Impact Statement.

The EIS study will be addressing relevant issues associated with soils within the proposed development area. We also hope to examine water, sewage, drainage, and erosion and sedimentation concerns.

Sincerely,

Brian Amjadi

Brian H. Suzuki
 Project Planner

BMS:ghs

cc: Robert L. Cole, Kohala Makai I

Principal and Architect: James R. Bell, Frank H. Thibault, Frank E. Jones Jr., Raymond F. Cole, Paul F. Wallerstein Jr., Joseph V. Vito, Jr., Charles W. Buzza, Michael J. Gorman, Thomas F. Moore, Thomas P. Papadimitriou, Frank J. Walker, Michael J. Gorman, Thomas F. Moore, Thomas P. Papadimitriou, Frank J. Walker





Belt Collins & Associates
 A Division of Lyon Associates, Incorporated
 Engineers - Planners - Landscape Architects - Architects
 345 West Street Honolulu HI 96811 Telephone: (808) 531-1811 Telex: 02734723

July 27, 1981
 81AJ-395

Department of Agriculture
 1428 South King Street
 Honolulu, Hawaii 96814

Gentlemen:

Proposed Kohala Makai I Environmental Impact Statement

At this time we wish to acknowledge receipt of your comments in regards to the proposed Kohala Makai I Environmental Impact Statement.

The EIS study will attempt to address the water question as it pertains to the proposed development site. Experimental drilling, as done by Water Resources, Inc., has shown a potentially good source of high quality, fresh water near the 1,400-foot elevation above the proposed development. The EIS study will also be discussing alternatives for water reuse for the proposed development.

Sincerely,

Brian Suzuki

Brian M. Suzuki
 Project Planner

BMS:ghs

cc: Robert L. Cole, Kohala Makai I

Prepared/Reviewed: James R. Bell, Paul H. Brown, Frank E. Linn, Jr., Raymond F. Cunniff, P. W. Williams, Jr., Joseph A. Vetter, Jr., Geoffrey B. Miller, Michael B. Beck, Richard S. Abbe, Lawrence S. Agost, Albert S. C. Chang, Paul J. Cline, Gilbert E. Hannon, Abraham H. Katz, Frank P. Frank, Alan Y. Korman, Richard J. Linn, Thomas P. Nease, Thomas P. Piquandier, Peter J. Water

RECEIVED
JUN 10 1981

MIL COLLINS & ASSOCIATES

DENNIS K. COLE
Deputy Director

DEPARTMENT OF BUDGET AND FINANCE

STATE OF HAWAII

STATE CAPITOL

HONOLULU, HAWAII 96810

June 16, 1981

Mr. Brian H. Suzuki
Belt, Collins and Associates
745 Fort Street
Honolulu, Hawaii 96813

Dear Mr. Suzuki:

Thank you for your letter of May 22, 1981, requesting comments to be considered in the formation of an Environmental Impact Statement for the Kohala Hakai I Project.

I appreciate the opportunity to review the environmental assessment report relating to the proposed project. However, at this time, I have no specific comments or questions regarding the proposed Kohala Hakai I Project.

Very truly yours,
Jensen S. L. Ilee
JENSEN S. L. ILEE

Mr. Jensen S. L. Ilee
Department of Budget and Finance
State Capital
P.O. 150
Honolulu, Hawaii 96810

Proposed Kohala Hakai I Environmental Impact Statement

At this time we wish to acknowledge receipt of your comments in regards to the proposed Kohala Hakai I Environmental Impact Statement.

Sincerely,
Brian Suzuki
Brian H. Suzuki
Project Planner

BIS:ghs
cc: Robert L. Cole, Kohala Hakai I

July 27, 1981
BIAJ-392

Approved and Forwarded: James R. Bell, Director, Department of Budget and Finance, State of Hawaii
Approved: Dennis K. Cole, Deputy Director, Department of Budget and Finance, State of Hawaii
Approved: Robert L. Cole, Project Planner, Department of Budget and Finance, State of Hawaii

19 JUL 1981

VALERIE A. SIEFERMANN
MAJOR GENERAL
ADJUTANT GENERAL



STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
340 BUCKINGHAM ROAD, HONOLULU, HAWAII 96813

5 JUN 1981

ITEM:

Mr. Brian H. Suzuki
Belt, Collins & Associates
5th Floor, Hawaii Building
745 Fort Street
Honolulu, Hawaii 96813

Dear Mr. Suzuki:


Chapter 343, HRS,
Environmental Assessment/Determination Report

Thank you for providing us the opportunity to review your proposed project,
Kohala Makai Environmental Assessment/Determination report.

We have completed our review and have no comments to offer at this time.

Yours truly,

Valerie A. Siefermann
VALERIE A. SIEFERMANN
Major General, HAWG
Adjutant General


Belt, Collins & Associates
A Division of Lyon Associates, Incorporated
Engineers - Planners - Landscape Architects - Architects
5th Floor Hawaii Bldg, 745 Fort Street Honolulu, HI 96813 Telephone (808) 531-5343 Telex 4723022

Mr. Valentine A. Siefermann
Department of Defense
Office of the Adjunct General
Prince Kuhio Building
Honolulu, Hawaii 96813

Dear Mr. Siefermann:

Proposed Kohala Makai I Environmental Impact Statement

At this time we wish to acknowledge receipt of your comments in regards to the
proposed Kohala Makai I Environmental Impact Statement.

Sincerely,

Brian M. Suzuki
Brian M. Suzuki
Project Planner

BMS:ghs

cc: Robert L. Cole, Kohala Makai I

July 27, 1981
81AJ-398

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STATE OF HAWAII
DEPARTMENT OF EDUCATION
P. O. BOX 2400
HONOLULU, HAWAII 96813

June 8, 1981

OFFICE OF THE SUPERINTENDENT

CHARLES G. CLARK
SUPERINTENDENT



Belt, Collins & Associates
A Division of Lyon Associates, Incorporated
Engineers - Planners - Landscape Architects - Architects

545 Kalia Avenue, Suite 111, Honolulu, Hawaii 96813 Telephone (808) 531-3301 Telex 17339273

July 27, 1981
81A-396

Mr. Charles G. Clark
Superintendent
Department of Education
P.O. Box 2360
Honolulu, Hawaii 96804

Dear Mr. Clark:

Proposed Kohala Makai I Environmental Impact Statement

At this time we wish to acknowledge receipt of your comments in regards to the proposed Kohala Makai I Environmental Impact Statement.

Sincerely,

Brian Suzuki
Brian M. Suzuki
Project Planner

BMS:ghs

cc: Robert L. Cole, Kohala Makai I

Belt, Collins & Associates
Hawaii Building, 5th Floor
745 Fort Street
Honolulu, Hawaii 96813

Attn: Mr. Brian Suzuki

Dear Mr. Suzuki:

Our review of the proposed Kohala Makai project indicates that student enrollment generated can be accommodated by Kohala High-Elementary School. It is expected that approximately 5 to 20 K-12 students will be generated.

Should there be any questions, please contact Mr. Howard Lan at 737-5231.

Sincerely,

Charles G. Clark
CHARLES G. CLARK
Superintendent

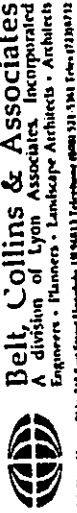
CFC:ll:jl

cc: Mr. James E. Edgington
Hawaii District

AN EQUAL OPPORTUNITY EMPLOYER

Prepared and printed by: James P. Bell, Paul H. Harris, Frank E. Linn, Jr., Raymond F. Cole, Paul P. W. Robinson, Jr., Joseph A. Votta, Jr., Gordon W. Bradley, Vincent J. Beck, Richard S. Albo, James S. Agard, Albert C. Chen, Paul H. Chen, Charles E. Harwood, John H. Hill, John E. Frank, Kenneth A. Allen, J. Barbara Michael, J. Thompson, Thomas P. Moore, Thomas P. Populizio, Perry J. White





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 A Division of Lyon Associates, Incorporated
 Engineers - Planners - Landscape Architects - Architects

1415 Pearl Harbor Blvd., Suite 200, Honolulu, HI 96813 Telephone: (808) 521-5341 Telex: 072349712

July 27, 1981
 81AJ-397

Melvin K. Koizumi
 Deputy Director for Environmental
 Health
 Department of Health
 P.O. Box 3378
 Honolulu, Hawaii 96801

Dear Mr. Koizumi:

Proposed Kohala Makai I Environmental Impact Statement

At this time we wish to acknowledge receipt of your comments in regards to the proposed Kohala Makai I Environmental Impact Statement.

The EIS study will attempt to address relevant water and sewage concerns.

Sincerely,

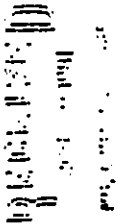
Brian Augustaki

Brian H. Suzuki
 Project Planner

BHS:ghs

cc: Robert L. Cole, Kohala Makai I

Principal and Associate: James P. Bell, Paul H. Harris, Fred E. Lane, Jr., Raymond J. Conroy, Paul W. Winkler, Jr., Joseph L. Verrill, Jr., Gordon W. Brady, William L. Beck, Richard S. Abe, Lawrence S. Agnew, Jr., Robert L. Frank, III, Thomas G. Glavin, E. Harmon, Edward H. Hahn, Frank H. Hahn, Alan T. Kautonen, Michael J. Lennert, Robert F. Palmer, Thomas P. Poppendieck, Perry J. White



GEORGE A. S. 31874
 HONOLULU, HAWAII



STATE OF HAWAII
 DEPARTMENT OF HEALTH
 P.O. BOX 3378
 HONOLULU, HAWAII 96801
 June 8, 1981

Mr. Brian H. Suzuki
 Belt, Collins & Associates
 745 Fort St.
 Honolulu, Hawaii 96813

Dear Mr. Suzuki:

Subject: Request for Comments on Proposed Environmental Impact Statement (EIS) for Kohala Makai Project, North Kohala, Hawaii

Thank you for allowing us to review and comment on the subject proposed EIS.

The proposed water and sewerage systems for the project must be addressed. Municipal water and sewerage systems are recommended for a project of this magnitude.

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,

Brian H. Cole

MELVIN K. KOIZUMI
 Deputy Director for
 Environmental Health

cc: Chief Sanitarian, Hawaii



Belt, Collins & Associates
 A Division of Lyon Associates, Incorporated
 Engineers - Planners - Landscape Architects - Architects

100 East Hawaii Blvd., Suite 210, Honolulu, Hawaii 96813 Telephone: (808) 531-5151 Telex: 472304 BTZ

July 27, 1981
 81AJ-393

Mr. Susumo Ono
 Chairman
 Department Land and Natural Resources
 P.O. Box 521
 Honolulu, Hawaii 96809

Dear Mr. Ono:

Proposed Kohala Makai I Environmental Impact Statement

At this time we wish to acknowledge receipt of your comments in regards to the proposed Kohala Makai I Environmental Impact Statement.

We have conducted a historic/archaeological survey of the proposed development area. A summary of the results of the survey will be discussed in the EIS study.

The EIS study will include a preliminary site plan. The preliminary plan does recognize relevant shoreline setbacks as outlined in the SPA rules and regulations for the County of Hawaii. The study will also discuss sewage, drainage, water, erosion, and sedimentation concerns.

Sincerely,

Brian M. Suzuki

Brian M. Suzuki
 Project Planner

BMS:ghs

cc: Robert L. Cole, Kohala Makai I

Company and Services: James B. Bell, Paul H. Thomas, (Paul E. Lyons, Jr., Raymond F. Cane, Paul F. W. Anderson, Jr., Joseph A. Verris, Jr., Stephen W. Bradley, Michael J. B. Richards, John Lawrence S. Adams, John S. C. Lee, Donald H. Chang, Edmund L. Harrison, Edward H. Holt, Frank J. Kanda, Alan J. Korman, Michael J. Tomczak, Thomas F. Hines, Thomas P. Papadimitriou, Peter J. Weber)



Belt, Collins & Associates
A Division of Lyon Associates, Incorporated
Engineers • Planners • Landscape Architects • Architects

345 Hawaii Street, Honolulu, HI 96813 Telephone: (808) 531-2343 Telex: 07220232

July 27, 1981
81AJ-391

Mr. Hideto Kono
Director
Department of Planning and
Economic Development
P.O. Box 2359
Honolulu, Hawaii 96804

Dear Mr. Kono:

Proposed Kohala Makai I Environmental Impact Statement

At this time we wish to acknowledge receipt of your comments in regards to the proposed Kohala Makai I Environmental Impact Statement.

The study recognizes that the proposed development will be located along the coastline and would be subject to Coastal Zone Management review. We hope the study will address relevant CZM policies.

Sincerely,

Brian Suzuki

Brian M. Suzuki
Project Planner

BMS:ghs

cc: Robert L. Cole, Kohala Makai I

This report was prepared by Belt Collins & Associates, Inc., a Division of Lyon Associates, Incorporated, 345 Hawaii Street, Honolulu, HI 96813. The project was funded by the Department of Planning and Economic Development, Honolulu, HI. The project was prepared by Brian M. Suzuki, Project Planner, and Robert L. Cole, Project Planner, under the supervision of Robert L. Cole, Project Planner. The project was prepared by Robert L. Cole, Project Planner, and Robert L. Cole, Project Planner, under the supervision of Robert L. Cole, Project Planner. The project was prepared by Robert L. Cole, Project Planner, and Robert L. Cole, Project Planner, under the supervision of Robert L. Cole, Project Planner.

RECEIVED

JUN 24 1981

BELT, COLLINS & ASSOCIATES

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

June 22, 1981

STP 8.7356

Mr. Brian M. Suzuki
Belt, Collins & Associates
5th Floor, Hawaii Building
745 Fort Street
Honolulu, Hawaii 96813

Dear Mr. Suzuki:

EIS Preparation Notice
Kohala Makai Project
North Kohala, Hawaii

Thank you for the opportunity to participate in the development of your EIS.

We suggest the following topics of concern to us be discussed in your statement.

1. A thorough discussion of total development potential of those properties adjoining and opposite the project site.
2. Discuss access design features, such as acceleration-deceleration and left-turn storage lanes that will probably be required for this development.

Very truly yours,

Ryokichi Higashionna
Ryokichi Higashionna
Director of Transportation



Belt, Collins & Associates
A division of Lyon Associates, Incorporated
Engineers - Planners - Landscape Architects - Architects

345 First Hawaiian Bldg., 745 Fort Street, Honolulu, HI 96813 Telephone: (808) 521-5361 Telex: 02280712

July 27, 1981
81AJ-387

Mr. Ryokichi Higashionna
Director of Transportation
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Higashionna:

Proposed Kohala Makai I Environmental Impact Statement

At this time we wish to acknowledge your comments in regards to the proposed Kohala Makai I Environmental Impact Statement.

We will be examining traffic and transportation concerns for the study. These will include relevant access improvements and traffic circulation and generation in regards to the proposed project.

Sincerely,

Brian Suzuki

Brian M. Suzuki
Project Planner

BMS:ghs

cc: Robert L. Cole, Kohala Makai I

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DEPARTMENT OF PUBLIC WORKS

STATE OF HAWAII 25, AUPUNANI STREET, HONOLULU, HAWAII 96813

RECEIVED
NOV 18 1981
EDWARD K. HARADA
CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS
STATE OF HAWAII

November 17, 1981

Mr. James R. Bell
Bell, Collins & Associates
Hawaii Ridge, Suite 418
745 Fort Street
Honolulu, HI 96813

SUBJECT: LUXURY CONDOMINIUM BY KOHALA HAKAI I
WAIKA, NORTH KOHALA, HAWAII
TRK: 5-9-01:6

We have reviewed the environmental amendment and we have no objections or comments to offer.

If your application is approved, we want to review the drainage study, grading plan and the access to Akoni Pule Highway.

Edward K. Harada
EDWARD HARADA
Chief Engineer

cc: Planning Dept.

November 23, 1981
81-488

Mr. Edward K. Harada
Chief Engineer
Department of Public Works
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Ed:

Proposed Kohala Hakai I
Environmental Impact Statement

Thank you for your letter regarding the environmental assessment/
environmental impact statement preparation notice for the Kohala Hakai I
condominium project. We understand that you have no comments to offer
at this time. We will submit a drainage study, grading plan, and
highway access plan to your office for review if the general plan
amendment is approved.

Sincerely yours,

James R. Bell
James R. Bell

AYK:ok

cc: Robert L. Cole

245 North Kukui Street, Honolulu, Hawaii 96817, Telephone (808) 537-5966

RECEIVED
JUL 1 1981

AMERICAN LUNG ASSOCIATION of Hawaii P.O. BOX 8, SEASIDE

Mr. Brian H. Suzuki
Belt, Collins & Associates
745 Fort Street
Honolulu, Hawaii 96813

Dear Mr. Suzuki:

Subject: Kohala Makai I Project.

Thank you for contacting us with regard to EIS preparation for the subject project. At this time we have the following suggestions for analyzing the impacts which are of particular interest to our Association.

1. A thorough analysis of the project's impact on traffic in the area should be included. This analysis should address both short and long term impact on peak-hours and average daily traffic volumes as well as highway service level. Particular attention should be paid to intersections.
2. An air quality analysis consisting of at least the following should be incorporated:
 - a. An analysis of the effect on the level of regulated pollutants during the construction period.
 - b. An analysis of the effect of increased traffic in the project area on the concentrations of regulated pollutants. The cumulative impact of this project, other approved projects, and existing sources of traffic should be assessed. Impacts should be reported as increased emissions and ambient concentrations. Highway intersections are generally considered 'hotspots' for pollutant concentrations and should receive special attention.
 - c. The indirect impacts on air quality resulting from increased fuel combustion to meet the increased electrical demand of the project should also be assessed.
 - d. Finally, any air quality impact associated with solid waste

May 29, 1981

disposal should also be examined and reported.

Sincerely yours,

James W. Harrow
James W. Harrow
Director
Environmental Health

JWH:jm
CI/L003



Belt, Collins & Associates
 A Division of Lyon Associates, Incorporated
 Engineers • Planners • Landscape Architects • Architects

215 East Street, Honolulu, HI 96813 Telephone: (808) 531-5941 Telex: 1732023

July 27, 1981
 BIAI-400

Mr. James H. Morrow
 Director
 American Lung Association of Hawaii
 245 North Kukui Street
 Honolulu, Hawaii 96817

Dear Mr. Morrow:

Proposed Kohala Makai I Environmental Impact Statement

At this time we wish to acknowledge receipt of your comments in regards to the proposed Kohala Makai I Environmental Impact Statement.

We will attempt to address your concerns regarding ambient air quality.

Sincerely,

Brian Suzuki

Brian M. Suzuki
 Project Planner

BMS:ghs

cc: Robert L. Cole, Kohala Makai I


Principal: James E. Bell, Fred H. Hanks, Frank E. Jones, Jr., Raymond J. Cox, Paul F. Waldstrom, R. Joseph Verra Jr., Gordon W. Bradley
 Vincent, Bert Richard, Fred Johnson, S. James, Alex S.C. Chen, Donald J. Chang, Thomas E. Howard III, John Frank, Frank, Alan Y. Kamae
 Michael J. Lennert, Thomas J. Moore, Thomas P. Popowich, Perry J. White

RECEIVED JUL 29 1981

RECEIVED
JUN 2 1981

HAWAIIAN TELEPHONE
ETTS

BELT, COLLINS & ASSOCIATES

 **Belt, Collins & Associates**
A Division of Lyon Associates, Incorporated
Engineers - Planners - Landscape Architects - Architects
Sub Office Location: 715 Fort Street, Honolulu, HI 96813 Telephone: (808) 531-5141 Telex: 172340J13

July 27, 1981
BIAJ-390

Mr. Russ K. Saito
Network Engineering Director

Network Engineering Director
Hawaiian Telephone
P.O. Box 2200
Honolulu, Hawaii 96841

June 19, 1981

Mr. Brian M. Suzuki
Belt, Collins & Associates
5th Floor, Hawaii Building
745 Fort Street
Honolulu, Hawaii 96813

Dear Mr. Saito:

Proposed Kohala Makai I Environmental Impact Statement

Environmental Assessment for the
Kohala Makai Project, North Kohala, Hawaii

At this time we wish to acknowledge receipt of your comments in regards to the proposed Kohala Makai I Environmental Impact Statement.

Thank you for allowing us to comment on the subject Environmental Assessment. We have no objections to the project, or any significant issues to raise but would like to have the following concerns addressed in the Environmental Impact Statement.

Thank you for alerting us of the telephone company in regards to providing service for the proposed project. Should the project be constructed, the developer would be working with Hawaiian Telephone officials to obtain telephone service.

Sincerely,

1. The Environmental Assessment states that telephone service is available to the project site. An overhead telephone cable on Kamaha-Kawahae Road does front the project site. Its capacity, however, is inadequate to provide the service we anticipate the proposed 500-550 unit luxury condominium development will need. A new overhead feeder (transmission) cable will be required on existing poles from our Kawahae Switching Center to the project site, a distance of approximately 23,000 feet.

Brian Suzuki
Brian M. Suzuki
Project Planner

BMS:ghs

cc: Robert L. Cole, Kohala Makai I

2. Telephone distribution facilities within the project site will be constructed upon satisfactory provision of appropriate easements, raceways, conduits, etc., by the developer.
3. Dependent on forecasted demands for telephone services, the developer may be required to advance a refundable amount equal to the total estimated construction cost. This is as required by our tariffs.

If you have any questions about our comments, please call Richard Mau, Engineering and Construction Staff Manager, at 546-1650.

Sincerely,

R. K. Saito

Prepared by: James R. Bell, Paul M. Harris, Frank E. Lyons, Jr., Raymond F. Cole, Paul F. Robinson, Jr., Joseph W. Smith, Jr., Gordon W. Butler, Vincent L. Beck, Richard S. Alie, Lawrence S. Agre, Allen S. C. Chen, Donald H. Cheng, Clifford F. Hanson, Edmund H. Holt, Frank J. Jones, Allen J. Johnson, Victor J. Janssen, Thomas F. Moore, Thomas F. Papadimitriou, Perry J. White


November 13, 1981
81-442

Mr. Alva K. Hiramura, Manager
Engineering Department
Hawaii Electric Light Company, Inc.
P. O. Box 1027
Hilo, Hawaii 96720

Dear Mr. Hiramura:

Thank you for your letter of November 5, 1981, responding to our letter of October 30, 1981, regarding the environmental impact statement for the proposed Kohala Hakai I project. We appreciate your counsel on the availability of electric service to the project site. We will be in contact with you on the required specific facilities if the project is approved by Hawaii County.

Sincerely yours,


James R. Bell

JRB:gt


November 13, 1981
81-442

Mr. Alva K. Hakarura, Manager
Engineering Department
Hawaii Electric Light Company, Inc.
P. O. Box 1027
Hilo, Hawaii 96720

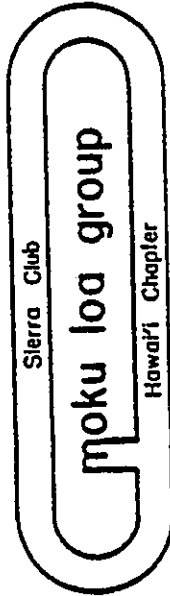
Dear Mr. Hakarura:

Thank you for your letter of November 5, 1981, responding to our letter of October 30, 1981, regarding the environmental impact statement for the proposed Kohala Makai I project. We appreciate your counsel on the availability of electric service to the project site. We will be in contact with you on the required specific facilities if the project is approved by Hawaii County.

Sincerely yours,


James R. Bell

JRB:qk



P.O. Box 1137, Hilo, HI 96720

August 10 1980

Mr. Perry White
Bell Collins and Associates
745 Fort St #514
Honolulu, Hawaii 96813

Dear Mr. White

The Moku Loa Group of the Sierra Club wishes to be a consulted party on the EIS for the Condominium Development at Waika North Kohala, Hawaii

We request the EIS address the following issues

1. Water Supply to the project including source, transmission lines, and capacities. Will public money be required to supply water to the site?
2. Waste water disposal and sewage treatment facilities
3. Public access to the area of the coast including traditional fishing rights and grounds.
4. Historical site and archeological study of the development area. This should include preservation of any historical sites on the property.

We would appreciate receiving a copy of the EIS when completed.

Thank you

George M. Winsley

November 17, 1981
61-457

Mr. George H. Winsley
Moku Loa Group
Sierra Club, Hawaii Chapter
P. O. Box 1137
Hilo, Hawaii 96720

Dear Mr. Winsley:


On August 10, 1980, you wrote our office with issues you believed should be discussed in the Environmental Impact Statement (EIS) for the Kohala Makai I development at Waika, North Kohala, Hawaii.

Environmental assessment/preparation notices for this project were sent out with requests for comments in May 1981. Your earlier comment letter was not discovered in the files until we began final assembly of the material to be included in the draft EIS. I hope you will forgive our delay in responding to your letter. The issues you asked to see addressed in the EIS -- water supply, sewage treatment and disposal, public access, and historic/archaeological resources -- will be covered in that document.

The way the EIS regulations are structured, all persons and organizations who have requested consulted party status do not automatically receive a copy of the document. Instead 60 copies are submitted by the applicant to the Environmental Quality Commission (EQC). It, in turn, distributes the copies to various government agencies, citizen groups, and public libraries. You may write the EQC and ask to be placed on the distribution list for this EIS. If you are not on its list, you may have to read the copy of the EIS that is sent to your local library by EQC.

Thank you again for your letter concerning the proposed project. We look forward to any further comments you may wish to make once the draft EIS has been published.

Sincerely yours,


James R. Bell

AVK:jk

cc: Robert L. Cole

RECEIVED
JUN 29 1981

In Re: MTE, CONURS & ASSOCIATES
Box 1572
Kekaha, HI. 96750
26, 1981

Mr. Brian M. Suzuki
Belt, Collins & Assoc.
745 Fort St., 5th Floor Hawaii Bldg.
Hon. HI 96813

Proposed Kohala
at

Dear Mr. Suzuki:

Mahalo for including us in your EIS study and sending a copy of the Environmental Assessment for Kohala Makai I. I trust that this letter will be just barely within the prescribed time period. I received your 5/26 letter on 5/28.

Specific questions, issues and topics which Na Ala Hele would like addressed in your EIS include:

1. Will more condominium units near to the South Kohala area be beneficial to the Big Island's economy? Condominiums pose additional competition to hotels which are presently struggling to keep occupancy rates at a profitable level. Many of the jobs offered by presently operating hotels are unstable, casual and/or part-time. In terms of employment for our residents, another condominium will not offer significant numbers of employment opportunities and possibly could harm employment at hotels which lay-off workers when business is poor. 6,970 condominium units have already been proposed for the South Kohala area. The major resort areas of Anaehe'omalu and Kalanulua have not yet opened for business, nor have they constructed their already approved condominium units. Those major resort areas could be more than sufficient to accommodate the tourist traffic which has been on the decline. "However, with the downturn in tourism last year (1980) and an expansion of 4,000 rooms in the hotel inventory, occupancies have plunged to their lowest levels in 10 years....The lowest occupancy rates for any area were found in Hilo - an average 37.1%....Kona's occupancy rate declined from an average 77.4% (1979) to 67.1% (1980)...." (Source: "Hawaii in 1980 - A Recap", First Hawaiian Bank's Economic Indicator, April 1981) Already existing and approved hotels (and their employees) cannot afford the added competition of more condominium units.
2. Will shoreline public access provisions be required of the developers as a condition to approval of the project? Are there any ancient mauka-makai trails in the project area?
3. Considering the surprising lack of archaeological sites found in past surveys and the signs of erosion evident on the subject property, could the project area be within a flood plain? Being a kama'aina to the Kohala district, I have seen dangerous floods occur occasionally along the Akoni Pule Hwy.
4. Obviously sewerage and water system plans need to be detailed. If public water systems are to supply Kohala Makai I, is that fair to current water users in west Hawaii who commonly are required to curtail water usage after less than a year of drought? Wouldn't it be wise to develop additional public water systems prior to further committing public water to new projects?
5. Could you tell me what an "agricultural suitability rating of VIII" in? Does the lack of water availability to the land affect the agricultural rating given to it?

2.

How affordable will the housing be at Kohala Makai I? There continues to be increasing needs for affordable housing among middle and lower income people in west Hawaii. North Kona is a good example of how plentiful condominium units do not ease the housing shortage. North Kona lead all other districts in the State in population growth between 1970 and 1980. (U.S. Census 1980) Do you have any statistics on the number of condominium units that are constructed in North and South Kona?

Mahalo for your time.

Sincerely,

Deborah Chang Abreu
President, NA ALA HELE

June 30, 1981
HIAJ-337

HIA ALA IIELE
P.O. Box 1572
Kealahoua, Hawaii 96730

Attn: Ms Deborah Chang Abreu
Dear Ms Abreu:

Kohala Makai I, EIS

Thank you for your recent response to the EIS study for the proposed Kohala Makai I project. In response to your questions for the EIS study:

1. Your concern about additional condominium units near the South Kohala area will be addressed through a market study analysis that was recently completed. We hope to incorporate the data and analysis from the market study into the EIS. The overall goal of the proposed development is not to compete with hotels in the South Kohala region. Rather, the proposed project will be primarily geared to attract permanent residents.
2. Our proposed development plan for the site indicates a public access point to the coastline. We will be discussing with Hawaii County the nature of shoreline public access regulations as they affect this property.
3. Your environmental concerns regarding flood plains, sewerage, and water will be discussed in the EIS study.
4. The agricultural suitability rating, according to the U.S.D.A. Soil Conservation Service, is 'VIs'. This class of soil, according to the Soil Conservation Service, has "severe limitations that make them generally unsuited to cultivation." The subclass 'S' rating shows that the soil is limited mainly because it is shallow or stony.

Thank you for your comments. We hope that we have clarified some of your questions.

Sincerely,



Brian H. Suzuki

BHS:ghs
cc: Robert L. Cole

Na Ala Hele
P.O. Box 1572
Kealahou, HI 96750
July 15, 1981

RECEIVED
JUL 17 1981

Mr. Brian M. Suzuki
Belt, Collins & Assoc.
745 Fort St., 5th Floor Hawaii Bldg.
Hon. HI 96813

Dear Mr. Suzuki:

Thank you for your letter of June 30 which briefly commented on some of my questions in my letter of June 26, 1981.

No doubt the proposed Kohala Makai I project does not intend to harmfully compete with hotels in the South Kohala district. However, as a planning consultant, is it not your task to surmise the anticipated impacts of the proposed project in addition to its intentions? While the proposed project would be "primarily geared to attract permanent residents", isn't there sufficient need for affordable housing among permanent residents presently residing on the Big Island to merit giving priority to the housing needs of these permanent residents?

Your comments did not address my question regarding how affordable Kohala Makai I's units would be to the low and moderate income group. I have enclosed a copy of a proposed Hawaii County Resolution concerned with affordable housing needs in Kona. It is my belief that very similar housing needs exist in the Kohala districts.

Will the EIS include projections of jobs (numbers and descriptions) that would result from Kohala Makai? Can you suggest sources for statistics on the number of condominium units constructed in Big Island districts?

As for shoreline public access provisions, would a fisherman be able to walk along the entire coastline effected by Kohala Makai, circumventing those rocky shorelines that are difficult to walk across?

Mahalo for your assistance in these inquiries.

Sincerely,

Deborah Chang Abreu
Deborah Chang Abreu
President, NA ALA HELE


PROPOSED RESOLUTION REGARDING AFFORDABLE HOUSING

The Planning Commission has just held a public hearing on a draft Resolution submitted to it by Mayor Waterhouse. The Mayor intends to submit this Resolution to the County Council for appropriate action. The Resolution states, after the appropriate "whereas" the following:

"NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE COUNTY OF HAWAII that the production of a sufficient number of housing units which are affordable by low and moderate income households shall have the highest priority among all development types particularly in the Kona area; and
"BE IT FURTHER RESOLVED that all appropriate departments and commissions of the County of Hawaii be requested to review and revise as necessary their respective rules, regulations, procedures, and practices to aid in reducing the cost of housing, particularly in the Kona area, and that the highest priority be given to projects which shall have the highest priority in their respective operations;...

The County Administration will be submitting to the County Council specific ordinances that deal with the housing issue. These will deal with water allocation, land use and possible assessment.

.....
If you know of anyone who would be interested in receiving our Newsletter, please send their name(s) to us or call us at 339-3336.


SOLUTIONS
HAWAII LEeward PLANNING CONFERENCE
50 SOUTH KALANANAKU, HONOLULU, HI

RECEIVED
PAID
HAWAII LEeward PLANNING CONFERENCE

Deborah Chang Abreu
P.O. Box 1873
Kealahou, HI 96750

DANIEL K. AKAKA
SECOND DISTRICT, HAWAII
COMMITTEES:
APPROPRIATIONS
COMMERCE
AGRICULTURE,
FOREIGN AFFAIRS,
AND RELATED AGENCIES
TREASURY,
POSTAL SERVICE,
GENERAL GOVERNMENT
TOURISM CAUCUS

RECEIVED
JUL 8 1981

Congress of the United States
House of Representatives
Washington, D.C. 20515

July 6, 1981

Mr. Brian Suzuki
Belt, Collins & Associates
5th Floor Hawaii Building
745 Fort Street
Honolulu, Hawaii 96813

Dear Mr. Suzuki:

Thank you for the opportunity to express any concern I may have on your proposed Kohala Makai project.

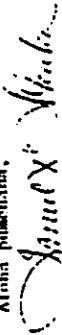
The Chapter 363, HRS, Environmental Mental Assessment/Determination report prepared by the County of Hawaii Planning Department which you provided me is quite comprehensive and enumerated the issues which need to be addressed quite well. However, partly in reiteration and partly in addition, I would appreciate your considering the following issues:

1. The impact of the proposed project on agriculture and the availability of land for other than luxury housing.
2. The impact of the proposed development on the availability of water, particularly for agricultural irrigation.
3. The social impact of the proposed project.
4. The issue of native tenant rights, if any.
5. Public access to the shoreline.

I also note that the County report refers to the proposed project as Kohala Makai I, underscore added. Does this mean that the proposed project is the first of a series?

Thank you again for this opportunity to comment on your proposed project.

Aloha pumehana,



DANIEL K. AKAKA
Member of Congress



Belt, Collins & Associates
A Division of Lyon Associates, Incorporated
Engineers - Planners - Landscape Architects - Architects

1415 Fort Street, Honolulu, HI 96813 Telephone (808) 531-3341 Telex 171747

July 27, 1981
81AJ-384

Representative Daniel K. Akaka
Congress of the United States
House of Representatives
Washington, D.C. 20515

Dear Congressman Akaka:

Proposed Kohala Makai I Environmental Impact Statement

Thank you for your comments on the proposed Kohala Makai I Environmental Impact Statement Preparation Notice. We hope to be addressing your concerns in the EIS study.

At this time we would like to acknowledge receiving your comments. According to the developers, the name Kohala Makai I was chosen because the project is located in the Kohala area on the makai side of the Kawaihae-Haikona Road and, it is the first parcel immediately adjacent to the North Kohala District boundary heading towards Mahukona. The project is not intended to be the first in a series of urban development.

Sincerely,



Brian M. Suzuki
Project Planner

BMS:ghs

cc: Robert L. Cole, Kohala Makai I

Prepared by: Brian M. Suzuki, Project Planner
Checked by: Robert L. Cole, Project Planner
Reviewed by: Thomas F. Hines, Thomas F. Populacion Perry J. White
Approved by: Daniel K. Akaka, Member of Congress
Date: July 27, 1981

RECEIVED
JUN 29 1981

MIT. COLLINS & ASSOCIATES

Box 155
Hawi, HI 96719
June 25, 1981

Mr. Brian Suzuki
Bolt Collins & Associates
745 Fort Street
Honolulu, HI 96813

Dear Mr. Suzuki:

In order to provide input for the EIS for Kohala Makai I, I visited the site on the afternoons of June 21 and 22. I would like to describe the land/ocean features and then request EIS features based on these observations.

On the property itself a sign describes this as a development by Hilton Head.

THE SITE--LAND

One of the striking features of the property is its composition of rock and virtual red dust. Technically these are called Kawaihae "red desert" soils. Two hills near the highway dominate the property. A rutted and well used dirt road enters, turns and goes up the coast. The shoreline is dramatic: cascading boulders and cliffs.

High land dominates almost half the property. The hills rise some 20 feet above the highway. The soil is loose and rusty in color, and the high land is strewn with reddish rocks. In midafternoon a breeze from the north stirred dead kiawe and dry grass. By late afternoon it was a wind of 15 knots blowing offshore.

The rutted road semi-circled the property and provided several access points to shore. Although the property was not littered, here and there were traces: an Olympia beer can, paper plates, a love's breadwrapper, a grill for cooking, a can of Jack mackerel, nipi shells on high land, and a can of Western Family Iced Tea. These tracings indicated that this was a much frequented local fishing site.

I observed a part-time fisherman leaving the property in a truck, and encountered a Japanese fisherman, about 50 years old, from Honolulu. He was fishing with his sons. He said the place was called "Pancake Line." He and his sons planned to camp. He said he caught here menpacht,

Kohala Makai (2)

manoa, mii, papio and ulua. He said that "essentially everybody" fished here. When advised of possible condominiums in the area, he said, "I know we're going to lose our fishing spot. I know they won't let us come this side."

The coast itself represented a geological transition ground, violent, between the low lying lava of South Kohala and the bluffs of North Kohala. Vertical slabs jutted in some places 200 feet from shore out to ocean; the grain of the earth had lifted. Such escarpments formed constant small bays from south to north. At the shoreline the drop in places was over 50 feet, sheer. More often it was 25 feet. Boulders seemed to have been flung at the coast. It would have been impossible to hike along these rocks. Obviously the main access was the dirt road, and one had to stop at points along it and then go shoreward.

THE SITE--OCEAN

Entry into the ocean confirmed the popularity of the spot for local fishermen. Among the rocks were bits of line, a portion of an Hawaiian throw net, and at a far point, fishing-pole holders had been cemented into the rock.

Underwater, coral and fish of many varieties abounded. Surgeon fish were prominent, including maiko, kolo, pakuiku, paiani, yellow tang and sailfin tang. In the surge zone were genus, api, kupipi, himalea and wrasse. There were a fair number of butterfly fish and of parrot fish. Other marine life included papio, eel, puffer, a school of 50 or more manini, manoa, crown of thorns starfish, starfish, and triggerfish.

The bottom varied from sandy or scoured places, to fields of coral, to occasional boulders. It dropped to 40 feet near shore. The rock outcroppings, seen underwater, gave the appearance of sea avenues. About half the coral was live, perhaps half dead. The surge among rocks may have killed some coral. According to a professional-quality diver who accompanied, there were "striking canyons," in general "lots of coral growth," and "the visibility underwater was 75 to 100 feet."

The water's edge sheltered additional marine life: wana, seaweed, black crab, pipipi, opihii, and small manoa and manini in tidepools.

EIS COMMENTS

I would like to see the EIS:

1. Address the actual water quality at the coastal site. Is this actually class A or class AA water? Please list marine species.

Kohala Makai (1)

2. Discuss adverse impacts on marine life and coastal water. Urbanization. Siltation. Pesticide and fertilizer runoff. The red soil will of course be the major cause of siltation, resulting from "soil erosion" as described in the County Assessment and from wind. Water pollution and reef degradation from such sources are discussed in "Hawaii Water Resources Regional Study" (1975).

3. Discuss visual pollution.

The unusual hilly topography creates overbearing height problems along the highway. To the extent that the developer may try to mitigate these by "earth moving," the water pollution increases.

Shoreline condominium development along the half-hour drive to scheduled State historical parks in North Kohala may diminish their attractiveness and even their sense of authenticity.

4. Discuss access, in all its complexity.

a) Due to the chaotic shoreline here, I believe access provisions would correspond to Hawaii Revised Statutes §§115-5:

However, in areas of cliffs or areas where the nature of the topography is such that there is no reasonably safe transit for the public along the shoreline below the private property lines, the counties by condemnation shall establish along the makai boundaries of the property lines public transit corridors which shall not be less than six feet wide.

b) Even if access is provided, the deprivation as perceived by shoreline fishermen will be a social cost. There will be a perceived loss in sense of privacy, space and local character.

That this is a much frequented shoreline fishing spot has been documented in "Hawaii Water Resources Regional Study, Fish and Wildlife." The study seems to assert that, annually, 1,270 fishermen use the region inclusive of South Kohala and about 42,000 man-days per year fishing in the region (p. 350). However, most of South Kohala's coast has already been committed to urban development.

c) Some estimate could be made as to whether low-income Japanese Hawaiian and Filipino shoreline fishermen will use this spot after luxury condominiums and/or residences and their primarily Caucasian occupants have arrived. This is an interesting question. Access may be physically provided but may be subtly and in fact denied. In this case, has HRS §115 been violated?

Thank you.

Sincerely,

Judith Graham

June 30, 1981
UIAD-336

Ms Judith Graham
Box 155
Hawi, Hawaii 96719

Dear Ms Graham:

Kohala Makai I, EIS

Thank you for your comments regarding the EIS study for the proposed Kohala Makai I project. Your description of the land and ocean characteristics of the site was thorough and informative. The following is in regards to your concerns:

1. In regards to the coastal waters off of the site, the waters have been classified by the State of Hawaii as Class A waters. We will be conducting a marine life and coastal waters survey for the EIS and will incorporate the findings into the draft EIS. We hope, through this survey, to identify any adverse impacts on marine life and coastal waters.

2. We recognize that during the construction period for the proposed Kohala Makai I there will be certain runoff associated with construction activity. We do not, however, expect siltation to be a major problem once all construction is completed. We will, in the EIS, be discussing certain mitigation measures to minimize the long term and short term impact of siltation and runoff.

3. We will be addressing the visual impacts of the proposed development.

4. We would expect that, if public transit corridors were to be provided along the makai boundaries of the property, the County would, by condemnation, have to establish such access. Our proposed development plan for the site indicates a location for a public right-of-way to the coastline. We will be discussing with Hawaii County shoreline public access regulations as they affect this property. While we recognize that there will be a perceived social impact on by shoreline fishermen, we would like to also point out that the proposed public access would allow shoreline fishermen to continue to frequent the area without illegally trespassing onto private property.

We will, to every extent possible, address those concerns which you have outlined. Thank you for your response.

