

FINAL

ENVIRONMENTAL IMPACT STATEMENT

GENERAL PLAN CHANGE

FOR

GROVE FARM PROPERTIES, INC.

PROPOSED LIHUE-PUHI MASTER PLAN

Lihue and Puhi, Kauai

Prepared for: Grove Farm Properties, Inc.

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For Submission to: Planning Commission, County of Kauai

Submitted by:

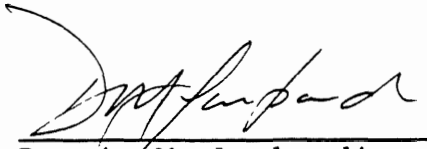

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EXHIBIT C

TABLE OF CONTENTS

	<u>Page</u>
<u>CHAPTER 1. INTRODUCTION AND SUMMARY.</u>	1
PURPOSE OF THIS DOCUMENT.	1
PROPOSED GOVERNMENTAL ACTION.	1
PROJECT DESCRIPTION	1
SIGNIFICANT IMPACTS AND PROPOSED MITIGATION MEASURES. . .	1
ALTERNATIVES CONSIDERED	3
UNRESOLVED ISSUES	3
COMPATIBILITY WITH LAND USE PLANS AND POLICIES.	4
LIST OF NECESSARY PERMITS AND APPROVALS	5
 <u>CHAPTER 2. DESCRIPTION OF THE PROPOSED ACTION.</u>	7
PROPERTY DESCRIPTION AND LOCATION	7
STATEMENT OF OBJECTIVES	7
HISTORICAL PERSPECTIVE.	7
PROPOSED GENERAL PLAN CHANGE AND SURROUNDING PROPERTY . .	9
PROJECT DESCRIPTION AND DEVELOPMENT PROGRAM	10
1. Overview	10
2. Parcels 5/6, 8, and 9.	13
3. Parcels 16, 30 and 31.	15
4. Parcel 33.	16
5. The Balance of the Project	17
a. Lihue	17
b. Puhī.	18
c. Community Facilities.	18
TECHNICAL DATA.	20
1. Water System	20
a. Existing Water System	20
b. Proposed Water System	20
(1) Expected Water Demand.	20
(2) Source Requirements.	20
(3) Storage Requirements	20
(4) Water Transmission	21
2. Sewage Disposal.	21
a. Existing Sewage System.	21
b. Proposed Sewage System.	21
(1) Projected Sewage Flow.	21
(2) Sewage Treatment and Disposal.	22
3. Storm Drainage	24
4. Electrical System.	27
5. Telephone and Cable TV Systems	27
6. Solid Waste Disposal System.	28
7. Road System.	28

	<u>Page</u>
INFRASTRUCTURE COST ESTIMATE	28
<u>CHAPTER 3. DESCRIPTION OF KNOWN ALTERNATIVES.</u>	30
ALTERNATIVE 1: NO GOLF COURSE	30
ALTERNATIVE 2: NO PROJECT	31
<u>CHAPTER 4. DESCRIPTION OF THE ENVIRONMENTAL SETTING AND PROBABLE IMPACTS OF THE PROPOSED ACTION.</u>	34
PHYSICAL ENVIRONMENT	34
1. Physiography, Geology, and Climate.	34
a. Elevation.	34
b. Topography and Slope	34
c. Rainfall	34
d. Geology.	37
e. Climate.	37
2. Soils and Agriculture	37
a. Soils and Other Physical Characteristics	37
b. Cane Land Withdrawal	41
c. Impact on Mill Operation	42
3. Flora and Fauna	44
a. Flora.	44
b. Fauna.	44
4. Near Shore Marine Ecosystem	45
5. Atmospheric System.	45
a. Air Quality Impacts of the Project	45
b. Impact of Surrounding Air Pollutant Sources on the Proposed Project.	45
6. Hydrologic System	46
a. Ground Water	46
b. Surface Water.	47
c. Water Quality.	47
7. Sonic Environment	47
a. Sonic Impact of the Project.	47
b. Impact of Surrounding Sound Sources on the Proposed Project	48
8. Visual Character.	48
9. Archaeological Resources.	48
PUBLIC SERVICE AND FACILITIES.	49
1. Police.	49
2. Fire.	49
3. Medical	49
4. Recreation Facilities	49
a. Neighborhood Parks	49

	<u>Page</u>
b. Regional Parks and Beaches	49
c. Private Recreational Facilities.	50
5. Educational Facilities.	50
INFRASTRUCTURE	50
1. Water Supply and Storage.	50
2. Sewage Disposal	51
3. Storm Drainage.	52
4. Power and Communication	52
5. Roads	52
PHYSICAL HAZARDS	52
1. Flooding.	52
2. Tsunami	53
3. Earthquake.	53
SOCIO-ECONOMIC CONSIDERATIONS.	53
1. Overview.	53
2. Current Socio-Economic Background	53
a. Population	53
b. Employment	57
c. Economy.	58
3. Housing Market Review and Trends.	61
4. Residential Lot Market Analysis	65
a. General Background	65
b. Market Assessment.	69
c. Estimated Affordability of Planned Lots.	75
5. Specific Socio-Economic and Fiscal Impacts.	76
a. Overview	76
b. Probable Impact on the Resident Population	76
c. Probable Employment and Employment Income.	79
d. Probable Fiscal Impacts (Taxes and Cost of Services).	79
<u>CHAPTER 5. RELATIONSHIP OF PROPOSED ACTION TO LAND</u> <u>USE PLANS, POLICIES, AND CONTROLS FOR THE AFFECTED AREA.</u>	81
HAWAII STATE PLAN.	81
STATE FUNCTIONAL PLANS	81
1. Housing Functional Plan	81
2. Recreation Functional Plan.	82
3. Agricultural Functional Plan.	82
STATE LAND USE CLASSIFICATION.	82
STATE COASTAL ZONE MANAGEMENT, OBJECTIVES AND POLICIES AS DEFINED IN CHAPTER 205A, HAWAII REVISED STATUTES	83
KAUAI COUNTY GENERAL PLAN.	84
LIHUE DEVELOPMENT PLAN	85
KAUAI COUNTY ZONING ORDINANCE.	87

	<u>Page</u>
<u>CHAPTER 6. RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY.</u>	88
<u>CHAPTER 7. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES.</u>	89
<u>CHAPTER 8. UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES PROPOSED TO MINIMIZE THEM.</u>	90
<u>CHAPTER 9. UNRESOLVED ISSUES AND THEIR RESOLUTION PRIOR TO THE PROPOSED ACTION</u>	91
<u>CHAPTER 10. CONSULTED AGENCIES AND PARTIES; AND PERSONS, FIRMS OR AGENCIES PREPARING THE STATEMENT BY CONTRACT OR AUTHORIZATION</u>	92
<u>CHAPTER 11. COMMENTS AND RESPONSES DURING THE CONSULTATION PERIOD.</u>	93
<u>CHAPTER 12. COMMENTS AND RESPONSES DURING THE AGENCY REVIEW PERIOD</u>	115
<u>CHAPTER 13. REFERENCES.</u>	202

FIGURES AND TABLES INDEX

<u>Figures and Tables</u>	<u>Page</u>
Figure 1-1 Lihue/Puhi Project District Plan.	2
Figure 2-1 Location Map.	8
Figure 2-2 Typical Roadway Section w/Curb, Gutter, & Utility Locations	31
Table 2-1 Proposed General Plan Change.	11
Table 2-2 Existing General Plan Update Urban Mixed Use Area.	12
Table 2-3 Surrounding Zoned and State Land Use Commission Urban Properties.	12
Table 2-4 Properties Proposed For Development By 1990	14
Table 2-5 Project Lot Affordability Without Sewer Systems	25
Table 2-6 Project Lot Affordability With Sewer System	25
Table 2-7 1979 Household Income Percentage Distribution, Island of Kauai	26
Table 3-1 Land Use Summary of Alternative One: No Golf Course.	32
Table 3-2 Land Use Summary of Alternative Two: No Project.	33
Figure 4-1 Topography map.	35
Figure 4-2 Median Annual Rainfall-Kauai map.	36
Figure 4-3 Detailed Land Classification- Island of Kauai	40
Table 4-1 County of Kauai Resident Population	55
Table 4-2 Kauai Resident Population by Census District.	56
Table 4-3 Kauai Civilian Employment Trends.	58
Table 4-4 Population and Economic Projections by Counties: 1980 to 2005.	60
Table 4-5 Estimated Distribution of Population and Housing Units on Kauai.	62
Table 4-6 Owner-Occupied Housing Units in Hawaii	63
Table 4-7 Inventory of Residential 1970 to 1984.	64

<u>Figures and Tables</u>	<u>Page</u>
Table 4-8 Planned Residential Lots on Kauai 1985 to 1988.	66
Table 4-9 Proposed Subdivisions With Indefinite Plans For Completion	68
Table 4-10 New Sales Within Selected Residential Subdivisions 1980 to 1984 . . .	70
Table 4-11 Projected Kauai Residential Lot Requirements 1984 to 2000	71
Table 4-12 Projected Market Support For Residential Lot Development At The Lihue/Puhi Project 1987 to 1998.	73
Table 4-13 Projected Market Support For Residential Lot Development At The Lihue/Puhi Project 1987 to 1998.	74
Table 4-14 Probable Impact of the Lihue Subdivision Expansion on Resident Population Distribution 1960 to 2005. . . .	78
Table 4-15 Probable Impact of the Lihue/Puhi Expansion on Real Property Taxes (1985 Dollars).	80
 <u>Appendices.</u>	 203
Exhibit 1 - Impact of Removing Land From Cane Production On the Cost Of Producing Sugar Lihue Plantation	
Exhibit 2 - Preliminary Engineering Report for Proposed Lihue/Puhi Project District Plan	
Exhibit 3 - A Study of Residential Land in the Lihue District, County of Kauai, Hawaii	

CHAPTER 1.

INTRODUCTION AND SUMMARY

PURPOSE OF THIS DOCUMENT

This environmental impact statement has been prepared to accompany a County General Plan amendment petition submitted by Grove Farm Properties, Inc. (hereinafter "Grove Farm Properties" or "Grove Farm") to the County of Kauai Planning Department. It is prepared in compliance with the requirements of Chapter 343, Hawaii Revised Statutes, and the regulations adopted pursuant thereto.

PROPOSED GOVERNMENTAL ACTION

Grove Farm Properties is requesting that the County of Kauai amend its General Plan as shown in Figure 1-1. This amendment involves the redesignation of about 464 acres from Agriculture to Urban Mixed Use in the County's General Plan

PROJECT DESCRIPTION

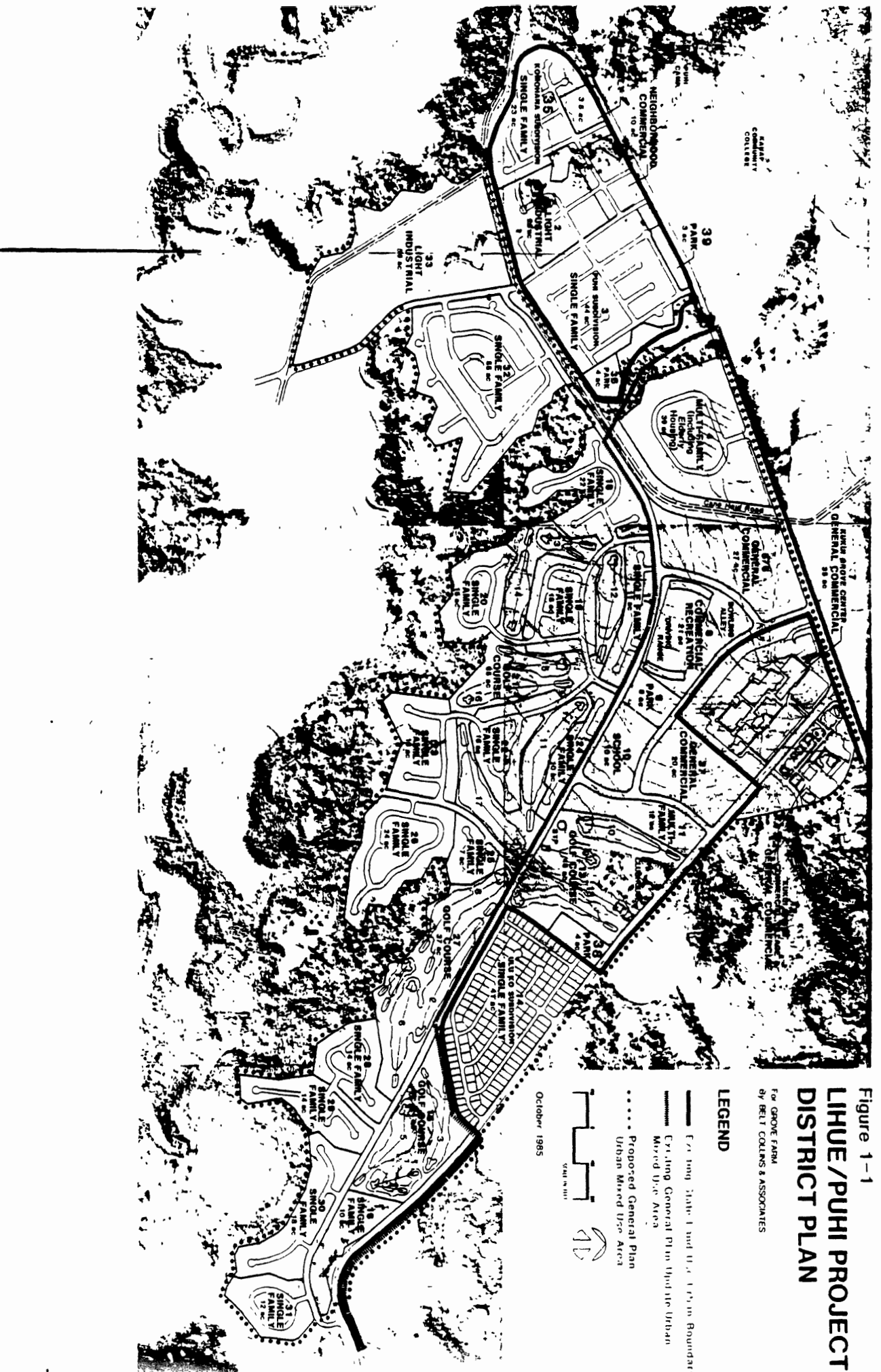
The proposed project is on property owned by Grove Farm Company, Incorporated abutting the southwest portion of Lihue. The area now consists predominantly of agricultural land being used for sugar cane. The applicant intends to establish a planned community which would include single and multi-family dwellings, light industrial, and recreational uses within the General Plan's Urban Mixed Use area. A proposed 18-hole golf course would run through single family areas to create an open and pleasant appearance. Light industrial uses would be concentrated adjacent to the existing light industrial area in Puhī, and would be screened from the nearby single and multi-family housing and park areas.

SIGNIFICANT IMPACTS AND PROPOSED MITIGATION MEASURES

The most significant impacts caused by the development of the proposed project are the removal of productive agricultural land and increased traffic levels, especially along Kuhio Highway.

The land to be removed from agricultural use consists of less than one percent of Kauai's total agricultural lands. This will be offset by the establishment of residential and employment opportunities.

October 1985



Traffic impacts, including congestion, air pollution and safety, would result from increased traffic levels along Kaumualii Highway and Nawiliwili Road. Several steps would be proposed to mitigate any potential adverse traffic impacts. The establishment of an internal roadway system would encourage most project-related traffic to remain within the project area. Signalization at the Kaumualii Highway intersections with Puhi and the Kukui Grove Shopping Center is also being considered as a method to mitigate potential traffic congestion. Finally, traffic flow would be improved by extending Nawiliwili Road through the shopping center to Kaumualii Highway.

Because the site has been radically altered from its natural state by agricultural practices, it is not expected that any significant impacts will occur to flora, fauna, or archaeological sites. All remaining impacts resulting from the project are expected to be minimal or mitigatable.

ALTERNATIVES CONSIDERED

Two separate alternatives were considered to the proposed plan. Alternative 1 discusses the adverse and beneficial impacts of excluding the golf course from the plan. Without a golf course approximately 504 additional units could be developed in the proposed project area. This alternative would sacrifice 172 acres of open space and recreation and create a less balanced and desirable development. Loss of this open space environment would affect the marketability of the residential lots.

Alternative 2 is the No Project alternative, which essentially maintains the current agricultural land use. No housing, employment, or recreational opportunities would be established on the site. As this type of development is in demand on Kauai, it is assumed that development would take place elsewhere on the island, and not within the area where population, employment, and government is focused. This alternative does not provide the land owner with satisfactory economic return on the subject property nor does it respond to the market needs existing in the Lihue/Puhi areas.

UNRESOLVED ISSUES

The issues which remain unresolved at this time are due to future adjustments needed to meet State and County standards, including: sewage disposal, storm drainage, solid waste disposal, light industrial uses, and water. The unresolved issues are primarily related to infrastructure.

- Two choices for sewage disposal currently exist: either the use of cesspools or the use of a sewage treatment plant. A final decision should be made concurrent with rezoning or subdivision approval.
- A preliminary study of storm drainage and its impact on the natural drainage system has been completed. Detailed plans for handling drainage will be prepared as part of the subdivision process.
- A solid waste transfer station site has not been determined at this time.
- The specific light industrial uses to be placed on the site cannot be identified until individual lots are purchased or leased.
- The adequacy of the water source has not been specifically identified. Water storage will need to be established prior to full development.

COMPATIBILITY WITH LAND USE PLANS AND POLICIES

The proposed project area is now designated within the State Agriculture Land Use district. A change to the Urban district will be required should the proposed General Plan change be approved. The housing, recreation, and economic aspects of the Hawaii State Plan and the State Functional Plans will be largely met by the development. Some conflict exists between the State Agriculture and Housing Functional Plans because the qualities that make the site amenable for agricultural use also make it desirable for housing. The site is not within the County Special Management Area, however consistency with the objectives and policies of the State Coastal Zone Management Program have been taken into consideration.

The Kauai General Plan governs long-range development within the County. The establishment of the Grove Farm project would meet many of the General Plans goals for physical and economic growth. The proposed zoning for the area is R-4, R-6, and industrial. Zoning will be sought after the State Land Use boundary is amended. The Lihue Development Plan essentially encourages the improvement of economic and housing conditions, the centralization of financial activities, and the promotion of recreational opportunities for all segment of the population. The project intends to provide a development which would meet these goals.

LIST OF NECESSARY PERMITS AND APPROVALS

This request for a General Plan Amendment to Urban Mixed Use is the first of many approvals which will need to be granted before Grove Farm Properties can commence construction of the Lihue and Puhi projects. The approvals and permits which need to be granted by various State and County agencies are listed below in the order in which they will be requested. Several adjacent areas, including Kukui Grove Commercial Center, are now zoned Urban Mixed Use and lie within the State Land Use Urban Boundary.

<u>Approval Needed</u>	<u>Approving Agency or Body</u>
State Land Use Boundary Amendment	State Land Use Commission
Rezoning	County Planning Commission/ County Council/Mayor
Subdivision Approval	County Planning Department
1) Preliminary Plat	Department of Public Works
2) Preliminary Engineering Drawings	State Department of Health
3) Final Engineering Drawings	State Department of Transportation
4) Final Subdivision Plat	Kauai Electric Co. State Surveyor Land Court Department of Water
Zoning Permit	County Planning Department
Grading, Grubbing and Stockpiling Permit	State Department of Health County Department of Public Works
Building Plan Approval	County Fire Chief
Building Permit	Building Department
Conditional Use Permit for Construction Activities	State Department of Health
Access to Work on State Highways	State Department of Transportation
Street Construction, Signing, Lighting, and Pavement Markings	County Department of Public Works

Park Dedication

County Planning and
Department of Public Works

Sewage Treatment Works:
Authority to Construct and
Operate:
Construction Plans:

State Department of Health
County Department of Public
Works

Water Connection Approval
Approval of Fire Hydrant
Installation Plan

Department of Water

County Fire Department

Electrical Connection Approval

Kauai Electric Company

Telephone Connection Approval

Hawaiian Telephone Company

CHAPTER 2

DESCRIPTION OF THE PROPOSED ACTION

PROPERTY DESCRIPTION AND LOCATION

The proposed action involves approximately 464 acres of land owned by Grove Farm Properties in the Lihue and Puhī District of Kauai. The Lihue parcel is situated in Lihue, Kauai, on the southwesterly side of Nawiliwili Road and identified by Tax Map Key: 3-3-3: portion of parcel 1. The Puhī parcel is situated in Puhī, Kauai, on the southerly side of Kaumualii Highway and on the westerly side of Puhī Road and identified by Tax Map Key: 3-3-2: portion of parcel 1.

The approximate location of the subject property is shown in Figure 2-1.

STATEMENT OF OBJECTIVES

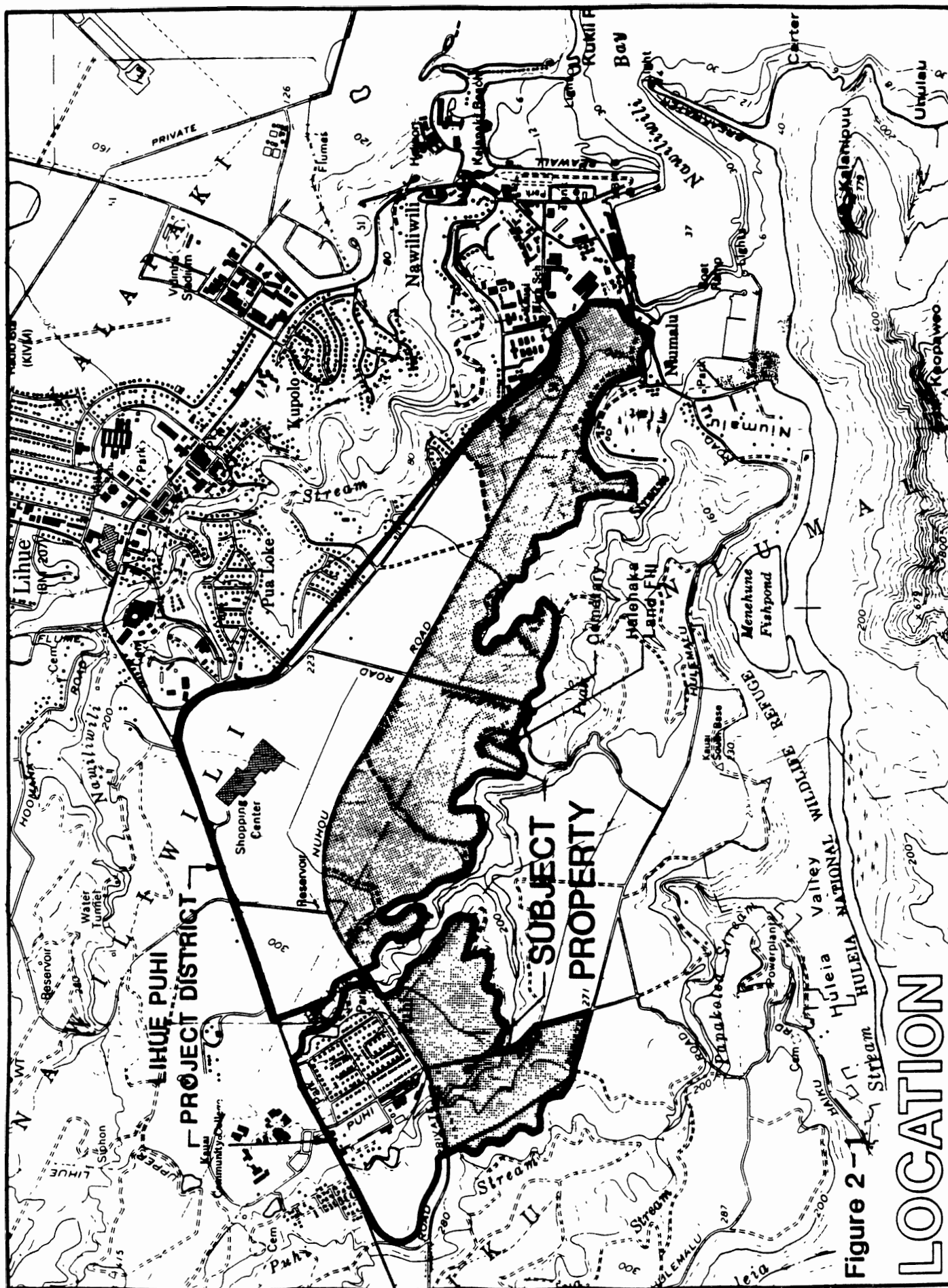
Grove Farm Properties, as a longstanding kamaaina business, has a long term commitment to develop its Lihue-Puhī Master Plan. The plan proposes future residential, recreational, commercial and industrial uses that focus on the recently completed Kukui Grove Shopping Center and Commercial Village in Lihue and on the existing residential, commercial and industrial uses in Puhī. The plan, as conceived, seeks to provide a planned community that will accommodate the Lihue and Puhī areas' future needs for more residential, recreational, commercial, and industrial space.

As with its previous developments, Grove Farm Properties with this development seeks to strike a balance between its business needs and the needs of the local community. Both the existing and proposed commercial-industrial uses are primarily intended to serve the needs of the Kauai residents. Existing residential areas, such as at Puhī, were intended for the local community. The proposed project area is intended to serve these needs as well as a range of other community needs.

HISTORICAL PERSPECTIVE

The subject property must be removed from The Lihue Plantation Co., Ltd.'s sugarcane production to allow the proposed development.

Grove Farm was in sugar production business between the years 1865 and 1974 and had 10,000 acres of land in sugar cultivation, of which 7,800 acres were owned in fee and 2,200



acres were leased from the Knudsen Trusts. Upon termination of its sugar production, Petitioner leased 5,000 acres of its lands to McBryde Sugar Company, Limited, and 2,800 acres of its lands to The Lihue Plantation Co., Ltd. Both of these leases are for a term of 21 years from 1974. The lease from the Knudsen Trusts for the 2,200 acres with 21 years remaining was assigned in 1974 to McBryde Sugar Company, Limited. The leasing and assignment by Grove Farm of its former sugar lands have strengthened the operations of both The Lihue Plantation Co., Ltd. and McBryde Sugar Company, Limited.

The lease to The Lihue Plantation Co., Ltd. provides for optional, yearly withdrawal of any 25 acres of the lease land by Grove Farm on a cumulative basis. To date, Grove Farm has accumulated the right to withdraw up to 300 acres. To date, less than 75 acres have been withdrawn from sugar production under this provision. Grove Farm intends to exercise its rights of withdrawal in an orderly manner so that The Lihue Plantation Co., Ltd. can continue the sugar production on surrounding lands, which will remain unaffected.

In 1974 when the 2,800 acres were leased to The Lihue Plantation Co., Ltd., Grove Farm offered to lease several hundred acres of additional land for sugar production. The offer to lease the additional acreage was declined due to the lessee's contention that its factory was unable to handle the additional cane production.

Any decrease in sugar production which may result from the withdrawal of the 464 acres for the proposed projects can be restored by improved farming methods of cane cultivation on the remaining lands which will and are now able to increase sugar yields per acre. For example, two new methods are drip irrigation and solid replant on unirrigated land. Under the latter method, the entire field is replanted after each harvest, which produces a better stand of cane and greater yield. As a result of the foregoing and the other factors herein addressed, Grove Farm believes that the proposed classification of the property will not have a significant effect on the environment.

PROPOSED GENERAL PLAN CHANGE AND SURROUNDING PROPERTY

Grove Farm Properties seeks a General Plan change at this time. Actual development of the property sought to be included within the Urban Mixed Use Area cannot be implemented until the State Land Use Commission changes its designation for the area to Urban and the County zones the property.

The General Plan change is requested due to the projected housing and industrial area shortages within the Lihue and Puhi project district. Of the property sought to be brought into the Urban Mixed Use area, the specific parcels subject to Grove Farm Properties' request include those identified in the following Table 2-1 and reflected in Figure 1-1. The table schedules the location and size of the parcels together with their proposed future classifications.

The properties sought to be included in the Urban Mixed Use area consist of 262 acres for single-family use, 56 acres of light industrial, approximately 20 acres of roads and buffers, and 126 acres of golf course.

The Puhi portion of the property includes parcel 32 consisting of 55 acres to be classified for single-family use. Also included is Parcel 33. It is 56 acres and is proposed for light industrial use. The parcels are bounded on the north by similar existing single-family and light industrial developments.

The Lihue property subject to this change request is contiguous to a number of parcels within the existing General Plan Update Urban Mixed Use area. The property in the current Urban Mixed Use area is classified, although not zoned, for multi-family, general commercial, recreational, public, and golf course purposes. Among the surrounding properties is a 10 acre parcel available for a school, 2 parcels slated for use as parks, and 46 acres of golf course, if constructed, to be added to the 126 acres of golf course land covered by Grove Farm's request for a general plan change. The unzoned Urban Mixed Use Area is contiguous to the existing Kukui Grove Center and Ulu Ko Subdivision.

The location of the surrounding properties, their size, and their classification are detailed in the following tables. The tables also identify those parcels within the General Plan Urban Mixed Use area which have not been classified Urban by the State Land Use Commission or zoned by the County (Table 2-2) and identify those parcels designated Urban by the State Land Use Commission and currently zoned by the County for residential, commercial, and industrial uses (Table 2-3).

PROJECT DESCRIPTION AND DEVELOPMENT PROGRAM

1. Overview. As can be seen from Table 2-1, addition of the Puhi and Lihue properties to the currently designated Urban Mixed Use areas in Lihue and Puhi will permit the eventual development of some 330 residential units in the Puhi area and

Table 2-1

PROPOSED GENERAL PLAN CHANGE

<u>Parcel</u>	<u>Location</u>	<u>Classification</u>	<u>Available Units</u>	<u>Acreage</u>
15	Lihue	Golf Course		24 acs.
16	Lihue	Single-Family (R-4)	40	10 acs.
17	Lihue	Single-Family (R-4)	44	11 acs.
18	Lihue	Single-Family (R-4)	88	22 acs.
19	Lihue	Single-Family (R-4)	72	18 acs.
20	Lihue	Single-Family (R-4)	60	15 acs.
21	Lihue	Golf Course		65 acs.
22	Lihue	Single-Family (R-4)	64	16 acs.
23	Lihue	Single-Family (R-4)	64	16 acs.
24	Lihue	Single-Family (R-4)	40	10 acs.
25	Lihue	Single-Family (R-4)	28	7 acs.
26	Lihue	Single-Family (R-4)	96	24 acs.
27	Lihue	Golf Course		37 acs.
28	Lihue	Single-Family (R-4)	56	14 acs.
29	Lihue	Single-Family (R-4)	56	14 acs.
30	Lihue	Single-Family (R-4)	72	18 acs.
31	Lihue	Single-Family (R-4)	48	12 acs.
32	Puhi	Single-Family (R-6)	330	55 acs.
33	Puhi	Light Industrial		56 acs.
Roads & Buffers				<u>20 acs.</u>
TOTAL			1,158	464 acres

Table 2-2

LIHUE/PUHI PROJECT DISTRICT AREAS GENERAL
 PLANNED FOR "URBAN MIXED USE," BUT WITHOUT
STATE URBAN OR APPROPRIATE COUNTY ZONING DESIGNATIONS

<u>Parcel</u>	<u>Location</u>	<u>Proposed Land Use</u>	<u>Acreage</u>
4	Puhi	Multi-Family	39
5/6	Lihue	Gen-Commercial	27
8	Lihue	Comm-Recreational	21
9	Lihue	Park	6
10	Lihue	School	10
11	Lihue	Multi-Family	12
13	Lihue	Golf Course	46
	Near Ulu Ko	Park	4
37	Lihue	Gen-Commercial	<u>20</u>
	Roads & Buffers		<u>18</u>
TOTAL			203

Table 2-3

LIHUE/PUHI PROJECT DISTRICT AREAS
 WITH APPROPRIATE STATE URBAN, COUNTY
GENERAL PLAN AND COUNTY ZONING DESIGNATIONS

<u>Parcel</u>	<u>Location</u>	<u>Existing Land Use</u>	<u>Acreage</u>
1	Komohana Subdiv.	Single-Family	23
		Multi-Family	3.5
	Puhi (Near Office)	Neighborhood Comm	10
2	Puhi	Light Industrial	28
3	Puhi Subdivision	Single Family	44
	Puhi Subdivision	Park (Kaumualii)	3
7	Kukui Grove Center	Gen-Commercial	35
12	Kukui Grove Village	Gen-Commercial	16
14	Ulu Ko Subdivision	Single Family	41
36	Puhi Subdivision	Park	4
	Roads & Buffers		<u>18</u>
TOTAL			225.5

an additional 828 residential units in Lihue. Taken alone, however, these housing unit figures are misleading as development of any of the future units will have to take into consideration required governmental approvals, the construction process, and market demand. Specifically, an Urban designation from the State Land Use Commission will have to be obtained along with County zoning and each of those approvals described at Chapter 1 of this statement before these units can be developed.

