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STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
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April 8, 1991

OFC. OF ENVIRONMENTAL
QUALITY CONTROL

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

Dear Mr. Choy:

Subject: LUC Docket No. A90-662/Lanai Resort Partners

At its meeting of February 28, 1991, the Land Use Commission determined that an Environmental Impact Statement would not be required for the subject docket.

In accordance with the Environmental Impact Statement Rules, we are filing a copy of the Commission's Negative Declaration, four copies of the environmental assessment, and one copy of OEQC form 89-01.

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

Sincerely,

A handwritten signature in cursive script, appearing to read "Esther Ueda".

ESTHER UEDA
Executive Officer

EU:to

cc: Brian Miskae (w/o encl.)
Harold Masumoto (w/o encl.)
James T. Funaki (w/o encl.)

58

1991-04-23-LA-FEA - Koele Project District Expansion

FILE COPY

EXHIBIT "5"

ENVIRONMENTAL ASSESSMENT OF SUBJECT PROPERTY

ENVIRONMENTAL ASSESSMENT

FOR

**PROPOSED STATE LAND USE DISTRICT
RECLASSIFICATION OF 67.9 ACRES TO URBAN AND 10.88 ACRES
TO CONSERVATION AT KOELE PROJECT DISTRICT,
LANAI, HAWAII
TMK: 4-9-01**

**PREPARED FOR:
LANAI COMPANY, INC.**

**PREPARED BY:
BELT COLLINS & ASSOCIATES**

NOVEMBER 1990

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- A: BIOLOGICAL SURVEY
Koele East Boundary Extension Biological Report, Prepared by
Kenneth M. Nagata, 1990.
- B: ARCHAEOLOGICAL RESOURCES SURVEY
Addendum Report for Additional Archaeological Survey at the
Proposed Koele Golf Course, Lanai Prepared by Hallett H.
Hammatt and Douglas Borthwick. April 1990.

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Chapter I

INTRODUCTION AND SUMMARY

CHAPTER I
INTRODUCTION AND SUMMARY

1. PETITIONER AND LANDOWNER

The Petitioner is Lanai Resort Partners, a partnership of MK Development, Inc. and Lanai Resort Partners subsidiaries of Castle & Cooke, Inc. and Castle & Cooke Properties, Inc. The project site is part of a property that is owned by Castle & Cooke, Inc., and is identified by TMK 4-9-01:portion of 02.

2. BRIEF PROJECT SUMMARY

The petitioner proposes to increase the area of the Lanai Project District 2 - Koele in order to reconfigure the low density residential development planned adjacent to the recently reconfigured Koele Golf Course. The residential lots under the proposed reconfiguration would improve the lot orientation to the new golf course and allow a larger range of lot types than originally proposed. The proposed action will not increase the residential lot count, but will require an additional 67.9 acres on the east side of the existing project district boundary. This results in an overall lower density project.

3. PROPOSED GOVERNMENT ACTION AND APPROVING AGENCY

3.1 State Land Use District Redistricting

The Lanai Company, Inc. (hereafter referred to as the "petitioner") is petitioning the State of Hawaii Land Use Commission to approve the following reclassifications:

•	Agricultural to Urban	63.52	acres
•	Conservation to Urban	4.38	acres
•	Agricultural to Conservation	10.88	acres

This Environmental Assessment has been prepared as part of the land use petition.

3.2 Other Approvals Sought

In related actions, the petitioner has applications before the County of Maui to amend the Lanai Community Plan and Lanai Project District 2-Koele. The 67.9 acre addition is part of the County applications.

4. AGENCIES CONSULTED IN PREPARING THIS ENVIRONMENTAL ASSESSMENT

Agencies consulted in the preparation of this environmental assessment or that have reviewed and commented on the proposed action as part of the County applications include:

- Planning Department, County of Maui
- Public Works Department, County of Maui
- Division of Historic Preservation, Department of Land and Natural Resources

5. SUMMARY OF IMPACTS AND MITIGATIONS

IMPACT: Clearing and grading of lands used for home sites and potentially some soil erosion.

MITIGATION: Manage the amount of ground uncovered at a time during construction; retain existing ground cover until just before construction; construct erosion control measures during grading following County of Maui standards; avoid construction, where possible, during the rainy season; water recently graded areas to dampen down windblown dust; and sod or plant all cut and fill slopes immediately before grading work has been completed.

IMPACT: Potential disturbance of natural drainage patterns across the site.

MITIGATION: The two principal gulches, natural drainage features, will be maintained as far as possible. Revise the existing drainage plan during the site planning process to support the new configuration of home sites. As necessary, construct drainage control features, including temporary berms and cut-off ditches.

IMPACT: Clearing of surface vegetation including selected eucalyptus trees and fallow pineapple fields over approximately one-half of the subject property.

MITIGATION: Increase ground cover through reseeding and landscaping of cleared areas. Retain mature, healthy trees, where possible and appropriate, the keeping of existing large trees within the new residential lots. Develop larger lots within the forest areas to minimize the number of house sites which need to be cleared.

IMPACT: Potential for noise nuisance associated with the on-site well operation.

MITIGATION: Installation of a submersible pump and motor that would be mounted well below grade and effectively muffle the noise from the surrounding properties.

IMPACT: Increase in the demand for potable water to be used for irrigation of the residential landscaping.

MITIGATION: Landscaping and water conservation measures include using alternate water sources for landscape irrigation; providing guidelines to homeowners for landscaping features using salinity tolerant plants and grasses; monitoring consumption, unreasonable use, and leakage from storage and distribution systems.

IMPACT: Potential long-term adverse effect on the water quality of the well due to pesticide contamination.

MITIGATION: Provide a separate lot and private access to the well; locate the house site as far away as possible in the lots adjacent to the well; limit the pesticides applied on home sites near the well; and if necessary, initiate a monitoring program to observe the construction practices and to test the water quality on a regular basis so that possible contamination sources can be identified and stopped.

*What about
the
golf
course?* →

Chapter II

DESCRIPTION OF THE PROPOSED PROJECT

CHAPTER II

DESCRIPTION OF THE PROPOSED PROJECT

1. REGIONAL SETTING

The petition area is located on Lanai, an island of about 89,280 acres in size (Figure 1). The petition area is a part of the proposed reconfigured Lanai Project District 2 - Koele near Lanai City on the east side.

The island has a population of about 2,500 residents, most of whom live in Lanai City. The Lanai Community Plan (County of Maui, April 1983) projects a resident population of about 4,500 by the year 2003 as a guideline for planning. Under the Community Plan, Lanai City would remain as the population center.

The major employers are the various entities of Castle & Cooke, Inc. including the Lanai Company, Inc., a subsidiary of Castle & Cooke Properties, Inc.. Most recently, most of the workforce was employed in the pineapple plantation; however, pineapple on Lanai is declining and employment is strengthening in the resort field. The petitioner, Lanai Resort Partners, is developer of the both Koele and Manele resort residential communities.

Regional access to the petition area would be via Kaunalapau Highway. The petition area is about 4.5 miles away from the airport and about 7.5 miles away from the Kaunalapau Harbor.

2. PROJECT BACKGROUND

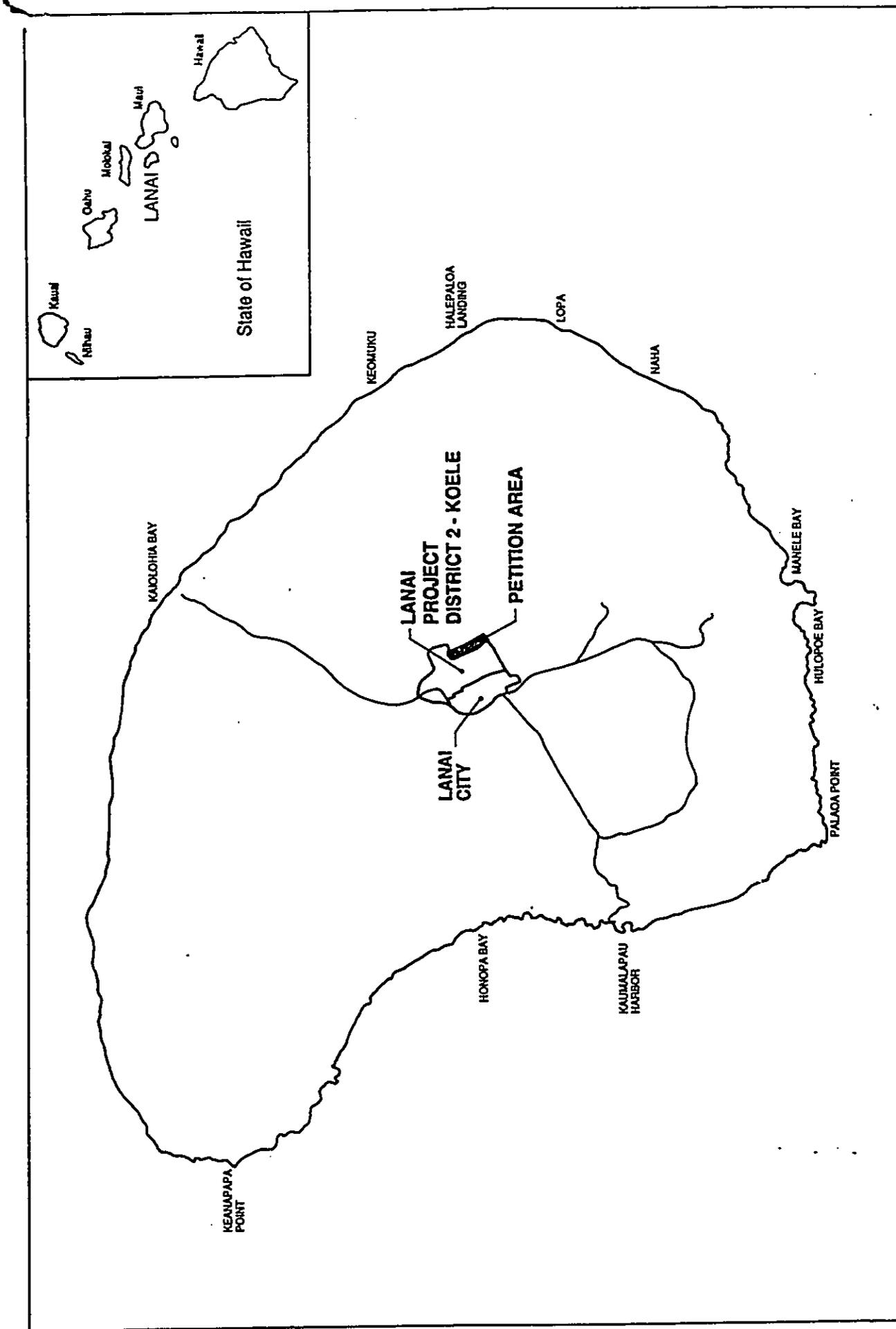
2.1 Existing Lanai Community Plan and Lanai Project District 2-Koele Plan

The petition area is part of a proposed amendment to the Lanai Project District 2-Koele which was established in the Lanai Community Plan (1983) to guide residential and resort growth around Lanai City.

The permitted land uses, as shown on Figure 2, were established by the Koele Project District Ordinance (September 1986). The proposed uses included a 102-room hotel with a future 150-room expansion, 502 single family and 132 multi-family residential units, golf course/open space and a 9-acre park.

2.2 State Land Use Redistricting

In September 1990, the State Land Use Commission approved a petition for reclassifying 38.7 acres of land in the Rural



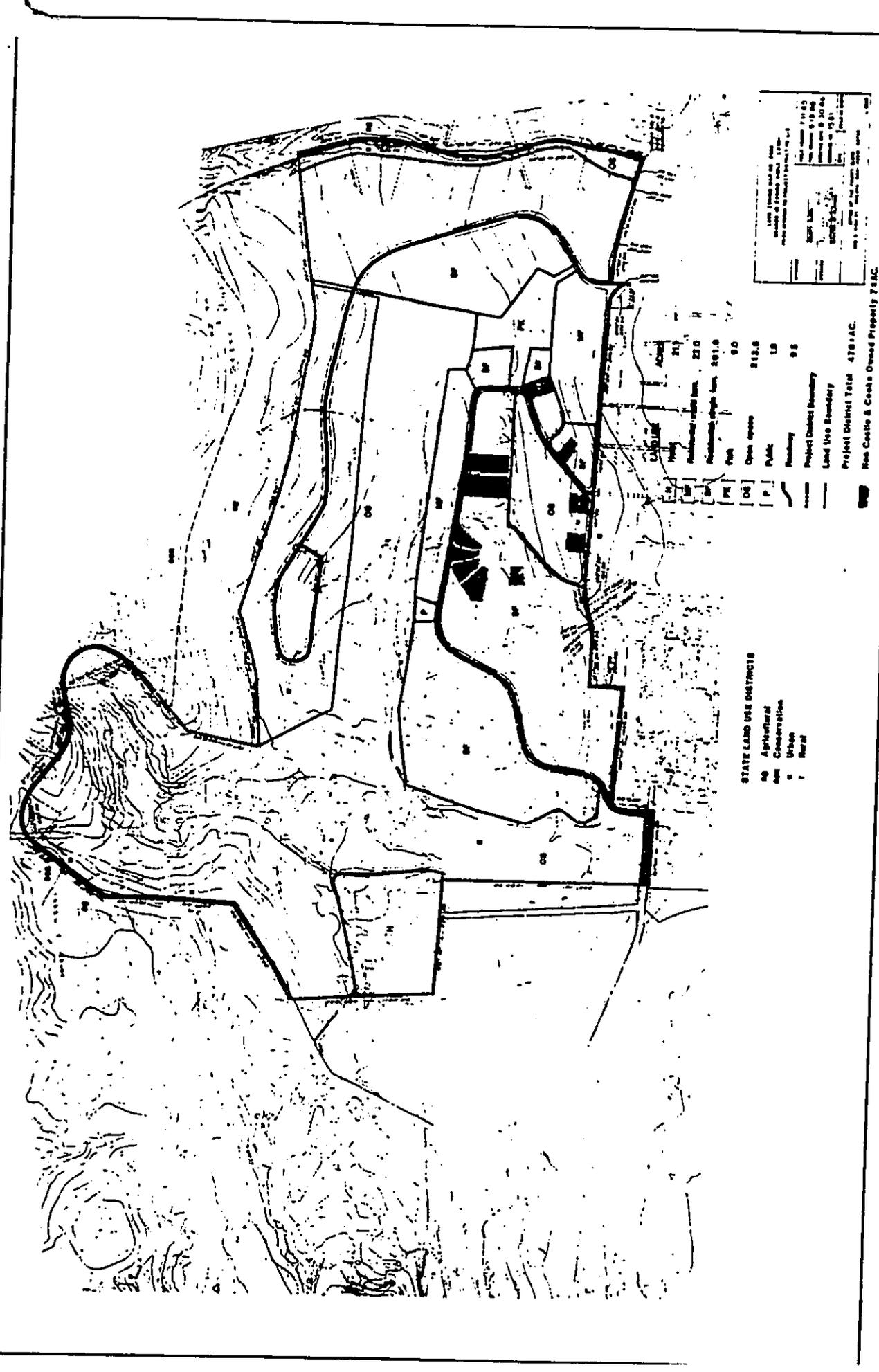
PROPOSED STATE LAND USE DISTRICT
 RECLASSIFICATION AT KOELE
 For: Lanai Co., Inc.
 By: Beit Collins & Associates November 1980



0 1 2 3
 SCALE IN MILES

**FIGURE 1
 LOCATION MAP**

DOCUMENT CAPTURED AS RECEIVED



PROPOSED STATE LAND USE DISTRICT RECLASSIFICATION AT KOELE
 For: Lanai Co., Inc.
 By: Belt Collins & Associates November 1980