Sincerely,

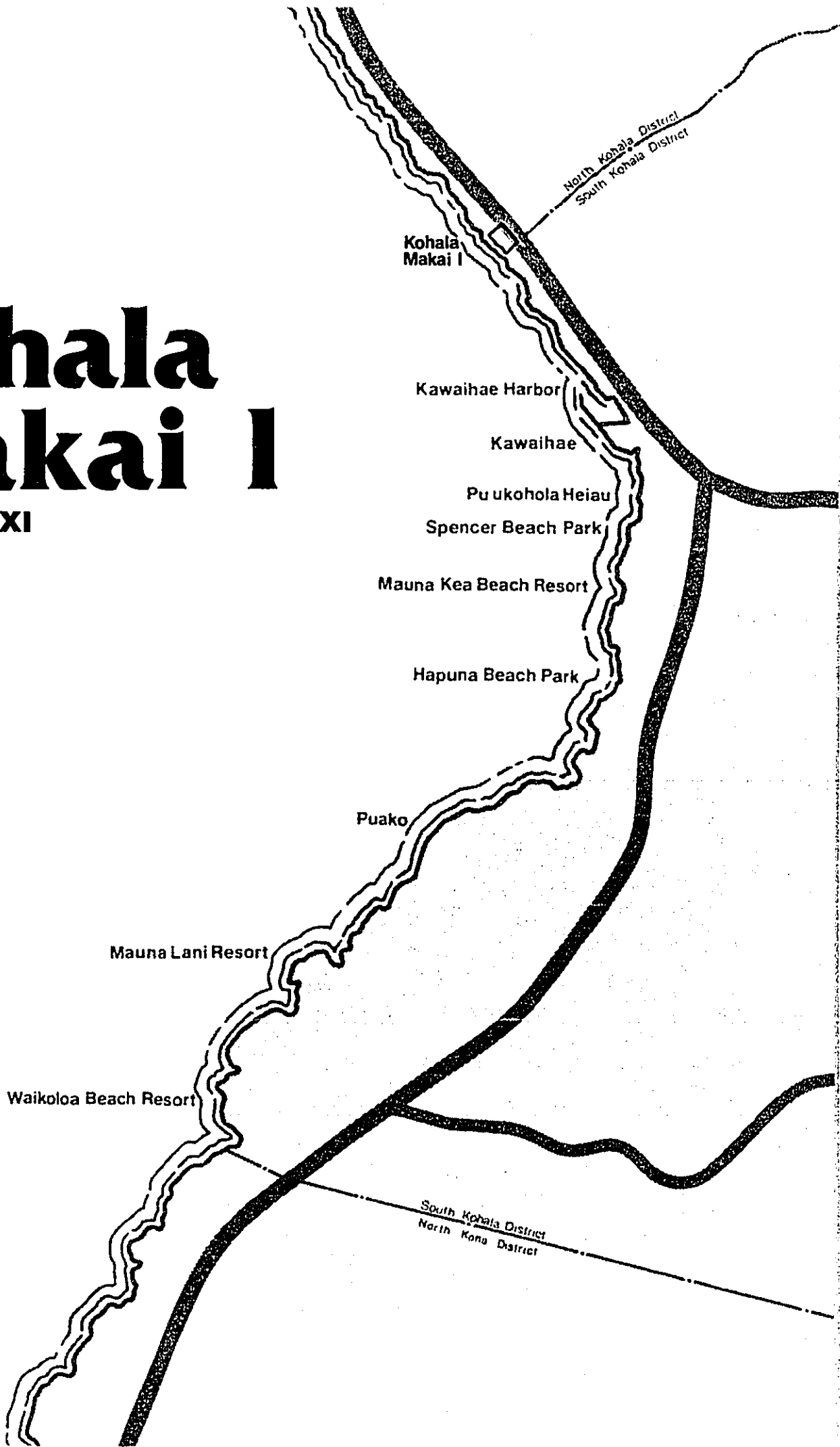
Brian M. Suzuki
Brian M. Suzuki

BMS:pls

cc: Robert L. Cole

Kohala Makai I

Chapter XI



CHAPTER XI
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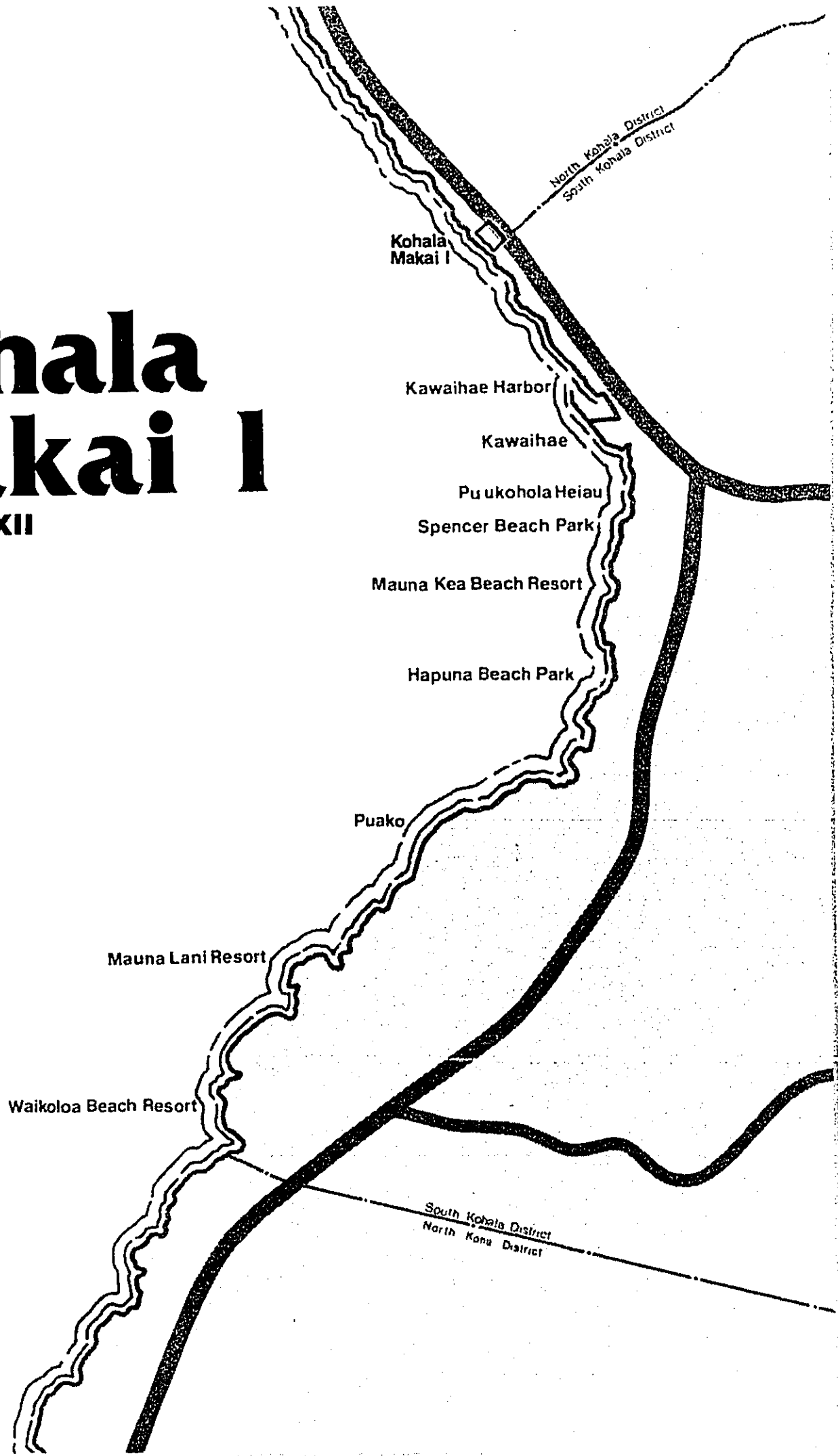
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Kohala Makai I

Chapter XII



CHAPTER XII

COMMENTS AND RESPONSES ON THE ENVIRONMENTAL IMPACT STATEMENT

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| U.S. Department of Agriculture, Soil Conservation Service | XII-5 |
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County of Hawaii Agencies

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 1511 AIR BASE WING (HACAF)
HICKAM AIR FORCE BASE, HAWAII 96813

BELT COLLINS & ASSOCIATES
110 3 HUR
Belt, Collins & Associates

Belt, Collins & Associates
Engineers, Planners, Landscapes, Architects
1100 Ala Moana Blvd., Suite 418 745 Fort St., Honolulu, Hawaii 96813-3841
Telex: BELT11 743074

18 March 1982
82-443

REPLY TO: DEEV (Mr Yamada, 449-1831)
ATTENTION:

2 FEB 1982

SUBJECT: Environmental Impact Statement for the Kohala Makai I

TO: Office of Environmental Quality Control
550 Halekuanila Street, Room 301
Honolulu, HI 96813

1. This office has reviewed the subject EIS and has no comment to render relative to the proposed project.
2. We greatly appreciate your cooperative efforts in keeping the Air Force apprised of your project and thank you for the opportunity to review the document.

William T. Morioka
WILLIAM T. MORIOKA
Chief, Engrg & Envtl Png Div
Directorate of Civil Engineering

CY TO: County of Hawaii Png Dept
25 Aupuni Street
Hilo, HI 96720
Mr James R. Bell
Belt, Collins & Associates
745 Fort Street, Suite 418
Honolulu, HI 96813

XII-3

Mr. William T. Morioka, Chief
Engineering and Environmental Planning Division
Directorate of Civil Engineering
Department of the Air Force
Headquarters 15th Air Base Wing
Hickam Air Force Base, Hawaii 96853

Dear Mr. Morioka:

Environmental Impact Statement for the
Proposed Kohala Makai I Residential Development
Kohala, Hawaii

Because Belt, Collins & Associates prepared the Environmental Impact Statement (EIS) for the proposed Kohala Makai I residential development, your 2 February 1982 letter to the Office of Environmental Quality Control regarding the document is being answered by us. We understand you have no comments to offer. Thank you for the time spent by you and your staff reviewing the EIS.

Sincerely,

James R. Bell
James R. Bell

JRB:AKY:lsf
cc: Kohala Makai I
Hawaii County Planning Department
Environmental Quality Commission

B&A, LTD. Principals: James R. Bell, Paul M. Hines, Raymond F. Cain, Joseph Vieira, Jr., Thomas P. Papandrew

RECEIVED
110 - 4 1982
SHE, COLLINS & ASSOCIATES

Belt, Collins & Associates
Engineers, Planners, Landscape Architects
1100 Ala Moana Blvd., Suite 418, Honolulu, Hawaii 96813-3991
Telephone (808) 521-5360
Telex BELTII 713474

18 March 1982
82-445

DEPARTMENT OF THE ARMY
HEADQUARTERS UNITED STATES ARMY SUPPORT COMMAND, HAWAII
FORT SHAFTER, HAWAII 96858

APZV-EIV

14 FEB 1982

Colonel Adolph A. Hight
Department of the Army
Headquarters U.S. Army Support Command, Hawaii
Fort Shafter, Hawaii 96858

Dear Colonel Hight:

Environmental Impact Statement for the
Proposed Kohala Makai I Residential Development
Kohala, Hawaii

Because Belt, Collins & Associates prepared the Environmental Impact Statement (EIS) for the proposed Kohala Makai I residential development, your 4 February 1982 letter (your reference APZV-EIV) to the Hawaii County Planning Department regarding the document is being answered by us. We are pleased to know no adverse impact on operations at the nearby Kawahae Military Reservation is anticipated. Thank you for the time spent by you and your staff reviewing the EIS.

Sincerely,

James R. Bell
James R. Bell

JRB:AKY:lsf
cc: Kohala Makai I
Hawaii County Planning Department
Environmental Quality Commission

County of Hawaii
Planning Department
25 Apunani Street
Honolulu, Hawaii 96820

Gentlemen:

The Environmental Impact Statement (EIS) for the proposed Kohala Makai I Residential Development Project, Kohala, Hawaii has been reviewed and we have no comments to offer. It is anticipated that the proposed project will have no adverse impact on operations at the nearby Kawahae Military Reservation.

Thank you for allowing us the opportunity to review this EIS.

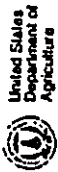
OLYMPIA ENGINEERING, INC.
1101 Kalia Road
Honolulu, Hawaii 96813
Deputy Director of Engineering and Housing

ADOLPH A. HIGHT
COL, EN
Director of Engineering and Housing

Copy Furnished:
Mc. James R. Bell
Belt, Collins & Associates
745 Fort Street, Suite 418
Honolulu, Hawaii 96813

BCA, LTD. Principals: James R. Bell, Paul M. Hinta, Raymond F. Cain, Joseph Vierra, Jr., Thomas P. Papandrew





Soil Conservation Service

P. O. Box 50004
Honolulu, Hawaii
96850

RECEIVED
FEB 23 1982

MR. COLLINS & ASSOCIATES

Director, Planning Department
County of Hawaii

FEB 22 1982

Director
Planning Department
County of Hawaii
45 Aupuni Street
Honolulu, HI 96720

Dear Sir:

Subject: Environmental Impact Statement
Kohala Makai I, Kohala, Hawaii

We have reviewed the above-mentioned document and offer the following comments:

This proposal, in our opinion, has severe hazards from several aspects, including erosion and sedimentation, water pollution potential, and soils limitations for development. These concerns were expressed to Belt, Collins and Associates in our June 15, 1981, comments on the draft EIS, which are found on pages X-23 and X-24 of this document. We do not feel that these prior concerns have been adequately addressed in this document.

We offer the following specific comments related to this document for consideration:

Page 1-3, Soils - The document states that a "small increase in soil erosion could occur" during construction. Since the soils at the site have a high erosion hazard when exposed, and since there are steep slopes at the site which may require extensive cuts and fills, erosion and sediment deposition may become a serious problem. Therefore, very careful preplanning and timely application of site-specific erosion control measures will be needed.

Page 1-5, Water Resources - This section states that if Kohala Estates develops their water source and there is excess capacity, it could be made available to Kohala Makai I. This would indicate that the availability of irrigation water is still not certain. Revegetation of the site will be extremely difficult unless a dependable source of water is available.

The report in Appendix G indicates that adequate water may be available. However, the Big Island recently experienced a drought that resulted in a situation where water from existing sources was not adequate to supply the present users.

IV-6, Erosion Potential and Mitigation - It should be noted that it may be very difficult to locate and construct temporary sediment basins and diversions because of the steep slopes and numerous boulders and areas of exposed bedrock.

IV-7, Watering - This section states that if water is available at the site, the ground could be wetted to control wind erosion. The availability of sufficient water for site erosion control is a concern. Because of the normally high winds in this area, frequent applications of water would be necessary to achieve effective protection from wind erosion. If adequate water is not available, structural type practices, including mulching, will be needed.

IV-37, Construction Dust - Twice daily watering may not be adequate to control dust. The Kohala Estates Development experienced a great deal of dust control difficulties during its construction. Almost continuous water application may be needed for effective control.

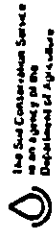
As stated in our June 15, 1981, comments, for specific assessments of problem areas, the developer may want to contact our District Conservationist in our Kamuela Field Office.

Sincerely,

JACK P. KAVALZ
State Conservationist

cc:

Mr. James R. Bell, Belt, Collins & Associates,
745 Fort St., Suite 418, Honolulu, HI 96813-3891
Mr. George Yuen, Director, OEQC,
550 Halekuanila St., Rm. 301, Honolulu, HI 96813



The Soil Conservation Service
is an agency of the
Department of Agriculture

Belt, Collins & Associates

Engineers Planners
Landscape Architects
Hawaii Building - Suite 418745 First St. Honolulu, Hawaii 96813-3891
Telephone: (808) 521-5361 Telex: BELT111743M74

24 March 1982
82-462

Hr. Jack P. Kanalz
State Conservationist
Soil Conservation Service
U.S. Department of Agriculture
P.O. Box 50004
Honolulu, Hawaii 96850

Dear Hr. Kanalz:

Environmental Impact Statement for the Proposed Kohala Makai I Residential Development Kohala, Hawaii

Because Belt, Collins & Associates prepared the Environmental Impact Statement (EIS) for the proposed Kohala Makai I residential development, your February 22, 1982 letter to the Hawaii County Planning Department regarding the document is being answered by us. Our responses to your comments are documented under the same headings used in your letter.

Page 1-3, Soils

The soils on the site do have a high erosion potential when exposed. Whether or not erosion actually occurs depends upon the extent to which an erosive agent, such as wind, water, or moving vehicles, is present. Construction of the project will bring heavy earth-moving equipment onto the site, and the area is occasionally subject to gusty winds. Both of these could lead to increased concentrations of airborne particles (i.e., dust) during construction. This dust is definitely a potential nuisance. It is not expected to become a serious or enduring problem for several reasons. First, the project will incorporate measures designed to limit the amount of soil particles becoming airborne. Second, there are few neighbors who might be affected by a temporary increase in particulate levels. Third, airborne soil would not cause harm to the marine environment because the wind would disperse it over a large area before it settled; consequently, the concentrations would be far too low to adversely affect water quality or marine communities.

Removal of the existing vegetation will leave the site more susceptible to erosion by storm runoff as well. As you have noted, the soil is highly erodible, but this is partially offset by the fact that the area receives little erosive rainfall. In fact, as shown in the Soil Conservation Service's Erosion and Sediment Control Guide for Hawaii (March 1981), the area in which the site is located has the lowest erosive rainfall rating in the State. Nevertheless, your statement that very careful replanning and timely application of site-specific erosion control methods will be needed is entirely correct. Because of the conceptual level of present plans we were unable to provide a definitive description of the measures that would be taken. However,

BCA, LTD. Principals: James R. Bell, Paul M. Limata, Raymond F. Cain, Joseph Verica, Jr., Thomas P. Papandrew

Hr. Jack P. Kanalz
Page two

24 March 1982
82-462

erosion control measures will be specified in the grading permit application which the Hawaii County Department of Public Works will review. They must be satisfied that erosion and sedimentation will be adequately controlled before issuing the permit and may attach conditions to the permit necessary to achieve this end.

Page 1-5, Water Resources

Obviously, the project cannot be undertaken unless a dependable water source is available to it. The source must supply enough water to meet the County standard of 600 gallons/unit/day. This figure includes water necessary for irrigating the landscaping around the proposed buildings, as well as for domestic use. Compliance with the standard insures that water sufficient to maintain the landscaping will be available.


The recent drought you referred to affected areas served by water systems utilizing surface water. The wells that would supply Kohala Makai I tap a very large groundwater reservoir. As is true of every source, it has its limits, but this basal aquifer has more than enough reserve to sustain projected users through extended periods of below-normal rainfall.

IV-6, IV-7, and IV-37

The points made in your letter are well taken. The possible erosion control measures cited in the EIS were intended only to provide an indication of the range of techniques that are available. Once design plans for the project have been developed, erosion control measures can be studied in depth. The grading permit application will then identify the specific measures that will be taken to control erosion. The developer will contact the District Conservationist in Matimea for specific help in problem areas before seeking a grading permit.

Thank you for your letter. We appreciate the time spent by you and your staff reviewing the EIS.

Sincerely,


James R. Bell

JRB:AKY:lsf
cc: Kohala Makai I
Hawaii County Planning Department
Environmental Quality Commission



United States Department of the Interior

FISH AND WILDLIFE SERVICE
300 ALA MOANA BOULEVARD
P. O. BOX 50187
HONOLULU, HAWAII 96850

ROOM 6307
MAR 2 1982

RECEIVED

MAR - 3 1982
MR. COLLINS & ASSOCIATES

Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Re: EIS, Kohala Makai I,
North Kohala, Hawaii
County, Hawaii

Gentlemen:

We have reviewed the subject Environmental Impact Statement (EIS) and offer the following comments.

The proposed project is not likely to have an adverse impact on significant fish or wildlife resources in the area, providing appropriate measures are taken during construction to protect the nearshore marine environment from increased siltation and toxic runoff from the site.

We appreciate this opportunity to comment.

Sincerely yours,

Ernest Kosaka
Project Leader
Office of Environmental Services

cc: NHFS - WPPD
HDF&G
EPA, San Francisco
James Bell, 745 Fort Street, Honolulu, HI 96813



Save Energy and You Serve America!

Belt, Collins & Associates
Engineers, Planners, Landscape Architects
Hawaii Bldg., Suite 118 745 Fort St., Honolulu, Hawaii 96813-3091
Telephone (808) 521-5261 Telex BELTII 7430374

18 March 1982
82-454

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 for the
Proposed Kohala Makai I Residential Development
Kohala, Hawaii

Because Belt, Collins & Associates prepared the Environmental Impact Statement (EIS) for the proposed Kohala Makai I residential development, your March 2, 1982 letter (reference ES Room 6307) to the Hawaii County Planning Department regarding the document is being answered by us.

We are pleased that you agree with the EIS's conclusion that the project is not likely to have an adverse impact on significant fish or wildlife resources in the area providing measures are taken during construction to control erosion and runoff. The exact measures to be used will be determined at the time the grading plans are developed and a grading permit sought from the County Department of Public Works.

Thank you for your letter. We appreciate the time spent by you and your staff reviewing the EIS.

Sincerely,

JRB:AKY:lsf
cc: Kohala Makai I
Hawaii County Planning Department
Environmental Quality Commission

BCA, LTD. Principals: James R. Bell, Paul M. Hinoj, Raymond F. Cain, Joseph Verra, Jr., Thomas P. Papandrew



HEADQUARTERS
NAVAL BASE PEARL HARBOR
HONOLULU, HAWAII 96860

RECEIVED
FEB 27 1982

BELT, COLLINS & ASSOCIATES
ENGINEERS, ARCHITECTS, LANDSCAPE ARCHITECTS
HAWAII BLDG., SUITE 418 FORT ST. HONOLULU, HAWAII 96813-3891
TELEPHONE (808) 521-5361

3 FEB 1982

Planning Department
County of Hawaii
25 Aupuni Street
Honolulu, Hawaii 96820

Gentlemen:

Environmental Impact Statement
Kohala Makai I, Kohala, Hawaii

The Environmental Impact Statement for the proposed Kohala Makai I, forwarded by the Environmental Quality Commission, has been reviewed and the Navy has no comments to offer. By copy of this letter, per the Commission's request, the subject EIS is being returned.

The opportunity to review the subject EIS is appreciated.

Sincerely,

R. L. ELSBERND
Lieutenant Commander, CEC, USN
Deputy Facilities Engineer
By direction of the Commander

Copy to:
Mr. James R. Bell
Belt, Collins & Associates
745 Fort Street, Suite 418
Honolulu, Hawaii 96813

State EIS (w/ EIS)

18 March 1982
82-444

Belt, Collins & Associates
Engineers, Architects, Planners, Landscape Architects
Hawaii Bldg., Suite 418 Fort St. Honolulu, Hawaii 96813-3891
Telephone (808) 521-5361

Lieutenant Commander R.L. Elsbernd
Deputy Facilities Engineer
Headquarters, Naval Base Pearl Harbor
Box 110
Pearl Harbor, Hawaii 96860

Dear Commander Elsbernd:

Environmental Impact Statement for the
Proposed Kohala Makai I Residential Development
Kohala, Hawaii

Because Belt, Collins & Associates prepared the Environmental Impact Statement (EIS) for the proposed Kohala Makai I residential development, your 3 February 1982 letter (your reference 002A:RLE:vjy/Ser 273) to the Hawaii County Planning Department regarding the document is being answered by us. We understand you have no comments to offer. Thank you for the time spent by you and your staff reviewing the EIS.

Sincerely,

James R. Bell
James R. Bell

JRB:AKY:lzf
cc: Kohala Makai I
Hawaii County Planning Department
Environmental Quality Commission

BCA, LTD. Principals: James R. Bell, Paul M. Minata, Raymond F. Cain, Joseph Vierra, Jr., Thomas P. Papandrew

BY REGISTERED MAIL
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NO POSTAGE
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IF MAILED
IN THE
UNITED STATES

Belt, Collins & Associates
Engineers, Planners, Landscape Architects
Hawaii Bldg., Suite 418745 Fort St. Honolulu, Hawaii 96813-3891
Telephone (808) 521-5361 Telex BELH11700474

18 March 1982
82-442

(P)1080.2

FEB 1 1982

Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Mr. Hideo Murakami
State Comptroller
Department of Accounting & General Services
1151 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Murakami:

Environmental Impact Statement for the
Proposed Kohala Makai I Residential Development
Kohala, Hawaii

Thank you for this opportunity to review and comment on the subject project.

The project will not have any adverse environmental effect on any existing or planned facilities serviced by our department.

Very truly yours,

HIDEO MURAKAMI
State Comptroller

Hijnt 5-9
cc: Mr. James R. Bell
Belt, Collins & Associates

Because Belt, Collins & Associates prepared the Environmental Impact Statement (EIS) for the proposed Kohala Makai I residential development, your February 1, 1982 letter (your reference no. (P)1080.2) to the Hawaii County Planning Department regarding the document is being answered by us. We are pleased to know that the project will not have any adverse environmental effect on any existing or planned facilities serviced by your department. Thank you for the time spent by you and your staff reviewing the EIS.

Sincerely,

James R. Bell
James R. Bell

JRB:AKY:lsf
cc: Kohala Makai I
Hawaii County Planning Department
Environmental Quality Commission

BCA, LTD. Principals: James R. Bell, Paul M. Hirota, Raymond F. Cain, Joseph Verra, Jr., Thomas P. Papandrew

01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

Belt, Collins & Associates
Engineers, Planners, Architects
Landscape Architects
1428 So. King Street, Honolulu, Hawaii 96822
P.O. Box 22159, Honolulu, Hawaii 96822
Telephone: (808) 521-5361
Telex: BT 1117 740474

23 March 1982
82-457

Mr. Jack K. Suma, Chairman
Board of Agriculture
P.O. Box 22159
Honolulu, Hawaii 96822

Dear Mr. Suma:

Environmental Impact Statement for the
Proposed Kohala Makai I Residential Development
Kohala, Hawaii

Because Belt, Collins & Associates prepared the Environmental Impact Statement (EIS) for the proposed Kohala Makai I residential development, your February 18, 1982 memorandum to the Hawaii County Planning Department regarding the document is being answered by us.

In response to your comments we are adding the following paragraph to Chapter V after the "Local and Regional Economics" section.

IMPACT ON NEARBY LAND USES

Development at the Kohala Makai I site would tend to increase pressures to urbanize adjacent agriculturally designated and zoned land which is privately owned. A rise in land values of agricultural lots, which could result from speculative buying of parcels despite agricultural designations, may adversely affect the viability of agricultural use. This could lead to applications for further subdivision and/or rezoning of agricultural lots. However, existing County policies and regulations regarding agricultural land would act as a strong counter to these pressures.

The large parcels of nearby land owned by the State and the Department of Hawaiian Home Lands would be affected less by these pressures to urbanize. Most of these parcels are under long-term leases to Kahua Ranch and, thus, are expected to remain in use as pastureland.

In writing the EIS we did not elaborate on the Kohala Estates water source because there was only a possibility that the Kohala Makai I development would connect to that system. The County of Hawaii Department of Water Supply has recently agreed that connection to the County system would be allowed if the developer pays for the extension of the water system from its terminus in Kawaihae to the site, plus a charge equivalent to the project's share of source development costs, as well as its share of costs for possible improvements to the system in Kawaihae. Hence, the option of utilizing water from the Kohala Estates system is not being seriously considered. Because of this, we have not expanded the discussion of that system found in the EIS.

BCA, LTD. Principals: James K. Bell, Paul M. Hinna, Raymond F. Cain, Joseph Vieira, Jr., Thomas P. Papandrew



GEORGE B. ANIYOCOS
GOVERNOR

State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 So. King Street
P.O. Box 22159
Honolulu, Hawaii 96822
February 18, 1982

JACK K. SUMA

CHAIRMAN, BOARD OF AGRICULTURE

FEB 23 1982

JIT, COLLINS & ASSOCIATES

MEMORANDUM

To: Mr. Sidney Fuke, Director
County of Hawaii, Planning Department

Subject: Environmental Impact Statement
Kohala Makai I
Kohala, Hawaii THK: 5-9-1:06

The Department of Agriculture has reviewed the subject Environmental Impact Statement and offers the following comments.

We have discussed the EIS with a staff member of Belt, Collins & Associates and have agreed that our concern regarding Kohala Makai's potential impacts of increasing property values and encouraging speculation and pressure to further subdivide and urbanize the adjacent mauka lands was not specifically addressed. It was subsequently agreed that this issue should be addressed in Chapter 5, Socio-Economic Impacts of the Proposed Project.

We believe that it would also be helpful for the EIS to elaborate on the Kohala Estate water source in a discussion similar to the one on the Lalaillio wells.

Thank you for the opportunity to comment.

/cc: James R. Bell
Belt, Collins & Associates

Jack K. Suma
JACK K. SUMA
Chairman, Board of Agriculture

"Support Hawaiian Agricultural Products"

Mr. Jack K. Suwa, Chairman
Page two

23 March 1982
82-457

Thank you for your memorandum. We appreciate the time spent by you and your staff reviewing the EIS.

Sincerely,


James R. Bell

JRB:AKY:lsf
cc: Kohala Makai I
Hawaii County Planning Department
Environmental Quality Commission



RECEIVED
FEB - 8 1982

BELT, COLLINS & ASSOCIATES

Belt, Collins & Associates
Engineers • Planners • Landscape Architects
Hawaii Bldg., Suite 11745 Fort St. Honolulu, Hawaii 96813-3801
Telephone (808) 531-5361 Telex BEL111743074

18 March 1982
82-446

State of Hawaii
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
3949 Diamond Head Road
Honolulu, Hawaii 96816

MEMO

County of Hawaii Planning Department
25 Aupuni Street
Hilo, Hawaii 96720

Gentlemen:

Kohala Makai I

Thank you for providing us the opportunity to review your proposed project, "Kohala Makai I" Environmental Impact Statement.

We have completed our review and have no comments to offer at this time.

Yours truly,

JERRY M. MATSUDA
Captain, MAJG
Contr & Engr Officer

cc: Mr. James R. Bell
(Belt, Collins & Assoc.)
Env Quality Comm w/EIS

Captain Jerry M. Matsuda
Contracting and Engineering Officer
Hawaii Air National Guard
State of Hawaii Department of Defense
Office of the Adjutant General
3949 Diamond Head Road
Honolulu, Hawaii 96816

Dear Mr. Matsuda:

Environmental Impact Statement for the
Proposed Kohala Makai I Residential Development
Kohala, Hawaii

Because Belt, Collins & Associates prepared the Environmental Impact Statement (EIS) for the proposed Kohala Makai I residential development, your 4 February 1982 letter to the Hawaii County Planning Department regarding the document is being answered by us. We understand you have no comments to offer. Thank you for the time spent by you and your staff reviewing the EIS.

Sincerely,



JRB:AKY:lsf
cc: Kohala Makai I
Hawaii County Planning Department
Environmental Quality Commission

BCA, LTD. Principals: James R. Bell, Paul M. Etnoda, Raymond F. Cain, Joseph Vieira, Jr., Thomas P. Papadirew

STATE OF HAWAII
DEPARTMENT OF EDUCATION



STATE OF HAWAII
DEPARTMENT OF EDUCATION
P. O. BOX 2360
HONOLULU, HAWAII 96804

February 11, 1982

OFFICE OF THE SUPERINTENDENT

Donnis H. Thompson
SUPERINTENDENT
1100 20th Ave
HONOLULU, HAWAII 96804

Belt, Collins & Associates
Engineers, Planners, Landscape Architects
1400 Ala Moana Blvd., Suite 418 745 East St. Honolulu, Hawaii 96813-3891
Telephone (808) 531-5361 Telex BELTII 743R174

18 March 1982
82-452

Ms. Donnis H. Thompson
Superintendent of Education
State of Hawai'i Department of Education
P.O. Box 2360
Honolulu, Hawai'i 96804

Dear Ms. Thompson:

Environmental Impact Statement for the
Proposed Kohala Makai I Residential Development

Because Belt, Collins & Associates prepared the Environmental Impact Statement (EIS) for the proposed Kohala Makai I residential development, your February 11, 1982 letter to the Hawai'i County Planning Department regarding the document is being answered by us. We appreciate the time spent by you and your staff reviewing the EIS. Thank you for confirming your earlier conclusion that the 5 to 20 K-12 students you expect the project to generate can be accommodated by Kohala High-Elementary School).

Our review of the subject EIS confirms our earlier response that student enrollment generated can be accommodated by Kohala High-Elementary School. It is expected that approximately 5 to 20 K-12 students will be generated.

Should there be any questions, please contact Mr. Howard Lau at 737-5231.

Sincerely,

Lloyd K. Ngata
for Donnis H. Thompson
Superintendent of Education

DLT:ML:mh
cc: Hawaii District

Sincerely,

James R. Bell
James R. Bell

JRB:AKY:lsf
cc: Kohala Makai I
Hawai'i County Planning Department
Environmental Quality Commission

AN EQUAL OPPORTUNITY EMPLOYER

BCA, LTD. Principals: James R. Bell, Paul M. Hirota, Raymond F. Cain, Joseph Vierra, Jr., Thomas P. Papadew



STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3119
HONOLULU, HAWAII 96811

February 18, 1982

RECEIVED
FEB 19 1982

DR. COLLINS & ASSOCIATES

GEORGE A. L. YOUNG
DIRECTOR OF HEALTH

VINCE C. WATTS, M.D.
DEPUTY DIRECTOR OF HEALTH

DEWITT M. THOMPSON, M.A.
DEPUTY DIRECTOR OF HEALTH

JAMES C. WILSON, M.D.
DEPUTY DIRECTOR OF HEALTH

THOMAS S. BROWN
DEPUTY DIRECTOR OF HEALTH

IN COPY, PLEASE REFER TO
FILE: 548-2235

County of Hawaii
Planning Department 2 February 18, 1982

the Kohala Makai I Project would qualify as a public water system. Section 11-20-29 of Chapter 20 requires that all sources developed to serve public water systems must be approved by the Director of Health prior to their use. Such approval is based primarily upon the submission of an engineering report which adequately addresses all concerns set down in Section 11-20-29. The report must be prepared by a registered engineer and bear his or her seal upon submittal.

If you should have any questions about Chapter 20, Title 11, Administrative Rules, please contact the Drinking Water Program at 548-2235.

Sewage Disposal

The proposed wastewater treatment works should be operated by the county and should meet Department of Health regulations in effect at the time of permit issuance.

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.

We submit the following comments for your information and consideration.

Drinking Water

It is our understanding that the project desires to be connected to the County water system and that the landowners would be willing to participate in water development and management programs if necessary. It is also our understanding that excess capacity from the Kohala Estates water development project could be made available to the Kohala Makai I Project if such an excess should be realized. Finally, an assured water supply, although known to be off-site, has not yet been established.

Please be informed that in the event the Kohala Makai I Project must develop its own source of potable water that Section 11-20-29 of Chapter 20, Title 11, Administrative Rules sets forth requirements for new raw sources of water serving public water systems as defined by that Chapter. A public water system is defined as a system which serves 25 or more individuals at least sixty days per year or has a minimum of 15 service connections. Clearly the water system serving

XII-15

MEMORANDUM

To: County of Hawaii Planning Department
From: Deputy Director for Environmental Health
Subject: Environmental Impact Statement (EIS) for Kohala Makai I

Melvin K. Koffert
MELVIN K. KOFFERT

BC:ca
cc: Office of Environmental Quality Control
✓Belt, Collins & Associates

Belt, Collins & Associates

Engineers • Planners • Landscape Architects
1145 Ala Moana Blvd., Suite 315, Honolulu, Hawaii 96813
Telephone (808) 521-5241 Telex: 311117340174

22 March 1982
82-455

Mr. Melvin K. Koizumi
Deputy Director for Environmental Health
State of Hawaii's Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801

Dear Mr. Koizumi:

Environmental Impact Statement for the
Proposed Kohala Makai I Residential Development
Kohala, Hawaii

Because Belt, Collins & Associates prepared the Environmental Impact Statement (EIS) for the proposed Kohala Makai I residential development, your February 18, 1982 memorandum (your reference: File EPI50-SS) to the Hawaii's County Planning Department regarding the document is being answered by us. Responses to your comments on water and sewage disposal are given below. We also understand you reserve the right to impose future environmental restrictions on the project at the time final plans are submitted to the Department of Health for review. Responses to your comments on drinking water and sewage disposal are given below.

Drinking Water

Kohala Makai I would not be a developer of a potable water source, but a purchaser of water, most probably from the County.

Sewage Disposal

The proposed wastewater treatment works would be designed to meet the Department of Health regulations. The Hawaii's County Department of Public Works, Sewers and Sanitation Division was contacted to discuss their policy on the operation of private sewage treatment plants. Mr. Harold Sugiyama, head of the division, indicated that the department does not operate plants serving a single development.

Thank you for your memorandum. We appreciate the time spent by you and your staff reviewing the EIS.

Sincerely,


James R. Bell

JRB:AKY:lsf
cc: Kohala Makai I
Hawaii's County Planning Department
Environmental Quality Commission

BCA, LTD. Principals: James R. Bell, Paul M. Hinda, Raymond E. Carr, Joseph Viera, Jr., Thomas F. Papandrew

RECEIVED
 FEB 25 1982
 DIVISION OF LAND AND NATURAL RESOURCES
 BELT, COLLINS & ASSOCIATES
 ENGINEERS, ARCHITECTS, LANDSCAPE ARCHITECTS
 HONOLULU, HAWAII 96813-3041
 TELEPHONE (808) 521-5341

Belt, Collins & Associates
 Engineers, Architects, Landscape Architects
 Hawaii Bldg., Suite 41475, Fort St. Honolulu, Hawaii 96813-3041
 Telephone (808) 521-5341
 Telex BELTI 743474

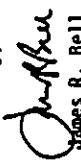
18 March 1982
 82-453

Mr. Ralston Nagata, Director
 Historic Sites Program
 Division of State Parks
 Department of Land and Natural Resources
 P.O. Box 621
 Honolulu, Hawaii 96809

Dear Mr. Nagata:
 Environmental Impact Statement for the
 Proposed Kohala Makai I Residential Development
 Kohala, Hawaii

Because Belt, Collins & Associates prepared the Environmental Impact Statement (EIS) for the proposed Kohala Makai I residential development, your February 4, 1982 memorandum to Gordon Soh of DLNR's planning office regarding the document was forwarded to us by the Hawaii County Planning Department for a response.

We appreciate the time spent by you and your staff reviewing the EIS. We recognize your concern that the project site may have archaeological features associated with the Waialeale Bay and Kahua 2 Complexes. The developer will meet with you and/or your staff to discuss further archaeological work on the site if the proposed General Plan amendment is approved.

Sincerely,

 James R. Bell

JRB:AKY:lzf
 cc: Kohala Makai I
 Hawaii County Planning Department
 Environmental Quality Commission

BCA, LTD. Principals: James R. Bell, Paul M. Hirta, Raymond F. Cain, Joseph Verra, Jr., Thomas P. Pylandrew



STATE OF HAWAII
 DEPARTMENT OF LAND AND NATURAL RESOURCES
 DIVISION OF STATE PARKS
 P. O. BOX 621
 HONOLULU, HAWAII 96809

February 4, 1982

MEMORANDUM

TO: Mr. Gordon Soh
 Planning Office

FROM: Ralston Nagata, Director
 Historic Sites Program

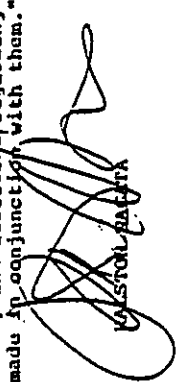
SUBJECT: Review of EIS-Kohala Makai I
 Kohala Makai I, a Limited Partnership
 Waikua, North Kohala, Hawaii
 TMR 5-9-01: 6

Thank you for the opportunity to review the subject undertaking.

As stated in the subject EIS, we recommend that further archaeological work beyond the reconnaissance survey be undertaken by the developer. This should be in the form of an intensive survey which includes the detailed recording (i.e. accurate plane table mapping) of the sites and sub-surface testing.

Our recommendation is based on the fact that the subject parcel is located near two archaeological sites which are characterized by extensive archaeological features. These sites are the Waialeale Bay Complex (site #4156) and the Kahana 2 Complex (site #4157), both listed in the statewide inventory of archaeological sites. Therefore, there is a high probability that features associated with these known complexes may be located on the subject property.

We further concur with the subject EIS statement (page IV-9) that "if unanticipated sites or remains are encountered during construction period, appropriate state and county officials would be notified, and decisions regarding work to be conducted would be made in conjunction with them."



cc: Virginia Goldstein, County of Hawaii
 Planning Office

GEORGE R. ARTYSON
Special Agent in Charge



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P O BOX 621
HONOLULU, HAWAII 96809

RECEIVED
FEB 26 1982

SUPPLIES DIV. CHAIRMAN
BOARD OF LAND & NATURAL RESOURCES
EDDIE A. HANAUSS
MEMBER TO THE CHAIRMAN
DEPARTMENT OF LAND AND NATURAL RESOURCES
P O BOX 621
HONOLULU, HAWAII 96809

Hon. Sidney Fuke
February 16, 1982
Page 2

Fresh water intrusion and suspended sediment from Honokoa Gulch (no more than a mile from the project site) have impacted the benthic communities in shallow water. Corals are small and provide a cover of less than 1%.

This description of Honokoa contrasts vividly with the consultant's finding of average coral cover greater than 50% seaward of the subject parcel (p. D-8). The Honokoa situation further suggests that any increase in sediment load or freshwater runoff resulting from the proposed project may indeed have significant impact on rich coral and fish resources.

A number of potentially effective measures could mitigate this potential impact. Some are listed in the EIS (p. IV-6). However, these are presented as measures which "may be" or "could be" employed during construction, along with unspecified "design features which retard surface flows and thus increase infiltration (p. VI-9). We recommend that a commitment be made to specific erosion control measures, such that drainage impacts would be minimized both during construction and throughout subsequent residential occupation.

A second aspect of the proposed project which may have potentially adverse effects on coastal marine resources is on-site disposal of wastewater. The EIS has apparently preceded selection of a particular design alternative. We concur with the proposed use of an on-site treatment facility, but note that specification of a particular disposal method is to be developed after "further tests" (p. VIII-1). Inasmuch as the underlying lava rock is so porous (p. D-11), disposal of effluents into on-site wells may introduce nutrients into the "calm, clear" coastal waters. Although the proposed project may not, by itself, produce a significant effect, approval of such disposal may set a precedent for future developments already proposed for the Kohala area (p. IV-25), potentially resulting in a cumulative impact which would be significant. We therefore suggest that the matter of wastewater treatment requires treatment more specific than relegation to "unresolved issues."

With respect to public shoreline access, this area presently supports considerable weekend shorefishing and camping, with shore casting, dunking, pole fishing, and skin diving concentrated on or near the subject property (Nolan and Cheney). The EIS attributes an observed paucity of preferred food fish species to the level of existing fishing use (p. D-10). We commend the proposal that "a public access trail would be provided on the site" (p. IV-18), but note with some concern that "the boundary of the open space along the shoreline, as well as provisions for public access are other details which will have to be worked out...in later stages of the review process" (p. VIII-1).

Honorable Sidney Fuke
Planning Department
County of Hawaii
25 Kupuni St.
Hilo, HI 96720

Dear Mr. Fuke:

Thank you for the opportunity to review the EIS for the Kohala Mākei I project. We concur with the EIS that "the site's shoreline and offshore marine life are the most important natural resources that could be affected by the project" (p. VI-11), and that "the greatest potential for impact on the marine life would be from runoff and sedimentation during construction" (p. I-4). Our concerns are two-fold: potentially adverse environmental impacts and effect on public recreational fishing. A third concern is the archaeological value of the site.

There appears significant potential for impact on aquatic organisms due to drainage from the project site. The site's soils are "very rocky, very fine sandy loam" with "erosion potential...considered high" (pp. IV-4 to 5). Nolan and Cheney in West Hawaii Coral Reef Inventory report that although water clarity to this region is generally excellent, murky water results from suspended sediments just off the nearby Honokoa Gulch. The EIS notes "increased runoff and sedimentation due to land grading and clearing seems to present the major potential detrimental factor" (p. D-11). However, the EIS suggests that because of low rainfall and porous soils there is present only minor potential for increased runoff, and further that "if...sediment runoff is increased somewhat, it should not affect coral reef community structure significantly" since sediments would merely accumulate in existing sand channels between the reef (ibid).

Inasmuch as the project would involve covering a portion of the land with impervious structures (e.g., houses and roads) runoff would inevitably increase. The potential result is evident in Nolan's and Cheney's description:

Hon. Sidney Fuke
February 16, 1982
Page 3

While the EIS is unusually well-written and is commendably comprehensive in scope, we are unable to evaluate properly the potential of the project proposed for impacts on aquatic resource concerns, due to a lack of such "other details." Hence there are continuing concerns regarding possible impacts from drainage and sedimentation, from wastewater disposal, and from effects on public access to and recreational use of the shoreline. The treatment in the EIS of project "details" to mitigate these concerns provides insufficient information for adequate assessment of these possible impacts.

We concur with the EIS, that further archaeological work beyond the reconnaissance survey should be undertaken by the developer. This should be in the form of an intensive survey which includes the detailed recording (i.e. accurate plane table mapping) of the sites and subsurface testing.

This assessment is based on the fact that the subject parcel is located near two archaeological sites which are characterized by extensive archaeological features. These sites are the Waialeale Bay Complex (site #4156) and the Kahana 2 Complex (site #4157), both listed in the statewide inventory of archaeological sites. Therefore, there is a high probability that features associated with these known complexes may be located on the subject property.

We further concur with the EIS (p. IV-9) that "if unanticipated sites or remains are encountered during construction period, appropriate state and county officials would be notified, and decisions regarding work to be conducted would be made in conjunction with them."

Sincerely,



SUSUMU ONO
Chairman of the Board and
State Historic Preservation Officer

Belt, Collins & Associates

Engineers, Planners
Landscaper Architects
Interior Designers
1415 Ala Moana Blvd., Suite 418745 Fort St. Honolulu, Hawaii 96813-3891
Telephone: (808) 521-5361 Telex: BELT111 7131174

29 March 1982
82-463

Mr. Susumu Ono
Chairman of the Board and
State Historic Preservation Officer
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Ono:

Environmental Impact Statement for the
Proposed Kohala Makai I Residential Development
Kohala, Hawaii

Because Belt, Collins & Associates prepared the Environmental Impact Statement (EIS) for the proposed Kohala Makai I residential development, your February 16, 1982 letter to the Hawaii County Planning Department regarding the document is being answered by us. We are pleased you found the EIS well-written and comprehensive in scope. The concerns you expressed in your letter are discussed under the headings below.