Grove Farm Properties contemplates that the development of the proposed project area will be effected over the next 8-10 years in conjunction with existing General Plan update Urban Mixed Use designated properties. The addition of the Lihue and Puhi property in the Urban Mixed Use area will permit the development of a total of 1,158 required single family residential units within the contemplated time frame. Moreover, the General Plan change requested by Grove Farm Properties will over time also permit the further development of the existing light industrial area in Puhi.

At a minimum, Grove Farm perceives a need for the development between now and 1990 of certain properties within the Urban Mixed Use area and a portion of the Lihue property sought to be included in that area. The properties proposed for development in the short term are described in Table 2-4.

2. Parcels 5/6, 8, and 9. There is an immediate need for the development of parcels 5/6, 8, and 9. They will be developed concurrently. Grove Farm proposes a bowling alley and driving range on parcel 8. Parcel 9 is intended for a multi-purpose park appropriate for use for farmers' fairs, circuses, 4-H shows, Kam Day parades, and carnivals. Parcel 5/6 is proposed for general commercial development.

Today, 94% of available space at Kukui Grove Center is leased. Over 60% of the Commercial Village at Kaumualii Highway and Nawiliwili Road is leased and improved. Grove Farm anticipates that the remaining available space at the Center and at the Village will be leased, improved, and occupied in less than 2 years. Need for additional commercial space at parcel 5/6 becomes obvious under these circumstances. Just as important, there are currently users for parcel 8 wishing to construct a bowling alley and driving range. Additionally, Grove Farm intends to retain parcel 9, the multi-purpose park, for the purposes discussed. Availability of these facilities will respond to the need for increased recreational facilities in the Lihue/Puhi area.

Table 2-4

PROPERTIES PROPOSED FOR
DEVELOPMENT BY 1990

<u>Parcel</u>	<u>Location</u>	<u>Proposed Land Use</u>	<u>Acreage</u>
5/6	Lihue	General Comm.	27
8	Lihue	Comm-Rec.	21
9	Lihue	Park	6
16	Lihue	Single Family	10
30	Lihue	Single Family	18
31	Lihue	Single Family	12
33	Puhi	Light Industrial	56

<u>Parcel</u>	<u>Existing General Plan Urban Mixed Use</u>	<u>State Urban District</u>	<u>Appropriate County Zoned</u>
5/6	Yes	No	No
8	Yes	No	No
9	Yes	No	No
16	No	No	No
30	No	No	No
31	No	No	No
33	No	No	No

Grove Farm intends to commence State Land Use Commission proceedings shortly to have parcels 5/6, 8, and 9 classified Urban. That procedure typically requires 10-14 months to complete. Thereafter, a zoning amendment must be sought requiring an additional 6-9 months for processing.

If zoning is obtained, construction planning can be started. The length of time associated with the planning process can vary from project to project. In this instance, Grove Farm estimates that construction planning will require 7-8 months with actual construction taking a similar period. As a result, construction of the bowling alley, driving range, and commercial facilities is not expected to commence prior to Spring of 1988. Completion of any of these parcels is expected no sooner than Fall of 1988.

3. Parcels 16, 30 and 31. These parcels are located at the lower end of Nawiliwili Road. Developed collectively, approximately 160 single family residential lots may be created for sale to Hawaii State and Kauai residents.

The development schedule for this portion of the project will depend on the design, approval, and construction process for the property and the market demand for the house lots. There are a number of steps in the development process and Grove Farm's time estimate presumes governmental approval at each phase of the process.

The minimum time to complete the development of this portion of the property, including design, approvals, and subdivision infrastructure construction, is estimated at 4 years from the date of the General Plan change. The earliest completed lots at this site can be available is at the end of 1990.

Assuming approval of the General Plan change sought by Grove Farm, Grove Farm Properties would be able to initiate State Land Use Commission proceedings to designate the property Urban no earlier than September 1986. Assuming a favorable action on Grove Farm Properties' request to the Land Use Commission, a petition for a zoning amendment could likely be filed by late 1987. Action on such a petition requires generally six months and an equal time is typically utilized in the construction planning stage and for preliminary subdivision approval. Thus, Grove Farm Properties does not expect construction to begin on the residential lots until late 1988 at the earliest, more likely 1989. In Grove Farm Properties' experience construction of a project such as the one described requires a minimum of 18 months to complete.

The anticipated market support for the planned single-family lots is expected to be primarily from Kauai residents seeking to reside in Lihue. Specifically, this market segment is expected to be comprised, in part, of recently formed households interested in a single-family homes. These will include residents employed in the district, persons relocating to Lihue or up-grading, and, to a certain extent, residents returning to Kauai.

A sufficient demand is expected to be in place to absorb the planned residential units prior to 1990. Upon their availability, sales are expected to be completed over a two-year period, 1990 to 1992. This conclusion is based on the average time required to market lots in the Lihue area and on the projected market position of the planned subdivision with respect to the total housing market on Kauai. The market performance of such a residential subdivision expansion could be accelerated if delays or cancellation occur with other planned residential lot developments. This market performance, of course, assumes that the lots are reasonably and appropriately priced, effectively marketed, and attractively developed.

The conclusion regarding adequate market demand is further bolstered by Grove Farm Properties' historical marketing practices and by the apparent demand for the existing Ulu Ko Subdivision. Before it was advertised in any manner, Grove Farm Properties had over 600 persons register their interest in the 164 lot Ulu Ko Subdivision. Also, at Ulu Ko, as with its Ulu Mahi and Komohana subdivisions, Grove Farm Properties intends to require lot purchasers to construct homes within three years (unless extended for certain reasons). Failure to do so within the time afforded can result in the loss of the property at its original selling price. This requirement/restriction on title has proven effective in reducing speculation within the housing lot market. It has also resulted in the timely construction of homes on the vacant residential properties marketed by Grove Farm Properties.

4. Parcel 33. The timetable for the light industrial development at parcel 33 is expected to track the development of parcels 16, 30, and 31. However, construction of parcel 33 is estimated to require only 5 months. Therefore, the property's projected availability is estimated to be early 1989 to mid-1989.

Parcel 33 will likely be used in the same manner as the existing light industrial parcel in Puhi. Expected uses include warehousing, storage facilities, light manufacturing and fabrication. Retailing operations are expected to be of

minimum concentration within the area. Because of its location adjacent to an existing light industrial zoned parcel and its proximity to a major harbor, airport, and regional shopping area, parcel 33 is expected to be an attractive destination for light manufacturing, wholesaling and service industries.

The Lihue Industrial Park is rapidly being filled. An additional industrial property in more rural Puhi will create a viable alternative for overflow usage. Moreover, it will attract many users not requiring the retail emphasis of Lihue but wishing Puhi's convenience at reduced cost.

5. The Balance of the Lihue/Puhi Project District.

a. Lihue. In April 1986 Grove Farm Properties secured final subdivision approval of its Ulu Ko Subdivision. Construction of the project has already commenced. The process of state registration of the subdivision has also been initiated and a preliminary order of registration was issued on January 7, 1986. A final order is expected in May 1986 and a petition has been lodged with the Land Court of the State of Hawaii seeking approval of the subdivision.

Ulu Ko is the last single family zoned property currently marketed or to be marketed for sale and available within the Lihue/Puhi project district adjacent to Kukui Grove Center. Although there are 2 parcels (parcel 4 and parcel 11) within the Urban Mixed Use area available, being used for single family residential development purposes, they are proposed for multi-family use because single-family use is not well suited for those properties. Their proximity to properties slated for general commercial expansion orients these residential properties to multi-family usage. That type of development is better capable of insulating its occupants from any impact resulting from general commercial development on adjacent property.

Recognizing the projected market demand for single family homes in Lihue, a phased development of the balance of the property sought to be included in the County General Plan's Urban Mixed Use area is justified. Reference to the Residential Lot Market Analysis section of this statement indicates that demand and need between the years of 1990-1998 will absorb all of the single family lots, including the golf course lots contemplated by Grove Farm Properties.

Development of the Lihue golf course lots is to occur in connection with the proposed golf course. Golf course lot owners may be afforded membership in the proposed public golf course at reduced rates. Although demand and need for such

properties within the foregoing time frames is apparent, the development of such low density residential properties can only occur if conducted concurrently with the golf course. This development scenario is a function of economic reality. Low density development properties must as a matter of course command a higher than ordinary price. The only manner in which these lots may command such prices is with the proposed adjacent golf course. Fortunately, it appears that a need will exist for a non-resort golf course within the next 5-8 years.

Now, Kauai has only one 18-hole non-resort golf course at Wailua and a single non-resort 9-hole course at Kukuiohono. The Wailua course is over capacity servicing over 110,000 persons per year (see County of Kauai 1984 Annual Report, p. 189) and the Wailua course services are now taxed (requiring a marshall to police players because the normal minimum 15 minutes between tee-offs can no longer be provided to players). When the impact of the new Hilton Hotel occupants use of the Wailua course is considered, there exists today a need for another public course.

With continued relocation of Kauai's employment aged population to its economic and government center, justification for a golf course oriented to Kauai residents becomes obvious. The Kauai Surf course seemingly will be monopolized largely by guests of the new Hemmeter Westin Resort being constructed at Kalapaki Bay. Also, the rumored cost of play at the Kauai Surf course will be prohibitive for many local users. As a result, the Grove Farm alternative to Wailua and the Kauai Surf Hotel is expected to be mandated for the local user. Grove Farm Properties projects that construction of the course will be required in the not overly distant future, and certainly not longer than 5-8 years from today.

Being cognizant of all the foregoing, however, development of the golf course and golf course lots will be dependent upon market demand. Grove Farm Properties believes that demand, although projected today to be sufficient to absorb the lots and require the course within the next 8-10 years, should once again be justified to the County at the time appropriate zoning is requested.

b. Puhi. Grove Farm Properties wishes to classify Parcel 32 at Puhi single family (R-6). Once developed Parcel 32 will be aimed at moderate to medium income earners with a goal of being affordable. In this regard, the inclusion of the property within the Urban Mixed Use Area will respond to the County Planning Department's expressed wishes concerning this subject matter.

Currently, sales at Grove Farm Properties' Komohana Subdivision, which is aimed at the same buyer who will be attracted to parcel 32 lots, are progressing well. Based on its historical experience, Grove Farm Properties projects that the Komohana subdivision will be sold out by 1987 and that homes there will be fully constructed within 2-4 years. During that period, the development process for parcel 32 will be initiated. The demand for such properties, which is projected in Chapter 4, is expected to permit absorption of those properties within 5-10 years.

c. Community Facilities. In addition to the residential, recreational, and light industrial uses proposed for the Lihue and Puhi property subject to the General Plan change request, Grove Farm Properties has numerous recreational, park, and school facilities scheduled for addition to the Lihue/Puhi area.

In approximately 1981 Grove Farm Company, Incorporated, dedicated a 4 acre community park at Puhi. The new park is located at the southeastern (makai) corner of the existing Puhi subdivision. With that placement, the community park is well situated to serve both the existing community at Puhi together with the moderate income housing expansion contemplated for parcel 32 southeast of the current Puhi subdivision.

Another 4 acre community park is planned for Lihue. It is to be located on northwest (mauka) boundary of the Ulu Ko Subdivision. The park will be adjacent to a portion of Grove Farm Properties' proposed golf course addition to Lihue. The park's placement will allow it to serve and be available to the community at large while also addressing the needs of the single family residential expansion proposed by Grove Farm Properties. This park is proposed to be dedicated in connection with the development of Ulu Ko Subdivision.

Further recreational facilities in the form of a private 6 acre park and a 21 acre commercial recreational facility for a bowling alley and driving range are also contemplated. They will be located west-northwest of the Ulu Ko Subdivision, and south of Kukui Grove Center at parcels 8 and 9 (which are not the subject of Grove Farm Properties' current application).

Moreover, a 10 acre school facility is proposed by Grove Farm Properties on parcel 10 adjacent to the anticipated location of the private park. Grove Farm Properties believes the site should be used for an elementary school facility as expansion room is currently available at the existing high school.

TECHNICAL DATA

1. Water System.

a. Existing Water System. The project area is currently served by the County of Kauai, Department of Water as part of both the Lihue and Puhi water systems. These systems operate multiple wells serving a number of storage tanks located in the Lihue, Puhi, Hanamaulu areas. Principally, there are 2 one million gallon storage tanks in the Lihue district above the German Hill area. Additionally, there are 2 low pressure 200,000 gallon tanks adjacent to Kauai Nursery. The German Hill tanks service Lihue, Kukui Grove Center, Kapaia, and Hanamaulu. The Kauai Nursery tanks serve Pua Loke, Ulu Mahi, and Ulu Kukui Subdivision, all bordering Nawiliwili Road. Another storage tank located above the Kauai Community College serves the Puhi area. In addition to existing facilities, another storage facility is proposed for construction in the Hanamaulu-Lihue area. These source/storage installations are connected by transmission lines varying in size between 10" and 18". Recently Grove Farm Properties has installed a 16" line from the German Hill tanks to service Kukui Grove Center and the area which is the subject of this statement.

b. Proposed Water System.

(1) Expected Water Demand. The Department of Water requires that new residential developments base their water systems on a demand factor of 500 gallons per unit per day. Based on this unit factor, the average daily demand generated by the housing projects contemplated, when fully constructed will be approximately 579,000 gallons (0.579 MGD). It is not expected that any water demand will be generated by the golf course usage planned for a portion of the Lihue project area. Golf course irrigation will be handled by off flow from the private sewage treatment facilities servicing Kukui Grove Center and Kauai Community College.

(2) Source Requirements. The Kauai Department of Water typically does not commit source capacity to new developments until zoning and subdivision approval. Should the source capacity provided by the wells feeding German Hill storage or Puhi storage require augmentation, it will be provided by an additional well or wells in the immediate vicinity which are expected to produce sufficient volume. (Source: Kauai Department of Water).

(3) Storage Requirements. Storage requirements for the residential and industrial projects will be equal to

one day's average demand (0.08 MGD) or such higher figure as determined by the Department of Water. Currently, it is not perceived that further storage other than what is presently being planned by the Water Department will be required. With Grove Farm Properties' proposed addition of a 12" line along Nawiliwili Road, service to house lots there may be switched over to the Lihue system increasing available storage in the Puhi storage tanks. Should a future need arise, that need for additional storage facilities may be addressed at such time as specific zoning requests in respect of portions of the project area are made by Grove Farm Properties. At that time, the location, size, cost, and the equitable apportionment of the cost of such facilities may be determined through coordination with the Department of Water.

(4) Water Transmission. Off-site water transmission facilities are adequate to service the project area. If further improvements are required, they will be constructed. It is not perceived today that installation of a booster pump station will be required in the future. The on-site distribution system will be designed and constructed consistent with the standards of the Department of Water. The cost of the same will be borne by Grove Farm Properties. Upon completion, all water system improvements will be dedicated to the County of Kauai.

2. Sewage Disposal.

a. Existing Sewage System. Residential Lihue adjacent to the project area and Puhi are both served exclusively by cesspools. Kauai's 5-year (1986-1992) Capital Improvement Program proposes no adjustment to the current service methodology. Kukui Grove Center is served by a privately owned sewage treatment plant.

Rapid growth of developments in this area will increase wastewater emissions. Evaluation of this particular aspect of the proposed project is better handled upon zoning or subdivision of particular elements of the project.

b. Proposed Sewage System.

(1) Projected Sewage Flow. The typical residential unit is expected to produce 100 gallons per day (GPD) of sewage flow per capita. Assuming an average occupancy rate of 3.2 persons (based on the 1980 U.S. Census) per unit and 1,158 residential units, the project will produce approximately 370,000 gallons of sewage flow per day.

The State Department of Health currently requires that sewage treatment facilities base their capacity on an assumed flow of 400 gallons per residential unit per day. Applying this higher standard to this project will produce upon completion an assumed sewage flow of 463,000 GPD. Household sewage flow, however, will range between 320-400 GPD. This flow can be adequately serviced by cesspools. Light industrial needs in Puhi can be similarly served.

Sewage flow for the overall project is described in the Preliminary Engineering Report attached as Exhibit 2.

(2) Sewage Treatment & Disposal. As a preliminary matter Grove Farm Properties proposes that cesspools be utilized to address the sewage disposal needs of the projected developments. This disposal method is historically consistent with the surrounding developments.

Grove Farm Properties recognizes that utilization of cesspools exclusively to service the entire project may have a significant effect. That determination, however, may not reasonably be made in connection with this application as the determination requires the evaluation of myriad factors upon which we can only speculate today. The determination will depend on large part upon studies conducted by the Department of Health in the future.

It is noteworthy that the area in question has generally good drainage and a low water table. As a result, it appears that it may be well suited for cesspools. However, if it is determined that a significant environmental impact will result from utilization of cesspools, the impact may be avoided or minimized through the installation of a sewage treatment and collection system.

With the foregoing in mind, Grove Farm Properties proposes that questions, if any, concerning the proper or least significantly impacting method of sewage disposal be addressed in connection with the zoning of the properties. Grove Farm Properties will coordinate with the State Department of Health at that time and throughout any subdivision planning stage to insure that every required or necessary mitigative measure is implemented in the development of the project.

In that regard, however, Grove Farm Properties believes that utilization of cesspools to serve the project area is both economically and socially justified. Recognizing that one of the objectives under the Hawaii State Plan (Objectives and Policies for Socio-Cultural Advancement-Housing) is to create more opportunity for Hawaii's

people to purchase reasonably priced homes, there can be little question regarding the justification in light of the cost per lot to construct a sewage treatment and collection system versus cesspool costs.

In 1986 dollars the cost to construct a cesspool in non rocky areas ranges from \$500.00 - \$1,200.00. The cost per unit to provide sewage treatment and collection facilities to the project site could easily exceed \$9,000.00 to \$11,000.00. This cost differential has a significant social and economic impact on the residential project. In the first instance, the approximate \$14,000,000.00 cost associated with construction of sewer facilities for the proposed residential projects is an infrastructure cost which must be advanced by the developer before residential lots can be marketed. As an infrastructure cost, it is generally paid with construction financing for improvement of the project. Thus, the cost of financing plus the infrastructure cost is borne by the buyer of the developed properties.

If the average cost differential between sewer and cesspool is \$10,000.00, that cost differential alone will prevent a significant portion of the population from being able to purchase available residential properties within the development. A simple analysis which can be used to assess the impact of this additional cost is to evaluate the resulting affordability of the residential lots.

Cost is only one element of the affordability factor. Affordability is a function of cost, income, available mortgage financing terms, and applicable qualifying ratios applied to the foregoing items. Mortgage financing terms vary and conventional financing terms offered by major Hawaii lenders and for Hula Mae loans have been reviewed. The current terms for fixed rate, 30-year conventional residential loans have fluctuated greatly during the last quarter of 1985 and first quarter of 1986 and have ranged from about 10.25% to 12.75% with points ranging from 1% to 2.5%. Adjustable rate mortgage loans have been available at lower rates. Qualifying ratios range from a gross income of 2.5 to 4 times the monthly mortgage payments.

For the purpose of this analysis, the income qualifying ratio is assumed to be 3 to 1. Interest rates are assumed to approximate a constant of 12%. The average residential lot is projected for this analysis to be priced at about \$55,000.00 without sewer facilities. A typical residence is estimated to cost about \$55,000.00, for a total cost of \$110,000.00 for house and lot. Typically, about 80% of the purchase price will be financed. Table 2-5 and Table 2-6

identify the financial or affordability impact that requiring construction of sewers will have on Hawaii's public.

The total purchase price, mortgage loan amount, monthly principal and interest payments and qualifying household income levels for the project without sewer facilities is summarized in Table 2-5. Table 2-6 summarizes the same information but incorporates the added cost to construct a sewage treatment and disposal system of approximately \$10,000.00 per unit, thus increasing the assumed lot price of \$55,000.00 to \$65,000.00.

The foregoing analysis reflects that substantially less qualifying income is required to purchase a home without a sewer system. In fact, construction of sewers means someone must earn almost 10% more annually in order to be able to afford the same property, provided all other variables are constant. This impact could exclude some 5%+/- of Kauai's population from being able to purchase a home.

Set out in Table 2-7 are the household income percentage distributions on Kauai reflected in the 1980 U.S. Census. Where affordability is a function of increased income (which is a result of increased infrastructure costs) approximately 4-1/2% to 6% of Kauai's population are rendered incapable of qualifying for the mortgage loan described in Table 2-6 (Project Lot Affordability With Sewer System). Put another way, use of cesspools increase the number of persons by approximately 5%+/- of the population base who can afford to purchase a single family detached home in Lihue.

3. Storm Drainage. Reference should be made to the Preliminary Engineering study attached as Exhibit 2. Storm drainage for the site will be via surface and subsurface drainage systems constructed to County standards. The site's natural drainage pattern slopes gently towards Puali (Niumalu) stream and Nawiliwili stream towards the Nawiliwili Harbor. If the drainage plan is implemented there will be no drainage into Huleia stream or the Menehune fishpond.

Table 2-5

PROJECT LOT
AFFORDABILITY WITHOUT
SEWER SYSTEMS

Purchase price of lot		\$ 55,000.00
Construction cost of house		<u>55,000.00</u>
Total house and lot price		\$110,000.00
Mortgage loan amount at 80%		\$ 88,000.00
Estimated monthly mortgage payment (12%) at:		905.00
	<u>Monthly</u>	<u>Annual</u>
Qualifying household income at:	\$2,715	\$ 32,580.00

Table 2-6

PROJECT LOT AFFORDABILITY
WITH SEWER SYSTEM

Purchase price of lot		\$ 65,000.00
Construction cost of house		<u>55,000.00</u>
Total house and lot price		\$120,000.00
Mortgage loan amount at 80%		\$ 96,000.00
Estimated monthly mortgage payment (12%) at:		988.00
	<u>Monthly</u>	<u>Annual</u>
Qualifying household income at:	\$2,964	\$ 35,564.00

Table 2-7

1979 HOUSEHOLD INCOME PERCENTAGE
DISTRIBUTION, ISLAND OF KAUAI

<u>Income Category</u>	<u>Island of Kauai</u>
Less than \$ 2,500	3.0%
\$ 2,500 - \$ 4,999	5.7
\$ 5,000 - \$ 7,999	7.9
\$ 7,500 - \$ 9,999	6.5
\$10,000 - \$12,499	9.0
\$12,500 - \$14,999	8.0
\$15,000 - \$17,499	0.9
\$17,500 - \$19,999	7.3
\$20,000 - \$22,499	7.1
\$22,500 - \$24,999	7.1
\$25,000 - \$27,499	7.5
\$27,500 - \$29,999	4.2
\$30,000 - \$34,999	8.8
\$35,000 - \$39,999	6.2
\$40,000 - \$49,999	5.0
\$50,000 - \$74,999	4.2
\$75,000 and More	<u>1.7</u>
Total	100.0%

Source: U.S. Census Data

Drainage will be via the site's internal road system to the makai boarder of the site to insure that the natural pattern of flowage is maintained without any material alteration. This system has the advantage that, as increments of development are installed, the storm drainage can be isolated from, if necessary, or be used in tandem with the cane irrigation system. That system will continue to utilize the existing natural drainage swales that flow in a southeasterly direction to the Harbor. Throughout the development of the project and upon its completion, discharge will be into Nawiliwili Harbor through the area's natural drainage system.

4. Electrical System. Primarily, the proposed project will be provided with an underground electrical distribution system. It will be constructed in accordance with Kauai Electric standards and regulations. The source of electricity will be the generating plant at Port Allen with back-up from the Lihue, McBryde, and Kekaha Sugar mills and various hydro-electric installations.

Electrical usage will increase as a result of the project. The electrical peak generating demand increase that will be caused by the project may be estimated utilizing Kauai Electric's residential use factors. Currently, Kauai Electric uses a factor of 3 kilowatts per residential unit to estimate peak generating demand increases. Applying this factor to the proposed additional housing units contemplated by the project, we may estimate that an additional 3,478 kilowatt increase in peak generating demand will result upon completion of the project. Puhi's industrial use may cause an increase of one quarter again as much use. Realistically, this demand will not be present until sometime after 1995 as a result of the phasing of the project and the time required for sale and construction of the residential projects. The monthly consumption for the project may be estimated by using a range of 800 to 1,000 kilowatt hours per month per unit, with a similar factor applicable to Puhi's light industrial. Applying this factor, the range of consumption for the total project, once completed, may be estimated to be 926,000 kilowatt hours to 1,158,000 kilowatt hours. The light industrial area may add some to this demand. However, it is anticipated that the primary use will be warehouse or storage and therefore requiring little electrical demand. The electrical distribution system in the industrial area may be overhead which is consistent with the present Puhi industrial area.

5. Telephone and Cable T.V. Systems. The project will be provided with an underground telephone distribution system

constructed by Grove Farm Properties in accordance with Hawaiian Telephone standards and regulations. The installation of an underground cable television distribution system will also be provided if local services are available.

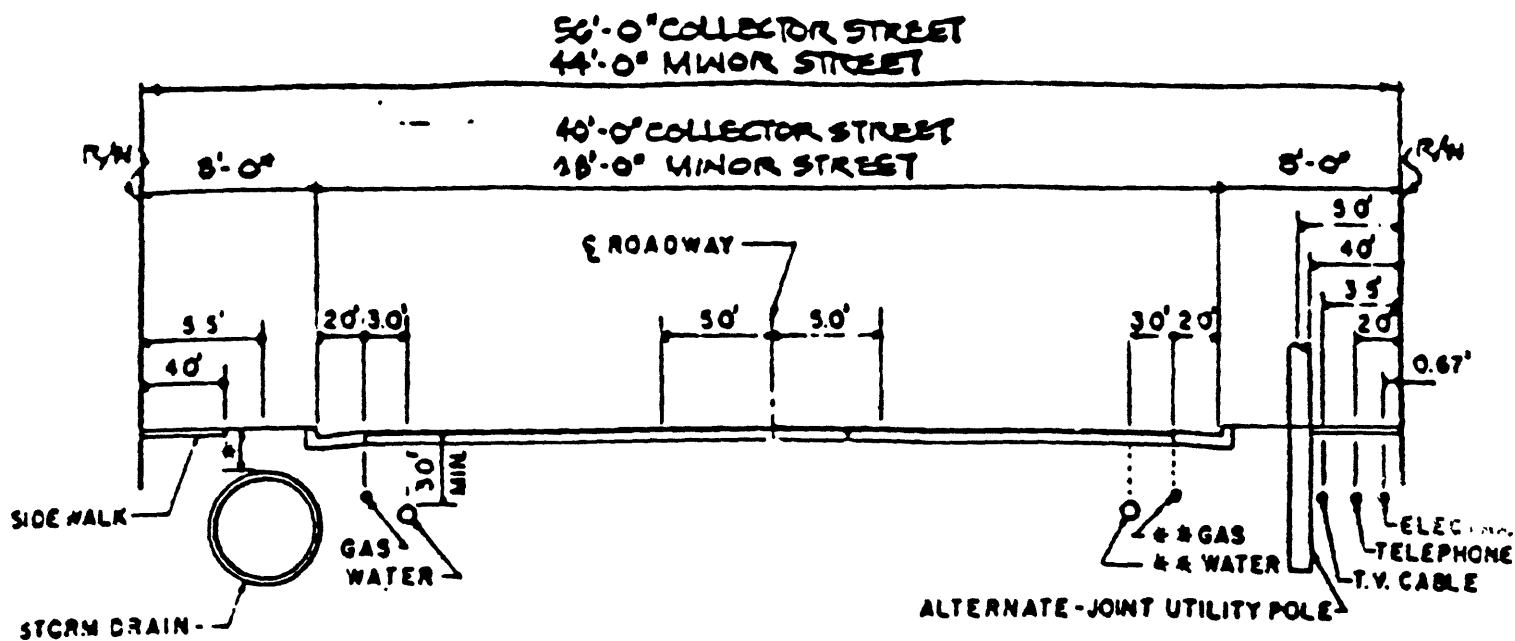
6. Solid Waste Disposal System. Solid waste will be collected by and disposed of by the County of Kauai, Public Works Department. Disposal will be at either the Halehaka landfill and/or the Kekaha landfill. Since the Halehaka landfill has an expected life of only a few years, the Kekaha landfill will be the primary site for solid waste disposal, utilizing a transfer station somewhere in the Lihue area.

7. Road System. The main access to the proposed project will be via a new 56-foot collector road to be constructed in a general east-west alignment along the mauka boundary of the project site. Minor streets with 44-foot rights-of-way will be constructed off of this main road to provide access to residences within the project site. See Figure 2-3 - Typical Roadway Sections.

As contemplated, this main collector road will intersect at its most western point with the planned improvements of Puhi Road. From that point the road will travel east-northeast to a point south of Kukui Grove Center where the road turns in a south-southeast direction to intersect with Nawiliwili Road adjacent to the Bulk Sugar Plant. A number of 44-foot collector streets connect this main road to Kaumualii Highway and Nawiliwili Roads at various locations. Internally, it is estimated that at least 20,000 lineal feet of road will be constructed to service the project. Upon completion of the roadways, it is intended to dedicate them to the County of Kauai.

INFRASTRUCTURE COST ESTIMATE

The estimated cost of providing all on-site and off-site improvements for this project is \$42,000,000.00 in 1986 dollars. This estimate includes roads, water, drainage, and other required improvements, but if construction of sewage treatment and collection facilities is required, it will cost over \$51,750,000.00 to develop the property.



NOTES:

- 1 MAINLINE UTILITIES SHALL HAVE A MINIMUM COVER OF 2.5' UNLESS OTHERWISE SPECIFIED
- 2 * WHEREVER POSSIBLE THE STORM DRAIN SHALL HAVE A MINIMUM COVER OF 3.0'.
- 3 * * ALTERNATE LOCATION OF UTILITIES.

TYPICAL ROADWAY SECTION W/ CURB, GUTTER & UTILITY LOCATIONS

CHAPTER 3.

DESCRIPTION OF KNOWN ALTERNATIVES

Several alternatives are considered here in order to gain an understanding of the range of possible social, economic, and environmental impacts which might occur under other development or non-development scenarios.

ALTERNATIVE 1: NO GOLF COURSE

Under this alternative, the proposed golf course lots would be developed for single family residential use rather than recreation and open space. This alternative would affect about 46 acres of golf within the existing General Planned area and about 126 acres within a requested General Plan change area. Also affected would be the proposed driving range on parcel 8 which might not be developed without the support of the golf course. See Table 3-1.

Golf course as a recreational outlet is seen in the applicant's present proposal as being important for the establishment of an attractive community environment, and one which will promote a healthy lifestyle. The replacement of the proposed golf course in the project district with residential use will drastically affect the ambiance of the proposed community. The new residential area zoned at R-4 would increase the projected number of residential units by 688. The amount of recreation and landscaped open area in the Lihue/Puhi project district would be reduced by 172 acres.

The replacement of the driving range by other general commercial use would allow an additional 137,214 sq. ft. of commercial floor area. Total commercial floor area in this alternative would be 137,000 sq. ft. greater than the present proposal.

The increase in number of residents and amount of commercial activities would increase the demands on public service, infrastructure and other needed facilities. The lack of a golf course for irrigation and runoff retention areas would require alternative and possibly more costly engineering solution for drainage control and sewage effluent disposal.

Overall, Alternative One increases the overall density and intensity of use and eliminates the open space and recreation amenities. This arrangement, from the developer's standpoint, would eliminate the appeal of the project to higher income buyers and would reduce the range of housing markets the

developer is able to target. Finally, a longer development period would be needed to phase in the larger number of lots.

ALTERNATIVE 2: NO PROJECT

The No Project alternative would essentially limit urban development within the existing General Planned areas of the Lihue/Puhi project district and may require serious restructuring of the applicant's present land use plans. Without the single family golf course lots, it seems unlikely that the proposed golf course would be developed outside of the present General Planned Urban Mixed Use area. Development in this area would probably remain in sugar cane production over the short-term period. The survival of the Lihue Plantation Company, which is in doubt, would determine the length of this period.

Parcel 13, the proposed golf course area within the General Planned area, would probably be developed as additional general commercial, multi-family or single family.

Parcel 10, the school site, may not be needed with the reduced residential population and the proposed driving range on parcel 8 would not be needed without the golf course. These areas probably would be developed for general commercial use because of their proximity to the shopping center.