 NORTH

 SCALE IN FEET

FIGURE 2
EXISTING LANAI PROJECT DISTRICT 2 -
KOELE & STATE LAND USE DISTRICTS

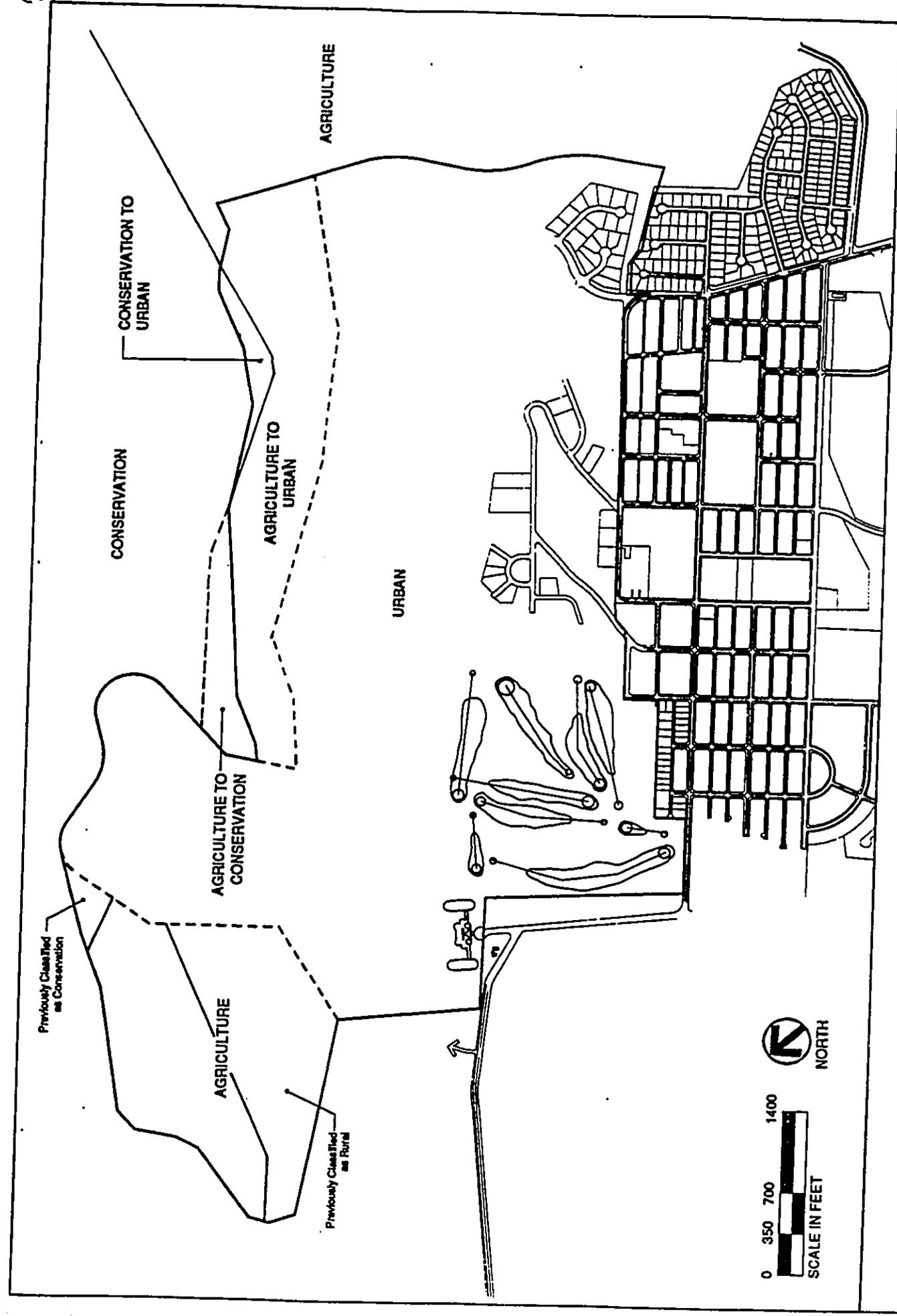
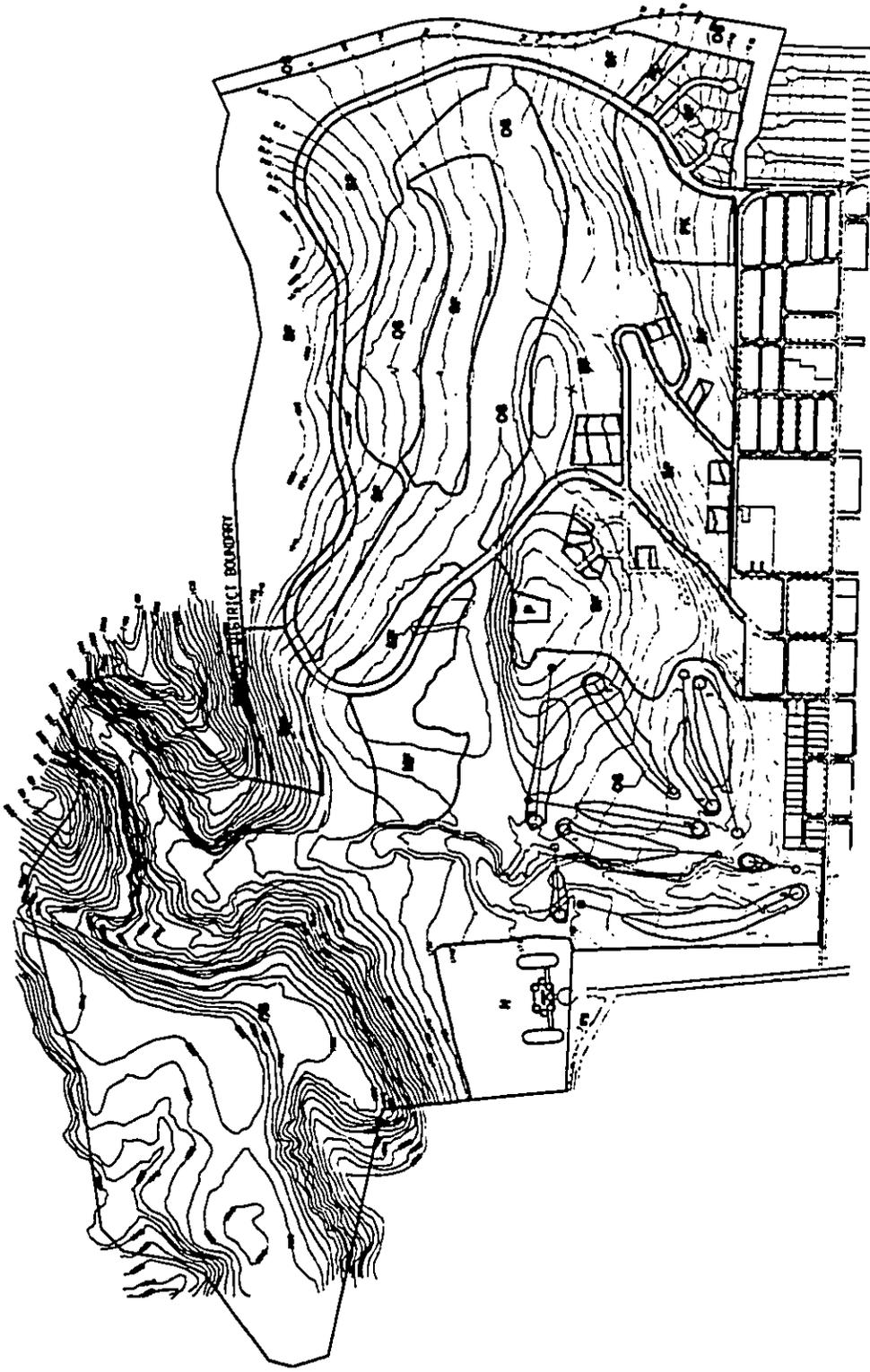


FIGURE 3
STATE LAND USE DISTRICTS
AND PROPOSED CHANGES

PROPOSED STATE LAND USE DISTRICT
RECLASSIFICATION AT KOELE
For: Lanai Co., Inc.
By: Belt Collins & Associates
November 1990

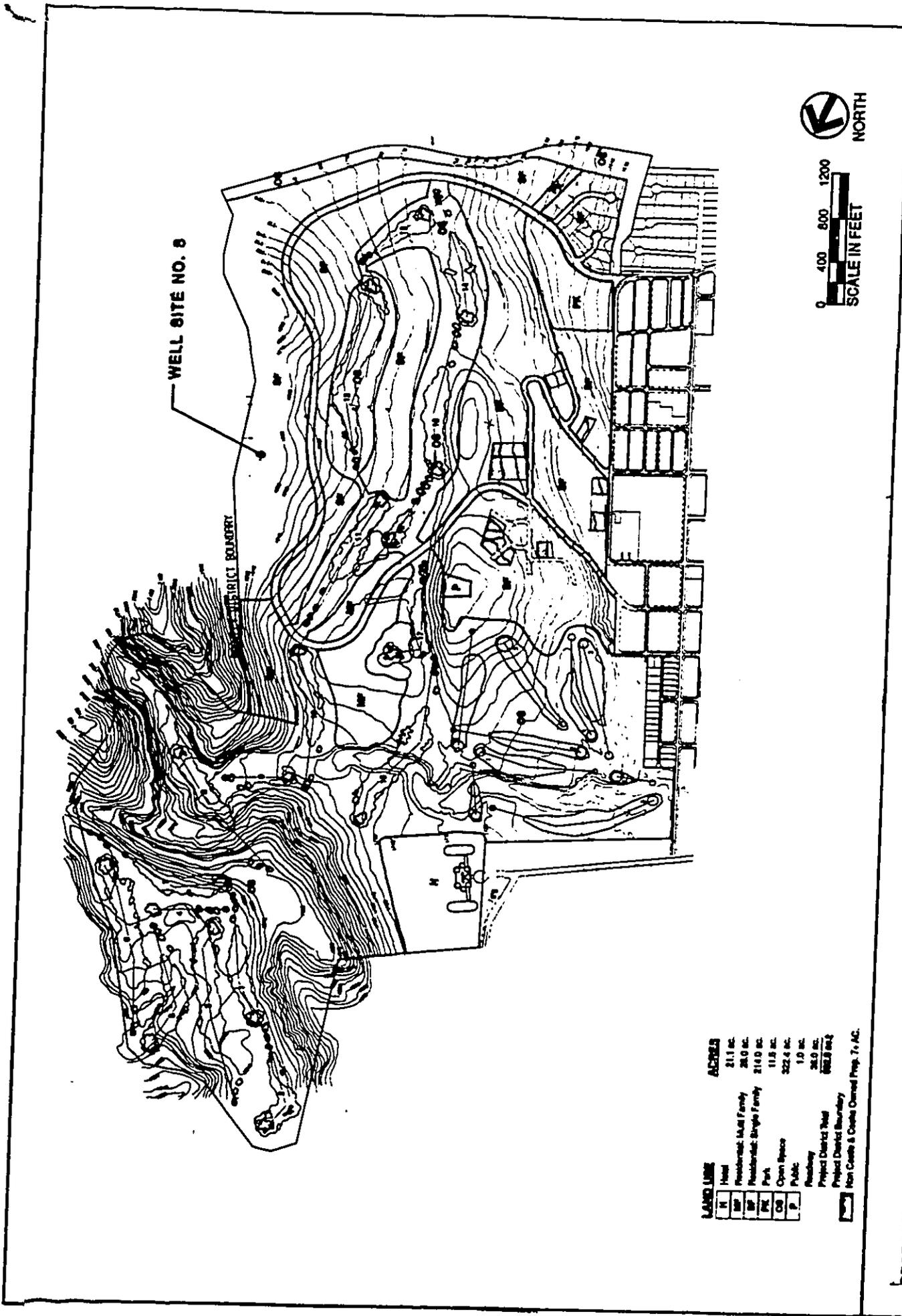


LAND USE	ACRES
H	21.1 ac.
SF	Residential Multi-Family 28.0 ac.
SP	Residential Single Family 214.0 ac.
PK	Park 11.8 ac.
OS	Open Space 222.8 ac.
P	Public 0.9 ac.
	Project District Total 500.6 ac.
	Project District Boundary 500.6 ac.

 North
 SCALE IN FEET

FIGURE 4
PROPOSED LANAI
PROJECT DISTRICT 2 - KOELE

PROPOSED STATE LAND USE DISTRICT
 RECLASSIFICATION AT KOELE
 For: Lanai Co., Inc.
 By: Beth Collins & Associates November 1990



PROPOSED STATE LAND USE DISTRICT
RECLASSIFICATION AT KOELE
For: Lanai Co., Inc.
By: Belt Collins & Associates November 1990

FIGURE 5
OVERALL LAND USE
CONCEPT PLAN

The elements of the entire Koele Resort Master Plan which includes the subject 67.9 acres proposed for single- and multi-family residential are as follows:

• Hotel	21.1	acres
• Residential: Single-family	200.0	acres
• Residential: Multi-family	26.0	acres
• Open Space*	347.9	acres
• Public	1.0	acres
• Roads**	<u>36.0</u>	<u>acres</u>
Total Area	632.0	acres

* Includes both Cavendish and new 18-hole golf courses.

** Includes major collector only, and does not include internal roads.

4. STATEMENT OF OBJECTIVE

This proposal includes the objectives set forth in the original Lanai Project District 2-Koele and specifically meets the objective of establishing an improved residential lot plan with lower density with a range of unit types, in an aesthetically pleasing layout.

5. NEED FOR THE PROJECT

The need for the proposed action relates to the success of the overall Koele Resort Complex. As originally planned the existing Cavendish Golf Course was to serve as 9 out of 18 holes of the golf course. Upon reconsideration by the petitioner to retain the Cavendish Golf Course for Lanai residents on a "free play" basis, the Koele Golf Course required additional acreage to accommodate an 18-hole golf course of world class design. The resort-residential development was subsequently sited to take advantage of the aesthetics of the open space in the golf course, thereby establishing a residential product that could appeal to a higher valued real estate market.

The proposed expansion of the project district boundaries is required to meet this objective of improved residential lotting with a range of unit types that can effectively improve the marketability of the entire Koele Resort Complex. The reconfiguration of the subdivision will also improve the marketability of each individual residence as well by allowing flexibility in the unit type, aspect, and lot size.

6. **DEVELOPMENT TIMETABLE**

Site work in the Koele residential development is expected to begin in 1991 and houses will be developed in increments with work continuing through 1997. The proposed expansion site would be developed as part of the entire residential development sometime during the entire construction period.

Chapter III

ALTERNATIVES CONSIDERED

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ALTERNATIVES CONSIDERED

1. INTRODUCTION

In compliance with the provisions of Title 11, Department of Health, Chapter 200, Environmental Impact Statement Rules, Section 11-200-17(f), the "known feasible" alternatives to the proposed action are described in this chapter.

2. ALTERNATIVES ANALYSIS AND EVALUATION CRITERIA

2.1 Project Goals

In conformance with the applicable rules, the alternatives have been evaluated relative to their capability and/or lack of capability to meet the goals of the entire Koele Resort and Residential Complex. Those goals are:

- (1) A high quality, successful resort development;
- (2) A resort development which will be economically successful in terms of long-term operations;
- (3) A development that provides a substantial amount of employment opportunities; and,
- (4) A development that improves the overall economic and social well-being of the community to the advantage of the region as well as to the developer.

The alternatives evaluated herein have been considered within the context of the Master Development Plan for the Lanai Project District 2-Koele and the project goals stated above. Further, during the planning and alternatives evaluation process, fundamental planning/design issues and challenges were identified as being:

- (1) Provide the greatest feasible visitor satisfaction through:
 - (a) man-made facilities and amenities which capitalize on the scenic qualities and the natural features of the site.
 - (b) services, programs, and physical design that enhances the social environment.

- (2) Provide a resort that is acceptable to the targeted visitor market and one that can be economically and socially acceptable at a planned level of occupancy.
- (3) Provide a resort that incorporates and accommodates scenic qualities, existing facilities, land uses, site features, and environmental and community concerns.

2.2 Evaluation Factors

The factors that have been used to evaluate the various alternatives are interrelated, thereby allowing comparative analyses to be performed. All of the natural, social, environmental, and economic factors need to be considered collectively to determine the relative merits of each alternative. Those factors included in this analysis are:

- Density (Number of units per acre)
- Development Costs (Amenities, facilities, and utilities)
- Quality of Visitor Experience
- Total Occupancy
- Total Expenditures
- Community Economic Benefits (Jobs)
- Environmental Impacts (cultural, land use, biological effects, etc.)
- Project District Development Viability

3. DESCRIPTION OF ALTERNATIVES CONSIDERED

3.1 Alternative 1 - Proposed Action

The applicant proposes to expand the Urban Koele Project District to include 67.9 additional acres that now fall within the Agricultural and Conservation Land Use Districts. These revisions would allow the residential development already planned for Koele to be reconfigured around the golf course to better take advantage of viewsheds, aspect, proximity to open space and to retain mature trees and other natural scenic features. A direct effect of the improved lotting would be increased marketability with a secondary effect of greater insurance of success of the Koele Resort complex.

Alternative 1 has been judged to be the preferred alternative due to (1) the expected high quality visitor experience that would result from the low density single-family residential units, and the enhanced aesthetic quality of the golf course and surrounding uses; (2) the appropriate density of single family residential units and flexibility of development concept; (3) the relatively

moderate, adverse or favorable, natural and socioeconomic impacts as compared to other alternatives; and (4) the expected positive economic, occupancy, and expenditure impacts.

3.2 Alternative 2 - "No Action"

This alternative would maintain the Koele Urban Project District boundaries at their present locations, whereby the golf course could be constructed as planned, but the residential units would be a single row of properties along the mauka side of the district. Also, the residential property while constructed on Urban LUD would be adjacent to the State Agricultural District rather than the State Conservation District. No further amendments would be sought for rezoning areas currently designated within the Project District.

Densities for the Project District would be higher than for Alternative 1. The affected area would be less, but the scenic qualities and natural attributes of the area would continue to be underutilized.

Market assessments for the project have determined that the low density single family residential units are necessary for the economic viability of the Koele Urban Project District.

Due to the permanently impaired economic potential associated with this alternative, the market value of the residential units would be reduced and less additional development would be foreseen in the Project District. This lack of development could have a negative impact on the neighboring resort at Manele, and more importantly on the community of Lanai Island. Economic viability at both resorts is essential to provide the employment opportunities required in light of the current phase-out of pineapple production.