Impacts on Marine Life

Paragraphs two through seven of your letter contain comments pertaining to sediment yields, stormwater runoff volumes, and sewage effluent. These subjects are intertwined in your letter, but for the purpose of clarity we will cover them separately below.

Sedimentation Potential. Because of the land's moderate slope, the relatively sparse vegetation, and the physical properties of the soil, there is a fairly high erosion potential. However, on the project site little of this potential is realized because there is little erosive rainfall. In fact, the U.S. Soil Conservation Service rates the area the best in the state in this respect.

Your letter draws heavily on Nolan and Cheney's observations in the coastal waters adjacent to Honokoa Gulch about a mile to the south of the Kohala Makai I project. It suggests that the proposed development could lead to the same adverse conditions noted off Honokoa:

The Honokoa situation further suggests that any increase in sediment load or freshwater runoff resulting from the proposed project may indeed have significant impact on rich coral and fish resources.

B.C.A. LTD. Principals: James R. Bell, Paul M. Hinta, Raymond F. Cain, Joseph Verza, Jr., Thomas P. Papandrew

We believe that the coastal water situation in the vicinity of the Kohala Makai I site is fundamentally different than that off Honokoa Gulch and that the conclusion you reached is unwarranted. Reasons for this belief include the following:

- o The sediment load delivered to the shoreline through Honokoa Gulch (that has adversely affected the benthic community there) is very much larger than any that could reach the coast at the Kohala Makai I site. It comes from a basin several times as large that is subject to much higher erosive rainfall. The fact that the marine community off Kohala Makai I is thriving unlike that off the similarly undeveloped Honokoa watershed is strong evidence that the situations are not the same.
- o The volume of surface runoff originating on the Kohala Makai I site will increase as a result of the larger impervious area present following development. However, the increased coverage by structures and paving, as well as the protection provided by irrigated landscaping, will insure that average post-development sediment yields are lower than at present.
- o Increased erosion is likely during the construction phase of the project, but this will be of short duration and will occur over only a small percentage of the drainage basin. Moreover, adherence to the County's grading ordinance will insure that the increase in erosion from the project site is limited. Hence, we do not expect that it will initiate any serious or irreversible changes in the marine community. With respect to this, it should be noted that until design plans for the project are at a more advanced state, it is impossible to provide the details of the erosion control measures that will be taken. However, the commitment to specific mitigation measures will be made at the time the developer applies for a grading permit.

Stormwater Runoff Volumes. No adverse impacts are expected to result from the slight increase in freshwater runoff. The primary reason for this is that the increase would be extremely small in comparison to the existing runoff amounts contributed by the areas draining through the gullies on the site.

Sewage Effluent. Further study of the sewage treatment and disposal system will be required at future points in the permitting process, including the Special Management Area permit stage, County rezoning stage, and before obtaining necessary construction and operating permits for the system from the Department of Health. The EIS investigated the sewage situation sufficiently to conclude that significant adverse impacts can be avoided if the system is properly designed. Further environmental studies will be required when a specific system is designed to determine that it is adequate in this respect.

While the use of effluent disposal wells on the Kohala Makai I site may set a precedent, it is unlikely that approval of such a disposal system here would mean automatic approval of such a system elsewhere along the Kohala coast. The existing regulations provide a mechanism for monitoring and controlling installation of new wastewater treatment and disposal systems so that cumulative adverse impacts can be avoided.

Since it is not known whether Kohala Makai I will use disposal wells or irrigation of neighboring land for effluent disposal, the choice between the two options was discussed in Chapter VIII as an "unresolved issue". The matter of wastewater treatment is also discussed on pp. IV-46 to IV-50 of the EIS. At the present time the Kohala Makai I site does not have either the Hawaii County General Plan or Zoning designations necessary for the proposed project. It would be imprudent for the developer to undertake detailed (and expensive) engineering studies before the County has reached a basic policy decision (via its action on the present General Plan amendment request) regarding the desirability of allowing urban development on this site.

Shoreline Access

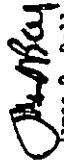
The developer is committed to providing public shoreline access. However, a specific agreement on the boundaries of the public access will have to be worked out with the Hawaii County Planning Department in later stages of the approval process.

Archaeological Features

We recognize your concern that the project site may have archaeological features associated with the Waiala'ilio Bay and Kahua 2 Complexes. The developer will meet with you and/or your staff to discuss further archaeological work on the site if the proposed General Plan amendment is approved.

Thank you for your letter. We appreciate the time spent by you and your staff reviewing the EIS.

Sincerely,



James R. Bell

JRB:AKY:lsf
cc: Kohala Makai I
Hawaii County Planning Department
Environmental Quality Commission



DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT

1111 Kalia Road, Suite 1000, Honolulu, Hawaii 96813
Tel. (808) 551-2100
Fax (808) 551-2101

COPY

March 2, 1987

Ref. No. 4151

Mr. Sidney Pike
Director
Planning Department
County of Hawaii
25 Aoyama Street
Hilo, Hawaii 96720

Dear Mr. Pike:

Subject: Kona Kona Environmental Impact Statement, Proposed County General Plan Amendment From Agriculturists to Define Kona Urban

XII-21

We have reviewed the subject Environmental Impact Statement (EIS) and offer the following comments with respect to relevant objectives and policies of the Hawaii Coastal Zone Management (CZM) Program.

Recreational Resources

Provide adequate, accessible and diverse recreational opportunities in the coastal zone management area by... providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value.

Two jeep trails from Aiea Highway connect with a trail running about 100 feet inland from and parallel to the coastline. According to the EIS, area residents use these trails and several spurs from these as accessways for recreational fishing along the coastline. Although the project's conceptual design provides for perpendicular public accessways, the existing lateral accessway along the coastline would presumably be affected and should also be discussed.

Commercial Use

Provide public or private facilities and improvements important to the State's economy in suitable locations. Concentrate in appropriate areas the location of coastal dependent development necessary to the State's economy.

Mr. Sidney Pike
Page 2
March 2, 1987

The EIS states that "multi-family residential units of the type proposed are coastal dependent, in that they would not be marketable if they were located inland" (page VI-5).

This assertion of coastal dependency under the economic uses category is inappropriate, inasmuch as such citations are intended for water-dependent and water-related developments such as harbors, ports, and visitor industry and energy facilities which are important to the State's economy. The proposed activity's primary function is to provide housing in a coastal location and any marketing benefits that may be derived are ancillary to this intended use. Accordingly, we recommend that this reference be deleted from the text.

We appreciate this opportunity to comment. Should any questions arise regarding this matter, please feel free to contact us at any time.

Sincerely,
Frank Collins

Waleto Kimo

cc: Viet Collins and Associates

Belt, Collins & Associates

Engineers, Planners, Architects
1100 Ala Moana Blvd., Suite 1107, Honolulu, Hawaii 96813
Telephone (808) 521-5161 Telex BELL1171 0374

Mr. Ilieto Kono
Page two

23 March 1982
82-474

23 March 1982
82-474

Mr. Ilieto Kono
Department of Planning & Economic Development
State of Hawaii
P.O. Box 2359
Honolulu, Hawaii 96804

Thank you for your letter. We appreciate the time spent by you and your staff reviewing the EIS.

Sincerely,



JAMES R. BELL

Dear Mr. Kono:

Environmental Impact Statement for the
Proposed Kohala Makai I Residential Development
Kohala, Hawaii

JRB:AKY:lsf
cc: Kohala Makai I
Hawaii County Planning Department
Environmental Quality Commission

Because Belt, Collins & Associates prepared the Environmental Impact Statement (EIS) for the proposed Kohala Makai I residential development your March 2, 1982 letter (reference number 4354) to the Hawaii County Planning Department regarding the document is being answered by us. Responses to your two comments in regard to the objectives and policies of the Hawaii Coastal Zone Management program are given below.

Recreational Resources

The site of the proposed Kohala Makai I project currently has a strip of land along the shoreline designated as "open area" on the Hawaii County General Plan. Kohala Makai I's general plan amendment application does not seek to change this portion of the site's designation. The exact boundary of this open space designation has not been worked out with the County. The existing lateral jeep trail is from 100 to 400 feet inland. Its retention would seriously constrain development of the site, and the developer has not made a commitment to keep it open. The developer is committed to providing public access to the shoreline. The details of public access have not yet been worked out with the County. Thus, this matter is discussed as an "unresolved issue" in Chapter VIII.

Economic Uses

In response to your comment the sentence under the heading "Provision for Coastal Dependent Economic Uses" on page VI-5 will be replaced with:

Multi-family residential units of the type proposed are not a coastal-dependent development necessary to the State's economy. However, development of the Kohala Makai I project would not conflict with the aim of this policy to concentrate such economic uses in appropriate locations, since the site is not particularly suited for such uses.

B.C.A. LTD. Principals: James R. Belt, Paul M. Hines, Raymond F. Cain, Joseph V. Verra, Jr., Thomas P. Papadimitriou

GEORGE R. ARYOSHE
Chairman

RECEIVED
FEB - 6 1982
BILT, COLLINS & ASSOCIATES
FRANKLIN Y. K. SUNN
DIRECTOR
KOHALA MAKA'I I
RESIDENTIAL DEVELOPMENT
SECTION



STATE OF HAWAII
DEPARTMENT OF SOCIAL SERVICES AND HOUSING

February 4, 1982

County of Hawaii Planning
Department
25 Aupuni Street
Hilo, Hawaii 96720

Gentlemen:

Subject: Kohala Makai I
Environmental Impact Statement

The Hawaii Housing Authority has reviewed the subject
EIS and is concerned that this project does not address
the need for employee housing.

Implementing Action D(1)(c) of the State Housing Plans
reads, "Encourage and assist in the development of
rental housing for employees of large businesses and
industries outside of urban areas." In this regard,
we recommend that the county of Hawaii condition any
approvals to insure that employee housing is provided
by the developer.

Thank you for allowing us to comment on this matter.

Sincerely,

FRANKLIN Y. K. SUNN
Director

cc: Mr. James R. Bell,
Belt, Collins & Associates

Belt, Collins & Associates
Engineers Planners Landscape Architects
Hawaii Bldg., Suite 418 715 Fort St., Honolulu, Hawaii 96813-3891
Telephone (808) 521-5261 Telex BELTII 7130474

18 March 1982
82-447

Mr. Franklin Y.K. Sunn, Director
Department of Social Services and Housing
State of Hawaii
1390 Miller Street
Honolulu, Hawaii 96813

Dear Mr. Sunn:

Environmental Impact Statement for the
Proposed Kohala Makai I Residential Development
Kohala, Hawaii

Because Belt, Collins & Associates prepared the Environmental Impact
Statement (EIS) for the proposed Kohala Makai I residential development, your
February 4, 1982 letter to the Hawaii County Planning Department regarding
the document is being answered by us.

Hawaii County's practice has been to impose employee housing require-
ments (if any) at the time zoning is granted, rather than at the General Plan
amendment stage. We expect that the County Council will follow this practice
with the Kohala Makai I project.

The "Implementing Action" referred to in your letter is aimed princi-
pally at large employment generators outside urban areas. A portion of the
units in the Kohala Makai I project are expected to be used for short-term
visitors and would, therefore, generate resort employment. However, it is
primarily a residential project. Hence, it is expected that many of the
residential units in it would be used as homes for persons employed elsewhere
in the region. Thus, the project will, in part, be employee housing.

As indicated in the section on "Local and Regional Economics" in Chapter
V of the EIS, the project is expected to generate, directly and indirectly,
about 80 long-term jobs. This is a relatively small number compared to a
hotel/resort project with the same number of units. In addition, the Initia-
tion of the 80 jobs would be spread out over a number of years.

The Hawaii County Planning Department, Planning Commission, and County
Council will make the decision on employee housing requirements, and you
should continue to make your views known to them.

BCA, LTD. Principals: James R. Bell, Paul M. Hirota, Raymond F. Cain, Joseph Vetro, Jr., Thomas F. Popandrew

Mr. Franklin Y.K. Sum, Director
Page two

18 March 1982
82-447

Thank you for the time spent by you and your staff reviewing the EIS. If there is any further information we may provide, please call Ann Yoklavich at 521-5361.

Sincerely,



James R. Bell

JRB:AKY:lsf
cc: Kohala Makai I
Hawaii County Planning Department
Environmental Quality Commission



Belt, Collins & Associates
Engineers, Planners, Landscape Architects
Hawaii Bldg., Suite 110745 Fort St. Honolulu, Hawaii 96813-3891
Telephone (808) 521-5361 Telex BELT11 743074

18 March 1982
82-450

Mr. Ryokichi Higashionna, Director
State of Hawaii Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Higashionna:

Environmental Impact Statement for the
Proposed Kohala Makai I Residential Development
Kohala, Hawaii

Because Belt, Collins & Associates prepared the Environmental Impact Statement (EIS) for the proposed Kohala Makai I residential development, your February 18, 1982 letter (your reference STP 8.8091) to the Hawaii County Planning Department regarding the document is being answered by us.

We understand your concern about access onto Akoni Pule Highway. Your recommendation regarding only a single access for the development is acknowledged. The developer will work with your staff to coordinate and resolve the exact access requirements for the development.

Thank you for your letter. We appreciate the time spent by you and your staff reviewing the EIS.

Sincerely,

James R. Bell
James R. Bell

JRB:AKY:lsf
cc: Kohala Makai I
Hawaii County Planning Department
Environmental Quality Commission

BCA, LTD. Principals: James R. Bell, Paul M. Hirta, Raymond F. Cain, Joseph Vavra, Jr., Thomas P. Papadew

SWP 8.8091

February 18, 1982

Mr. Sidney Fuke, Director
Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Mr. Fuke:

Environmental Impact Statement
Kohala Makai I

Thank you for the opportunity to comment on the subject
EIS.

The access onto Akoni Pule Highway is a problem and we, therefore, strongly recommend the option mentioned in your report that only a single access be provided from this development.

Exact access requirements will have to be coordinated and resolved with our Highways Division.

Very truly yours,

Ryokichi Higashionna
Ryokichi Higashionna
Director of Transportation

/cc: Mr. James R. Bell

100
FEB 22 1982
MRS. COLLINS & ASSOCIATES

George Yuen
Director
TELEPHONE NO.
245-5115



STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

100 MALDENBLUM ST.
ROOM 301
HONOLULU, HAWAII 96813

February 19, 1982

Sidney Fuke
February 19, 1982
Page 2

P. V-22

Since refuse collection service will not be provided to the development, indiscriminate dumping of household trash and its associated problems of fly and rat infestation should be anticipated and addressed.

We trust that our comments will be helpful in the preparation of the revised statement. Thank you for the opportunity to review the EIS.

Sincerely,

Malvin Kolzumi
Malvin Kolzumi
Deputy Director
Department of Health

cc: Kohala Makai I
c/o Belt, Collins & Associates
745 Fort Street, Suite 418
Honolulu, Hawaii 96813-3891

SUBJECT: Environmental Impact Statement for Kohala Makai I

Dear Mr. Fuke:

We have reviewed the Environmental Impact Statement for Kohala Makai I and offer the following comments:

P. II-23

The EIS should state whether the amenities such as ocean access, picnic areas, tennis courts, would be for public use or for the exclusive use of the residents of Kohala Makai I.

P. IV-6

This section on "Erosion Potential and Mitigation" is evasive, it lists a number of mitigation measures but makes no commitment that any will be used. Other sections of this EIS were also weak in this regard.

P. IV-50

The impact of smell from the proposed sewage treatment plant should be addressed.

P. V-12

The EIS should provide a rationale supporting the statement that "the development would generate between 5 to 20 kindergarten through 12th grade students that would attend public school." It seems highly improbable that a development which consists of 350 two and three bedroom units would generate so few students.



Belt, Collins & Associates

Engineers, Planners, Architects
1100 Kalia Road, Suite 410, Honolulu, Hawaii 96813
Telephone: (808) 521-5361 Telex: BFL11174W774

Mr. Melvin Koizumi
Page two

23 March 1982
82-456

23 March 1982
82-456

Mr. Melvin Koizumi
Deputy Director for Environmental Health
State of Hawaii Department of Health
Office of Environmental Quality Control
550 Halekaunila Street, Room 301
Honolulu, Hawaii 96813

Dear Mr. Koizumi:

Environmental Impact Statement for the
Proposed Kohala Makai I Residential Development
Kohala, Hawaii

Because Belt, Collins & Associates prepared the Environmental Impact Statement (EIS) for the proposed Kohala Makai I residential development, your February 19, 1982 letter to the Hawaii County Planning Department regarding the document is being answered by us. We appreciate the time spent by you and your staff reviewing the EIS. Responses to your comments follow under the page numbers you referenced.

Page 11-23

There would be a public access to the ocean as shown on Figure II-8 (page 11-21). The "amenities" listed under this heading on p. 11-23 would be for residents of Kohala Makai I. A statement clarifying this will be added to the revised EIS.

Page 14-6

It was not our intent to be "evasive" with respect to the erosion control measures that would be used. Without a specific site plan we were simply unable to be more specific. In listing a number of measures that might be used, we were attempting to demonstrate that adequate control of soil loss is possible. This is as much as we can do at the present time.

The County of Hawaii does have a grading ordinance with which the proposed Kohala Makai I project must comply before necessary construction permits will be issued. The plans which accompany the grading permit application will indicate the specific erosion control practices which will be followed, and issuance of the grading permit will be conditioned on the implementation of these measures. In view of these controls, it is our belief that the coverage of this topic contained in the EIS is adequate.

Your letter also states that other sections of the EIS were "weak" with respect to the commitment to mitigation measures which they expressed. However, no examples were given. Hence, it is impossible to respond to this assertion at the present time.

B.C.A. LTD. Principals: James R. Bell, Paul M. Finley, Raymond E. Carr, Joseph Verra, Jr., Thomas P. Paudyal

Page 14-50

The following paragraph will be added under the "Anticipated Impacts" heading of this section in the revised EIS to address the impact of smell from the proposed sewage treatment plant:

The sewage treatment plan process and location would be designed to minimize impacts from sewage odors, both for residents of Kohala Makai I and for those in Kohala Estates. The proposed activated sludge wastewater treatment process is generally the least offensive treatment process in terms of smell. And locating the plant in the northeast corner of the project site takes advantage of the prevailing wind directions. The wind comes predominantly from the west-northwest during the day, and from the east-southeast at night. Thus, at night odors would be blown across Kahua Ranch's vacant property directly north of the project site. Odors from the treatment plant could reach the near corner of the large parcel in the southeast corner of the Kohala Estates development during the day. However, given the agricultural zoning of the parcel, its impact would probably be minor.

Page 14-12

The statement you referred to on this page, as we indicated, was based on a letter received from the State Department of Education (see letter on page X-30). The DOE has recently confirmed this estimate in a letter dated February 12, 1982 (see attachment).

We understand your concern that the number of students projected may be low, but we presume the DOE is in a position to make an informed estimate based on their experience with similar projects. While the basis for their calculations wasn't given, we imagine the factors which might contribute to a relatively low generation rate for public school students could include:

- o Some of the units would have only one bedroom, suggesting that they would house virtually no students.
- o A substantial percentage of the units would be occupied by part-time owners or visitors.
- o Families in the socio-economic strata the project would be marketed to often send their children to private schools.
- o In rapidly developing resort areas there tends to be a higher than average proportion of childless households among the work force.

100
FEB 23 1982
DIT, COLLINS & ASSOCIATES



University of Hawaii at Manoa

Environmental Center
Crawford 317 • 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 951-7215

Office of the Director

County of Hawaii Planning Department
22 Aupuni Street
Hilo, Hawaii 96720

Dear Sirs:

Draft Environmental Impact Statement
Kohala Makai I
Kohala, Hawaii

The Environmental Center has reviewed the above cited EIS with the assistance of Peter Flachsbart, Urban and Regional Planning, and Robert Rowland, Environmental Center. Although there are significant planning issues yet to be resolved with regard to this project, we have found the EIS generally to be a high quality document. The EIS correctly identifies and adequately discusses the several environmental impacts that could occur if the proposed project is developed. The discussion of these impacts and their mitigative measures appears to be adequate in some cases (e.g., erosion) and excellent in others (e.g., traffic). Also, the methods used to identify these impacts appear to be sound, and limitations of the methodology are candidly discussed. We do have several comments, however, that are contained in the following paragraphs.

It is not clear whether the developers intend to adopt any or all of the recommended mitigative measures that are within their control. For example, the applicant has listed several actions that could be taken to mitigate the serious erosion potential of site development. Will the developers assume on adoption of these recommendations, or must regulatory agencies force compliance? This concern also applies to recommendations pertaining to mitigating construction dust and noise.

The forecasting methodology used in the Project Rationale section should be clarified. A simple historical trend analysis is suggested in the estimate of market demand prepared in 1980. Given the current marketplace and its prospects for the future, a second opinion might be worthwhile from the applicant's viewpoint.

In general, the proposed project represents a small increment in the trend toward urbanization for the Kohala coast. As such, the proposed project, by itself, does not appear to generate any significant environmental and socio-economic impacts which cannot be mitigated through design or resolved through negotiations with appropriate public agencies or private landowners. The larger issue of cumulative impacts resulting from the several separate housing and resort projects (approved and proposed) over the next twenty years may not be addressed for several reasons. It is difficult for individual developers to determine how their project contributes to this cumulative impact, designs

AN EQUAL OPPORTUNITY EMPLOYER

County of Hawaii Planning Department

-2-

February 22, 1982

of projects are not formalized, and the County's plans for infrastructure improvements to handle this growth is uncertain. Will the County of Hawaii Planning Department be responsible for identifying the cumulative impacts and infrastructure needs of this development?

We appreciate the opportunity to review this document and we await your response to our comments.

Sincerely,

Doak C. Cox
Director

cc: Office of Environmental Quality Control
James Ibell
Peter Flachsbart
Jacquelin Miller
Robert Rowland

Belt, Collins & Associates
Engineers Planners Architects
Landscape Architects
1140 Ala Moana Blvd., Suite 1075, First St., Honolulu, Hawaii 96813-3091
Telephone: (808) 521-5341 Telex: BEL HI 743074

Dr. Doak C. Cox, Director
Page two

23 March 1982
82-459

23 March 1982
82-459

Dr. Doak C. Cox, Director
Environmental Center
University of Hawaii
2250 Campus Road
Honolulu, Hawaii 96822

Dear Dr. Cox:

Environmental Impact Statement for the
Proposed Kohala Makai I Residential Development
Kohala, Hawaii

Because Belt, Collins & Associates prepared the Environmental Impact Statement (EIS) for the proposed Kohala Makai I residential development, your February 22, 1982 letter (your reference RE:0348) to the Hawaii County Planning Department regarding the document is being answered by us. We are pleased that you found the EIS generally to be a high quality document. Responses to your comments are given below.

Mitigation Measures for Construction Activities

Possible measures for mitigating the impacts of erosion, dust, and noise during the construction period were recommended in the EIS. However, until more detailed plans for the project are available, it cannot be determined which measures would be most effective and appropriate. Because of this, no specific erosion control plans have been formulated or committed to as yet.

When the grading permit is applied for, proposed erosion control measures will be specified. At that time, the Hawaii County Department of Public Works can require any additional measures they consider necessary to control both water and wind erosion. Construction noise impacts will be minimized by adherence to State Department of Health conditional use permit procedures for construction activities. Since construction would probably be incremental, in all cases the greatest potential impacts would be on the earlier phases of the Kohala Makai I development. This means the developer has a greater incentive to minimize or avoid adverse impacts since he will not be able to market his units if there is considerable noise, dust, and erosion from ongoing construction.

Forecasting Methodology

The forecasting methodology described in "Chapter III, Project Rationality" was developed by Hastings, Martin, Chew & Associates as part of the market analysis prepared by that firm for the proposed project. They replied to the comments in the third paragraph of your letter as follows:

1. The forecast methodology appears to be very clear, so it is not clear as to what aspect of it needs to be clarified.

2. Our projection of market demand was based upon analysis of historical trends and correlated with the historical experience of reasonably similar resort regions during each of their developing stages. While the analysis may appear simple, it was not. To wit, discussion and presentation of the demand projections required five (5) pages of text, five (5) tables and one (1) graphical illustration.

3. The mortgage market will certainly affect demand since it affects the ability of the buyer to finance the purchase. Our analysis focused upon data that had been developed over a fifteen (15)-year period and which did reflect irregular and not smooth patterns. This includes periods in which the market activity was being influenced by a variety of discontinuous forces. Yet, markets tend to equilibrate. While the current mortgage market conditions have indeed caused discontinuous patterns of real estate market activity, we believe that supply, demand and other market pressures will again tend to equilibrate, and that a more normal pattern will again emerge.

It should be noted that our demand analysis was based upon visitor arrival forecasts and population forecasts. While visitor arrivals have been flat for a couple of years, arrivals in January 1982 have started increasing again. No one would have projected flat visitor arrivals for the next several years, however, based upon the discontinuous two flat years. In fact, the flat years generated market reactions which resulted in increased promotions, which are likely to bring visitor arrival patterns back into a historically equilibrium trend. Similarly, we expect mortgage market reactions probably in the form of new financing programs or policies which will move the mortgage market conditions back to a historically equilibrium trend.

Regional Cumulative Impacts

Where possible, the EIS identified the kind and scope of infrastructure improvements which would be required by planned development in the region. See, for instance, p. IV-31 regarding the traffic impacts and necessary road improvements resulting from planned resort development and associated secondary growth in the region. In Chapter V, it is also noted that additional construction or expansion of public facilities, services, and utilities will be required, not usually in response to this project, but to accommodate the

23 March 1982
82-459

Dr. Doak C. Cox, Director
Page three

region's projected population growth. It is true that an EIS for a single project cannot address the cumulative impacts of other development. The County has published no document identifying the cumulative impacts of planned and proposed development in the region, but they will consider this project's request for a General Plan amendment in light of its contributions to the cumulative impacts of growth in the region. It should be remembered that Kohala Makai I is primarily a residential project; as such, it will accommodate population growth destined to occur in the region in any case.

Thank you for your letter. We appreciate the time spent by you and your colleagues reviewing the EIS.

Sincerely,



James R. Bell

JRB:AXY:lsf
cc: Kohala Makai I
Hawaii County Planning Department
Environmental Quality Commission

RECEIVED
FEB 11 1982
BILT, COLLINS & ASSOCIATES



University of Hawaii at Manoa

Water Resources Research Center
1400 University Avenue • 2530 Holo Street
Honolulu, Hawaii 96822

8 February 1982

County of Hawaii Planning Dept.
25 Aupuni Street
Hilo, Hawaii 96720

Gentlemen:

Subject: Environmental Impact Statement for the Proposed Kohala
Makai I Residential Development, January 1982

We have reviewed the subject EIS and offer the following comments:

1. Listed on p. IV-6, "Erosion Potential and Mitigation Measures", are a number of methods which could (emphasis added) be used to reduce or abate erosion. But there is no commitment that any or all of them will actually be used. Does the County have a grading or construction ordinance on erosion control?

While the average annual rainfall is quite low, heavy rains from "kona" storms do periodically occur in the area, particularly during the winter months. Incremental development wherein only a portion of the land is exposed to any time would also reduce the risk of erosion. Protecting the Class AA waters off-shore would be highly desirable.

2. If an on-site sewage treatment plant is built, the project might consider using the treated effluent for irrigating the grounds.

Thank you for the opportunity to comment. This material was reviewed by WRC personnel.

Sincerely,

Edwin T. Murabayashi
Edwin T. Murabayashi
EIS Coordinator

ETH:jm

cc: Y.S. Tok
H. Gee
Enw. Center, UH
James Bell, Belt Collins

AN EQUAL OPPORTUNITY EMPLOYER

Belt, Collins & Associates
Engineers Planners Landscape Architects
Hawaii Bldg., Suite 118745 Fort St., Honolulu, Hawaii 96813-3091
Telephone (813) 531-5361 Telex BELTII 7130474

18 March 1982
82-448

Mr. Edwin T. Murabayashi
EIS Coordinator
Water Resources Research Center
University of Hawaii at Manoa
2540 Dale Street
Honolulu, Hawaii 96822

Dear Mr. Murabayashi:

Environmental Impact Statement for the
Proposed Kohala Makai I Residential Development
Kohala, Hawaii

Because Belt, Collins & Associates prepared the Environmental Impact Statement (EIS) for the proposed Kohala Makai I residential development, your 8 February 1982 letter to the Hawaii County Planning Department regarding the document is being answered by us. I hope the discussion presented below adequately addresses the two concerns raised in your letter.

1. The County of Hawaii does have a grading ordinance. Any large development project must submit grading plans with erosion control measures specified to the Hawaii County Department of Public Works for their review and approval. The Department may require additional measures, if necessary, as conditions to the grading permit. It was not possible to specify the erosion control measures in the EIS because detailed plans for the project have not yet been developed. While the EIS outlined possible means of reducing erosion, the commitment to specific erosion control measures will be made when the grading permit is applied for.

The erosion control measures are intended to protect the Class A ocean waters adjacent to the proposed project site. Incremental development is one of the measures discussed in the EIS that may be used to control erosion. Another measure suggested in the EIS was to avoid development during rainy periods, that is, particularly the winter months. The statement on page IV-6 that rainfall in the area is low will be qualified with a note about occasional heavy rains.

2. While use of treated sewage effluent is acceptable for irrigation of golf courses and other extensive uses removed from residences, the State Department of Health does not allow its use close to dwellings. This fact is stated on page IV-49 of the EIS. Therefore, irrigation of the grounds of the Kohala Makai I development with treated effluent is not possible.

BCA, LTD. Principals: James K. Bell, Paul M. Hironaka, Raymond F. Cain, Joseph Vieira, Jr., Thomas P. Papandrew

XII-32

Mr. Edwin T. Murabayashi
Page two

18 March 1982
82-448

Thank you for your letter. We appreciate the time spent by you and the staff of the Water Resources Research Center reviewing the EIS.

Sincerely,



James R. Bell

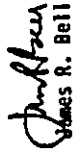
JRB:AKY:lsf
cc: Kohala Makai I
Hawai'i County Planning Department
Environmental Quality Commission

Mr. Edwin T. Murabayashi
Page two

18 March 1982
82-448

Thank you for your letter. We appreciate the time spent by you and the staff of the Water Resources Research Center reviewing the EIS.

Sincerely,


James R. Bell

JRB:AKY:1sf
cc: Kohala Makai I
Hawaii County Planning Department
Environmental Quality Commission



COPY

DEPARTMENT OF WATER SUPPLY - COUNTY OF HAWAII

1100 KALANANAKU DRIVE, HONOLULU, HAWAII 96813

February 22, 1982

205 AUGUST STREET, HONOLULU, HAWAII 96813

TO: Planning Department
FROM: Manager
SUBJECT: KOHALA MAKAI I ENVIRONMENTAL IMPACT STATEMENT

We reviewed the Environmental Impact Statement prepared by Belt, Collins & Associates and have the following comment.

It is preferable by this Department that the developer utilize their groundwater source as the primary source and the Department's Kalahele water source as a secondary standby source. The Kalahele water system must be further developed to meet the required capacities.

cc: William Sewake, Manager

cc: Belt, Collins & Associates
State Environmental Quality Commission

Belt, Collins & Associates
Engineers - Planners - Landscape Architects
1440 Ala Moana Blvd., Suite 410, Honolulu, Hawaii 96813-3091
Telephone (808) 521-5101 Telex: B1111231000

22 March 1982
82-458

Mr. H. William Sewake, Manager
Department of Water Supply
County of Hawaii
25 August Street
Hilo, Hawaii 96720

Dear Mr. Sewake:

Environmental Impact Statement for the
Proposed Kohala Makai I Residential Development

Because Belt, Collins & Associates prepared the Environmental Impact Statement (EIS) for the proposed Kohala Makai I residential development, your February 22, 1982 memorandum to the Hawaii County Planning Department regarding the document is being answered by us.

Our response to the memorandum is based on further information obtained at our meeting with you on March 1, 1982. We understand that Kohala Makai I would be allowed to connect to the County water system if the developer pays for the extension of the water system from Kawaihae to the site, plus a charge equivalent to the project's share of source development costs, as well as its share of costs for possible improvements to the system in Kawaihae.

Thank you for your memorandum. We appreciate the time spent by you and your staff reviewing the EIS.

Sincerely,

James R. Bell
James R. Bell

JRB:AKY:lsf
cc: Kohala Makai I
Hawaii County Planning Department
Environmental Quality Commission

... Water brings progress ...

BCA, LTD. Principals: James R. Bell, Paul M. Thoma, Raymond F. Cain, Joseph Verra, Jr., Thomas P. Papadimitriou

Belt, Collins & Associates

Engineers, Planners, Architects
Landscape Architects, Environmental Scientists
1440 Kalia Road, Suite 100, Honolulu, Hawaii 96813
Telephone: (808) 531-1111

3 April 1982
82-507

Mr. Sidney Fuke, Director
Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Mr. Fuke:

Environmental Impact Statement for the
Proposed Kohala Makai I Residential Development
Kohala, Hawaii

Thank you for your letter of March 10, 1982 commenting on the subject document. We appreciate the time spent by you and your staff reviewing the Environmental Impact Statement (EIS). Our responses to your comments follow the numbering in your letter.

1) Drainage, Erosion, and Related Impacts to Coastal Waters

Please see our responses to the Department of Land and Natural Resources and the U.S.D.A. Soil Conservation Service with respect to the comments they submitted. We agree that since specific mitigation measures cannot be determined until detailed site plans are drawn up that a section entitled Erosion Control Measures should be added to Chapter VIII. The discussion in this section will read as follows:

Erosion Control Measures

Because detailed site plans have not yet been developed, the extent and timing of the land alterations the project would involve are not known at this time. Therefore, the exact measures which would be taken to mitigate the expected increase in erosion during the construction period are still unresolved. Possible erosion control measures are listed on page IV-6 and IV-7 of the EIS. When application is made to the Hawaii County Department of Public Works for a grading permit, an erosion control plan would be submitted for their review and approval.

2) Water

Discussions have been held with the Hawaii County Department of Water Supply, and Kohala Makai I, Limited Partnership is willing to pay for its share of source development costs as well as possible improvements to the Kawahae water system, in addition to paying for the extension of the system from Kawahae to the site. Given the projected growth in the region, further

B-3 LTD Principal James R. Bell Paul M. Hoada Raymond L. van Joseph Maria L. Thomas P. Papenhem

development of the Lalaimo source seems very likely. While no specific allocations have yet been made for water from future wells, the Department of Water Supply has indicated if Kohala Makai I assists financially in the source/system costs as described above, water would be available for the project.

3) Hawaiian Home Lands

We contacted Gordon Wong of the Department of Hawaiian Home Lands to see if any further information was available regarding their plans for the Department's Kawahae lands. He told us that they were still processing the contract for the planning consultant who will be preparing the plans for these lands and so there was no further information that he could provide.

4) Means to Achieve Long-Term Residential Use

Hastings, Martin, Chew & Associates has stated that in:

regard to the estimated ratio of anticipated use, we based the projection on the results of our experience of reasonably similar types of projects. The ratio generally reflects what has been experienced based upon commonly used marketing strategies and programs, sales agreements and covenants.

Kohala Makai I, Limited Partnership intends to pursue other means besides the common practices, to achieve largely long-term residential, rather than visitor, use of the units in the project. For the first ten days half of the units must be available only to owner-occupant purchasers under Chapter 514A, Hawaii Revised Statutes (HRS). Kohala Makai I, Limited Partnership would extend this period and make available more than 50 percent of the units to owner-occupants during this time. They also plan to offer the units at a discounted purchase price to owner-occupants. The provisions of Chapter 514A, HRS require lending institutions to "take all reasonable steps necessary to determine that the individual, in fact, intends to become an owner-occupant of such residential unit". The Real Estate Commission Regulations also call for an affidavit of intent to become an owner-occupant of a residential unit. A paragraph will be added to Chapter III of the EIS describing these means.

5) Time-Sharing and Effect on Marketability

Hastings, Martin, Chew & Associates, Ltd. has analyzed the possible impact that passage of the proposed County time-sharing ordinance might have on the marketability of the Kohala Makai I project. In their opinion "the net impact would be nil, or at worst, a modest lengthening of the marketability period," since there would be a compensating effect that could offset the loss of short-term rental use completely. They explain the effect as follows:

While the ordinance limits the potential for short-term vacation rental of units outside of designated resort or hotel property, it concomitantly enhances the financial potential for short-term vacation rental units within resort and hotel areas. Normally, residential apartment units in resort and hotel areas are sources of units for long-term rentals as well as for short-term. If the

ordinance directs the short-term rental market demand to resort and hotel areas, the financial attractiveness of such use in such areas will be increased. As more demand is directed to these short-term rental units, achievable occupancies would increase. As occupancy levels increase, rates increase and short-term rental returns begin to exceed long-term rental returns. Investor owners of residential apartment units in resort and hotel areas would then be motivated to remove their units from the long-term rental inventory and shift to more rewarding short-term rentals. Removing these units from the long-term rental inventory would increase the demand for long-term rental units outside the resort and hotel designated areas. As such, the investor owner that might have planned to use units in Kohala Makai I for short-term rental use, would find increased financial benefits from renting the unit on a long-term basis. Thus, the motives for purchase would likely be sustained.

Moreover, resort residential apartment units have traditionally been occupied by a number of full-time residents, both owner-occupants and long-term renters. Since the ordinance will tend to direct a greater proportion of short-term renters to resort and hotel areas, the ambience and character of such areas could become less desirable to owner-occupants and long-term renters who might then seek housing still within the region, but not specifically within resort or hotel designated areas. Therefore, there might be a tendency for owner-occupants and long-term renters to also contribute to the potential demand for units in a project such as Kohala Makai I.

All of these potential market shifts could . . . compensate for the loss of short-term occupancies from visitor use. Therefore, we conclude that the likely impact of the proposed timeshare/vacation rental ordinance would be to increase the share of long-term residential occupancies as an offset to the decrease in short-term visitor use, and possibly a slight increase, if at all, in the marketability period.

This discussion will be added to chapter III of the EIS.

Thank you for your comments. If there is any additional information we may provide, please call us at 521-5361.

Sincerely,



James R. Bell

JRB:AKY:lsf
cc: Kohala Makai I
Hawaii County Planning Department
Environmental Quality Commission

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118 93 142

Bill Collins & Associates

Box 155
Hawi, HI 96719
February 16, 1982

County of Hawaii Planning Department
24 Aupuni Street
Hilo, HI 96720

Re: Kohala Makai I EIS

Dear Planning Department:

Please find herewith my comment on the Environmental Impact Statement for Kohala Makai I prepared by Bull, Collins & Associates.

There appear to be numerous difficulties. The socioeconomic section is particularly weak, and gives no sense of the ethnic composition, lifestyle or lifestyle preference of neighboring residents in North Kohala. These have expressed themselves strongly to the Mayor of the County as being opposed to condominium development in North Kohala.

In addition, the EIS offers conflicting presentations as to whether the condominiums are intended for residents or tourists; this conflict is particularly apparent in the astonishingly low number of children foreseen as living in the project. The EIS has not answered the County's request, in its Assessment, for a description of marketing strategy to ensure that the condominiums will attract residents rather than visitors.

A map on page V-20 erroneously labels as "beach parks" several County parks which have no beaches, thereby perhaps suggesting that North Kohala residents have more alternatives than they do once this property is withdrawn from possibilities for camping and diving along traditional mauka-makai trails and roads.

However, I am primarily concerned with the survival of the offshore marine community, which I believe this project seriously endangers.

ADVERSE IMPACTS ON THE MARINE COMMUNITY, AND WATER POLLUTION, ARE INADEQUATELY TREATED.

In its treatment of impacts on the nearshore marine community and possible water pollution, the EIS does not meet the following requirements of the Environmental Quality Commission Regulations: E1:42f (discussion

Kohala Makai EIS (2)

of adverse effects such as water pollution); E1:42j (discussion of irreversible commitments of non-renewable resources); E1:42b:6 (provision of summary technical data); and in general appears self-serving, prohibited by section E1:40.

While adverse impacts are slighted, the nearshore marine community which is my concern is well described in the EIS as follows:

"WITH RESPECT TO RESOURCE POTENTIAL, THE REEFS OF KOHALA EXHIBIT SOME OF THE HIGHEST CORAL COVER, UNUSUALLY COMPLEX TOPOGRAPHY, CANOPY AND CLEANEST WATER, AND SOME OF THE RICHEST FAUNAL POPULATIONS IN THE HAWAIIAN ISLANDS."

The nearshore marine community is described in Appendix D by Steven Dollar, Marine Research Consultant. However, Dollar errs in his analysis. He writes, "Since . . . ground cover is predominantly porous lava rather than soil, runoff of terrigenous sediments is almost non-existent" (page D-6). Dollar therefore comes to the conclusion, "Based on evaluation of the community and its tolerance to stress /which is low/, there is no reason to expect any significant adverse impacts due to development activities." (page D-12)

This conclusion appears to be the technical base support for many similar conclusions expressed throughout the EIS, all of which appear false to this reader, for the following reasons:

1. ARCHAEOLOGIST CONTRADICTS FINDINGS

In Appendix A archaeologist Paul Rosendahl states that "in many parts of the area there are soil deposits of thick alluvium." Portions "have alluvial deposits which are as much as two meters thick . . ." (page A-2).

2. STATE CONSERVATIONIST CONTRADICTS FINDINGS

On page X-23 State Conservationist Jack P. Kanals writes:

" . . . the site has severe problems for grading activities, including a high erosion potential, depth to bedrock, sewage disposal and water pollution hazard during development.

" . . . steep slopes create extremely difficult grading hazards which may require extensive blasting. Wind and water erosion hazards are very high because of the high winds. . . . Previous grading and excavation work immediately to the south suffered severe wind erosion and dust problems that were extremely difficult to control. Even when adequate water for sprinkling was available dust was a problem. At present there is no source of water at the proposed site. . . .

"The potential for sediment pollution of the ocean is also very high . . . The soil in the area is one of the more erosive types on the Big Island."

Belt, Collins & Associates

Engineers, Planners, Landscape Architects
Landscape Architects
1100 Kalia Road, Suite 407, Honolulu, Hawaii 96813-3941
Tel: (808) 734-7474
Fax: (808) 734-7474

29 March 1982
82-461

KOHALA MAKAI EIS (5)
Protection Agency report) and that sewage treatment will impact the reef to a lesser or greater extent undeterminable at present due to a cursory description.

Thank you for this opportunity to comment.

Sincerely,


Judith Graham

Ms. Judith Graham
P.O. Box 155
Hawi, Hawaii 96719

Dear Ms. Graham:

Environmental Impact Statement for the
Proposed Kohala Makai I Residential Development
Kohala, Hawaii

Because Belt, Collins & Associates prepared the Environmental Impact Statement (EIS) for the proposed Kohala Makai I residential development, your February 16, 1982 letter to the Hawaii County Planning Department regarding the document is being answered by us. Our responses are organized under the following headings, some of which cover several of your specific comments.

Ethnic Composition of North Kohala

The ethnic composition of both North and South Kohala is discussed on page V-2.

"Lifestyle and Lifestyle Preference of Neighboring Residents"

Although just inside the North Kohala District boundary, the proposed Kohala Makai I project would be more closely tied to the South Kohala coastal communities (i.e. Kawaihae and the resorts), geographically, socially and economically, than to North Kohala communities. Because the project is primarily residential in nature, its primary function would be to accommodate population growth generated by expanding employment opportunities elsewhere in the region, not to generate such growth. Because of this, the project's impacts on "lifestyle" would be very limited, although obviously residents of Kohala Makai I would have different lifestyle preferences than most existing North Kohala residents.

Intended Market

The EIS states, based on the market study by Hastings, Martin, Chew & Associates, Ltd., that the Kohala Makai I units would be utilized mostly by full-time residents, but that there would be a certain percentage of units occupied part-time by owners or visitors. You felt this conflicted with the number of public school students which the State Department of Education (DOE) projected the development would generate (see letter on page X-30).

The DOE confirmed its original estimate in a letter dated February 12, 1982 (see attachment).