The no project alternative based on the above assumptions are presented in Table 3-2. Residential units are expected to be about 865 units less than the present proposal. Commercial floor area is expected to be about 62,000 sq. ft. less as compared to the present proposal.

The net effect of the no project alternative would be a decrease in the demand for residential oriented public services, infrastructure and facilities. The areas remaining in agriculture would generate less real property taxes than if they had been urbanized. There would be no additional areas for industrial expansion or for moderate income and market housing in Puhi and Lihue.

Table 3-1.

LAND USE SUMMARY OF ALTERNATIVE ONE:
NO GOLF COURSE

<u>Land Use</u>	<u>Acreage</u>	<u>No. of Units</u>	<u>Floor Area(sf)</u>
Existing Use			
Commercial	61	0	451,000
Industrial	28	0	30,000
Multi-Family			
Residential	3.5	35	0
Single Family			
Residential	108	415	0
Park	7	0	0
Roads and Buffers	18	0	0
Subtotal	225.5	450	481,000
Proposed Within General Plan Area			
Commercial	68	0	592,416
Multi-Family			
Residential	51	510	0
Single Family			
Residential	46	184	0
Parks and Public			
Facilities	20	0	0
Roads and Buffers	18	0	0
Subtotal	203	694	592,416
Proposed Addition to General Plan Area			
Industrial	56	0	487,872
Golf Course	0	0	0
Single Family			
Residential	388	1,662	0
Roads and Buffers	20	0	0
Subtotal	464	1,662	487,872
Roads and Other			
Misc. Areas	36	0	0
TOTAL	892.5	2,806	1,561,288
	Acres	Units	Square Feet

Table 3-2.
LAND USE SUMMARY OF ALTERNATIVE TWO:
NO PROJECT

<u>Land Use</u>	<u>Acreage</u>	<u>No. of Units</u>	<u>Floor Area(sf)</u>
Existing Use			
Commercial	61	0	451,000
Industrial	28	0	30,000
Single Family Residential	108	415	0
Park and Public Facilities	7	0	0
Subtotal	204	415	481,000
Proposed Within General Plan Area			
Commercial	84	0	731,808
Multi-Family Residential	54.5	545	0
Single Family Residential	46	184	0
Parks and Public Facilities	4	0	0
Subtotal	188.5	729	731,808
Proposed Addition to General Plan Area			
Agriculture	464	0	0
Other Roads and Misc. Areas	36	0	0
TOTAL	892.5 Acres	1,146 Units	1,212,808 Square Feet

CHAPTER 4.

DESCRIPTION OF THE ENVIRONMENTAL SETTING AND PROBABLE IMPACTS OF THE PROPOSED ACTION

PHYSICAL ENVIRONMENT

1. Physiography, Geology, and Climate.

a. Elevation. Elevation within the project site varies. Its lowest point is 120 feet above mean sea level at the point near Nawiliwili Road where the property is closest to Nawiliwili harbor (at parcel 30). The elevation is 240 feet at the northwest quadrant of the Lihue portion of the site (parcel 17). The highest point within the proposed additional area is 280 feet located just east of the proposed extension of Puhi Road in Puhi. Average elevation is approximately 200 feet with most of the site falling between 180 and 220 feet.

b. Topography & Slope. The topography can be characterized generally as flat in the Puhi area and the western portions of the Lihue property. There is a gentle slope in the eastern portion of the Lihue property with isolated pockets of low areas along the southern edges.

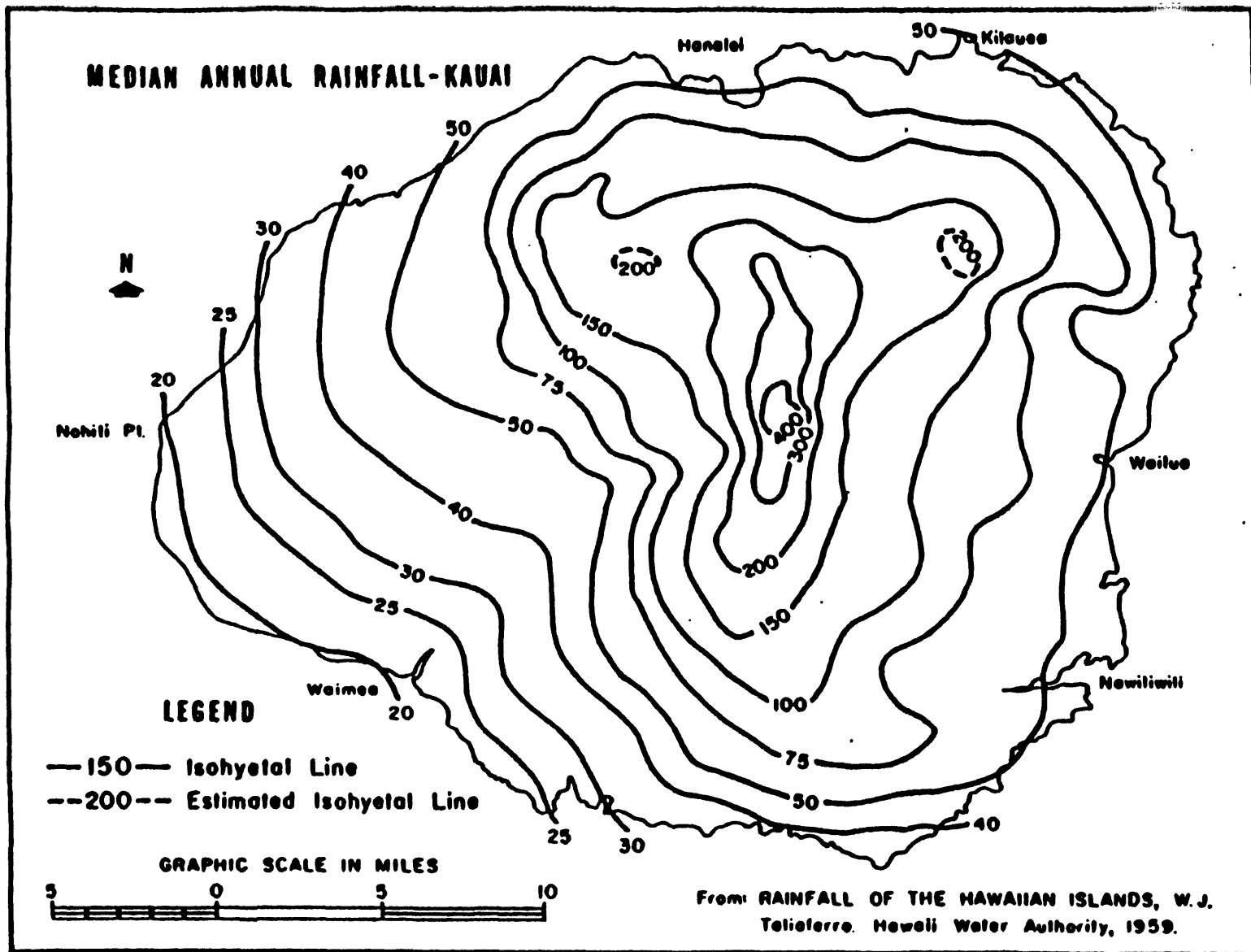
Slopes range from 2 percent in the western portion to just short of 3 percent in the eastern. The general direction of the slope is from west to east/south and from the south in a southeasterly configuration. See Figure 4-1.

c. Rainfall. The average rainfall at the project is approximately 50.0 +/- inches as reflected by the nearest climatological station. This station is located at Puhi. The project site therefore receives somewhat less rain. Rainfall at the site is distributed fairly evenly throughout the year. However, May through September are dryer than average months and October through April are wetter than average. Median average rainfall at the site is also reflected on Figure 4-2.



— 75 —

FIGURE 4-2



d. Geology. Kauai is the fourth largest island in the Hawaiian group. It is considered to be one of the oldest geologically. The island is volcanic in origin. It consists essentially of a single deeply dissected constructional dome resulting from lava flow dipping outward in all directions from the principal volcano center near Mount Waialeale. This dome is slightly elongated in a northeast-southwest direction, and a slight bulge was produced on the southeastern slope of the dome by the lesser eruptive center of Haupu. The rocks produced by this major shield volcano are known as the Waimea Canyon Volcano Series. They make up much of the rugged interior of the island. After time this series of volcanic activity ceased and the land mass was exposed for a long period to climatic forces. Those forces weathered the rocks to soil material and cut deep canyons and valleys.

Volcanic activity resumed with the Koloa Volcanic Series, which continued intermittently over a long period of time. These flows, occurring primarily along the island periphery, smoothed the topography by covering the previous dissected terrain of the Waimea Canyon Volcanic Series. During the period between eruptions, however, valleys and gulches were carved into earlier Koloa flows.

Toward the end of the Waimea Canyon eruptions, the Lihue depression was formed by the collapse of a large subcircular section in the eastern side of the island. Subsequently, the walls were eroded further and the depression floor was buried under flows of the Koloa Volcanic Series. Over geologic time, these flows were deeply weathered to soil material and greatly incised by streams and valleys resulting in the present topography. The flatter areas within this Lihue depression constitute much of the arable lands on the windward side of the island. The depression is bounded by the Makaleha Mountains to the north, Kalepa and Nonou Ridges to the east, Haupu ridge to the south, and the Waialeale massif to the west. See Detailed Land Classification, Island of Kauai, Land Study Bureau, 1967, p. 2 (hereinafter sometimes "DLC").

e. Climate. Kauai has a mild, semitropical climate. Owing to the marine influence and the prevailing northeast tradewinds, there is very little diurnal or seasonal variation in temperature. The mean annual temperature at sea level is approximately 75° F; seasonal fluctuations seldom exceed +/-10°F of this mean. See DLC.

2. Soils and Agriculture.

a. Soils and Other Physical Characteristics. The site is relatively flat with no distinguishing

characteristics. The site is currently under sugarcane cultivation and related uses (roadways, etc.) except for small gulch areas too steep to cultivate.

The majority of the soils at the project consist of Lihue Silty Clays (LhB). Characteristics for these types of soils, as indicated by the United States Department of Agriculture Soil Conservation Service in their soils survey of August 1972, are moderately rapid permeability, slow runoff, and only slight erosion hazard. Engineering interpretations for this type of soil indicate no unusual conditions that would affect construction. However, as with many Hawaiian soils, shrink-swell potential is indicated as moderate.

The Soil Conservation Service classifies the Lihue silty clay type of soil in Sugarcane Group 1 indicating that this soil type is in the grouping most suitable for sugarcane. The soils capability group is Subclass IIe. This would indicate that the soils are subject to moderate erosion if they are cultivated and not protected. Soils are 30 inches to more than 60 inches deep and have slopes of 0% to 8%. The detailed land classification done by the Land Study Bureau for the island of Kauai in 1967 designates most of the project area as B41i; B indicating a productivity rating of B on a scale of A through E, 41 indicating the land type (Lihue silty clay), and i indicating it is irrigated. See Figure 4-3. The balance of the land has ratings of B-78 in the Puhī area and E-39 and C-41 towards Nawiliwili harbor. The Department of Agriculture of the State of Hawaii classifies the majority of the project site as Prime Agricultural Land, and advises that the soil survey reflects that the project site includes each of the following soil types:

- LhB -Lihue silty clay with 0 to 8 percent slopes, used for sugarcane, pineapple, pasture, truck crops and orchard, capability classification of IIe;
- LhC -Lihue silty clay with 8 to 15 percent slopes with similar uses as LhB, capability classification of IIIe;
- LhD -Lihue silty clay with 15 to 25 percent slopes, used for sugarcane, pineapple and pasture, capability classification of IVe;
- LhE2 -Lihue silty clay with 25 to 40 percent slopes, used for pasture, capability classification of IVe;
- LIC -Lihue gravelly silty clay with 8 to 15 percent slopes, used for sugarcane, pineapple and pasture, capability classification of IIIe;

- PnA -Puhi silty clay loam with 0 to 3 percent slopes, used for sugarcane, pineapple, pasture, truck crops and orchard, capability classification of IIc;
- PnB -Puhi silty clay loam with 3 to 8 percent slopes with similar uses as PnA, capability classification of IIc;
- PnD -Puhi silty clay loam with 15 to 25 percent slopes, used for sugarcane, pineapple, pasture and orchard, capability classification of IIc;
- IoC -Ioleau silty clay loam with 6 to 12 percent slopes, used for sugarcane, pineapple, pasture, truck crops and orchard, capability classification of IIc;
- HnA -Hanalei silty clay with 0 to 2 percent slopes, used for sugarcane, pasture and taro, capability classification of IIc.

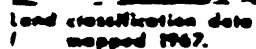
The predominant soil types are LhB and PnB. These soils are subject to moderate erosion if cultivated and not protected.

The Land Study Bureau (LSB) Detailed Land Classification for the Island of Kauai identifies the Overall Productivity Ratings, land types, and selected crop productivity ratings for the project site as:

	<u>pineapple</u>	<u>Selected Crop Productivity Ratings</u>				
		<u>vegetable</u>	<u>sugarcane</u>	<u>forage</u>	<u>grazing</u>	<u>orchard</u>
B411	b	b	b	a	a	a
B781	b	b	b	b	a	b
C791	c	d	d	d	b	c
D801	d	e	d	e	a	d
E39	e	e	e	e	d	e

The predominant soil ratings in the project area according to the LSB are B411 and B781. By this method of classification, these "B"-rated soils have good productivity potential for most agricultural uses.

The project site is classified "Prime" according to the Agricultural Lands of Importance to the State of Hawaii (ALISH) system.



Lead Type. Number and letter "i" if irrigated; number only if unirrigated. (See sections of text where Lead Types are defined and rated by selected uses.)



Approximate Scale (ft./in.) = $\frac{12,700'}{6}$ - Ground Elevation

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∴ **Figure 4-3**

Over time the impact of the proposed project on the site will be to remove the land from cane cultivation by placing it mainly in residential uses. The primary effect of residential usage of the land will be to reduce the permeability to water of the ground surface by the addition of impervious objects such as buildings, parking, and roadways. Assuming the total site is approximately 464 acres and that each residential unit will render impervious approximately 2,200 square feet, residential use will result in a hardening of approximately 58 acres of the site or just over 12% of the site area. The effect of this usage on water infiltration will be to decrease it somewhat since the water will run from the impervious areas to the more permeable areas adjacent to it before it runs off the site. (The figure 2,200 square feet per unit assumes a 1,000 square foot building unit, 400 square feet of parking and driveway, and an assignment of one-half of the adjacent access road to each parcel, which would be 12'x60', or 720 square feet.)

The impact that the proposed project will have on the agriculture industry of Kauai will be felt in two related areas. The first is the gradual withdrawal from cane of approximately 420 acres of B productivity rated land (20 acres are currently in roads; a portion is gulches or lower rated land) over the next ten years. The second is the impact on mill operations that will result from the withdrawal of the area from cane production.

b. Cane Land Withdrawal. In 1967 Class A, B, and C agricultural lands on Kauai totaled 68,981 acres (as calculated by the Land Study Bureau), not including urban uses or land under water. The urban use land in 1967 was approximately 4,600 acres. A comparison of the 464 acres of land to be withdrawn indicates that .67% (i.e. 6/10ths of a percent) of agricultural lands will be lost to the development. This figure somewhat underestimates the actual impact the proposed withdrawal of cane lands in that additional lands have been allocated to urban uses since 1967. However, if it is assumed that the amount of agricultural land in urban uses has doubled since 1967 to 10,000 acres, the comparison percentage changes to only .72% or 7/10 of one percent. This percentage remains a relatively small share of the A, B, and C, agricultural land available.

While the impact of the withdrawal of a relatively small parcel of land might not in itself have a significant impact, the cumulative impact over time of a large number of withdrawals may at some point be significant. Since 1967, 18 of the 21 major urban areas on Kauai have expanded into agriculture lands classified A, B, or C (comparison of 1967

detailed land classification maps with the 1981 State Land Use District boundary maps). Such expansion is reasonable as, historically, settlement areas were placed on or adjacent to the best agricultural lands. Moreover, the characteristics that make an area good agricultural land also make it prime urban land which results in agricultural lands being steadily lost to urban uses.

As pressures grow for urban expansion, the social and economic commitment represented by the existing urban areas in terms of both land ownership and in the investment in existing infrastructure dictate that the majority of future growth take place as expansions of existing centers rather than the development of new centers away from lands of agricultural importance. In view of the foregoing, Grove Farm Properties believes that the proposed project is a reasonable expansion of the city of Lihue and the magnitude of the proposed agricultural land withdrawal is not of critical significance. Moreover, and perhaps of critical significance, is the fact that Lihue Plantation's lease covering the project area will expire in 1994. It is unclear at this time, especially in light of the fragile state of the sugar industry price support legislation in the United States Congress and the current and projected profitability of the sugar industry generally, whether the subject property will continue to be used for cane. Non-renewal of the lease is a substantial possibility. See Hawaii Investor, February 1986, "we've got to tell it like it is."

c. Impact on Mill Operations. The land which is the subject of this statement is currently under lease to Lihue Plantation Co. The lease provides for optional, yearly withdrawal of any 25 acres of the leased crop land by Grove Farm Company, Incorporated, on a cumulative basis. To date Grove Farm Properties (pursuant to its option with Grove Farm Company, Incorporated) has accumulated the right to withdraw up to 300 total acres. However, approximately 75 acres have been withdrawn from sugar production under this lease provision leaving 225 acres capable of being withdrawn at this time. Grove Farm Properties intends to exercise its rights of withdrawal in an orderly manner so that Lihue Plantation can continue sugar production on surrounding lands, which will remain unaffected.

Removal of the land from cane will have some impact on Lihue Plantation's mill operation. An attempt has been made to evaluate this impact. The plantation currently farms approximately 15,500 acres around Lihue. The withdrawal of the project site in full from lands farmed by Lihue Plantation will reduce by just over 2.7% the land in its control--a very small

proportion of the land in cane. This reduction is not expected to have a significant impact on cane operations by itself. Indeed, Lihue Plantation in connection with its Molokoa project opined that the removal of 270 acres from cane production would have no significant impact on mill operations. As part of its application for a general plan change concerning that project, Lihue Plantation had prepared by Peter Garrod, Economist, Department of Agriculture and Resource Economics, University of Hawaii, a report on the impact of removing land from cane production on Lihue Plantation cost of producing sugar. That report is reproduced in full and attached as Exhibit 1 to this statement.

The impact report prepared for Lihue Plantation assumes that 270 acres of Class B land was to be removed from cane production. The report, according to its author may be used as a model to evaluate other withdrawals of cane from Lihue Plantation operations. The report concludes, as to the 270 acres under consideration by the author, that removal of the acreage would increase the cost of producing sugar by 7/100 of a penny per pound or \$1.40 per ton. After adjustment to the reduced acreage the report opines (utilizing employment measures in full-time-equivalents) that Lihue Plantation would reduce its labor force by about 10 full-time employees. The labor force reduction would offset the increase of cost of producing sugar.

We may extrapolate from Lihue Plantation's report what impact would result from the removal of the project area upon completion of the development. Assuming that the withdrawal of the entire project area occurred today (which could not occur under the terms of the lease) and none of the mitigative measures discussed below are instituted, the withdrawal could increase Lihue Plantation's cost of producing sugar by approximately 12/100 of a penny per pound or \$2.40 per ton. Upon adjustment to the reduced acreage, the removal could result in a reduction of Lihue Plantation's work force by 17 full-time employees (with a corresponding reduction in the cost per pound of producing sugar).

The foregoing conclusions, however, ignore the improvements to farming methods which have occurred since the 1982 date of the Lihue Plantation report. Any increase in the cost per pound of producing sugar resulting from the withdrawal of the project acreage can be offset by increased savings from improved farming methods and increasing yields. In First Hawaiian Bank's Economic Indicators Kauai County 1985, Nov./Dec. 1985, it was noted that Lihue Plantation had the highest yield in its history, was projecting a 13% increase in production, and cut in costs from \$476 to produce a ton of

sugar in 1983 to \$340 per ton in 1985, all as a result of improved farming methods. Those methods are capable of increasing sugar yields per acre thus reducing the production cost per pound. Two new methods (although not necessarily the ones currently utilized by Lihue Plantation) are drip irrigation and solid replant on unirrigated land. Under the latter method, the entire field is replanted after each harvest, which produces a better stand of cane and greater yield.

It is reasonable to assume that implementation of such improved farming methods would, even absent withdrawal of any cane lands from production, would reduce Lihue Plantation's employment needs. First Hawaiian Bank's 1985 report bears out this conclusion. Accordingly, a projected 17 jobs lost over the next 10 years may well overstate the actual impact of a phased withdrawal of the project lands from cane. However, even assuming that the job loss figures are correctly stated, employment generated by the development of the proposed project will fully mitigate any impact of the withdrawal of cane land. The proposed development is expected to generate temporary employment for local contractors in the building of homes. Long term permanent employment will be generated for workers at the light industrial sites and golf course (above and beyond the employment resulting from the commercial recreational uses contemplated on adjacent property). Currently, it is projected that employment at the golf course alone (exclusive of any related commercial activities to be conducted there) will completely offset any jobs lost as a result of the withdrawal of cane. Indeed, a net increase of jobs will result.

3. Fauna and Flora. The probable impact on fauna and flora likely to be found on the site is as follows:

a. Flora. The existing vegetation on the site consists entirely of cultivated sugarcane except for roads and small gulch areas. The cane will be removed and replaced by residential and park landscaping, such as grass, coconut trees, ground covers, shrubs, and several varieties of shade trees.

b. Fauna. The Environmental Impact Statement prepared for the Hanamaulu-Ahukini Cutoff Road (FAP Route 51) Kauai, Hawaii, by the U.S. Department of Transportation and the State of Hawaii Department of Transportation indicates that a field survey identified five mammalian species consisting of black rat, Hawaiian rat, Norway rat, house mouse and feral cat within the predominant sugarcane habitat of the proposed highway corridor. The project lands also consist primarily of cultivated sugarcane. As a result, it is presumed that the same fauna are present at the project area.

4. Near Shore Marine Ecosystem. The expected impact that the proposed project will have on the marine ecosystem in the vicinity of the project will be the result of storm drainage from the site. The various phases of the site will drain through existing swale systems and after construction over roadway and drainage easements created for that purpose to natural gulchs to Pualī (Nīumalu) stream with a small portion of the runoff meeting Nawiliwili stream. Under the current proposed drainage plan no runoff reaches Huleia stream or Menehune fishpond.

The contemplated pattern of drainage may result in a net increase in drainage into the Harbor. However, it is unlikely that a negative impact will be felt on the area since the contemplated drainage system will represent a return to the natural drainage system that existed before the area's drainage was modified by the cane irrigation system. That system actually contributes to the drainage flow from the project area by virtue of irrigation channel overflowing. This additional drainage contribution will cease upon the removal of the project area from cane cultivation.

5. Atmospheric System. Air quality impacts include those that will result from the proposed project. They also include the effect of the surroundings on the air quality of the project.

a. Air Quality Impacts of the Project. Air quality generally will be affected by construction activities at the project and by increased automotive traffic in the area. During construction of the project, dust and exhaust from equipment will be emitted. This problem will last approximately six to eighteen months per development increment. Dust will be controlled with watering and other appropriate methods. The construction equipment to be utilized is essentially the same in terms of air quality impacts as cane cultivation and harvesting equipment. As a result, no additional impact from construction is perceived.

Automobile emissions are not expected to be a problem within or about the area, as many of the expected property owners will be current but relocated residents or new residents to the island who would be utilizing the highways in any event.

b. Impact of Surrounding Air Pollutant Sources on the Proposed Project. At present there are three potential sources of air pollution to the proposed project. They include (1) the automobile emissions from surrounding roadways; (2) the dust and smoke from the nearby cane cultivation areas; and (3) proximity of the light industrial area to the Puhi residential area.

Surrounding roadways should not be an air quality problem. Additional auto usage resulting from the project is not expected to increase carbon monoxide levels/concentrations significantly. Concentrations are expected to be well within Hawaii State standards for air quality.

Cane remains a way of life on Kauai. The relationship of cane to the proposed development will not be different than the existing relationship between cane and development in the Lihue area. As a result, no impact is expected to obtain by virtue of the proximity of the site to cane production activities. It is simply a matter of relocating the interface between cane cultivation and residential use.

Similarly, the proximity of the light industrial project to the Puhi residential area will have no greater impact than the existing industrial project in that area. The impact, if any, is minimal. The residential areas in Puhi are upwind of the industrial area so minimal dust or noise pollution is expected. Moreover, the proposed light industrial area will be screened from the residential areas' view in much the same manner as the existing light industrial area.

6. Hydrologic System.

a. Ground Water. The Hanamaulu-Ahukini Cutoff Road Environmental Impact Statement indicates that Koloa basalts (in B411 type lands as in the project area) have a relatively low permeability. The EIS concluded that groundwater resources of the area under consideration in the EIS were not significant for development purposes due to the underlying Koloa basalts. A similar conclusion may be reached with respect to the property which is the subject of Grove Farm Properties' request.

Although little exploration of the basal groundwater resources within the Koloa basalts has been undertaken, they are estimated to extend about a mile inland (Sunn, Low, Tom & Hara, 1973). However, the water quality studies which have been done indicate that areas closer to the shoreline may contain brackish water (MacDonald et al., 1960). Areas further inland (one-half mile or more) may contain reserves of fresh water to depths below sea level, but the low permeability of the Koloa basalts would limit the productivity of these wells (MacDonald et al., 1974). Most usable groundwater resources impounded within the Koloa basalts are found in high-level reservoirs primarily on the eastern slopes of the Kilohana Crater outside of the project area (Peat, Marwick, Mitchell, 1976). Therefore, the change in permeability of the soil identified as a result of improvements to be made to the

project area should not have a detrimental effect on the regional groundwater system. Nor is it likely that available well/fresh water resources will be impaired.

b. Surface Water. There are no natural surface water sources or channels crossing the subject property. The entire area is currently under the influence of the Lihue Plantation irrigation system. When this area is withdrawn from the irrigation system, the natural run-off from the area will be through natural drainage gulchs to Pualī (Niumalu) stream and to some degree Nawiliwili stream.

c. Water Quality. The site drainage pattern is expected to return to the natural runoff system. Accordingly, very little effect is anticipated on existing water quality in the area even after construction of the subject project is finished. During construction siltation prevention measures will be practiced as required by the Kauai County Public Works Department.

7. Sonic Environment. There will be sonic impacts resulting from the proposed project. Also, the project will be affected by surrounding noises.

a. Sonic Impact of the Project. It is expected that the project will generate a sonic impact on the surroundings. In an ongoing sense, the impact will result from a slight increase in traffic on the surrounding roads and by noises expected to be generated during construction (primarily during the grading phase). The increase in sound that will be generated by the expected increase in traffic is expected to be no greater than would develop as a result of normal usage over the next 10 years. Additionally, redirection of the project's flow of traffic (and to some degree east-north bound traffic headed to the Hanamaulu-Ahukini cut-off road) onto the main collector road system earlier described is expected to alleviate or at least minimize any increased noise from project traffic.

Sound generated during the construction period of the proposed project will affect the surrounding area. However, it is the same type of noise from the same types of equipment that are associated with intensive agriculture (large diesel engines). Since these sounds have not been an apparent problem in the existing residential areas, it is assumed that these sounds will not be a problem during the construction phase of this project. Moreover, after the construction is completed, agricultural cultivation sound will be moved farther away from Lihue town. This outcome is seemingly a positive effect. Also, almost no construction activity occurs at night which is not the case with cane harvesting operations.

b. Impact of Surrounding Sound Sources on the Proposed Project. Only one portion of the proposed project borders an existing highway where parcels 15 and 16 meet Nawiliwili Road. Parcel 15 is slated for golf course usage. As a result of that usage, parcel 15 will act as a noise buffer for residential developments south and southwest of the parcel.

Parcel 16 is scheduled for residential development and fronts Nawiliwili Road. Usage of Nawiliwili Road is expected to increase as it begins to serve as an alternate route to the planned Hanamaulu- Ahukini cutoff road. As a result, some noise impact on this project area is anticipated. Any resulting noise impact may be minimized and mitigated by creating a landscaped border, such as exists at Ulu Ko along the road shoulder to insulate the project area. In addition to providing an attractive road border for both motorist and resident, the attractively landscaped green belt reduces both road noise and dust in the adjacent residential properties.

8. Visual Character. The existing visual character of the site is predominately level with an approximate 2%-3% west to east/south slope. The property is primarily covered with cane. The Lihue portion of the property, except where it borders Nawiliwili Road at parcels 15 and 16, is not visible from either Kaumualii Highway, Nawiliwili Road or Kukui Grove Center other than directly after harvesting and new planting of cane. It will be visible from the Ulu Ko Subdivision properties. At this time, it is contemplated that a green belt similar to that to be used along Nawiliwili Road may be used to screen single family construction adjacent to the major collector road proposed to service the Lihue/Puhi project. Where residences are visible, the proposed density of development will permit them to blend in with existing development along Nawiliwili Road.

The single family development planned in the Puhi portion of the project will be visible from the existing Puhi residential subdivision and Puhi industrial subdivision. The new light industrial area in Puhi is visible from all of those areas and from portions of the Komohana Subdivision. Currently, it is intended to screen the proposed Puhi light industrial project from the view of the surrounding neighborhood. This screening will be accomplished in the same manner as the existing Puhi Industrial Subdivision is screened. In the foregoing manner, any visual impact of the proposed development will be minimized.

9. Archaeological Resources. The Lihue Development Plan schedules no historic sites in the project area. None are listed on the State's Register of Historic Places. Practically

speaking, the entire area has been under intensive cane cultivation for over 100 years. Sites of a historic nature that may have existed previously in the area have been destroyed by the intensive cultivation by heavy equipment.

PUBLIC SERVICE AND FACILITIES

1. Police. Police service to the project area is from the Lihue Station, which is in close proximity to the proposed development.

2. Fire. Fire service to the project area will also be from the Lihue Station on Rice Street which is in close proximity to the development. Adequate fire fighting water at the project site will be available from a hydrant system. The system will be constructed by Grove Farm Properties and will be connected to the County water supply.

3. Medical. The project will be served by Wilcox Hospital which is less than 2 miles from the site.

4. Recreational Facilities.

a. Neighborhood Parks. A neighborhood park has been included as part of the proposed development plan for the overall Lihue/Puhi district. The existing Puhi park located at the southeastern (makai) corner of the existing Puhi subdivision is well situated to serve both the existing community at Puhi together with the moderate income housing expansion contemplated for parcel 32 south-southeast of the current Puhi subdivision. A new 4 acre community park is planned for Lihue. It is to be located on northwest (mauka) boundary of the Ulu Ko Subdivision bordering Nawiliwili Road. The park's placement will allow it to serve and be available to the community at large while also addressing the needs of the single family residential expansion proposed by Grove Farm Properties.

b. Regional Parks and Beaches. Niumalu Beach Park is visible from a portion of the project area. With the construction of the planned major collector road to service the contemplated Lihue/Puhi projects, access to the park will be significantly improved. Hanamaulu Beach Park is also quite close geographically to the project area. Both parks provide excellent facilities for passive and beach-oriented recreation. Both are available for use by the project population. In addition to these beaches, the beach at Kalapaki Bay will remain available for use by local residents. Access to that beach is scheduled to be improved as part of the renovation of the Kauai Surf Hotel facilities.

c. Private Recreational Facilities. Certain private recreational facilities in close proximity to the project site are planned by Grove Farm Properties. They include a private 6 acre multi-purpose park and a 21 acre commercial recreational facility. As previously described, the multi-purpose park is designed for farmers' fairs, circuses, 4-H shows, Kam Day parades and the like. The 21 acre recreational facility is proposed for use as a bowling alley and driving range. These facilities are intended to be used by the public for the purposes indicated. The park and recreational facility will be located west-northwest of the Ulu Ko Subdivision and south of Kukui Grove Center. Beyond those facilities, the golf course planned in the Lihue project area will be open for public use. In addition to maintaining an open space perspective in the area, the course will be designed to provide enjoyable commercial recreation for Lihue and Puhī residents.

5. Educational Facilities. The Department of Education estimates that among the occupants of new residences constructed in the Lihue area there will be a certain number of school aged children. The Department has established projection factors for the area which estimate that there will be 0.45 kindergarten to 6th grade children and 0.35 7th to 12th grade children per residential unit residing in the project area. Assuming that no discount factor is appropriate for families relocating within the Lihue and Puhī areas, the Department's factors and the Department's comments on the Draft Environmental Impact Statement indicate that there will be an increase of approximately 200 - 400 grade school aged students and 150 - 300 junior-high and high school aged students occupying the project area once it is completed.