Chapter IV

**DESCRIPTION OF THE AFFECTED ENVIRONMENT,
ENVIRONMENTAL CONSEQUENCES AND
MITIGATION MEASURES**

CHAPTER IV

DESCRIPTION OF THE AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

1. INTRODUCTION

The existing characteristics and potential impacts to environmental resources within the petition lands is described herein. Reference is made to the Koele resort, the existing Lanai Project District 2-Koele, and the island of Lanai where a regional context is necessary to describe the effects of the proposed action. If the potential impact is not significantly different from those associated with the current project district plan, it is noted in the text. Any potential adverse impact has a planned or implemented mitigation measures assigned regardless of whether it was directly related to the project district amendment or the Koele residential development in general.

2. PHYSICAL ENVIRONMENT

2.1 Geology, Physiography, Soils and Agricultural Potential

Physiography

The present Lanai Project District 2-Koele is located at the foot of Lanaihale on the northeast side of Lanai City. The site rises from approximately 1,600-foot elevation up to 1,900 feet. The site is composed of relatively flat pineapple and pastoral lands cut by gulches and rough, rocky lands. The major gulches are the Kaiholena and Kapano Gulches.

The petition area located on the east side of the Project District includes remnant pineapple fields and portions of the existing Eucalyptus forest. The pineapple fields are relatively flat and easy for development. The forest areas are more rugged and will require some grading; although, it is the petitioner's intent to maintain as much contiguous forest area as possible within the development.

The development in the more rugged areas will require care in grading to minimize soil erosion. Refer to the following soil section for possible mitigation measures.

Soils

The existing Project District is composed of Koele silty clay at the Lanai City edge; Waihuna clay in the central area; and Koele-badland complex (KRL) at the mauka edge (Soil Conservation Service, 1972).

The petition area is characterized by Koele soil types in the flatter areas with rough broken lands (Koele-badlands complex) in the gulch and mountainous areas (Figure 6). During construction, development in the petition area could cause soil loss by increasing wind and water erosion; however, this impact would not be significantly greater than under the existing Project District residential plan.

The following mitigating measures may be used to minimize the soil loss:

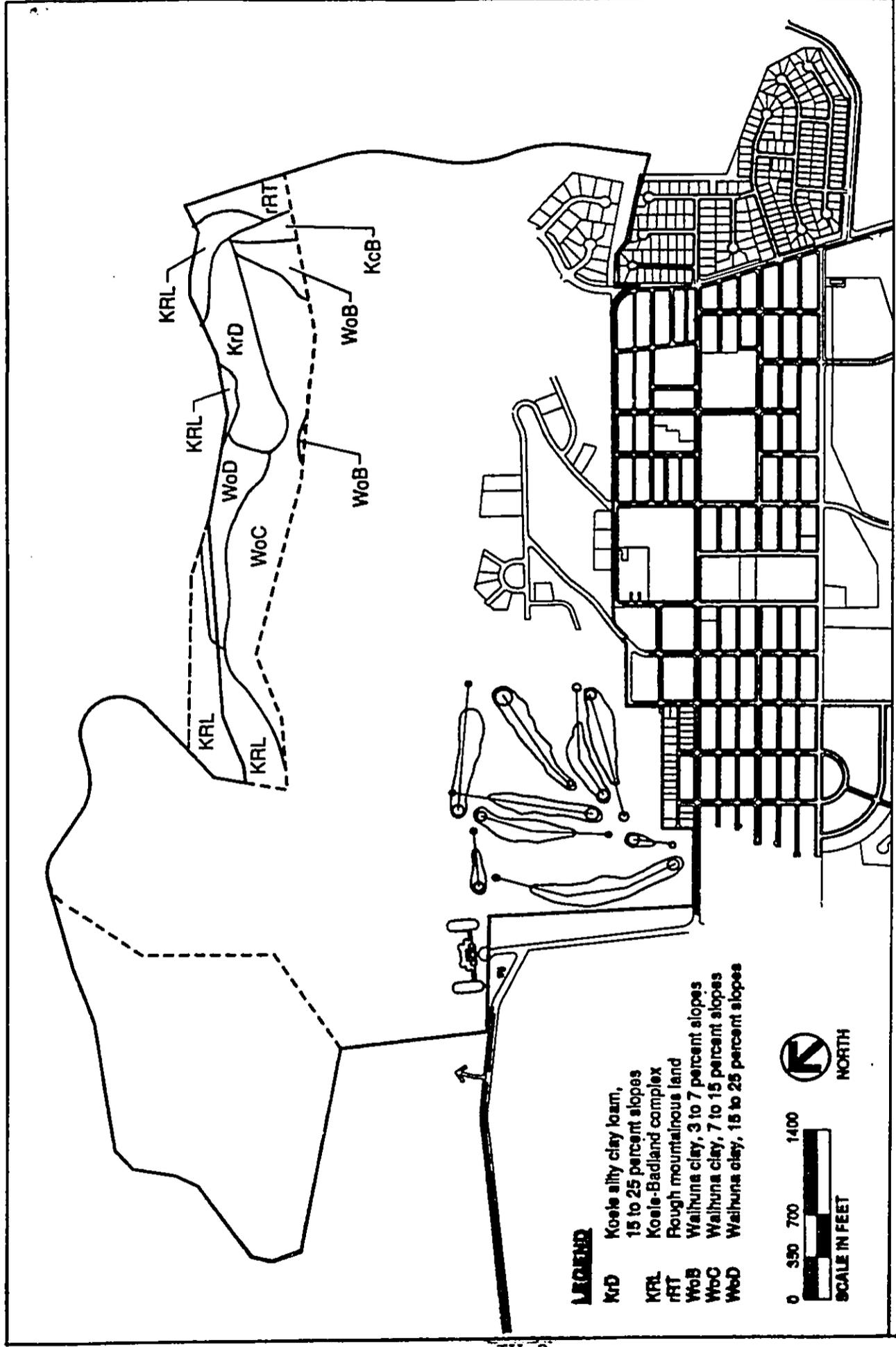
- (1) Manage the amount of ground uncovered at a time during construction;
- (2) Retain existing ground cover until just before construction;
- (3) Construct erosion control measures, e.g., sediment basins, planting grass, installing filter fences, during grading;
- (4) Construct drainage control features, including temporary berms and cut-off ditches;
- (5) Avoid construction, where possible, during the rainy season;
- (6) Water recently graded areas to dampen down windblown dust; and
- (7) Sod or plant all cut and fill slopes immediately before grading work has been completed.

Agricultural Resources

The State's Agricultural Lands of Importance to the State of Hawaii (ALISH) maps designate some of the land formerly cultivated for pineapple within the petition lands as Unique Agricultural land and others as Other Important Agricultural Land. Gulch and mountainous areas are not rated (Figure 7). The proposed additions to the Lanai Project District 2-Koele are not rated as exceptional agricultural lands.

The University of Hawaii (UH) Land Study Bureau productivity rating for the Project District lands is C, D, and E. The pineapple lands are rated as C while other areas are rated as D and E; none of the lands are rated in the two highest productivity classes.

The productivity-land type ratings for the residential addition area is C-6 in the pineapple fields, D-15 and E-22 in the



**FIGURE 6
SOIL MAP**

PROPOSED STATE LAND USE DISTRICT
RECLASSIFICATION AT KOELE
For: Land Co., Inc.
By: Brett Collins & Associates November 1980

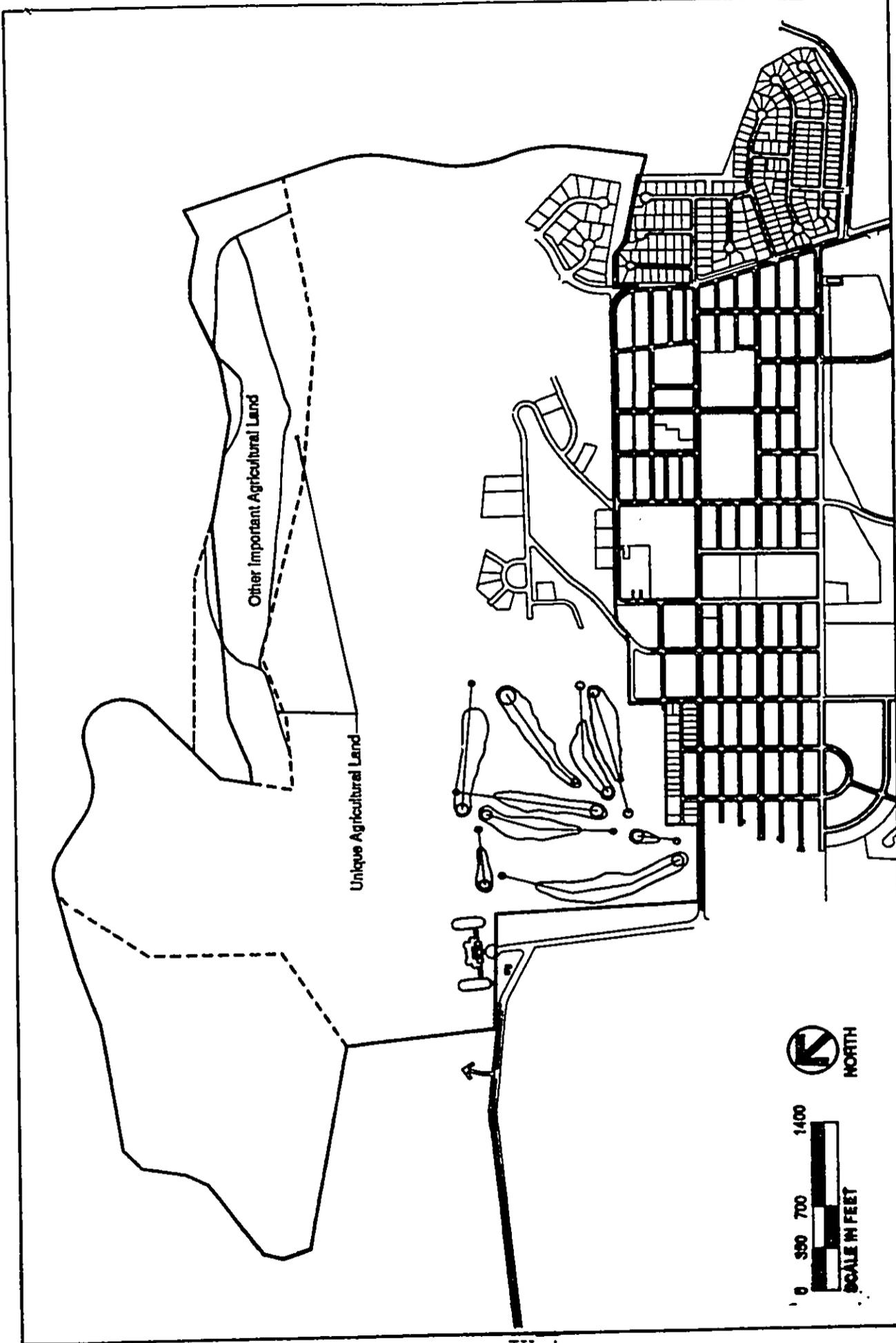


FIGURE 7
AGRICULTURAL LANDS OF IMPORTANCE
TO THE STATE OF HAWAII

PROPOSED STATE LAND USE DISTRICT
 RECLASSIFICATION AT ROELE
 For: Lunal Co., Inc.
 By: Beth Collins & Associates November 1990

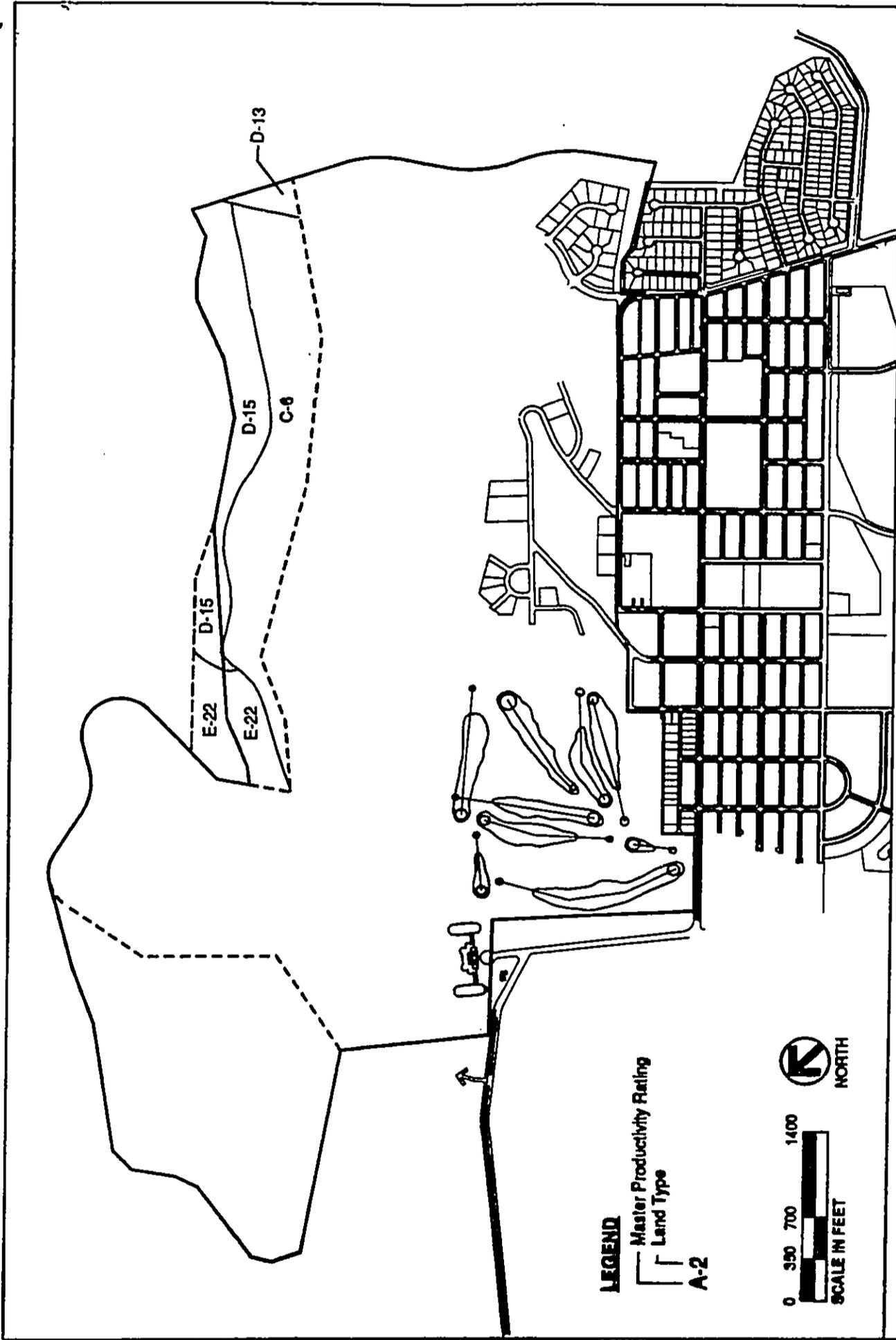


FIGURE 8
LAND STUDY BUREAU MAP

PROPOSED STATE LAND USE DISTRICT
 RECLASSIFICATION AT KOELE
 For: Land Co., Inc.
 By: Brett Collins & Associates November 1990

A potential long term effect is the contamination of the groundwater through leaching of pesticides, fertilizers, or other materials used for site development or maintenance into Well N 8 (Figure 5) water or the aquifer. On Lanai, as in many volcanic islands, the principal source of potable water is groundwater held within high level aquifers. Therefore, there is always a risk of possible contamination to high level water when there is a contaminant source (eg. urban development) on the surface near the water source.

Missing
page 7.

A common practice when preparing a site for residential foundations is to saturate the ground with a pesticide. If this was done at Koele, it could eventually leach into the water source. This practice, however, is not essential to the site preparation and could be omitted for the home sites surrounding the well. In addition, the magnitude of the leaching effect is extremely difficult to measure and of course depends on numerous geologic, soil, and chemical factors as well as the type of above ground activities.

To ensure that there is no long term adverse effect on the water quality of the groundwater or on-site well water, construction should not include broadscale pesticide application on foundation sites near the existing well. It may also be prudent to initiate a monitoring program to observe the construction practices and to test the water quality on a regular basis so that possible contamination sources could be identified and stopped.

The Department of Health, Drinking Water Section, are responsible for certifying the well before it can be used domestically. Through the certification process, they will ensure that measures for well head protection and any monitoring guidelines are agreed to by the petitioner (Bill Wong, Department of Health, Drinking Water Section). The petitioner has initiated the well certification process and consultation with the State Department of Health will continue during site planning and design stages of the project.

2.3 Surface Water and Drainage

Proposed drainage for the existing Lanai Project District 2-Koele would be through the two major gulches, Kaiholena and Kapano. Runoff from the Project District will be directed to these gulches by a system of catch basin/inlets, manholes, drain lines, and swales. Berms and cutoff ditches constructed immediately above the upper boundary of the Project District will intercept and transport off-site runoff from areas above the project.