B. A. (77) Principal, James K. Leil, Paul M. Hinton, Raymond F. Cain, Joseph Verra, Jr., Thomas P. Papamkrew

We understand your concern that the number of students projected may be low, but we presume the DOE is in a position to make an informed estimate based on their experience with similar projects. While the basis for their calculations wasn't given, we imagine the factors which might contribute to the relatively low generation rate for public school students they reported could include:

- o Some of the units would have only one bedroom, suggesting that they would house virtually no students.
- o Some of the units would be occupied by part-time owners or visitors.
- o Families in the socio-economic strata the project would be marketed to often send their children to private schools.
- o In rapidly developing resort areas there tends to be a higher than average proportion of childless households among the work force.

Means to Attain Long-Term Residential Use

Chapter 514A of the Hawaii Revised Statutes (HRS) requires that 50 percent of the residential apartment units shall be initially offered only to owner-occupants for a ten-day period. The Kohala Hakai I, Limited Partnership would extend this period and make available more than 50 percent of the units. They also plan to offer the units at a discounted purchase price to owner-occupants. The provisions of Chapter 514A, HRS require lending institutions to "take all reasonable steps necessary to determine that the individual, in fact, intends to become an owner-occupant of such residential unit." The Real Estate Commission Regulations also call for an affidavit of intent to become an owner-occupant of a residential unit. A paragraph will be added to Chapter III of the EIS describing these means that Kohala Hakai I partners would pursue to achieve largely long-term residential, rather than visitor, use of the units.

Beach Parks

The map on page V-21 and the table on page V-20 identified County parks in North and South Kohala according to their names in the County of Hawaii Recreation Plan. After receiving your letter we called the County Department of Parks and Recreation to see if the plan incorrectly identified them. A staff person confirmed that the names we used are the official names. He stated the County calls them beach parks because they are on the shoreline. We understand your concern about recreational opportunities for North Kohala residents, but there was no intent on our part to deceive by labeling these parks on the shoreline "beach parks."

Adverse Impacts on the Marine Community Due to Erosion

Several of your specific comments relate to this central concern of your letter. Our response here will address each of them but not exactly in the order in your letter, and will show that we did meet the requirements of the Environmental Quality Commission Regulations.

The concern you expressed over inconsistencies between the soil descriptions contained in the EIS and Steven Dollar's statement that "the groundcover is predominantly porous lava rather than soil" is understandable. Lava outcrops do occupy 10 to 20 percent of the land surface, but the remainder generally has a relatively thin soil mantle which could be eroded. While we relied on the Dollar study for information regarding the existing marine community and its tolerance to development-related environmental stresses, our analysis of potential erosion and sedimentation was conducted independently and assumed the presence of a soil cover. The remainder of this section outlines the logic behind our conclusions. We hope it dispels any doubts you may have had. First, existing conditions are described, then post-construction conditions, and, finally, construction-period conditions.

Existing Conditions. Soil erosion by either wind or water does not appear to be a problem for the marine community so long as the site remains in its present state. Dollar's study offers clear evidence that the nearshore marine community is not presently subject to high rates of sedimentation. Despite the sparse vegetation cover on the site, waterborne sediment is not a problem because the site is in an area with the lowest amount of erosive rainfall in the state, according to the Soil Conservation Service's publication Erosion and Sediment Control: Guide for Hawaii. Localized wind erosion does not affect water quality or marine biota because soil particles which become airborne are dispersed over a large area before settling on the ocean.

Post-Construction Conditions. Erosion rates following construction will almost certainly be less than they are at present. With approximately 12 units per gross acre, the project is a relatively high-density development. Because the site is steep, as you noted, the design of the project will be a terraced one, so that extent of overland flow by surface runoff will be limited. That is, the runoff will not travel far before being intercepted by a cross slope drain and carried to one of the natural drainageways on the site. The distance overland flow travels relates to its velocity, and this, in turn, determines its erosive force. Hence, interception and retardation of the flow by cross-slope roadways and drains will reduce erosion. Also, impermeable surfaces such as roadways, parking areas, roofs, walkways, and lanais will cover a very large proportion of the development areas. No erosion can occur from these areas. Nearly all of the remainder of the development areas will be covered with irrigated landscaping. This dense vegetative cover will allow far less erosion than the existing dryland scrub.

Construction-Period Conditions. Given the above, it is evident that only during the construction phase of the project could potentially significant erosion occur. For reasons previously mentioned (i.e., their dispersion over very large areas), airborne soil particles would not have a significant adverse impact on water quality or marine organisms. Finally, there is the question of whether a significant amount of erosion likely to occur as a result of rain falling on exposed soil during the construction phase of the project. As previously noted, the project site is subject to relatively little erosive rainfall. In fact, rainfall frequency maps prepared by the U.S. Weather Service indicate that rainfall of sufficient intensity to produce runoff (and, therefore erosion) would occur only a very few times over the course of a three-year construction period. Moreover, the construction activities would take place on only a small percentage of the watershed area tributary to the affected shoreline discharge points; sediment production from the remainder of the watershed would remain at its present level. Most importantly, an erosion control plan for the project will be prepared and submitted to the County as required by the County grading ordinance. Until design plans for the project are at a more advanced stage, it is impossible to provide the details of the erosion control measures that will be taken. However, it is our belief that the Hawaii County Department of Public Works, which must grant the grading permit for Kohala Makai I, will not do so unless it is convinced that significant adverse impacts can be prevented.

Sewage Effluent Impacts on the Marine Community

Your letter requests a far more detailed design analysis of the proposed wastewater treatment system than we believe is appropriate at this time. To substantiate this I would like to respond to your comments on this matter on a point-by-point basis.

State Conservationist's Request. In his letter of June 15, 1981, Mr. Jack Kanaliz did ask that the EIS discuss "the severe limitations of the site for sewage disposal." However, he gave no reason why problems would be encountered disposing of treated sewage effluent through irrigation or injection wells. It is our belief that his statement was based on the fact that the soils present have low permeability and are, therefore, poorly suited for cesspools and septic tanks. The proposed injection wells would dispose of treated effluent below the soil layer into permeable basalt.

Effluent Effects on the Marine Biological Community. For many years the effluent from the Mauna Kea Beach Hotel sewage treatment plant was disposed of through injection wells. As a water conservation measure it is now used in part to irrigate the golf course. No adverse effect on the nearshore marine community is evident despite the fact that some of the soluble nutrients are undoubtedly carried into the ocean by the prevailing mauka to makai groundwater flow. The reasons for the absence of adverse effects appear to be: (1) the fact that the treated effluent receives additional purification as it flows

through the vegetation (in the case of irrigation), the soil, and the basalt aquifer; (2) the treated effluent is greatly diluted by mixing with the other groundwater that is present; and (3) the effluent is further dispersed and diluted by wave and tidal action once it reaches nearshore waters. In short, while it is true that some of the nutrients and other substances contained in the treated effluent will eventually find their way into nearshore waters, the available evidence from similar treatment and disposal systems (such as that at the Mauna Kea Beach Hotel) strongly suggests that these would not alter the quality of those coastal waters to any substantial degree and would not, therefore, adversely affect the marine biological community.

Page IV-18. Treated effluent from the sewage treatment facility would be discharged into injection wells or onto irrigated fields. It would reach the marine environment indirectly after passing through hundreds of feet of soil and basaltic lava. Installation and operation of the project, including the wastewater system, would involve no direct physical modification of the near-shore environment. As noted above, the effluent would alter groundwater quality in the vicinity of the disposal wells, and this in turn would alter coastal water quality. We consider this to be an "indirect" impact and so stated in the EIS. It should be noted that the question of whether an impact is direct or indirect is really of little consequence. What does matter is whether or not it causes significant harm to the environment. Thus, while it is true that the effluent would affect groundwater quality, we judged this to be insignificant because the change in quality would be small, because the water is not a potential source of potable water (it is too saline), and because the addition of the treated effluent would not cause measurable harm to marine biota.

Use of Effluent for Irrigation. As the EIS notes (p. IV-49), irrigation with effluent is not permitted in residential areas. This is why the report goes on to state that utilization of this disposal option would require "...an agreement with adjacent landowners or acquisition of another parcel." Given the existing scarcity of water suitable for irrigation and the presence of surrounding land zoned for agriculture, such an arrangement appears to be a technically feasible alternative to subsurface disposal. However, many details would need to be worked out, and it would take the energetic efforts of the developer and the cooperation of a nearby landowner to bring it to fruition.

Further Engineering Studies. At the present time the Kohala Makai I site does not have either the Hawaii County General Plan or Zoning designations necessary for the proposed project. It would be imprudent for the developer to undertake the detailed (and expensive) engineering studies you are requesting before the County has reached a basic policy decision (via its action on the present General Plan amendment request) regarding the desirability of allowing urban development on this site.

EIV 2
II-II/R



HAWAII ELECTRIC LIGHT COMPANY, INC.
P. O. BOX 1027 HILO, HAWAII-96720

February 16, 1982

County of Hawaii
Planning Department
25 Airport Street
Hilo, Hawaii 96720

Attention: Mr. Sidney Fuke
Director


Gentlemen:

SUBJECT: Kohala Makai I Environmental Impact Statement

This is in reply to the recent Environmental Impact Statement for the Kohala Makai I which was submitted to us.

We have reviewed the electrical portions and have the following comment. Sec. V-23 We would like to correct the statement, "The cost of providing new lines to the boundary of the Kohala Makai I site would be borne by HELCO." Please note that the developer will have to bear this cost.

Very truly yours,


Alva K. Nakamura, Manager
Engineering Department

AKH:EKH:mg

cc: Mr. James R. Bell
(Belt, Collins & Associates)

Ms. Joan Kodani
(Environmental Quality Commission)

Belt, Collins & Associates
Engineers • Planners • Landscape Architects
Hawaii Bldg., Suite 418 755 Fort St. Honolulu, Hawaii 96813-3841
Telephone (808) 521-5361 Telex BELH11710074

18 March 1982
82-449

Mr. Alva K. Nakamura
Manager, Engineering Department
Hawaii Electric Light Company, Inc.
P.O. Box 1027
Hilo, Hawaii 96720

Dear Mr. Nakamura:

Environmental Impact Statement for the
Proposed Kohala Makai I Residential Development
Kohala, Hawaii

Belt, Collins & Associates prepared the Environmental Impact Statement (EIS) for the proposed Kohala Makai I residential development. Because of this your February 16, 1982 letter to the Hawaii County Planning Department regarding the document is being answered by us.

Thank you for correcting the statement in the EIS regarding the costs of new electrical lines. The correction will be made in the revised EIS. We appreciate the time spent by you and your staff reviewing the EIS.

Sincerely,


James R. Bell

JRB:AKY:lsf
cc: Kohala Makai I
Hawaii County Planning Department
Environmental Quality Commission

BCA LTD. Principals: James R. Bell, Paul M. Hinata, Raymond E. Carr, Joseph Vetter, Jr., Thomas P. Espandlow

Belt, Collins & Associates
 Planners, Engineers, Architects & Environmentalists
 1100 Kalia Road, Suite 1100, Honolulu, Hawaii 96813
 Telephone: (809) 521-5301

24 March 1982
 82-460

Mr. Collin Kaholo, Chairman
 Planning and Land Use Committee
 Kohala Community Association
 P.O. Box 451
 Kapaau, Hawaii 96755

Dear Mr. Kaholo:

**Environmental Impact Statement for the
 Proposed Kohala Makai I Residential Development
 Kohala, Hawaii**

Because Belt, Collins & Associates prepared the Environmental Impact Statement (EIS) for the proposed Kohala Makai I residential development, your February 16, 1982 letter to the Hawaii County Planning Department regarding the document is being answered by us. We agree that the increase in public facilities as a result of projects like Kohala Makai I will benefit the surrounding neighborhoods. We are responding to your specific comments under the headings used in your letter.

Water

Page IV-45. The sentence you were concerned about has been clarified to read as follows:

"Currently Kohala Estates residents must transport water from the County system to their own storage tanks at their own expense."

Pages X-26 and X-34. The developer's present plans are to connect Kohala Makai I with the County's existing South Kohala water system. To do so, the developer would have to extend the County system from Kawahae to the project site, plus assist financially in the development of the system's groundwater source, as well as its share of costs for possible improvements to the system in Kawahae. This would mean the proposed project would not be competing for water from the Kohala Estates wells when that system is completed.

Wind

A statement that gusty tradewinds in the area often reach gale levels will be added as a footnote to Table IV-7 and to the text on pages IV-33 and II-5.

Electrical

The developer has informed us that he will work to insure that on-site electrical facilities are inconspicuous. There is an existing 69-KV electrical transmission line which runs from Kawahae to Kohala Estates parallel to the

(R.A. 111) Principals: James R. Belt, Paul M. Hines, Raymond E. Cain, Joseph Vavra, Jr., Thomas P. Papandrew

PLANNING AND LAND USE COMMITTEE of the KOHALA COMMUNITY ASSOCIATION
 P. O. Box 451
 Kapaau, Hawaii 96755
 February 16, 1982

Mr. Sidney Fuke
 Director of Planning Department
 County of Hawaii
 Hilo, Hawaii 96720

Subject: Kohala Makai I Environmental Impact Statement

Dear Mr. Fuke:

We appreciate the opportunity to comment on the Kohala Makai I Environmental Impact Statement. The North Kohala community acknowledges the lack of public facilities in the area of the proposed project. Water development and 24 hour fire protection are the greatest concerns for the neighboring residents. Health and safety are the greatest concerns for the need for public facilities. density urban development in the area will increase the need for public facilities.

We have the following comments on the information found in the E.I.S.:
 1) WITH Page IV-45 "Water from the County system is currently transported to their (Kohala Estates) storage tanks by a tanker truck." Seems to mislead the reader into thinking Kohala Estates residents are drawing water out of the tanks. Water was hauled to the tanks one time for the preservation of the cement tanks. The residents each haul their own water.

Page X-26 Dept. of AG letter requesting a discussion of competing water needs, Page X-34 Dept of Planning & Economic Development letter referring to competing water needs. This did not seem to be discussed in the E.I.S.

2) WITH Page IV-33 Meteorology and Page IV-34, Table IV-7 For the wind information on this area to be factually complete, a statement should be included concerning the occasionally gusty tradewinds which often reach gale levels and can result in extremely violent whirlwinds on the leeward side of the Kohala Mountain. Buildings in the area have been rebuilt to withstand wind up to 75 and 80 mph.

3) ELECTRICAL Page IV-37 The community will benefit the most if the visual impact of new power poles continues to be minimized with poles set off from the road, and new power sub-stations or accumulation of equipment to be located in inconspicuous places, thereby preserving the view.

If the public facilities of the area, especially water development and fire protection, are increased as a result of projects such as Kohala Makai I, then the surrounding neighborhoods will benefit.

Richard Sentingo
 Richard Sentingo, President of the
 Kohala Community Association

Sydney Fuke
 Sydney Fuke, Chairman of the
 Planning and Land Use Committee

SM
 cc: Belt, Collins & Associates

24 March 1982
82-460

Mr. Collin Kaholo, Chairman
Page two

Kawaihae-Mahukona Highway and 500 feet eauka. The only new poles that would be required would be those carrying a distribution line from the existing transmission line directly makai as far as the highway right-of-way. The distribution line would be underground crossing the highway and on the project site.

Thank you for your letter. We appreciate the time spent by you and the Kohala Community Association reviewing the EIS.

Sincerely,


James R. Bell

JRB:AXY:lsf
cc: Kohala Makai I
Hawaii County Planning Department
Environmental Quality Commission

RECEIVED
MAR - 1 1982
BILT, COLLINS & ASSOCIATES

Belt, Collins & Associates

Engineers, Planners, Landscape Architects
Lawson Hille, Suite 41275 Fort St. Honolulu, Hawaii 96813 3991
Telephone (808) 531-5361

Planning Department
County of Hawaii
25 Aupuni St.
Honolulu, HI 96720

Dear folks at the Planning Commission:

This is a letter of protest regarding the proposal for 450 condo units, to be called Kohala Makai I, situated makai of Kohala Estates.

It seems to me that the welfare of the local residents is not being considered at all. These proposed condo units are expected to cost \$140,000.00 and up when completed. Very few local residents make that sort of money.

I sincerely hope and pray that the greedy developers of this proposed atrocity will not be granted the amendment to the County General Plan which they are seeking.

What good can possibly come from this project? After the initial construction phase is finished, there will be no jobs resulting from the erection of these condos, unless it is employment as maids and servants to keep these places clean. Come on, folks, is this what we send our kids to colleges for? So they can come back to Hawaii and be maids, servants and busboys?

The developers are clearly shrinking from their responsibilities toward the community, and too many liberties are being taken here which should be clearly examined. If this project is allowed to materialize, it will be only the beginning and condos will be popping up all over the place. Of course, the best land and the best beaches will be slated for these condos, leaving nothing for the local residents. The Hawaii County Planning Department must be capable of creating and allowing developments for this Island's communities which are much more beneficial than strings of condominiums and hotels. Please, consider us, the local residents, who work very hard and do not have the kind of money it takes to buy these kinds of places.

Cordially,

O.C. Nichols
P.O. Box 1054
KAPAAU, HI, 96755

cc: Hawaii Herald Tribune
County of Hawaii

23 March 1982
82-454

Mr./Ms. O.C. Nichols
P.O. Box 1054
Kapa'au, Hawaii 96755

Dear Mr./Ms. Nichols:

Environmental Impact Statement for the
Proposed Kohala Makai I Residential Development
Kohala, Hawaii

Because Belt, Collins & Associates prepared the Environmental Impact Statement (EIS) for the proposed Kohala Makai I residential development, your recent letter to the Hawaii County Planning Department/Commission regarding the project was forwarded to us for a response. Your letter is, as you noted in your first sentence, intended as a protest against the proposed development, rather than as a set of comments on the document made as part of the EIS process. Because of that, I will not respond directly to your questions here. However, I would like briefly to explain the purpose of the environmental impact statement so that you have a clearer understanding of its role in the public review and approval process.

The Kohala Makai I EIS was written to evaluate the impacts of a request for a change in the General Plan designation of the property. The document's purpose is not to argue for or against the project. Rather, it is intended to identify its possible effects in an objective manner so that the Hawaii County Planning Department, Planning Commission, and County Council will be able to make a reasoned judgement as to the project's desirability and appropriateness. It will be up to the Hawaii County government to decide on the project's acceptability in their review of the General Plan amendment request. This is a decision distinct from their review and acceptance or rejection of the EIS.

We appreciate the time you spent preparing your letter. If there are any further questions we can answer, please contact us.

Sincerely,

James R. Bell
James R. Bell

JRB:AKY:lsf
cc: Kohala Makai I
Hawaii County Planning Department
Environmental Quality Commission

PCA, LTD. Principals: James R. Bell, Paul M. Hinda, Raymond F. Carr, Joseph Verna, Jr., Thomas F. Popandrew

QUALIFIED MAIL

HENRY A. ROSS

page 2

To the County Planning Department
25 Aupuni Street
HILO, HI, 96720

21 February 1982
Honolulu, Kohala

Re. Environmental Impact Statement, (draft dated January 1982)
for "Kohala Makai 1", by Belt Collins & Associates.

This is a review as per Chapter 343-5(c) Hawaii Revised Statutes,
of a draft environmental impact statement (hereafter called EIS)
authored by Belt Collins as consultants to Kohala Makai 1, a
limited partnership, which wants to do something with appr. 30 acres
of coastal land in North Kohala, 3 miles north of Kawaihau Harbor,
generally indicated by tax key 5-9-1-6.

As this is a Sunday I cannot get any copies made in North Kohala,
which moreover would be hardly legible anyway notwithstanding the
extravagant charge of 25%, and therefore I would appreciate if you
would make a copy of this review and send it to Mr Bell as was
requested in the EQC's coverletter to the EIS.

As this is only a draft I would appreciate if you would call Belt
Collins' attention to the legal requirement of sending 60 copies
also of the final EIS or attachments to the draft, to the EQC for
distribution. They only sent 20 copies last time when I reviewed
the Mahukona EIS and thus we have now at least 40 copies of a draft
that was later revised, however bore the name of Environmental
Impact Statement, deposited here and there which will be used later
for any kind of reference as if they were a complete EIS which they
were not. This was sloppy work and illegal, and very confusing, and
should be reason enough to reject the EIS if for nothing else.

If Belt Collins is not aware of this and other legal aspects that I
will treat hereafter they do not deserve to be in this business as
consultants. These subjects are serious matters and they deserve to
be treated seriously and punctuously by all parties concerned.

1) The EIS is incomplete when it states that the limited partner-
ship Kohala Makai 1 is the owner of the land for which the General
Plan (GP) amendment and rezoning for later subdivision is applied
for. Kohala Makai 1 has a sub-agreement of sale with Hilton Head
Inc., which has an agreement of sale with Kahua Ranch Ltd for this
land and 4000 acres immediately mauka of this 38 acre parcel,
which are zoned agricultural. Kahua Ranch Ltd holds the title to
these 38 acres and thus is the legal owner of the land with of
course the encumbrance of the 2 agreements of sale as mentioned.
Kahua Ranch Ltd also owns appr. 80 more acres of the same coastal
strip land mauka of the Akoni Pulo Highway and immediately north
to north-west of the Kohala Makai 1 land. This land is of the
same nature as the 36 acres and unsuitable for grazing which is
the ranch's business. There are presently no plans for the part of
Kahua Ranch for these 80 acres but it must be obvious that these

80 acres would potentially be available to a developer who is
willing to pay enough, after another developer has shown that a
condominium complex as discussed in the EIS or something else that
would be allowed after the County upzones the land, had been shown
to be a successful venture for a developer although it might be detri-
mental to everybody else. This aspect has not at all been mentioned
in the EIS and must of necessity be treated in depth lest the draft
be rejected by the approving agency.

2) The 30 acres of land are worth at most \$100 per acre, as per
Belt Collins' EIS for Mahukona Properties, recently issued, and
given as their intrinsic value of that land which is in fact more
valuable than Kohala Makai 1's land. I am willing to put a value of
\$200 per acre on it, which then should be regarded as very liberal.
That makes for a total intrinsic value for this land as is of
\$7600, which I personally would be willing to pay for it because
it has a nice view and I could build one house on it as it is
presently zoned, although it would cost much to build there and
provide proper access to the house. No power or telephone poles
allowed along the highway and having to contend with the traffic of
fishermen with jeeps (dust, noise, etc.) who have rights of old
since the Mahele, would one even make think twice.

What did Kohala Makai 1 pay? The sub-agreement of sale, dated 14
June 1979 shows a purchase price of \$3,300,000 (a deposit of
\$825,000 and annual payments of \$247,500 @ 9 1/2% interest). The
county assessed the land after this sale at an undiscounted value
of \$345,388 about a tenth of the purchase price and raised Kahua
Ranch's 80 acres (THK 5-9-1-7) to \$720,003. Another appr. 23 acres
north of Kahua Ranch's 80 acres along the coast belongs to
Clifford D. Downs of Kahua Shores Ltd and is valued by the County
at an undiscounted \$206,607, all for tax assessment purposes.

Mr Downs' land should also be made part of a discussion of potential
impacts as quite obviously all these lands are held for speculation.
Obviously the County knows more than we do about these things and
so in evaluating the EIS it should regard Kohala Makai 1's endeavor
for 38 acres as a precedent setting event not only for these 103
immediately adjacent acres but for a slowly creeping up the whole
North Kohala coastline of illegal structures or uses as will later
be explained. To show the speculative syndrome inherent here, one
must ask oneself if a ranch like Kahua Ranch which is known for
being a shrewd business venture would pay an estimated \$7,741 in
yearly taxes for these 80 (as they say) unusable acres for ranching
while much better land that they do use for grazing cost them \$191
per year for appr. 85 acres (THK 5-9-1-9, used for comparison in the
same area but without coastal frontage). All these figures are taken
from recent tax records in Hilo. It must be obvious to any normal
person that something fishy is being planned here and definitely

not the fishy business that is an old Hawaiian right along this whole coast for local people, which would be obliterated from the area in question, as is being indicated by other letters to this EIS. I myself have in recent days been contacted by numerous people whose livelihood or only recreation is fishing along this coast and they have been inundated by the fishermen who have been ousted from the "big hotel area" at and southwards of the Maunakea Beach hotel. This crowding leads to feuds and fights and is caused and aggravated by uncontrolled development that is in the case of Kahala Makai 1 illegal even, as will be discussed later.

The people of this island want to see the visitor industry and the condominium business which is going on confined to the area between the Maunakea Beach Hotel and Kailua Kona, where all the good beaches of this island are which they feel have now already been taken away from them but at least do not let the developers take over any more of our precious coastline. Fishing, even if access to the coast is given as must be by law, but is rarely done, becomes impossible in areas where other activities take place and possible effluent and eroded soil goes into the ocean. This impact is absolutely insufficiently treated in the EIS.

3) The EIS creates the impression that Kahala Makai 1 wants to build approx. 600 luxury condominiums there as is also indicated on their original application to the County Planning Department in Hilo, which peculiarly is undated but was filed with the County in the second quarter of 1980 and accepted by the County as a legitimate application on or about July 24 1980. However Kahala Makai 1 does not intend to build anything on the 38 acres that they presently hold on a sub-agreement of sale and a partial payment. This is shown by the attached exhibit "X" to this review which is a xerox of a certified copy of the Certificate of Limited Partnership as filed with the Dept of Regulatory Agencies in Honolulu, dated June 12, 1979 and is herewith made part of this review. It consists of 3 pages and states as the character of the partnership to be: "TO ACQUIRE, OWN AND HOLD FOR INVESTMENT APPRECIATION REAL PROPERTY LOCATED IN NORTH KOHALA, ISLAND OF HAWAII, STATE OF HAWAII" and nothing more. It does not mention any kind of condominium development on the property, it only mentions that it wants the "investment appreciation" of the property that was bought for the hui. Consequently the whole bit about developing and building condos etc, etc, and the EIS is a sham to obtain upzoning of this land in order to sell it at a profit to anybody who then might come along and buy the 38 acres from the hui to further develop it with whatever is allowed under the upzoned condition that the hui obtained from the county, and that could be widely different from what the EIS tells us without having to file for a new EIS because what is applied for is medium density urban zoning by the county which means anything upto 35 units per acre.

Delt Collins must have been aware of this legal constraint on the limited partnership. If yes, they are aiding and abetting an illegal pursuit of a hui, if no, they are ignorant to the point where they should not be in the consulting business, and they would be as ignorant in all other respects of the EIS as not mentioning the legal constraints of their client and consulting within this, such as mentioning that their clients are only speculators and must of necessity pull out after they get the upzoning that is requested, leaving it to later takers to fulfill the EIS requirements etc. However nothing of all this is mentioned in the EIS at all and thus it is deficient in its most important aspect, namely that of legality. Delt Collins could even be taken to court by the County of Hawaii for misleading it knowingly on behalf of a client who is not really okama in all respects of their application.

The clincher in this whole thing is namely the following:

HRS 425-44; (Limited Partnership Law) A CERTIFICATE SHALL BE

AWARDED WHEN:

(6) There is a change in the character of the business of the partnership;

(7) There is a false or erroneous statement in the certificate;

And the general partners are liable for everything that happens on behalf of the partnership. Isn't it hilarious that our councilman James Dahlberg is a General Partner in this partnership and thus liable for this sham along with the other general partners of course? See exhibit "X" for verification of the above.

It is my opinion that political aspects and impacts should also be discussed in the EIS and they are not. If Dahlberg would have been a limited partner only, it would have looked a lot better than him being a general partner of this hui. The people who have asked me to review this EIS are concerned about this political involvement apart from their many other legitimate concerns. It seems suspicious to them if people from Maui (other general partners of Kahala Makai 1) come to visit their Planning & Land Use Committee to obtain its cooperation for their project, as happened last week Tuesday, while the local general partner James Dahlberg could do it so much easier and cheaper but seems to be hiding and people ask what his real role in this is supposed to be, now or later.

4) The project as proposed in the EIS is against the Hawaii State Plan, Chapter 226 HRS, which among many other things such as preservation of lifestyle, self-sufficiency and enjoyment of life, land and recreational facilities for the local people, emphatically prohibits unnecessary in-migration of foreign elements. If foreigners buy land here that is not prohibited, but it is against the law for any organization here to facilitate by developing and upzoning and subdivision further influx of foreigners than the state could absorb or assimilate. Is this going to the playground for wealthy people

all over the world while the local people can only sweep their floors and mow their lawns or be their chauffeurs? This would mean semi-slavery again as happened when the plantations developed and which is now more than evident, does ultimately leave havoc behind. The EIS says the project is geared to people of this island, of the state but also to foreigners from other countries. There will be very few takers from this state at prices of \$250,000 for a condo. Without a golf course or a beach, but there might be Canadians, people from Hong Kong, Singapore, Korea etc who have enough money to flee their cold or oppressive political situations to populate these condos. They will be consumers that we have to provide for in times of war or catastrophe. We don't need that as we can hardly take care of ourselves. Everybody knows that jobs are not generated by such condos especially if they become time-share units for vacationers who want to spend a month here every year at far smaller expense than a hotel. The EIS does not address at all the time-share element and its conflict with long term residents who might buy such units. It also does not go into any depth about the foreign market to which it wants to cater except for mentioning it in 3 words and must therefore be held to be misleading, grossly inadequate and not mentioning the illegality of all this under the State Plan. The County actually is prohibited from even entertaining such applications.

5) What one often hears is that developers come to the County with the argument that they have invested so much money in this that now they have a right to help from the County in making their speculation a worthwhile venture financially, while helping the local people at the same time. This of course is a farce, unless they intend to provide housing there in a price range of \$50,000 for hotel employees of nearby hotels. In order to be complete I attach as Exhibit "A" ~~four~~ ^{three} page annual statement (the latest one available) as filed with Regulatory Agencies, showing all the limited partners as well, who contributed about \$47,000 each in this venture, which amounts to a total of about \$1,200,000, and may be held to pay \$25,000 each year in additional funds at the request of the general partners. So just in order to pay off the land it would take them about 5 years of paying additional \$25,000, amounting to about \$160,000 total per each limited partner (inclusive the interest). This might mean, an enormous political pressure on our County to give them the zoning, which contravenes the GP and the State Laws. This aspect must be treated in the EIS, because it is an impact on our County fathers, and indirectly on all the people of this County, who elected them to protect them against such invasions of a few money hungry speculators, instead of supporting the developers, who have nothing good to offer to either the people or the County, not even in tax base.

In order to be complete in its social impacts the EIS must also respond to how it will mitigate the feelings of local people who feel frustrated and impotent against all these changes that are going on in their environment and condoned by their government, which they see as invasions of incompatible elements if they come too close to their kuliana with increasing crime rates wherever they happen (triple in Kailua Kona over ten years). They tell me: Henry, you better try hold them up because if they come in with their bulldozers we're going to blow 'em up with dynamite.

6) The Supreme Court has repeatedly ruled against ventures like this one. I will mention one case here and I am sure that Belt Collins and the County are aware of it; anyway even if caselaw, anybody is assumed to know the law. I only want to refresh everybody's memory. In Dalton v. City & County, 51 Haw 400, the State Supreme Court under item III gives an illuminating exposé on the validity of the amendments to the general plan. It is stressed that the GP (Honolulu and the County of Hawaii) are concurrent in this respect) is a longrange comprehensive plan, serving as a guide for the future physical and economic development (of the county) and: No public improvement or project, or subdivision shall be initiated or adopted unless it conforms to and implements the GP. With regard to amending the GP, so then thereafter the zoning of certain parcels of land can be changed, the Court states on page 414:

"To allow the city to amend the general plan (under its general power to amend ordinances) and then adopt a zoning ordinance contrary to the unamended general plan, is to allow the city to accomplish by two ordinances exactly what the charter sought to prohibit.

It is also stated that:

"The planning commission and the planning director are required to follow a course of conduct consistent with the safeguards that were required in the initial adoption of the general plan. This interpretation will not only meet the spirit of the law but fulfill the true intent of the laws, covering the general plan. We conclude that the city's general power to amend ordinances is not applicable to the general plan. The purpose of the Honolulu Charter was to prevent the deterioration of our environment by forcing the city to articulate long range comprehensive planning goals. These sections of the charter allow less room for the exertion of pressure by powerful individuals and institutions.

.....
We hold that the safeguards specified by the charter as applicable to the adoption of the general plan must be followed in altering the general plan. The record in this case shows that the county failed to follow a course of conduct consistent with the safeguards that are required in the initial adoption

of the general plan. These safeguards require that alterations in the general plan must be comprehensive and long range, more specifically if the city believes that the general plan of 1964 (written by the Court in 1969, - Ross) is obsolete, then comprehensive updating of the 1964 plan's "studies of physical, social, economic and governmental conditions and trends" is in order. (bracketed material and stress added)

In other words the Director may gather up all kind of private proposals for changes in the GP but they must be gathered up, studied and researched in their total context to the overall GP, and if found that in sum total an amendment is warranted because of changed conditions, then he must put it all in a comprehensive form and make new long range goals, which might or might not include some of all of the received proposals plus his own recommendations after the necessary public hearings are held.

In this legal context it would seem that Kohala Makai 1 and Belt Collins have been trying to lead the County Planning Department astray. It also seems that the County should have put all petitions for GP amendments in a file for future study of a comprehensive change in the GP goals and objectives etc.

The EIS is totally silent on this aspect and fails to approach the County as approving agency on the basis of presenting all their information and views for future treatment in an overall comprehensive manner that then would be initiated as a GP amendment by the Director, which is a totally different procedure that the one followed here. Comments from Belt Collins on this legal impact should follow this review from their consultative point of view. It should also not be forgotten that political, legal and governmental aspect and impacts are categorized under social impacts and thus must be addressed in any EIS of this nature. There is no excuse for their omission.

7. The time period for any further treatment of this EIS has passed. The County granted an extension of time (which was illegal) of three months in its letter to Mr Amaral (a general partner) dated September 14, 1981. It reads in essence (with correction of a typo):

"We are in receipt of your letter dated September 8, 1981, requesting a three-month extension of the November 22, 1981 deadline for review of the subject General Plan Amendment petition. Please be advised that we have no objections and thus are granting an extension to February 22, 1982.

Before this the allowable one year extension under the amendment rules of the GP had been granted by the Planning Director in his letter to Belt Collins, dated July 7, 1981, and states the matter more succinctly as follows (interalia):

The November 22, 1981 deadline relates to the General Plan Amendment review procedure ... and not to the EIS procedure.... After the reviews such as this by the public are received they will then be passed on to Belt Collins for answers and for submission of

the final EIS to the County and the Environmental Quality Commission. The County has then time to review the final EIS and take the next step, which is laid down in Section 3 of the Amendment Procedure of the County GP, and has to be done before or on February 22, 1982. Needless to say, that this now appears to be impossible because Belt Collins without any necessity dragged out this draft EIS so long that its time has run out. There are no excuses for this. All the underlying studies and reports were received early enough to issue the EIS in time to meet to-morrow's deadline for the entire process which will now take at least 2 more months if it would be allowed. One report that is used was dated December 1980. It is the Market and Economic Impact Analysis for the Proposed Kohala Makai 1 Condominium, by Hastings, Martin, Chew & Ass.Ltd, which is used extensively in the EIS and should have been bound together with it like a number of other reports prepared for the purpose which are attached in the back of the draft EIS. Maybe it was not attached and only made available in some libraries, because it contains a lot of nonsense and 19 pages about another project that are immaterial to the issue and do not even qualify for comparison. The other 56 pages contain blunders like:(p.55) Single family residential development has taken place at nearby Kohala Estates, .. (20 acre agricultural lots of Hilton Head development). They projected the hotel occupation rates for 1980-1985 for the island's west coast to be way higher than they are now and will be for some time to come, and that only about a year ago. How can these people give any reliable forecast on projects 10 years hence. It would seem that these forecasters, as the economists, do not really have any basis for the figures they are plonking out. Nevertheless an EIS and the future of many many people might be planned on such unreliable and far-fetched numbers. This is a crime to the local people if the government would base its policies on such assumptions of over-optimistic and self-serving reports on behalf of individual developers, who try to paint their project rosy so it will be accepted. The EIS should have shown more restraint in using unreliable data and at least cautioned that the projections are speculative.

Anyway this whole issue of the whole EIS is now moot, because the EIS came too late. And if anything is done with it or if it should be completed it might possibly serve for some future input into the overall planning of the County when the next general update of the County GP comes up. Belt Collins is invited to comment or answer this in its final EIS if it ever will write a final EIS on this project. According to our County Law, the GP, and assuming that my information, obtained from the Planning Department by phone on Friday Febr. 19 (from Norman Hayashi) that no further extension had been granted for this project beyond the Febr 22, 1982 date, is correct, the Planning Director's options for any action in this matter are as follows:

- a. he cannot initiate the proposed amendment with his recommendations to the Planning Commission for their review, because he cannot make recommendations without a completed EIS under State law.
- b. he cannot defer the proposal for upto one year, because he already did so and then followed up with a further (illegal) extension of 3 more months. Surely he is not going to follow this with yet another illegal extension, just because Belt Collins was slow. If I had been slow after all the other things I had to do, I would not be working this Sunday on this review, without even have had proper and sufficient time to read Belt Collins' padded EIS, and the result would be that my review would not be received because it did not meet the deadline. I am working alone on this. Belt Collins has a host of engineers and supporting personnel, word processors, etc. What is sauce for the goose is sauce for the gander.
- c. he then can only reject the proposal stating his reasons. And that should not be difficult after he reads my review carefully.

B. No mention is made of the implications that the Ohang Housing Law is going to have on all this, neither in the EIS nor in Hastings etc. report, above mentioned. This is a serious omission and must be treated in the final EIS. As must the Timesharing Ordinance of the County which is about to go in effect and must under State law; this was already stated above. It must be obvious that the housing demand if it is at all important in this context is seriously impeded by both.

9. It should be kept in mind that people who can invest tremendous amounts of money like at least \$160,000 and being limited partners in a venture like this, meaning they gave their money up without having any control, obviously can spare to loose such amounts of money, otherwise they would be more careful with their assets. So the Jere livelihoods and living circumstances of common people who live from one day to the other must have preference in any kind of discussion on the subject EIS and its implications. Belt Collins has failed to point this out in the EIS. In fact they have not at all treated the alternative of no action (project) at all, which should have been so easy to include and must under HRS 343.

10. The EIS fails to mention that in recent reapportionment hearings, held island wide, the trend was that any further development be limited to the area between Hounakea Beach Hotel and Kailua Kona, so that it does not contaminate other areas with increased crime rates, increased property taxes, ruined lifestyles and the like. These documents are public and give a far better picture of social impacts than cooked-up self-serving reports from paid subcontractors.

11. The EIS fails to discuss anything at all about a planned Manganese Nodule Processing Plant that is planned by the State on adjoining state land within a radius of maximum 9 miles around Kawaihae Harbor. I should say that that would be quite an impact.

especially in connection with water availability which is also insufficiently treated in the EIS as is shown by a letter from the County Water Dept. included in the EIS, which requires 2 independent sources for a project like this. After the State pushes through on its dumb manganese processing plant, which would require 600 acres yearly for dumping the tailings (poisonous) around the area and the noise factor of such a plant and the unaesthetic aspect of it, how many people would be staying in this high class planned project, but a few managers of the plant perhaps? That would leave us with the eyesore of deteriorating and vacant vandalized buildings like we now see along Banyan Drive in Hilo, where the hotels have closed their doors. Of course such a plant would influence the Hounakea Beach Hotel likewise, but that has been there for years and this project still has to be built. So let's treat it here in this EIS, it might be illuminating to others in the area also. And let's not forget that the groundwater from both mentioned sources in the EIS would likely be contaminated with lead, thallium, cadmium, arsenic, cobalt, mercury etc. This should not be taken lightly. Plenty of information about this is available from Mr Kent Keith, Deputy Director of the Dept of Planning and Econ. Development in Honolulu.

12. What I miss in the EIS is a discussion of some kind of promise or willingness on the part of the developers to pay their share in a road widening project to 4 lanes which they indicate will become necessary together with other developments being planned right now.

Or do the taxpayers have to for their pleasure?

In the same vein it has to be mentioned that electric power has been treated insufficiently. What does the public have to pay for to the benefit of developers who want to run off with a pocket full of money. PUC says that any new line has to be paid for by the developer. Is he going to put that underground along the highway or is he going to get easements from others to put poles away from the highway which will still be an eyesore? Any improvement of existing facilities and the EIS shows us that there is a situation like that, if they must be boosted (and they must, according to Halco's letter attached) then Halco has to pay for that and turns it over on all its customers. Would the EIS explain why people in Kau should pay for boosting a powerline to Kohala Hakai 1, while not sharing in any profits of the huf. The same goes for telephone lines.

13. The EIS contains a map on page V-21 that shows Kapaa Beach and Mahukona Beach as recreational features. As I have pointed out in a previous EIS by Belt Collins for Mahukona Properties, which contained the same erroneous indications, that these are not beaches, and then got the answer back that this was an error but would be corrected in the final EIS, (which did not much good because as mentioned only 20 copies were supplied instead of the legally required 60 copies). I now have to assume that Belt Collins does this on purpose. Halt

LIMITED PARTNERS

ADDRESS

See Exhibit "A" attached hereto and made a part hereof.

V. The term for which the partnership is to exist is from the date of filing of this certificate in the Department of Regulatory Agencies and shall continue until dissolved or terminated, but in any event the partnership shall dissolve and terminate automatically on December 31, 1994.

VI. The amount of cash contributed by each of the limited partners is as follows:

LIMITED PARTNERS

CASH CONTRIBUTION

See Exhibit "A" attached hereto and made a part hereof.

No other property has been contributed by the limited partners.

VII. No additional contributions have been agreed to be made by the limited partners, except that each limited partner has agreed to future contributions of not more than \$25,000.00 annually. See below.

VIII. The time when the contributions of the limited partners are to be returned shall be at the dissolution or termination of the partnership.

IX. The share of the profits which the limited partners shall receive shall be based upon the number of limited partnership units held by each limited partner. Upon the sale of the subject property

in fee simple, the limited partners shall each receive 2.4% of the profits on account of each unit of the limited partnership he holds. Until the subject property is sold in fee simple, all of the taxable income and losses of the partnership shall be allocated equally to the limited partners.

The exact amount to be determined by the General Partners.

XI. On the death, retirement or insanity of a general partner, the remaining general partner or general partners, if there shall be any, shall have the right to continue the business.

XII. There is no right of a limited partner to demand and receive property other than cash in return for his contribution.

XIII. Amendments: Power of Attorney. Except as otherwise required by Section 425-45 of the Hawaii Revised Statutes, no signature of any limited partner shall be required for any amendment to this Certificate. As a matter of convenience the limited partners have irrevocably designated and have appointed in the Partnership Agreement the General Partners from time to time acting as their agent and attorney-in-fact to execute, acknowledge, verify and record, if necessary, any documents, this Certificate for convenience in recording the Certificate of Limited Partnership for this partnership, and amendments to the Certificate of Limited Partnership, to show changes in the identities of any of the partners of this partnership.

IN WITNESS WHEREOF, the undersigned have caused this Certificate to be executed this 12th day of June, 1994.

ROBERT L. COLE, General Partner

[Signature]

ALVIN T. AMORAL, General Partner

[Signature]

JAMES L. K. DAHLBERG, General Partner

[Signature]

MICHAEL K. BATES, General Partner

[Signature]

Limited Partners as shown on Exhibit "A" attached hereto:

By: *[Signature]* James L. K. Dahlberg
Their Attorney-in-fact

By: *[Signature]* Michael K. Bates
Their Attorney-in-fact

By: *[Signature]* Alvin T. Amoral
Their Attorney-in-fact

By: *[Signature]* Robert L. Cole
Their Attorney-in-fact

KOHOLA HAKAI I CONT.

Limited Partners

18. S. James & Dorothy E. 3038 La Pietra Circle
Honolulu, HI 96815
Hearmore
576-09-8765 & 550-3-8964
19. Takeshi Kudo
576-18-3583
Hino Dr., Captain Cook
Xona, Hawaii 96704
20. A & O Development 229 Awapuhi St.
99-0194186 Wailuku, Maui, HI 96732
21. CGSW Hui 202 Wailuku Townhouse Bldg.
99-0194553 Wailuku, HI 96793
22. K. Abbot Hui 258 Alua Road
99-0196922 Wailuku, HI 96793
23. Pierre Ernest Bouvet P.O. Box 95
575-54-3406 Kukuihaele, HI 96727
24. Robert & Lucia Mounts 112 Lunalilo St.
026-22-0244 Wailuku, HI 96793
- 25.