Wilcox Elementary School is currently approaching its saturation level. Kauai High School has adequate room for expansion due to the recent addition of the former Kauai Community College campus and appears capable of accommodating the planned projects. The saturation in the local elementary school is expected to be relieved, in part, by the satellite school to be constructed in Hanamaulu. Moreover, Grove Farm Properties has committed for school use a 10-acre parcel adjacent to the project area and the proposed private multi-purpose park. Seemingly, the school site is well suited for an elementary school. This school, when constructed, together with the Hanamaulu school should adequately accommodate the new developments.

INFRASTRUCTURE

1. Water Supply and Storage. The water demand of .803 MGD projected for the total project is expected to be provided from

the County water system. With the addition of the 16" main serving Kukui Grove Center and planned 12" line extension to the Ulu Ko Subdivision the present configuration of the Lihue system in the Nawiliwili area will be adjusted. The Lihue system, which is supplied primarily by the German Hill tanks and well complex mauka of Lihue town will now be able to serve the Ulu Mahi and Pua Loke area and other house lots on Nawiliwili Road. Those properties are now on the Puhī tank system. This shift in service will make available additional storage in the Puhī tank system so service below that area may be expanded.

It is Grove Farm Properties' understanding that the current policy of the Kauai Water Department is not to commit water to a new project until zoning is established and plans for subdivision are underway. To date the Department has been able to meet the needs of new development in the area by addressing those needs at zoning. This development can be handled in the same manner. Accordingly, no impact on water storage facilities and supply is perceived.

2. Sewage Disposal. Upon completion and full occupancy of this project, the ultimate residential flow is expected to range between .37 MGD and .47 MGD. This flowage translates into approximately 320-400 gallons per day per house. Tentatively, Grove Farm Properties believes that cesspools can adequately address such flowage as this disposal method is historically consistent with the surrounding developments.

Grove Farm Properties recognizes that exclusive utilization of cesspools to service the entire project may have a significant environmental effect. That determination, however, may not reasonably be made in connection with this application. The determination requires the evaluation of myriad factors upon which we can only speculate today and will depend in large part upon studies conducted by the Department of Health in the future. Obviously, if a significant environmental impact will result from utilization of cesspools, the impact may be avoided or minimized through the installation of a sewage treatment and collection system.

With the foregoing in mind, Grove Farm Properties proposes that questions, if any, concerning the proper method of sewage disposal or the one having the least impact be addressed in connection with the zoning of the properties. At that time, Grove Farm Properties will work with the Department of Health to insure that every required or necessary mitigative measure is implemented in the development of the project.

3. Storm Drainage. As described in the section relating to the technical data of the project, storm drainage for the site will be effected through the utilization of surface and subsurface drainage systems meeting County standards. The contemplated system envisions a return to the site's natural drainage pattern which will cause discharge of waters via Puali (Niumalu) Stream and to a lesser extent Nawiliwili Stream into the harbor. A return to the natural drainage pattern is perceived as a benefit to the area.

4. Power and Communication. This aspect of the project is also described in the section dealing with the project's technical data. Power and communication distribution lines will service the project via a primarily underground system following the project road alignments. Power from the existing substation will be supplied by the Kauai Electric's transmission system to the project area. The power feeding the transmission system originates from the generating plant at Port Allen and from the Lihue, McBryde, and Kekaha sugar mills as well as certain hydro-electric installations. No significant impact is foreseen by bringing service to the project.

5. Roads. The project area, when completed, will be served predominantly by Nawiliwili Road on the east and Kaunualii Highway on the north. The existing capacities of these roads are discussed in the traffic analysis (Preliminary Engineering Study) attached as Exhibit 2 to this statement. The report evaluates traffic at the intersections of Nawiliwili and Kaunualii Highway, Kaunualii Highway and Puhī Road, and at Nawiliwili where it meets Nokekula and Apapane.

The project is expected to have some impact on the existing highway system as reflected in the attached Traffic Study.

The current report and analysis is helpful in the guidance it provides in understanding the existing highway system and its existing service levels.

PHYSICAL HAZARDS

1. Flooding. The project is well above the Puali (Niumalu) Stream, Huleia Stream, and Nawiliwili Harbor. The project is not in the path of any major flood ways. None of the project site lies within the tsunami inundation zone as shown on the Flood Insurance Rate Map for the Island of Kauai prepared by the U.S. Army Corps of Engineers as part of the National Flood Insurance Program. Further, none of the proposed project area is subject to flooding from stream overflow or heavy localized rainfall. Therefore, flooding is not expected to be a problem.

2. Tsunami. The lowest elevation of the project site is approximately 120 feet above sea level, well above the Tsunami inundation line.

3. Earthquake. Kauai is the most stable of the major Hawaiian islands with a seismic zone of zero, indicating minimal risk.

SOCIO-ECONOMIC CONSIDERATIONS

1. Overview. This section seeks to address the socio-economic impacts of the proposed project. It also seeks to evaluate the need for the project. In many respects, particular socio-economic impacts of the project have been assessed in various sections of this submittal.

For instance, the effect that withdrawal of cane will have on jobs has been discussed. This concern is both social and economic in nature. Calculations reveal that jobs for the local community created by the project will offset any impact on agricultural jobs. In fact, the project will result in a net increase in jobs for local residents. Also, the effect of requiring installation of a sewer system on affordability of the residential properties to be developed has been addressed.

To some degree each of the foregoing items will be touched on in this section as will the market evaluation of the properties, which has been discussed throughout previous portions of this statement. In that latter regard, Grove Farm Properties wishes to credit Peat Marwick, Mitchell & Co. ("PMM" or "Peat Marwick") for use here of substantial data reflected in various PMM reports. In 1981 Peat Marwick conducted market studies in respect of and made assessments of 2 separate projects on Kauai, a Lihue project and a Koloa project. In 1984 Peat Marwick updated its study on the Koloa property. The Peat Marwick reports deal in large part with housing needs generally for Kauai and specifically for Lihue. To the extent of their applicability portions of those reports have been reproduced here. Additionally, attached as Exhibit 3 is a 1983 study of residential land in the Lihue district prepared by Belt, Collins & Associates for Grove Farm Properties. Throughout, each study concludes that a need for additional housing on Kauai exists. Specifically, there is a need for housing in Lihue over the next ten years.

2. Current Socio-Economic Background.

a. Population. The population of the County of Kauai was 39,082 residents as of 1979-1980. It is ethnically mixed. In 1983 the largest ethnic groups were Japanese (25.4%),

followed by Filipinos (21.2%) and Caucasians (17.4%). The population is also relatively young with 60% of the population being less than 30 years old. Overall, Kauai's population constitutes about 4% of the State's total residential population as indicated by the 1980 U.S. Census.

The resident population of Kauai declined from 1940 to about 1970, as shown in Table 4-1. Since 1970, however, the population increased at the rate of almost 3% per annum. This reversal in population trend is primarily a result of increased economic activity and employment opportunities generated, in part, by the growth of tourism in the county. According to the State Department of Planning and Economic Development, the population of Kauai is expected to continue to grow over 3.0% per annum and to amount to 55,000 residents by 1990, 63,900 by 1995, and 69,100 by 2000, as also shown in Table 4-1.

The 1980 resident population in the Lihue district was 8,590, or 22% of the island's total population. The current count represents an increase of over 27% over the 1970 population of 6,766 for an annual increase of 2.4% during this time period. See Table 4-2.

Population characteristics, as reported in 1980 U.S. Census, show the median age of Lihue's resident population to be 31.0 years, as compared to 29.0 years for Kauai in general and 28.3 years for the State.

Table 4-1

COUNTY OF KAUAI RESIDENT POPULATION
1940 to 2000

<u>Historical:</u>	<u>Resident population</u>	<u>Annual percent change</u>
1940	35,636	- %
1950	29,683	(1.8)
1960	27,922	(0.6)
1970	29,761	0.6
1980	39,082	2.8
<u>Projected:</u>		
1985	46,000	3.3
1990	55,100	3.7
1995	63,900	3.0
2000	69,100	1.6

Sources: County of Kauai, An Annual Report of the County's Economic Indicators, 1978; Department of Planning and Economic Development State of Hawaii, Data Book, 1979 and Population and Economic Projections for the State of Hawaii, 1980-2005, 1984; and the U.S. Department of Commerce, 1980 Census of Population and Housing.

Table 4-2

KAUAI RESIDENT POPULATION BY CENSUS DISTRICT

1960 to 1980

	<u>1960</u>	<u>1970</u>	<u>1980</u>	<u>Annual percent growth 1970-1980</u>
Lihue district	6,297	6,766	8,590	2.4%
Kawaihau district	6,498	7,393	10,497	3.6
Hanalei district	1,312	1,182	2,668	8.5
Koloa district	7,012	6,851	8,734	2.5
Waimea district	<u>7,057</u>	<u>7,569</u>	<u>8,367</u>	<u>1.0</u>
Total(1)	<u>28,176</u>	<u>29,761</u>	<u>38,856</u>	<u>2.7%</u>

(1) Excludes Niihau

Sources: Department of Planning and Economic Development, State of Hawaii, Data Book, 1979; and the U.S. Department of Commerce, 1980 Census of Population and Housing.

b. Employment. The total civilian labor force on Kauai in 1980 amounted to 17,900 people. Over the past ten years, the Kauai labor force has been expanding about 3% per annum. This growth has resulted from the generation of new employment opportunities in wholesale and retail trades, hotels, and government activities. Agricultural employment, which represented almost 15% of the total employed in 1970, represented less than 10% in 1979 and is expected to continue to decline over the next 10 years. Overall, about 850 were unemployed in 1980, resulting in a relatively low unemployment of 4.5%.

About 70% of the adults in the Lihue tract and 69% in the Puhi-Hanamaulu tract were employed in 1974. These figures represented the greatest number of employed persons of Kauai's nine census tracts which reported an overall employment rate of 63%.

Table 4-3

Kauai Civilian Employment Trends
1970 to 1980

	<u>1970</u>	<u>1975</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
Civilian labor force	13,200	14,580	17,400	17,750	17,750
Employment	12,570	13,390	16,200	16,700	16,900
Unemployment rate	4.8%	8.2%	6.9%	5.8%	4.9%
Sources of employment:					
Construction	380	770	50	900	850
Manufacturing	1,850	1,350	1,300	1,200	1,300
Transportation, etc.	1,110	1,170	1,600	1,600	1,550
Trades	1,860	2,370	3,300	3,500	3,650
Finance, insurance and real estate	240	390	900	800	1,000
Hotels	990	1,150	1,600	1,800	1,700
Other services	1,220	1,310	1,800	1,800	1,900
Government	2,050	2,360	2,700	2,700	2,750
Agriculture	1,730	1,490	1,600	1,600	1,550

Sources: Department of Labor and Industrial Relations, State of Hawaii,
Labor Force Data Book, March 1978 and revisions.

c. Economy. The Lihue district is the County seat of Kauai. It is the island's center of governmental and commercial activity. It is the location of the island's two most important transportation facilities, Lihue Airport, which handles most passenger arrivals to Kauai, and Nawiliwili Harbor, the primary deep-water port. The Lihue district forms a pie-shaped wedge on the southeastern coast of the island and contains about 55,440 acres. The major towns in the district are Lihue, Puhi and Hanamaulu. In a few words, Lihue District is Kauai's government and urban center.

Six of the island's twelve existing shopping centers are located in Lihue and represent more than one-half of Kauai's total commercial area. With the addition of Kukui Grove Center with 310,000 square feet of retail and commercial space together with its office park, Lihue has been firmly established as the major commercial center on Kauai.

The Lihue district is also one of Kauai's major tourist areas with over 1,200 hotel rooms in nine hotel and condominium-hotel developments. The largest is the Kauai Resort with 556 hotel rooms and a convention center. That resort is to be increased significantly in size as a result of Chris Hemmeter's efforts and the addition of a new tower with 289 rooms.

The projections contained in the Department of Planning and Economic Development's report on Population and Economic Projections for the State of Hawaii, 1980-2005, bode well for Kauai. See Table 4-4.

TABLE 4-4

POPULATION AND ECONOMIC PROJECTIONS, BY COUNTIES: 1980 TO 2005

County and variable	1980 (est.)	1985	1990	1995	2000	2005
Kauai:						
Resident population (1,000)	39.3	46.0	55.1	63.9	69.1	72.2
De facto population (1,000)	46.3	54.2	66.9	79.3	88.2	92.2
Total jobs (1,000)	17.6	20.0	24.4	28.7	31.3	32.8
Armed forces	0	0	0	0	0	0
Civilian jobs	17.6	20.0	24.4	28.7	31.3	32.8
Agriculture	1.5	1.6	1.6	1.4	1.2	1.0
Manufacturing	1.1	1.1	1.2	1.3	1.3	1.3
Construction .....	.9	.9	1.1	1.3	1.5	1.5
Transp., com., and util.	1.6	1.7	2.2	2.6	2.9	2.9
Eating and drinking places	1.4	1.8	2.4	3.1	3.5	3.9
Other trade	2.3	2.6	3.3	4.1	4.7	5.1
Finance, insurance and real estate .....	.9	1.0	1.2	1.4	1.6	1.7
Hotels	1.9	2.4	3.0	3.7	4.1	4.1
Other services	1.8	2.2	2.8	3.3	3.6	3.8
State and local government	2.5	2.8	3.4	3.9	4.2	4.5
Federal government <u>1/</u> .....	.3	.3	.3	.3	.3	.3
Self-employed	1.4	1.7	2.0	2.3	2.5	2.6
Personal income (millions of 1980 dollars)	335.0	407.7	528.5	661.2	769.4	859.3
Per capita personal income (1980 dollars)	8,546	8,863	9,592	10,347	11,135	11,902

Source: Department of Planning & Economic Development, Population & Economic Projections for the State of Hawaii 1980-2005, 1984.

3. Housing Market Review and Trends. The State housing inventory increased from 216,538 units in 1970 to 334,251 units in 1980. The City and County of Honolulu contains 75% of the total housing units. Kauai has remained relatively stable, with just over 4% of the State inventory. Private units represent approximately 90% of the total housing units in the State. On Kauai, private units represent 97% of the total housing units.

The State Housing Plan, prepared by the Hawaii Housing Authority, dated September 1980, projected that the State would need approximately 9,000 new units per year from the period 1979 to 1985, or 63,000 units in total. If current ratios are maintained, this projection means 420 new units per year for Kauai. The State Housing Plan also states that the demand for housing will be affected by housing prices, general affordability and consumer preferences. The plan notes that housing affordability may continue to decline as a result of increased housing costs, continuing inflation, and relatively lower family incomes in Hawaii in relation to the nation. Further, the plan notes that the general preference of most families is to own a single-family detached unit but that such units may not be affordable to many local residents. These factors as they relate to Kauai are confirmed in the Kauai Housing Master Plan which stresses Kauaian's preference for single family housing even in low to moderate income households.

In 1980, the County of Kauai had about 14,800 housing units. Lihue includes about 22% of the island population and just under 20% of the housing units. See Table 4-5. Housing in the district tends to be resident-oriented. Generally, it appears owner occupied housing is increasing annually, island-wide. See Table 4-6. The housing inventory has been increasing about 3.7% per annum for the period 1970 to 1983. Both single-family and multi-family units were constructed at an average annual rate of over 300 units per year from 1977 to 1983. See Table 4-7.

TABLE 4-5

Estimated Distribution of Population
and Housing Units on Kauai

1980

<u>District</u>	<u>Population</u>		<u>Housing units</u>	
	<u>Number</u>	<u>Percentage</u>	<u>Number</u>	<u>Percentage</u>
Lihue	8,590	22.1 %	2,899	19.6 %
Kawaihau	10,497	27.0	3,389	25.6
Hanalei	2,668	6.9	1,731	11.7
Koloa	8,734	22.5	3,627	24.5
Waimea	<u>8,367</u>	<u>21.5</u>	<u>2,741</u>	<u>18.6</u>
Total	<u>38,856</u>	<u>100.0 %</u>	<u>14,787</u>	<u>100.0 %</u>

Source: U. S. Department of Commerce, 1980 Census of Population and Housing (excludes Niihau figures).

TABLE 4 -6

Owner-Occupied Housing Units in Hawaii

1970 to 1979

<u>Year</u>	<u>County of Kauai</u>	<u>City and County of Honolulu</u>	<u>County of Hawaii</u>	<u>County of Maui</u>	<u>State total</u>
1970	3,583	68,672	9,547	7,422	89,224
1971	3,751	72,221	10,150	7,696	93,818
1972	3,980	77,410	10,943	8,171	100,504
1973	4,255	81,044	11,784	8,571	105,654
1974	4,452	86,793	12,519	9,063	112,827
1975	4,760	88,428	13,190	9,429	115,807
1976	5,057	93,149	13,739	10,069	122,014
1977	5,202	94,700	14,171	10,456	124,529
1978	5,286	98,034	14,781	10,757	128,858
1979	5,455	100,988	15,359	11,011	132,813
Annual percentage increase:					
1970 to 1979					
1978 to 1979	3.2%	3.0%	3.9%	2.4%	3.1%
Percentage owner-occupied to total housing units:					
1970	39.7	39.3	50.3	52.8	41.1
1975	45.7	42.6	55.8	48.9	44.4
1979	46.2	45.2	56.8	44.8	46.3

Source: Department of Housing and Community Development, City and County of Honolulu, Housing and Community Development Research, July 1979.

TABLE 4 -7

Inventory of Residential Lots on Kauai

1970 to 1984

<u>Year</u>	<u>Annual lots developed by district</u>					<u>Annual total</u>	<u>Cumulative total</u>
	<u>Koloa</u>	<u>Lihue</u>	<u>Kawaihau</u>	<u>Hanalei</u>	<u>Waimea</u>		
1970 and prior years	<u>1,477</u>	<u>1,561</u>	<u>1,672</u>	<u>156</u>	<u>762</u>	<u>-</u>	5,628
1971	169	35	-	-	-	204	5,832
1972	-	-	53	-	-	53	5,885
1973	38	80	121	-	110	349	6,234
1974	-	215	183	-	62	460	6,694
1975	62	-	52	-	50	164	6,858
1976	-	-	-	31	220	251	7,109
1977	-	140	98	136	-	374	7,483
1978	9	-	220	62	-	291	7,774
1979	61	60	-	89	14	224	7,998
1980	34	-	493	9	-	536	8,534
1981	-	-	10	14	322	346	8,880
1982	9	-	22	12	272	315	9,195
1983	119	-	-	-	-	119	9,314
1984 (estimated)	<u>-</u>	<u>-</u>	<u>-</u>	<u>52</u>	<u>-</u>	<u>52</u>	9,366
Subtotal 1971 to 1984	<u>501</u>	<u>530</u>	<u>1,252</u>	<u>405</u>	<u>1,050</u>	<u>3,738</u>	
Total inventory	<u>1,978</u>	<u>2,091</u>	<u>2,924</u>	<u>561</u>	<u>1,812</u>	<u>9,366</u>	
Average annual growth - 1970 to 1984	2.1%	2.1%	4.1%	9.6%	6.4%	3.7%	

Source: Compiled by Peat, Marwick, Mitchell & Co. based on State of Hawaii Tax Map Branch records and discussions with developers or their representatives.

4. Residential Lot Market Analysis.

a. General Background. The residential lot market on Kauai has increased sharply over the past ten years as the demand for single-family homes has continued to expand. Indeed, between 1970 and 1984, the residential lot inventory on Kauai has increased from about 5,628 lots to 9,366, an average increase of about 270 lots, or 3.7% annually, as shown in Table 4-7. Today, it is estimated that Kauai has approximately 9,500 +/- residential lots.

The demand for residential lots has primarily been from the owner-occupant residents seeking single family homes. The growth in demand for residential lots reflects the expansion of the population base as well as an increase in income levels. Over the next ten years, the residential lot market is expected to accelerate due to projected growth in population, the current trend towards smaller households, a shift in housing patterns from rental to owner-occupant status, and an increase in income levels in comparison to general costs of construction.

Currently, about 2,400 more residential lots are proposed for construction on Kauai. This data has been compiled by Peat, Marwick, Mitchell & Co., based on its discussions with developers or their representatives (adjusted only for those residential subdivisions completed in 1985) and is reflected at Table 4-8 and Table 4-9. Of these proposed lots, only 40% are actively being planned for construction and sales; the majority, or 60% of the proposed inventory, have indefinite plans for completion. It is believed that all the known subdivisions have been identified although it is possible that some have been overlooked. The impact of this fact, however, is negligible in face of the current demand for residential properties in Lihue.

If all of the project is completed as planned, the residential lot inventory could increase to about 10,000 lots by 1988, but will remain relatively stable after that without future development. See Table 4-8. This table presents the timing of the planned subdivisions which are most likely to be constructed. The phasing of these lots as proposed by the subdivision developers reflects a relatively slower rate of increase in the lot inventory of about 180 lots per year from the end of 1984 to 1988 compared to 270 lots actually developed annually from 1970 to 1984. Adjusted for the reflected delays (several of the proposed residential lot developments are uncertain due to zoning changes required and to difficulties in arranging adequate financing), lot inventory will continue to lag significantly behind demand. See Table 4-8 and Table 4-9.

Table 4-8

PLANNED RESIDENTIAL LOTS ON KAUAI
1985 to 1988

<u>Subdivision</u>	<u>Planned lots</u>	<u>Cumulative inventory</u>
Existing - 1984	-	9,490
<u>1985</u>		
Puu Lani IV-B (Phase III - market lots) Kilauea, Hanalei	30 (Delayed)	
Puu Lani IV-B (Phase III - County lots) - low income Kilauea, Hanalei	25 (Delayed)	
Mowry/Keown subdivision (Phase I), Kapaa, Kawaihau	<u>30</u> (Delayed)	
Subtotal	<u>85</u>	9,575
<u>Proposed - 1986</u>		
Molokoa subdivision (Phase III), Lihue	114	
Puu Lani IV-B (Phase IV) Kilauea, Hanalei	33 (Delayed)	
Ulu Ko Subdivision (Phase I) Lihue	<u>99</u>	
Subtotal	<u>246</u>	9,821

(continued on next page)

PLANNED RESIDENTIAL LOTS ON KAUAI
1985 to 1988

(continued)

Proposed - 1987

Hanamaulu subdivision (Phase I), Lihue	158	
Mowry/Keown subdivision (Phase II), Kapaa, Kawaihau	31	
Ulu Ko Subdivision (Phase II), Lihue	<u>65</u>	
Subtotal	<u>254</u>	10,075
Total	<u>585</u>	10,075

Average - 1985 to 1988
(adjusted for delays and including lots complete in 1985 which are Komohana, Mountain View, and Kalaheo Oceanview Estates))

	<u>177</u>
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Source: Compiled by Peat, Marwick, Mitchell & Co., based on discussions with developers or representatives of the respective subdivisions.

Table 4-9

PROPOSED SUBDIVISIONS WITH
INDEFINITE PLANS FOR COMPLETION

<u>Subdivision</u>	<u>Proposed lots</u>
Koloa:	
Konohiki Estates	21
Kaumualii subdivision Phase II	80
Arakaki subdivision	17
Parsonson subdivision	64
A. C. Nominee (formerly Kalaheo Oceanview Estates)	150
A*B Kukuiula	<u>883</u>
Subtotal	<u>1,215</u>
Lihue:	
Molokoa Phase IV	60
Molokoa Phase V	110
Hanamaulu Phase II	168
Hanamaulu Phase III	<u>36</u>
Subtotal	<u>374</u>
Kawaihau:	
Unnamed Kauai Realty subdivision (Kapaa)	29
Otsuka subdivision	50
Smith subdivision	23
Nonou Mountain Estates	9
H&G Enterprises subdivision	<u>34</u>
Subtotal	<u>145</u>
Hanalei - Ferreira subdivision	<u>12</u>
Waimea - Eleele Nani Unit II	<u>138</u>
Total	<u>1,951</u>

Source: Compiled by Peat, Marwick, Mitchell & Co.,
based on discussions with developers or
representatives of the respective
subdivisions.

In the last five years, due to the economic recession from the end of 1980 to 1983, lot sales during that period slowed to an average of about 200 lots annually. See Table 4-10. Based on a conservative estimate of 200 lots sold per year in 1985 (actual lot sales in 1985 exceeded 350) and projecting an average increase of 20 lots annually as the economy continues to improve and as the population and number of households on Kauai increase, the annual demand for residential lots is projected to increase to 300 lots per year by 1990, 400 lots by 1995 and 500 lots by 2000. Over a 10-year period, this represents an average annual rate of increase of 3%, which is historically consistent. See Table 4-11. Significantly, Table 4-1 shows an estimated annual increase in population above 3% for the period 1985-1995. As shown in Table 4-11, the projected inventory would exceed demand until 1986; however, as the demand for residential lots increases and as excess inventory is sold, an additional 4,800 residential lots would be required on Kauai by 2000, as also shown in the Table.

As a result of the shortage in supply of residential lots, especially in Lihue, a sufficient demand is expected to absorb the planned residential units as they are developed over the next ten years and sold. This conclusion is based on a variety of factors, including historical average sales, time to market lots experienced in the Lihue area, and on projected market position of the planned subdivisions with respect to the total housing market on Kauai.

Obviously, market performance may be enhanced if delays or cancellations occur in the proposed residential lot projects on Kauai. Indeed, even in an oversupply situation which does not currently exist, sufficient demand exists for Lihue residential lots to support the project. As experienced in the past, the better-located and priced lots are less adversely affected by an oversupply situation. Recognizing that the earliest that the first phase of the project's residential lots will be available is approximately 1988, there is little risk that demand will be insufficient to absorb the properties.

b. Market Assessment. Since 1970, the demand for housing has increased sharply as a result of a 30% increase in Kauai's resident population. Although the housing inventory has increased from 9,021 units in 1970 to 14,828 units in 1980, a significant proportion of this increase has been for resort or vacation use rather than for owner-occupant use. An indication of the trend is that owner-occupied housing units on Kauai represents only 45% of the total inventory. Thus, the demand for housing units, particularly single-family units, is considered to be relatively strong on Kauai.

TABLE 4 -10

New Sales Within Selected Residential Subdivisions
1980 to 1984

<u>Year</u>	<u>New lot inventory in selected subdivisions</u>		<u>Lots sold</u>	<u>Lots unsold</u>
	<u>New additions(1)</u>	<u>Total inventory(2)</u>		
1980	123	171	158	13
1981	346	359	16	343
1982	315	658	203	455
1983	137	592	392	200
1984 (actual to September)	159	358	135	223
(Estimated September to December)	-	223	40	183(3)
Annual average lots sold - 1980 to 1984			201	

- (1) Represents lots that are put on the market for presale, usually prior to completion of the lots.
- (2) Total new lots offered for sale plus unsold lots from the previous year in selected subdivisions.
- (3) Includes 59 completed lots and 124 presale lots estimated to be complete in 1985.

Source: Discussions with developers or representatives of the respective subdivisions.

TABLE 4-11

Projected Kauai Residential Lot Requirements
1984 to 2000

<u>Year</u>	<u>Residential lot demand</u>		<u>Projected cumulative known inventory(2)</u>	<u>Cumulative residential lot excess demand (deficit)</u>
	<u>Annual</u>	<u>Cumulative(1)</u>		
Historical - 1984	-	9,307	9,366	59
Projected:				
1985	200	9,507	9,575	68
1986	220	9,727	9,802	75
1987	240	9,967	9,991	24
1988	260	10,227	10,075	(152)
1989	280	10,507	10,075	(432)
1990	300	10,807	10,075	(732)
1991	320	11,127	10,075	(1,052)
1992	340	11,467	10,075	(1,392)
1993	360	11,827	10,075	(1,752)
1994	380	12,207	10,075	(2,132)
1995	400	12,607	10,075	(2,532)
1996	420	13,027	10,075	(2,952)
1997	440	13,467	10,075	(3,392)
1998	460	13,927	10,075	(3,852)
1999	480	14,407	10,075	(4,332)
2000	500	14,907	10,075	(4,832)

(1) Initial lot demand calculated based on lot sales of 8,521 lots (as in 1980) plus 786 lots (sold from 1981 to 1984).

(2) From Exhibit B.

Source: Peat, Marwick, Mitchell & Co.

Peat Marwick and Belt Collins have both projected that the demand for residential housing on Kauai over the next ten years is expected to continue to accelerate as the resident population, according to the Department of Planning and Economic Development, is projected to increase in excess of 3.0% per annum. A portion of the demand represented is from low- to moderate-income families who wish affordable housing in close proximity to major employment centers. In this regard, the planned residential subdivision expansion at Puhi will provide the necessary residential lot to meet part of this demand, particularly for single-family homes in Lihue, the major employment, financial, retailing, and government center of the island. The significant portion of the demand, however, for Lihue housing is from middle-income families. As a result, the anticipated market support for the planned single-family lots at Lihue is expected to primarily be from residents seeking to reside in Lihue. Specifically, this market segment is expected to be comprised of recently formed households interested in a single-family home, residents employed in the district, families trading up or unwinding current multi-family residences and, to a certain extent, returning residents to Kauai.

Based on the projected population growth of 3% annually reflected in the Department of Planning and Economic Development's most recent report and the average household size on Kauai, which has shrunk from 3.55 persons in 1970 to 3.22 persons in 1980 according to the U.S. Census, a more realistic estimate for housing demand projects a demand for 5,300 additional occupied housing units by 2000.

Nonetheless, even utilizing the conservative market demand figures reflected in Table 4-11, sufficient market support for the project exists. See Table 4-12. The potential market support for the residential development as reflected in that Table is estimated based on the development's expected market position in relation to the projected overall demand for residential lots on Kauai. As a result of the residential nature of the community, the support facilities, and the attractiveness of the area, the project is expected to have a market share of about 30% of the annual increase in demand. Additionally, the lack of adequate housing opportunities in the Lihue area for families employed there or trading up from multi-family households in the area add support to the projected market share commanded by the development.

Table 4-12

PROJECTED MARKET SUPPORT FOR
RESIDENTIAL LOT DEVELOPMENT AT
THE LIHUE/PUHI PROJECT

1987 to 1998

	<u>Projected annual demand for Kauai</u>	<u>30% Estimated market share</u>	<u>30% Cumulative market share</u>
1987	240	72	72
1988	260	78	150
1989	280	84	234
1990	300	90	324
1991	320	96	420
1992	340	102	522
1993	360	109	630
1994	380	114	744
1995	400	120	864
1996	420	126	990
1997	440	132	1,122
1998	460	138	1,260

Table 4-13

PROJECTED MARKET SUPPORT FOR
RESIDENTIAL LOT DEVELOPMENT
AT THE LIHUE/PUHI PROJECT

1987 to 1998

	<u>Projected annual demand for Kauai</u>	<u>Estimated market share</u>		<u>Cumulative market share</u>	
		<u>20%</u>	<u>30%</u>	<u>20%</u>	<u>30%</u>
1985	350	-	-	-	-
1986	370	-	-	-	-
1987	390	78	117	78	117
1988	410	82	123	160	240
1989	430	86	129	246	369
1990	450	90	135	336	504
1991	470	94	141	430	645
1992	490	98	147	528	792
1993	510	102	153	630	945
1994	530	106	159	736	1,104
1995	550	110	165	846	1,269
1996	570	114	171	960	1,440
1997	590	118	177	1,078	1,617
1998	610	122	183	1,200	1,800

If projections of future annual demand are based on actual residential lot sales of 350 occurring in 1985 versus the 200 reflected in Table 4-12, an even greater demand is reflected over the relevant sales period. Estimates of this demand and likely absorption of the project is shown on Table 4-13. The table reflects the need for the project and the likely absorption of the lots even with a market share reduced to 20% versus 30%.

c. Estimated Affordability of Planned Lots. The estimated financial ability of Kauai residents to purchase lots and construct residences in the planned community has been assessed by Grove Farm Properties to evaluate the estimated affordability of the planned lots at certain projected price levels. In addition, the size and relative mobility of the potential households which could afford to purchase lots and construct homes has also been evaluated.

As everyone knows, housing affordability is a function of cost, income, available mortgage financing terms, and applicable qualifying rates applied to the foregoing items. Mortgage financing terms vary. Conventional financing terms offered by major Hawaii lenders and on Hula Mae loans were reviewed. The current terms for fixed rate, 30-year conventional residential loans range from about 10.25% to 12.75% with points ranging from 1.5% to 2.5%. Adjustable rate mortgage loans are available at lower rates. Qualifying ratios range from a gross income of 2.5 to 4 times the monthly mortgage payments.