The drainage plan should be revised and updated as the project progresses, detailed topographic maps obtained, major roadways designed, and mass grading conducted.

A potential long term effect is the contamination of the groundwater through leaching of pesticides, fertilizers, or other materials used for site development or maintenance into Well No. 8 (Figure 5) water or the aquifer. On Lanai, as in many volcanic islands, the principal source of potable water is groundwater held within high level aquifers. Therefore, there is always a risk of possible contamination to high level water when there is a contaminant source (eg. urban development) on the surface near the water source.

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The Department of Health, Drinking Water Section, are responsible for certifying the well before it can be used domestically. Through the certification process, they will ensure that measures for well head protection and any monitoring guidelines are agreed to by the petitioner (Bill Wong, Department of Health, Drinking Water Section). The petitioner has initiated the well certification process and consultation with the State Department of Health will continue during site planning and design stages of the project.

2.3 Surface Water and Drainage

Proposed drainage for the existing Lanai Project District 2-Koele would be through the two major gulches, Kaiholena and Kapano. Runoff from the Project District will be directed to these gulches by a system of catch basin/inlets, manholes, drain lines, and swales. Berms and cutoff ditches constructed immediately above the upper boundary of the Project District will intercept and transport off-site runoff from areas above the project.

The drainage plan should be revised and updated as the project progresses, detailed topographic maps obtained, major roadways designed, and mass grading conducted.

2.4 Natural Hazards

The petition lands are located in central Lanai along a slight ridge at elevation 1840 to 1900 feet above mean sea level. Any natural hazards that affect the site would be those that ultimately affect the entire island; events such as seismic events, tsunamis and major storms, or flooding.

Three major rift zones radiate from the center of a collapsed caldera now the Palawai Basin. The petition lands are 2.5 miles north east of the Palawai Basin. The last recorded earthquake on Lanai was in 1871 when large portions of the western side of the island reportedly fell into the sea. The entire island is within the Seismic Zone 2B (International Conference of Building Officials, 1988) which indicates that the island is less likely to sustain damage from earthquakes than the Big Island designated Seismic Zone 3, but slightly more likely than Oahu, designated Seismic Zone 1.

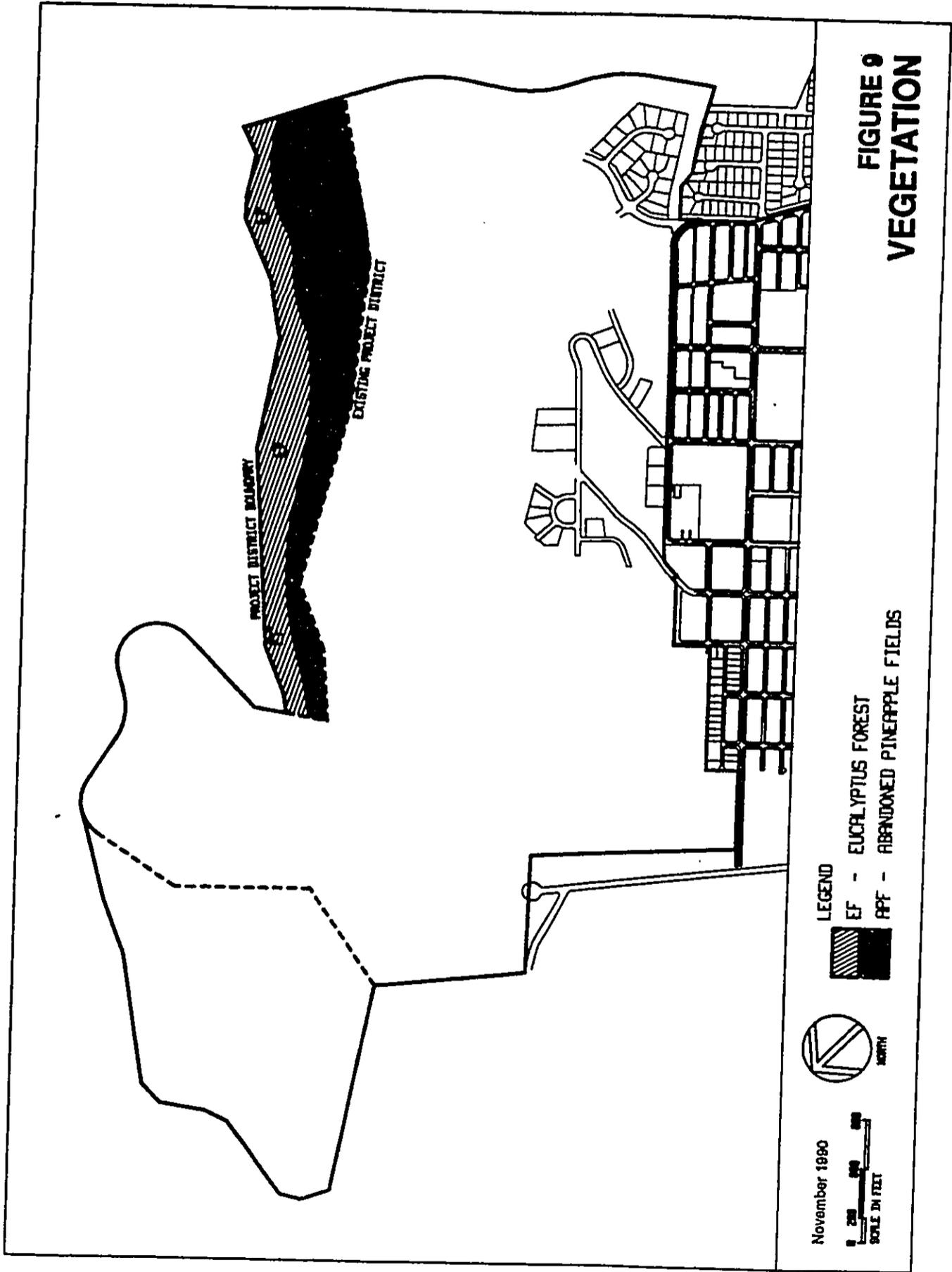
There is no risk of damage from tsunamis since it is an inland high elevation site; risks from major storm events is low since a low-density, low rise development is planned and major storm events are uncommon.

The mean annual rainfall averages 35 to 40 inches per year at the project site and rain storms are common November through March; however, flood events are rare. The Federal Emergency Management Agency has not prepared a Flood Insurance Rate Map for the island of Lanai. The likelihood of damage due to flooding at this high elevation site is very low. No mitigation is warranted.

2.5 Flora and Fauna

A biological walk-through survey of the petition area identified no endangered species (Nagata, 1989). The survey and vegetation map (Figure 9), also included as Appendix A of this report, identified two vegetation zones:

- **Abandoned Pineapple Fields (APF):** the lower petition area is characterized by uncultivated pineapples overgrown with sourgrass (Tricachne insularis), balloon flower (Gomphocarpus physocarpus), hairy horseweed, and Vasey grass (Paspalum urvillei).



**FIGURE 9
VEGETATION**

- **Eucalyptus Forest (EF):** the upper petition area is characterized by closed canopied forest of planted red ironbark and swamp mahogany 50 to 75 feet tall. The forest lands adjacent to the pineapple fields has an understory generally open with a poorly developed shrub layer consisting mostly of strawberry guava.

The survey identified only four birds as possibly present in the petition area: Kentucky cardinal, Japanese white-eye, lace-necked dove, and barred dove (*Geopelia striata*). Observations made during the survey included deer trails and droppings indicating the presence of Axis deer. Field mice and other rat species may also be present.

The survey report indicated that "the proposed project will in no way compromise any native plant community or ecosystem nor will it impact the native flora in general."

The development, as presently proposed, would clear the abandoned pineapple fields and would necessitate clearing of some trees in the forest area for house sites and vehicular access. The following measures are proposed to minimize the impact on the existing plant or animal life:

- Retain mature, healthy trees, where possible and appropriate, the keeping of existing large trees within the new residential lots;
- Develop larger lots within the forest areas to minimize the number of house sites which need to be cleared.

2.6 Scenic Resources

The petition lands are partially forested characterized by dense canopy of mature trees adjacent to open fallow pineapple fields. Graceful slopes extend to the golf course from the Lanaihale above the petition lands. The entire Lanai Project District 2-Koele is scenic and the petition lands provide an extension to the forested area beyond the golf course.

Short term impacts include disturbance of vegetation by construction and supplies which encroach on the landscape, and exposed irrigation pipes, drainage culverts, rocks, and soil prior to landscaping.

The proposed construction of the large lot residential area would change the scenic resources by modifying the dense forest to appear less dense and interspersed with houses and clearings. The addition of low-rise and low-density residential areas and would increase the extent of landscaped area, but since the density of development is lower than originally planned within the Project District, the change will be more aesthetic.

In the short term, mitigation measures involve limiting the amount of vegetation removal and soil exposure, placing sod as soon as practicable, and planting vegetation on developed sites that complements the natural environment. The primary mitigation measure that will be employed to minimize potential adverse visual impacts will be to encourage homeowners to be extremely selective on tree thinning and to discourage vegetation clearing except for the house foundations and a minimum setback area. Extensive landscaping in and around the residential areas and using buildings and homes designed to blend in with the natural environment would also offset any adverse effect.

2.7 Air and Noise Quality

Short term effects on air and noise quality are expected due to residential construction on the petition area. The petitioner as developer would abide by County requirements for grading and stockpiling to minimize dust and erosion. Construction activities would be limited to daytime hours to minimize noise intrusions into existing residential areas in the evenings.

Under the proposed action, there would be no change in the type or intensity of residential uses proposed; therefore, no adverse noise effects are anticipated.

After the residences are constructed and occupied, there is a possibility of some noise from the existing pump motor on the water well being a nuisance to the homeowners. The well is not fully operating as yet and there is a possibility that a the sound could be minimized through one of several techniques: using a submersible pump and motor and mounting it well below the water surface or constructing a housing around the motor and controls. These techniques are described further in Section 5.4.

3. HISTORICAL AND ARCHAEOLOGICAL RESOURCES

An archaeological survey identified no significant archaeological sites within the petition area (Hammatt, April 1990). The abandoned pineapple fields, based on testing in the earlier surveys, are not expected to have any subsurface sites.

The study, included as Appendix B of this EA, recommended no on-site monitoring during construction based on the lack of funding. The study, however, did recommend that should archaeological material be uncovered during grading that work should be stopped and the State Historic Preservation Office should be notified prior to re-initiating construction.

SOCIOECONOMIC FACTORS

4.1 Land Use

The present Lanai Project District 2-Koele includes the Koele Lodge (a hotel facility), the Cavendish Golf Course (a 9-hole public course), some pineapple lands, and some gulch and mountainous areas.

The proposed 18-hole resort golf course is now under construction and will provide recreation amenity to visitors to the Lodge and the adjoining resort residential community.

The petition area presently includes abandoned pineapple fields and eucalyptus forest areas. Development of these areas will not displace any Lanai resident or business.

4.2 Housing

Housing on Lanai is presently concentrated within Lanai City. The petitioner to date has provided new affordable units at Lalakoa III and at various multifamily projects at Lanai City.

About 502 single family and 132 multifamily residential units have been proposed for the present Lanai Project District 2-Koele. The proposed amendment would not increase this housing number, but would reconfigure the residential layout over a large area and thereby reduce the overall project density.

4.3 Employment

Over the short-term period, the Project District additions would provide employment in construction, sales and other real estate related jobs.

Over the long term period, the Project District additions would provide only limited employment opportunities.

5. INFRASTRUCTURE

5.1 Roads and Traffic

Access to the Project District and the petition area will be via a new collector road that extends from Sixth Street, loops through the Project District and connects back onto Queens Street (Figure 2). This arrangement with two ingress/egress points improves access into the Project District as compared to an earlier layout and allows the existing Cavendish course to remain unaffected.

No increase in traffic is expected from the proposed action for the proposed reclassification and reconfiguration of the site

does not increase the number of units from that planned in the existing Lanai Project District 2-Koele. A traffic assessment prepared by Pacific Planning and Engineering in August 1990 (Exhibit 41, State Land Use Commission Docket No. A89-649) indicates that traffic estimates which assume total build out of projects planned through 2003 on Lanai could easily be accommodated with the existing and previously planned roads. This slight reconfiguration of the roadway within the Koele Project District would not significantly change the traffic projections previously developed for Lanai projects (personal communication, Pacific Planning & Engineering, November 1990).

5.2 Water Supply

Lanai's water supply system is owned and operated by Lanai Water Company, Inc. a subsidiary of Castle & Cooke Properties, Inc. both Castle & Cooke, Inc. entities. The existing sources consists of wells, shafts, and tunnels, that tap into the dike-impounded high-level aquifer in central Lanai. Wells 3 and 6, located near the project area, service Koele and the Lanai City users.

Currently, the Koele domestic supply is served by Wells 3 and 6, a supply reservoir near Lanai City, and several major distribution lines. There will be no increase in the number of residences under the proposed action; therefore, the water supply planned for the existing Lanai Project District 2-Koele should be adequate.

There is a possibility of a slight increase in water demand over the projected value from the possible increase in landscape irrigation due to the larger lot size of the residential. The magnitude of this increase is modified by occupancy levels, seasonal temperatures and rainfall, and types of landscape vegetation employed.

Well 8 is located adjacent to the Koele Golf Course within the petition lands (Figure 5). It is needed to supply high quality domestic water to Lanai Project District 2-Koele and Lanai City for future use. It has been tested and proved to have sufficient instantaneous capacity, pressure, and good water quality.

The presence of the well within the proposed residential area must be considered during the site planning in order to minimize the potential for impacts to or from the well and pumping apparatus. The issues that need to be addressed include: well head protection, provision of access through private residential neighborhood, possible contamination of the water supply from urban development sited nearby, noise of the electric motor that runs the water pump, and negative effect on the visual character of the site. Possible contamination of the drinking water has been addressed earlier in this Chapter in Section 2.2.

According to the Lanai Company, the existing well (Well 8) on the petition lands, after full operation, would be relatively quiet and would have a few above ground features that could be effectively screened by a metal housing and landscaping. The well itself is 1800 feet deep and it will have a pump mounted at a 1600-foot depth; it is completely sealed from the air and from any objects or air blown substances entering the water supply (personal communication, John Walker, Lanai Company, Lanai, October 1990).

During construction of the Lanai Project District 2-Koele, the pump may be powered by an on-site generator. After operation, however, the pump would be served by an underground power supply provided and maintained by Maui Electric Co. (personal communication, Ed Reinhardt, Maui Electric Company, October 1990). At that time the only above ground structures would be a two-foot high water pipe and a control panel (5 feet by 6 feet) that could be mounted upright or prostrate, enclosed, and screened with landscape vegetation.

The well site (Well No. 8) should be provided a discrete lot with a private access road to ensure that there is sufficient space for the system and that the well can be adequately maintained for continuous operation. For maximum protection, the existing well and pump on the project site should be constructed with a submersible pump and motor and the control panel below grade, secured, and screened from view (personal communication, James Kumagai, M & E Pacific, Inc. November 1990). If these mitigative measures are adopted, no further mitigation would be necessary.

5.3 Wastewater Collection, Treatment and Disposal

The Lodge at Koele is connected by an 8-inch sewer line to the Lanai City sewer system that was constructed in 1984 and sized to a design population of 2,575. Wastewater treatment ponds located southwest of the Lanai City provide secondary treatment. New sewage treatment ponds were constructed recently and other system improvements are planned prior to construction of the residential development at Koele.

The planned improvements should be sized to adequately service the Lodge at full occupancy, the Lodge expansion, and the single- and multi-family residential requirement originally planned for the Lanai Project District 2-Koele. The only additional concern under the proposed action would be to configure the planned improvements to access each residence within the petition lands. Since the sewer system is in the design stage and as yet unconstructed, there should be no significant effect from this proposal. No mitigation is warranted.

5.4 Solid Waste Collection and Disposal

Lanai's only landfill is located approximately one mile south of the airport access road between the airport and Kaunapali Harbor. It is filled to over capacity; however, it is still accepting non-toxic and non-infectious solid waste. According to Maui County Public Works Department, the County and Castle & Cooke, Inc. are in the final stages of selecting a new landfill site that meets current regulations. Final design permits and approvals, and construction will take approximately two years (personal communication, Brian Hashiro, Solid Waste Division Chief, Maui Public Works Department, November 2, 1990).

Refuse is hauled from Lanai City residences weekly by Maui Co. A private hauling company services the commercial establishments on the island. Most likely a similar system will be made available to the residents of Koele. At full operation, all of the planned residences would require weekly refuse hauling service. This service is not increased from that required under the authorized Lanai Project District 2-Koele; therefore, no specific mitigation is warranted.

The cumulative effect of constructing and operating the resort developments planned for Lanai will substantially increase the waste stream through addition of materials cleared and grubbed during construction, cardboard packaging, construction materials used and discarded, etc. In order to manage this vast accumulation of materials, some of which could be reused, the petitioner is preparing a Solid Waste Management Plan for Lanai that investigates feasible management techniques including composting, waste reduction, and recycling.

5.5 Electrical Power and Communications

The existing telecommunications network will be extended into the proposed area of development to provide electrical and telephone services. All lines will be installed below ground to minimize any adverse visual impacts.