KOHOLA HAKAI I

GENERAL PARTNERS

1. Robert L. Cole 214 Aulii Drive
576-42-3898 Pukalani, HI. 96788
2. Alvin T. Amaral 206 Puunene Avenue
576-22-7624 Kahului, HI. 96732
3. James L. K. Dahlberg 159 Keawe Street
476-48-2432 Hilo, HI. 96720
4. Michael K. Bates . Kamuela, HI. 96743
575-38-5603

April 5, 1982
Page 2

Belt, Collins & Associates
Incorporated
1100 South King Street
Honolulu, Hawaii 96813
Telephone: 833-1111

Partners
Lawrence M. Collins
Richard A. Collins
John H. Collins

April 1, 1982

Mr. Henry A. Ross
P.O. Box 99
Kapa'au, Hawaii 96755

Dear Mr. Ross:

Environmental Impact Statement for the Proposed
Kohala Makai I Residential Development

Thank you for your letter of 21 February 1982 regarding the Environmental Impact Statement prepared by this firm for the proposed Kohala Makai I residential project. It is satisfying to know that the EIS process is achieving its intended goal of facilitating the exchange of information between the general public and prospective developers.

Your letter identifies a number of areas where you believe the EIS is deficient. Because you intermingled comments regarding the EIS with references to the County's General Plan amendment process, it has been necessary for us to sift through the points you raised and identify those issues which require a response. We believe this has been successfully accomplished and the remainder of this letter deals with those relevant issues. The numbers shown correspond to the numbering system you employed.

First, to respond to your comments in the first and third unnumbered paragraphs of your letter and elsewhere regarding the nomenclature of the two versions of the EIS and the numbers of each version to be sent to the Environmental Quality Commission (EQC), we wrote the EQC (see attachment A) regarding these questions. Their reply (see attachment B) was that our practice of referring to the two versions as the "Environmental Impact Statement" and "Revised Environmental Impact Statement" does not conflict with either the EQC Regulations or Chapter 343, HRS. They also stated that EQS has been interpreting the Regulation requiring 60 copies to mean 60 copies only of the draft (as they call it) EIS and that their standard procedure has been to require only 20 copies of the revised EIS. The EQC agrees that the regulations are not clear on these two points and that these issues will be clarified when the Regulations are amended.

Comment No. 1

Legal Ownership. The EIS did state on page II-15 that the proposed project site was sold to Kohala Makai I, a Limited Partnership by Hilton Head Company of Hawaii, Inc. under a subagreement of sale, subsequent to Hilton Head's purchase of the property from Kahua Ranch under an agreement of sale. Hence, the EIS is not incomplete in stating the facts of ownership. Your letter also implies that since Kahua Ranch holds the title to the site, Kohala Makai I Limited Partnership does not have the legal right to apply for the General Plan amendment. Kohala Makai I has an ownership interest in the property by virtue of a subagreement of sale. Based upon an opinion from legal counsel, such ownership under applicable Hawaii law entitles the partnership, subject to the particular provisions of the subagreement of sale, to all the rights,

W. A. Pitt, Principal; James R. Bell, Paul M. Hinton, Raymond J. Lam, Joseph A. Vera, Jr., Thomas P. Engstrom

benefits and responsibilities as if the partnership held title by way of a deed. Legal counsel cites the case of *Jenkins v. Wise*, 58 Hawaii 592 (1978) at 596 wherein the Hawaii Supreme Court has stated that while the seller under an agreement of sale retains the legal title to the property, he does so essentially as security for the payment of the purchase price by the purchaser. The purchaser becomes vested with the equitable and beneficial interest in the property. Hence, Kohala Makai I is a proper party to apply for an amendment to the General Plan designation of the property, unless prohibited from doing so by the terms of the subagreement of sale, which it is not.

Precedent for Further Development. The central points to the discussion found at the bottom of page 1 and the top of page 2 of your letter appear to be that: (1) there is other land in the vicinity that is potentially available to a developer who is willing to pay enough, (2) prospective developers will seek to obtain and/or develop this land if Kohala Makai I is approved, and (3) the EIS should have discussed this potential effect more fully than it did. Each of these is addressed below.

Your comment identifies approximately 80 acres of land belonging to Kahua Ranch which you note "... would potentially be available to a developer who is willing to pay enough. . . ." All private landowners have a right to sell and this is applicable to all land, not just the 80 acres you referred to. Hence, it is certain that land will be made available by private landowners for development if there is a strong market for it.

It is true that approval of the Kohala Makai I project would establish a precedent that could (but might not) contribute to increased development pressure on other land in the vicinity. The intensity of the pressure would be influenced by entrepreneurs' estimates of the market for urban uses in that area and of the difficulties they would encounter in obtaining necessary changes in governmental land use designations and permit approvals. The Environmental Impact Statement did not discuss this possibility for two reasons. First, it was our belief that doing so would be overly speculative. Second, the County's existing policy would preclude development of this sort.

In retrospect, we agree that the possible increase in development pressure is worthy of mention even if it is never translated into actual urban development. Because of this, a new section entitled "Impact on Nearby Land Uses" will be included in Chapter V of the revised EIS.

Comment No. 2

Land Value. You state that the EIS prepared by Belt, Collins & Associates for the proposed Mahukona Resort project cites a value of \$100 per acre as the "intrinsic value" of that land. This is not the case. The \$100 per acre figure developed on pages VII-2 and VII-3 of the Mahukona Resort EIS is based on the estimated return from the land if it were used for grazing. It is a monetary value based on a particular land use at a given point in time. While it represents the amount that a rancher might pay, it is not at all the same as the market value of the property.

These effects are discussed at numerous places in Chapter IV. Refer especially to pages IV-46 through IV-51, and IV-6 through IV-7.

Thus, there should be no physical impacts on fishing access or marine resources. We agree, however, that the value of the recreational activity often depends on a secluded atmosphere, and that this atmosphere would be affected by the proposed development. This is stated on pages VI-5 and VI-14 of the EIS.

Comment No. 3

Development Planned. You are incorrect when you suggest that the EIS implies that Kohala Hakai I wants to build approximately 500 luxury condominiums. The EIS at page I-1 specifically states that the partnership envisions the construction of 450 multi-family residential units. Such units could be condominiums, but could just as easily be townhouses or apartment complexes. This impression about the number and type of units to be developed probably derives from the EIS Preparation Notice and the market study by Hastings, Martin, Chew & Associates, which were completed prior to the change in concept of the project.

Character of Partnership. We have been advised by legal counsel that the statement in the Certificate of Limited Partnership does not preclude the partnership from developing the property. They have planned to participate in the development of the site to enhance the value of their investment. The EIS describes the impacts of their current plan. You are incorrect in supposing that a widely different plan could be followed without filing a new EIS. Such a change in plans would require a new EIS, probably at the Special Management Area permit stage in the Hawaii County approval process.

Comment No. 4

Violation of the Hawaii State Plan. You conclude that, "The project as proposed in the EIS is against the Hawaii State Plan, which among many other things . . . emphatically prohibits unnecessary in-migration of foreign elements." We have reviewed the text of the Hawaii State Plan and can find no specific statement to this effect. Hence, we presume it must reflect your own interpretation of the Plan's provisions. The State Plan does call for means to manage the rate of migration of new residents to the State. However, we do not find in it any deep-seated xenophobia prohibiting persons not born here from moving here.

Market for Units. Your letter (page 5, line 6) states, "There will be very few takers from this state at prices of \$250,000 for a condo, without a golf course or a beach, but there might be Canadians, people from Hong Kong, Singapore, Korea, etc. . . ." We do not know where you obtained the figure of a quarter of a million dollars as the sales price of the proposed units; it is certainly not given in the EIS. We agree that the absence of the amenities you mentioned may make the Kohala Hakai I project less desirable to some potential residents than the condominiums planned for Mauna Kea Resort, Mauna Lani Resort, and Waikoloa Beach Resort. Because of this, it is likely that the units in the Kohala Hakai I project will sell for lower prices than those

In reality, the monetary value of any property is no more and no less than the amount that a potential buyer is willing to pay an owner who is willing to sell. This, in turn is influenced by a large number of social, psychological, and economic factors, only one of which is the income which it would produce if used for grazing.

We are not familiar with any generally accepted definition of "intrinsic value." However, on the few occasions when we have seen it used it has not been in relation to a monetary value at all. Instead the term has been used in reference to natural values such as a wildlife habitat, scenic beauty, maintenance of water quality, and ecosystem stability. This does not correspond to the manner in which the term was employed in your letter.

Mr. Downs' Land. As noted in our response under the heading "Comment No. 1" above, a discussion of the project's possible effect on land values and the precedent it would set for further coastal development will be included in the revised environmental impact statement. This discussion encompasses all land in the vicinity of the Kohala Hakai I project, including the Clifford D. Downs/Kahua Shores Ltd. parcel referred to in your letter.

Effects on Fishing. You assert on page three of your letter that:

Fishing, even if access to the coast is given as must be by law, but is rarely done, becomes impossible in areas where other activities take place and possible effluent and eroded soil goes into the ocean. This impact is absolutely insufficiently treated in the EIS.

We believe your allegation is incorrect. In support of this we call your attention to the following facts:

- (1) As stated on pages VI-5, VI-14, VI-20 and elsewhere in the EIS, public access to the coastline will be provided if the project is implemented.
- (2) While the soils on the site are relatively susceptible to erosion if they are stripped of cover, the area has the lowest amount of erosive rainfall in the state; hence, that susceptibility is rarely translated into actual erosion. The critical time will be the construction period, and adequate erosion control measures must be incorporated into the project in order for it to obtain the required grading permit from the County. Calculations made using the U.S. Soil Conservation Service's Universal Soil-Loss Equation indicate that erosion rates will be lower following development than they are in the area's natural state. Because of the rainfall regime characteristic of the area and erosion control measures which would be taken, there appears to be little likelihood that elevated sediment loads during the construction period would have a significant effect on the marine environment.
- (3) Sewage would undergo secondary treatment followed by either ground injection or land application. In either case, additional purification would occur before the effluent, now highly diluted by mixing with the natural groundwater flow, reaches the coastline. What little treated effluent does reach the ocean would be quickly dispersed.

in the resorts and be more affordable to the residential market which has been identified as the principal target of the project.

Condominium Job Generation. Your statement that, "Everybody knows that jobs are not generated by such condos . . ." is inaccurate and unsubstantiated. Studies have shown that permanent jobs are generated by condominium development. You may confirm the reasonableness of this conclusion for resort condominiums by checking the visitor expenditure data collected by the Hawaii Visitor Bureau. They show that average daily expenditures by visitors staying in condominiums is equal to or greater than expenditures by those staying in hotels. This spending generates jobs and income in the Hawaiian economy.

Time-Share Element. The EIS does discuss the effects of units occupied by visitors. It did not discuss time-sharing because no County ordinance regarding time-sharing has been passed. See response to Comment No. 8 regarding time-sharing and marketability.

Foreign Market. The project does not intend to "cater" to the foreign market. No special marketing efforts would be made overseas. The sentence in the EIS where the two words "international markets" are used reads: "Other full-time residential occupants would likely come from other areas of the island of Hawaii, other islands, and from national or international markets." All this sentence says is that some residents of Kohala Makai I could be from other countries, other parts of the United States, or from Hawaii outside of the Kohala Districts. It is hard to see how you interpreted this sentence to mean that the project "wants to cater" to the foreign market.

Comment No. 5

Political Pressure on the County. As noted in our response to your first comment, approval of the Kohala Makai I project might set a precedent which could make it easier for owners of other nearby land to develop their properties. A discussion of this possibility has been added to the EIS. In passing, we would like to note that we do not share your concern that political pressures on the County would lead to the granting of zoning in contravention to the General Plan and State law. To the contrary, the success of our democratic system of government stems from the fact that our elected officials and government employees are dedicated public servants, responsive and responsible to the general public and generally have served the public interests.

Mitigation of Social Impacts. Because of the small scale of the project relative to the development which is occurring at nearby South Kohala resorts, its isolation from existing residential areas, and the fact that it is intended in large part to accommodate persons attracted to the region by employment opportunities at other projects, Kohala Makai I is not expected to have significant social impacts which would require mitigation. Therefore, no "special" social mitigation measures (i.e., actions beyond those required by Federal, State, and County laws and regulations) are proposed.

Comment No. 6

Proper Procedure for Obtaining an Amendment to the General Plan. Legal counsel has informed us that your quotation and application of portions of the decision of the Hawaii Supreme Court in *Dalton v. City and County of Honolulu*, 51 Hawaii 400 (1969) to the present situation is erroneous and inapposite. In that case, the County was confronted with amendments to the General Plan for the City and County of Honolulu which were adopted merely by passage of ordinances by the county council, without referral to the planning commission for its recommendations. The Court held that the procedural safeguards dictated by the county charter (of seeking planning commission approval prior to passage of ordinances instituting general plan amendments) were critical to maintain the overall integrity of the general plan. While the procedure under the Charters of the City and County of Honolulu and the County of Hawaii are not identical, Kohala Makai I has endeavored and will continue to meticulously follow the proper steps for obtaining an amendment of the Hawaii County General Plan. Accordingly, we must categorically deny your assertion (see page 7, lines 16 and 17) that Kohala Makai I and Belt, Collins & Associates have "been trying to lead the County Planning Department astray." In applying for the General Plan amendment and preparing the EIS we have simply followed procedures established by County ordinance and instructions given by the Hawaii County Planning Department.

Political, Legal, and Governmental Impacts. The political, legal, and governmental aspects and impacts of the project are addressed in Chapters V and VI of the EIS.

Comment No. 7

Hastings, Martin, Chew & Associates, Ltd. Report. As stated on page III-1, the Hastings, Martin, Chew & Associates (HMCA) report was not appended to the EIS because of its length. Copies were sent to the Hawaii County Planning Department, to the Environmental Quality Commission, and to the public library in North Kohala, to be available for public review. The firm itself is a respected one that has worked extensively for State and County governments as well as private developers. They have responded to your comments as follows:

Your Comment: "19 pages about another project that are immaterial to the issue and do not even qualify for comparison."

HMCA Response: "They describe three Kona oceanfront projects that were considered reasonably comparable, and therefore, are material to the analysis. These pages appear as an Exhibit in the Addenda."

Your Comment: "The other 56 pages contain blunders like: (p. 55) Single family residential development has taken place at nearby Kohala Estates. . . ."

HMCA Response: "Single family residential development (houses) have actually been constructed at Kohala Estates, and therefore, the statement referred to on page 55 in the report is accurate."

Your Comment: They projected the hotel occupation rates for 1980-1985 for the island's west coast to be way higher than they are now and will be from some time to come. . . .

HMCA Response: "The 70 percent occupancy rate is a generally accepted rate for forecasting transient accommodations demand. Although it is lower than the 80 percent occupancy used in the State Tourism Study . . . 70 percent is considered to be more realistically achievable over longer periods of time.

"While the 70 percent occupancy assumption is not currently being achieved, the current conditions are considered to be below-normal due to the effects of the national economy. The forecast is based upon a longer-term pattern."

Your Comment: "The economists do not really have any basis for the figures they are plonking out."

HMCA Response: "The bases are well-described and considered to be reliable."

In regard to your comment that the "EIS should have . . . cautioned that the projections are speculative, please note that all projections are "speculative" in the sense that they are based on unprovable assumptions about the future. We doubt that there is anyone who is unaware of this obvious fact. Hence, it is unnecessary to attach the special cautionary note regarding this that you requested.

EIS Too Late. Neither Chapter 343, HRS, nor the EQC's environmental impact statement regulations prescribe a time limit for the completion of an EIS. In view of this, your assertion that " . . . the EIS came too late. . . ." (first sentence, last paragraph, page 8) appears to be erroneous. We are now in the process of preparing a revised EIS as prescribed by law which will be submitted to the County for final action. The General Plan Amendment review period has been extended to May 19, 1982.

Comment No. 8

Ohana Housing Law and Time-sharing Ordinance. Neither an ohana housing law or a time-share ordinance have been passed into law by the County of Hawaii, according to the County Planning Department.

Hastings, Martin, Chew & Associates discussed the effect passage of an ohana housing law might have on housing demand.

Theoretically, the Ohana Housing Law, if in place, could have a very slight impact on demand on the subject project. If such a law were in operation, it would be possible to add new housing units without having to add new housing unit sites. This could therefore affect demand pressures for both single family and multi-family housing sites.

Practically, however, such an impact on the overall market conditions for housing sites would not materially affect the market

demand pressures for the subject project since there are such great differences between it and Ohana housing in terms of such things as location, amenities, attributes, quality, price, image, ambience, and neighbors.

So, while the housing demand might be impeded, it certainly would not be "seriously" impeded.

Because of your concern about this issue a statement that the ohana housing law, if passed, might slightly impede housing demand will be added to Chapter III.

Hastings, Martin, Chew & Associates also analyzed the possible impact that passage of the proposed County time-sharing ordinance might have on the Kohala Makai I project. In their opinion "the net impact would be nil, or at worst, a modest lengthening of the marketability period," since there would be a compensating effect that could offset the loss of short-term rental use completely. They explain the mechanism as follows (Hastings, Martin, Chew & Associates, Ltd.; April 2, 1982):

While the ordinance limits the potential for short-term vacation rental of units outside of designated resort or hotel property, it concomitantly enhances the financial potential for short-term vacation rental units within resort and hotel areas. Normally, residential apartment units in resort and hotel areas are sources of units for long-term rentals as well as for short-term. If the ordinance directs the short-term rental market demand to resort and hotel areas, the financial attractiveness of such use in such areas will be increased. As more demand is directed to these short-term rental units, achievable occupancies would increase. As occupancy levels increase, rates increase and short-term rental returns begin to exceed long-term rental returns. Investor owners of residential apartment units in resort and hotel areas would then be motivated to remove their units from the long-term rental inventory and shift to more rewarding short-term rentals. Removing these units from the long-term rental inventory would increase the demand for long-term rental units outside the resort and hotel designated areas. As such, the investor owner that might have planned to use units in Kohala Makai I for short-term rental use, would find increased demand and therefore increased financial benefits from renting the unit on a long-term basis. Thus, the motives for purchase would likely be sustained.

Moreover, resort residential apartment units have traditionally been occupied by a number of full-time residents, both owner-occupants and long-term renters. Since the ordinance will tend to direct a greater proportion of short-term renters to resort and hotel areas, the ambience and character in such areas could become less desirable to owner-occupants and long-term renters who might then seek housing still within the region, but not specifically within resort or hotel designated areas. Therefore, there might be a tendency for owner-occupants and long-term renters to also contribute to the potential demand for units in a project such as Kohala Makai I.

All of these potential market shifts could . . . compensate for the loss of short-term occupancies from visitor use. Therefore, we conclude that the likely impact of the proposed timeshare/vacation rental ordinance would be to increase the share of long-term residential occupancies as an offset to the decrease in short-term visitor use, and possibly a slight increase, if at all, in the marketability period.

This discussion is being added to Chapter III of the EIS.

Comment No. 9

"No Action" Alternative. Your letter (page 9, paragraph 4) states, "In fact they [Bell, Collins & Associates] have not at all treated the alternative of no action (project) at all. . . ." Apparently the time constraints within which you worked led you to overlook the discussion of this topic found on page VII-6 of the EIS.

Comment No. 10

Testimony at Reapportionment Hearings. The testimony given at the reapportionment hearings will undoubtedly be taken into consideration by the County in deciding on the General Plan amendment request for Kohala Makai I.

Comment No. 11

Manganese Module Processing Plant. Your comment faults the EIS for failing to discuss anything at all about a planned Manganese Module Processing Plant that is planned by the State on adjoining state land within a radius of maximum 9 miles around Kawaihae Harbor." It further suggests that the State is pushing "through on its dumb manganese processing plant." Finally, you refer us to Mr. Keith Kent, Deputy Director of the Department of Planning and Economic Development (DPED) for "plenty of information about this."

The subject of plans for a manganese module processing facility on the Big Island was discussed with Mr. Kent's office during the preparation of the EIS and once again following receipt of your comments. The facts obtained from these discussions contradict the statements made in your letter and fully justify the absence of a treatise on manganese processing in the Kohala Makai I EIS. To be specific:

o No manganese module processing facility is "planned" for the Kawaihae area. DPED has evaluated the implications of developing a hypothetical facility in each of two prototypical locations, Puna and Kawaihae. But no organization has even come close to planning to construct such a facility at Kawaihae and DPED is not proposing or recommending that this be done.

o The hypothetical facility examined by DPED would not require 600 acres per year for the disposal of tailings. In fact, one alternative being examined would utilize controlled ocean dumping and would require no land disposal sites for tailings. If land disposal were used, 600 acres would accommodate tailings produced over a period of 25 years, not one year as stated in your letter.

o Because of a number of factors, including uncertainties over the outcome of international negotiations concerning ownership of seabed mineral resources, the relatively low market prices of minerals derived from the nodules, and the intense international competition that exists for the industry, the probability that a processing facility will actually be developed near Kawaihae is remote at best. To have assumed differently for the EIS would have been a gross distortion of the facts and would have diverted attention from more realistic concerns.

Water Availability. On page 10 of your letter you express the belief that . . . water availability . . . is also insufficiently treated in the EIS as is shown by a letter from the County Water Dept. included in the EIS, which requires 2 independent sources for a project like this." This is incorrect.

The requirement for two "sources" mentioned in the Department of Water Supply's letter refers to the fact that a back-up well is required in case there is a mechanical or electrical failure in the primary source of supply. As indicated in the EIS, water for the project would probably be drawn from the County system. This system can draw from multiple sources including the several wells in the Lalaimo area and, in an emergency, from a surface water source in Waimea. Hence, tapping into this system would insure compliance with the two-source requirement.

It is now considered unlikely that the Kohala Makai I project would utilize water from the Kohala Estates system. However, upon completion, the Kohala Estates system will include two independent well sources, thereby fulfilling the Department of Water Supply's requirement.

Comment No. 12

Road Widening Costs. Page IV-32 of the EIS states that improvements to Akoni Pule Highway could be desirable . . . if both planned South Kohala resorts and the proposed Mahukona Resort are constructed." Given the County's recent refusal to initiate a General Plan amendment petition for the Mahukona Resort project, the conditions under which highway widening would be required would not be present.

Power Line Feed. A 69-Kv capacity transmission line presently extends from Kawaihae to Kohala Estates and connects the latter with the Hawaiian Electric Light Company (HELCO) power grid. This line runs parallel to Akoni Pule Highway and 500 feet mauka. Because of the small amount of power now being consumed at Kohala Estates the line is now being fed with only 12 Kv. Significant further development of Kohala Estates or of Kohala Makai I will require that the transmission voltage be raised and that a substation be constructed to step it down to 12 Kv for distribution. No new transmission line would be required to serve the Kohala Makai I project. A new distribution line would tap the transmission line and run makai to the Kohala Makai I parcel, crossing Akoni Pule Highway underground and continuing underground on the project site. In response to HELCO's letter of February 16, 1982 we have amended the sentence in the EIS which says HELCO would bear the cost of providing new lines. The cost of the substation and of the distribution line necessary to bring electricity from the existing transmission line to the Kohala Makai I site will be paid for by the private developers who will benefit

April 5, 1982
Page 11

from it. The cost of electricity provided to existing HELCO customers will not be increased by the proposed project.

Telephone Lines. As stated in the EIS, a new transmission cable from the Kawaihae Switching Center would be required to provide the Kohala Makai I site with telephone service. This cable would run on the same poles as the electrical lines. A representative of the Hawaiian Telephone Company has indicated that costs to existing customers would not be increased due to the Kohala Makai I project.

Comment No. 13

Recreational Facilities. Our answer to your comment on park names in the Mahukona Resort Environmental Impact Statement is reproduced below:

Beaches. Figure V-15 portrays "recreational facilities." It was intended that "Kapa'a Beach" be read as "Kapa'a Beach Park." The same is true of "Mahukona Beach." Both of these are the official names of the parks as obtained from the County of Hawaii Recreation Plan, despite the fact that there are no beaches at these parks. You will note that this same convention was followed for Hapuna Beach (Park) and Keokea Beach (Park). It was certainly not our intention to mislead readers on this point, and I apologize for any misunderstanding it may have created.

As is clearly evident, at no point in this response did we tell you that there was an error which would be corrected in the revised EIS, and we cannot imagine how you might have thought otherwise. Because of the continued concern you have expressed over this minor issue of nomenclature, we are changing the figure in the revised Kohala Makai I EIS so that "Kapa'a Beach" reads "Kapa'a Beach Park" and "Mahukona Beach" reads "Mahukona Beach Park," etc.

Comment No. 14

There are no substantive comments regarding the EIS under this heading. Hence, we can only presume that its only purpose is to attempt to establish the broadest possible grounds for civil action under the provisions of Section 1-81 of the Environmental Quality Commission's EIS Regulations should the EIS be accepted. We believe that the document has adequately discussed the probable impacts of the project, but this determination can only be made by the duly authorized government body.

Very truly yours,

James R. Bell
James R. Bell

Attachments
JRB:kg
Environmental Quality Commission
cc: Hawaii County Planning Department
Kohala Makai I Partners

Belt, Collins & Associates

Engineers, Architects, Planners
1155 North King Street, Suite 402, Honolulu, Hawaii 96813
Telephone: (808) 531-5361
Telex: III 111741174

March 2, 1982
82-363

Ms. Joan Kodani
Executive Secretary
State of Hawaii
Environmental Quality Commission
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Kodani:

Kohala Hakai I EIS

Yesterday we received a letter from Mr. Henry A. Ross commenting on the environmental impact statement (EIS) for the Kohala Hakai I project in North Kohala (see attachment). The letter raises two questions that I would appreciate your help in resolving.

First, on the first page of his letter, Mr. Ross states:

"As this is only a draft, I would appreciate if (sic) you would call Belt, Collins' attention to the legal requirement of sending 60 copies also of the final EIS or attachments to the draft to the EQC for distribution."

We then goes on to make several other assertions relative to the number of copies of the revised EIS (he calls it the "final" EIS) that are required.

Based on my reading of the Environmental Quality Commission's EIS regulations and on my experience with previous Chapter 343 EIS's, I believe Mr. Ross is incorrect. The copy of the EIS regulations that we possess does not stipulate the number of revised EIS's that must be submitted to EQC. Our practice has been to query the Environmental Quality Commission regarding the number of copies it wishes to have. Typically, we have been asked to supply 20 to 25, enough to distribute to interested public repositories.

Would you please indicate whether my interpretation of the regulations is correct? If it is, I would appreciate it if the Commission would inform Mr. Ross of the propriety of our action. If I am incorrect, would you please indicate to us the number of copies of the revised EIS which must be submitted to EQC?

PCA, LTD. Principals: James R. Bell, Paul M. Thomas, Raymond J. Carr, Joseph Vento, Jr., Thomas P. Spandrew

Ms. Joan Kodani
March 2, 1982 - 82-363
Page 2

Second, Mr. Ross asserts that we should have called the document a "draft" environmental impact statement" (see, for example, his first sentence on page one and the third paragraph on page one). He cites Chapter 343-5(c) of Hawaii Revised Statutes as the basis for this. Upon checking the statute, I find that Section 343-5 does not contain a paragraph (c). Hence, I must presume that Mr. Ross meant to refer to Section 343-4. That section does discuss the process to be followed in the preparation of environmental impact statements and is the basis for much of the EQC regulations.

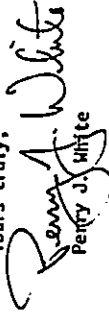
The paragraph never uses the term "draft environmental impact statement". As far as I can ascertain, the State EIS process provides for an "Environmental Impact Statement" and a "Revised Environmental Impact Statement", not a "Draft" and a "Final" as Mr. Ross would have us call them. It is possible that he is thinking of the Federal nomenclature.

Please review our practice of referring to the document submitted for circulation and review as the EIS and the document incorporating comment letters and necessary changes as the "Revised EIS" and indicate whether or not our interpretation of the law is correct. If it is, would you please inform Mr. Ross of this fact?

I would appreciate a written response to this letter so that we might include it, if appropriate, in the revised EIS. I would also like to receive a copy of any letter you sent to Mr. Ross as a result of it.

Thank you very much for your assistance. If you have any questions regarding my request, please call me at 521-5361.

Yours truly,


Henry J. White

PJH:gk

Attach.: Henry Ross Letter of 2/21/82



STATE OF HAWAII
ENVIRONMENTAL QUALITY COMMISSION
116 MAIHEAULELE ST.
ROOM 311
HONOLULU, HAWAII 96813

ROY R. TAKEMOTO
Chairman

ILLUSTRATION
ROOM 1-10-111

Mr. Perry J. White
March 12, 1982
Page 2

The Commission is in the planning stages of revising the Regulations and your recommendations for improvement are welcomed. A copy of our letter to Mr. Henry A. Ross is enclosed. Please feel free to contact me if I can be of any further assistance.

Sincerely,

Roy R. Takemoto
Roy R. Takemoto
Chairman

Mr. Perry J. White
Belt, Collins and Associates
745 Fort Street, Suite 418
Honolulu, Hawaii 96813-3891

Dear Mr. White:

Subject: Kohala Makai I EIS

In response to your letter of March 2, 1982, we are providing you with clarification on two areas regarding the EIS process.

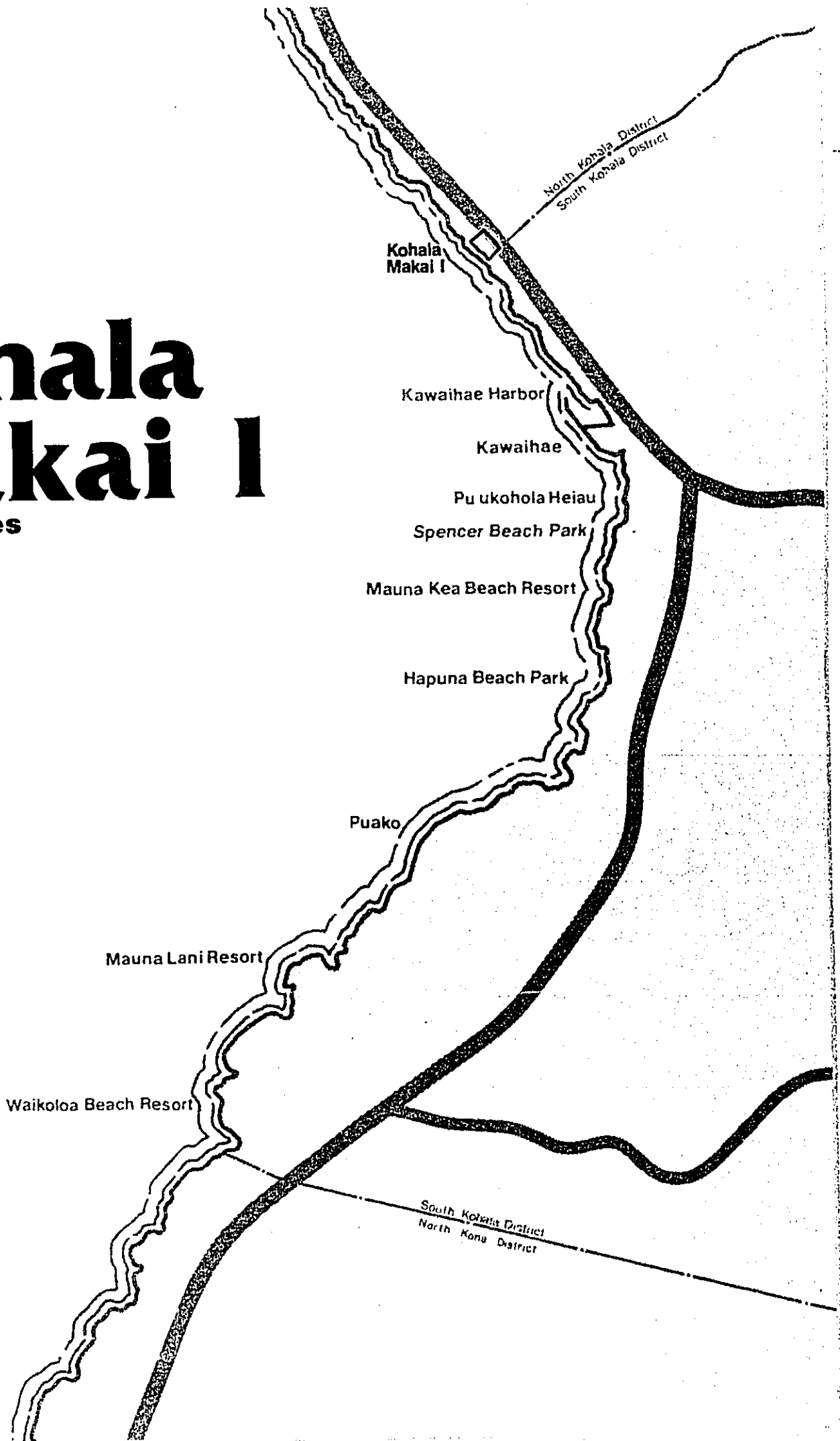
1. Chapter 343, HRS does not specify the number of copies required by the Commission for an EIS. The Regulations, however, require 60 copies (EIS Regs. 1-50 a and b). In the past, this has been interpreted to mean 60 copies of the draft EIS and the standard procedure has been to require 20 copies of the revised EIS (see flow chart). As you are aware, these copies are sent to various libraries and public repositories for inspection. If there is a great demand for copies of a revised EIS, the preparers of the document may provide us with extra copies. This depends on the individual project and is optional. We realize this area is not clear and must be clarified when the Regulations are amended.
2. Chapter 343-4, HRS has been renumbered to 343-5 and subsection (c) refers to applicant actions. A copy of Chapter 343, HRS is enclosed for your files. Your practice of referring to the document as "EIS" and "Revised EIS" does not conflict with either the Regulations or Chapter 343, HRS. In the future, however, we might suggest using the terms "Draft EIS" and "Revised EIS" to avoid confusion. Again, this is an area which the Regulations fails to clarify and one which the Commission plans to amend.

Enclosure

March 12, 1982

Kohala Makai I

Appendices



APPENDIX A

ARCHAEOLOGICAL RECONNAISSANCE SURVEY
OF THE KOHALA MAKAI I DEVELOPMENT SITE

By: Paul H. Rosendahl, PH.D.
Archaeological Research Associates

INTRODUCTIONBACKGROUND

At the request of Belt, Collins & Associates of Honolulu and Amaral-Cole, Realtors of Kahului, Maui, an archaeological reconnaissance survey was conducted on a parcel of land located in the land of Waikua, North Kohala, Island of Hawaii. This survey was carried out as part of planning work for a proposed condominium development by Amaral-Cole, Realtors. Survey field work was conducted on July 6, 1980 by Paul H. Rosendahl and Margaret E. E. Rosendahl, who were accompanied during a portion of the field work by Mr. Michael K. Bates. Mr. Bates represented Amaral-Cole. A preliminary oral report of survey findings and tentative recommendations was made to Mr. Bates on-site on July 6, and subsequently to Mr. Larry B. Helber of Belt, Collins & Associates on July 8. The present report comprises the final report on the reconnaissance survey.

SCOPE OF WORK AND DESCRIPTION OF SURVEY AREA

The basic purpose of the reconnaissance survey was to locate any sites or features of possible archaeological significance. A reconnaissance survey is simply a walk-through survey--extensive rather than intensive in scope--conducted to determine the presence or absence of archaeological resources within a specified project area. A reconnaissance survey (1) permits a preliminary evaluation of archaeological resources, and (2) facilitates formulation of realistic recommendations and estimates for any further archaeological work that might be necessary. Such additional work could include intensive survey--detailed recording of sites and features, and selected test excavations; and possibly subsequent mitigation--salvage or research excavations, interpretive planning, and/or preservation of sites and features with significant research, interpretive, and/or preservation values.

The Kohala Makai-I development site survey area consists of approximately 38.2 acres located in the land of Waikua, North Kohala District, Island of Hawaii (TMK: 2-5-9-0116). Situated along the leeward coast of North Kohala, the survey area is located about two miles northwest of Kawaihae Harbor and contained within Land Court Application 1043. The survey area is bounded by the Kawaihae-Mahukona Highway along the northeast (inland) side, by the South Kohala-North Kohala District boundary along the southeast end, by the Pacific Ocean along the southwest (seaward) side, and by a similar parcel of coastal land on the northwest end. Roughly rectangular in shape, the survey area has about 1400 feet of ocean frontage, and has maximum dimensions of approximately 1200 feet (NE-SW) by 1850 feet (NW-SE).

The survey area rises in elevation from sea level to approximately 200 feet. Much of the coast line consists of nearly vertical rocky cliffs some 20 to 30 feet high. The terrain of the survey area is very irregular, being dissected by several dry gulches and washes, some of which are quite steep-sided. The predominant soil, Kawaihae very-rocky-very-fine-sandy-loam, has developed from both the basaltic lava flows of the Holocene volcanic series and the subsequent andesite and trachyte lava flows of the Hual volcanic series. Recent alluvium deposits are found in the lower reaches of several of the dry gulches and washes.

The coastal portion of the survey area--below c. 100 feet in elevation--has for the most part a dense vegetation cover composed almost entirely of the introduced exotic Kiawe (Prosopis juliflora (Humb. and Bonpl. ex Willd.) HBK.). The upper portion--above c. 100 feet elevation--is fairly open, with a cover of low Sida, a few Sida fallax L., and scattered Kiawe. The sides and bottoms of the upper reaches of the dry gulches generally have fairly thick stands of Kiawe and grasses.

The ground surface in the upper portion of the survey area is for the most part exposed bedrock, with little or no soil, and

is littered with cobbles and small boulders exposed by wind erosion. The bottoms of the gulches and washes appear to have fairly thick deposits of coarse-to-fine alluvium. The ground surface in the lower portion of the survey area has some exposed bedrock, but in many parts of the area there are soil deposits of thick alluvium. Most of the near coast area, including both low areas at the mouths of gulches and washes as well as other relatively flat portions of the coastal area, have alluvial deposits which are as much as two meters thick--based on examination of exposed deposit faces at the cliff edges.

There is relatively little recent modification of the survey area. There are bulldozed jeep trails along the coast and just inside both the northwest and southeast ends of the survey area, and a section of bulldozed trail into the upper central portion. Some of the ground surface adjacent to parts of the jeep trails and the highway have also been scraped or cleared.

PREVIOUS ARCHAEOLOGICAL WORK

A review of maps and records in the Hawaii County Planning Department office in Hilo failed to reveal the presence of any known sites within the survey area either presently on or eligible for inclusion on either the Hawaii State Register of Historic Places or the National Register of Historic Places. Mr. Bates indicated that he was under the impression that some kind of archaeological survey had been conducted earlier by the previous landowner, but a check with the Hawaii County Planning Department found that no report on any earlier survey was known.

Previous reported archaeological work in the vicinity of the project area indicated the presence of several sites earlier. During his surface survey of the Kawaihau-Mahukona Highway route in 1964, Soehren (1964) recorded three sites within the land of Waika. Two of these sites--F1-2, an irregular walled enclosure; and F1-3, a rectangular walled enclosure--were apparently built and destroyed during construction of the highway. A third site--

F1-1, a rectangular walled enclosure--was situated far enough seaward of the highway alignment to have been spared from any destruction. While not identified definitely, it seems probable that the remains of a destroyed site designated as Feature C during the reconnaissance survey might well be the remains of the site recorded as F1-1 by Soehren in 1964.

In 1967, Bonk (1968) conducted a coastal survey of South and North Kohala, from about one mile northwest of Kawaihau to Upeolu Point. While several sites were located within the lands of Waika and Kahuunui immediately to the northwest, none of them were found within the area of the present survey.

SURVEY METHODS AND PROCEDURES

Survey field methods were quite simple. Survey team members, working separating and together, swept slowly back and forth, searching the ground for any structural remains or other indications of cultural activity. In terms of coverage, the entire project area was inspected. The locations of archaeological features found were plotted onto a copy of a 1:200' (approx.) (1:2000 scale) topographic map of the project area provided by Mr. Bates. Written descriptions and scaled sketch maps were made of features and 35 mm. black and white photographs were taken. Features were assigned alphabetic designations, but no permanent Hawaii Register of Historic Places site numbers were assigned.

SURVEY FINDINGS

Reconnaissance survey identified eight features within the limits of the Kohala Makai-I development site. The locations of these features are indicated on Figure 1. Of the eight features designated, two were natural outcrops modified to form windbreaks or shelters (Features A, E), while another two were walled shelters (B, D). Other recorded features include a surface artifact and midden concentration (C), a crude pavement; or

Ms. ARA-15-070780

foundation (F), a small cairn (i), and a small cache or cupboard (H).

Feature A - Modified Outcrop

This feature consists of a natural outcrop modified by the addition of a few small boulders stacked atop and along the sides of the outcrop to form a crude windbreak shelter. Roughly rectangular in shape, this shelter has overall dimensions of c. 3.0 by 4.0 meters, and a maximum interior wall height of 30 centimeters. The feature is situated in the southern inland portion of the survey area, on a low knob extending southward from the north side of a dry gulch, at an elevation of approximately 145 feet. The shelter is open toward the sea. It is in very poor condition. No associated portable cultural remains were noted, nor any obvious cultural deposit.

Feature B - Walled Shelter

This feature consists of a remnant of a walled shelter, apparently rectangular in form, and measuring c. 2.5 by 4.0 meters. The inland side has been destroyed by bulldozing activity. Standing wall sections indicate stacked stone construction using small boulders. Maximum present height is only 10 to 25 centimeters. A flat basalt slab, apparently not modified, lies at the northwest corner of the shelter. One meter off the southeast corner is a small cache or cupboard feature measuring 75 by 100 centimeters, with stacked stone walls 50 centimeters high.

Feature B is situated in the central inland portion of the survey area, at the seaward end of a low ridge between two dry gulches, at an elevation of c. 195 feet. Located similarly to Feature A, this shelter has an excellent view of the coastal waters. It is in very poor condition. A few pieces of weathered marine shell and fragments of coral are present on the surface on the

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seaward side of the shelter. These constitute the only observed cultural remains associated with the feature. No obvious cultural deposits are present.

Feature C - Surface Artifact and Middie Concentration

This feature appears to represent the remains of a totally disturbed site. Spread out over an area c. 25 by 30 meters are abundant surface midden, several artifacts, and boulders which look to have been derived from an earlier surface structure destroyed by bulldozing activity. The feature is situated in the northern inland portion of the survey area, near the Kahaluu-Mahukona Highway, atop a prominent ridge. At an elevation of c. 195-200 feet, the location is a vantage point providing an excellent view of the coastal waters.

Based on the description provided by Soehren (1969:5), it was felt that Feature C might be the remains of the shelter site recorded and designated by Soehren as site FI-1. If not, then the remains surviving suggest a site very similar in character. Small boulders probably derived from walls had been picked up around the area of the feature, and down the side slope of the ridge, to the north and northwest. Abundant surface midden was scattered over the disturbed area, including several species of marine mollusc (cowry, limpet, sea snail, cone, and others), coral cobbles, and pebbles, and a few waterworn basalt pebbles. Several surface artifacts were also noted, including three cowry shell octopuses lures, a sea urchin spine abrader, and informal hammerstones of utilized waterworn basalt cobbles.

Feature D - Walled Shelter

This feature is a C-shaped stone walled shelter, measuring c. 3.0 by 4.2 meters overall. The crude bi-face wall has a rubble core-fill, and averages 90 centimeters in width and 80 centimeters

in height. In fair condition, the shelter is situated on the gently sloping southern side of a shallow dry ditch in the northern inland portion of the survey area, at an elevation of c. 15 feet. The shelter is open toward the sea. The very limited surface cultural remains consist of a few pieces of weathered marine shell (cowry and others) and a few small waterworn basalt cobbles. No obvious cultural deposit was present.

Feature E - Modified Outcrop

This feature consists of a natural outcrop modified by the addition of a low section of stacked stone wall to form a roughly L-shaped windbreak shelter measuring at most c. 2.5 by 3.5 meters. The combination of the stacked stones and the natural outcrop produce a rear shelter wall c. 75 centimeters high and 80 centimeters wide. Feature E is situated just within the survey area, along the northwest boundary, c. the sloping lee side of a low ridge, at an elevation of c. 90 feet. The shelter is open toward the sea.

A recently constructed boundary cairn with survey mark is located immediately adjacent to the northwest of the feature. The feature itself is in poor condition. A few scattered fragments of well-weathered marine shell on the surface comprised the only cultural remains noted. No obvious cultural deposit was present.