For the purpose of this analysis, the income qualifying ratio is assumed to be 3 to 1. Interest rates are assumed to approximate a constant of 12%. The average residential lot is projected to be priced at about \$55,000.00. A typical residence is estimated to cost about \$55,000.00, for a total package price in the range of \$110,000.00. About 80% of the purchase price will be financed.

Applying the foregoing, the total purchase price, mortgage loan amount, monthly principal and interest payments and qualifying household income levels for the project can be summarized for a typical house and lot package in the planned community as follows:

Purchase of lot	\$ 55,000.00	
Construction cost of house	<u>55,000.00</u>	
Total house and lot price	\$110,000.00	
Mortgage loan amount at 80%	\$ 88,000.00	
Estimated monthly mortgage payment (12%) at:	905.00	
	<u>Monthly</u>	<u>Annual</u>
Qualifying household income at:	\$2,715	\$ 32,580.00

In 1979 about 1,905 households, representing 15.7% of Kauai's households, reported income levels of \$35,000 or higher, according to the U.S. Census Bureau. It is estimated that closer to 19% or 2,305 households had incomes of over \$32,000 per year. See Table 3-3. Assuming household income has increased from 3% to 5% annually from 1979 to 1983, about 3,000 to 3,600 households would be earning at least \$35,000 annually by 1983, and over 4,050 households by 1987. Obviously, a greater number of households can be expected to be earning \$32,000 by that same time. The 3,000 to 4,000 households earning incomes of \$32,000 or more would make up the market for the residential lots at Lihue.

5. Specific Socio-Economic and Fiscal Impacts.

a. Overview. The Lihue/Puhi expansion will provide additional new housing in Lihue, Kauai's center, commerce, finance, government, and employment opportunity. The lots are expected to be improved with single-family residences and occupied by local residents. These homes are expected to be constructed over a 10 to 12 year period from 1988 to 2000. The Lihue expansion is expected to have significantly favorable socio-economic and fiscal impacts on the community.

b. Probable Impact on the Resident Population. Among the probable impacts of the Lihue expansion on the Kauai's resident population is the increase in the Lihue district resident population and, hence, the mild redistribution of the island's residential population. Assuming that the residential

single-family homes will have an average household size of 3.2 persons and that they will be fully constructed and occupied by the year 2000, the project will add some 3,700 persons to the population of Lihue and Puhī. At that time, a significant portion of this addition, however, is attributable to natural increases.

Without the proposed project, the resident population of Lihue will continue to increase at the historical average annual rate and is expected to remain home for at least 22% of Kauai's population. Reference to Table 4-14 reflects that Lihue's resident population is likely to increase by approximately 5,550 persons during the considered period, notwithstanding the addition of the project. Table 4-14 also sets out the estimated impact that the development will have Lihue's resident population assuming that one-half of the available units are purchased by new residents resulting from the natural increase in population.

In the late 1970s rapid population growth on Kauai and relatively slower increases in the housing inventory in the Lihue district resulted in population movement away from the major employment area. Without the project, the resident population in Lihue district is projected to increase at a slower rate than the island generally, and Lihue's population share is projected to decline to slightly below 22% of the Kauai population by 1990. The projected decline results from the limited housing inventory and does not reflect a declining demand for housing in the area. Implementation of the project will permit Lihue district to maintain its historical percentage (22%-22.7%) of the County's population base.

Table 4-14

PROBABLE IMPACT OF THE LIHUE SUBDIVISION
EXPANSION ON RESIDENT POPULATION DISTRIBUTION

1960 to 2005

<u>Projected resident population without project</u>			
<u>Year</u>	<u>Kauai</u>	<u>Lihue</u>	<u>Percentage distribution</u>
Historical:			
1960	28,176	6,297	22.3%
1970	29,761	6,766	22.7
1980	39,082	8,590	22.0
1985	46,000	10,120	22.7
Projected:			
1990	55,100	11,960	21.7
1995	63,900	13,870	21.7
2000	69,100	15,000	21.7
2005	72,200	15,670	21.7
Average annual increase:			
Historical -			
1970 to 1980	2.8%	2.4%	

<u>Projected resident population with project</u>			
<u>Year</u>	<u>Kauai</u>	<u>Lihue</u>	<u>Percentage distribution</u>
Historical:			
1960	28,176	-	-%
1970	29,761	-	-
1980	39,082	-	-
1985	46,000		
Projected:			
1990	55,100	12,190	22.1
1995	63,900	14,100	22.1
2000	69,100	15,230	22.1
2005	72,200	15,900	22.1
Average annual increase:			
Historical -			
1970 to 1980	2.8%	2.4%	

Source: Projected estimates are based on DPED Population and Economic Projections, 1984, See Table 4-4. Historical Data Source is Peat, Marwick, Mitchell & co.

c. Probable Employment and Employment Income. Construction of the subdivision is projected to generate employment opportunities and employment income for Kauai residents. These opportunities have been discussed at length in various portions of this report. As indicated, employment during construction is estimated to be 100 workers per year. That employment presumes 30 site workers and approximately 70 building workers per year. The construction phasing of the project is expected to occur commencing in 1987-88 through the year 2000 for house construction after sale of lots.

During the construction phase and continuing thereafter, the golf course will create numerous jobs for local residents. Utilizing the Wailua course as a model, we can estimate that the course, exclusive of related commercial activities such as a pro shop, restaurant, bar, driving range, etc, will employ approximately 30 full-time operations and maintenance staff. Related commercial activities should account for an additional 25 full time and again as many part-time positions.

d. Probable Fiscal Impacts (Taxes and Cost of Services). Probable fiscal impacts include increase in State income tax during construction, 4% State general excise tax on materials and supplies purchased in the State and real property taxes collected on the improved properties. The State income and general excise taxes are an indirect effect of the construction. Real property taxes are of long-term, direct benefit to the County.

Real property tax is paid on a basis of 100% of assessed fair market value of the property. Fair market value is determined based on separate land and improvement values and is computed as a rate per \$1,000 of assessed value. The 1985-1986 tax rate is \$5.81 per \$1,000 of assessed value for residential buildings and \$6.45 for land. For commercial property, the rates are \$8.25 and \$8.70, respectively.

If the average single-family residential property assessed valuation is estimated to be \$110,000 (and a homeowner's exemption of \$20,000 is subtracted from the assessed value of the building for owner-occupied properties), the annual real property tax for the typical lot will be about \$558.00 presuming it is improved with an owner-occupied residential dwelling. Application of those rates will generate \$646,164.00 in taxes attributable to the residential development portion of the project. The planned light industrial area in Puhi is expected to generate \$31,000.00 in annual real property taxes, for an annual total of \$677,280.00 in real property taxes at the completion of all phases of the project. See Table 4-15.

Table 4-15

PROBABLE IMPACT OF THE LIHUE/PUHI
EXPANSION ON REAL PROPERTY TAXES

(1986 Dollars)

<u>Single-family residences</u>	<u>Assessed value</u>	<u>Annual real property taxes generated(1)</u>	
		<u>Per unit</u>	<u>Total</u>
Typical unit:			
Land	\$ 55,000	355	
Building	55,000	-	
Less homeowners exemption	20,000	-	
Net taxable building assessed value	<u>\$ 35,000</u>	<u>203</u>	
Typical annual real property tax per residence		<u>\$ 558</u>	
Annual real property taxes for all residential projects:			\$646,164
Annual real property taxes for Puhi light industrial land			\$ 16,550
Annual real property taxes for Puhi light industrial buildings			<u>14,616</u>
Total			<u>\$677,280</u>

(1) Presumes current tax rate of \$5.81 per \$1,000 assessed value for buildings and \$6.45 for land.

CHAPTER 5.

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

HAWAII STATE PLAN

Section 19 of the Hawaii State Plan, Objectives and Policies for Socio-Cultural Advancement-Housing, deals most directly with the issues raised by the proposed project. Objective 1 states as a goal the creation of "greater opportunities for Hawaii's people to secure reasonably priced, safe, sanitary, livable homes located in suitable environments that satisfactorily accommodate the needs and desires of families and individuals." By providing additional residential lots in the Lihue and Puhi areas, the proposed project will increase the supply of housing in those areas. It is the intent of this project to expand the existing Lihue/Puhi community and to serve the same types of people as live in those areas now.

STATE FUNCTIONAL PLANS

The State Functional Plans are used to provide detail to the State Plan by addressing specific topics such as education, tourism and energy. The Functional Plans are used to define and implement the goals, objectives, policies and priority directions of the State Plan. The topics which are most relevant to the proposed project are housing and recreation; these are discussed in detail below.

1. Housing Functional Plan. The following are the objective and policies of the Housing Functional Plan which are relevant to the proposed General Plan change.

Objective A: Develop greater opportunities for Hawaii's people to secure reasonably priced, safe, sanitary, livable homes located in suitable environments that satisfactorily accommodate the needs and desires of families and individuals.

Policy A(2): Stimulate and promote feasible approaches that increase housing choices for low-income, moderate-income, and gap group households.

Policy A(3): Increase homeownership and rental opportunities and choices in terms of quality, location, cost, densities, style, and size of housing.

Policy A(4): Promote appropriate development of additional housing and improvement, rehabilitation, and maintenance of existing housing.

Discussion: The proposed housing will accommodate the needs of a diversity of Kauai residents. It is the intent of the applicant to provide housing that can be purchased at a reasonable price by the majority of Kauai's residents, including those at low, moderate and gap group income levels.

2. Recreation Functional Plan. The following are the objective and policies from the Recreation Functional Plan which are relevant to the proposed General Plan change.

Objective C: Provide a comprehensive range of opportunities which fulfill the needs of all recreation groups effectively and efficiently.

Policy C(1): Maintain an adequate supply of recreation facilities and programs which fulfill the needs of all recreation groups.

Discussion: The proposed development will establish a golf course, driving range, and bowling alley in the Lihue-Puhi area and in so doing will provide needed recreational opportunities for Kauai residents.

3. Agricultural Functional Plan. The Housing Functional Plan recognizes that conflicts with the Agricultural Functional Plan will arise. Land appropriate for agricultural use which are characterized as having little to no slope and being well-drained have the same qualities which allow for the development of moderate cost housing.

The proposed action conflicts with the objectives of the Agricultural Functional Plan by taking agricultural lands out of production in order to develop more housing for Kauai residents. The proposed action represents a trade-off between the need to build housing economically and efficiently and the desire to maintain agricultural lands and bolster the sagging sugar industry.

STATE LAND USE CLASSIFICATION

The entire project area which is the subject of Grove Farm Properties' request is designated State Land Use Agriculture. The State Land Use line borders Kukui Grove Center. The line spokes out from the Center along Nawiliwili Road and Kaumualii Highway until it intersects with the Ulu Ko Subdivision to the east and the Puhi Subdivision to the west, respectively, and then encompasses the balance of the project area. Because the project area is now designated Agriculture, it will require a change in the State Land Use boundary (in addition to County zoning) prior to development.

STATE COASTAL ZONE MANAGEMENT, OBJECTIVES AND POLICIES AS
DEFINED IN CHAPTER 205A, HAWAII REVISED STATUTES

The subject property is not within the Kauai County Coastal Zone Special Management Area. This fact was determined by consultation with the Kauai County Planning Department and review of the SMA maps. However, consistency with the objectives and policies of the State Coastal Zone Management Program still must be identified as a part of Grove Farm Properties' application. Only those objectives and policies deemed relevant to this petition will be addressed.

Policy B encourages "public and private agencies to manage the natural resources within the County in a manner that avoids or minimizes adverse effects on the environment and the depletion of energy and natural resources to the fullest extent possible." The continued use of this land for cane must be weighed against the need for additional housing in the Lihue/Puhi area. Since this area is most closely adjacent to the major commercial and government center of the island, and the city's expanding commercial center, it is reasonable that Lihue expand in the direction of the project area. It is felt that the provision of needed residential housing in Lihue outweighs the loss to the County that would be attributed to the loss of this cane land.

Significantly, the land currently in cane is leased to Lihue Plantation. The lease expires in 1994 and there exists a significant risk the right to continue planting operations in the project area may not be exercised. If this action were to occur, the properties in question would be put into pasture and would afford significantly less benefit to the County or the public.

Just as importantly, the project proposes to return to open space, one of the most significant benefits resulting from agricultural use of the property, 172 acres as a golf course. Satisfying the Lihue/Puhi open space concerns in this manner clearly minimizes any potential adverse effect to the environment. Also, it avoids the depletion of one of the County's foremost natural resources.

Guideline A2 motivates us to insure that "adequate and properly located public recreation areas and wildlife preserves are reserved." A 4-acre neighborhood park is to be dedicated shortly by Grove Farm Properties. This park is in addition to the proposed private multi-purpose park. The parks will not be only for the new project but for the wider area of Lihue and Puhi as well. Moreover, a 10-acre parcel is intended to be made available to the State for future use as a public school facility.

KAUAI COUNTY GENERAL PLAN

The Kauai General Plan is the primary policy governing comprehensive, long-range development, use, and allocation of land and water resources within the County. The proposed project is specifically relevant to eight out of the sixteen goals established by the General Plan through a community desire for physical, social, and economic growth and well-being on Kauai. The eight most relevant goals are listed below.

Goals:

- a) Manage growth according to established population growth targets.
- b) Create opportunities for a greater diversity and stability of employment for residents of Kauai.
- c) Provide opportunities for suitable living quarters for all residents in all income levels.
- d) Promote the improvement and expansion of the island's economy by recognizing and carefully utilizing land and water resources.
- e) Guide physical growth so that island and visitor communities will develop in social and economic concert with each other.
- f) Create, develop and sustain an economy and a population composition that will encourage the youth of Kauai to live in the County and contribute to society.
- g) Guide and control development to take full advantage of the island's form, beauty, and climate and preserve the opportunity for an improved quality of life.
- h) Manage implementation of the Plan through development of social and physical infrastructure based on growth targets, priorities, and efficient utilization of facilities and services.

Discussion: By designating the project area Urban Mixed Use, which would be used primarily for housing and light industry, a greater number of Kauai's people will have the opportunity to be gainfully employed and reside on their home island. The proposed project would create greater diversity and add stability to the Kauai employment market, while also serving as an incentive for younger people to remain on the island and improve their quality of life.

The house lots which the project intends to develop will be directed to meet the needs of a range of household types, while efficiently using infrastructure resources. The proposed project intends to use land and water resources in an effective and conservative manner in order to meet the needs of the people of Kauai. Although a major portion of the development will be located on agricultural land, which is now used for the cultivation of sugar, the removal of the 420 acre area will account for less than one percent of the present total of agricultural land on Kauai. This land is adjacent to existing urban land uses and, consequently, compared to much of the agricultural land on the island that might be designated for urban uses in the future, this may be one of the most appropriate sites.

The location of the proposed development concentrates urbanized land use in the Lihue area instead of allowing such community growth to take place in too close a proximity to visitor communities. The orientation of the development is therefore resident oriented and not resort oriented.

Population growth resulting from the proposed 1,158 housing units will increase the resident population of the combined Lihue and Puhi areas by approximately 2,649 and 1,056, respectively. Considering that the objectives for the Lihue Development Plan calls for an increase in housing to 3,000 to 4,500 units, and a population increase to 10,000 to 15,000 by 1995, the completion of this project would be within the planned development target, boosting the current population to 12,290, and the estimated number of housing units to 4,057 by the year 2000, not including housing and impacts from other sources.

LIHUE DEVELOPMENT PLAN

The purpose of the County's Lihue Development Plan (LDP) of 1978 was to guide and regulate future development by providing for a greater degree of detailed physical, social, and economic planning at the community level than is possible in the General Plan. Since the adoption of the 1984 County General Plan, many of the LDP concepts have been superceded by the new General Plan.

The goals and objectives of the Plan discussed below are those which are most relevant to the proposed project.

Goal: Develop Lihue as a more active and competitive commercial, business, and financial center.

Objective: (a) Encourage greater centralization of such activities.

Discussion: By developing the area west of Lihue into several types of land uses, including housing, light industrial, park, and recreation, the Lihue planning area will become a greater focus of the island's commercial, business, and financial activities, therefore becoming more competitive with similar areas on Kauai and on outer islands as well. The location of the proposed sites are adjacent to land now in urban and commercial use and are also close to the town of Lihue, encouraging the centralization of such development, versus allowing urban mixed land uses to be inappropriately scattered throughout the island.

Goal: Improve Economic Conditions.

Objectives: (a) Promote more and better job opportunities.
(b) Promote economic diversification.
(c) Optimize use of present human and economic resources.

Discussion: The construction of housing and the development and use of the industrial sites will provide both short-term and long-term job opportunities. Housing construction will create short-term employment opportunities which are expected to be filled primarily by Kauai residents. Light industrial land use, as proposed herein, will create long-term employment while promoting economic diversification for the County. The Citizens' Advisory Committee of the Lihue Development Plan selected a potential industrial area south of the Lihue Airport, however, as the Plan indicates, this site may conflict with the possibility of this area becoming a major entrance to town from the airport if the terminal location should change and/or expand. Taking this into account, the proposed location for light industrial land use can be seen as an appropriate area for such development, especially as the site is closer to Lihue and is adjacent to similar activity.

Goal: Improve Housing Conditions.

Objectives: (a) Encourage adequate housing which will meet the needs of all sectors of the population.

(b) Promote construction of attached-type dwelling units to conserve land and encourage affordable prices.

Discussion: The proposed project specifically seeks to establish housing which will be affordable to the majority of County residents. Most of the area proposed for housing will be single family, however, 51 acres have been planned for multi-family dwellings. The Citizens' Advisory Committee decided that the primary solution to the housing problems in

Lihue is to have government encourage the production of low cost, multi-family and single family housing on small lots in town or toward Puhi. The proposed housing would be adjacent to Lihue and in Puhi on land adjacent to existing urban mixed land uses.

Goal: Promote Recreational Opportunities for All Segments of the Population.

Discussion: The proposed project intends to initiate the establishment of a golf driving range, golf course, and bowling facility at various stages of the development. These facilities will provide recreational opportunities for the residents of Lihue in particular, and the island of Kauai in general.

KAUAI COUNTY ZONING ORDINANCE

No portion of the site currently within the area covered by Grove Farm Properties' application for a general plan change has been zoned by the County for the proposed uses. As previously stated, zoning will not be sought until adjustment of the State Land Use District boundary. It is contemplated that R-6 zoning will be sought for the Puhi portion of the project area (exclusive of the proposed light industrial property). Open (O) zoning for the golf course and R-4 zoning for the residential areas will be sought for the Lihue portion of the project area.

CHAPTER 6.

RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The subject property is presently used for sugar cane production and its status over the long-term is unknown due to the uncertainty surrounding the survival of Hawaii's sugar industry. Implementation of the proposed project would create (1) new housing units for Kauai and State residents, (2) more industrial area for more jobs and to serve the needs of Kauai as it grows, and (3) golf course to serve island recreational needs. These uses, from the developer's standpoint, represents a more productive use of his property over the long-term period.

In addition to providing for long-term land use needs, the increased productive use of the subject property would increase the County's real property tax base. The proposed project will also, over the long-term, strengthen the Kukui Grove commercial area.

As demonstrated in this document, the proposed project does not appear to pose any long-term risks to health and safety. The intent of the developer is to provide a healthful, safe, and enjoyable community.

CHAPTER 7.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The development of the Lihue and Puhi sites will commit these parcels to the urban and recreational uses identified earlier in this report, specifically: residential, light industrial, park and recreational uses. Urbanization of this land will change the present agricultural setting. The development of residential and light industrial land uses will decrease the total amount of agricultural land on Kauai on a relatively permanent basis. However, the golf course and park areas do not constitute an irretrievable commitment of agricultural land as the proposed use could more easily be changed to other land uses in the future. Thus, agricultural land and soil are the primary resources which will, on a relative scale, be irretrievably committed to housing and light industrial uses.

CHAPTER 8.

UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES PROPOSED TO MINIMIZE THEM

The proposed General Plan change will convert about 464 acres of land from agricultural use to residential, industrial, and recreational uses. This conversion of agricultural lands is an unavoidable effect of this plan and represents a tradeoff between agricultural production and the creation of needed housing and employment. The conversion of the agricultural lands will be done gradually over a five to 15 year period as sugar is phased out and the new urban uses phased in. The loss of these lands to the sugar industry will be predictable so that sugar production can acclimate to loss of these lands.

Unavoidable adverse environmental effects are expected during the construction of the project. Air quality will decrease and noise levels will increase due to construction activities. These effects will be temporary and will be mitigated by abiding by Federal and State regulations for air quality, i.e. Department of Health Rules and Regulations, Chapter 43, Section 10) and allowable noise levels, i.e. County Zoning Ordinance, Public Health Regulations 44-A and 44-B, Occupational Safety and Health Administration standards. These regulations stipulate that control measures, such as wetting down loose soil areas with water and the establishment of physical buffers to trap particulates, be carried out to reduce some of the adverse effects of construction activities.

Sugar operations on the subject property already generate dust and noise due to wind, machinery and cane burning. The proposed addition to the General Plan will replace these air quality and noise problems with noise and emissions into the air through increased traffic and industrial activities. The effects of the proposed Puhi industrial expansion can be mitigated through landscape buffers and through adherence to the County's zoning requirements for light industrial use.

CHAPTER 9.

UNRESOLVED ISSUES AND THEIR RESOLUTION PRIOR TO PROPOSED ACTION

Several issues within the proposed development will not be decided until further in the development process. Final plans depend on several factors, particularly decisions which have yet to be made at the State and County level. The unresolved issues discussed below relate primarily to matters of infrastructure.

The sewage disposal method for single family residential and light industrial has not been specifically identified. Two choices currently exist: either the use of cesspools or the use of a sewage treatment plant. The use of cesspools is preferable as it makes the cost of housing considerably less expensive. The State Department of Health and the County Department of Public Works will decide which disposal method is safe and permissible after rezoning takes place.

Storm drainage will make use of the natural drainage systems, including Puali and Nawiliwili streams, which discharge at Nawiliwili Harbor. The added runoff created by the development of impermeable surfaces needs to be assessed in order to predict the potential amount of runoff and the capacity of the natural drainage system and flood plain. The development of alternative drainage systems may have to be established if the natural system cannot support the average level of flow.

A solid waste disposal site has not been specifically determined at this time. It is expected that the Halehaka landfill has a life expectancy of several more years and that a portion of the golf course will eventually be developed on the land fill. The Kekaha landfill would then become the primary site for solid waste disposal, and a solid waste transfer station would have to be located within the Lihue area. A specific site for the transfer station has not been located at this time. When a rezoning decision is made, a specific solid waste management plan will be made.

Light industrial uses within the project area are expected to be generally consistent with those currently taking place on adjacent land designated as urban mixed use. However, the specific industrial uses cannot be identified until each individual lot is purchased.

CHAPTER 10.

CONSULTED AGENCIES AND PARTIES; AND PERSONS, FIRMS OR AGENCIES PREPARING THE STATEMENT, BY CONTRACT OR AUTHORIZATION

CONSULTED AGENCIES AND PARTIES

In addition to the County Planning Department the following agencies and parties were consulted during the preparation of this Draft EIS.

State Department of Agriculture

State Department of Health

State Department of Transportation, Division of Highways

County Department of Public Works

County Fire Department

County Water Department

PERSONS, FIRMS OR AGENCIES PREPARING THE STATEMENT, BY CONTRACT OR AUTHORIZATION

This document was prepared by Case, Kay & Lynch as attorneys for the petitioner, Grove Farm Properties. Assistance on planning and engineering matters was provided by Belt, Collins and Associates.

CHAPTER 11.

COMMENTS AND RESPONSES DURING THE CONSULTATION PERIOD

The agencies and individuals listed in Chapter 10 were all sent copies of the Environmental Impact Statement Preparation Notice (EISPN) with the Environmental Assessment (EA) and a transmittal letter requesting comments. Copies of the EISPN sent to these organizations and individuals are reproduced in this section along with copies of their comments and our responses to them.

PLANNING DEPARTMENT - COUNTY OF KAUAI

NOTICE OF DETERMINATION

APPLICANT: Grove Farm Properties, Inc.

TAX MAP KEY: 3-3-03: Por. 1 and 3-3-02: Por. 1 (464 acres)

LOCATION: Lihue - Along Nawiliwili Road and Kaunualii Highway, generally southeast of the existing Puhi and Komohana Subdivisions and to the west, south, and east side of Kukui Grove Center.

APPROVING AGENCY: Planning Department, County of Kauai

AGENCIES CONSULTED:

County: Public Works
Fire
Water

State: Health
Highways Division

A. DESCRIPTION OF PROPOSED ACTION AND STATEMENT OF OBJECTIVES:

The subject properties are sought to be transferred into the "Urban Mixed Use" general plan designation. The affected portion of the properties are presently designated on the general plan as "Agriculture," "Open," and "Urban Residential." The project consists of 262 acres for single-family residential housing units, 56 acres for light-industrial development, approximately 20 acres of roads and buffers, and 126 acres for an 18-hole golf course which will be integrated into the residential areas. The residential project intends to be phased into a total development of 330 units in Puhi and 828 units in Lihue.

B. DESCRIPTION OF ACTIONS TECHNICAL, ECONOMIC, SOCIAL, AND ENVIRONMENTAL CHARACTERISTICS:

1. Technical: The proposed project intends to complement existing commercial, light industrial, and residential development in Puhi and Lihue. The proposed golf course will be the third 18-hole golf course within the Lihue District. Physically, the areas sought in the petition are contiguous to existing development and lands which are general planned "Urban Mixed Use" or situated within the State Urban Land Use District. The petitioned area, however, will require a land use boundary amendment from Agriculture to Urban and the appropriate zoning designations from the Planning Commission and County Council before development can proceed. To date, a general plan amendment petition was submitted and public hearing conducted on the matter on January 22, 1986. Action will be dependent on the completion of all procedural requirements.
2. Economic: The project proposes to provide additional housing inventory on the island and it is anticipated that positive economic benefits associated with the project will result such as an increase in the revenues for the County and State, a broadening of the island's economic base, and employment that will be generated during and subsequent to completion of the project.
3. Social: It is expected that the project will contribute to increased resident population a general reinforcement of the function of Lihue District as the island's major center of employment, business, and government activities. Due to the size of the project, changes to the social fabric of the Lihue community would occur.

F. PROPOSED MITIGATION MEASURES IF ANY:

To date the State Highways Division recommends that a Traffic Impact Analysis Report be prepared. The Water Department has stated that additional water source may be required prior to actual subdivision or development if other developments in the planning area precede this one. The Public Works Department recommends that matters relating to sewage disposal, and development in proximity to the existing Halehaka landfill be resolved in a manner to address future needs.

G. DETERMINATION:

It is hereby recommended that an Environmental Impact Statement is required due to the magnitude of the project and because it is in excess of that presently encouraged by the Kauai General Plan.

Authorized Signature

Title

3-7-86
Date

GEORGE R. ARIYOSHI
GOVERNOR



JACK K. SUWA
CHAIRPERSON, BOARD OF AGRICULTURE

SUZANNE D. PETERSON
DEPUTY TO THE CHAIRPERSON

State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 So. King Street
Honolulu, Hawaii 96814-2512
April 2, 1986

Mailing Address:
P. O. Box 22159
Honolulu, Hawaii 96822-0159

Mr. Dennis M. Lombardi
Case, Kay and Lynch
Attorneys at Law
P. O. Box 494
Honolulu, Hawaii 96809-0494

Dear Mr. Lombardi:

Subject: Proposed General Plan Change to Urban Mixed Use
Near Kukui Grove Center; Lihue, Kauai
Grove Farm Properties, Inc.
TMK: 3-3-03: 01 and 3-3-02: 01
Acres: 464

The State Department of Agriculture would like to be a
consulted party in the preparation of the subject Environmental
Impact Statement. Please send the Preparation Notice and/or
other pertinent documents to:

Planning and Development Office
Department of Agriculture
P. O. Box 22159
Honolulu, Hawaii 96822-0159

Should you have any questions, please call Mr. Earl
Yamamoto at 548-7134.

Sincerely,

A handwritten signature in cursive script, reading "Paul J. Schwind".

Paul J. Schwind
Chief Planner

cc: Kauai Planning Department
OEQC

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April 17, 1986

Paul J. Schwind
Chief Planner
State of Hawaii
Department of Agriculture Planning
and Development Office
P.O. Box 22159
Honolulu, Hawaii 96822-1059

Re: General plan change proposed by Grove Farm
Properties, Inc. at Lihue, Kauai, Hawaii

Dear Mr. Schwind:

Thank you for your correspondence concerning Grove Farm Properties, Inc.'s application to the County of Kauai for a general plan change affecting certain real property located at Lihue, Kauai, Hawaii.

Based on your request, I have enclosed for review by the Planning and Development Office of the Department of Agriculture the preparation notice issued by the Planning Department of the County of Kauai. I have also enclosed copies of the petition submitted by Grove Farm Properties, Inc., to the Planning Department together with the environmental impact assessment prepared by Grove Farm Properties, Inc.

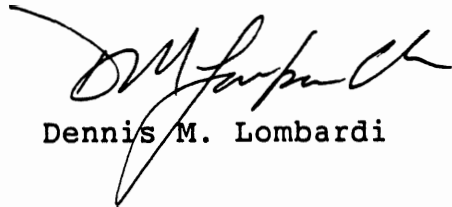
At such time as an environmental impact statement is available, we will be pleased to forward that to you. In the interim, we would appreciate your comments so that we may incorporate them into the environmental impact statement currently being prepared.

Mr. Schwind
April 17, 1986
Page 2

If you have any questions, please feel free to contact me at our Honolulu office.

Very truly yours,

CASE, KAY & LYNCH

A handwritten signature in dark ink, appearing to read 'DML', with a long, sweeping horizontal line extending to the right.

Dennis M. Lombardi

DML:kbt/0281K/0129A(L)
Enclosures

cc: The Planning Department, County of Kauai
Attention: Mr. Avery Yuen

The Office of Environmental Quality Control
Attention:

COUNTY OF KAUAI
PLANNING DEPARTMENT

FROM: Avery H. Youn, Planning Director (BM)

DATE: November 22, 1985

SUBJECT: General Plan Amendment GPA-86-2, GROVE FARM PROPERTIES, INC.

TO: (XX) Public Works Dept.
(XX) Water Dept.
(XX) State Health Dept.
(XX) State Highways Div.
() Fire Dept.
() Sam Lee (DLNR)
() State Dept. of Agriculture
() Police Dept.
()
()

FOR YOUR COMMENTS (pertaining to your department): December 13, 1985

See attached comments



Signature _____

County Engineer

Please return one (1) copy by December 9, 1985. Thank you.

KK/HF/sb

GPA-86-2
GROVE FARM PROPERTIES, INC.

Public Works Comments:

1. Drainage

There will be increases in storm runoff with the proposed land development by the construction of impermeable surfacing such as houses, roads, etc. Our concern would be the existing drainage systems that drain the Kukui Grove and subdivisions such as Pua Loke and Ulu Mahi. Prior to development we will need to have the developer provide drainage studies to evaluate the existing systems and provide the solutions if necessary to minimize flood and drainage problems.

The larger area of the project which we approximate to be about 700 acres will drain into the Puali Stream. At the mouth, the stream has a drainage area of 1280 acres. Consequently, the development area involves 55 percent of the total drainage watershed area and we believe it's development will have a significant impact on the flood plain of the Puali Stream. Prior to development we will need studies for the Puali Stream and mitigating proposals to maintain flood risks and dangers to predevelopment conditions.

2. Roads

a. Existing

The development will access to the State Highway which are Kaumualii Highway and Nawiliwili Road. These are two lane highways which can accommodate two way traffic. However, we believe that channelization such as left turn lanes and additional lanes for deceleration, acceleration or capacity purposes should be provided at the time of development.

The development will also impact existing County roadways. Directly affected by the development will be Puhi and Halehaka Road. The development plan shows Puhi Road to be a primary connecting street. Consequently, Puhi Road would be impacted by the added traffic. We believe Puhi Road must be upgraded to standards to accommodate the traffic.

The development plan shows a section of Halehaka Road to be in the Golf Course. A new roadway in the vicinity of parcel 25 and 26 will provide a connection to the portion of Halehaka Road that eventually connects to Hulemalu Road. No mention is made on the disposition of the section of Halehaka Road in the Golf Course but we presume that the intent is to eliminate the segment in the golf course. If this is the intent, our concern would be to resolve the utilities in the roadway and to maintain access and service between Nawiliwili and Hulemalu Road in close proximity to the existing Halehaka Road.

b. Proposed

Exhibit A provides a roadway layout for the development of the project. We consider the layout as conceptual. The scale of the drawing prohibits review for compliance to the road standards.