The telephone and electric power distribution lines serving the Koele Lodge will be extended through a series of underground lines and transformers to serve the proposed Koele residential development. All lines will be installed below ground to minimize any adverse visual impact.

The proposal does not imply an additional power or communications requirement; therefore, no mitigation is warranted.

6. PUBLIC SERVICES AND FACILITIES

No direct effect on public services would occur as a result of this land use change; however, the cumulative effect of

developments within Koele and Manele Project Districts must be addressed. Proposed development on Lanai will have a greater demand on all public services. The applicant has taken steps to anticipate these changes and to mitigate any adverse impacts through systematic planning and provision of new services as outlined below.

6.1 Police and Fire Protection Systems

Police Protection

- The Maui County Police Department has one police station on Lanai. The existing police station is a one room facility with a separate confinement area on the same property.
- The Lanai police force consists of seven officers--one lieutenant, one sergeant, and five patrolmen. There are officers on duty 24 hours a day.
- The existing station will be replaced with a larger one in December 1991.
- The Lanai Police Station has requested five additional officers to meet increased needs due to the Manele Bay Hotel. This will allow one officer on each beat.

The Office of State Planning (OSP) surveyed State and Maui County departments about future governmental needs on Lanai. The Maui County Police Department estimated Lanai will need 11 additional police officers during the next 20 years (Office of State Planning, 1990).

Fire Protection

- The Maui County Fire Department has one fire station on Lanai which operates 24 hours a day. In addition to fire protection duties, the firemen assist the island's ambulance service.
- The station has a crew of four firemen--two from Lanai and two who travel from Maui for their shifts. Prior to September 1989, Lanai was served by a volunteer fire crew.
- For ocean rescue missions, the station occasionally requests assistance from the Lahaina and Wailuku fire stations on Maui.
- Funds have been requested from the County of Maui for one additional fireman and the purchase of ocean rescue

equipment. Currently, a boat owned by one of the firemen is used for ocean rescue operations.

The project will not require additional services beyond those already planned. Plans for improved services are based on projected population levels which implicitly assume project development.

Mitigation measures are not warranted because the project will not further impact services.

6.2 Health Care Facilities

Lanai Community Hospital

- The facility is operated by the State Department of Health. It has six acute care beds and eight long-term care beds. The emergency room is open 24 hours a day.
- The hospital has no in-house physician. Lanai's one doctor is on call. Patients requiring surgery are referred to hospitals on Oahu.
- To meet health care needs on Lanai in the next 20 years, the State Department of Health recommends the following: renovation of the Lanai Community Hospital to facilitate full hospital care services, 20 additional long-term care beds, ten additional staff members, and one full-time physician. The Department of Health also estimated five additional personnel will be required to administer substance abuse, mental health, public health, and environmental health services (Office of State Planning, 1990).

Mental Health Services

- Services are provided by the State Department of Health. The department employs one full-time counselor on Lanai. Psychologists make weekly and monthly visits.
- The Maui County Department of Human Concerns estimates Lanai will need two additional counseling services personnel in the next 20 years (Office of State Planning, 1990).

The project will not require additional services beyond those already planned. Plans for improved services are based on projected population levels which implicitly assume project development.

Mitigation measures are not warranted because the project will not further impact services.

6.3 Schools and Education Facilities

Lanai Elementary and High School

- The school is the only school on the island. During the 1989-1990 school year, school enrollment was 503 students. There are 36 teachers.
- Enrollment at the school is expected to increase by approximately 70 in the next five years (personal communication, Roy Hirose, Deputy District Superintendent, Maui District, State Department of Education).
- The State Departments of Education and Labor and Industrial Relations plan to open a Transition Center at the school. The purpose of the center will be to prepare residents, primarily students, for entrance into the job market. The center will also provide counseling services to help residents cope with lifestyle changes due to Lanai's changing economy.
- The State Department of Education estimates the school will require approximately nine to fourteen additional classrooms in the next 20 years (Office of State Planning, 1990).

Maui Community College

- College courses are offered by Maui Community College at the Lanai Education Center. Some courses are transmitted to Lanai for television viewing through the Skybridge program and Hawaii Interactive Television System. Program enrollment is 55 students.
- The University of Hawaii Cooperative Extension service estimates the center will require two additional personnel in the next 20 years (Office of State Planning, 1990).

The project will not require additional services beyond those already planned. Plans for improved services are based on projected population levels which implicitly assume project development. Mitigation measures are not warranted because the project will not further impact services.

6.4 Recreation and Open Space

Public recreation resources available to Koele area residents and visitors include the following facilities and amenities:

County of Maui

- Maui County operates one gymnasium, two tennis courts, a baseball field, and a community center (consisting of a multi-purpose room with kitchen facilities). A contract to renovate the gymnasium is now out to bid.
- Recreational facilities at Lanai Elementary and High School include a gymnasium, a baseball field, two basketball courts, and three tennis courts.
- The Maui County Department of Recreation estimates Lanai will need eight additional recreation and caretaker employees in the next 20 years (Office of State Planning, 1990).

State of Hawaii

- The State Department of Land and Natural Resources controls axis deer, sheep, and bird hunting on 36,000 acres of State property.
- Lanai has no County or State parks. The State Department of Land and Natural Resources has identified Shipwreck Beach as a potential State wild coastline park.

The petition area would be used for residential development. Recreation/open space uses would be provided elsewhere within the Lanai Project District 2-Koele.

The revised Lanai Project District 2-Koele provides for the following Recreation and Open Space opportunities: (1) the 18-hole Koele Golf Course; (2) a 9-hole Cavendish golf course; and (3) 11.5 acres of park spaces, and (4) open area. The Cavendish course and the 11.5 acre park are for public use by Lanai residents (Figure 5).

The project will not require additional recreational facilities beyond those already planned. Plans for improved facilities are based on projected population levels which implicitly assume project development.

Mitigation measures are not warranted because the project will not further impact recreation resources.

6.5 Human Services

Protective Services and Income Maintenance

- These services are provided by the State Department of Human Services. Two staff members are assigned these duties.
- In the next 20 years, the Department of Human Services estimates Lanai will need ten additional personnel (Office of State Planning, 1990).

The Elderly

- Services for the elderly are provided by the "Nursing Home without Walls" program administered by the State Department of Human Services and a senior citizen's program operated by the County of Maui.

Unemployment and Social Security

- The Department of Labor and Industrial Relations and the Federal Office of Social Security do not have offices on Lanai. Services such as unemployment record keeping and services related to social security applications are provided by the State Department of Human Services staff.

Veterans Services

- A Federal Veterans Administration worker makes monthly visits to provide services regarding the receipt of benefits.

Currently, social service agencies are not centrally located and expansion of services is limited by a lack of office space. In its assessment of governmental needs on Lanai, the OSP recommends a multiple agency human service center for Lanai. The OSP suggests Castle & Cooke provide land for the center. The State of Hawaii will pay for construction of the center and purchase or lease the property from Castle & Cooke (Office of State Planning, 1990).

The project will not require additional services beyond those already planned. Plans for improved services are based on projected population levels which implicitly assume project development.

Mitigation measures are not warranted because the project will not further impact services.

KOELE EAST BOUNDARY EXTENSION
BIOLOGICAL REPORT

Prepared for: Belt Collins & Associates

By: Kenneth M. Nagata

INTRODUCTION

The project area involves a parcel of land between approximately 1800' and 1925' elevation mauka of Lanai City, Lanai. It is a narrow strip immediately mauka (east) of the present Koele Project District and extends the length of the pineapple field behind Lanai City.

Two vegetation types as described by Ripperton and Hosaka (1942) are present in the region. The vegetation in the lower portion consists of open dryland shrubs and grasses with trees in the upper elevation (Zone C, Low Phase). The upper portions consist of shrub and closed forest (Zone D, Low Phase). Dominant shrubs in Zone C include guava (Psidium guajava) and koa-haole (Leucaena leucocephala) which often form dense localized thickets. Lantana (Lantana camara) is of secondary importance. The herb layer in this zone is often well-developed and consists of such grasses as Bermuda (Cynodon dactylon) and Natal reedtop (Rhynchelytrum repens). Common wayside species including Spanish needle (Bidens pilosa), garden spurge (Euphorbia hirta) and galinsoga (Galinsoga parviflora) characterize the agricultural fields. The vegetation grades into Zone D Low Phase in the mauka regions. Guava remains the most characteristic shrub in this zone. Dominant canopy species include 'ohi'a-lehua (Metrosideros collina ssp. polymorpha), hala (Pandanus odoratissimus) and kukui (Aleurites moluccana). Herbs such as Boston fern (Nephrolepis exaltata), Hilo grass (Paspalum conjugatum), rice grass (P. dilatatum), basketgrass (Oplismenus hirtellus) and honohono (Commelina diffusa) are common.

A recent survey of the area revealed a strikingly modified vegetation pattern consisting of 10 vegetation types (Nagata 1986). Two are adjacent to the proposed extension. Immediately makai are pineapple fields invaded by such common agricultural weeds as feathery pennisetum (Pennisetum setosum), Rhodes

grass (Chloris gayana), Guinea grass (Panicum maximum), molasses grass (Melinis minutiflora), goosegrass (Eleusine indica), star-bur (Acanthospermum australe) and hairy horseweed (Erigeron bonariensis). To the north the proposed extension abutts a closed-canopied Eucalyptus Forest consisting of planted stands of swamp mahogany (Eucalyptus robusta) and red ironbark (E. sideroxylon). Other canopy species found in this vegetation type include black wattle (Acacia decurrens), ironwood (Casuarina equisetifolia) and Cook pine (Araucaria columnaris, previously identified as Norfolk Island pine, A. heterophylla). Other species associated with this community include Christmas berry (Schinus terebinthifolius), strawberry guava (Psidium cattleianum), Boston fern, molasses grass, guava and Hilo grass.

Several introduced birds and mammals have been observed in the Koele Project District (Nagata 1986). The following birds were recorded in the pineapple fields and Eucalyptus forest: Kentucky cardinal (Richmondia cardinalis), white eye (Zosterops japonica), rice bird (Lonchura punctulata), francolin (Francolinus sp.), lace-necked dove (Streptopelia chinensis) and turkey (Meleagris gallopavo). Axis deer (Axis axis) abound throughout the region and numerous droppings and trails were evident in the Eucalyptus forest. The only mammal actually seen in the two adjacent vegetation types was an unidentified rat (Rattus sp.).

METHODS

A walk-through survey with 70-80% cover was conducted in February 1990 to ascertain the vegetational composition of the project site. Special emphasis was given to native plant communities and rare and endangered species. A cursory inventory of animals was conducted in conjunction with the vegetational survey. Observations were made along vegetation transects and listening posts

were established at intervals. Nests were not investigated and no quantitative data were recorded.

RESULTS

FLORA

The vegetation in the project site was found to be almost entirely secondary in nature, consisting predominantly of planted species, agricultural weeds and other exotic ("alien" or non-native) species. Two distinct vegetation types were recognized; both are extensions of communities described in an earlier survey (Nagata 1986). They are depicted in the accompanying vegetation map with a distinct boundary between them. Such clear boundaries do not exist in nature but in this instance the vegetation types are man-made.

Abandoned Pineapple Fields (APF)

The abandoned pineapple fields behind Lanai City which were described in the previous survey extends into the makai portion of the present project area. These fields have been fallowed for several years and although pineapples (Ananas comosus) are still present, they are now overgrown primarily by sourgrass (Tricachne insularis), balloon flower (Gomphocarpus physocarpus), hairy horseweed, and Vasey grass (Paspalum urvillei) up to 5' tall. As can be expected in such situations, numerous common weeds are present including star-bur, molasses grass, ageratum (Ageratum conyzoides), Crassocephalum crepidioides, Boston fern (Nephrolepis exaltata) and Hilo grass (Paspalum conjugatum). Many others are found but in small to only moderate numbers. A section of the fields at the Koele end has been recently grubbed and is now barren.

Eucalyptus Forest (EF)

The Eucalyptus Forest described in the earlier survey continues into the mauka portion of the project site. As described previously, it is a closed-canopied forest of planted red ironbark and swamp mahogany 50-75' tall. Except

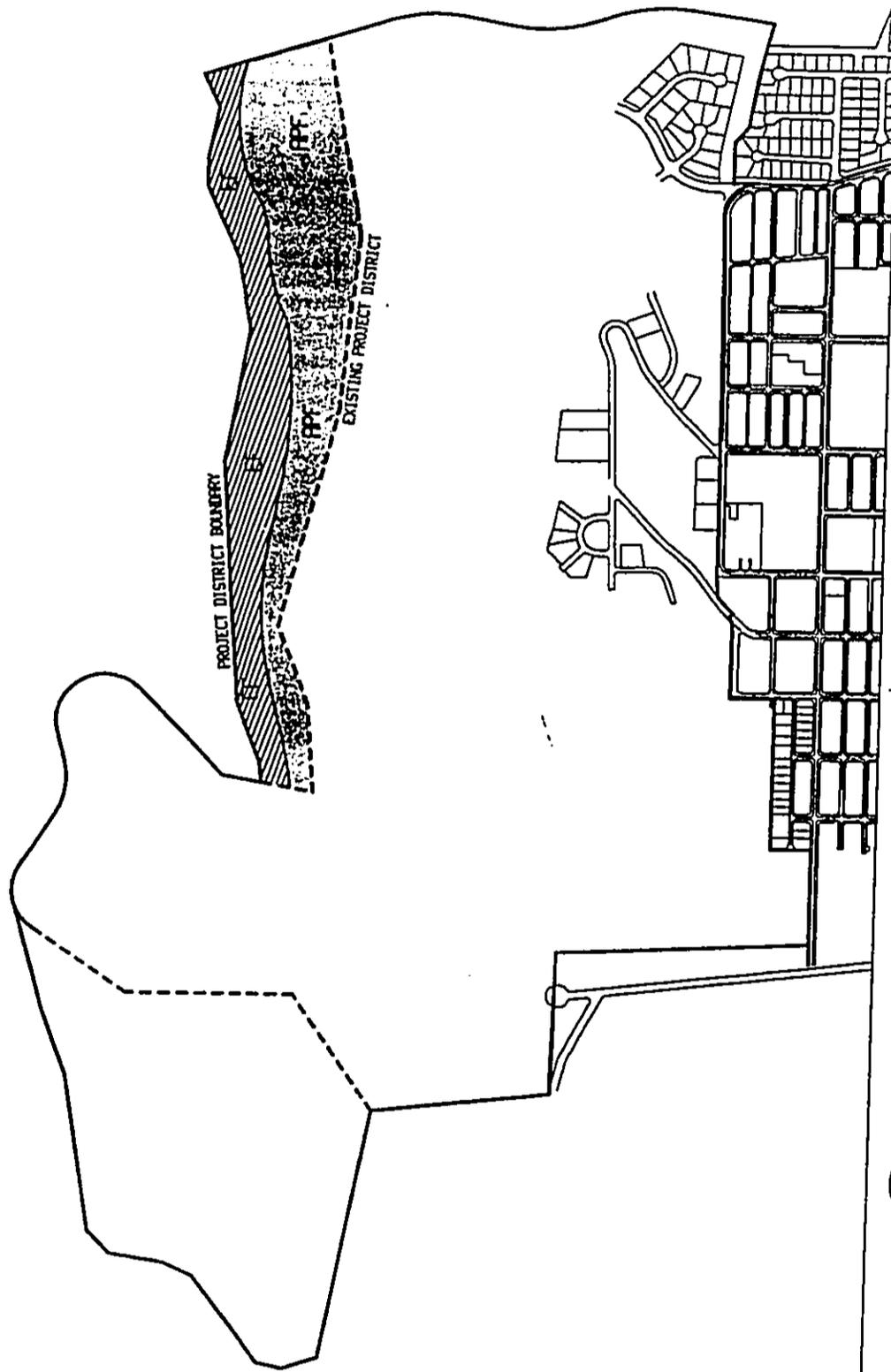
along the makai edge, the understory is generally open with a poorly developed shrub layer consisting mostly of strawberry guava. The understory at the Koele end, however, is extremely dense with Christmas berry up to 12' tall. Hilo grass, Christmas berry, strawberry guava and Jamaica vervain are common along the makai edge of the forest. A powerline/pipeline corridor has been cut through the south end of the community. This exposed site is characterized by molasses grass, bracken fern (Pteridium aquilinum) and regenerating eucalyptus.

FAUNA

Only four birds were seen or heard during the survey. This small number was perhaps due in part to the progressive loss of habitat because of grading and grubbing makai of the site, and the constant construction noise. The only birds heard were the Kentucky cardinal and Japanese white-eye. White-eyes and rice birds were seen in the Abandoned Pineapple Fields but none were actually observed in the Eucalyptus Forest. There is every reason to believe that other birds such as the lace-necked dove and barred dove (Geopelia striata) are also present in the area. Deer trails and droppings are present throughout the Eucalyptus Forest and droppings and browsed plants were common in the Abandoned Pineapple Fields. Axis deer is clearly still found in the region despite construction activities. Field mice (Mus musculus domesticus) and one or more species of rats (Rattus spp.) may also be present in the site.