Feature F - Pavement/Foundation

This feature is an irregular, roughly rectangular shape of pavement or foundation of small boulders and large cobbles. With maximum dimensions of approximately 4.5 by 5.5 meters, this crude pavement is a single course high (maximum c. 20 centimeters) and is composed mostly of lava rocks with a few pieces of coral. No portable cultural remains were noted in association with the feature, which is in very poor condition.

Feature F is situated in the coastal portion of the survey

area, c. 25 to 30 meters inland from the edge of the sea cliff, at an elevation of c. 25 feet. The ground surface slopes gently inland at the location of the pavement. The immediate area of the feature is overgrown with klawe, and the structure is covered with organic debris. No obvious internal architectural features were found, though the edge of the pavement appears to have a short alignment of stones forming the edge in at least one place.

Adjacent to the pavement, between it and the sea cliff, is a relatively flat to gently sloping area c. 20 by 20 meters in extent. This area has a surface scatter of well-weathered marine shell (several species) and several coral pebbles and cobbles. No surface structural features were noted, nor were any artifacts. The soil appeared very shallow, and did not seem to represent a cultural deposit.

Feature G - Cairn

This feature consists of three small boulders stacked atop one another to produce a small cairn with maximum dimensions of c. 25 by 25 centimeters and standing c. 35 centimeters high. Located at the edge of a shallow dry wash, c. 25 meters from the edge of the sea cliff, this cairn appears to be a recently constructed trail marker. Other than a few pieces of coral trash, there was no portable cultural material associated with the feature.

Feature H - Cache/Cupboard

This feature is a small storage structure constructed of small boulders set in a socket; the arrangement is like that of a cache. The structure is c. 80 by 100 centimeters, the cache has an open interior area, and stands c. 35 centimeters high. Situated only c. 10 meters from the edge of the sea cliff, this cache appears to be a cache.

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structure--possibly for temporary storage of water bottles used by fishermen working along the coast. No portable cultural remains were found in association with the feature.

CONCLUSION

DISCUSSION

Archaeological reconnaissance survey of the Kohala Makai-I development site revealed the presence of only eight features. Two of these--Features G and H--are believed to be recent structures. The absence of historic period portable cultural remains, excepting recent trash and rubbish, suggests that the rest of the features are probably of prehistoric age.

The paucity of archaeological features is somewhat surprising, considering the general abundance of structural remains known to exist along most of the rest of the west coast of Kohala, from Kawaihu to Upolu Point. The relative absence of archaeological features, especially in situations where features might reasonably be expected to be found, could possibly be related to the apparent erosional instability of the local terrain. Either features were present previously and are now destroyed, or no features were ever built in the area. The latter alternative is considered more likely than the former because of the almost total lack of any evidence of cultural remains in the coastal portion of the area.

For the most part, the features found within the survey area seem to represent temporary occupation features--probably used in connection with the exploitation of the rich inshore marine resources found along the western Kohala coast. The situation of the several simple walled shelters and modified outer shelters; somewhat inland at suitable elevations provides vantage points with excellent views of the coastal waters.

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EVALUATION AND RECOMMENDATION

To attempt evaluation of significance of archaeological resources on the basis of a preliminary assessment such as a reconnaissance survey is generally premature. Significance can be defined in terms of potential research, interpretive, and/or preservation values. Research value refers to the potential of archaeological resources for producing information useful in the understanding of culture history, life-ways, and cultural processes at the local, regional, and inter-regional levels of organization. Interpretive value refers to the potential of archaeological resources for public education and recreation, and for promotion of ethnic identity. Preservation value refers to the need to conserve an adequate representative sample of the archaeological resource base for future use. Occasionally, it is possible to even a preliminary level of study, such as a reconnaissance survey, to evaluate the significance of specific archaeological resources when their potential research, interpretive, and/or preservation value is obvious.

The limited archaeological remains found within the bounds of the Kohala Makai-I development site are judged to have only the most minimal significance in terms of research, interpretive, or preservation potential. Reasons for this evaluation include the generally poor condition of the remains, the lack of substantial structural remains, the general paucity of associated portable cultural materials--midden or artifacts, and the absence of cultural deposits with potential for excavation.

The recording of the features present completed during the reconnaissance survey constitutes adequate preservation of the minimal archaeological data present, and no further archaeological work of any kind is believed to be either necessary or justified. This evaluation is given on the basis of the findings of the reconnaissance survey, and with the general qualification that during any development activity involving the modification of the

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ground surface there is always the possibility that previously unknown or unexpected subsurface cultural features or deposits might be encountered. In such a situation, immediate archaeological consultation should be sought.

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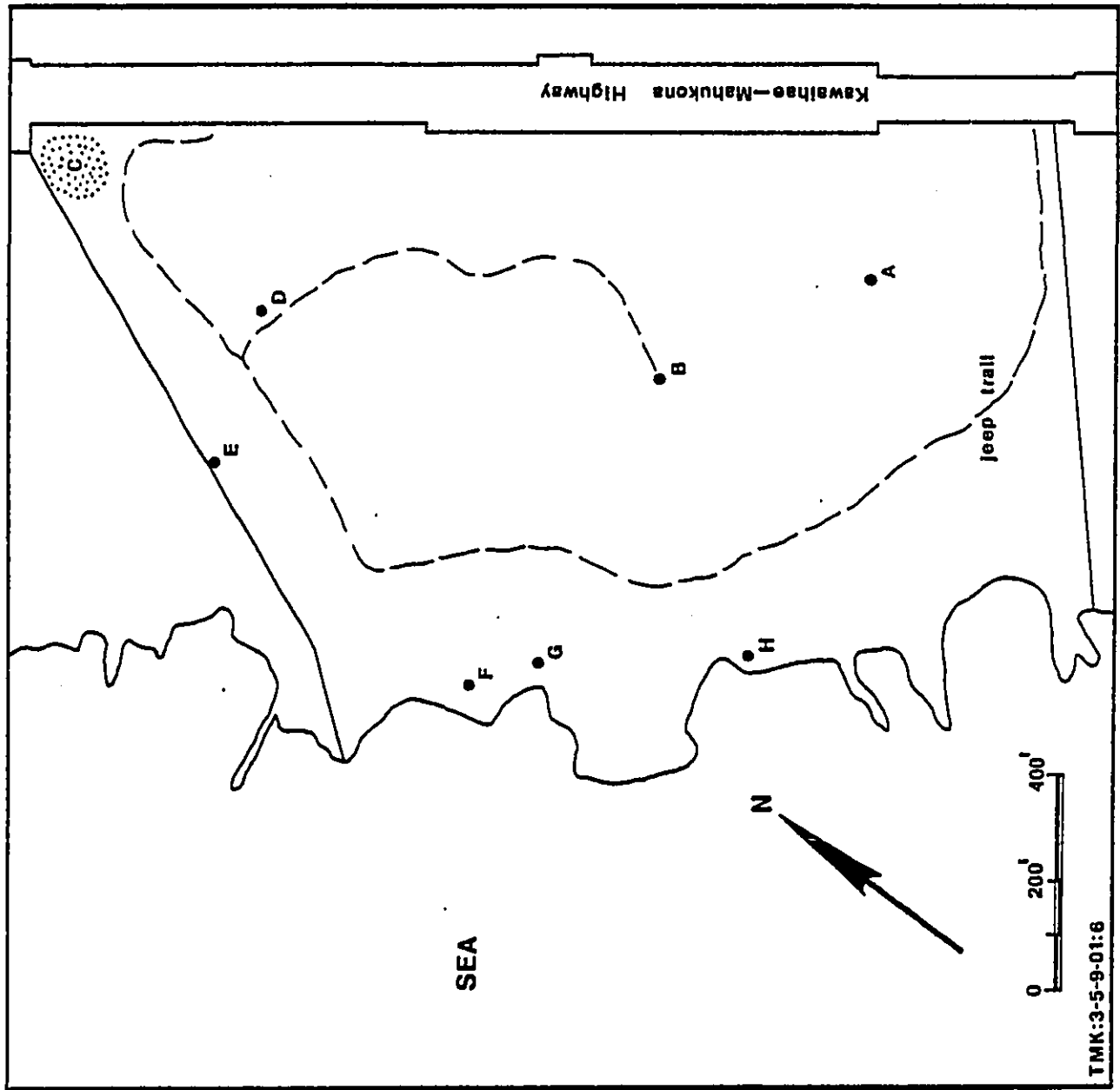


FIG.1.

ARCHAEOLOGICAL FEATURES
 Reconnaissance Survey for
 Belt, Collins & Associates
 and
 Amaral-Cole, Realtors
 Kohala Makai-I
 Development Site
 Maika, North Kohala
 Island of Hawaii
 July 1980
 Paul H. Rosendahl, Ph.D.
 Consulting Archaeologist
 Project ARA 80-15

TMK:3-5-9-01:6

APPENDIX B

VEGETATION AND ENVIRONMENTAL IMPACTS
OF THE PROPOSED KOHALA MAKAI I
DEVELOPMENT PROJECT

By: Earthwatch, Environmental Resource Investigators

INTRODUCTION

Construction of the proposed Kohala Makai tombhouse development will require clearing of much of the existing vegetation and replacement with residential facilities and introduced plants. To aid in the assessment of such land cover changes, this report examines present environmental conditions and probable environmental impacts, relative to vegetation, for the Kohala Makai Site. It is based on original field survey, mapping, aerial photo interpretation, and other evaluations made by the authors in July 1981.

LOCATION OF STUDY AREA

The Kohala Makai I site is located in North Kohala with the North Kohala-South Kohala boundary forming its southern border. Highway 27, which links the communities of Iiwi and Kawaihae, forms the eastern (mauka) boundary, and the Kawaihae coastline the western. The configuration of the parcel is given in Figure 1.

ENVIRONMENTAL SETTING

Climate -- The Kawaihae Coast is one of the most arid regions of the island, receiving less than 10 inches of rainfall per year (Taliaferro, 1959), primarily during the winter months. Long periods of continued drought are not unusual; at the time of survey the area was in a severe drought that had lasted over a year. Solar insolation is high, humidity low. Local weather conditions are influenced primarily by a land-sea breeze regime.

Physiography -- The site is located on the western (leeward) flank of Hawaii Island's oldest volcano, Kohala Mountain. Unlike the highly weathered

windward side, this area exhibits little modification of the original pahoehoe shield formation. Low-cut sea cliffs and boulder beaches along the coast give rise to gently rolling uplands. The site is characterized by scattered hills and depressions as well as a few erosional gullies. Elevations range from sea level to nearly 200 feet.

Soils -- Soils in this area consist of "Kawaihae very rocky very fine sandy loam, 6 to 12 percent slopes (KOC)", with rock outcrops occupying 10 to 20 percent of the surface (Soil Conservation Service, 1972). These poorly developed reddish brown aridisols are characteristic of dry regions and on the island of Hawaii support some pastures.

Hydrology -- Due to infrequent rainfall and the porous nature of the area, no permanent surface water features exist. Erosional gullies are dry except in times of storms or occasional heavy rainfall. Ground water is characterized by a brackish basal lens (Armstrong, 1973) which is nearest the surface along coastal flats and beneath gullies.

Flora -- The site falls within the potential vegetation zone of kiawe and lowland shrub (Ripperton and Hosaka, 1942). Potential vegetation is the vegetation which would be expected for an area given the existing climate, elevation, and available plant species. Kiawe and lowland shrub is characteristic of areas in Hawaii below 1000 feet elevation receiving less than 20 inches of rain per year. Dense kiawe thickets occupy coastal flats and gullies where groundwater is more available; uplands are characterized by kiawe trees and shrubs scattered in dry, rolling grasslands.

Prior to the introduction of cattle and lumbering, environmental conditions may have been less harsh in this area. Like other leeward coastal areas in Hawaii, this region may have hosted native forest tree species adapted to dry environments, such as sandalwood. Also, the gullies may have been

intermittently more active since no major stream diversions were made prior to the expansion of the cattle industry.

Actual vegetation of the site, linked to factors such as land use, rainfall, topography, history of disturbance, human settlement and local groundwater hydrology, closely approximates the potential vegetation zone and is described in detail in the following sections. At the time of survey the vegetation and landscape seemed strongly influenced by the prolonged drought conditions.

METHODOLOGY

Three phases of survey and analysis were conducted to document existing vegetative cover and evaluate probable environmental impacts:

Preparatory phase -- Prior to field survey, existing maps and aerial photographs were examined for familiarization with boundaries, location of survey routes and problem areas, and assessment of general cover types.

Background research was conducted to determine whether any rare or endangered native Hawaiian flora could be expected for this region.

Field survey -- A reconnaissance level survey was made to determine variability of cover types and relationships to terrain. More detailed walk-through surveys were made for each cover type encountered or predicted from aerial photographic signature interpretation. Plant species were observed and recorded, with their relative cover and abundance evaluated subjectively in the field. Representative photographs were also taken of each major cover type encountered in the field. Throughout the survey aerial photographic signatures were identified and verified by ground truth observations. This information was later compiled into a vegetative cover map with the aid of image transfer techniques and photographic bases. Although the maps are not

corrected for geometric scale distortions, they serve to illustrate the distribution of vegetative cover types at Kohala Makai I.

Impacts assessment -- Findings of the vegetation survey and observations of the physical environment were used to determine the significance of existing vegetative cover. Existing conditions were then weighed against actions which may accompany townhouse development and operation, and assessment was made of environmental impacts which may occur relative to vegetation.

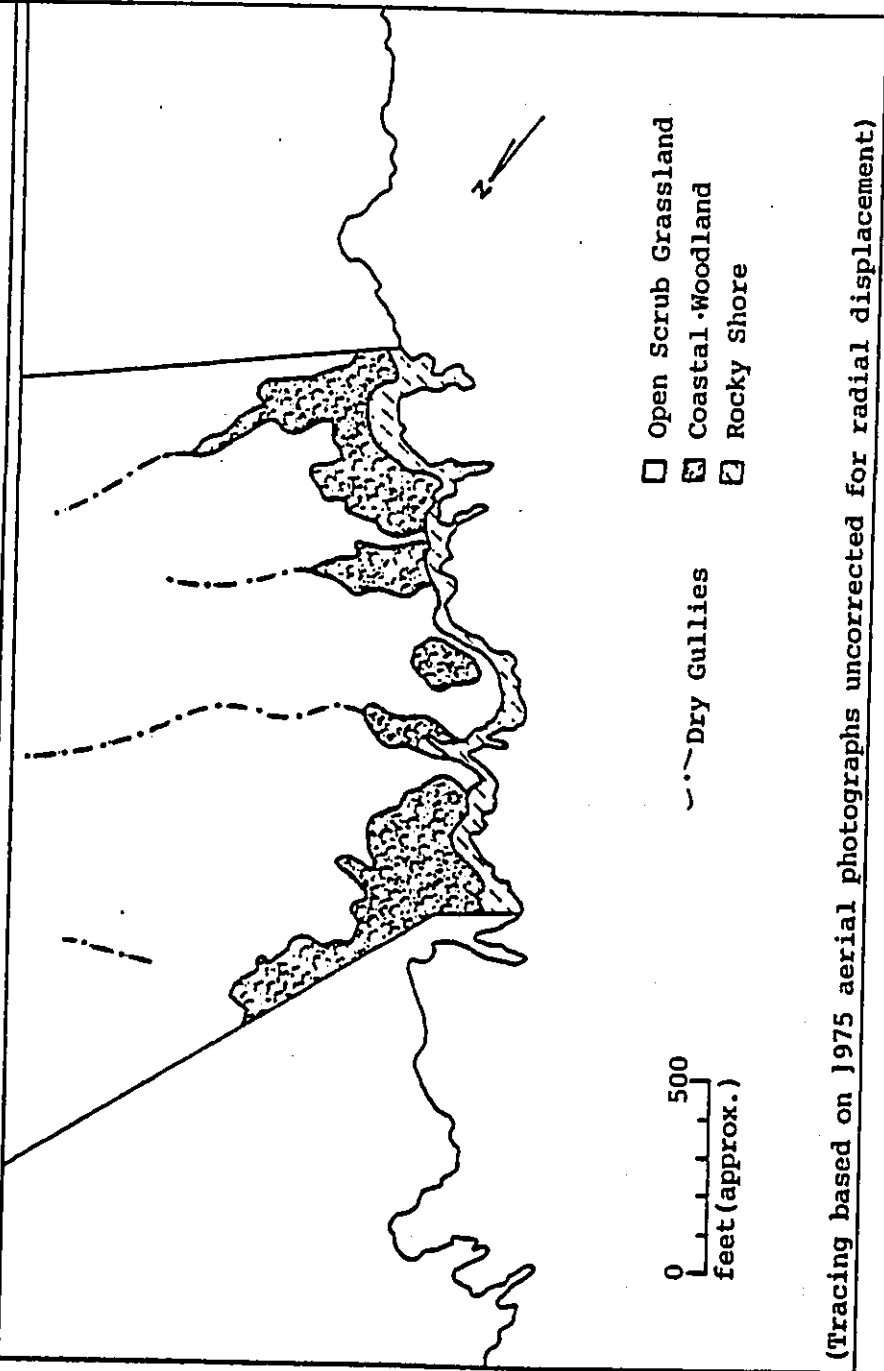
RESULTS: DESCRIPTION OF COVER TYPES

Existing vegetation and land cover are classified into "cover types" based on vegetative structure (height, physiognomy, stratification, cover/abundance), floristic composition (dominant plant species) and habitat association (site and terrain characteristics). Figure 1 illustrates the distribution of cover types, Table 1 summarizes the characteristics of each cover type, and Table 2 provides a checklist of plant species observed within the site.

The site may be characterized by three major cover types: open scrub grassland, coastal woodland and rocky shore.

1. Open Scrub Grassland -- This is the predominant cover type of the Kohala Makai I site. It is characterized by vast, gently rolling lands covered with dry grasses and moderately to widely spaced (50% total cover) kiawe trees and shrubs. Exposed soils and rock outcrops are common but generally do not exceed 10% of the total land surface area. Kiawe (*Prosopis pallida*) is an exotic plant species well adapted to the harsh, arid environment of this area, and was the only major species observed in the tree and shrub layer in open scrub grassland. Many of the kiawe were dried and without leaves. *Sida cordifolia* shrubs, averaging 2 1/2 - 3 1/2 ft. in height, and usually in a desiccated condition, were also observed scattered sparsely throughout this

VEGETATIVE COVER TYPES OF THE PROPOSED
KOHALA MAKAI DEVELOPMENT SITE, NORTH KOHALA, HAWAII



(Tracing based on 1975 aerial photographs uncorrected for radial displacement)

Earthwatch, 1981

Figure 1

Table 1

SUMMARY OF COVER TYPES -- KOHALA MAKAI I

| Cover Type | Characteristics | Important Plant Species |
|-------------------------|---|--|
| 1. Open Scrub Grassland | Gently rolling dry grasslands with scattered trees and shrubs; thin and rocky soils. | Kiawe (<i>Prosopis pallida</i>) trees and shrubs; buffelgrass (<i>Cenchrus ciliaris</i>), feathery pennisetum (<i>Pennisetum setosum</i>), 'ilima (<i>Sida cordifolia</i>), hi'aloa (<i>Waltheria americana</i>), pa'u-o-hi'i-'aka (<i>Jacquemontia sarabacensis</i>). |
| 2. Coastal Woodland | Dense thickets of kiawe shrubs and trees, 25-35 ft. in height. Herb layer shaded with sparse understory of grasses and forbs. | Kiawe, buffelgrass, feathery pennisetum, nettle-leaved goosefoot (<i>Chenopodium murale</i>). |
| 3. Rocky Shore | Low volcanic sea cliffs and boulder beaches with small, very scattered patches of vegetative cover. | Australian saltbush (<i>Atriplex semibacata</i>), pa'u-o-hi'i-'aka, nettle-leaved goosefoot, small kiawe shrubs. |

Table 2

CHECKLIST OF PLANT SPECIES FOR KOHALA MAKAI I

| Scientific Name | Common Name | Status |
|---|---|------------|
| MONOCOTYLEDONEAE | | |
| Gramineae (Grass Family) | | |
| <i>Cenchrus ciliaris</i> L. | Buffelgrass | Exotic |
| <i>Eragrostis atizanensis</i> (All.) Vignolo - Lutati | Stinkgrass | Exotic |
| <i>Pennisetum setosum</i> (Sw.) L.C.Rich. in Pers. | Feathery pennisetum | Exotic |
| DICOTYLEDONEAE | | |
| Chenopodiaceae (Goosefoot Family) | | |
| <i>Atriplex semibacata</i> R.Br. | Australian saltbush | Exotic |
| <i>Chenopodium murale</i> L. | Nettle-leaved goosefoot | Exotic |
| Convolvulaceae (Morning-glory Family) | | |
| <i>Jacquemontia sarabacensis</i> Gray | Hi'aka's little skirt Pa'u-o-hi'i-'aka | Endemic |
| Leguminosae (Bean Family) | | |
| <i>Prosopis pallida</i> (Humb. & Bonpl. ex Willd.) HBK. | Kiawe | Exotic |
| Malvaceae (Mallow Family) | | |
| <i>Sida cordifolia</i> L. | 'Ilima | Indigenous |
| Sterculiaceae (Cocoa Family) | | |
| <i>Waltheria americana</i> L. | Hi'aloa; 'uhaloa | Indigenous |

* Native species

cover type. The herb layer is dominated by dense growths of buffelgrass (*Cenchrus ciliaris*) and feathery pennisetum (*Pennisetum acetosum*), with sparsely scattered hi'aloa (*Mittheria amaricosa*) and pa'u-o-hi'i'aka (*Jakweimtia ambrosioides*).

The effects of the drought could be observed not only in the condition of the plants--outer shoots of living plants were typically dried yellow or grey, and many plants appeared dead (Plate 1)--but in the lack of diversity of species usually found within this cover type along the Kawaihae Coast. The shade of the kiawe usually shelters diverse species such as the wild spider flower and wild cucumber, but only the nettle-leaved goosefoot (*Chenopodium murale*) was occasionally observed in addition to the common grasses. Dormant species of plants may have escaped observation since these tend to pass through drought periods in the form of seeds. Average height of the grasses ranges from 1 1/2 to 2 feet; trees average 10 to 15 feet in height.

Dry gullies are generally characterized by the same cover type as open scrub grassland except towards the coast where the tree/shrub canopy becomes more closed and the gully vegetation more closely resembles coastal woodland. After heavy rainfalls more diverse species may be found in gully areas, but at the time of survey the floristic composition was similar to that of open scrub grassland and coastal woodland.

2. Coastal Woodland -- Along the coast where groundwater is available, dense thickets of kiawe trees and shrubs are common. Whereas open scrub grassland supports scattered tree and shrub cover, coastal woodland is characterized by a closed canopy and heavily shaded herb layer. Soils are deeper and in places have accumulated organic debris (kiawe branches, leaves, seed pods, etc.) on the surface. While soils in this cover type may usually be more moist than in open scrub grassland, at the time of survey soils were dry here as elsewhere, and supported a very sparse understory of feathery

pennisetum, buffelgrass, nettle-leaved goosefoot and Australian saltbush (*Atriplex semibaccata*). Trees in coastal woodland areas are generally greener and taller than in the surrounding grasslands, averaging 25-35 feet in height.

3. Rocky Shore -- The Kohala Makai I shoreline consists of low volcanic seacliffs and black lava-rock boulder beaches. Often there is an abrupt transition between this cover type and the open scrub grassland or coastal woodland areas which extend to the edges of the cliffs. Vegetative cover is very sparse, consisting of scattered Australian saltbush, nettle-leaved goosefoot, feathery pennisetum, kiawe shrubs and pa'u-o-hi'i-'aka growing in small patches of soil among lava boulders.

SIGNIFICANCE OF EXISTING VEGETATION

Overall the vegetation of the Kohala Makai I site may appear botanically unremarkable or uninteresting. There is a predominance of weedy exotics adapted to harsh, dry, desert environments. Native Iiwaian species are poorly represented and there are no known rare or endangered plant species in this area. The two indigenous species observed--Iiima and hi'aloa--are commonly found in disturbed areas throughout Hawaii. The endemic pa'u-o-hi'i-'aka is not proposed as threatened or endangered, but like many endemic species, is less commonly found now than in the past, and care should be taken to avoid further depletion. In general, there is little species diversity between or within cover types. Nonetheless, the vegetative cover which exists does serve a number of important functions. These should be considered in any evaluation of environmental impacts.

In steeper areas of the site, vegetation serves to stabilize slopes and prevent mass erosion of underlying soils. Though rainfall is infrequent, vegetation helps reduce runoff and minimize sedimentation of offshore waters.

-- Presence of construction equipment, destruction of vegetation, exposure of bare soil and generation of debris will result in an unavoidable negative aesthetic impact. However, this would be a short-term impact since clean-up operations will be practiced and the overall goal is for aesthetic land transformation.

-- Removal of vegetation will result in the exposure of bare soil to the forces of wind and rain. This may be a significant adverse effect since gusty winds are common for this area and heavy rains, though infrequent, may be severe. Dust pollution and possible nearshore sedimentation would be temporary, but the loss of soil resources would be a long-term effect of erosion. Introduction of fill will balance this effect in places.

-- Removal of vegetation will result in localized changes of micro-climate. Removal of large trees or shrubs will reduce total shaded areas, effecting higher air and ground temperatures and in turn increasing soil desiccation.

-- Removal of vegetation will result in some loss of habitat for birds, and other wildlife. However, at this stage displacement is not irreversible since natural vegetation could recover or be replaced. Also, since similar habitats exist outside the area, this is not likely to result in a permanent reduction of total wildlife populations.

Construction/Land Transformation

This phase covers all activities required for facilities construction and eventual total land transformation. Standard engineering and landscaping practices for townhouse development may be anticipated. Environmental impacts relative to vegetation are outlined below:

-- Construction of facilities would result in an irreversible and irretrievable loss of open space and a commitment of land resources to urban use.

-- The introduction of man-made elements to existing undeveloped areas will significantly affect aesthetics. The essentially wild nature of the site will be disrupted by buildings, roads, automobiles, noise, etc. Any disturbance or modification should be made in as harmonious a manner as practically possible.

-- Landscaping and planting offer potentially positive aesthetic and environmental effects. Introduction of soils, nutrients, shade and irrigation will result in modification of harsh environmental elements and the successful establishment of wild and ornamental plant species. Native plant species may be incorporated into the landscaping, resulting in a significant improvement of visual and environmental quality.

Gully vegetation serves to buffer and minimize potentially adverse effects of storms and occasional heavy water runoff. Vegetation in general promotes infiltration of water and recharge of underlying groundwater supplies, although kiawe is a heavy user of groundwater supplies.

Vegetation also provides food, oxygen, shade and habitat for wildlife which in turn return organic matter to the soil. Vegetative cover provides shade and reduces local air temperatures, helping to maintain and moderate local microclimates in this harsh climate. Vegetation also filters the atmosphere of dust, pollutants and salt spray.

PROPOSED ACTIONS AND PROBABLE ENVIRONMENTAL IMPACTS RELATIVE TO VEGETATION

Development actions may be divided into three phases: 1) site preparation, 2) construction and land transformation, and 3) facility maintenance and operation. Although specific designs for the townhouse development are not known, impacts may be predicted based on general intended use.

Site Preparation

The site preparation phase covers the initial preparation of the land prior to construction or major landscape modification. Ground clearance activities are significant in this phase and include digging, cutting, blasting and bulldozing as required for removal of vegetation, soil, boulders and bedrock. Surface preparations after clearing may include scraping, crushing, grading, terracing, and introduction of fill material. Environmental impacts associated with this phase are as follows:

-- All vegetation in the path of clearing activities would be destroyed. This will not result in an irreversible or irreplaceable commitment of resources for areas such as open scrub grassland or coastal woodland since these cover types are extensive and species involved could be replanted, replaced or incorporated into the landscape at a later time.

-- Changes in ground cover, particularly the introduction of impermeable surfaces such as asphalt, pavement and roofing will affect the relationship between precipitation, infiltration and runoff. Though heavy rainfall is infrequent, this could result in increased runoff into gullies and possible flooding. The loss of permeable ground surface would also result in a reduction of groundwater recharge areas. These effects are not likely to be significant, particularly if vegetation is left in gully areas to minimize flooding and maximize groundwater recharge.

-- Wildlife displaced by vegetation clearance may return given the increase in the man-modified environment. However, those species of wildlife sensitive to nearby human occupation will likely suffer overall habitat reduction rather than increase.

Maintenance/Operation

After construction and landscaping are completed, environmental impacts will continue to be generated by maintenance and operation of the tombhouse facility. Environmental impacts, relative to vegetation, of associated activities such as irrigation, fertilization, sewage disposal, weed control, recreational use, etc. may include the following:

-- Application of irrigation waters drawn from brackish wells may result in increased salt levels in the soil and possible damage to plants. Salt accumulation problems may be compounded by application of fertilizers and pesticides to the soil surface.

-- Increased requirements for water in this area would be very significant. Existing vegetation is adapted to long dry periods but would probably be replaced by ornamentals and grasses requiring frequent irrigation, with the possible adverse effects listed above. Potable water may be piped from upland wells, but these water supplies should not be viewed as limitless resources. Drawing of these and on-site water resources may result in the lowering of groundwater levels and possible intrusion of saltwater into the now brackish lens.

DISCUSSION AND RECOMMENDATIONS

Direct impacts on vegetation for the Kohala Makai I site are not expected to be severe. The destruction of flora is unavoidable, but most of the species involved are common species found throughout this geographic region. Major changes in the floristic composition may be expected, but could have a positive impact on the environment if, for example, the exotic grasses, trees and shrubs

which currently constitute over 95% of the cover could at least in part be replaced in landscaping by native species adapted to the dry environment. *Williwilli* (*Erythrina sandwicensis*) is an endemic tree once common in and well adapted to dry leeward environments. Native shrubs which can withstand dry periods include beach naupaka (*Scaevola taccada*), 'olei or Hawaiian hawthorne (*Osteomeles antihyrtidifolia*), and ma'o or native cotton (*Gossypium sanctiandreae*). Planting, fertilization, weed control and irrigation could also improve the project site as a habitat for plant and perhaps some animal species.

Indirect impacts relative to vegetation are of greater significance.

On a short-term basis, vegetation removal will result in the undesirable exposure of loose soil to erosion forces and the unaesthetic scarring of natural land surfaces. Comments on possible mitigation measures for these and other short-term impacts have been discussed. On a long-term basis, the introduction of man-modified landscapes and facilities will result in reduction of open, natural spaces and a commitment to urban land use and expansion. Stresses imposed on water resources by irrigation, fertilization and other consumptive uses may be particularly severe, given potential drought periods such as those experienced this year. It is recommended that mitigation measures at this more complex level incorporate thoughtful planning concepts or guidelines:

-- Recognize and protect unique or sensitive ecosystems. In this project area, shorelines are important aesthetically and are an environmentally sensitive cover type which has suffered widespread reduction and alteration throughout Hawaii. It is recommended that attempts be made to enhance or maintain these areas in their natural state, including the small stands of the endemic pa'u-o-hi'i-'aka.

-- Understand the capacity of the existing environment to absorb change. This can be accomplished with adequate background information and periodic

monitoring of environmental parameters. There should, for example, be a commitment to conservation of limited resources such as water. Other developments in dry areas were observed, at the time of survey, using wasteful irrigation methods in the middle of the day during drought conditions. Irrigation schedules should be efficient, minimizing overspray or wasteful evaporation. Drought-resistant plants with low moisture requirements could be incorporated into landscape design--exotic species as well as the natives suggested above.

-- With careful planning, artificial elements of the environment can blend harmoniously with existing natural elements. Large boulders, lava formations or trees may be incorporated into landscaping or walkways rather than cleared on a massive scale.

-- The significance of aesthetics should be recognized relative to vegetation as well as other environmental factors. The seemingly minor environmental impact of vegetative screens may have a broader significance when considering views, noise levels or air quality. As an outward representation or symbol of development policies, aesthetics can greatly influence public attitudes and social acceptance of a project.

CONCLUSION

Throughout this report existing conditions are emphasized for impacts and evaluations of significance. Since the survey was undertaken during a period of extreme drought, it might be of value to briefly survey the project area after a rainy season, since arid regions usually support numerous annuals which pass through dry seasons in the form of seeds. Documentation of variations in vegetative cover and drainage patterns could yield a more comprehensive picture of existing conditions and a more complete evaluation of impacts relative to vegetation.

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APPENDIX C

AN AVIFAUNAL AND MAMMAL SURVEY
OF KOHALA MAKAI I, HAWAII

By: Phillip Bruner, M.S.

AN AVIFAUNAL AND MAMMAL SURVEY OF

KOHALA MAKAI I, HAWAII

INTRODUCTION

This report is the result of a two man/day (July 25-26, 1981) ornithological and mammal survey of Kohala Makai I property on the island of Hawaii. Data in the report are based primarily on these field observations. A report on Mahukona Properties, prepared by P. Bruner in 1979, was also consulted. This report provided a comparison for species composition and abundance in the Kohala area.

The primary objective of this study was to assess the avifaunal composition and usage of the site. To a lesser degree the project took a look at the wild mammal population simply to see what species occurred in the area.

GENERAL SITE DESCRIPTION AND STUDY METHODS

Kohala Makai I comprises an area of approximately 38 acres makai of Highway 27 in North Kohala, Hawaii. Most of the property drops steeply to the rocky coastline (Fig. 1). Off-road vehicle trails provide access to much of the site. Vegetation is primarily comprised of dry grass and Kiawe (Prosopis pallida). The severe drought of the past several months has had a noticeable effect on the vigor of the vegetation. Currently the foliated Kiawe are restricted to the immediate coastal strip and along the floors of ravines. The upper exposed grasslands and scattered Kiawe

are extremely dry. The drought has also had an effect on the distribution and abundance of wildlife in the area (a point to be noted later in the report).

Observations were conducted with binoculars and by listening for vocalizations. All accessible areas were surveyed. At randomly selected sites eight minute counts of all birds either seen or heard were taken (Fig. 2). These counts occurred in all types of habitat (open grassland, Klawe thickets, shoreline, roadside) and at different times of the day. Such counts and walking census methods thus provide the basis for the relative abundance estimates contained in this report. General distribution patterns were also indicated by these counts.

RESULTS - DISCUSSION

Non-resident (Migratory) Birds

Of the three common species of migratory shorebirds Ruddy Turnstone (Arenaria interpres), Golden Plover (Ptuvialis dominica), and Wandering Tattler (Heteroscelus incanus), only the latter was recorded on this survey (two individuals seen foraging along the shoreline). In-as-much-as most migratory birds depart Hawaii during the summer months it is not surprising that so few were observed during the survey. From late August until to early May one could expect to find both Tattler and Ruddy Turnstone common along the coastline. Golden Plover, however, would be less common as they prefer open grass fields as foraging sites.

Resident Indigenous (Native) Birds

No resident native birds were recorded during the survey.

(2)

The severe dryness of the habitat probably precludes use of area by native species. The only possible exception might be the Hawaiian Owl, called Pueo, (Asio flammeus sandwichensis). This bird is fairly common on ranchland and in the forests on Hawaii. It occasionally is seen in dry coastal areas as well.

Resident Exotic (Introduced) Birds

The Kohala Makia I survey recorded a total of only ten exotic bird species. Table 1 indicates their relative abundance and habitat preference. In contrast to the 1979 survey of the Mahukona area fewer species of gamebirds were observed and no Mockingbird (Mimus polyglottos) nor House Finch (Carpodacus mexicanus) were noted. Other than these differences the two species lists are identical.

In terms of relative abundance only Banded Dove (Geopelia striata) and Northern Cardinal (Cardinalis cardinalis) were as abundant as in the Mahukona survey. All other species were much less common, a fact which I attribute largely to the severe drought and the subsequent reduction of useful habitat. Furthermore, Northern Cardinal which naturally are highly territorial were instead observed in small flocks in the Kiawe thickets. Gamebirds were also much less common than normal again due to restricted suitable habitat brought on by the drought.

Mammals

Evidence of mammals in the area consisted of tracks of cats and dogs and the sighting of a single mongoose (Herpestes auropunctatus). Drought conditions have also apparently had their effect on the mongoose population since normally this species is much more common than this survey found it to be.

(3)

CONCLUSIONS AND RECOMMENDATIONS

(Impact of Projected Development)

When viewing a natural dryland coastal zone under abnormally dry (drought) conditions one can get a distorted image of the typical avifaunal abundance and distribution patterns. In more favorable times many of these species might be more widely distributed in the same habitat. However, it is still possible to assess the general status of the area particularly if one has prior knowledge of the site and knows what to expect under more normal conditions. With this in mind and by drawing on past experience with the Kohala coastal environment the following conclusions can be made of the Kohala Makia I property:

- 1- The site is used almost exclusively by exotic birds, particularly those species well adapted to dry grassland and brush habitat.
 - 2- Use of the area by migratory birds is confined primarily to the immediate shoreline.
 - 3- The natural arid conditions precludes the establishment of many species of exotic birds currently found in Hawaii and is likewise not suitable to the native forest birds with the possible exception of the Pueo.
 - 4- Predatory mammals such as cat, dog, and mongoose are probably a major force in regulating the size of the gamebird population.
- Development on this property will alter the avifaunal composition and abundance. Residential house sites with their greater diversity of vegetation will ultimately provide a much broader range of habitats

(4)

for wildlife. Species such as the Common Myna (Acridotheres tristis), House Sparrow (Passer domesticus), and the Japanese White-eye (Zosterops japonica) would all be expected to become more abundant. The loss of grassland and Kiawe thickets will reduce the gamebird population. One should not assume that the gamebirds will simply move into adjacent undisturbed areas as these areas are likely already occupied to their carrying capacity.

Finally with the advent of development species not now present in the area might become established. Likely candidates for such establishment include Saffron Finch (Sicalis flaveola) and Yellow-fronted Canary (Serinus mozabicus) both of which are presently found in wetter habitats nearby. Mockingbird should also become more common at this site.

C-3

RECOMMENDATIONS

- 1- Retain as much of the natural dry grassland and Kiawe thickets as possible. This will help insure at least some of the habitat will be suitable for gamebirds.
- 2- Restrict development that would disrupt the immediate shoreline and its buffer zone of Kiawe trees as this area is of major importance to the present population of birds both for foraging and nesting.

Report respectfully submitted to Belt, Collins and Associates
29 July 1981

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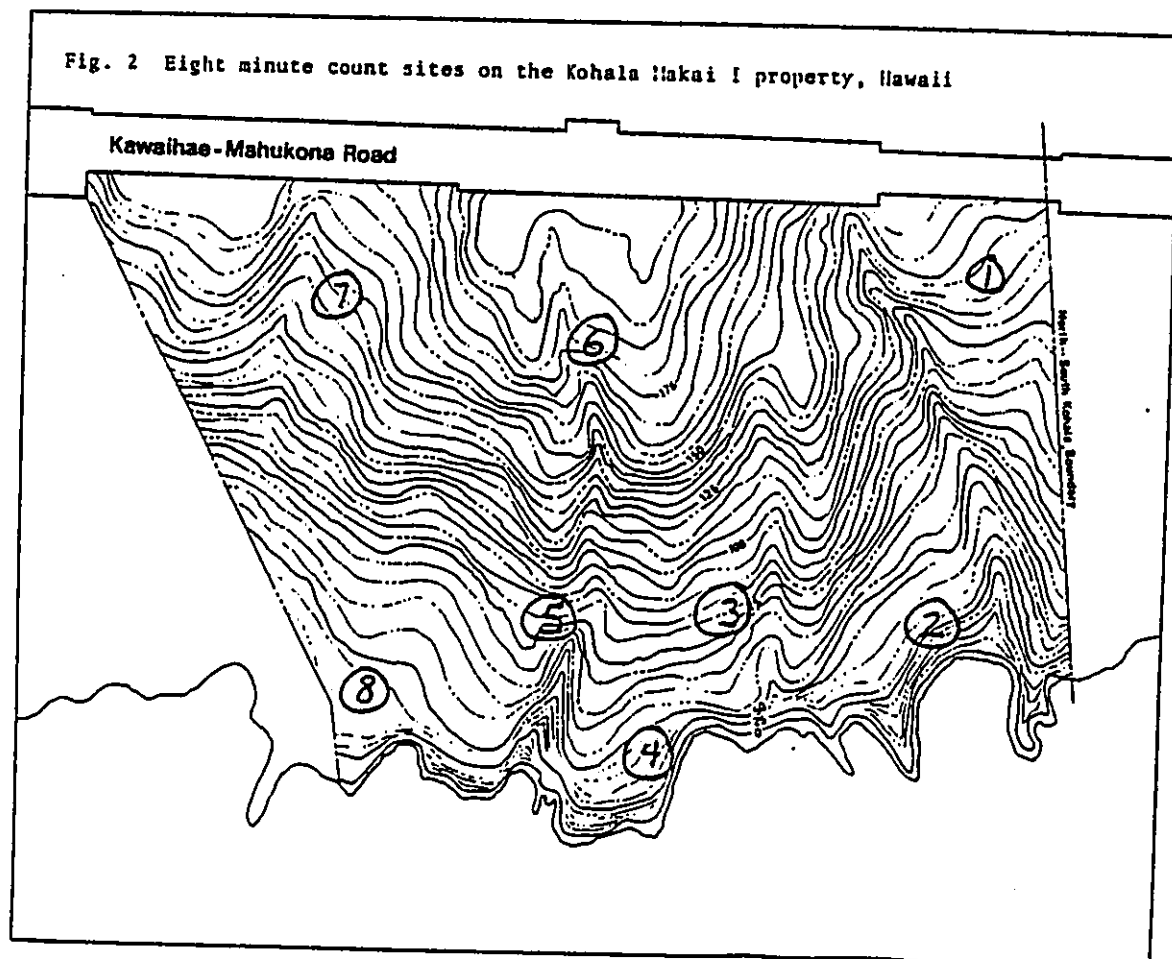
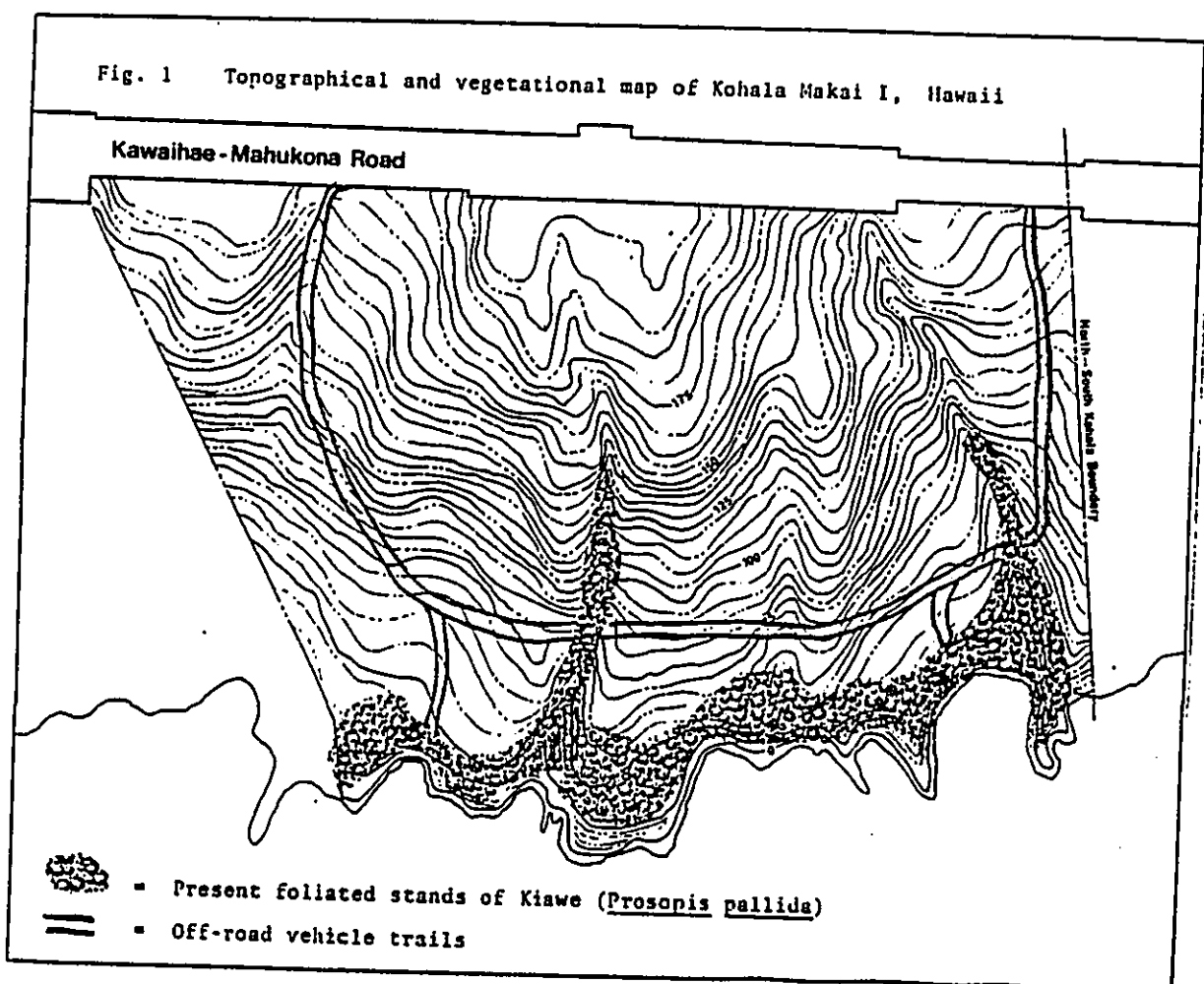


TABLE 1

Relative abundance and habitat preference of exotic birds at Kohala Makai I, Hawaii

| COMMON NAME | SCIENTIFIC NAME | *HABITAT | *ABUNDANCE |
|---------------------|----------------------------------|----------|------------|
| Gray Francolin | <u>Francolinus pondicerianus</u> | G,K,E | U |
| Japanese Quail | <u>Coturnix coturnix</u> | G,K,E | U |
| Barred Dove | <u>Geopelia striata</u> | K,E | A |
| Spotted Dove | <u>Streptopelia chinensis</u> | K,E | U |
| Barn Owl | <u>Tyto alba</u> | K,G | R=1 |
| Common Myna | <u>Acridotheres tristis</u> | K | R=8 |
| Japanese White-eye | <u>Zosterops japonica</u> | K,G | U |
| Northern Cardinal | <u>Cardinalis cardinalis</u> | K | C |
| House Sparrow | <u>Passer domesticus</u> | K,G,E | R=4 |
| Warbling Silverbill | <u>Lonchura malabarica</u> | G,K | U |

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

- A= Abundant (>50 recorded on walking census or ave. no. on 8 min. count >10)
 C= Common (>25 <50 recorded on walking census or ave. no. on 8 min. count >5 <10)
 U= Uncommon (>10 <25 recorded on walking census or ave. no. on 8 min. count <5)
 R= Rare (<10 recorded on walking census may or may not have been on 8 min. counts)

Habitat = Area most frequented. Order of most preferred or utilized portions of habitat listed first.