We like the plan which provides a connecting road from Nawiliwili Road (vicinity parcel 16) to Puhi Road (vicinity parcel 32). However, we would like to see revisions in the street layout especially in the vicinity of parcel 18 thru 31 where we believe a circulatory road should serve parcel 17 thru 26 and parcel 28 thru 31 rather than the dead end street systems.

Some of our concerns in the roadway plan are as follows:

- (1) Improvements and realignment of both Puhi and the proposed interior road in the vicinity of Parcel 32 may be necessary due to the curvilinear alignment of both Puhi and the proposed roadway.
- (2) Improvements and realignment of both Nawiliwili and the proposed interior road in the vicinity of Parcel 16 may be necessary due to the grade of Nawiliwili Road and the curvilinear alignment of both Nawiliwili and the proposed roadway.
- (3) The interior streets should be developed so that collector street connects to major street or another collector street with continuity in alignment and function. Minor street should also connect to collector streets or another minor street.
- (4) The interior streets should be developed with the street classification and definition as cited in the Subdivision Ordinance.
- (5) Curvilinear alignment of streets are allowed. However, consideration should also be made for driveway sight distance for the lots which abut the curving roadway.
- (6) Intersection should desirably be located so that streets entering the main road are directly across each other. If unavoidable and streets must be offset, the offset shall meet the road standards or provide sufficient distance to allow left turn channelization and storage lanes. Intersections on horizontal or vertical curves shall be avoided.
- (7) The collector street in the Ulu Ko Subdivision should be extended for access to the connecting road between Nawiliwili Road and Kaumualii Highway.

3. Sewers

The subject development designated as a Project District under the old General Plan, was not included in the planning of the service area for the Lihue Sewerage System.

The subject development should be masterplanned relative to wastewater systems to cover the entire area indicated, including the existing urban areas. Piecemeal determination of wastewater systems as occurred for the Ulu Ko Subdivision should be prevented from re-occurring.

4. Solid Waste

Portion of Parcels 23 (Single Family) and 21 (Golf Course) are located on the existing Halehaka Landfill. It is recommended that structures not be located over the landfill and that the golf course be redesigned to cover more of the landfill area.

The existing landfill has an expected life of another two years at which time an alternate means of disposal of refuse will need to be developed. Being that a golf course is proposed in the close proximity of the existing landfill, we recommend that those areas be made available for expansion of the landfill site until the area is ready to be developed.

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April 25, 1986

County Engineer
Department of Public Works
County of Kauai
4396 Rice Street
Lihue, Kauai, Hawaii 96766

Re: General Plan Amendment GPA-86-2, Grove Farm
Properties, Inc.

Dear County Engineer:

Thank you for your comments of January 8, 1986, to the Planning Department regarding the proposed General Plan amendment for Grove Farm Properties' Lihue/Puhi Project District Plan.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS). The following are brief responses to those comments.

1. Drainage

The property which is subject to the General Plan change is about 464 acres. When fully developed, not all of the property will consist of impermeable surfaces. About 126 acres or 27% of the property will be in golf course use.

2. Roads

All roadways will be designed to County standards. The intent is to develop roads that are dedicable to the County.

County Engineer
Department of Public Works
April 25, 1986
Page 2

The road alignments as shown in the plan are a result of consideration of terrain, golf course alignment, subdivision lotting needs and other factors. The project district plan at this stage is conceptual in nature and as such will evolve as it proceeds through the planning process. The developer fully expects that refinements to the road alignments will be needed at the zoning and subdivision approval level where a more precise level of planning and design is appropriate.

The suggested extension of the Ulu Ko Subdivision collector street should more appropriately be dealt with as part of that subdivision approval process.

3. Sewers

The intent of the developer is to provide a wastewater collection system for the proposed commercial and multi-family areas in the areas surrounding the existing shopping center. Single family and light industrial uses in the proposed General Plan Amendment area would utilize cesspools if the Department of Health finds that cesspool use in the area is safe.

4. Solid Waste

The developer concurs that structures should not be located over the Halehaka landfill site. Redesigning of the golf course to use more of the landfill area is a possibility that requires further design study.

The DEIS is expected to be filed in May. You will be sent a copy of the DEIS when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,



Dennis M. Lombardi

DML:kbt/0318/0130A(L)
cc: Grove Farm Properties, Inc.

COUNTY OF KAUAI
PLANNING DEPARTMENT

FROM: Avery H. Youn, Planning Director (BM)

DATE: November 22, 1985

SUBJECT: General Plan Amendment GPA-86-2, GROVE FARM PROPERTIES, INC.

TO: (XX) Public Works Dept.
(XX) Water Dept.
(XX) State Health Dept.
(XX) State Highways Div.
() Fire Dept.
() Sam Lee (DLNR)
() State Dept. of Agriculture
() Police Dept.
()
()

FOR YOUR COMMENTS (pertaining to your department):

10 Dec. 85

1. Our environmental health concerns are as follows:

- a. There is a cemetery and a sanitary landfill on or adjacent to the parcels number 23 and 26. Both the cemetery and the landfill shall be identified on the map.
- b. Odor nuisance from the existing piggery operation on Halemanu Road, the existing private wastewater treatment work on Halehaka Road may affect ehr residents living in the area. The proposed Light Industrial area may also generate odor nuisance and affect the neighboring residents.
- c. The existing cane haul road may create odor, noise and dust nuisances and affect the residents of the properties adjacent to and near the road. Smoke, noise and dust nuisances may arise during cane harvesting operations in the nearby cane fields.
- d. There is one reservoir currently used for temporary storage of the effluent from the KCC and the Kukui Grove Wastewater Treatment Works. The effluent is currently being used for the irrigation of the canefields in the subject area. If the canefields are removed, how will effluent be disposed of?

continued on the back

Signature _____

Please return one (1) copy by December 9, 1985. Thank you.

- e. The developer shall advise potential buyers of adverse environmental conditions and such conditions shall be made known to subsequent buyers through proper provisions in the property deed which will run with the parcels so long as the environmental conditions exists. These adverse environmental conditions include: odor, dust, noise and smoke nuisances as mentioned in items b & c.
- f. We strongly recommend the entire project be served by the existing Kukui Grove Wastewater Treatment Work.
2. Due to the general nature of the plans submitted, we reserve the right to impose further environmental health restrictions on this project when more detailed plans are submitted.


Theodore Inouye, Chief Sanitarian, Kauai

FORWARDED:


Jeffry A. Smith, M.D., M.P.H.
District Health Services Administrator, Kauai

CT/plo

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April 25, 1986

Mr. Theodore Inouye,
Chief Sanitarian
Kauai District Health Office
Department of Health
Lihue, Kauai, Hawaii 96766

Re: General Plan Amendment GPA-86-2, Grove Farm
Properties, Inc.

Dear Mr. Inouye:

Thank you for your comments of December 10, 1985 regarding the proposed General Plan amendment for Grove Farm Properties' Lihue/Puhi Project District Plan.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS). The following is a response to some of your comments.

a. The cemetery and landfill site will be located in the DEIS.

b. Grove Farm Properties' does not believe that odor will be a major problem to residents. The existing piggery will be approximately one-half of one mile downwind from the proposed single family subdivision at Puhi. The wastewater treatment plant on Halehaka Road will be a landscape buffer and the proposed new golf course. Units in the abutting multi-family area, Parcel 11, can be sited to avoid the treatment plant area. Finally, the proposed light industrial area, Parcel 33, would be separated from the residential areas by a road and landscape buffer. Uses would be those permitted under the County's Limited Industrial zoned districts. These uses are not like those permitted in General Industrial zoned

Mr. Theodore Inouye,
Chief Sanitarian
Kauai District Health Office
April 25, 1986
Page 2

areas which ". . . are generally considered offensive to the senses or pose some potential threat or hazard to health, safety and welfare."

c. Cane operation will continue to create smoke, odor, noise and dust nuisances. However, there will be a decrease of these nuisances in time as the proposed project gradually displaces existing cane operations. Remaining cane operations will be separated from the development by the highway or gulches and will have some relief from these nuisances.

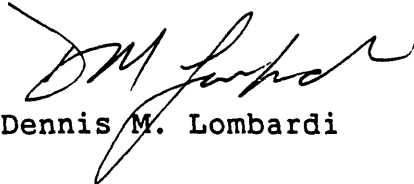
d. Several options are available to the developer for effluent disposal, including use of the golf course as an irrigation area and the use of injection wells in the area makai of the Underground Injection Control boundary.

e. The developer will consider the possibility of such provisions in the deed.

f. The cost of serving the entire project, as discussed in the EA, is expensive and would increase lot costs to prospective moderate income families. The developer fully intends to service the commercial uses around the shopping center.

The DEIS is expected to be filed in May. You will be sent a copy of the DEIS when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

A handwritten signature in dark ink, appearing to read "DM Lombardi", with a stylized flourish at the end.

Dennis M. Lombardi

DML:kbt/0319K/0131A(L)
cc: Grove Farm Properties, Inc.

COUNTY OF KAUAI
PLANNING DEPARTMENT

FROM: Avery H. Youn, Planning Director (BM)

DATE: November 22, 1985

SUBJECT: General Plan Amendment GPA-86-2, GROVE FARM PROPERTIES, INC.

TO: (XX) Public Works Dept.
(XX) Water Dept.
(XX) State Health Dept.
(XX) State Highways Div.
() Fire Dept.
() Sam Lee (DLNR)
() State Dept. of Agriculture
() Police Dept.
()
()

FOR YOUR COMMENTS (pertaining to your department):

December 20, 1985

We have no objections to the proposed General Plan Amendment, however, we provide the following comments:

1. A Traffic Impact Analysis Report (TIAR) should be prepared and submitted for our review;
2. The TIAR should cover the impacts on our highway system and recommend improvements to alleviate the traffic impacts;
3. Highway improvements required as the result of the development should be implemented at the developer's expense; and,
4. We request all development and construction plans be forwarded for our review and comments.

Signature *Walter J. Springer*

DISTRICT ENGINEER

SY:jf

lease return one (1) copy by December 9, 1985. Thank you.

CASE, KAY & LYNCH
ATTORNEYS AT LAW
A PARTNERSHIP INCLUDING LAW CORPORATIONS

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MAUKA TOWER
TWENTY FIFTH AND TWENTY SIXTH FLOORS
737 BISHOP STREET
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HONOLULU, HAWAII 96809-0494
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NORITO KAWAKAMI

ALLEN M. STACK

*A LAW CORPORATION

April 25, 1986

Mr. Shigeto Yamaguchi
Kauai District Engineer
Department of Transportation
State of Hawaii
Lihue, Kauai, Hawaii 96766

Re: General Plan Amendment GPA-86-2, Grove Farm
Properties, Inc.

Dear Mr. Yamaguchi:

Thank you for your comments of December 20, 1985, regarding the proposed General Plan amendment for Grove Farm Properties' Lihue/Puhi Project District Plan.

The comments and information that you provided are valuable to us in preparing the Draft Environmental Impact Statement (DEIS). The following are responses to your comments.

1. Grove Farm Properties' is having a traffic impact analysis prepared as part of the DEIS. A copy of the DEIS will be sent to your office.

2. The DEIS will address the impacts on the highway at proposed project and will note improvements needed to mitigate the traffic impacts.

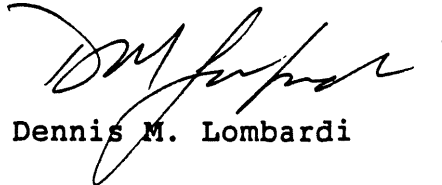
3. The implementation of needed highway improvements will need to be negotiated with your office at the time zoning and subdivision approval.

4. All development and construction plans will be forwarded to your office for review and comments.

Mr. Shigeto Yamaguchi
Kauai District Engineer
Department of Transportation
April 25, 1986
Page 2

The DEIS is expected to be filed in May. You will be sent a copy of the DEIS when it is available. We look forward to your further participation in the EIS process and to your comments on the DEIS.

Sincerely,

A handwritten signature in dark ink, appearing to read "DML", with a stylized flourish extending from the end.

Dennis M. Lombardi

DML:kbt/0320K/0132A(L)
cc: Grove Farm Properties, Inc.

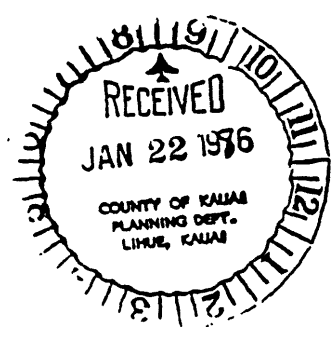
COUNTY OF KAUAI
PLANNING DEPARTMENT

FROM: Avery H. Youn, Planning Director (BM)

DATE: November 22, 1985

SUBJECT: General Plan Amendment GPA-86-2, GROVE FARM PROPERTIES, INC.

- TO: (X) Public Works Dept.
(X) Water Dept.
(X) State Health Dept.
(X) State Highways Div.
() Fire Dept.
() Sam Lee (DLNR)
() State Dept. of Agriculture
() Police Dept.
()
()



FOR YOUR COMMENTS (pertaining to your department):

January 16, 1986

We have no objections to this General Plan Amendment provided that the developer is aware that approvals of any actual subdivision or development will be dependent on the adequacy of the source, storage and transmission facilities existing at that time.

At the present time, storage facilities for the Lihue and Puhi water systems are not adequate for full development of this area. The present source capacity is adequate; however, for a development of this magnitude, the adequacy of the source may not be sufficient at the time of development if there are other developments that should precede this one. In this situation, additional source may be required prior to actual subdivision or development.

Additional storage facilities need to be developed prior to full development of this area. The existing transmission facilities for the "Puhi parcels" are adequate along the Puhi Road at Leleiona Street. The existing transmission facilities for the Lihue parcels are adequate at the Kukui Grove Shopping Village.

Signature Raymond A. Youn

Please return one (1) copy by December 9, 1985. Thank you.

CASE, KAY & LYNCH

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ALLEN H. STACK
NORITO KAWAKAMI

*A LAW CORPORATION

April 25, 1986

Mr. Raymond Sato
Manager and Chief Engineer
Department of Water
County of Kauai
P.O. Box 1706
Lihue, Kauai, Hawaii 96766

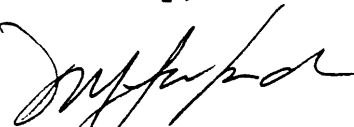
Re: General Plan Amendment GPA-86-2, Grove Farm
Properties, Inc.

Dear Mr. Sato:

Thank you for your comments of January 16, 1986 to the
Planning Department regarding the proposed General Plan
amendment of Grove Farm Properties' Lihue/Puhi Project District.

The comments and information that you provided are
valuable to us in preparing the Draft Environmental Impact
Statement (DEIS) which is expected to be filed in May. You
will be sent a copy of the DEIS when it is available. We look
forward to your further participation in the EIS process and to
your comments on the DEIS.

Sincerely,


Dennis M. Lombardi

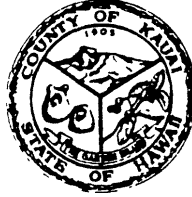
DML:kbt/0321K/0133A(L)
cc: Grove Farm Properties, Inc.

CHAPTER 12

COMMENTS AND RESPONSES DURING THE AGENCY REVIEW PERIOD

The comments received by the Applicant and the responses made to those comments by the Applicant are set out in full in this Chapter 12.

TONY T. KUNIMURA
MAYOR



AVERY H. YOUN
PLANNING DIRECTOR

TOM H. SHIGEMOTO
DEPUTY PLANNING DIRECTOR

TELEPHONE (808) 245-3919

COUNTY OF KAUAI
PLANNING DEPARTMENT
4280 RICE STREET
LIHUE, KAUAI, HAWAII 96766

RECEIVED JUN 09 1986

June 6, 1986

Mr. Dennis M. Lombardi
Attorney at Law
Case Kay & Lynch
P. O. Box 494
Honolulu, Hawaii 96809

Subject: Draft Environmental Impact Statement for
General Plan Amendment Petition
Grove Farm Properties, Inc., Applicant
Lihue and Puhi, Kauai

In accordance with the procedural requirements set forth by the Office of Environmental Quality Control, the following comments and information are provided with respect to the subject matter:

1. Chapter 9 (pg. 94) of the Draft Environmental Impact Statement (DEIS) recognizes that the resolution of sewage disposal, storm drainage, a solid waste disposal site, and the nature of uses within the proposed light industrial site in Puhi are unresolved issues. Of the foregoing, the method of sewage disposal appears to be and is expected to be an issue of controversy when the project is further subject to additional scrutiny by the State and County. The DEIS does not seem to concur with the State Health Department's recommendation that the project should be served by a sewage treatment facility. We are aware and can appreciate the financial constraints in developing such a facility and the negative costs and impacts to the affordability per lot. As recommended for the proposed Ulu Ko Subdivision, we believe that the proposed project should be connected to the existing Kukui Grove Sewer Treatment Facility in view of the magnitude of the project and because the facility was

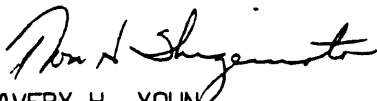
Mr. Dennis M. Lombardi
Attorney at Law
Page 2
June 6, 1986

intended to accommodate additional flow capacity as the applicant's project progresses over time.

Other than the foregoing, other issues which will be further focused upon include:

- a. Need for marketability of this project.
 - b. Traffic.
2. We have enclosed for your information, comments received from the Department of Land and Natural Resources, Department of the Army, and the County Department of Public Works. We believe that you have not received nor are aware of these comments.

Thank you for allowing us the opportunity to review the subject matter.

for 
AVERY H. YOUNG
Planning Director

Enclosures

cc: Dept. of Land and Natural Resources
Dept. of the Army
Dept. of Public Works

CASE, KAY & LYNCH

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VERNON O. BORTZ
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*A LAW CORPORATION

June 18, 1986

Mr. Avery H. Youn
Planning Director
Planning Department
County of Kauai
4280 Rice Street
Lihue, Kauai, Hawaii 96766

Re: Draft Environmental Impact Statement
filed by Grove Farm Properties, Inc., in
respect of its proposed General Plan Change
for the Lihue/Puhi project areas

Dear Mr. Youn:

Thank you for your comments concerning the Draft Environmental Impact Statement ("DEIS") filed by Grove Farm Properties, Inc., in respect of its proposed General Plan Change. We appreciate the effort and time you have taken to assist Grove Farm Properties, Inc., in the formulation of its Final Environmental Impact Statement. We have considered your comments and, to the extent appropriate, implemented changes in the Final Environmental Impact Statement on the basis of your suggestions and our responses to your comments. The following are our responses to your comments in the order they are referenced in your letter:

1. Comment: "...the method of sewage disposal appears to be and is expected to be an issue of controversy when the project is further subject to additional scrutiny by the State and County. The DEIS does not seem to concur with the State Health Department's recommendation that the project should be served by a sewage treatment facility.

Mr. Avery H. Youn
Planning Director
Planning Department
June 18, 1986
Page 2

We are aware and can appreciate the financial constraints in developing such a facility and the negative costs and impacts to affordability per lot. As recommended for the proposed Ulu Ko Subdivision, we believe that the proposed project should be connected to the existing Kukui Grove Sewer Treatment Facility in view of the magnitude of the project and because the facility was intended to accommodate additional flow capacity as the applicant's progresses over time."

Response: The present Kukui Grove Sewer Treatment Facility was intended to serve only the sewage disposal requirements of present and future commercial activities at Kukui Grove. Servicing the single family residential area with the existing facility will require expansion of the wastewater treatment facility and will additionally require the construction of force main and booster pump installation (the existing facility is at a higher elevation than most of the project area) which may be avoided through master planning of the wastewater disposal system for the entire project area.

Currently, the County Council is considering the propriety of permitting Ulu Ko Subdivision to be served by cesspools instead of a centralized sewage disposal system. As commented by the Department of Public Works for the County of Kauai, Grove Farm Properties, Inc., believes that master planning of the entire project and development is a good idea. However, master planning must be tied to the zoning of the project, as it is difficult to master plan the sewage system without knowing the final extent and form of the development.

2. Comment: "Need for marketability of this project."

Response: Grove Farm Properties, Inc., intends to work with the Planning Department at each phase of the development's zoning and further intends to provide the Planning Department with such information concerning marketability of the project as is required at each such stage.

3. Comment: "Traffic."

Response: As the land use plan for the project is further refined throughout the planning and zoning process,

Mr. Avery H. Youn
Planning Director
Planning Department
June 18, 1986
Page 3

the traffic situation will be reassessed in an ongoing manner. Grove Farm Properties, Inc., is currently working with the Public Works Department in respect of this matter and will continue to do so throughout planning and development of the project.

Again, thank you for your assistance in helping Grove Farm Properties, Inc. finalize the DEIS. At such time as the Final Environmental Impact Statement is available, we will request the Office of Environmental Quality Control to provide a copy of the statement to you.

Yours truly,

CASE, KAY & LYNCH



Dennis M. Lombardi

DML:kbt/0179A/0538K

cc: Grove Farm Properties, Inc.
Office of Environmental Quality Control
Planning Department of the County of Kauai

To: Brian Mamaslay, Planning 5-27-86
From: Don Keacock, DLNR
RE: Draft EIS General Plan Change
for Grove Farm Properties, Inc.
Proposed Lehua - Puhi Winter Plan.

If rezoning is approved and the developer applies for a "grading permit" the County should require the developer to formulate a detailed "sedimentation control plan" with the assistance of the Soil Conservation Service (SCS). The purpose of the sedimentation control plan would be to minimize soil erosion and sedimentation in both the development site and within the adjacent, downstream (downslope) watersheds (i.e. Puahi, Nanihale, Papahale Streams, and Hulea River and Nanihale Bay).

cc Neil Fujiwara, SCS

1-27-86
5-27-86

CASE, KAY & LYNCH

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PA LAW CORPORATION

June 18, 1986

Mr. Donald Heacock
Department of Land & Natural Resources
State of Hawaii
1151 Punchbowl Street
Honolulu, Hawaii 96813

Re: Draft Environmental Impact Statement
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for the Lihue/Puhi project areas

Dear Mr. Heacock:

Thank you for your comments concerning the Draft Environmental Impact Statement ("DEIS") filed by Grove Farm Properties, Inc., in respect of its proposed General Plan Change. We appreciate the effort and time you have taken to assist Grove Farm Properties, Inc., in the formulation of its Final Environmental Impact Statement. We have considered your comments and, to the extent appropriate, implemented changes in the Final Environmental Impact Statement on the basis of your suggestions and our responses to your comments. The following are our responses to your comments in the order they are referenced in your letter:

1. Comment: "If rezoning is approved and the developer applies for a 'grading permit' the County should require the developer to formulate a detailed 'sedimentation control plan' with the assistance of the Soil Conservation Service."

Mr. Donald Heacock
Department of Land & Natural Resources
June 18, 1986
Page 2

Response: The applicant, Grove Farm Properties, Inc., concurs with the need for sediment control as part of any grading work on the project area and intends to work with the County on measures to minimize soil erosion and sedimentation problems.

Again, thank you for your assistance in helping Grove Farm Properties, Inc., finalize the DEIS. At such time as the Final Environmental Impact Statement is available, we will request the Office of Environmental Quality Control to provide a copy of the statement to you.

Yours truly,

CASE, KAY & LYNCH



Dennis M. Lombardi

DML:kbt/0180A/0539K

cc: Grove Farm Properties, Inc.
Office of Environmental Quality Control
Planning Department of the County of Kauai



DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT SHAFTER, HAWAII 96858

May 15, 1986

Mr. Avery H. Young, Planning Director
Planning Department
County of Kauai
4280 Rice Street
Lihue, Hawaii 96766

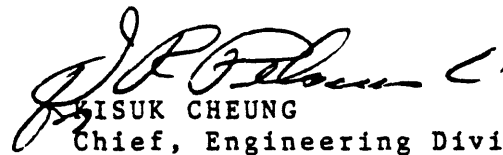
Dear Mr. Avery:

Thank you for the opportunity to review and comment on the EIS for a General Plan Change for Grove Farm Properties, Inc., Lihue and Puhi, Kauai. The following comments are offered:

a. A Department of the Army permit is not required since the project does not include any work in waters of the United States and adjacent wetlands. Grading operations should be controlled to preclude any fill placement in the nearby Niunalu wetland.

b. The flood hazards have been addressed on page 54. The project is located in Zone C, area of minimal flooding.

Sincerely,


JISUK CHEUNG
Chief, Engineering Division

CASE, KAY & LYNCH
ATTORNEYS AT LAW
A PARTNERSHIP INCLUDING LAW CORPORATIONS

GROSVENOR CENTER
MAUKA TOWER
TWENTY FIFTH AND TWENTY SIXTH FLOORS
737 BISHOP STREET
HONOLULU, HAWAII 96813

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HONOLULU, HAWAII 96809-0494
(808) 547-5400

INCORPORATING
COOK, CHOI, QUITQUIT & MATSUKAWA

June 18, 1986

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Mr. Kisuk Cheung
Chief, Engineering Division
Department of the Army
U.S. Army Engineer District, Honolulu
Ft. Shafter, Hawaii 96858

Re: Draft Environmental Impact Statement
filed by Grove Farm Properties, Inc., in
respect of its proposed General Plan Change
for the Lihue/Puhi project areas

Dear Mr. Cheung:

Thank you for your comments concerning the Draft Environmental Impact Statement ("DEIS") filed by Grove Farm Properties, Inc., in respect of its proposed General Plan Change. We appreciate the effort and time you have taken to assist Grove Farm Properties, Inc., in the formulation of its Final Environmental Impact Statement. We have considered your comments and, to the extent appropriate, implemented changes in the Final Environmental Impact Statement on the basis of your suggestions and our responses to your comments. The following are our responses to your comments in the order they are referenced in your letter:

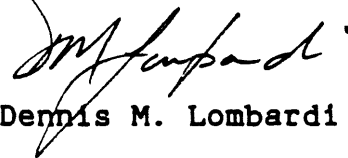
1. Comment: Grading operations should be controlled to preclude any fill placement in the nearby Niumalu wetland.
2. Response: The applicant, Grove Farm Properties, Inc., does not intend to place any fill in the nearby Niumalu wetland and intends to work with the County on sediment control measures as part of any grading work on the project area in order to minimize soil erosion and sedimentation problems.

Mr. Kisuk Cheung
Chief, Engineering Division
Department of the Army
June 18, 1986
Page 2

Again, thank you for your assistance in helping Grove Farm Properties, Inc., finalize the DEIS. At such time as the Final Environmental Impact Statement is available, we will request the Office of Environmental Quality Control to provide a copy of the statement to you.

Yours truly,

CASE, KAY & LYNCH

A handwritten signature in dark ink, appearing to read "D. Lombardi", with a long, sweeping underline that extends to the right.

Dennis M. Lombardi

DML:kbt/0540K

cc: Grove Farm Properties, Inc.
Office of Environmental Quality Control
Planning Department of the County of Kauai

COUNTY OF KAUAI
PLANNING DEPARTMENT

FROM: Avery H. Youn, Planning Director (BM)

DATE: May 7, 1986

SUBJECT: General Plan Amendment GPA-86-2, GROVE FARM PROPERTIES, INC.

TO: (XX) Public Works Dept.
(XX) Water Dept.
() State Health Dept.
(XX) State Highways Div.
() Fire Dept.
() Sam Lee (DLNR)
() State Dept. of Agriculture
() Police Dept.
()
()

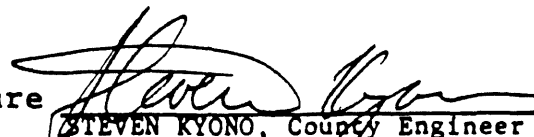


FOR YOUR COMMENTS (pertaining to your department): - DRAFT OF EIS

May 13, 1986

Please refer to our comments which is included on page 104 of the Draft EIS. Our comments and concerns although partially answered are still applicable and have not been completely addressed and resolved by Mr. Lombardi in his reply to us.

Signature


STEVEN KYONO, County Engineer

Please return one (1) copy by May 28, 1986. Thank you.

KK/sb

PPA 001041

4751

CASE, KAY & LYNCH

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A PARTNERSHIP INCLUDING LAW CORPORATIONS

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NORITO KAWAKAMI

KA LAW CORPORATION

June 18, 1986

Mr. Steven Kyono
County Engineer
Department of Public Works
County of Kauai
Lihue, Kauai, Hawaii 96766

Re: Draft Environmental Impact Statement
filed by Grove Farm Properties, Inc., in
respect of its proposed General Plan Change
for the Lihue/Puhi project areas

Dear Mr. Kyono:

Thank you for your comments concerning the Draft Environmental Impact Statement ("DEIS") filed by Grove Farm Properties, Inc., in respect of its proposed General Plan Change. We appreciate the effort and time you have taken to assist Grove Farm Properties, Inc., in the formulation of its Final Environmental Impact Statement. We have considered your comments and, to the extent appropriate, implemented changes in the Final Environmental Impact Statement on the basis of your suggestions and our responses to your comments. The following are our responses to your comments in the order they are referenced in your letter:

You have asked us to refer to the Department's comments contained at page 104 of the DEIS. You have indicated that the Department's comments and concerns, although partially answered, are still applicable and have not yet been completely addressed and resolved in the DEIS. Accordingly, we have sought in this letter to respond to each of the comments contained in the Department's original letter regarding the project. The following are the comments from the initial letter followed by Grove Farm Properties, Inc.'s responses to those comments:

Mr. Steven Kyono
Department of Public Works
County of Kauai
June 18, 1986
Page 2

Drainage

Comment: "Prior to development we will need to have the developer provide drainage studies to evaluate the existing systems and provide the solutions, if necessary, to minimize flood and drainage problems."

"...Prior to development, we will need studies for the Puali Stream and mitigating proposals to maintain flood risks and dangers to predevelopment conditions."

Response: The existing and projected amount of runoff is covered on pages 16-24 of Exhibit 2 of the DEIS. The developer, as stated, will design retention ponds in the golf course and other open areas to control the amount of runoff during storm conditions. These measures will be addressed in a drainage plan that the developer intends to prepare as part of the zoning and subdivision process. At this time, design mitigation measures, such as siltation and catchment facilities, will be examined more closely as part of the final engineering and construction activities undertaken in respect of the project.

Roads

Comment: "The development will access to the State Highway which are Kaumualii Highway and Nawiliwili Road. These are two lane highways which can accommodate two way traffic. However, we believe that channelization such as left turn lanes and additional lanes for deceleration, acceleration or capacity purposes should be provided at the time of development."

Response: Channelization will be needed as traffic continues to increase on those highways. The State in recognizing the problems created by increased traffic has proposed improvements to Nawiliwili Road and to the Kaumualii Highway/Nawiliwili Road intersection. Presumably, channelization is contemplated as part of the proposed improvements.

Comment: "The development will also impact existing County roadways. Directly affected by the development will be Puhi and Halehaka Road. The development plan shows Puhi

Mr. Steven Kyono
Department of Public Works
County of Kauai
June 18, 1986
Page 3

Road to be a primary connecting street. Consequently, Puhi Road would be impacted by the added traffic. We believe Puhi Road must be upgraded to standards to accommodate the traffic."

Response: The traffic projections indicate that Puhi Road will need to be upgraded to standards to accommodate the increased traffic.

Comment: "...If this is the intent [the deletion of a portion of Halehaka Road], our concern would be to resolve the utilities in the roadway and to maintain access and service between Nawiliwili and Hulemalu Road in close proximity to the existing Halehaka Road."

Response: Utilities in the closed portions of Halehaka Road would be relocated to proposed new roads. Access between Nawiliwili and Hulemalu Road would be maintained by a new road north of Halehaka Road and by the extension of a major road in Ulu Ko Subdivision.

Comment: "...The scale of the drawing prohibits review for compliance to the road standards."

Response: The applicant intends to comply with County road standards.

Comments: "...we would like to see revisions in the street layout especially in the vicinity of parcel 18 thru 31 where we believe a circulatory road should serve parcel 17 thru 26 and parcel 28 thru 31 rather than dead end street systems."

Response: The applicant understands the County's concerns regarding the proposed vehicular circulation system. These concerns will be considered and incorporated, where appropriate, into future refinements of the current conceptual plan at the zoning and subdivision level.

In preparing the conceptual plan for the development, dead end streets were indicated to promote neighborhood enclaves by discouraging traffic through those areas and to reduce costs by minimizing streets which cross gulches and would require bridging or filling.