SUMMARY

The vegetation in the project site is almost entirely secondary. Only 12 common native species were observed and in very small numbers. No native ecosystems and no native animals are present. The proposed project will in no way compromise any native plant community or ecosystem nor will it impact the native flora in general.



NORTH



SCALE IN FEET

LEGEND



EF -

EUCALYPTUS FOREST



APF -

ABANDONED PINEAPPLE FIELDS

KOELE EAST BOUNDARY - EXTENSION
VEGETATION ZONES

SPECIES CHECKLIST

Plant families are arranged alphabetically in two groups - Pteridophytes and Angiosperms. The Angiosperms are subdivided into Monocotyledones and Dicotyledones. Genera and species are arranged alphabetically within each family. Taxonomy of the Pteridophytes follows that of Wagner's unpublished list and the common names are those which are commonly accepted. Taxonomy, common names and the status of the Angiosperms generally follow that of St. John (1973). Taxonomy of bird species follows that of Berger (1981).

EXPLANATION OF SYMBOLS

Species Status:

- E - Endemic to the Hawaiian Islands, ie. occurring nowhere else in the world.
- I - Indigenous, ie. native to the Hawaiian Islands but also occurring naturally elsewhere.
- X - Exotic (alien), ie. plants introduced after the Western discovery of the islands.
- P - Polynesian, plants introduced before the Western discovery of the islands.

Vegetation types:

- APF - Abandoned Pineapple Fields
- EF - Eucalyptus Forest

Relative Abundance Rating:

- A - Abundant, generally the major or dominant element in an area.
- C - Common, generally distributed throughout a given area in large numbers.
- O - Occasional, generally distributed throughout a given area in small numbers.
- U - Uncommon, observed uncommonly but more than 10 times in a given area.
- R - Rare, observed 2-10 times in a given area.
- X - Indicates presence only.

CHECK LIST

SCIENTIFIC NAME	COMMON NAME	STATUS	N ^o	FH *	APPEL	RELATIVE ABUNDANCE
PTERIDOPHYTES						
ADIANACEAE						
<i>Pityrogramma calomeles</i> (L.) Link	Cold fern	X			U -	
DAVALLIACEAE						
<i>Nephrolepis exaltata</i> (L.) Schott	Boston fern	I			C U	
DENNSTAEDTIACEAE						
<i>Pteridium aquilinum</i> (L.) Kuhn	Bracken fern	I			- R	
PSILOIACEAE						
<i>Psilotum nudum</i> L.	Noa	I			- U	
TRELYTERIDACEAE						
<i>Christella dentata</i> (Forsk.) Brownsey & Jenmy	Doggy wood-fern	X			U -	
ANGIOSPERMS-BOOBYDEONES						
BROMELIACEAE						
<i>Ananas comosus</i> (Stickm) Merr.	Pineapple	X			C -	
CANNACEAE						
<i>Canna indica</i> L.	Ornamental canna	X			R -	
COMELINACEAE						
<i>Commelina diffusa</i> N.L. Burm.	Honohono	X			R -	
CYPERACEAE						
<i>Carex wahuensis</i> C.A. Mey.		E			- U	
<i>Cyperus kyllinga</i> Endl.	Kyllinga	X			U -	
GRAMINEAE						
<i>Chloris gayana</i> Kunth	Rhodes grass	X			U -	
<i>Cynodon dactylon</i> (L.) Pers.	Bermuda Grass	X			R R	
<i>Digitaria ciliaris</i> (L.) Koeler		X			U -	
<i>D. setigera</i> Roth	Kikaipua'a	X			U U	
<i>Eleusine indica</i> (L.) Gaertn.	Goosegrass	X			U -	
<i>Melinis minutiflora</i> Beauv.	Molasses grass	X			C R	
<i>Oplismenus hirtellus</i> (L.) Beauv.	Basketgrass	X			U -	
<i>Panicum maximum</i> Jacq.	Guinea grass	X			U -	
<i>Paspalum conjugatum</i> Berg.	Hilo grass	X			O O	
<i>P. urvillei</i> Steud.	Vasey grass	X			A -	
<i>Pennisetum clandestinum</i> Hochst. ex Chloov.	Kikuyugrass	X			U -	
<i>Rhynchosyris repens</i> (Willd.) C.E. Hubb.	Natal redtop	X			R -	
<i>Setaria geniculata</i> (Poir.) Beauv.	Perennial foxtail	X			U R	
<i>Sporobolus indicus</i> (L.) R. Br.	West Indian dropseed	X			U -	
<i>Tricachne insularis</i> (L.) Nees	Sourgrass	X			A U	
LILIACEAE						
<i>Cordyline terminalis</i> (L.) Kunth	TI	P			- R	

* Category not applicable

SCIENTIFIC NAME	COMMON NAME	STATUS	N#	FH *	APF	EF	RELATIVE ABUNDANCE
PANDANACEAE							
<i>Pandanus odoratissimus</i> L.f.	Hala	I?			-	R	
ANGIOSPERMS-DICOTYLEDONES							
ANACARDIACEAE							
<i>Schinus terebinthifolius</i> Raddi	Christmas berry	X			U	O	
ASCLEPIADACEAE							
<i>Gemphocarpus physocarpus</i> E. Mey.	Balloon plant	X			A	R	
CASUARINACEAE							
<i>Casuarina equisetifolia</i> Stickm.	Common ironwood	X			R	R	
COMPOSITAE							
<i>Acanthospermum australe</i> (Loebl.) Kuntze	Star-bir	X			U	-	
<i>Ageratum conyzoides</i> L.	Ageratum	X			U	R	
<i>Girardinia vulgare</i> (Savi) Tenore	Bull thistle	X			R	R	
<i>Crassocephalum crepidioides</i> (Benth.) S. Moore		X			C	U	
<i>Erechtites hieracifolia</i> (L.) Raf. ex DC.		X			K	-	
<i>E. valerianifolia</i> (Wolf) DC.		X			U	R	
<i>Erigeron bonariensis</i> L.	Hairy horseweed	X			C	U	
<i>Picris hieracioides</i> L.	Hawkweed	X			U	-	
<i>Pluchea odorata</i> (L.) Cass.	Pluchea	X			U	-	
<i>Vernonia cinerea</i> (L.) Less.	Ironweed	X			R	-	
CUCURBITACEAE							
<i>Momordica charantia</i> var. <i>pavel</i> Grantz	Peria	X			R	R	
EPACRIDACEAE							
<i>Styphelia tameiameia</i> (Cham.) F. Muell.	Poklane	I			-	U	
EUPHORBACEAE							
<i>Aleurites moluccana</i> (L.) Willd.	Kukui	P			-	R	
LEGUMINOSAE							
<i>Acacia confusa</i> Merr.	Formosan koa	X			-	U	
<i>A. decurrens</i> (Wendl.) Willd.	Black wattle	X			-	R	
<i>A. koa</i> Gray	Koa	E			-	R	
<i>Albizia falcataria</i> (L.) Fosb.	Partridge pea	X			O	U	
<i>Crotalaria incana</i> L.	Fuzzy rattle-pod	X			U	-	
<i>Desmodium canum</i> (Nels.) Schinz & Thell.	Spanish clover	X			U	-	
<i>Indigofera suffruticosa</i> Mill.	Indigo	P?			U	R	
LOGANIACEAE							
<i>Buddleia asiatica</i> Lour.	Dog tail	X			R	-	

* Category not applicable

CHECK LIST OF PLANTS

SCIENTIFIC NAME	COMMON NAME	STATUS	N*	FH*	APPE	EFF	RELATIVE ABUNDANCE
MALVACEAE							
<i>Malvastrum coromandelianum</i> (L.) Garcke	False mallow	X			R	-	
<i>Sida acuta</i> N.I. Burm.		X			R	R	
MELIACEAE							
<i>Toona ciliata</i> var. <i>australis</i> (F. Muell.) C. DC.	Australian red cedar	X			-	R	
MENISPERMACEAE							
<i>Coccoloba ferrandianus</i> Gaud.	Huehue	E			-	R	
MIRIACEAE							
<i>Eucalyptus robusta</i> Sm.	Swamp mahogany	X			U	C	
<i>E. sideroxylon</i> A. Cunn. ex Benth.	Red ironbark	X			-	A	
<i>Eugenia jambos</i> L.	Rose apple	X			-	R	
<i>Metrosideros collina</i> ssp. <i>polymorpha</i> (Gaud.) Rock	'Ori' a-lehua	E			-	R	
<i>Psidium cattleianum</i> Sabine	Strawberry guava	X			U	C	
<i>P. guajava</i> L.	Guava	X			U	U	
OXALIDACEAE							
<i>Oxalis corniculata</i> L.	Yellow wood sorrel	P?			U	R	
<i>O. martiana</i> Zucc.	Pink wood sorrel	X			-	R	
PASSIFLORACEAE							
<i>Passiflora edulis</i> f. <i>flavicarpa</i> Deg.	Yellow liliko'i	X			-	R	
PLANTAGINACEAE							
<i>Plantago lanceolata</i> L.	Narrow-leaved plantain	X			R	-	
PROTEACEAE							
<i>Grevillea robusta</i> A. Cunn. ex R. Br.	Silk oak	X			-	R	
ROSACEAE							
<i>Osteomeles anthyllifolia</i> (Sm.) Lindl.	'Uel	E			-	R	
<i>Rubus rosaefolius</i> Sm.	Thimbleberry	X			R	-	
RUBIACEAE							
<i>Richardia brasiliensis</i> Gouez	Richardsonia	X			U	U	
SAPINDACEAE							
<i>Dodonaea viscosa</i> var. <i>arborescens</i> (Cunn. ex Hook.) Sherff A'alii		I			-	U	
VERBENACEAE							
<i>Lantana camara</i> L.	Lantana	X			R	-	
<i>Stachytarpheta jamaicensis</i> (L.) Vahl	Jamaica vervain	X			C	U	
<i>Verbena litoralis</i> HBK.	Keed verbena	X			U	-	

* Category not applicable

Appendix B

ARCHAEOLOGICAL RESOURCES SURVEY

ADDENDUM REPORT FOR
ADDITIONAL ARCHAEOLOGICAL
SURVEY AT THE PROPOSED
KO'ELE GOLF COURSE, LANAI

by

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Douglas Borthwick, B.A.

prepared for
Lanai Co. Inc.

by
Cultural Surveys Hawaii
April 1990

ABSTRACT

Archaeological survey was conducted for approximately 100 acres of land on the east (upslope) side of the present newly constructed Ko'ele Golf Course. This additional area is being considered for residential use. The reader is referred to Messrs. Hammatt and Borthwick 1989 Survey report on the Ko'ele Golf Course for the historic background information on the present project area. One archaeological site was located (referred to as Site 7) which consisted of a drainage ditch associated with the late 19th Century dam and reservoirs (Ko'ele Golf Course Sites 1-3). A charcoal deposit was associated with the deposits cut by this ditch. A charcoal sample was collected for dating and the ditch was mapped and described as part of the Ko'ele Golf Course reservoir system data recovery. The ditch site is considered no longer significant and no further archaeological investigation is recommended. On-site archaeological monitoring during construction is not recommended. However, if unanticipated findings are uncovered during grading the State historic Preservation Office should be contacted before work precedes.

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I. INTRODUCTION AND SCOPE OF WORK

On February 22 and 23, 1990 two archaeologists from Cultural Surveys Hawaii performed an archaeological survey of additional land bordering the previously defined Ko'ele Golf Course (Figs 1-4) These lands are located on the east side of the area previously surveyed by Cultural Surveys Hawaii and reported on in a 1989 Report (Hammatt and Borthwick, 1989). All other land within the Ko'ele project District has been previously surveyed.

The scope of work included ground coverage of all additional areas designated for single family housing and Golf Course use for the purpose of locating, mapping and describing all archaeological sites and assessing their significance and possible mitigation measures. The entire project area was covered on foot with spacing between archaeologists of 50-100 feet depending on visibility.

Description of the Project Area

The land surveyed includes a total of approximately 100 acres on the east (upslope) side of the Ko'ele Golf Course presently under construction. Included is a strip of land approximately 600 feet wide encompassing abandoned pineapple fields at the south end and sloping forest land at the north end (Figs. 6, 7) Also at the north end is a section of a steep sided valley known as Kaiholena Gulch. The gulch bottom is open land with heavily forested slopes of 30 to 40 percent grade. The forested areas are dominated by introduced species of trees, including Eucalyptus, Christmas Berry, Guava and Norfolk and Cook Island Pine.

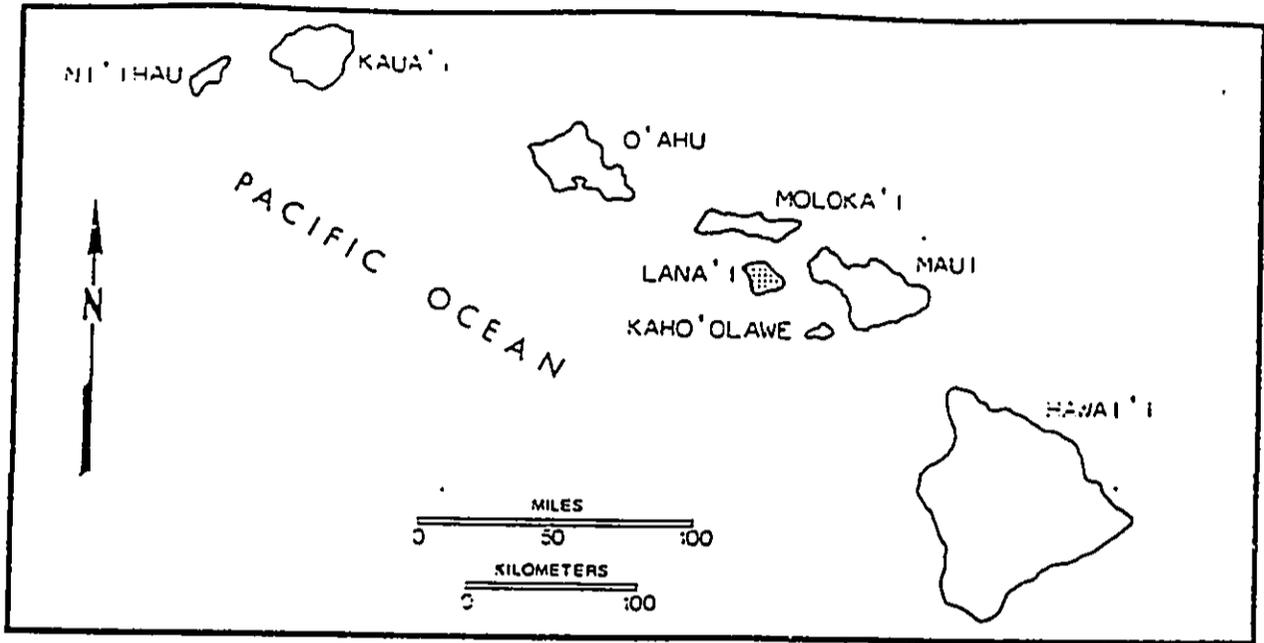


Fig.1. State of Hawaii.

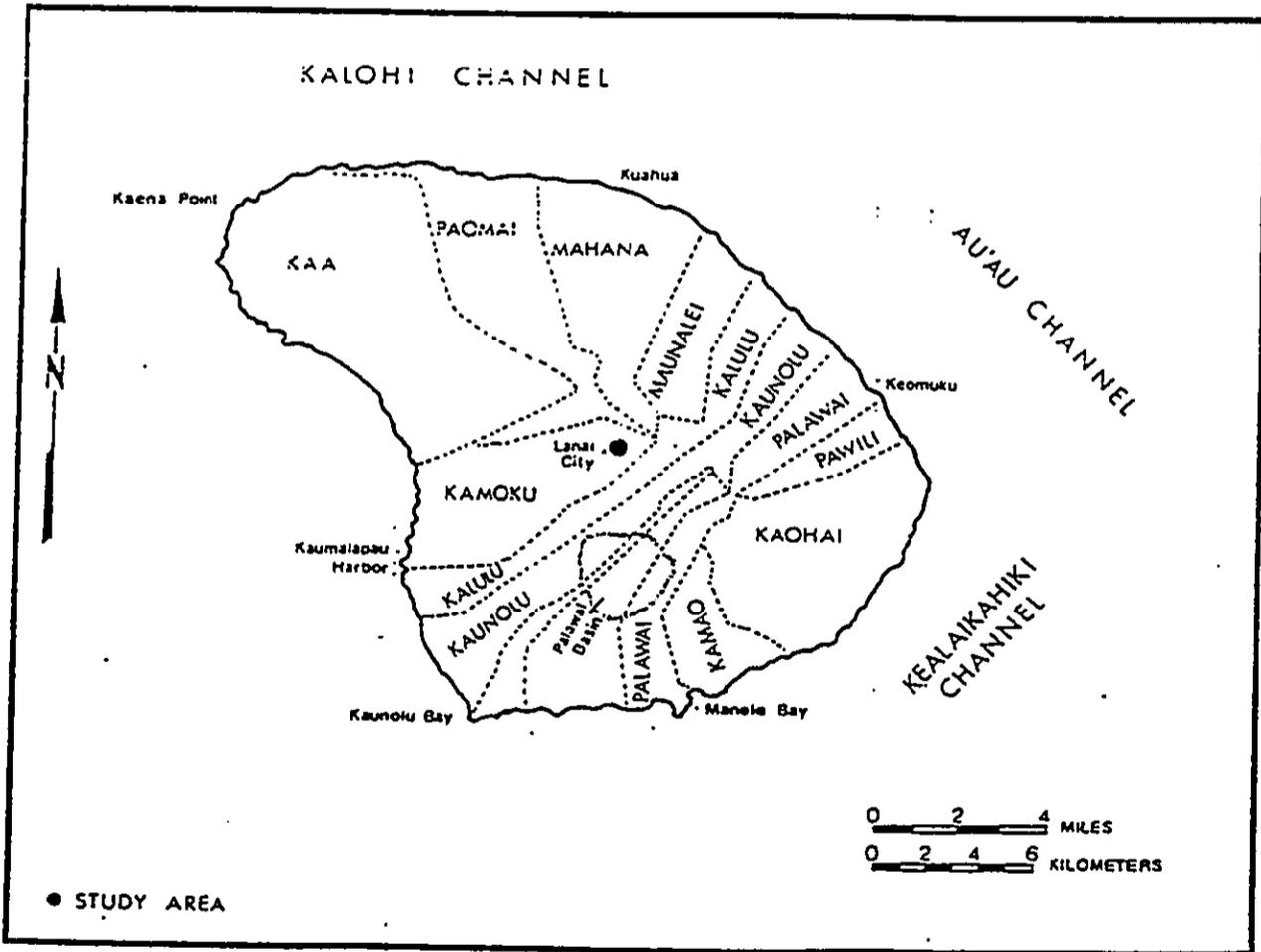


Fig.2. General Location Map Lana'i Island.