- G = Grassland
 K = Kiawe thickets
 E = Edge of roads

APPENDIX D

ENVIRONMENTAL ASSESSMENT OF NEARSHORE
MARINE COMMUNITY STRUCTURE OFF
KOHALA MAKAI I, HAWAII

By: Steven Dollar
Marine Research Consultant

INTRODUCTION

A new condominium development, KOHALA MAKAI I, is planned for the area fronting the shoreline immediately north of the north-south Kohala District's boundary on the west coast of the island of Hawaii. Approximately 1,200 ft of coastline and nearshore coral reefs border the parcel of land scheduled for development (see Figure 1). Because there is the possibility of alteration of the nearshore marine environment resulting from the development, it was deemed prudent to include an assessment of potential impacts to the marine community within the Environmental Impact Assessment for the new project.

The purpose of the study is threefold: (1) to identify any resources that may be of significant commercial or recreational value or that represent rare or unique ecological features that could be potentially affected by development; (2) to establish qualitative and quantitative baseline information to accurately characterize unique communities within the area of potential impact and in control areas located outside of the zone of potential impact; and (3) to provide an estimate of the effects on the marine community that could result from the planned development. Since impacts resulting from development are superimposed over natural phenomena, accomplishment of the third objective requires an evaluation of the degree of natural environmental stress (sedimentation, wave scour, etc.) in terms of both physical structure of the environment and adaptation of the nearshore benthic communities.

In the tropics and sub-tropics, coral reef ecosystems are particularly suited for studies designed to evaluate the effects of environmental stress. The broad range of plant and animal taxa that comprise local reef communities include many benthic (bottom dwelling) organisms that are either attached directly to the reef surface or have limited mobility, are long lived and therefore serve to integrate effects over time, and are relatively sensitive to many human-induced stresses. Since components of the benthos must either tolerate the surrounding perturbed conditions within the limits of adaptability or die, changes in the makeup of benthic community structure is one measure of long-term exposure to environmental stress and changing water quality. For this reason, the use of benthic communities as indicators of environmental perturbation is the major premise applied in the design of the present study.

In Hawaii, one of the most important components of the benthos is the scleractinian or stony corals. These animals play a keystone role in that they are major contributors to the physical structure of the reef (thus are instrumental in contributing to the aesthetic quality of the environment), provide food and shelter for many other species groups, and provide a protective barrier from shoreline erosion. Corals are also known to be particularly sensitive to many kinds of pollution since they are adversely affected by increases in turbidity, siltation and changes in salinity. The high area to volume ratio and thin body tissue of these organisms "exposes" them to exogenous substances in the environment. Hence, corals may be considered a most relevant group in the use of reef community structure as a means of practically and directly evaluating past and potential impacts associated with nearshore land development.

METHODS

The development area under study lies approximately two miles north of Kowalaha Harbor. Reconnaissance surveys were conducted at the outset of the fieldwork in order to make relative comparisons of the general physiography and benthic community structure occurring throughout the region. These surveys were conducted by slowly towing a diver in a zig-zag pattern along the entire length of the development parcel from the most shoreward depths possible to the seaward limit of coral growth. In addition, several hundred yards of shoreline north of the development parcel were also surveyed in this manner. Following this reconnaissance, three stations were selected for qualitative and quantitative surveys in areas deemed to be representative of community structure. One station was located towards the northern end of development; one towards the southern end, and one was located approximately 500 ft north of the development boundary to serve as a control site (Figure 1). At each station, transects were conducted to obtain precise estimates of benthic community composition at the depths of 15, 30 and 60 ft. It can be expected that at different depths, different species assemblages predominate as a response to varying physical parameters. The depths selected for this study are representative of the three main reef zones in Hawaii and can be considered to provide a good representation of the reef as a whole.

Biological data was collected quantitatively at each depth using a replicating phototranssect technique while qualitative information was gathered by "in situ" observation at each station for a constant interval of time (30 minutes). During this interval, lists of families and reef fish species were compiled.

The photo-transect technique involves placing a 50 meter long nylon line over a representative area of reef surface parallel to the shoreline or along a depth contour. An underwater 35 mm camera and electronic strobe light mounted a distance over a 1 m x .6 m aluminum quadrat frame is sequentially placed over the reef surface underlying ten random marks on the transect line. At each of these points, a color slide is exposed. In addition, a diver with knowledge of resident species visually estimates the occurrence of all organisms and the area coverage of organisms larger than approximately 2 cm. Transect slides are subsequently projected onto a grid of similar dimensions as the quadrat frame in order to accurately estimate the proportion of cover of each benthic species. This redundancy in data collection improves the accuracy of species identification and improves estimates of cover over "in-situ" methods alone. In addition, sampling speed of the photo-quadrat method is rapid and efficient with respect to time in the field. Also, the slide transparencies provide a permanent record for subsequent time-series comparisons. Representative photo-quadrats are shown in exhibits 1 and 2. All photo-quadrat slides are available to interested parties on request.

RESULTS AND DISCUSSION

A. Physical Environmental Parameters

The physical environmental parameters of the reef area that were assessed at each station included bottom topography, bottom composition (basalt, limestone, sand, rubble), apparent wave stress regime, turbidity, and sediment accumulation. The preliminary reconnaissance survey indicated that the entire development area, as well as the control areas

Kohala Makai I
Project

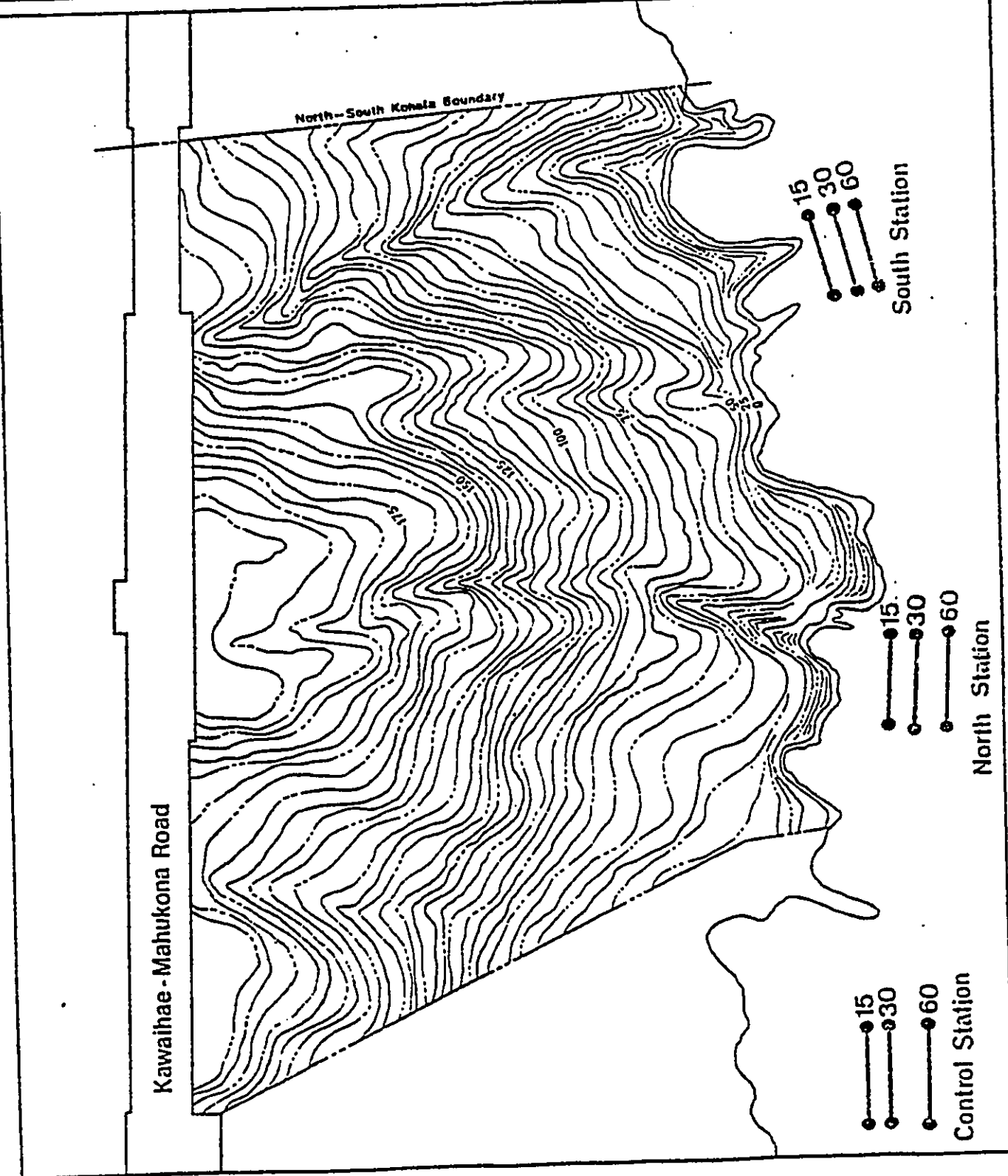


Figure 1
Scale in Feet

Figure 1. Topographic map showing boundaries of proposed Kohala Makai I development. Marine survey station and transect sites are indicated with corresponding depth in feet.

to the north, were extremely homogeneous with respect to physiographic structure--no unusual or unique features were encountered during the survey. Therefore the description of the physical environmental parameters applies to the entire study area.

1. Bottom topography. From an overhead perspective the shoreline region in the Kohala area takes on a scalloped appearance with the points of the scallops consisting of jagged barren lava projecting headlands topped by relatively flat surfaces interspersed with tide pools. These lava headlands separate a series of small bays, some with rounded basaltic boulder beaches with scattered bleached limestone cobbles. The littoral zone (the area between the low tide mark and the upper reaches of the wave splash zone) consists entirely of basaltic structures, either rounded boulders or sharp vertical facos. Boulders that comprise the littoral beaches extend below the low tide mark and form the first true benthic zone. These rounded boulders change in color from black above the water line to pinkish-white below when submerged due to a solid covering of encrusting coralline algae. Boulders extend to a depth of about 10 ft. Off the lava platform headlands the shoreline area consists of vertical basalt cliffs. The lava headlands extend seaward below water level as narrow flat-topped fingers with vertical slabs undercut by numerous caves and fissures. Thus the major topographic feature of the nearshore area are a series of basaltic dikes running perpendicular to shore with steep sides and flat tops covered with coral colonies. Between these dikes are relatively flat areas consisting of either narrow sand channels or basaltic platforms covered with both live and dead coral colonies. Moving seaward from depths of approximately 70 ft to 60 ft, bottom

topography is predominantly a series of low knolls and ridges oriented perpendicular to the shoreline alternating with broad flat expanses that are dominated by solid growths of coral. Figure 2 shows a bathymetric profile along the length of the development parcel approximately 100 ft from the shoreline over the central portion of the reef. It can be seen that the bottom topography in this area is punctuated by numerous bottom features. It may be noted that this kind of varied high-riffled underwater terrain is especially enjoyable from an aesthetic point of view to divers and swimmers. Seaward of the coral knolls and ridges at depths of approximately 70 ft and approximately 200 ft from shore, bottom topography abruptly changes to a steeply sloping flat sand bottom.

2. Bottom composition. Figure 3 shows the percentage composition for the three major benthic non-coral benthic substrata components (solid limestone, basalt and sand rubble). It can be seen that the predominant non-coral substrata in the shallow 15 ft zones consists of bare basalt and limestone surfaces in roughly equal proportions. At the deeper 70 ft and 60 ft depths bare basalt is relatively rare, while limestone bottom cover ranges from 26 percent to 42 percent. Since most of this bare limestone substrata consists of dead coral skeletal material, these data provide a useful baseline for monitoring development-induced stress parameters. If the percentage of dead coral surface increases offshore of the development site to a significantly greater degree than off-control stations, there is some implication of environmental impact.

3. Wave stress. The west coast of the island of Hawaii is totally protected from trade-wind-generated seas and swell but is subjected to long

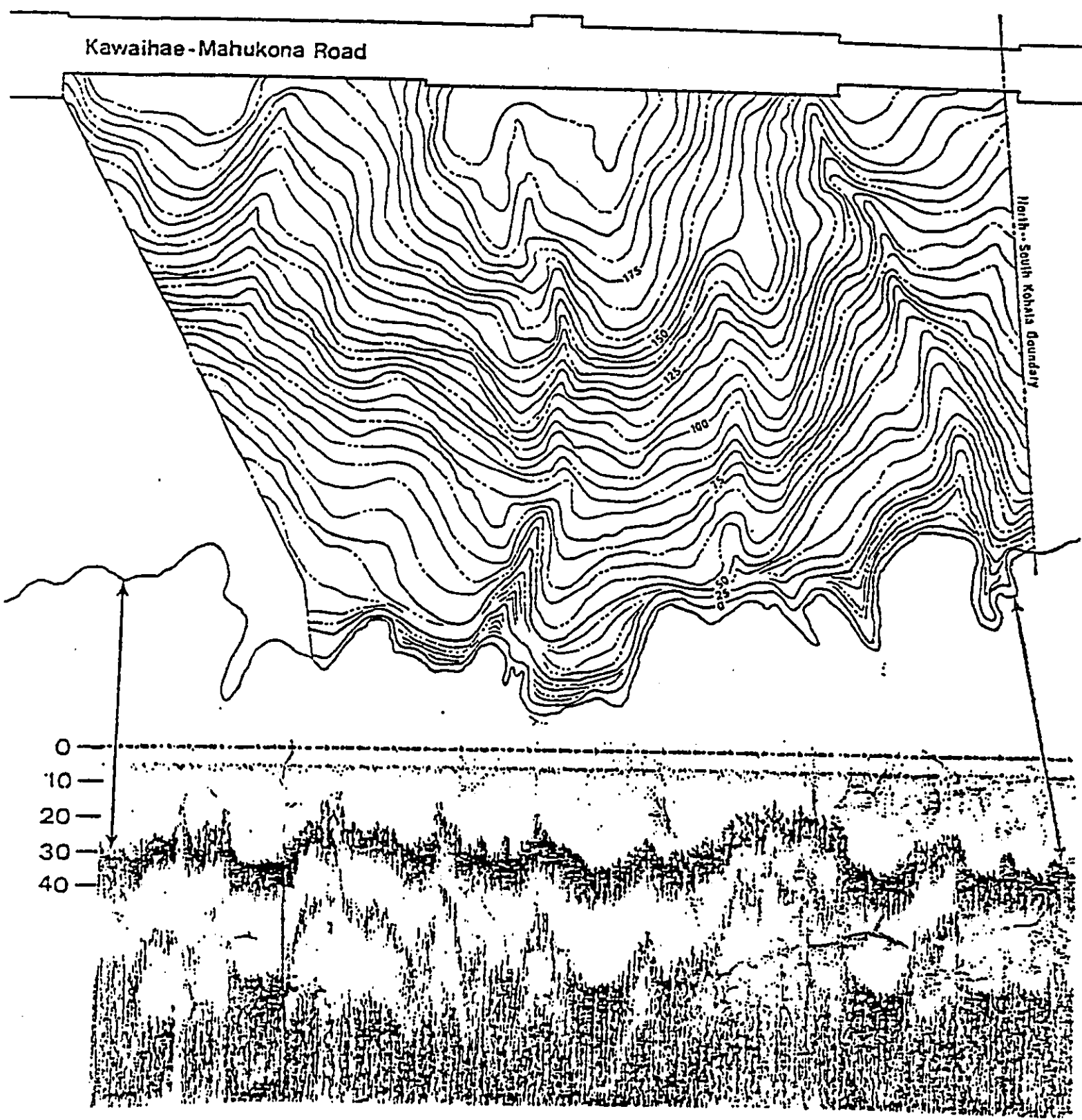


Figure 2. Bathymetric profile of offshore reef area along the proposed development site. Arrows indicate approximate position of profile on coastline. Vertical scale on right is depth in feet. Profile was taken approximately 100 ft. from shore.

periodic swells from the south and west. The position of Hawaii relative to the other islands in the chain (especially Maui) provides shelter for the Kohala coast from large north and northwest swells generated from winter storms in the North Pacific. As a result, the wave climate in the study region is among the least stressful in the entire Hawaiian archipelago. The following section on biological population parameters discusses how this stress regime is reflected in coral community structure.

4. Turbidity and sediment accumulation. Turbidity in the study region is characteristically very low with high water clarity year round. Features on the bottom are typically distinguishable from the surface at water depths exceeding 100 ft. Since rainfall in the area is low and the ground cover is predominantly porous lava rather than soil, runoff of terrigenous sediments is almost non-existent. Sediments that do occur on the study reefs consisted mainly of coarse (> 5 mm) basaltic and calcareous sands that are confined mainly to channels between lava extensions and in small pockets. Seaward of the reef platform bottom cover consists entirely of fine white calcareous sands.

During the course of this present study, no freshwater extrusion was noted near the shoreline although this is a characteristic feature of the west coast of Hawaii. The combination of these parameters (low turbidity and sedimentation, abundance of solid substrata, and low wave stress) results in a physical setting that is unquestionably optimal for extensive coral reef development.

D. Biological Population Parameters

Appendices A-D summarize the occurrence of all macrobenthic invertebrate, algae and fish species observed during the field investigations of Kohala Maui I. Results of these observations indicated that there is relatively little zonation both horizontally along the coastline of the study area or vertically from the shallow depth where coral growth begins and the depth where the reef platform ceases. Therefore observation of species occurrence are combined for the entire survey area.

1. Reef coral community overview. One of the most important components of the tropical benthos are the stony corals since these organisms are major contributors to the physical structure of the reef, provide food and shelter for other species groups, and provide a protective barrier from shoreline erosion. Species assemblage characteristics of coral communities are also known to be accurate indicators of natural environmental conditions as well as man-induced perturbations since they are adversely affected by wave stress, turbidity, siltation and changes in salinity.

On the Kohala reefs under study, very high coral cover is the dominant biologic as well as physiographic feature from very shallow depths close to the shoreline to the limit of the reef platform. While coral cover is high, species diversity is uncommonly low even for Hawaiian reefs which in general exhibit low diversity on a worldwide scale. The large majority of coral cover off Kohala (greater than 99 percent) consists of two species, *Porites lobata* and *Porites compressa*. Only six other species were observed during the course of the fieldwork (see Appendix A) and all of these corals were classified as occurring either

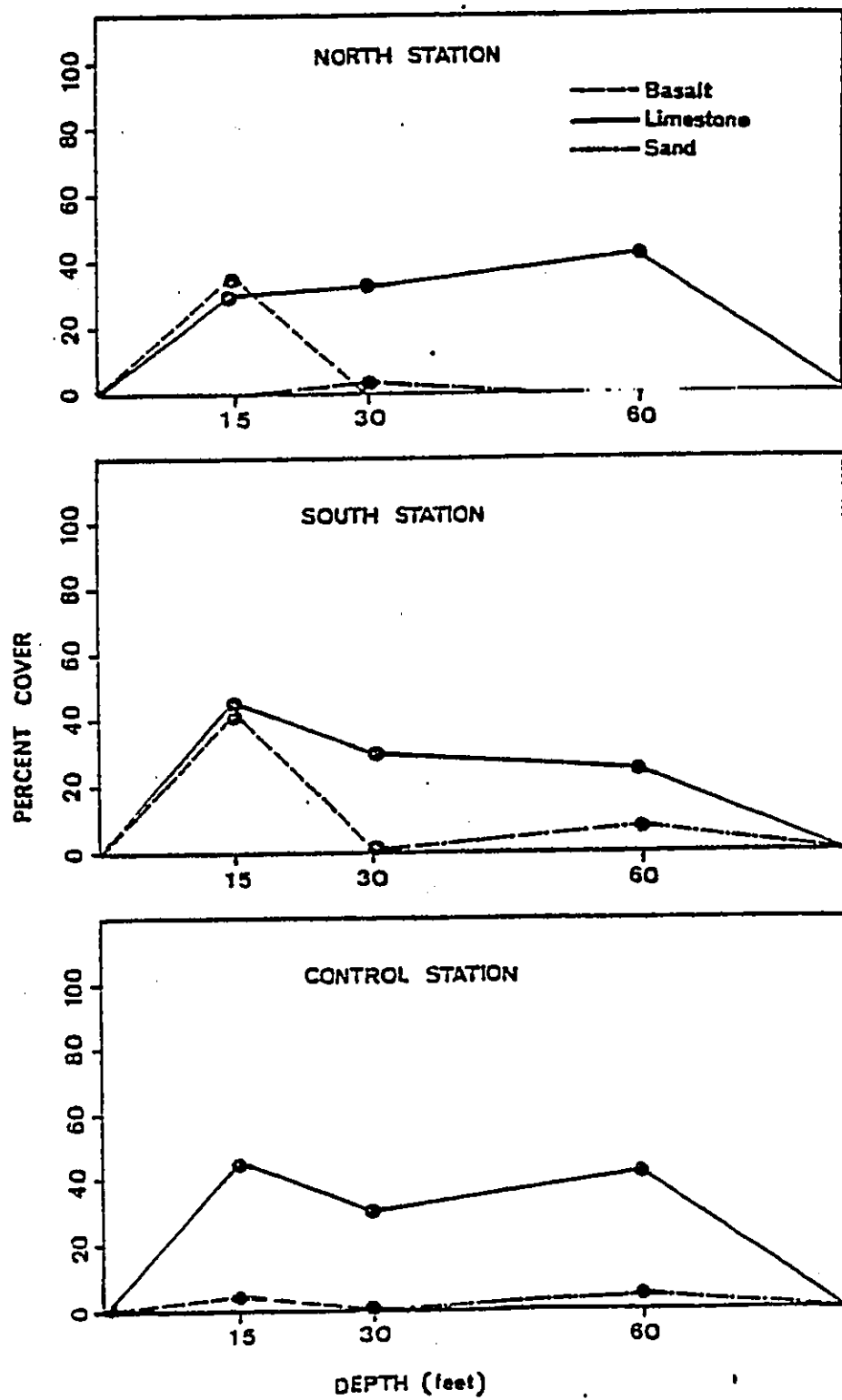


Figure 3. Percent bottom cover of basalt, limestone and sand at each transect on north, south and control stations at Kohala Makai I.

infrequently or rarely. *Porites* spp. appears to be the most successful competitor on Hawaiian reefs and can displace other species through substrate monopolization and overgrowth when optimal environmental conditions persist with little oscillation. The Kohala reefs appear to be an extremely stable environment and as such have reached advanced successional stages. This feature appears to be primarily due to the low frequency of large-scale wave disturbances. Evidence of this advanced succession due to protection from waves is evident when Kohala reefs are compared with those located to the south on the west coast of Hawaii. Reefs located in the Kona Districts, approximately 50 miles to the south, showed great susceptibility to devastating storm waves,¹ which served to halt back community succession to early stages. On the other hand, reefs to the north of Kohala near Hukoua, Hawaii, showed no effect of storm waves and as such the reefs are in very stable climax phases.² The Kohala reefs lie intermediate to these extremes, showing slight damage to coral skeletal structures but not to the extent of pushing back community succession to significantly earlier stages.

Other indications that the Kohala area is an extremely stable region is the lack of a *Porolithothamnion* dominated zone. This coral is termed a "fugitive species" in that it is the first to occupy recently buried surfaces and occurs commonly in areas that are too harsh for other species. Therefore, the relative abundance of this species

¹Miller, S. J. 1961. Storm wave stress and coral community structure in Hawaii. In: Proceedings of the IV International Coral Reef Symposium, Manila, Philippines, in press.

²Miller, S. J., and Boucher, L. H. 1960. Reconnaissance assessment of the marine community at Hukoua, Hawaii. Report prepared for Bell, Collins and Associates.

is a useful biological indicator of natural stress: up to a lethal limit the more stressful the physical regime, the more abundant is the coral. Hence, since *Porolithothamnion* was only infrequently observed on the reef platform at Kohala and many colonies were in the process of being overgrown by *Porites* spp., thus it can be concluded that natural stress is low and infrequent. Figure 4 shows quantitative values for total coral cover and the two dominant species of *Porites* at each transect location. It can be seen that the general trend of coral cover is the same at all these stations. Coral cover is consistently lowest at the shallow 15 ft transects (range of 12-50 percent), highest at 30 ft (61-79 percent), and intermediate at the 60 depth (49-56 percent). The abundance plateau for *Porites lobata*, the most abundant coral, is very similar to that of total coral cover while *Porites compressa* abundance increases with depth. Total coral cover on transects ranged from 12 percent to 79 percent with a mean value of 51 percent. Surveys conducted off the southwest coast of all other islands in the Hawaiian archipelago show that coral cover ranges from about 10 percent to 50 percent with an average of around 25 percent. Thus, the mean value of 51 percent at Kohala indicates that these reefs contain approximately twice the coral cover as the average Hawaiian reef. This high coral cover but low species diversity indicates an extremely stable reef system.

2. Other benthic invertebrate overviews. Macro-benthic invertebrate fauna of the Kohala area is relatively rich and diverse relative to other Hawaiian reefs, apparently due to the physical stability of the environment and the diversity of habitat types.

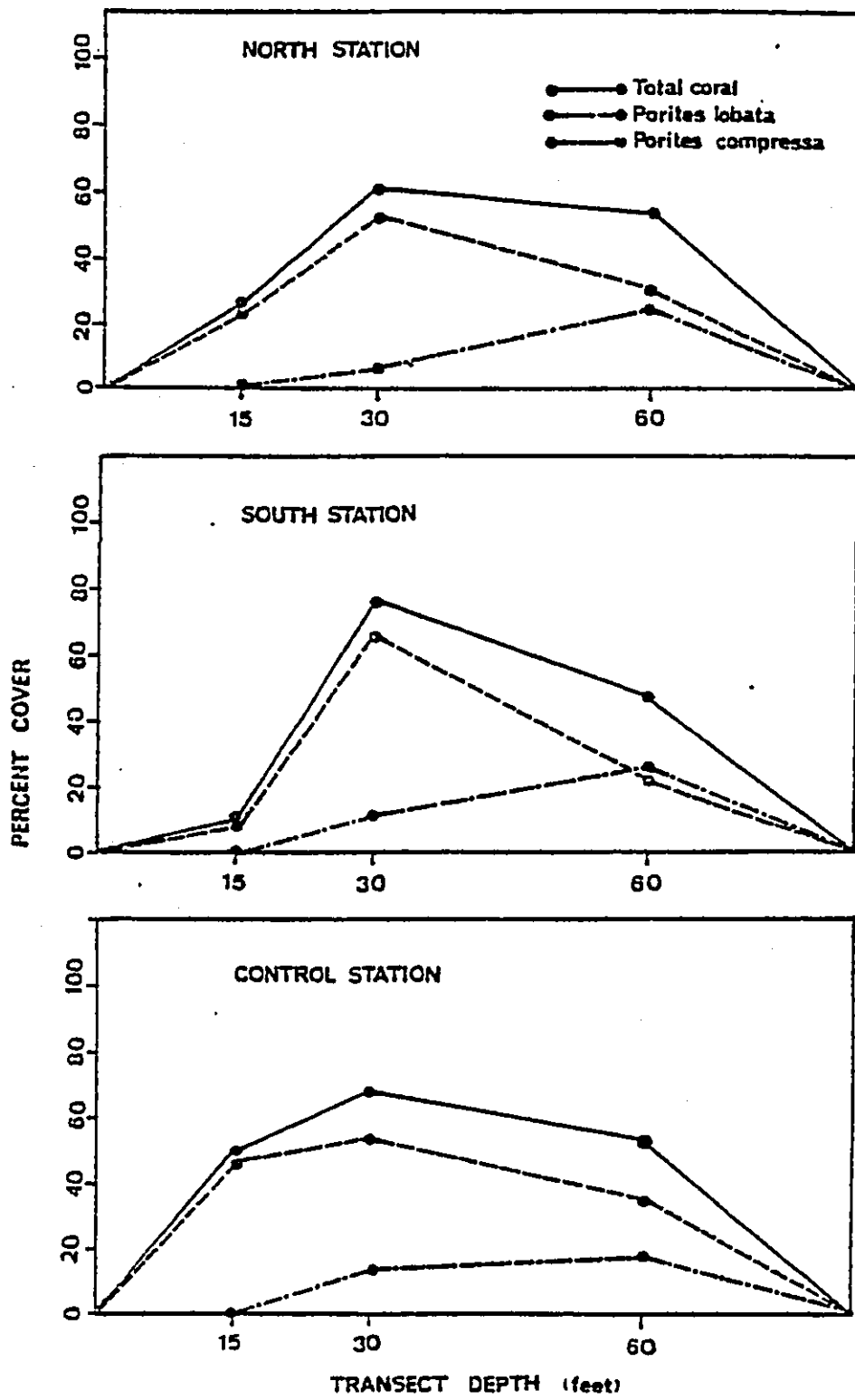


Figure 4. Percent cover of total coral and the two dominant species, Porites lobata and P. compressa at each transect on the north, south and control stations off Kohala Makai I.

Dominant members of benthic epifaunal assemblages consist primarily of ophiuroids, particularly sea urchins and sea stars. The sea urchins *Echinometra mathaei*, *Echinometra oblonga*, *Echinostirix diadema*, *Tripneustes gratilla*, *Heterocentrotus mamillatus* and *Echinostrephus aciculatus* are all abundant and ubiquitous throughout the reef platform. Large sea stars, *Linckia guildingii* and *Linckia multiflora* are common as is the crown-of-thorns starfish *Acanthaster planci*. The latter species is especially conspicuous because of its size (up to 1 ft in diameter) and since it feeds solely on living reef corals. Many coral colonies in the Kohala reefs particularly *Pocillopora meandrina* were observed to be dead and bleached while due to recent predation by *Acanthaster*. Other common macro-invertebrates include feather-duster worms, *Spirobranchius gigantea* which protrude from live coral colonies, brittle stars *Ophiocoma* spp., and sponges such as *Clathrina* spp., *Spirastrella* sp., and *Chondrosia* sp. Hydroids such as *Halocordyle denticata* frequently inhabit interstitial spaces in branching coral colonies.

Regions of dead coral rubble and sand provide a habitat for sea cucumbers, *Actinuria* sp., as well as a diverse population of molluscs from the genera *Sabia*, *Turbo*, *Cerithium*, *Cyprina*, *Conus*, *Tonna*, *Cymatium*, *Maatula*, *Bucca*, *Imbricaria* and *Mimozelania*. The presence of midbranch mollusc *Urcubambanella weigmanni* was apparent by large (10 cm diameter) vermilion-colored egg masses collected on bare rocky surfaces.

Ledge and cave fauna included numerous hydroid and sponge species, as well as oysters (*Spondylion* sp.), spiny lobsters (*Hummeria penicillata* and *P. japonica*) and slipper lobsters (*Arctides regalis*).

The complete list of macrobenthic invertebrates encountered during the study and estimates of abundance is found in Appendix B.

3. Reef fish overview. Reef fish assemblages at Kohala were extremely rich with respect to both number of species and individuals with a total of 71 species observed during the study period (see Appendix C). Diversity of reef fish communities is generally positively correlated with topographic relief of the substratum. The highly complex vertical relief associated with coral platforms, lava structures, ledges, caves and sand flats of the Kohala reefs results in a highly varied fish fauna. The stability of the environment or the lack of catastrophic events that result in reef destruction also is a factor that enables highly complex and specialized fish-habitat interactions to proliferate, resulting in highly diverse communities.

While number of fish species and individuals was high, it was noted that the size of individual fish was small, especially in those species that are regarded as preferred food species such as goatfish, squirrelfish and parrotfish. This is in contrast to the Kihukona reefs to the north where species occurrences were similar to the Kohala reefs but high concentrations of large individuals of these species were observed. It is apparent that this difference in population structure is due to fishing pressure. Kihukona remains very remote and inaccessible to both shore and spear fishermen while Kohala is situated very close to Kawaihae Harbor and the shoreline is easily accessible by jeep trails.

4. Macro-benthic algae overview. In general, the seaweed flora of the Kohala area is sparse and is monopolized by a few species (Appendix D). The most abundant species is *Punctillum encladon*, a coralline alga, which forms a dense pinkish crust on virtually all exposed basalt and limestone surfaces.

Foliose algae species were rare throughout the coral-dominated reef platform although several specimens of *Ulva* spp., *Valoniopsis* sp., *Halimnion* sp., and *Halimnion* sp. were observed. This depauperate species assemblage is typical of the west coast of Hawaii, probably due in part to the dominance of the substratum by living corals. This is another indication of a stable environment as recently disturbed environments are often characterized by an influx of foliose algae species.

CONCLUSIONS

The results of this assessment provide a detailed and comprehensive picture of the structure and composition of the nearshore marine communities off the proposed Kohala Mokolii development. However, other purposes of the study were to evaluate the system in terms of resource potential and in ability to withstand variances in environmental parameters due to activities related to construction of the development without significant community change.

With respect to resource potential, the reefs of Kohala exhibit some of the highest coral cover, unusually complex topography, calmest and clearest water, and some of the richest faunal populations in the Hawaiian Islands. The sum of these factors is a particularly interesting and beautiful Hawaiian coral reef that will add useful and beneficial recreational (fishing, swimming, skin and scuba diving) and aesthetic resources to the planned development. Natural beaches occurring within the development parcel should make for easy and safe access to the ocean and provide additional scenic areas.

Evaluation of the effects of man-induced activities on natural systems requires a working knowledge of the effects of natural stress

regimes on the same system. From this basis of response to natural stress one can make valid estimates of the effects of additional development related factors. In Hawaii, co-occurrence of low coral species diversity and high living cover, as is the situation off Kohala, indicates very stable, predictable and optimal environmental parameters. As such it might be expected that these reefs might have narrow tolerance limits and that relatively large changes in community structure would be expected if physical conditions varied much beyond the narrow, normal range.

While this theory may hold true on a broad scale, when viewed from the narrower context of shoreline development impact, the potential for detrimental community alteration is greatly reduced. Wave shock, the principal determinant in reef community structure, does not enter into considerations of shoreline development. Therefore increased runoff and sedimentation due to grading and land clearing seems to present the major potential detrimental factor. Since rainfall in the area is normally very low and ground cover is predominantly porous lava rather than soil, the potential for increased runoff appears to be minor. If however, sediment runoff is increased somewhat, it should not affect coral reef community structure significantly. Bottom topography of the nearshore area is characterized by dikes, knolls and ridges that are separated by sand-filled channels. Increased land-derived sediment loads would drain into these channels just as natural sediments do, with no significant adverse environmental effects.

Another area of possible concern that could result from additional access to the shoreline and nearshore reef is impact to the fish communities due to increased fishing pressure. However, this does not seem to

to a potential problem since the area already appears to be subject to recreational fishing both from boat-borne divers from Kawaihae and shoreline fishing activities. As mentioned in the reef fish overview section, the present reef fish assemblages already are depleted of larger individuals, therefore there appears to be very little expected change due to further access to the area.

In summary, based on this survey of physical and biological marine community structure, the offshore reef adjacent to the Kohala Haka I development will provide a valuable recreational and aesthetic resource. Based on evaluation of the community and its tolerance to stress, there is no reason to expect any significant adverse impacts due to development activities.



APPENDIX A. REEF CORAL SPECIES OCCURRENCE

| Coral Species | Abundance |
|-----------------------------------|-----------|
| <i>Montipora patula</i> | I |
| <i>Montipora verrucosa</i> | I |
| <i>Palythoa tuberculosa</i> | C |
| <i>Pavona varians</i> | I |
| <i>Pocillopora membranina</i> | C |
| <i>Porites compressa</i> | A |
| <i>Porites lobata</i> | A |
| <i>Porites (Synarasa) convexa</i> | I |

Explanation of symbol notation:

Abundance classification - organism abundance is subjectively classified as:

- A = abundant; always observed, many individuals encountered
- C = common; localized concentrations or even distributions of moderate amount of individuals
- I = infrequent; small localized concentrations or only several observations
- R = rare; only one or two organisms observed

APPENDIX B. MACROINVERTEBRATE SPECIES OCCURRENCE

| Species | Abundance |
|------------------------------------|-----------|
| PHYLUM PORIFERA | |
| <i>Chondrosia chucalla</i> | C |
| <i>Clathrina</i> sp. | I |
| <i>Dampospongiae</i> (3 spp.) | I |
| <i>Spirastrella vagabunda</i> | I |
| PHYLUM ECHINODERMATA | |
| <i>Acanthaster planci</i> | C |
| <i>Actinopyga mauritiana</i> | I |
| <i>Actinopyga obesa</i> | I |
| <i>Chondrocecidaria</i> sp. | I |
| <i>Clypeaster reticulata</i> | R |
| <i>Colobocentrotus atrata</i> | A |
| <i>Guleta novaequinae</i> | R |
| <i>Dialana paucispinum</i> | C |
| <i>Echinometra mathaei</i> | A |
| <i>Echinometra oblonga</i> | C |
| <i>Echinometra plus aciculata</i> | I |
| <i>Echinothrix calamaris</i> | C |
| <i>Echinothrix diadema</i> | A |
| <i>Eucidaris metularia</i> | C |
| <i>Heterocentrotus mammillatus</i> | A |
| <i>Holothuria atra</i> | I |
| <i>Linckia guildingii</i> | I |
| <i>Linckia multiflora</i> | C |
| <i>Ophiothrix</i> sp. | C |
| <i>Pseudobolita indiana</i> | R |
| <i>Tripicenten gratilla</i> | A |
| PHYLUM MOLLUSCA | |
| <i>Cyprina sandvicensis</i> | C |
| <i>Cerithium mutatum</i> | I |
| <i>Chama ionana</i> | I |
| <i>Charonia trilineata</i> | R |
| <i>Conus chinensis</i> | I |
| <i>Conus textile</i> | I |
| <i>Coralliophila violacea</i> | C |
| <i>Cyprina caputserpentis</i> | I |
| <i>Cyprina heliophila</i> | I |
| <i>Cyprina isabella</i> | C |
| <i>Cyprina maatiffera</i> | I |

APPENDIX B. (Continued)

| Species | Abundance |
|----------------------------------|-----------|
| <i>Decapodentem noduliferum</i> | I |
| <i>Dendropoma</i> sp. | C |
| <i>Drypa merum</i> | C |
| <i>Hastula lanceata</i> | I |
| <i>Hastula penicillata</i> | I |
| <i>Haukea juddi</i> | I |
| <i>Hexabranchius sanguineus</i> | I |
| <i>Indricaria olivaceiformis</i> | I |
| <i>Ischnomus californicum</i> | I |
| <i>Littorina</i> sp. | A |
| <i>Mitra</i> sp. | I |
| <i>Mytilus</i> sp. | I |
| <i>Nerita picea</i> | A |
| <i>Phyllidia pustulosa</i> | I |
| <i>Pipina muricata</i> | I |
| <i>Rhinocelaris sinensis</i> | I |
| <i>Sabia conica</i> | I |
| <i>Siphonaria normalis</i> | C |
| <i>Stenobornia newombi</i> | I |
| <i>Tellina elizabethae</i> | I |
| <i>Teretia</i> sp. | C |
| <i>Tonna perdit</i> | I |
| <i>Trichycardium orbita</i> | I |
| <i>Tropezium oblongum</i> | I |
| <i>Tridacna interius</i> | C |
| <i>Turbo umbilicatus</i> | I |

FYLUM CRUSTACEA

| | |
|-------------------------|---|
| <i>Austidea regalis</i> | I |
| Barnacle | C |
| <i>Gnopsis gnopsis</i> | C |

MISCELLANEOUS

| | |
|--------------------------------|---|
| <i>Halocordyle disticha</i> | C |
| <i>Haloporella</i> sp. | I |
| <i>Hydrozoa</i> | C |
| <i>Lichenopora</i> sp. | I |
| <i>Spiridocarpus giganteus</i> | I |
| <i>Triphyllotoxon</i> sp. | I |

APPENDIX C. FISH SPECIES OCCURRENCE

| Family | Species | Abundance | |
|-----------------------------------|----------------------------------|-----------|--|
| Holocentridae (Squirrelfish) | <i>Myripristis</i> | A | |
| | <i>Plamneo canava</i> | C | |
| | <i>Adioryx enesfer</i> | C | |
| | <i>Adioryx lactocoguttatus</i> | C | |
| Serranidae (Groupers) | <i>Cephalopholis argus</i> | R | |
| | <i>Priacanthius eumentatus</i> | I | |
| Priacanthidae (Big-eye) | <i>Priacanthius eumentatus</i> | I | |
| | <i>Monotaxis grandoculis</i> | C | |
| Sparidae (Porgys) | | | |
| | | | |
| Mullidae (Goatfish) | <i>Mulloidichthys samoensis</i> | C | |
| | <i>Mulloidichthys auriflamma</i> | I | |
| | <i>Ruvipeneus bifasciatus</i> | I | |
| | <i>Ruvipeneus multifasciatus</i> | C | |
| | <i>Ruvipeneus porphyreus</i> | C | |
| | <i>Crotomyge potteri</i> | I | |
| | <i>Forcipiger flavissimus</i> | C | |
| | <i>Hemitaurichthys thompsoni</i> | A | |
| | <i>Chaetodon fimbrii</i> | I | |
| | <i>Chaetodon lunula</i> | R | |
| Chaetodontidae (Butterflyfish) | <i>Chaetodon ornatissimus</i> | C | |
| | <i>Chaetodon multilineatus</i> | I | |
| | <i>Chaetodon quadrimaculatus</i> | C | |
| | <i>Chaetodon trifasciatus</i> | I | |
| | <i>Chaetodon unimaculatus</i> | R | |
| | <i>Carex melanopygia</i> | I | |
| | Carangidae (Jack) | | |
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| Pomacentridae (Damselfish) | <i>Ducyllum albicella</i> | I | |
| | <i>Abudefduf abdominalis</i> | I | |
| | <i>Abudefduf imparipennis</i> | C | |
| | <i>Plectrolythichodon</i> | I | |
| | <i>Johnstoniana</i> | I | |
| | <i>Stegastes fasciatus</i> | C | |
| | <i>Chromis leucurus</i> | C | |
| | <i>Chromis ovalis</i> | C | |
| | <i>Chromis virator</i> | C | |
| | <i>Chromis oxyris</i> | C | |

APPENDIX C. (Continued)

| Family | Species | Abundance |
|-----------------------------|----------------------------------|-----------------------|
| Labridae (Wrasses) | <i>Bodianus bilunulatus</i> | C |
| | <i>Zabroides pithiophagus</i> | C |
| | <i>Pseudochelinus octotaenia</i> | I |
| | <i>Thallosoma ballieui</i> | C |
| | <i>Thallosoma duparreyi</i> | A |
| | <i>Thallosoma fuscum</i> | I |
| | <i>Comptosius varius</i> | I |
| | <i>Coris gaimardi</i> | I |
| | <i>Anampses cauter</i> | I |
| | <i>Halichoeres ornationinus</i> | I |
| Scaridae (Parrotfish) | <i>Scarus dubius</i> | C |
| | <i>Scarus perspicillatus</i> | C |
| | <i>Scarus nardius</i> | C |
| Cirrhitidae (Hawkfish) | <i>Puracanthus arcatus</i> | C |
| | <i>Puracanthus forsteri</i> | C |
| | <i>Cirrhitops fasciatus</i> | C |
| Acanthuridae (Surgefish) | <i>Acanthurus achilles</i> | C |
| | <i>Acanthurus diademum</i> | C |
| | <i>Acanthurus leucoparvus</i> | C |
| | <i>Acanthurus nigrofuscus</i> | C |
| | <i>Acanthurus olivaceus</i> | C |
| | <i>Acanthurus sandvicensis</i> | C |
| | <i>Ctenochaetus hawaiiensis</i> | C |
| | <i>Ctenochaetus strigosus</i> | C |
| | <i>Zabracoma flavescens</i> | C |
| | <i>Maso hexacanthus</i> | I |
| | <i>Maso titurus</i> | C |
| | <i>Zanclus cornutus</i> | I |
| | Scorpaenidae (Scorpionfish) | <i>Pterois aphaca</i> |
| <i>Melichthys niger</i> | | I |
| Balistidae (Triggerfish) | <i>Melichthys vicia</i> | I |
| | <i>Sufflamen bursa</i> | C |
| Mnacanthidae (Filefish) | <i>Paruropsis aptilonema</i> | I |

APPENDIX C. (Continued)

| Family | Species | Abundance |
|----------------------------------|-------------------------------------|-----------|
| Ostraciidae (Boxfish) | <i>Ostracion meleagris canarium</i> | I |
| Canthigasteridae (Pufferfish) | <i>Canthigaster jactator</i> | I |
| Diodontidae (Porcupinefish) | <i>Diodon hystrix</i> | R |

APPENDIX D. ALGAE SPECIES OCCURRENCE

| Algal Species | Abundance |
|--------------------------------|-----------|
| <i>Almofelia concinna</i> | A |
| <i>Anania glomerata</i> | I |
| <i>Gibberithia hawaiiensis</i> | I |
| <i>Halimeda</i> spp. | I |
| <i>Hydroclithon</i> sp. | A |
| <i>Jania</i> sp. | C |
| <i>Porolithon onkodes</i> | A |
| <i>Pterocladia caerulea</i> | A |
| <i>Pterocladia capillacea</i> | A |
| <i>Salpsia</i> sp. | I |
| <i>Ulva</i> sp. | C |
| <i>Valoniopsis ventricosa</i> | I |

APPENDIX E

NOISE ANALYSIS, RESIDENTIAL CONDOMINIUM DEVELOPMENT,
KOHALA MAKAI I, NORTH KOHALA, HAWAII

By: Darby-Ebisu & Associates, Inc.