Mr. Steven Kyono
Department of Public Works
County of Kauai
June 18, 1986
Page 4

Comment: "Improvements and realignment of both Puhī and the proposed interior road in the vicinity of Parcel 32 may be necessary due to the curvilinear alignment of both Puhī and the proposed roadway."

Response: The roads shown in Figure 1-1 of the DEIS are conceptual. The final roads will be designed to meet County road standards. This design will be effected during the subdivision approval process.

Comment: "Improvements and realignment of both Nawiliwili and the proposed interior road in the vicinity of Parcel 16 may be necessary due to the grade of Nawiliwili road and the curvilinear alignment of both Nawiliwili and the proposed roadway."

Response: The roads shown in Figure 1-1 of the DEIS are conceptual. In connection with the subdivision approval process, the final roads will be designed to meet County road standards.

Comment: "The interior streets should be developed so that collector streets connect to major street or another collector street with continuity in alignment and function. Minor street should also connect to collector streets or another minor street."

Response: The use of dead end streets is intended to discourage through traffic in planned neighborhoods. The street system is conceptual in nature and it may be possible to align some streets to provide a degree of continuity while maintaining the neighborhood concept. The refining of these detailed design considerations, however, is more appropriate as part of the subdivision design and engineering process.

Comment: "The interior streets should be developed with the street classification and definition as cited in the Subdivision Ordinance."

Response: The applicant intends to develop the streets in the manner indicated.

Mr. Steven Kyono
Department of Public Works
County of Kauai
June 18, 1986
Page 5

Comment: "Curvalinear alignment of streets are allowed. However, consideration should also be made for driveway sight distance for the lots which abut the curving roadway."

Response: The applicant intends to develop the street system in accordance with State and County standards, and as a result will give consideration to driveway sight distance.

Comment: "Intersection should desirably be located so that streets entering the main road are directly across each other. If unavoidable and streets must be offset, the offset shall meet the road standards or provide sufficient distance to allow left turn channelization and storage lanes. Intersections on horizontal or vertical curves should be avoided."

Response: The applicant intends to develop intersections within the development in accordance with State and County standards.

Comment: "The collector street in the Ulu Ko Subdivision should be extended for access to the connecting road between Nawiliwili Road and Kaumualii Highway."

Response: The applicant feels that this is a good suggestion and intends to provide for such a connection within the Ulu Ko Subdivision.

Sewers

Comment: "The subject development designated as a Project District under the old General Plan, was not included in the planning of the service area(s) for the Lihue Sewerage System.

The subject development should be masterplanned relative to wastewater systems to cover the entire area indicated, including the existing urban areas. Piecemeal determination of wastewater systems as occurred for the Ulu Ko Subdivision should be prevented from recurring."

Response: The applicant concurs that piecemeal planning of wastewater systems should be avoided. The applicant further believes that masterplanning is a good idea, but

Mr. Steven Kyono
Department of Public Works
County of Kauai
June 18, 1986
Page 6

that it needs to be tied to the zoning approval of the entire system. It is difficult to masterplan a sewage system without knowing what the final extent and form of the development will be.

Solid Waste

Comment: "Portion of Parcels 23 (Single Family) and 21 (Golf Course) are located on the existing Halehaka Landfill. It is recommended that structures not be located over the landfill and that the golf course be redesigned to cover more of the landfill area."

Response: The applicant concurs with the Department's suggestion and will initiate design studies to realign the golf course over the landfill area. Structures will not be located over the landfill.

Comment: "The existing landfill has an expected life of another two years at which time an alternative means of disposal of refuse will need to be developed. Being that a golf course is proposed in the close proximity of the existing landfill, we recommend that those areas be made available for expansion of the landfill site until the area is ready to be developed."

Response: The applicant can accommodate temporary use of the landfill site. The use of this site, however, should be viewed as an interim measure since the County's present plan designates a Kekaha landfill site to accommodate the County's solid waste disposal needs.

Again, thank you for your assistance in helping Grove Farm Properties, Inc., finalize the DEIS. At such time as the Final Environmental Impact Statement is available, we will

Mr. Steven Kyono
Department of Public Works
County of Kauai
June 18, 1986
Page 7

request the Office of Environmental Quality Control to provide
a copy of the statement to you.

Yours truly,

CASE, KAY & LYNCH



Dennis M. Lombardi

DML:kbt/0181A/0541K

cc: Grove Farm Properties, Inc.
Office of Environmental Quality Control
Planning Department of the County of Kauai



United States Department of the Interior

FISH AND WILDLIFE SERVICE

300 ALA MOANA BOULEVARD
P O BOX 50167
HONOLULU, HAWAII 96850

ES
Room 6307

Mr. Avery H. Youn
Planning Director
Planning Department
County of Kauai
4280 Rice Street
Lihue, Hawaii 96766

RECEIVED JUN 09 1986

Re: General Plan Change for Grove Farm Properties, Inc.

Dear Mr. Youn:

We have reviewed the Environmental Impact Statement (EIS) for the proposed General Plan Change for Grove Farm Properties, Inc. and offer the following comments for your consideration.

General Comments

Our primary concerns with the proposed project are the potential impacts from increased runoff and sedimentation on endangered waterbird habitats at the Huleia National Wildlife Refuge and at the Niumalu wetland, on aquatic habitats within Puali (Niumalu) and Nawiliwili streams, and on marine habitats within Nawiliwili Harbor.

Specific Comments

a. Page 29 states that "If the drainage plan is implemented there will be no drainage into Huleia stream or the Menehune fishpond." Page 46 states that "Under the current proposed drainage plan runoff reaches Huleia stream or Menehune fishpond." Page 23 (Exhibit 2) states that "Runoff from the Puhi light industrial area (parcel 33) will be diverted into the Puali Stream basin to minimize the impact on Huleia Stream and Menehune Ponds." These conflicting statements should be clarified.

b. Under project conditions, the 100-year storm runoff rate would increase by 28% over existing conditions. This runoff rate may be higher since existing developments (with 0% increase in storm runoff rates) were used to determine the average runoff value. The impact of this increased runoff and associated sediment loads on wetland and aquatic habitats should be more thoroughly discussed in the Final EIS.



Summary Comments

The EIS discusses the potential use of the golf course and dry wells to retain stormwater runoff. To protect important wetland and aquatic habitats, we recommend that the project take full advantage of the golf course as a siltation basin. We recommend that the developer consider designs that fully utilize the golf course and other open areas as siltation ponds.

We appreciate this opportunity to comment.

Sincerely,

A handwritten signature in black ink, appearing to read "Ernest Kosaka". The signature is fluid and cursive, with the first name "Ernest" and last name "Kosaka" clearly distinguishable.

Ernest Kosaka
Project Leader
Office of Environmental Services

cc: Mr. Dennis M. Lombardi
OEQC
DLNR
RWR

CASE, KAY & LYNCH

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*A LAW CORPORATION

June 18, 1986

Mr. Ernest Kosaka
Project Leader
Office of Environmental Services
United States Department of the Interior
Fish and Wildlife Service
300 Ala Moana Boulevard
P.O. Box 50167
Honolulu, Hawaii 96850

Re: Draft Environmental Impact Statement
filed by Grove Farm Properties, Inc., in
respect of its proposed General Plan Change
for the Lihue/Puhi project areas

Dear Mr. Kosaka:

Thank you for your comments concerning the Draft Environmental Impact Statement ("DEIS") filed by Grove Farm Properties, Inc., in respect of its proposed General Plan Change. We appreciate the effort and time you have taken to assist Grove Farm Properties, Inc., in the formulation of its Final Environmental Impact Statement. We have considered your comments and, to the extent appropriate, implemented changes in the Final Environmental Impact Statement on the basis of your suggestions and our responses to your comments. The following are our responses to your comments in the order they are referenced in your letter:

Fish and Wildlife Service, U.S. Department of the Interior

1. Comment: "Our primary concerns with the proposed project are the potential impacts from increased runoff and

Mr. Ernest Kosaka
Project Leader
Office of Environmental Services
United States Department of the Interior
Fish and Wildlife Service
June 18, 1986
Page 2

sedimentation on endangered waterbird habitats at the Huleia National Wildlife Refuge and at the Niumalu wetland, on aquatic habitats within Puali (Niumalu) and Nawiliwili streams, and on marine habitats within Nawiliwili Harbor."

Response: The drainage concept as outlined in the DEIS would minimize the amount of runoff into the individual areas during storm conditions through the use of retention ponds in the golf course and other open areas. Following retained water will be released in controlled amounts to minimize the downstream effects. Runoff will be diverted from the Huleia National Wildlife Refuge. The details of these mitigation measures will be further refined as part of a drainage plan prepared in connection with the subdivision design and approval process.

2. Comment: "Page 29 states that 'If the drainage plan is implemented, there will be no drainage into Huleia stream or the Menehune fishpond.' Page 46 states that 'Under the current proposed drainage plan, runoff reaches Huleia stream or Menehune fishpond.' Page 23 (Exhibit 2) states that 'Runoff from the Puhi light industrial area (parcel 33) will be diverted into the Puali Stream basin to minimize the impact on Huleia Stream and Menehune Ponds.' These conflicting statements should be clarified."

Response: The confusion reflected in your comment is created by a typographical error on page 46. The sentence in question which has been corrected in the Final Environmental Impact Statement now reads as follows: "Under the current proposed drainage plan no runoff reaches Huleia stream or Menehune fishpond."

3. Comment: "Under project conditions, the 100-year storm runoff rate would increase by 28% over existing conditions. This runoff rate may be higher since existing developments (with 0% increase in storm runoff rates) were used to determine the average runoff value. The impact of this increased runoff and associated sediment loads on wetland and aquatic habitats should be more thoroughly discussed in the Final EIS. ...To protect the important wetland and aquatic habitats, we recommend that the project take full advantage of the golf course as a siltation

Mr. Ernest Kosaka
Project Leader
Office of Environmental Services
United States Department of the Interior
Fish and Wildlife Service
June 18, 1986
Page 3

basis. We recommend that the developer consider designs that fully utilize the golf course and other open areas and siltation ponds."

Response: To minimize sedimentation during construction, the Applicant will work with the County to implement sediment control measures during grading work on the project. To prevent sedimentation from going into the Huleia National Wildlife Refuge, the applicant proposes to divert project related runoff from reaching Huleia Stream.

Open areas such as the golf course will be grassed and landscaped to minimize erosion. The Applicant concurs, however, that utilization of siltation ponds within the golf course should be explored as a means to address the agency's concern on runoff and sediment loads.

Again, thank you for your assistance in helping Grove Farm Properties, Inc. finalize the DEIS. At such time as the Final Environmental Impact Statement is available, we will request the Office of Environmental Quality Control to provide a copy of the statement to you.

Yours truly,

CASE, KAY & LYNCH



Dennis M. Lombardi

DML:kbt/0542K

cc: Grove Farm Properties, Inc.
Office of Environmental Quality Control
Planning Department of the County of Kauai

UNITED STATES
DEPARTMENT OF
AGRICULTURE

SOIL
CONSERVATION
SERVICE

P. O. BOX 50004
HONOLULU, HAWAII
96850

June 4, 1986

Mr. Avery H. Youn
Director, Planning Department
County of Kauai
4280 Rice Street
Lihue, HI 96766

RECEIVED JUN 09 1986

Dear Mr. Youn:

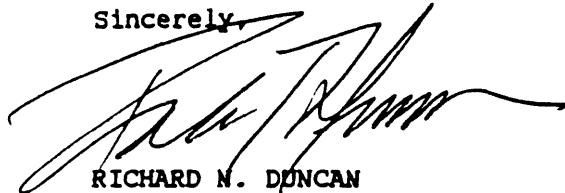
Subject: Draft EIS - General Plan Change for Grove Farm Properties, Inc.
Proposed Lihue-Puhi Master Plan, Lihue and Puhi, Kauai, Hawaii

We reviewed the subject document and offer the following comments:

The majority of the land concerned is classified as "Prime Agricultural Land" and is highly suited for agriculture.

Thank you for the opportunity to review the document.

Sincerely,



RICHARD N. DUNCAN
State Conservationist

cc:

Mr. Dennis M. Lombardi
Case, Kay & Lynch
Attorneys at Law
P.O. Box 494
Honolulu, HI 96809-0494

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June 18, 1986

Mr. Richard N. Duncan
State Conservationist
United States Department of Agriculture
Soil Conservation Service
P.O. Box 50004
Honolulu, Hawaii 96850

Re: Draft Environmental Impact Statement
filed by Grove Farm Properties, Inc., in
respect of its proposed General Plan Change
for the Lihue/Puhi project areas

Dear Mr. Duncan:

Thank you for your comments concerning the Draft Environmental Impact Statement ("DEIS") filed by Grove Farm Properties, Inc., in respect of its proposed General Plan Change. We appreciate the effort and time you have taken to assist Grove Farm Properties, Inc., in the formulation of its Final Environmental Impact Statement. We have considered your comments and, to the extent appropriate, implemented changes in the Final Environmental Impact Statement on the basis of your suggestions and our responses to your comments. The following are our responses to your comments in the order they are referenced in your letter:

1. Comment: "The majority of the land concerned is classified as 'Prime Agricultural Land' and is highly suited for agriculture."

Mr. Richard N. Duncan
State Conservationist
United States Department of Agriculture
Soil Conservation Service
June 18, 1986
Page 2

Response: The applicant agrees that the subject property is suitable for agricultural uses. However, the applicant demonstrates in Chapter 29 of the DEIS (Description of the Proposed Action) that the property is also suitable for light industrial, residential, and recreational uses.

Moreover, urban land is also important for the County. As discussed in the Socio-Economic Considerations section of Chapter 4 of the DEIS, the applicant demonstrates there is need for more urban land. The proximity of the proposed project area to Lihue, the County's urban center, also makes it suitable as a future urban growth area. Indeed, if Lihue is to be permitted to grow at all, it must be into land classified as "Prime Agricultural Land".

Again, thank you for your assistance in helping Grove Farm Properties, Inc., finalize the DEIS. At such time as the Final Environmental Impact Statement is available, we will request the Office of Environmental Quality Control to provide a copy of the statement to you.

Yours truly,

CASE, KAY & LYNCH



Dennis M. Lombardi

DML:kbt/0183A/0543K

cc: Grove Farm Properties, Inc.
Office of Environmental Quality Control
Planning Department of the County of Kauai

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII



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

LESLIE S. MATSUBARA
DIRECTOR OF HEALTH

In reply, please refer to:
EPHSD

June 5, 1986

Mr. Avery H. Youn, Planning Director
Planning Department
County of Kauai
4280 Rice Street
Lihue, Kauai 96766

RECEIVED JUN 09 1986

Dear Mr. Youn:

Subject: General Plan Change for Grove Farm Properties, Inc., Lihue & Puhi, Kauai

Thank you for allowing us to review and comment on the proposed general plan change. We provide the following comments:

Wastewater Disposal

The proposed use of cesspools for this project as discussed in the EIS is not consistent with the 208 Plan for the Lihue area. The 208 Plan indicates the proposed project area to be ultimately part of the Lihue Wastewater Treatment Plant (WWTP) service area. Considering the magnitude of the proposed development and the fact that there is excess capacity at the Lihue WWTP to handle a significant portion of the proposed project's sewage flow, we highly recommend that this project be connected to the County's sewers.

Drinking Water

Due to the near proximity of potable water wells in the area, any further disposal of wastewater through subsurface means is unacceptable. Further, existing subsurface disposal waste should be ceased as soon as possible.

Odor Nuisance

Odor nuisance from the existing piggery operation on Hulemalu road may affect not only the residents living in the area, but also the people who will be working in the proposed Light Industrial area (Parcel 33).

Sincerely yours,

A handwritten signature in dark ink, appearing to read "Leslie S. Matsubara", is written over a horizontal line.

LESLIE S. MATSUBARA
Director of Health

cc: Mr. Dennis M. Lombardi ✓
DHO, Kauai

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P.A. LAW CORPORATION

June 18, 1986

Mr. Leslie S. Matsubara
Department of Health
State of Hawaii
P.O. Box 3378
Honolulu, Hawaii 96801

Re: Draft Environmental Impact Statement
filed by Grove Farm Properties, Inc., in
respect of its proposed General Plan Change
for the Lihue/Puhi project areas

Dear Mr. Matsubara:

Thank you for your comments concerning the Draft Environmental Impact Statement ("DEIS") filed by Grove Farm Properties, Inc., in respect of its proposed General Plan Change. We appreciate the effort and time you have taken to assist Grove Farm Properties, Inc., in the formulation of its Final Environmental Impact Statement. We have considered your comments and, to the extent appropriate, implemented changes in the Final Environmental Impact Statement on the basis of your suggestions and our responses to your comments. The following are our responses to your comments in the order they are referenced in your letter:

Wastewater Disposal

1. Comment: "The proposed use of cesspools for this project as discussed in the EIS is not consistent with the 208 Plan for the Lihue area. The 208 Plan indicates the proposed project area to be ultimately part of the Lihue Wastewater Treatment Plant (WWTP) service area. Considering the

Mr. Leslie S. Matsubara
Department of Health
State of Hawaii
June 18, 1986
Page 2

magnitude of the proposed development and the fact that there is excess capacity at the Lihue WWTP to handle a significant portion of the proposed project's sewage flow, we highly recommend that this project be connected to the County's sewers."

Response: The present Lihue WWTP suffers from an effluent disposal problem. It is incapable, currently, of handling the additional effluent output which would result from the proposed project. As suggested by the Public Works Department for the County of Kauai, the developer concurs that the wastewater system for the project area should be master planned and that piecemeal determination of wastewater systems should be avoided. Effective master planning of the area, however, should occur in connection with the zoning of the overall project.

Drinking Water

2. Comment: "Due to the near proximity of potable water wells in the area, any further disposal of wastewater through subsurface means is unacceptable. Further, existing subsurface disposal waste should be ceased as soon as possible."

Response: The applicant agrees that if a sewer system is needed to protect the groundwater then an overall program should be established to sewer nearby areas which are currently on cesspools. However, much of the proposed General Plan Change area is makai of the State Department of Health's Underground Injection Control Line which was established to protect potable well sources. And, the applicant is not aware of any present contamination problems in that area or the surrounding areas resulting from the use of cesspools. Furthermore, the County Council is currently considering acceptable and appropriate methods for sewage disposal in the area, as part of the Ulu Ko Subdivision development.

Odor Nuisance

3. Comment: "Odor nuisance from the existing piggery operation on Hulemalu road may affect not only the residents living in the area, but also the people who will be working in the proposed Light Industrial area (parcel 33)."

Mr. Leslie S. Matsubara
Department of Health
State of Hawaii
June 18, 1986
Page 3

Response: The prevailing winds are not expected to blow any odor toward the proposed developments. The prevailing northeast winds occur about 30 to 40 percent on a daily basis. Winds from the south and east occur only about 10 percent of the time (Atlas of Hawaii, Second Edition, 1983).

The applicant intends to work with the piggery to control any odor problems which may occur. Moreover, deeds for properties adjacent to the piggery will incorporate restrictions which disclose to purchasers the existence of the piggery.

Again, thank you for your assistance in helping Grove Farm Properties, Inc., finalize the DEIS. At such time as the Final Environmental Impact Statement is available, we will request the Office of Environmental Quality Control to provide a copy of the statement to you.

Yours truly,

CASE, KAY & LYNCH



Dennis M. Lombardi

DML:kbt/0184A/0544K

cc: Grove Farm Properties, Inc.
Office of Environmental Quality Control
Planning Department of the County of Kauai



AMERICAN LUNG ASSOCIATION OF HAWAII

none.
For Information

ENVIRONMENTAL IMPACT STATEMENT REVIEW

... an air quality assurance program

RECEIVED JUN 09 1986

Project: Grove Farm Properties, Inc.

Date: 6/6/86

1. Page 47, Para 5.a. Air Quality Impacts of the Project:
"Automobile emissions are not expected to be a problem within or about the area, as many of the expected property owners will be current but relocated residents or new residents to the island who would be utilizing the highways in any event."

Comment: The above quotation is fallacious as the project will clearly attract additional motor vehicle activity into the area. Only on a regional (county-wide) basis might one argue that the relocated residents are simply redistributing their emissions but not increasing them. On a local or microscale basis, the relocated residents will be concentrating their automotive emissions in the newly developed area and the new residents will be contributing an additional new pollutant burden.

2. Page 47: "Surrounding roadways should not be an air quality problem. Additional auto usage resulting from the project is not expected to increase carbon monoxide levels/concentrations significantly. Concentrations are expected to be well within Hawaii State standards for air quality."

Comment: These three assertions are very interesting since no factual data are presented in the EIS to support them. It is the purpose of the EIS to set forth such data in an effort to aid the decision-maker in deciding about the acceptability of the proposed action. Such statements as quoted above do not belong in an EIS since they represent only unfounded opinions and thus are of no value to the decision-making agency. As a minimum some type of screening air quality screening analysis should have been conducted in order to determine the magnitude of possible air quality impacts associated with the increased traffic in the project area.

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245 N. Kukui St.
Honolulu, Hawaii 96817
Telephone 537-5968

HAWAII COUNTY
Post Office Box 925
Hilo, Hawaii 96720
Telephone 935-1206

KAUAI COUNTY
Post Office Box 991
Lihue, Hawaii 96766
Telephone 245-4142

MAUI COUNTY
Cameron Center
Wailuku, Hawaii 96793
Telephone 244-5110

We conducted such a screening analysis for the p.m. peak traffic hour at the Nawiliwili Road - Kaumuali'i Highway intersection in order to assess the possible impact. An EPA dispersion model (PAL) was employed along with 1995 emissions factors generated by the EPA mobile source emissions model MOBILE-2. Receptor locations were placed around the intersection at 10 meter intervals. Meteorological conditions input to the model included four different wind directions forming 10-degree wind-road angles, 1 meter per second wind speed and neutral (Pasquill-Gifford Class 4) atmospheric stability as might occur on a cloudy afternoon. The results indicated potential violations of the State's 1-hour and 8-hour carbon monoxide standards. One-hour concentrations within 10 meters of the intersection were 11 - 17 milligrams per cubic meter (mg/m³) while 8-hour estimates ranged 6 - 10 mg/m³. These compare to the State standards which are 10 mg/m³ (1-hour) and 5 mg/m³ (8-hour). Since the federal 8-hour standard is 10 mg/m³, it appears that even it might be approached in close proximity to the intersection.

3. Page 54: "The project is expected to have some impact on the existing highway system. The appropriate time to assess that impact and its significance and to evaluate required mitigative measures, if any, is in connection with the zoning and subdivision of the project area."

Comment: It appears that the word "access" should be "assess". More importantly, the time to assess impacts is, according to Chapter 343, HRS, during the planning process, not zoning stage. A recent Attorney General's Opinion (No. 86-30) and Declaratory Order (No. 86-1) of the State Environmental Council reaffirm that this is the appropriate time to assess and, if necessary, require a full environmental impact statement.

Comment: The quotation above acknowledging "some" impact on the existing highway system, appears to be somewhat of an understatement since we note that the traffic analysis (Exhibit 2, p. 14) predicts long delays at intersections and reduction of service to stop-and-go conditions.

"For the with project scenario, delays would be greater than for the without project because more traffic will be using Puhi Road. The left turn movement will decrease from level of service C to F during the PM peak hours for the with project scenario."

Grove Farm, Inc.

6/6/86

Page 3

4. Exhibit 2, p. 14

Comment: This traffic analysis addressed two scenarios involving two Nawiliwili Road/Kaumuali'i Highway and also Puhi Road/Kaumuali'i Highway. A table (Table 8) presented PM peak-hour traffic projections for Nawiliwili Road and Kaumuali'i Highway indicating some increase on Nawiliwili Road but little change on Kaumuali'i Highway due to the proposed action. The traffic volumes presented in Table 8 only accounted for a small portion of the large project-generated traffic (as much as 3,960 vehicles per hour during the PM peak-hour) indicated in a preceding table (Table 7). Thus one must wonder where the majority of those 3,960 vehicles are going. The second scenario addressing Puhi Road indicated serious project-related impacts, but no table of traffic volume projections was presented.

CASE, KAY & LYNCH

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*A LAW CORPORATION

American Lung Association of Hawaii
245 N. Kukui Street
Honolulu, Hawaii 96817

Re: Draft Environmental Impact Statement
filed by Grove Farm Properties, Inc., in
respect of its proposed General Plan Change
for the Lihue/Puhi project areas

Dear Gentlemen:

Thank you for your comments concerning the Draft Environmental Impact Statement ("DEIS") filed by Grove Farm Properties, Inc., in respect of its proposed General Plan Change. We appreciate the effort and time you have taken to assist Grove Farm Properties, Inc., in the formulation of its Final Environmental Impact Statement. We have considered your comments and, to the extent appropriate, implemented changes in the Final Environmental Impact Statement on the basis of your suggestions and our responses to your comments. The following are our responses to your comments in the order they are referenced in your letter:

American Lung Association of Hawaii

1. Comment: "Page 47, Para. 5.a. Air Quality Impacts of the Project: 'Automobile emissions are not expected to be a problem within or about the area, as many of the expected property owners will be current and relocated residents or new residents to the island who would be utilizing the highways in any event.'"

The above quotation is fallacious as the project will clearly attract additional motor vehicle activity into the area. Only on a regional (county-wide) basis might one argue that the relocated residents are simply redistributing their emissions but not increasing them. On a local or microscale basis, the relocated residents will be concentrating their automotive emissions in the newly developed area and the new residents will be contributing an additional new pollutant burden."

Response: The statement is based on a regional basis and represents an islandwide redistribution of emissions. The concentration of emissions on a local level in Lihue should be expected as Lihue is the urban center of Kauai and will continue as such under the County's present General Plan.

2. Comment: "Page 47: 'Surrounding roadways should not be an air quality problem. Additional auto usage resulting from the project is not expected to increase carbon monoxide levels/concentrations significantly. Concentrations are expected to be well within Hawaii State standards for air quality."

"These three assertions are very interesting since no factual data are presented in the EIS to support them. It is the purpose of the EIS to set forth such data in an effort to aid the decision-maker in deciding about the acceptability of the proposed action. Such statements as quoted do not belong in an EIS since they represent only unfounded opinions and thus are of no value to the decision-making agency. As a minimum, some type of screening air quality screening analysis should have been conducted in order to determine the magnitude of possible air quality impacts associated with the increased traffic in the project area."

"We conducted such a screening analysis...This results indicated potential violations of the State's 1-hour and 8-hour carbon monoxide standards. One-hour concentrations within 10 meters of the intersection were 11-17 milligrams per cubic meter (mg/m³) while 8-hour estimates ranged 6-10 mg/m³. These compare to the State standards which are 10 mg/m³ (1-hour) and 5 mg/m³ (8-hour). Since the federal 8-hour standard is 10 mg/m³, it appears that even it might be approached in close proximity to the intersection."

Response: Thank you for your screening analysis of the subject intersections. While there is a potential that State standards may be approached and possibly exceeded, the screening analysis is based upon a projection of existing traffic conditions. As the proposed project is implemented over time, improvements to vehicle performance can be expected during the same period. More importantly, improvements can be expected to the roadway system to facilitate traffic movement past the project area and through Lihue town center.

Recognizing the regional nature of the traffic problem, a joint committee composed of public and private members has been formed to study the traffic problem in the Lihue town area and to make recommendations on improving the traffic in Lihue and in the region. Implementing their recommendations should increase the overall performance of the roadway and might be expected to decrease automotive emissions.

The Department of Transportation indicated in their response to the DEIS that signalization of the Puhi Road and Nawiliwili Road intersections with Kaumualii Highway and the realignment of Nawiliwili Road through the existing Kukui Grove commercial area would be desirable to improve traffic movement through the project area. The implementation of these improvements coupled with regional traffic solutions should improve overall roadway performance and reduce traffic queues at the project intersections.

3. Comment: "Page 54: 'The project is expected to have some impact on the existing highway system. The appropriate time to access that impact and its significance and to evaluate required mitigative measures, if any, is in connection with the zoning and subdivision of the project area.'"

"It appears that the word 'access' should be 'assess.' More importantly, the time to assess impacts is, according to Chapter 343, HRS, during the planning process, not zoning stage. A recent Attorney General's Opinion (no. 86-30) and Declarator Order (No. 86-1) of the State Environmental Council reaffirmed that this is the appropriate time to assess and, if necessary, require a full environmental impact statement."

"The quotation above acknowledging 'some' impact on the existing highway system, appears to be somewhat of an understatement since we note that the traffic analysis (Exhibit 2, p. 14) predicts long delays at intersections and reduction of service to stop-and-go conditions.

'For the with project scenario, delays would be greater than for the without project because more traffic will be using Puhi Road. The left turn movement will decrease from level of service C to F during the PM peak hours for the will project scenario.'"

Response: You are correct on the spelling of "assess" and on the "understatement" of the paragraph. The paragraph in question was an oversight from the previous environmental assessment report and should have been revised in the DEIS with receipt of the engineering report. The paragraph has been revised in the Final Environmental Impact Statement to read as follows: "The project is expected to have impact on the existing highway system as reflected in the attached traffic study."

Comment: This traffic analysis (Exhibit 2. p. 14) addressed two scenarios involving two Nawiliwili Road/Kaumualii Highway and also the Puhi Road/Kaumualii Highway. A table (Table 8) presented PM peak-hour traffic projections for Nawiliwili Road and Kaumualii Highway indicating some increase on Nawiliwili Road but little change on Kaumualii Highway due to the proposed action. The traffic volumes presented in Table 8 only accounted for a small portion of the large project-generated traffic (as much as 3,960 vehicles per hour during the PM peak-hour) indicated in a preceding table (Table 7). Thus one must wonder where the majority of those 3,960 vehicles are going. The second scenario addressing Puhi Road indicated serious project-related impacts, but no table of traffic volume projections was presented."

Response: The projected PM peak hour traffic generation from the project for the year 2000 of 3,960 vehicles per hour is the total traffic generated by the project. The projected traffic includes traffic generated by existing developments within the project area such as the Puhi

American Lung Association of Hawaii
June 18, 1986
Page 5

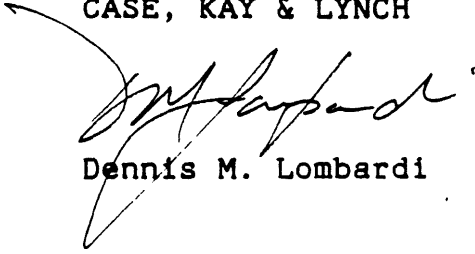
subdivision, Kukui Grove Center, Kukui Grove Commercial Village and others. The traffic from these existing developments is already distributed into the street system. Some of the traffic generated by the project will have destinations within the project site and therefore will not have an impact on the existing street system. Since some of the traffic is already on the existing system and some of the traffic remains within the project area, the impact of the traffic increase on the existing street network from the project is not 3,960 vehicles per hour but a lesser figure.

The traffic from the project area is accounted for in the following manner, traffic generated from existing developments is already distributed on the existing roadway network, traffic is distributed to existing Nawiliwili Road and Kaumualii Highway through the many intersections and will have destinations in either direction of the intersection, and some traffic remains within the project site.

Again, thank you for your assistance in helping Grove Farm Properties, Inc. finalize the DEIS. At such time as the Final Environmental Impact Statement is available, we will request the Office of Environmental Quality Control to provide a copy of the statement to you.

Yours truly,

CASE, KAY & LYNCH



Dennis M. Lombardi

DML:kbt/0185A/0546K

cc: Grove Farm Properties, Inc.
Office of Environmental Quality Control
Planning Department of the County of Kauai

GEORGE R. ARIYOSHI
GOVERNOR



JACK K. SUWA
CHAIRMAN, BOARD OF AGRICULTURE

SUZANNE D. PETERSON
DEPUTY TO THE CHAIRMAN

State of Hawaii
DEPARTMENT OF AGRICULTURE
June 8 So., King Street
Honolulu, Hawaii 96814

Mailing Address:
P. O. Box 22159
Honolulu, Hawaii 96822

MEMORANDUM

RECEIVED JUN 09 1986

To: Mr. Avery H. Youn, Director
Planning Department
County of Kauai

Subject: Draft Environmental Impact Statement (EIS) for
Kauai General Plan Change for Grove Farm
Properties, Inc.
TMK: 3-3-02: por. 1
3-3-03: por. 1
Lihue, Kauai
Acres: 464

The Department of Agriculture has reviewed the subject Draft EIS and offers the following comments.

According to the Draft EIS, the applicant seeks to amend the Kauai General Plan designation for the subject parcels from Agriculture to Urban Mixed Use to permit the development of a planned community. The applicant is exercising its right to withdraw land according to a lease with Lihue Plantation Company which is currently cultivating sugarcane on the project site.