DOCUMENT CAPTURED AS RECEIVED

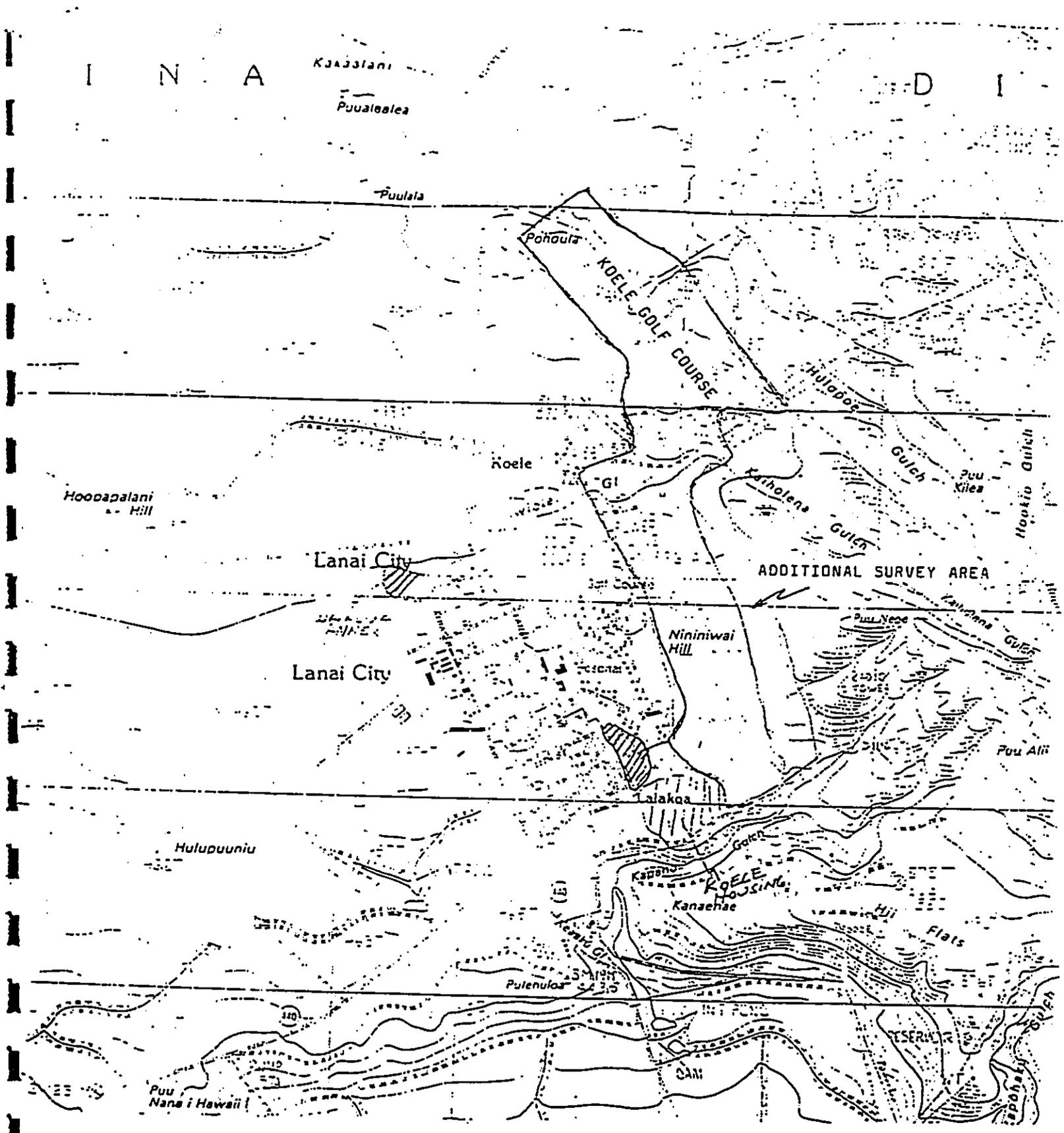


Figure 3 U.S.G.S. Map of Lana'i (1-25,000) Additional Survey Area

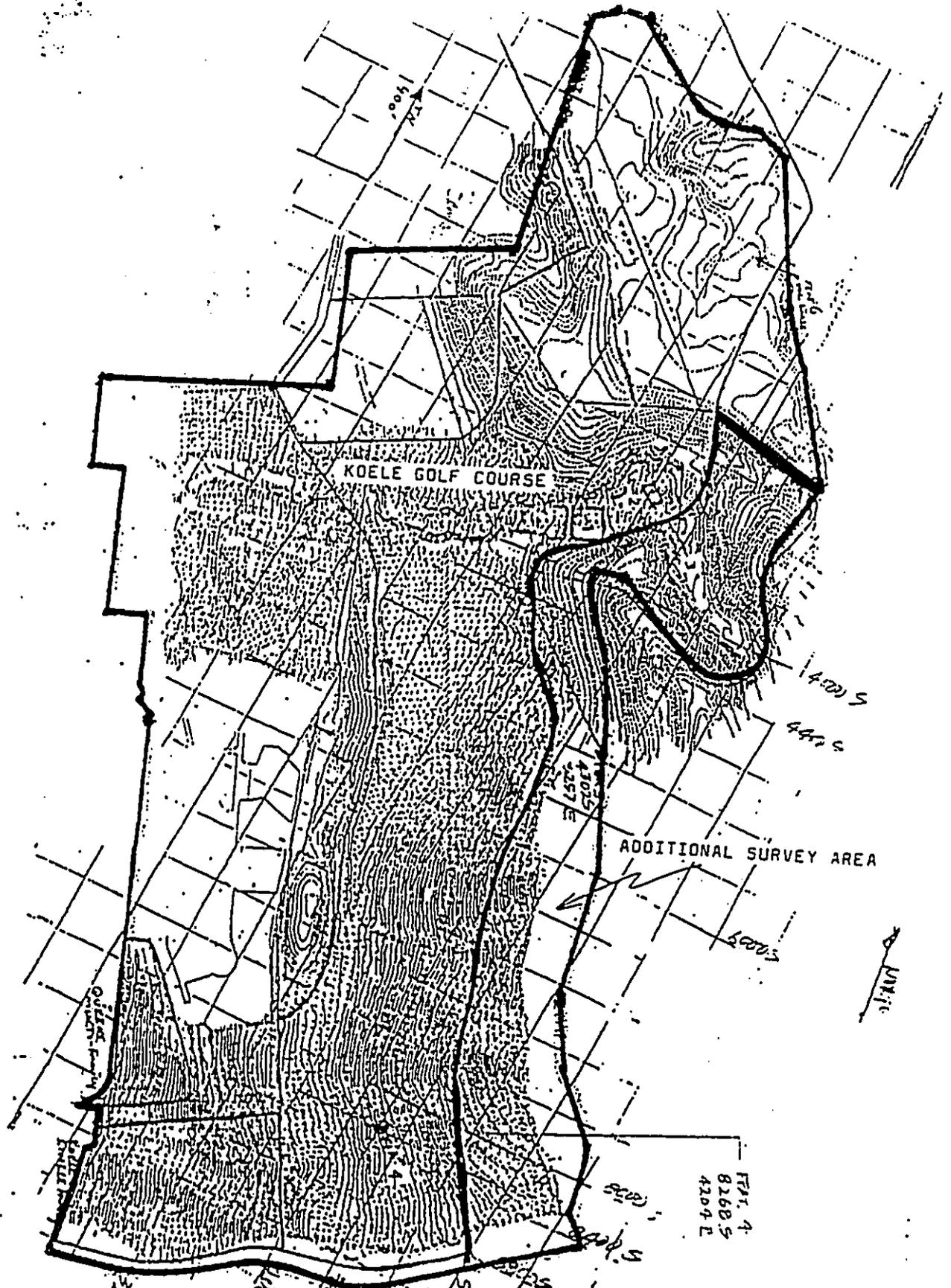


Figure 4

Koele Golf Course Project Showing Additional Areas Surveyed

II. PREVIOUS ARCHAEOLOGICAL RESEARCH

Archaeological work specific to the project areas started in 1921 with Kenneth P. Emory's island-wide survey. To the authors' knowledge there has been no other project specific archaeological research. However, works on adjoining properties were conducted by Cultural Surveys Hawaii. One dealt with Ko'ele area as Lana'i's ranching center (Hammatt et al. 1988A); the other concerned the Lalakoa III Subdivision (Hammatt and Borthwick, 1988B). More recently a survey of the Ko'ele Golf Course and three adjacent housing projects (Waialua Annex, Queen's and Ko'ele) was conducted by Cultural Surveys (Hammatt and Borthwick, 1989).

Emory recorded no sites within the proposed housing development areas of Waialua Annex, Queens Multi-Family Housing or the Ko'ele Single-Family housing projects. Emory's dot map of "visitable house sites...and heiau" (Emory 1924, Fig. 4:49) indicates that there were house sites just to the northwest of the northwestern portion of the proposed golf course. "From Kukuikahi to Ko'ele, I counted 27 house sites" (Ibid.:25). Emory's report also suggests the possibility of burials within the slope area of the proposed golf course. "At Pohoula is a stone faced terrace 22 X 59 feet, 4 feet high, having 4 walled divisions probably for as many houses. The hill above has been used as a burial ground" (Emory 1924b:25). Emory further discusses these burials "Unmarked, flexed burials are frequently exposed in eroding banks on the plateau lands. The sides of Pohoula hill, near the summit, were used as a burial ground"

(Ibid:73). Emory's discussion appears to put the terrace/platform and burials just to the northwest (outside) the northwest end of the proposed golf course, relatively close to the existing Lana'i cemetery. The 1989 Survey observed no burials eroding out of "banks" within the slope areas of the proposed golf course. However, for the most part the banks or slopes are considerably more forested today than when Emory observed them 60+ years ago.

"Archaeological Investigation of the Ranching Era at Ko'ele, Lana'i (Hammatt et al. 1988A) details the excavation and analysis of recovered historic materials from two trash pits at Ko'ele. The report contains both midden and artifact analysis and their correlations to events at Ko'ele during the ranching ear (ca. 1870-1950). This report also contains a general historical review of Lana'i land use relating to ranching activities. Specific information relevant to this report includes unrestricted grazing of up to 40,000+ livestock, building of reservoirs in Kaiholena Gulch, and the beginnings of the pineapple industry.

Archaeological investigations at Lalakoa Subdivision III (Hammatt and Borthwick, 1988B) discussed the surface inspection, and collection of indigenous artifacts from a pineapple field at the south end of Lana'i City. As would be anticipated there were no surface features, but 75 artifacts (mostly basalt flakes) were surface collected. Four of the collected artifacts were volcanic glass specimens, all of which were sent to Mohlab for analysis. MohLab's analysis of the volcanic glass (Michels April 1988)

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appears as an appendix to the report. The appendix indicates a lana'i Island source and a range in the dates from 1216±31 years to 1660±12 years. However, the context of the recovery of these and the other artifacts, (whether or not they were from a site or sites on the particular project area) was ambiguous. Subsurface testing indicated that "any original archaeological context would have been destroyed long ago by plowing to depths of over 31 cm." (Ibid.:22). However, the historical literature review indicated that the area was utilized during pre-historic times and up until approximately the mid 1800s for dry land agriculture. The summation suggests that the majority of the artifacts were probably "carried (to the project area) with road gravel taken from a source near the ko'i adz quarry in the Palawai Basin" (Ibid.:24). A percentage of artifacts may be from a localized aboriginal activity area.

The previous research indicates that project areas within former pineapple fields have little archaeological potential with a low probability of subsurface features. however, surface collection of artifacts, along with historical literature review may give a more complete look at past land use in the area.

The 1989 Survey of Ko'ele Golf Course, and the 3 proposed housing projects (Hammatt and Borthwick, 1989) included both pineapple fields, forested slopes and level grassland. Within the approximately 300-acre proposed golf course a total of 6 archaeological features were located. These include 2 reservoirs from the late 19th Century Ranching Era in Kaiholena Gulch, a dam upslope of the reservoir as well as a volcanic glass outcrop on the

upper table land, a prehistoric flake scatter and a scatter of historic debris in the lower pineapple fields. the reservoir features are part of the water storage system which included the large reservoir upslope of the new Ko'ele Lodge. This large reservoir has been preserved and restored as part of the Lodge landscaping scheme. Because this lower reservoir is the finest example of any of these water storage features, the others were not recommended for preservation. Photographic and mapping documentation was obtained on the upper reservoirs and dam before their removal.

Backhoe subsurface testing was conducted in the areas of the flake scatter and historic debris scatter (Ko'ele Golf Course Sites 5 and 4). No intact cultural layers or features were encountered during this testing. The volcanic glass outcrop (Site 6) is outside of the grading limits and has been preserved. At the present time, the Ko'ele Golf Course is under construction and grading has been completed for nearly half of the course. Cultural Surveys Hawaii is providing archaeological monitoring during construction.

III. RECONNAISSANCE RESULTS AND RECOMMENDATIONS

Only one archaeological site was encountered within the survey area. This site is referred to as Site 7 (following the sequence of the 76 previously recorded Ko'ele Golf Course sites (Fig. 5)).

Site 7

Site 7 is an eroded ditch which hugs the southwest side of Kaiholena Gulch and extends up the gulch for over 600 feet. This ditch although originally constructed has been deepened by erosion during heavy rains to 5-6 feet in places and has vertical cut banks on both sides. The width varies from 2-5 feet (Fig. 8). The ditch bypasses the upper dam structure and upper reservoir and empties into the middle reservoir (Site 1). This ditch is probably an eroded remnant of a 19th Century ditch which diverted water around the reservoirs for flood control and did not originally empty into any of the reservoirs. These reservoirs were at one time used for drinking water and were filled by pipes. It would have been important to divert dirty flood water. The original ditch in all probability dates to the construction of the reservoirs (1880s).