Acoustical Consultants

Belt, Collins & Associates
JUL 23 1981

DARBY-EBISU & ASSOCIATES, INC.
Acoustical Consultants
1051 Keolu Drive, Suite 201 • Honolulu, Hawaii 96734
(800) 261-3727

Belt, Collins & Associates
July 22, 1981
Page 2

DEA Job #81-20P

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| D. H. J. |
| C. M. B. |
| J. Papamichael |
| K. M. A. |
| E. W. P. |
| K. G. |
| H. C. |
| V. D. |
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July 22, 1981

Belt, Collins & Associates
514 Hawaii Building
745 Fort Street
Honolulu, HI 96813

Attention: Mr. Brian Suzuki

Subject: Noise Analysis, Residential Condominium Development,
Kohala Makai I, North Kohala, Hawaii

Dear Mr. Suzuki:

In accordance with our proposal dated June 17, 1980 and your letter of July 14, 1981, the following letter report is submitted:

I. OBJECTIVES

To describe the existing and anticipated noise environment in the environs of the proposed Kohala Makai I condominium development, and to evaluate potential noise conflicts which may arise with emphasis placed upon traffic noise. Recommendations for minimizing potential noise impacts were also to be provided when applicable.

II. SUMMARY OF FINDINGS

Due to the residential nature of the proposed development, and the dramatic increases in future nonproject-related traffic volume along Akoni Pule Highway expected by the Year 1990, minimal noise impacts are anticipated from project-related traffic. Project-related traffic generation estimates obtained from Reference 1 indicate that a maximum of 3,250 total vehicle trips per day would be generated by the Year 1990. This volume of traffic would add only 0.6 dB to projected 1990 traffic noise levels.

Significant increases (in the order of 8 dB) in traffic noise are anticipated by the Year 1990 due to anticipated traffic volume increases attributable to other North and South Kohala resort developments. For this reason, an evaluation of future traffic noise impact on the proposed residential lots of Kohala Makai I was performed. Because of the noise barrier effect of the highway cut (estimated at 30 FT height) fronting the subdivision, the proposed development for residential units will be compatible with existing noise guidelines and criteria if line-of-sight to the highway is avoided.

Construction noise will be audible at the existing Kohala Estates subdivision across the highway from Kohala Makai I. Minimization of these noise impacts is suggested through the use of properly muffled equipment and conducting noisy operations during normal waking hours. Construction noise impacts on Kohala Makai I subdivision residents could occur if a phased construction/occupancy schedule is implemented. These impacts could be minimized by completing noisy site preparation work prior to occupancy.

If a small boat landing is constructed in the cove at the south end of the subdivision, a shoreline location at maximum distance from residential units is suggested. Co-locating the small boat landing with other non-residential uses (sewage treatment plant, recreational facilities, or open space) will also tend to minimize land use compatibility conflicts.

III. NOISE DESCRIPTORS AND THE RELATIONSHIP OF NOISE LEVELS TO LAND USE COMPATIBILITY*

The Day-Night Sound Level, or L_{dn}, is the accepted noise descriptor for

*A brief description of the acoustic terminology and symbols used are provided in the enclosure to this report.

the determination of land use compatibility. The Day-Night Sound Level is a 24-hour average sound level in which nighttime noise levels occurring between 10:00 PM and 7:00 AM are increased (or penalized) by 10 dB before calculation of the 24-hour average. A recently published American National Standard, ANSI S3.23-1980, (Reference 2) recommends use of the L_{dn} descriptor when assessing land use compatibility. Figure 1, extracted from Reference 2, provides land use compatibility determinations for various levels of exterior noise as measured by the L_{dn} descriptor. A general consensus among federal agencies has developed whereby residential housing is considered acceptable where exterior noise does not exceed L_{dn} 65. EPA's prior recommendation of L_{dn} 55 or less for residential housing has not been adopted by other federal agencies, but is recognized as a desirable long-term goal.

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TABLE 1 (extracted from Reference 3) describes the typical variation of L_{dn} for various kinds of neighborhoods. Levels of 60 L_{dn} or greater are typical along city streets with daily traffic volumes exceeding 2,500 vehicles. 65 to 70 L_{dn} are typical values for city business districts where traffic is a dominant noise source. FIGURE 2 presents typical L_{dn} values obtained on Oahu.

TABLE 1

Typical Values of Yearly Day-Night Average Sound Level for Various Residential Neighborhoods Where There is No Well Defined Sources of Noise Other Than Usual Transportation Noise

| Description | L_{dn} - dB |
|-----------------------------|---------------|
| Rural (undeveloped) | 35 |
| Rural (partially developed) | 40 |
| Quiet Suburban | 45 |
| Normal Suburban | 50 |
| Urban | 55 |
| Noisy Urban | 60 |
| Very Noisy Urban | 65 |

IV. EXISTING NOISE ENVIRONMENT

Actual noise measurements on the project site were not performed. However, based upon the undeveloped nature of the site, traffic noise shielding effects of the highway cut, and prior noise measurements obtained in other South and North Kohala areas, estimates of the existing noise environment are as follows:

- A. At 50 FT from the centerline of Akoni Pule Highway, and in direct line-of-sight to the highway surface, traffic noise levels are approximately 62 L_{dn} . This is based on a P.M. peak hour volume of 99 VPH and 55 MPH speeds.
- B. On the elevated project site at normal listener level of 5 FT above grade, with approximately 10 to 15 dB of shielding, traffic noise levels are 47 to 52 L_{dn} at 50 FT setback from the highway centerline.
- C. At the center of the site, at approximately 500 FT setback, traffic noise probably diminishes to a range of 32 to 40 L_{dn} , with other intermittent noise sources (aircraft, birds, and noisy trucks) being dominant. Minimum instantaneous noise levels (as read on a sound level meter) probably range in the low 30 dB range.
- D. Near the shoreline, depending on surf conditions, water noise will begin to dominate. Surf noise can vary between 50 to 65 L_{dn} , and is not readily predictable.
- E. In the urban areas of Hawi and Kawahae, at 50 FT distance from the through streets, current traffic noise levels are approximately 61 L_{dn} with peak hour traffic volumes of 200 to 230 VPH.

F. At the present time, traffic noise levels at residential units along Akoni Pule Highway and in Hawi and Kawaihae are considered acceptable by federal criteria and recommendations.

V. FUTURE TRAFFIC NOISE ENVIRONMENT

Future traffic noise with and without the proposed project were estimated using available traffic projections and prior studies of other North and South Kohala development proposals. Proposed resort complexes in North and South Kohala are anticipated to generate traffic significantly in the Kawaihae and North Kohala areas during the 1980 and 1990 periods. Estimates of this future traffic component were obtained from References 4, 5, and 6. TABLE II, extracted from Reference 6, summarizes the expected growth in traffic volume and noise levels along Akoni Pule Highway as a result of non-project related resort developments in the area. Non-project traffic volumes predicted for the years 1990 and 2001 are anticipated to reduce service levels, with a net effect of reducing average vehicle speeds along the roadways of interest. The net effect of these increased traffic volumes is to place an upper limit on traffic noise levels as the volumes approach roadway capacity. It is not known what future roadway improvements to Akoni Pule Highway and/or to through streets in Kawaihae and Hawi will occur.

Project-related traffic, assuming 90 percent occupancy at Kohala Makai I by 1990, will range between 2,600 to 3,250 total trips per day. Using a 25/75 percent north/south traffic volume split respectively, and an 8 percent P.M. peak hourly volume factor, the proposed subdivision will contribute a maximum of

65 and 195 VPH during the P.M. peak hour in the directions north and south of the project. These contributions are less than 20 percent of the non-project traffic volumes predicted for 1990 along the highway (see TABLE II). Resulting traffic noise increases due to project traffic should not exceed 0.6 L_{dn}, which is negligible. TABLE III summarizes the traffic volumes and noise levels north and south of the proposed subdivision, and the increases in traffic noise levels attributable to the project. L_{dn} values at 100, 150, and 200 FT may be obtained by subtracting 4.5, 7.1, and 9.0 dB respectively from the 50 FT L_{dn} values shown in TABLE III for line-of-sight conditions.

Traffic noise levels in the urbanized areas of Hawi and Kawaihae are anticipated to increase by the same order of magnitude (+7 dB) between 1980 and 1990, and remain constant between 1990 and 2001 due to declining roadway service conditions. Traffic noise levels at 50 FT distance from through streets in both urban areas are anticipated to be 68 L_{dn} for the years 1990 and 2001. As in the situation along Akoni Pule Highway, the large increases in traffic noise levels between 1980 and 1990 are attributable to the planned South Kohala and Mahukona projects with the proposed subdivision adding an additional 0.3 to 0.6 dB to the total non-project traffic noise levels.

VI. RECOMMENDATIONS AND POSSIBLE MITIGATION MEASURES

Although traffic noise increases from the proposed subdivision are not considered to be significant in comparison with those expected from other resort developments planned for the area, noise mitigation measures directed

towards minimizing future subdivision residences from highway noise are recommended. The reported 30 FT high embankment alongside the highway should provide a natural noise barrier for the ground floor units and possibly the second floor units. Highway noise reductions in the order of 5 to 15 dB appear possible for a 30 FT embankment. However, 3rd floor residential units placed within 100 FT of the highway centerline may not experience any noise reductions if line-of-sight to the highway exists (see FIGURE 3). Because highway noise levels may increase to 70 L_{dn} by 1990, it is suggested that a unit-by-unit evaluation be performed to determine if topographic conditions will reduce traffic noise to 65 L_{dn} or less.

A desirable goal to increase the probability of occupant satisfaction with the highway noise environment is an exterior noise level of 55 L_{dn} or less at each unit's window. A detailed topographic survey, and unit/highway geometry examination is recommended prior to construction. If possible, structures should be located toward the interior of the subdivision to avoid line-of-sight to the highway. The addition of highway noise barriers on the embankment is also a possible mitigation measure for breaking the line-of-sight. If it is not feasible to attenuate exterior noise to 55 L_{dn} , treatment of the units should be considered. These methods of providing additional exterior-to-interior noise reduction include complete closure and air conditioning, a minimization of units' window/door openings facing the highway, and the use of flow-through sound attenuators in selected units.

YE:SS
Encl.

Sincerely,



Yoichi Ebisu, P.E.

REFERENCES

1. Traffic Projections for Kohala Makai I, by BCA (received 7/15/81).
2. Sound Level Descriptors for Determination of Compatible Land Use, American National Standards, ANSI S3.23-1980, May 30, 1980.
3. Guidelines for Preparing Environmental Impact Statements on Noise, Report of Working Group 69 (CIABA), National Research Council, National Academy of Sciences, 1977.
4. Traffic Projections and EIS draft on Lalamilo Water System by BCA (received 1/4/80).
5. Air Quality Assessment Report, Hahukona Resort Development, by J.A. Morrow (received 6/19/80).
6. "Traffic Noise Analysis, Hahukona Resort/Residential Development, North Kohala, Hawaii," Darby-Ebisu & Associates, Inc., July 15, 1980.
7. State Dept. of Transportation 24 IIR Traffic Count on Akoni Pule Highway, Station No. 12-E, April, 1980.

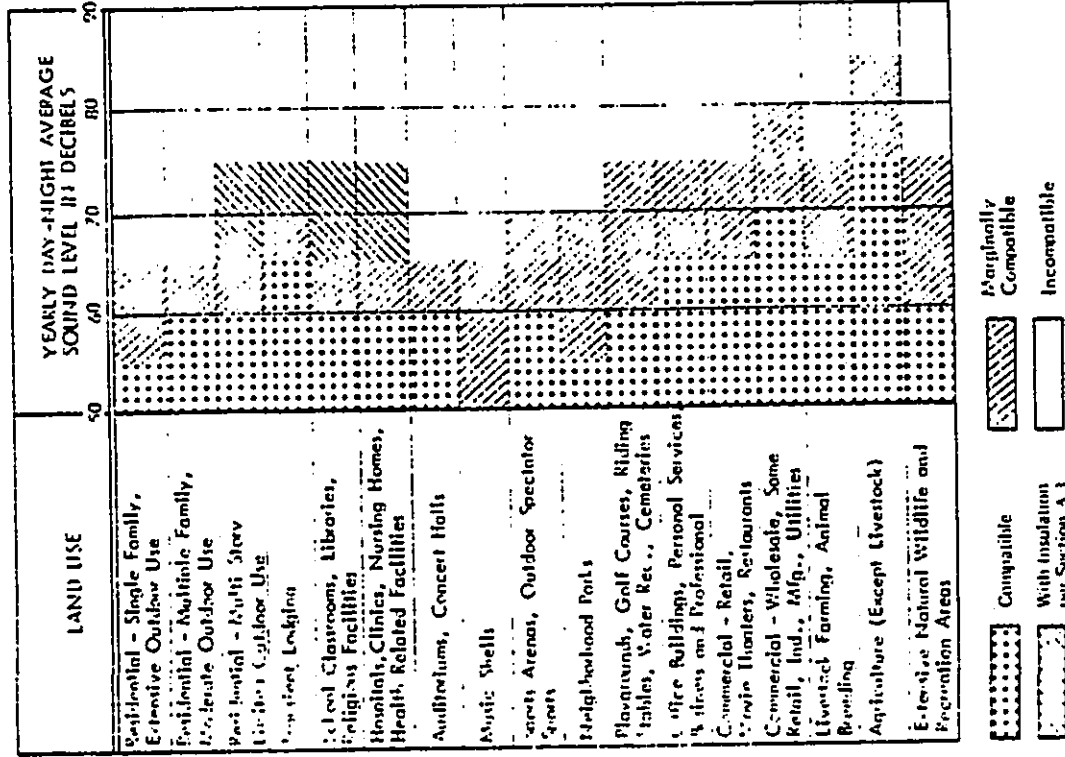


FIG. 1. Land use compatibility with yearly day-high average sound level at a site for buildings as commonly constructed. [For information only; see a part of American National Standard for Sound Level Descriptors for Determination of Compatible Land Use S3.23 (1984)]

TABLE II
NON-PROJECT TRAFFIC VOLUMES AND NOISE LEVELS ALONG KOHOLA MAKA I HIGHWAY

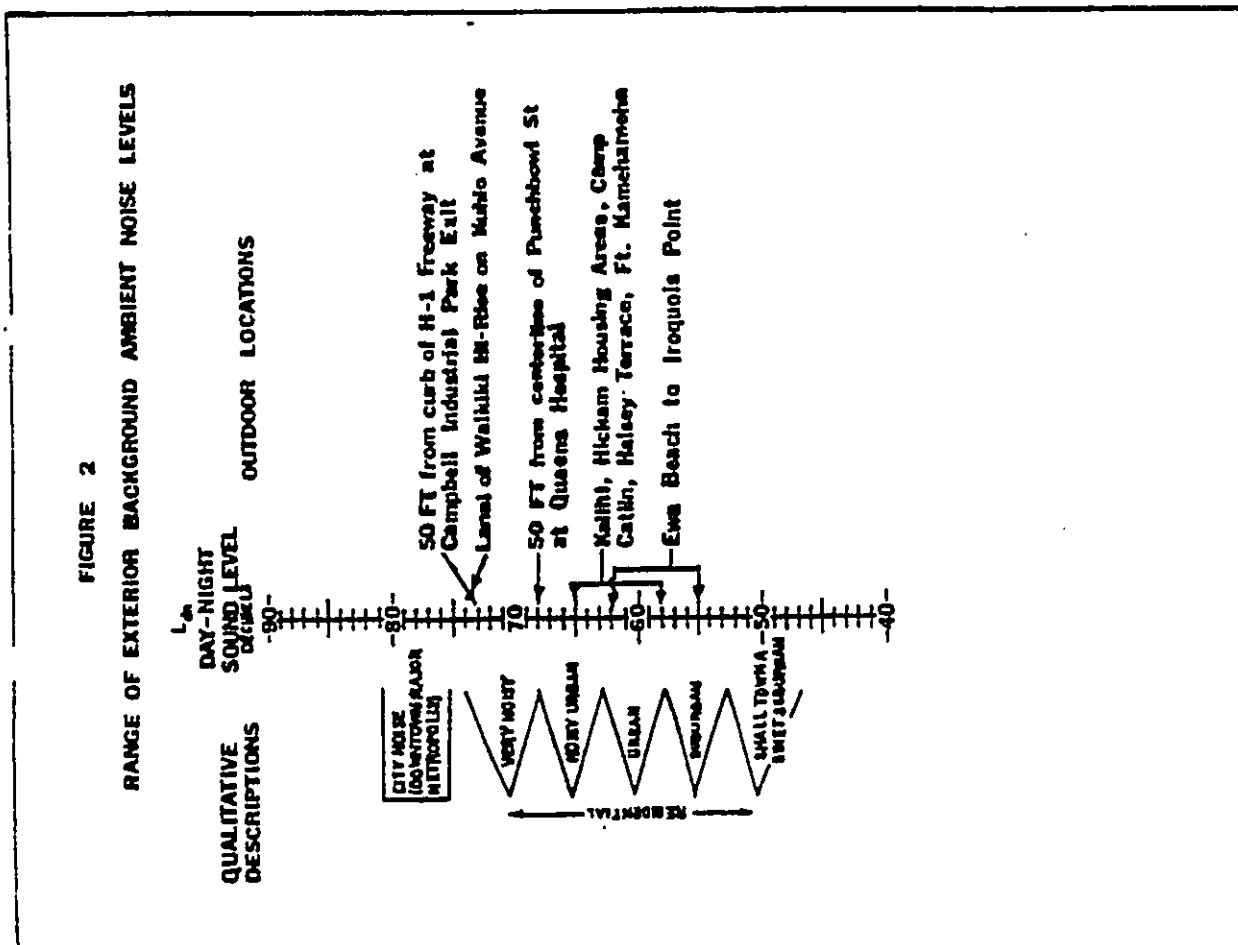
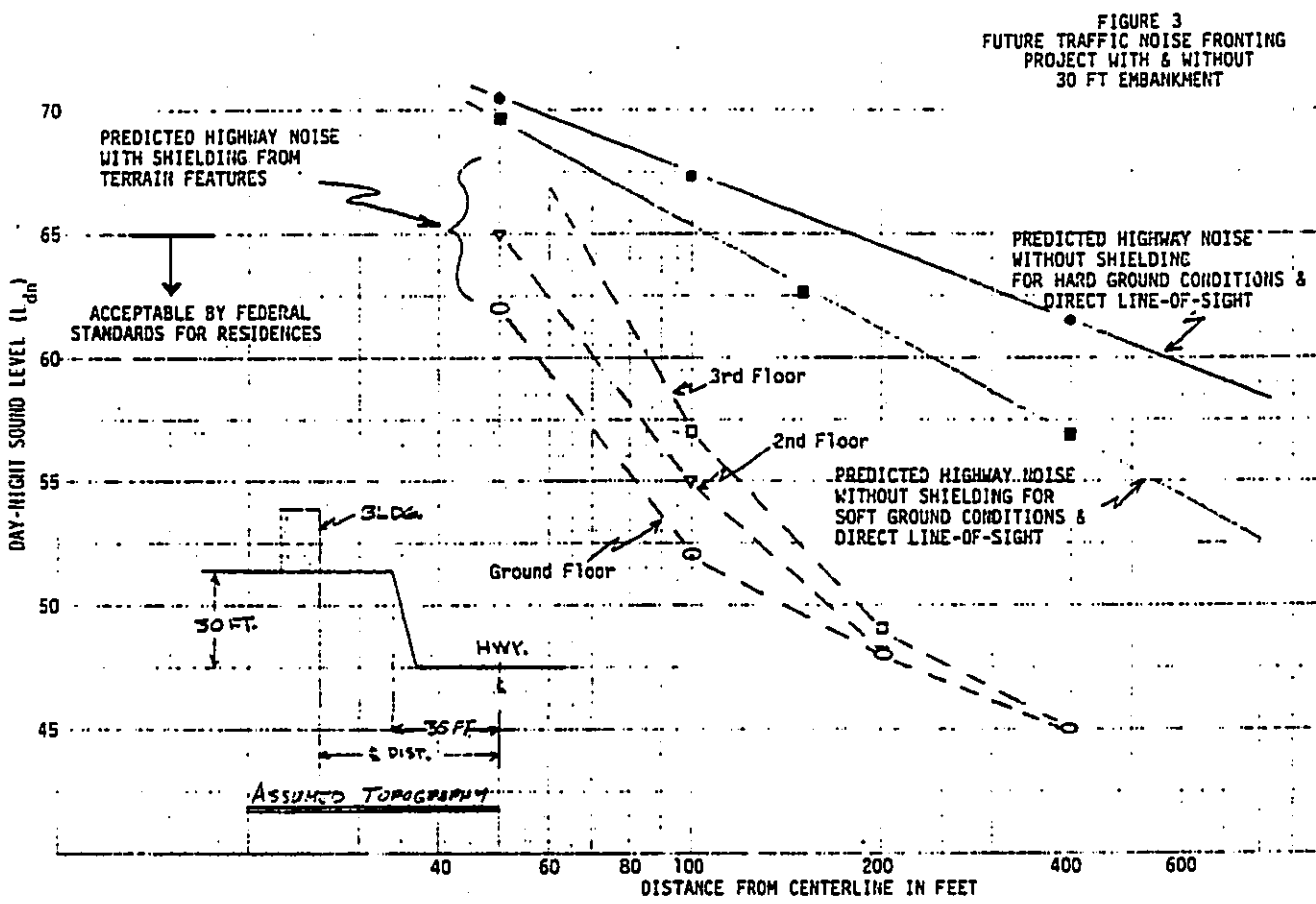
| Year | Fronting Project Site & Entering Kawahae | | North of Proposed Mahukona Resort & Entering Hana | |
|----------|--|------------------|---|------------------|
| | P.M. Peak Volume (VPH) | Ave. Speed (MPH) | P.M. Peak Volume (VPH) | Ave. Speed (MPH) |
| 1980 (2) | 99 | 55 | 99 | 55 |
| 1990 | 1231 | 42 | 797 | 50 |
| 2001 | 2171 | 27 | 1158 | 43 |

TABLE III
PROJECT PLUS NON-PROJECT TRAFFIC VOLUMES AND NOISE LEVELS ALONG KOHOLA MAKA I HIGHWAY

| Year | South of Project Site & Entering Kawahae | | North of Project Site Before Mahukona Resort | | North of Proposed Mahukona Resort & Entering Hana | |
|------|--|---|--|---|---|---|
| | P.M. Peak Volume (VPH) | L _{dn} 50 FT in L _{dn} (dB) | P.M. Peak Volume (VPH) | L _{dn} 50 FT in L _{dn} (dB) | P.M. Peak Volume (VPH) | L _{dn} 50 FT in L _{dn} (dB) |
| 1980 | 99 | 61.9 | 99 | 61.9 | 99 | 61.9 |
| 1990 | 1426 | 70.9 | 1296 | 70.5 | 862 | 70.4 |
| 2001 | 2366 | 69.3 | 2236 | 69.0 | 1223 | 70.5 |

Note (1): Increase in L_{dn} attributable to Kohala Makai I development.

(2): Existing peak hour volume estimated from Reference 7.





TEXT

EXERCISES FROM EPA'S ACOUSTIC TERMINOLOGY GUIDE

Descriptor Symbol Usage
The recommended symbols for the commonly used acoustic descriptors listed on A-weighting are contained in Table 1. As most acoustic criteria and standards used by EPA are derived from the A-weighted sound level, almost all descriptor symbols usage guidance is contained in Table 1.

Since acoustic measurements include weighting networks other than "A" and measurements other than pressure, an expansion of Table 1 was developed (Table II). The group adopted the ANSI descriptor-symbol scheme which is structured into three stages. The first stage indicates that the descriptor is a level (i.e., based upon the logarithm of a ratio), the second stage indicates the type of quantity (power, pressure, or sound exposure), and the third stage indicates the weighting network (A, B, C, D, E, ...). If no weighting network is specified, "A" weighting is understood. Exceptions are the A-weighted sound level and the A-weighted peak sound level which require that the "A" be specified. For convenience in those situations in which an A-weighted descriptor is being compared to that of another weighting, the other weighting should be indicated in the inclusion of the "A". For example, a report on blast noise might wish to compare the A-weighted level with the LWA.
Although not included in the tables, it is also recommended that "pp" and "Lpp" be used as symbols for perceived noise levels and effective perceived noise level, respectively.
It is recommended that in their initial use within a report, such terms be written in full, rather than abbreviated. An example of preferred usage is as follows:
The A-weighted sound level (LA) was measured before and after the installation of acoustic treatment. The measured LA values were 85 and 75 db respectively.

Descriptor Nomenclature
With regard to energy averaging over time, the term "average" should be discouraged in favor of the

term "equivalent". Hence, Leq is designated the "equivalent sound level". For Lp, Lmax, and Lp, the equivalent level is stated since the concept of dB, dBA, or dB(A) is not used. The term "equivalent" is used to indicate that the descriptor is a level (i.e., based upon the logarithm of a ratio), the second stage indicates the type of quantity (power, pressure, or sound exposure), and the third stage indicates the weighting network (A, B, C, D, E, ...). If no weighting network is specified, "A" weighting is understood. Exceptions are the A-weighted sound level and the A-weighted peak sound level which require that the "A" be specified. For convenience in those situations in which an A-weighted descriptor is being compared to that of another weighting, the other weighting should be indicated in the inclusion of the "A". For example, a report on blast noise might wish to compare the A-weighted level with the LWA.

With regard to units, it is recommended that the unit decibel (abbreviated db) be used without modification. Hence, dBA, dBS, and dBS(A) are not to be used. Examples of this preferred usage are: the Perceived Noise Level (PNL) was found to be 75 db(A); Lp = 75 db(A); National Bureau of Standards, and the policies of ANSI and the Acoustical Society of America, all of which allow any modification of db except for prefixes indicating its multiples or submultiples (e.g., deci).

Noise Impact
In discussing noise impact, it is recommended that "Level Weighted Population" (LWP) replace "Equivalent Noise Impact" (ENI). The term "Relative Change of Impact" (RCI) shall be used for comparing the relative differences in LWP between two alternatives. Further, when appropriate, "Noise Impact Index" (NII) and "Population Weighted Loss of Hearing" (PWL) shall be used consistent with CHARA Working Group #9 Report Guidelines for Preparing Environmental Impact Statements (1977).

TABLE II: Recommended Descriptor List

Table with 5 columns: Item, A-Weighting, Alternative(1) A-Weighting, Other Weighting, and Unweighted. It lists 15 items including Sound (Pressure) level, Sound Power Level, Max. Sound Level, Peak Sound (Pressure) level, Level Exceeded at of the time, Equivalent Sound level, Equivalent Sound level Over Time, Day Sound Level, Night Sound Level, Day-Night Sound Level, Yearly Day-Night Sound Level, Sound Exposure Level, Energy Average value over (non-time domain) set of observations, Level exceeded at of (total) set of (non-time domain) observations, and Average LA value.

TABLE I: A-Weighted Recommended Descriptor List

Table with 2 columns: Term and Symbol. It lists 12 terms including A-Weighted Sound Level, A-Weighted Sound Power Level, Maximum A-Weighted Sound Level, Peak A-Weighted Sound Level, Level Exceeded at of the time, Equivalent Sound Level, Equivalent Sound level over time, Day Sound Level, Night Sound Level, Day-Night Sound Level, Yearly Day-Night Sound Level, and Sound Exposure Level.

(1) Unless otherwise specified, time is in hours (e.g., the hourly equivalent level is Lp(1)). Time may be specified in non-quantitative terms (e.g., could be specified as Lp(WASH) to mean the washing cycle noise for a washing machine.)

- (1) "Alternative" symbols may be used to assure clarity or consistency.
(2) Only B-weighting shown. Applies also to C, D, E, ... weighting.
(3) The term "pressure" is used only for the unweighted level.
(4) Unless otherwise specified, time is in hours (e.g., the hourly equivalent level is Lp(1)). Time may be specified in non-quantitative terms (e.g., could be specified as Lp(WASH) to mean the washing cycle noise for a washing machine.)

APPENDIX F

**INFORMATIONAL LETTERS FROM
STATE AND COUNTY AGENCIES**

GEORGE R. ARYOSH
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF AGRICULTURE
1325 SO. KING STREET
HONOLULU, HAWAII 96814

JOHN FARIAS, JR.
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MEMBER MEMBER
SUZUKI OHNO
EX OFFICIO MEMBER

March 24, 1980

Mr. Alvin T. Amaral, President
Amaral-Cole, Realtors
The Kahului Building, Suite 480
P. O. Box 98
Kahului, Maui, HI 96732

Dear Alvin:

Re: TMK 3rd Division: 5-9-01:6
Thank you for your letter of March 18, 1980.

I know the subject area fairly well and it is not conducive to agricultural development. We would have no objections to your requesting the County of Hawaii for a medium density zoning designation.

Sincerely,

John Farias, Jr.
Chairman, Board of Agriculture

cc: Planning Department

RECEIVED
JUL 13 1981

HAWAII COUNTY FIRE DEPARTMENT
466 MIKODOLE STREET, HILO, HAWAII 96720
HONOLULU, HI 96814

HERBERT I. MATAYOSHI
MAYOR

July 10, 1981

Mr. Brian M. Suzuki
Belt, Collins & Associates
5th Floor Hawaii Building
745 Fort Street
Honolulu, Hawaii 96813

Dear Mr. Suzuki:

Subject: Kahala Makai I EIS

- (1) Present fire protection for the project area would score a 9 on a scale of 1 to 10. Current services consists of a single Class "C" apparatus and one operator working a day shift from 8:00 a.m. - 4:00 p.m. with varying days off. Twenty-four-hour fire and EHS services are provided by Waimea Fire Station which has a crew of five fire fighters.
- (2) Adequate protection for the area would require an addition of nine fire fighter positions to begin 24-hour coverage, plus one 1,000 gpm capacity triple combination pumper.
- (3) Present fire station is located on the grounds of an abandoned school across from the Standard Oil Company in Kawaihae. This area is leased from the Department of Hawaiian Home Lands on yearly terms and is subject to cancellation. Twenty-four-hour service would require new station accommodations of at least 3,500 square feet under roof and a more stable site acquisition.
- (4) Future expansion studies for this district are just getting under way and completion is contingent on time availability.
- (5) Water supply for fire fighting distribution (hydrants and mains) shall conform to the 1976 Uniform Fire Code. Exceptions are subject to approval of final plans by the Fire Chief.

Sincerely,

FRANCIS E. SMITH
ACTING FIRE CHIEF

FES/MD

People list

Reil, J.
Cain, B.
Papamichael, T. [initials]
Pulvint, A.
Vilhe, F.
Koyama, G.
Eshen, C.
Vine, D.
[initials]

Library
File No. 22305



STATE OF HAWAII
 DEPARTMENT OF HEALTH
 KALEI, CHARLES S. FERGUSON

STATE OF HAWAII
 DEPARTMENT OF HEALTH
KOHALA HOSPITAL
 P.O. BOX 10
 KAPAAU, HAWAII 96755

August 19, 1981

TO: Mr. Brian M. Suzuki
FROM: Rural Hospital Administrator
SUBJECT: Kohala Makai I EIS

The nearest health care facility to the proposed project is the Kohala Hospital. This health facility consists of 26 beds and 6 bassinets and provides inpatient and outpatient services. It also provides emergency room services.

Inpatients receives medical, obstetric, pediatrics, minor surgical repair procedures, skilled and intermediate nursing care services. Ancillary services, available to both inpatients and outpatients, include pharmacy, radiology and pathology.

The facility is budgeted for 36 staffing positions of which one newly established position is being recruited and two positions have been approved but not yet established.

Kohala has two private practicing physicians and one part time emergency physician. The two and a half doctors adequately covers 24-hours, 7-days medical care. They service the hospital and are on call for emergencies. All resides in Kohala.

There is also a full time dentist practicing in this community. We have one ambulance stationed at the hospital with 24-hour on call coverage. Personnel rotate on call coverages.

Presently there is no future plans for expansion of services or the facility.

GEORGE AL. STEIN
 DIRECTOR OF HEALTH
 STATE OF HAWAII
 DEPARTMENT OF HEALTH
 1600 KALANOA'OLE DRIVE
 HONOLULU, HAWAII 96813

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 I. SUZUKI, P. 8/3
 File Job # 23305

Mr. Brian M. Suzuki
 Page 2
 August 19, 1981

Comments: I am sure the facility and health care services will grow and develop accordingly to the growth, demands and needs of the population.

Besides the Kohala Hospital, there is a Kohala Health Center operated by the physicians and located within walking distance to the hospital.

Sincerely,

[Handwritten Signature]

cc: Mr. Henry Thompson
 Mr. Bill Kam

APPENDIX G

**FINAL REPORT ON GROUND WATER
DEVELOPMENT: KOHALA ESTATES, HAWAII**

By: Water Resources International, Inc.

well potential

WATER RESOURCES INTERNATIONAL, INC.
PACIFIC OPERATIONS

FOR YOUR INFORMATION
FROM
JOHN MICHAEL WHITE

The Hilton Head Company
225 Queen Street
Honolulu, Hawaii 96813

Attention: Mr. John Michael White
Gentlemen:

FINAL REPORT ON GROUND WATER DEVELOPMENT
KOHALA ESTATES, HAWAII

This report will confirm our preliminary findings that a high grade source of ground water is available for continued development of the Kohala Estates subdivision.

Your effort to develop a fresh ground water source in the Kohala Estates area is an excellent example of successfully planned pioneering in an unproven area. Our decision on site selection was based upon our general understanding of the geology and ground water origin and movement in the Kohala area, and our on-site, in depth analysis of your project location.

The final site selection was made at the 1,462 foot elevation, as this was the best compromise between hydrology, accessibility, economics and future development. Our procedure on this project followed our established concept of "water development phase progress" to minimize your risk and maximize the information available at each phase of the water development before your commitment was necessary to proceed with a subsequent phase.

Time was of the essence, and, therefore, a heavy duty rotary rig was used. We worked around the clock in an effort to meet your timetable. A brief outline of the procedural steps taken by us to accomplish your objective follows:

Water Source Exploration:

- A. Drill 9-7/8" pilot hole to -50' for a total depth of 1,515'.
- B. Bail through drill stem and obtain a static water level and water sample. This was considered as being sufficiently accurate to base a decision for proceeding to the water source development phase, as results showed a head of water of 49 feet and a very low chloride

EXPLORATION AND DEVELOPMENT SPECIALISTS

The Hilton Head Company
October 15, 1979
Page Two

reading of approximately 50 PPH. This was a positive indication of an excellent potential water source. To provide further assurance for capacity, it was decided to deepen the well to 1,550' (-88' elevation) during the water source development program which followed.

Water Source Development:

- A. The 9-7/8" was reamed to
- B. A 12-3/4" O.D. casing x 120' being lowered.
- C. The top 120' of annular slurry.
- D. We set the deep well over pump; driven by a 16v. 1,505' to suction, with.
- E. We ran the pump test, the data sheet included as at

Conclusions:

The pump test confirmed that of ground water in the area available, a well field at 11 gallons per day to serve you lease lands in this area cover well fields could be developed additional water demands for

Suggestions for Future Water De

Given the foregoing conclusions, we recommend the following program:

- 1. Install a 1 mgd pump in the existing well, with necessary power, equipment, storage and transmission lines. This should accommodate the anticipated water needs of your Phases I and II. For additional development or increased future water demand, this same well field could be expanded in the following manner.
- 2. Drill a similar "step-out" production well approximately 300' laterally from the present well, and equip as above.

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OCT 18 1979
JOHN MICHAEL WHITE
HAWAIIAN CONSULTANT

WATER RESOURCES INTERNATIONAL, INC.
PACIFIC OPERATIONS

FOR YOUR INFORMATION
FROM
JOHN MICHAEL WHITE

The Hilton Head Company
225 Queen Street
Honolulu, Hawaii 96813

Attention: Mr. John Michael White
Gentlemen:

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KOHALA ESTATES, HAWAII**

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Time was of the essence, and, therefore, a heavy duty rotary rig was used. We worked around the clock in an effort to meet your timetable. A brief outline of the procedural steps taken by us to accomplish your objective follows:

Water Source Exploration:

- A. Drill 9-7/8" pilot hole to -50' for a total depth of 1,515'.
- B. Ball through drill stem and obtain a static water level and water sample. This was considered as being sufficiently accurate to base a decision for proceeding to the water source development phase, as results showed a head of water of 19 feet and a very low chloride

The Hilton Head Company
October 15, 1979
Page Two

reading of approximately 50 PPH. This was a positive indication of an excellent potential water source. To provide further assurance for capacity, it was decided to deepen the well to 1,550' (-88' elevation) during the water source development program which followed.

Water Source Development:

- A. The 9-7/8" was reamed to 17-1/2".
- B. A 12-3/4" O.D. casing x 5/16" wall was set to the bottom, the lower 120' being lowered.
- C. The top 120' of annular was grouted with a total of 18 yds. of 1:1 slurry.
- D. We set the deep well vertical turbine Johnston 25 stage pump (test pump), driven by a 16V. GMC diesel. The total depth of setting was 1,505' to suction, with air line at 1,455.5'.
- E. We ran the pump test, the results of which are shown on the separate data sheet included as an exhibit to this report.

Conclusions:

The pump test confirmed that there is an excellent high grade source of ground water in the area explored. Based upon our information available, a well field at this location should yield 2 to 3 million gallons per day to serve your proposed development. As the Hilton Head lands in this area cover a vast acreage, it is felt that other well fields could be developed within the total acreage to meet any additional water demands for future development.

Suggestions for Future Water Development of this Source:

Given the foregoing conclusions, we recommend the following program:

- 1. Install a 1 mgd pump in the existing well, with necessary power, equipment, storage and transmission lines. This should accommodate the anticipated water needs of your Phases I and II. For additional development or increased future water demand, this same well field could be expanded in the following manner.
- 2. Drill a similar "step-out" production well approximately 300' laterally from the present well, and equip as above.

October 15, 1979
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OCT 18 1979
JOHN MICHAEL WHITE
HILTON HEAD COMPANY

The Hilton Head Company
October 15, 1979
Page Three

3. The location of both wells, as outlined above, in the same well field, would permit certain economics through the common use of power lines and control systems. It is also possible that long term observation during the operation of these two wells may indicate that a third well could, in the future, be added to this well field to meet possible future increased demand in the area.
4. Estimated costs for constructing an additional well would be based on the same cost of the first well, except that a percentage factor would be added to the overall cost for inflationary increases in labor and materials.

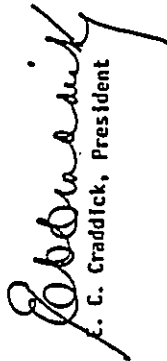
Our final report concludes that your effort to find a suitable water source for the Kohala Estates project, and future development, has been outstandingly successful. This is particularly gratifying in view of the high degree of risk involved due to the fact that this water source has been developed in an area heretofore unexplored.

Your development of this exploratory water well project has certainly added tremendously to the geological knowledge of ground water in this region. Additionally, it is notable that your well project will be the deepest fresh water production well operating in the State of Hawaii, with the deepest set pump of its type in the State.

We appreciate having had the opportunity to work with you on this project and we are proud to be a part of your pioneering effort to develop a water source for this area.

Very truly yours,

WATER RESOURCES INTERNATIONAL, INC.



F. C. Craddock, President

ECC/sm

Enclosures: Pump test reports dated June 25, 1979
Area Map

U
JUL 29 1981

PELT, COLLINS & ASSOCIATES
DIVISIONS:
CONSULTING AND
ENGINEERING
CONSTRUCTION
PLANNING AND
DESIGN
WATER AND LAND DEVELOPMENT



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF WATER AND LAND DEVELOPMENT

P. O. BOX 221
HONOLULU, HAWAII 96809

FOR YOUR INFORMATION
FROM
JOHN MICHAEL WHITE

June 3, 1981

The Hilton Head Co.
225 Queen Street
Honolulu, Hawaii 96813

Attention: Mr. John Michael White
Gentlemen:

Kohala Estates Well

On March 19, 1981, we logged the Kohala Estates Well (No. 6549-01) and obtained the following information:

- Depth to water (from top of casing) 1,454.75 ft.
- Depth of well (from top of casing) 1,556 ft.
- Temperature of water 69.4°F
- Chloride content of water 56 ppm

Based on our measurement of the depth to water and an elevation of 1,462 ft. for the top of the casing (we assume that the "1462" written on the top of casing is correct), the static water level or head of the ground water aquifer is 7.25 ft.

We appreciate your permission to check your well and hope the above information is of some value to you. The cover plate on the well casing was re-welded as originally found. Mahalo.

Very truly yours,

Robert T. Chuck

ROBERT T. CHUCK
Manager-Chief Engineer

DL:ko

cc: Hawaii DWS

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| Root | |
| 1. Pel, J. | |
| 2. Cain, B. | |
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| 5. White, P. | |
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| 7. I. Shiba, R. | |
| 8. J. S. White | |
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