A feature of this ditch site (Site 7, Feature A) is a charcoal deposit observed on the upslope southwest wall of the ditch at the lower end of Kaiholena Gulch where the gulch empties into Iwiolo Gulch. This charcoal deposit occurs in alluvial sediments truncated by the ditch erosion and is spread over an area of 20 feet laterally and is approximately 3 feet high. The charcoal consists of dispersed chunks within this zone. One

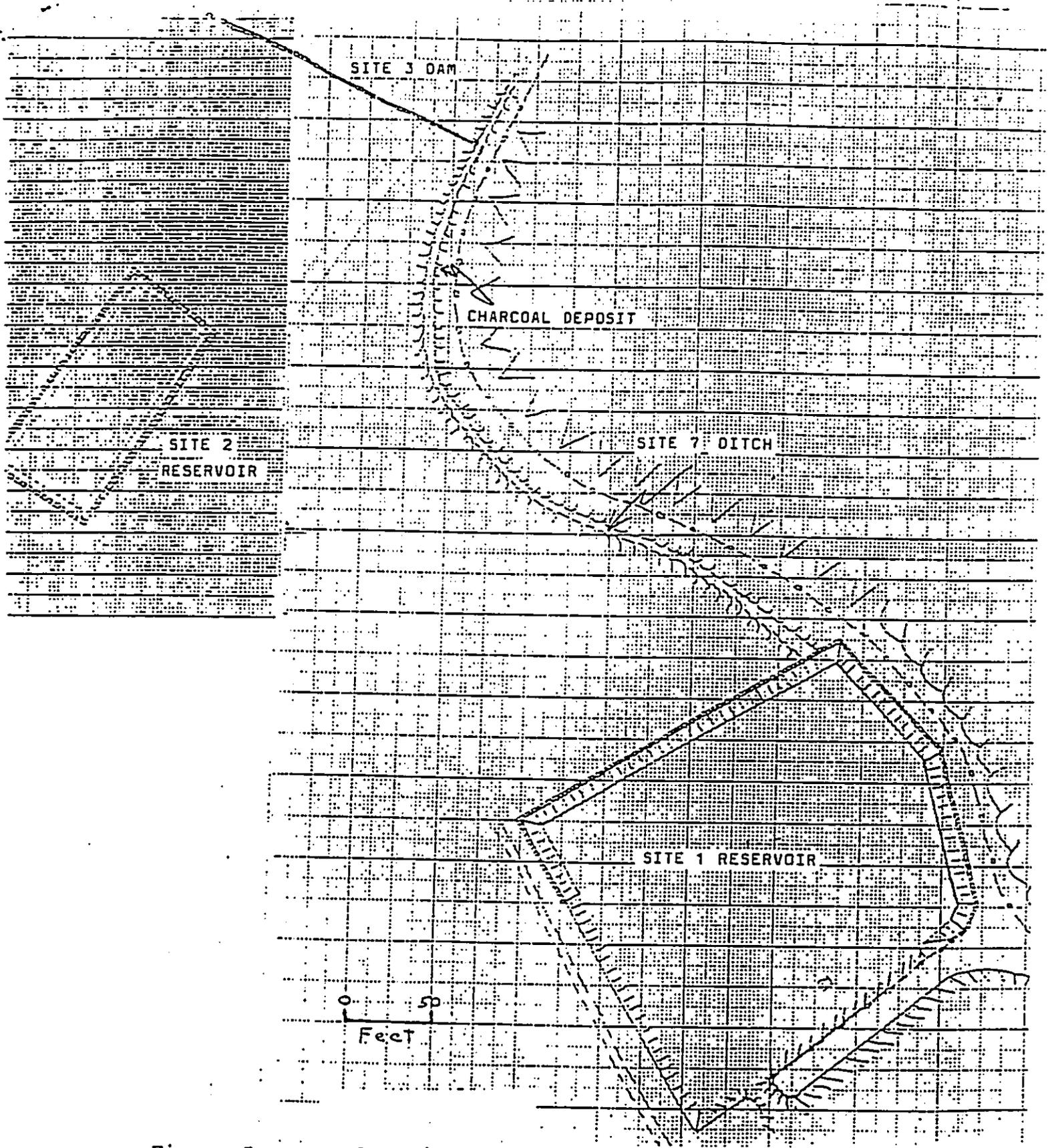


Figure 5

Plan View of Upper Reservoirs Koele Showing Location of Ditch (Site 7) and Associated Charcoal Deposit

piece of bottle glass and one opihi shell was observed at the top soil surface in the vicinity of the charcoal. No cultural material was observed in context with the charcoal. The sediments containing the charcoal clearly predate the erosional cutting of the ditch and are in all probability contemporaneous with forest burning, clearing, burning and grading for construction of the reservoirs.

The charcoal layer was sampled by selective excavation of the vertical ditch wall to a depth of 5 cm. for the purpose of extracting charcoal for possible radiocarbon dating (Fig. 9). The dating of this sample would serve to confirm our interpretation that the alluvium and associated charcoal is associated with late 19th Century reservoir construction.

Significance of the Site

Site 7 is considered important for its information content only as a component of the late 19th Century reservoir complex. This would place it as significant under Code D (Site may be likely to yield information important to prehistory or history). However, because of the collection of the charcoal sample and the mapping and description of the ditch as part of the reservoir complex, the site is further evaluated as no longer significant. The description of the ditch as part of the reservoir system has been included in the data recovery of the Ko'ele Golf Course proper. This data recovery which has included large format documentary photographs has been coordinated with Ms. Anne Griffin of the State Historic Preservation Office. She and other

members of the staff have approved the data recovery plan as well as the field work phases of its implementation.

Traditional Agricultural Terrace Outside the Survey Area

Two adjacent stone terraces varying from 25 to 30 feet long were located in the wooded slopes above the pineapple fields at the southeastern boundary of the survey area. Their presence is noted here but since they were determined to be at least 200 feet upslope from the survey area they are not directly relevant to the present project. However, it should be cautioned that other agricultural sites may occur in the upper slopes of the area and impact of construction should be limited to the boundaries of the project area.

Recommendations

The single archaeological site recorded in this survey (a ditch and associated charcoal deposit) is considered important for its information content. The information has been gathered as part of the data recovery of the reservoir system within the Ko'ele Golf Course project area. For these reasons, no further archaeological investigation is recommended. On-site monitoring during construction of residential housing is not justified based on the lack of findings. However, if unanticipated discoveries are made during grading the State Historic Sites Division should be consulted before work proceeds.

IV. REFERENCES CITED

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1924 The Island of Lana'i: A Survey of Native Culture.
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 Surveys Hawaii, Kailua, Oahu.
- Hammatt, H.H. and D. Borthwick
1989 "Archeological REconnaisance Survey of the
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 Housing, Queens Multi-Family and Waialua Annex
 Subdivision, Cultural Surveys Hawaii, Kailua,
 Oahu.

XII. PHOTOGRAPHIC APPENDIX



Figure 6 South End of Additional Survey Area Showing Fallow Pineapple Fields View West



Figure 7 Forested Slopes of Survey Area View South



Figure 8 Site 7 Ditch Above Dam Sites, View Upstream



Figure 9 Site 7 Feature A Charcoal Deposit Excavated, View South

Chapter V

**RELATIONSHIP OF THE PROPOSED ACTION TO LAND
USE PLANS, POLICIES AND CONTROLS FOR THE
AFFECTED AREA**

- d) Sufficient reserve areas for urban growth in appropriate locations based on a ten year projection;

The applicant's development timetable projects construction of the Lanai Project District 2-Koele within a seven-year timeframe and sale of the units as the market allows. See Chapter II, Section 6.

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

The petition area can be used for low-density residential development that is designed with the natural terrain and drainage. The area is not within an identified flood or natural hazard area, nor is it habitat for known endangered species. See the discussion in Chapter IV, Section 2.

- 4) In determining urban growth for the next ten years, or in amending the boundary, land contiguous with existing urban areas shall be given more consideration than non-contiguous land, and particularly when indicated for future urban use on state or county general plans;
- 5) It shall include lands in appropriate locations for new urban concentrations and shall give consideration to areas of urban growth as shown on the state and county general plans;

The petition area is contiguous with the Lanai Project District 2-Koele which is in the Urban District and is adjacent to the existing urban area of Lanai City. The Lanai Project District 2-Koele is part of the County's Community Plan for Lanai. The petition area is being considered for inclusion into the Project District and Community Plan.

- 6) It may include lands which do not conform to the standards in the paragraphs above:
 - a) When surrounded by or adjacent to existing urban development; and
 - b) Only when those lands represent a minor portion of this district;
 - c) It shall not include lands, the urbanization of which will contribute toward scattered spot urban development, necessitating unreasonable investment in public infrastructure or support services;

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

The petition area proposed as part of the Lanai Project District 2-Koele is adjacent to Lanai City, an existing urban area, and represents a small addition to the Project District and Lanai City. The petition area, being contiguous to Lanai City, will not contribute to scattered isolated urban development. Road and utility infrastructure for the petition area will be planned and constructed by the applicant as part of the Lanai Project District 2-Koele development (see Chapter IV, Section 6).

2. HAWAII STATE PLAN

The Hawaii State Plan as set forth in Chapter 226, Hawaii Revised Statutes, consists of a series of broad goals, objectives, policies, and priority guidelines which are to act as guidelines for the growth and development of the State. These goals, objectives, policies, and priority guidelines constitute the major reasons for the proposed Koele project. The goals and their relationship to the proposed action are as follows:

Goal: A strong, viable economy characterized by stability, diversity, and growth that enables the fulfillment of the needs and expectations of Hawaii's present and future generations.

Discussion: The present local economy is dominated by pineapple production. This production is expected to cease by 1993. The proposed action offers an economic alternative that will open new job opportunities and create a stronger, more diverse, and stable economy.

Goal: A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.

Discussion: Tourism is a relatively clean, non-polluting industry that is not only compatible with, but also dependent upon, an unspoiled environment.

Goal: Physical, social, and economic well-being, for individuals and families in Hawaii, that nourishes a sense of community responsibility, of caring, and of participation in community life.

Discussion: Given the stoppage of pineapple production, the outlook for the economic well-being of individuals and families on Lanai is bleak. The increased job opportunities provided by the proposed project would lessen the need for the migration of residents in search of employment and the corresponding break up of families. The development would produce direct growth in tourist-related industries and provide future employment expansion opportunities. Thus the project would increase the economic well-being of the community as a whole.

The proposed project would also promote the following State Plan objectives, policies, and priority guidelines:

Sec. 226-5 Objective and policies for population

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

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

Discussion: The Lanai Project District 2-Koele is a product of the Maui County approval processes with community participation toward well-planned developments consistent with community needs and desires. This will serve to promote increased opportunities to choose and pursue socioeconomic aspirations for residents of Lanai, who otherwise would be facing economic hardships with the phase-out of pineapple.

Sec. 226-8 Objective and policies for the economy - visitor industry

Objective (a) Planning for the State's economy with regard to the visitor industry shall be directed towards the achievement of the objective of a visitor industry that constitutes a major component of steady growth for Hawaii's economy.

Policy (b)(2) Ensure that visitor industry activities are in keeping with the social, economic, and physical needs and aspirations of Hawaii's people.

Policy (b)(3) Improve the quality of existing visitor destination areas.

Policy (b)(4) Encourage cooperation and coordination between the government and private sectors in developing and maintaining well-designed, adequately serviced visitor industry and related developments which are sensitive to neighboring communities and activities.

Policy (b)(5) Develop the industry in a manner that will continue to provide new job opportunities and steady employment for Hawaii's people.

Policy (b)(6) Provide opportunities for Hawaii's people to obtain job training and education that will allow for upward mobility within the visitor industry.

Discussion: The planning process involved in the County approval for Project Districts on Lanai has received extensive government agency and citizen review. Active citizen participation and government comment have ensured that the well-designed developments are reflective of community concerns. The Koele resort, golf course, and residences will serve as a necessary amenity to support the success of these developments. The Lanai Project District 2-Koele will provide continued employment opportunities to those citizens of Lanai facing unemployment due to the pineapple phase-out. Those who elect to, will be provided with job training and educational opportunities to better prepare them for careers in the visitor and service industries.

Sec. 226-103 Economic priority guidelines

Priority Guideline (a)(8) Provide public incentives and encourage private initiative to develop and attract industries which promise long-term growth potentials and which have the following characteristics:

- (A) An industry that can take advantage of Hawaii's unique location and available physical and human resources.
- (B) A clean industry that would have minimal adverse effects on Hawaii's environment.
- (C) An industry that is willing to hire and train Hawaii's people to meet the industry's labor needs at all levels of employment.
- (D) An industry that would provide reasonable income and steady employment.

Priority Guideline (b)(1) Promote visitor satisfaction by fostering an environment which enhances the Aloha Spirit and minimizes inconveniences to Hawaii's residents and visitors.

Priority Guideline (b)(2) Encourage the development and maintenance of well-designed, adequately serviced hotels and resort destination areas which are sensitive to neighboring communities and activities and which provide for adequate shoreline setbacks and beach access.

Priority Guideline (b)(3) Support appropriate capital improvements to enhance the quality of existing resort

destination areas and provide incentives to encourage investment in upgrading, repair, and maintenance of visitor facilities.

Priority Guideline (b)(4) Encourage visitor industry practices and activities which respect, preserve, and enhance Hawaii's significant natural, scenic, historic, and cultural resources.

Priority Guideline (b)(5) Develop and maintain career opportunities in the visitor industry for Hawaii's people, with emphasis on managerial positions.

Discussion: Lanai has long been without visitor facilities. The designation of the Lanai Project Districts, 2-Koele and 1-Manele, by the County of Maui acknowledges the need to provide for well-planned developments pursuant to the uses permitted in the districts. The proposed low-density housing area supports the economic health and quality of the visitor industry on Lanai by preserving open space within the urban project district which is a primary amenity for residents and visitors of Lanai. The proposed residential development is a relatively clean, non-polluting industry that is not only compatible with, but also dependent upon the unspoiled natural, scenic, historic, and cultural resources of the area.

3. STATE FUNCTIONAL PLANS

Chapter 226, Hawaii Revised Statutes, The Hawaii State Plan, provides a long-range guide for Hawaii's future and establishes a Statewide Planning System. The system includes the formulation of fourteen State Functional Plans to manage and coordinate functional area activities and to guide resource allocation decision-making. Each plan addresses statewide needs, problems and issues, and recommends policies and priority actions to mitigate those problems and bring about desirable conditions.

The policies and priority actions of the relevant functional plan do not appear to be violated or compromised by the proposed reclassification of the petition area.

3.1 State Agriculture Plan

The State Agriculture Functional Plan identifies the major issues of statewide concern affecting Hawaiian agriculture and the underlying needs and requirements of the commodity industries for resources such as land, water, capital, human resources, and transportation; and for government support to agriculture in the areas of farm management, cultural practices, livestock production, waste management, government regulation, pest and disease control, handling and processing, marketing, and research and development.

Land currently zoned Agriculture to be utilized by the proposed project is severely limited by soil conditions. The area is currently classified by the Land Study Bureau as having a very poor productivity potential for agricultural uses and is not under cultivation. Because of this classification, the land does not fall under the State Agriculture Plan's definition of Lands "most suitable and needed for agriculture."

3.2 State Conservation Lands Plan

The State Conservation Lands Functional Plan defines and attempts to address areas of statewide concern including watersheds, terrestrial habitat, ocean space, natural areas, air and water quality, sensitive areas, and scenic, historic, and cultural sites. Specifically the plan deals with the protection of rare and endangered species and habitats.

The spirit and intent of the Conservation Lands Functional Plan are being adhered to in the proposed reclassification of the petition area. The petition lands contain no rare or endangered plant or animal species. The forested areas will be preserved to the extent possible, only 4.382 acres of land will be reclassified from Conservation to Urban District, and 10.88 acres of land will be converted from Agricultural to Conservation District.

All of the Conservation District lands within the petition area fall within the resource subzone. The objective of this subzone, as established by Hawaii Revised Statutes Chapter 183-41, is "to develop, with proper management, areas to ensure sustained use of the natural resources of those areas." The boundaries encompass "lands necessary for providing future parkland and lands presently used for national, state and county, or private parks" and land for growing timber or suitable for uses such as hunting, fishing, hiking, camping, picnicking. The Conservation District lands are not important watershed areas for Lanai (i.e. Protective Subzone).

3.4 State Historic Preservation Plan

The State Historic Preservation Plan is designed to set forth guidelines for the delivery of services and the allocation of resources by State agencies with regard to the preservation of history and the heritage of Hawaii. Essentially all of the policies and implementing actions in the Plan are directed at State agencies especially the Hawaii State Department of Land and Natural Resources.

The Koele Resort and accompanying residences have been the subject of intensive archaeological survey work. Only one archaeological site was found within the petition area. Data recovery was recommended for the site found within the petition area.

4. MAUI COUNTY GENERAL PLAN

The Maui County General Plan was adopted in 1980 as Ordinance No. 1052. The broad General Plan objectives for planned growth are implemented through district community plans. The Koele Residential Project falls under the Lanai Community Plan. Among the objectives of the Maui County General Plan met by the proposed action are:

Objective (II)(A)(1) To provide an economic climate which will achieve stabilization, controlled expansion, and diversification of the County's economic base.

Objective (II)(B)(1) To require exceptional and continuing quality in the development of visitor industry facilities.

Objective (II)(B)(3) To ensure that visitor industry facilities shall not disrupt agricultural and social pursuits and will not be allowed to deplete the County's natural resources.

Objective (II)(B)(4) To develop a visitor industry which will enhance the social and economic lifestyles of Maui County's residents.

Objective (V)(A)(1) To provide high-quality recreational facilities to meet the present and future needs of our people.

5. LANAI COMMUNITY PLAN

The applicant has requested an amendment to the current Lanai Community Plan as part of the proposed action. The Lanai Community Plan, adopted in April 1983, provides the implementation scheme for the County's broad objectives and policies pertaining to Lanai. The Plan includes the planned distribution and intensity of land uses and public facilities, statements of standards and principles with respect to development, statements indicating the sequence in which future development is to occur, and maps showing zoning and design. On August 9, 1990, the Maui Planning Commission approved the Lanai Community Plan Amendment for the Project District Boundary Amendment. The amendment is subject to final approval of the Maui County Council.

6. LANAI PROJECT DISTRICT 2-KOELE

The applicant has requested a Project District Boundary Amendment to allow the land use configuration as shown in Figure 2. The number of hotel and residential units would not be increased under this amendment request.

Appendix A

BIOLOGICAL SURVEY