SOIL CLASSIFICATION

Our review of the Draft EIS reveals that the references to the Soil Conservation Service Soil Survey and Land Study Bureau Detailed Land Classification for the Island of Kauai are incomplete. According to our review of the Soil Survey, the project site includes the following soil types:

- LhB -Lihue silty clay with 0 to 8 percent slopes, used for sugarcane, pineapple, pasture, truck crops and orchard, capability classification of IIe;
- LhC -Lihue silty clay with 8 to 15 percent slopes with similar uses as LhB, capability classification of IIIe;
- LhD -Lihue silty clay with 15 to 25 percent slopes, used for sugarcane, pineapple and pasture, capability classification of IVe;

- LhE2 -Lihue silty clay with 25 to 40 percent slopes, used for pasture, capability classification of IVe;
- LIC -Lihue gravelly silty clay with 8 to 15 percent slopes, used for sugarcane, pineapple and pasture, capability classification of IIIe;
- PnA -Puhi silty clay loam with 0 to 3 percent slopes, used for sugarcane, pineapple, pasture, truck crops and orchard, capability classification of IIs;
- PnB -Puhi silty clay loam with 3 to 8 percent slopes with similar uses as PnA, capability classification of IIe;
- PnD -Puhi silty clay loam with 15 to 25 percent slopes, used for sugarcane, pineapple, pasture and orchard, capability classification of IIIe;
- IoC -Ioleau silty clay loam with 6 to 12 percent slopes, used for sugarcane, pineapple, pasture, truck crops and orchard, capability classification of IIIe;
- HnA -Hanalei silty clay with 0 to 2 percent slopes, used for sugarcane, pasture and taro, capability classification of IIIe.

The predominant soil types are LhB and PnB. These soils are subject to moderate erosion if cultivated and not protected.

The Land Study Bureau (LSB) Detailed Land Classification for the Island of Kauai identifies the Overall Productivity Ratings, land types, and selected crop productivity ratings for the project site as:

	<u>Selected Crop Productivity Ratings</u>					
	<u>pineapple</u>	<u>vegetable</u>	<u>sugarcane</u>	<u>forage</u>	<u>grazing</u>	<u>orchard</u>
B41i	b	b	b	a	a	a
B78i	b	b	b	b	a	b
C79i	c	d	d	d	b	c
D80i	d	e	d	e	a	d
E39	e	e	e	e	d	e

Mr. Avery H. Youn
June 4, 1986
Page -3-

The predominant soil ratings in the project area according to the LSB are B41i and B78i. By this method of classification, these "B"-rated soils have good productivity potential for most agricultural uses.

The project site is classified "Prime" according to the Agricultural Lands of Importance to the State of Hawaii (ALISH) system.

IMPACT OF PROPOSAL ON LIHUE PLANTATION COMPANY AND AGRICULTURE IN GENERAL

The Draft EIS states that "Any decrease in sugar production which may result from the withdrawal of the 464 acres for the proposed projects can be restored by improved farming methods of cane cultivation on the remaining lands which will and are now able to increase sugar yields per acre" (Draft EIS, page 9). The methods mentioned are the use of drip irrigation and "solid" replant of sugarcane on unirrigated land.

The EIS should include the following information to clarify the above statement:

- Figures that show the expected decline in total sugarcane yield to Lihue Plantation as a result of the loss of the 464 acres in production;
- Figures estimating the increase in productivity needed from remaining sugarcane fields to replace the production lost from the subject 464 acres;
- Evidence that Lihue Plantation Company is currently practicing or intends to utilize the above methods of increasing sugarcane yield from existing fields.

The applicant derives an estimate of the economic impact of removing 464 acres from sugarcane production from the results of an earlier study done for Lihue Plantation Company in connection with a different project (Exhibit 1, "Impact of Removing Land From Cane Production on the Cost of Producing Sugar - Lihue Plantation"; Peter Garrod, Economist; May 15, 1982). With the immediate withdrawal of 464 acres, the cost of producing sugar is projected to increase by \$2.40 per ton and reduce Lihue Plantation Company's workforce by 17 full time employees (Draft

Mr. Avery H. Youn
June 4, 1986
Page -4-

EIS, page 45). The EIS should clarify (1) the "improved farming methods" used by Lihue Plantation to increase their yields and reduce per ton costs, (2) variables used in the extrapolation of the earlier study to the subject project, and (3) sources of this information.

The Draft EIS compares the land area to be removed of the project site from agricultural use to the land area on Kauai with LSB Overall Productivity Ratings of "A", "B" and "C" (Draft EIS, page 43). According to the Draft EIS, the project site will result in the reduction of between .67 to .72 percent of lands with LSB Ratings "A", "B" and "C". The loss to agriculture as a result of the approval and development the proposed project is "...not of critical significance" (Draft EIS, page 44). This conclusion appears to be based on the present use of the land in sugarcane. The EIS should include discussion on alternative agricultural uses of the property (i.e., diversified agriculture) before concluding that the loss of important agricultural land is "not of critical significance".

There is no generally accepted definition of important agricultural land. In many of the documents we have reviewed that are in support of petitions to amend the State Agricultural District to another District, we note efforts to compare the total acreage (by island or State) of "prime" land, however defined, to the acreage of the parcel(s) to be removed from productive use. One way, as is done in the subject document, is to identify those lands that have relatively good productive capability such as indicated in the Land Study Bureau Detailed Land Classifications for each island. Soil suitability studies such as the LSB focus on the physical attributes of land and the relative productivity of different land types. Exclusive reliance on physical attributes as indicators of "prime" agricultural land give an incomplete picture of the agricultural potential of any given area. The fact that agricultural lands elsewhere on Kauai have LSB Ratings of "A", "B" and "C" does not imply that they are actually available for agriculture or affordable for agricultural activities. Furthermore, the conversion of agricultural land to urban uses is irreversible, and incremental losses of a resource like arable land, if left uncontrolled, will have a devastating and irreversible cumulative effect on the viability of agriculture.

A more comprehensive and quantitative means for determining the quality of Hawaii's land area for viable agricultural use, based on projected demand for agricultural commodities, is the methodology developed by the Land Evaluation and Site Assessment Commission.

Mr. Avery H. Youn
June 4, 1986
Page -5-

LAND EVALUATION AND SITE ASSESSMENT COMMISSION

The Hawaii State Constitution requires the State to provide standards and criteria to conserve and protect agricultural lands, promote diversified agriculture, increase agricultural self-sufficiency and assure the availability of agriculturally suitable lands. The Constitution also provides for the identification of "important agricultural lands". Once identified, these lands may be reclassified or rezoned only after meeting the criteria established by the State Legislature and approved by a two-thirds vote of the body responsible for the reclassification or rezoning action.

The Land Evaluation and Site Assessment (LESA) Commission was assigned the task of identifying and recommending, for adoption by the Legislature, a system to identify important agricultural lands (IAL). The recommendations of the Commission, if approved by the Legislature, would carry out the Constitutional mandate to protect important agricultural lands.

From the illustrative maps (1:24,000 scale) which apply the IAL methodology as part of the work of the LESA Commission, the entire project site (except for a very small area nearest to Nawiliwili Harbor) is within the illustrative "Important Agricultural Land" (IAL) boundary as defined by the LESA Commission ("A Report on the State of Hawaii Land Evaluation and Site Assessment System", February 1986). The IAL are lands capable of producing high agricultural yields, lands which produce commodities for export and local consumption, lands not currently in production but needed to attain desired projected levels of agricultural activities and income, and lands designated by public policies as important agricultural lands resulting from some unique quality, setting or use.

The project site has Land Evaluation (LE) and partial Site Assessment (SA) ratings of 46 to 80 on a scale of 15 to 100 (LE + SA Scores by Soil Types, LE Ratings and SA Scores - Kauai; LESA Commission Report). Briefly, the LE ratings represent the physical characteristics (including irrigation) of the soil resources of Hawaii. The LE ratings are a composite of the Soil Conservation Service Soil Survey, Land Study Bureau Detailed Land Classification, and Agricultural Lands of Importance to the State of Hawaii. The SA factors or criteria express the relative quality of a site or area based upon its non-physical characteristics or attributes. The SA factors are criteria which indicate the agricultural viability of a parcel, site or area.

Mr. Avery H. Youn
June 4, 1986
Page -6-

Although the LESA Commission Report and corresponding legislative bill were not acted upon by the Legislature this past Session, the Department of Agriculture believes that the definition and identification of "important agricultural lands" by the methodology proposed by the LESA Commission provides the most comprehensive and rational indication of the relative importance of agricultural lands in the State.

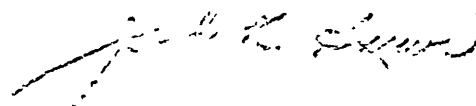
REFERENCE TO THE STATE AGRICULTURE FUNCTIONAL PLAN

The reference in the EIS to the State Agriculture Functional Plan should specifically address how the proposed project conforms to the following:

Policy B(5D): Provide greater protection to agricultural lands in accordance with the Hawaii State Constitution.

Implementing Action B(5)(c): Until standards and criteria to conserve and protect important agricultural lands are enacted by the Legislature, important agricultural lands should be classified in the State Agricultural District and zoned for agricultural use, except where, by the preponderance of the evidence presented, injustice or inequity will result or overriding public interest exists to provide such lands for other objectives of the Hawaii State Plan.

Thank you for the opportunity to comment.



JACK K. SUWA
Chairman, Board of Agriculture

cc: Mr. Dennis M. Lombardi, Case, Kay and Lynch ✓
OEQC
DPED

bcc: PS

CASE, KAY & LYNCH

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P.A. LAW CORPORATION

June 18, 1986

Mr. Jack K. Suwa
Chairman, Board of Agriculture
Department of Agriculture
State of Hawaii
P.O. Box 22159
Honolulu, Hawaii 96822

Re: Draft Environmental Impact Statement
filed by Grove Farm Properties, Inc., in
respect of its proposed General Plan Change
for the Lihue/Puhi project areas

Dear Mr. Suwa:

Thank you for your comments concerning the Draft Environmental Impact Statement ("DEIS") filed by Grove Farm Properties, Inc., in respect of its proposed General Plan Change. We appreciate the effort and time you have taken to assist Grove Farm Properties, Inc., in the formulation of its Final Environmental Impact Statement. We have considered your comments and, to the extent appropriate, implemented changes in the Final Environmental Impact Statement on the basis of your suggestions and our responses to your comments. The following are our responses to your comments in the order they are referenced in your letter:

1. Comment: "Our view of the Draft EIS reveals that the references to the Soil Conservation Service Soil Survey and Land Study Bureau Detailed Land Classification for the island of Kauai are incomplete [and that additional soil types are included in the project area]..."

Mr. Jack K. Suwa
Chairman, Board of Agriculture
Department of Agriculture
June 18, 1986
Page 2

Response: The DEIS was indeed missing information regarding the referenced soil and classification types. The information which you have provided to us has been included in the Final Environmental Impact Statement.

2. Comment: "The EIS should include the following information to clarify the above statement:

- Figures that show the expected decline in total sugarcane yield to Lihue Plantation as a result of the loss of the 464 acres in production;
- Figures estimating the increase in productivity needed from remaining sugarcane fields to replace the production lost from the subject 464 acres;
- Evidence that Lihue Plantation is currently practicing or intends to utilize the above methods of increasing sugarcane yield from existing fields.

The applicant derives an estimate of the economic impact of removing 464 acres from sugarcane production from the results of an earlier study done for Lihue Plantation Company in connection with a different project (Exhibit 1, 'Impact of Removing Land From Cane Production on the Cost of Producing Sugar-Lihue Plantation; Peter Garrod, Economist; May 15, 1982)..... The EIS should clarify (1) the 'improved farming methods' used by Lihue Plantation to increase their yields and reduce their per ton costs, (2) variables used in the extrapolation of the earlier study to the subject project, and (3) sources of this information."

Response: The reduction in Lihue Plantation sugar cane yields reflected in the DEIS resulting from the contemplated withdrawal of cane lands is based on the Garrod model which was the then available current data. More recent gross average yield data concerning Lihue Plantation's historical performance reflects that for the period of 1980-1985, Lihue Plantation's total sugar tonnage yield and tonnage yield per acre has increased while cultivated acreage has declined. These facts are reflected in the Yield Data Charts appended to this letter. The increased yield per acre and increased total yield

Mr. Jack K. Suwa
Chairman, Board of Agriculture
Department of Agriculture
June 18, 1986
Page 3

experienced by the Lihue Plantation operation are attributable to Lihue Plantation's utilization, in the same field, of drip irrigation and Lihue Plantation's increased use of a varietal disease resistant cane having a shorter harvest time but equal sugar yield.

3. Comment: "...The EIS should include discussion on alternative agricultural uses of the property (i.e., diversified agriculture) before concluding that the loss of important agricultural land is 'not the critical significance.'"

Response: Over the years Grove Farm Properties, Inc., has advocated diversified agriculture in and about the Lihue-Puhi area. At this time, Grove Farm Properties, Inc., is constantly looking for new areas in which to implement such pursuits and is fostering such pursuits by permitting its property to be used for diversified agriculture such as lilikai vine, tea leaves, bananas, piggeries, pasturing and the like.

4. Comment: "The project site has Land Evaluation (LE) and partial Site Assessment (SA) ratings of 46 to 80 on a scale of 15 to 100 (LE + SA Scores by Soil Types, LE Ratings and SA Scores--Kauai; LESA Commission Report)."

Response: Unfortunately, LESA was not adopted by the Legislature during its last term. Seemingly, one of the Legislature's prime concerns was the failure of the proposed SA rating to weight sufficiently the proximity of urban growth areas to the agricultural lands sought to be converted to urban use. The project lands, as with all lands surrounding Lihue, are prime agricultural land. If the expansion of Lihue is to occur at all, it will be into prime agriculture land.

5. Comment: "The reference in the EIS to the State Agricultural Functional Plan should specifically address how the proposed project conforms to the following:

Policy B(5): Provide greater protection to agricultural lands in accordance with the Hawaii State Constitution.

Implementing Action B(5)(c): Until standards and criteria to conserve and protect important agricultural lands are

Mr. Jack K. Suwa
Chairman, Board of Agriculture
Department of Agriculture
June 18, 1986
Page 4

enacted by the Legislature, important agricultural lands should be classified in the State Agricultural District and zoned for agricultural use, except where, by the preponderance of the evidence presented, injustice or inequity will result or overriding public interest exists to provide such lands for other objectives of the Hawaii State Plan."

Response: Growth in the Lihue urban center will continue to require that the agricultural lands be converted to urban use. The proposed project ensures that urban growth would be restricted to areas adjacent to the existing urban center and would proceed in an orderly manner. By doing so, agricultural lands are protected from unnecessary "leap-frogging" of urban areas that creates many pockets of urban uses within agricultural areas.

The plan proposal of a range of residential uses is consistent with the Housing objective to provide for "...Greater opportunities for Hawaii's people to secure reasonably priced, safe, sanitary, liveable homes located in suitable environments that satisfactorily accommodate the needs and desires of families and individuals." The location of the project area adjacent to the Lihue urban center, moreover, appears to be consistent with the policy to "Promote design and location of housing developments taking into account the physical setting, accessibility to public facilities and services, and other concerns of existing communities and surrounding areas."

Given the need for a new golf course as discussed on pages 17-19 of the Final Environmental Impact Statement, the golf course appears to be consistent with Socio-Cultural Advancement--Leisure--objective "...to accommodate diverse cultural, artistic and recreational needs for present and future generations." and the policy to "...Ensure opportunities for everyone to use and enjoy Hawaii's recreational resources." and to "Assure the availability of sufficient resources to provide for future recreational needs."

Finally, by providing more leaseable areas for new businesses, the light industrial site is consistent with the General Economic objective toward "Increased and diversified employment opportunities to achieve full

Mr. Jack K. Suwa
Chairman, Board of Agriculture
Department of Agriculture
June 18, 1986
Page 5

employment, increased income and job choice, and improved living standards for Hawaii's people." and "A growing and diversified economic base that is not overly dependent on a few industries."

Again, thank you for your assistance in helping Grove Farm Properties, Inc., finalize the DEIS. At such time as the Final Environmental Impact Statement is available, we will request the Office of Environmental Quality Control to provide a copy of the statement to you.

Yours truly,

CASE, KAY & LYNCH



Dennis M. Lombardi

DML:kbt/0186A/0547K

cc: Grove Farm Properties, Inc.
Office of Environmental Quality Control
Planning Department of the County of Kauai

GEORGE R. ARIYOSHI
GOVERNOR



LETITIA N. UYEHARA
DIRECTOR

TELEPHONE NO.
548-8915

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

465 South King Street, #115
HONOLULU, HAWAII 96813

June 2, 1986

RECEIVED JUN 9 1986

Mr. Avery H. Youn
Planning Director
Planning Department
County of Kauai
4280 Rice Street
Lihue, Hawaii 96766

Dear Mr. Youn:

Subject: Draft EIS for General Plan Change for Grove Farm
Properties, Inc., Lihue and Puhi, Kauai

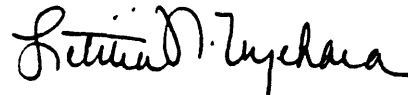
We have reviewed the EIS for this project and offer the following comments for consideration:

1. Land use conversions from agriculture to urban are generally considered permanent and irreversible. Thus, every land use change from agriculture to urban use diminishes the amount of agricultural lands in the state. It is the policy of the state to maintain valuable agricultural lands in agriculture; only marginal agricultural lands should be converted to urban use. The Department of Agriculture has classified the majority of the project site as prime agricultural land.
2. The project proposes the construction of 1,158 single-family residential units. The EIS states that as a result, projected inventory will exceed demand until 1986. Table 4-11, however, indicates that inventory will exceed demand until 1987. But, because Table 4-11 falsely assumes that cumulative inventory

will stabilize at 10,075 units, it is possible that the number of housing units may exceed demand into the 1990s.

Thank you for allowing us the opportunity to review this EIS.

Sincerely,

A handwritten signature in cursive script, appearing to read "Letitia N. Uyehara".

Letitia N. Uyehara
Director

cc: ✓ Dennis Lombardi
Case, Kay & Lynch

CASE, KAY & LYNCH
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465 South King Street, #115
Honolulu, Hawaii 96813

Re: Draft Environmental Impact Statement
filed by Grove Farm Properties, Inc., in
respect of its proposed General Plan Change
for the Lihue/Puhi project areas

Dear Ms. Uyehara:

Thank you for your comments concerning the Draft Environmental Impact Statement ("DEIS") filed by Grove Farm Properties, Inc., in respect of its proposed General Plan Change. We appreciate the effort and time you have taken to assist Grove Farm Properties, Inc., in the formulation of its Final Environmental Impact Statement. We have considered your comments and, to the extent appropriate, implemented changes in the Final Environmental Impact Statement on the basis of your suggestions and our responses to your comments. The following are our responses to your comments in the order they are referenced in your letter:

1. Comment: "Land use conversions from agriculture to urban are generally considered permanent and irreversible. Thus, every land use change from agriculture to urban use diminishes the amount of agricultural lands in the state. It is the policy of the state to maintain valuable agricultural lands in agriculture; only marginal agricultural lands should be converted to urban use. The Department of Agriculture has classified the majority of the project site as prime agricultural land."

Ms. Letitia N. Uyehara
Director
Office of Environmental Quality Control
June 18, 1986
Page 2

Response: The applicant agrees that the subject property is suitable for agricultural uses. However, the applicant demonstrates in Chapter 2 of the DEIS (Description of the Proposed Action) that the property is also suitable for light industrial, residential, and recreational uses.

Moreover, urban land is also important for the County. As discussed in the Socio-Economic Considerations section of Chapter 4 of the DEIS, the applicant demonstrates there is need for more urban land. The proximity of the proposed project area to Lihue, the County's urban center, also makes it suitable as a future urban growth area. Indeed, if Lihue is to be permitted to grow at all, it must be into land classified as "Prime Agricultural Land".

2. Comment: "The project proposes the construction of 1,158 single-family residential units. The EIS states that as a result, projected inventory will exceed demand until 1986. Table 4-11, however, indicates that inventory will exceed demand until 1987. But, because Table 4-11 falsely assumes that cumulative inventory will stabilize at 10,075 units, it is possible that the number of housing units may exceed demand into the 1990s."

Response: The 10,075 units represents projected cumulative known inventory. There exists an additional 1,951 lots within proposed subdivisions with indefinite plans for completion as shown in Table 4-9. Because these lots had indefinite plans for completion, it was impossible to accurately distribute them over the projection period or even to assess whether they would be built at all during the projection period.

As a rough estimation, one might look at the projection period between 1988-1998 and assume that the 1,951 lots were developed during that period. Under this scenario the cumulative residential lot demand in 1998 is estimated at 13,927 lots. The adjusted cumulative inventory in 1998 is estimated at 12,026 lots (10,075 + 1,951). Using these two estimates, the net cumulative demand is estimated as a need for 1,901 additional lots (13,927 - 12,026 = 1,901). Based on these facts, there appears to still be a need for the 1,158 lots proposed by this project through the 1990's.

Ms. Letitia N. Uyehara
Director
Office of Environmental Quality Control
June 18, 1986
Page 3

Again, thank you for your assistance in helping Grove Farm Properties, Inc., finalize the DEIS. At such time as the Final Environmental Impact Statement is available, we will request the Office of Environmental Quality Control to provide a copy of the statement to you.

Yours truly,

CASE, KAY & LYNCH



Dennis M. Lombardi

DML:kbt/0187A/0548K

cc: Grove Farm Properties, Inc.
Office of Environmental Quality Control
Planning Department of the County of Kauai



University of Hawaii at Manoa

Water Resources Research Center
Holmes Hall 283 • 2540 Dole Street
Honolulu, Hawaii 96822

RECEIVED JUN 10 1986

5 June 1986

Mr. Avery H. Youn, Planning Director
Planning Department
County of Kauai
4280 Rice Street
Lihue, Hawaii 96766

Dear Mr. Youn:

Subject: Draft Environmental Impact Statement, General Plan
Change for Grove Farm Properties, Inc., Proposed
Lihue-Puhi Master Plan, Lihue & Puhi, Kauai, May 1986

We have reviewed the subject DEIS and offer the following comment. The incongruousness of having a cesspool system of sewage disposal while at the same time proposing "...an additional well or wells in the immediate vicinity..." (p. 22, emphasis added) is an issue open for potential problems. Prevention of contamination is undoubtedly less expensive than cleanup efforts after the fact.

Thank you for the opportunity to comment. This material was reviewed by WRRC personnel.

Sincerely,

Edwin T. Murabayashi
Edwin T. Murabayashi
EIS Coordinator

ETM:jm

cc: A.H. Youn, Kauai Planning Dept.
D. Lombardi, Case, Kay & Lynch

CASE, KAY & LYNCH

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*A LAW CORPORATION

June 18, 1986

Mr. Edwin T. Murabayashi
EIS Coordinator
University of Hawaii at Manoa
Water Resources Research Center
Holmes Hall 283
2540 Dole Street
Honolulu, Hawaii 96822

Re: Draft Environmental Impact Statement
filed by Grove Farm Properties, Inc., in
respect of its proposed General Plan Change
for the Lihue/Puhi project areas

Dear Mr. Murabayashi:

Thank you for your comments concerning the Draft Environmental Impact Statement ("DEIS") filed by Grove Farm Properties, Inc., in respect of its proposed General Plan Change. We appreciate the effort and time you have taken to assist Grove Farm Properties, Inc., in the formulation of its Final Environmental Impact Statement. We have considered your comments and, to the extent appropriate, implemented changes in the Final Environmental Impact Statement on the basis of your suggestions and our responses to your comments. The following are our responses to your comments in the order they are referenced in your letter:

1. Comment: "...The incongruousness of having a cesspool system of sewage disposal while at the same time proposing '...an additional well or wells in the immediate vicinity...' (p. 22, emphasis added) is an issue open for potential problems. Prevention of contamination is undoubtedly less expensive than cleanup after the fact."

Mr. Edwin T. Murabayashi
EIS Coordinator
University of Hawaii at Manoa
Water Resources Research Center
June 18, 1986
Page 2

Response: The applicant agrees that if a sewer system is needed to protect the groundwater then an overall program should be established to sewer nearby areas which are currently on cesspools. However, much of the proposed General Plan Change area is makai of the State Department of Health's Underground Injection Control Line which was established to protect potable well sources. And, the applicant is not aware of any present contamination problems in that area or the surrounding areas resulting from the use of cesspools. Furthermore, the County Council is currently considering acceptable and appropriate methods for sewage disposal in the area, as part of the Ulu Ko Subdivision development.

The applicant agrees that if a sewer system is needed to protect the groundwater then an overall program should be established which includes sewerage nearby areas which are presently on cesspools.

Again, thank you for your assistance in helping Grove Farm Properties, Inc., finalize the DEIS. At such time as the Final Environmental Impact Statement is available, we will request the Office of Environmental Quality Control to provide a copy of the statement to you.

Yours truly,

CASE, KAY & LYNCH



Dennis M. Lombardi

DML:kbt/0556K

cc: Grove Farm Properties, Inc.
Office of Environmental Quality Control
Planning Department of the County of Kauai



DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT

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GOVERNOR
KENT M. KEITH
DIRECTOR
MURRAY E. TOWILL
DEPUTY DIRECTOR
LINDA KAPUNIAI ROSEHILL
DEPUTY DIRECTOR

Ref. No. P-4271

June 4, 1986

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BUSINESS AND INDUSTRY DEVELOPMENT DIVISION
ENERGY DIVISION
335 Merchant St. Room 110 Honolulu, Hawaii 96813
FOREIGN-TRADE ZONE DIVISION
Plan 2, Honolulu, Hawaii 96813
LAND USE DIVISION
PLANNING DIVISION
RESEARCH AND ECONOMIC ANALYSIS DIVISION
OFFICES
DIRECTOR'S OFFICE
ADMINISTRATIVE SERVICES OFFICE
INFORMATION OFFICE

The Honorable Avery H. Youn
Planning Director
County of Kauai
4280 Rice Street
Lihue, Hawaii 96766

Dear Mr. Youn:

Subject: Draft Environmental Impact Statement, A General Plan Change
for Grove Farm Properties, Inc., Lihue and Puhi, Kauai

We have reviewed the subject draft environmental impact statement
(DEIS) and offer the following comments.

1. The drainage and mosquito problems of the Lihue area are well documented in Land Use Commission Docket No. A82-530 (Amfac Property Development). In that case, wastewater from Lihue Sugar Mill was ponding due to shrinking percolation areas as a result of land developments around the mill.
2. According to the letter dated November 22, 1985, from the Chief Sanitarian on Kauai, there is one reservoir currently used for temporary storage of the effluent from the KCC and the Kukui Grove Wastewater Treatment Works. The effluent is currently being used for the irrigation of the cane fields of the subject area. DEIS should assess the impacts resulting from the development of these cane fields, specifically the problem of effluent disposal.
3. DEIS states on page 44 that Lihue Plantation's lease, covering the project area, will expire in 1994 and that non-renewal of the lease is a substantial possibility. DEIS should discuss Grove Farm Properties, Inc.'s plan for withdrawing sugar lands in the Lihue area and the potential impacts to agricultural operations.
4. The subject project will result in the reclassification of approximately 464 acres currently within the agricultural district. The project area consists of 262 acres for single-family use, 56 acres of light industrial, approximately 20 acres of roads and buffers and 126 acres of golf course. The need for single-family housing, light industrial and golf courses should be substantiated in relation to the market segments that will be served.

The Honorable Avery H. Youn
Page 2
June 4, 1986

5. DEIS should also address the need for low/moderate/gap group housing on Kauai and the benefits/costs of providing lots or house and lot packages.
6. A specific coastal ecosystem policy of the Hawaii Coastal Zone Management (CZM) Program is to minimize the disruption or degradation of coastal water ecosystems. The applicant proposes the use of natural drainage ways to convey runoff to Pualu and Nawiliwili streams for subsequent discharge into Nawiliwili Harbor. Pualu Stream is a perennial stream of moderate to high natural quality as indicated by the U.S. Fish and Wildlife Service's Statewide Inventory of Streams. The change in land use from agricultural to urban uses and their associated impacts on the water quality and ecosystem of Pualu Stream should be assessed in the DEIS.
7. The coastal hazards policy of the CZM Program advocates prevention of coastal flooding from inland projects. While the project site itself may not be situated in a flood hazard district, development may lead to increased surface runoff and flooding in lower lying areas. DEIS should describe and assess any potentially adverse effects on properties below the project site.
8. DEIS should also address the Hawaii State Plan, Objectives and Policies for Economy-in-General in regard to the nature of development within the new industrial site.

Thank you for the opportunity to review and comment on the subject document.

Very truly yours,

Kent M. Keith

cc: ✓ Mr. Dennis M. Lombardi
Case, Kay and Lynch
Office of Environmental Quality Control

CASE, KAY & LYNCH
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June 18, 1986

Mr. Kent M. Keith
Department of Planning and Economic Development
Kamamalu Building
250 South King Street
P.O. Box 2359
Honolulu, Hawaii 96804

Re: Draft Environmental Impact Statement
filed by Grove Farm Properties, Inc., in
respect of its proposed General Plan Change
for the Lihue/Puhi project areas

Dear Mr. Keith:

Thank you for your comments concerning the Draft Environmental Impact Statement ("DEIS") filed by Grove Farm Properties, Inc., in respect of its proposed General Plan Change. We appreciate the effort and time you have taken to assist Grove Farm Properties, Inc., in the formulation of its Final Environmental Impact Statement. We have considered your comments and, to the extent appropriate, implemented changes in the Final Environmental Impact Statement on the basis of your suggestions and our responses to your comments. The following are our responses to your comments in the order they are referenced in your letter:

1. Comment: "1. The drainage and mosquito problems of the Lihue area are well documented in Land Use Commission Docket No. A82-530 (Amfac Property Development). In that case, wastewater from Lihue Sugar Mill was ponding due to shrinking percolation areas as a result of land developments around the mill."

Mr. Kent M. Keith
Department of Planning and Economic Development
June 18, 1986
Page 2

Response: The drainage and mosquito problems are located in lands around the present Lihue Wastewater Treatment Plant and is due to the amount of land there is available for effluent disposal through irrigation. Lands owned by Grove Farm Properties, Inc., including, the project area, are not involved with this disposal problem.

2. Comment: "2. According to the letter dated November 22, 1985, from the Chief Sanitarian on Kauai, there is one reservoir currently used for temporary storage of the effluent from the KCC and the Kukui Grove Wastewater Treatment Works. The effluent is currently being used for the irrigation of the cane fields of the subject area. DEIS should assess the impacts resulting from the development of these cane fields, specifically the problem of effluent disposal."

Response: During the initial stages of development, the effluent from both the KCC and Kukui Grove Wastewater Treatment Works might be used for irrigating the golf course. As the amount of effluent increases from expansion of commercial activities, effluent from KCC might be diverted to the reservoir west of the community college. Effluent from the Kukui Grove Wastewater Treatment Works would continue to be used for golf course and open space irrigation. For backup or emergency purposes, injection wells located makai of the Department of Health's Underground Injection Control line may be developed.

3. Comment: "3. DEIS states on page 44 that Lihue Plantation's lease, covering the project area, will expire in 1994 and that non-renewal of the lease is a substantial possibility. DEIS should discuss Grove Farm Properties, Inc.'s plan for withdrawing sugar lands in the Lihue area and the potential impacts to agricultural operations."

Response: The applicant intends to withdraw the lands on an incremental basis. This withdrawal is consistent with methods that Grove Farm has employed in the past to reduce the impact on its tenant, Lihue Plantation. If Lihue Plantation elects not to farm undeveloped lands available in 1994 Grove Farm intends to make those lands available for agricultural pursuits pending their development.

Mr. Kent M. Keith
Department of Planning and Economic Development
June 18, 1986
Page 3

4. Comment: "4. The subject project will result in the reclassification of approximately 464 acres currently within the agricultural district. The project area consists of 262 acres for single-family use, 56 acres of light industrial, approximately 20 acres of roads and buffers and 126 acres of golf course. The need for single-family housing, light industrial and golf courses should be substantiated in relation to the market segments that will be served."

Response: The market demand for residential use is discussed on pages 55-80 of the DEIS and correspondingly in the Final Environmental Impact Statement. The golf course and light industrial demands are discussed on pages 19-20 and 18, respectively, of the DEIS and in the Final Environmental Impact Statement. The further identification of specific market segments to be targeted will occur in connection with the zoning and subdivision approval process since market conditions will change during the lengthy planning approval period. As the project moves closer to the actual subdivision and construction of the project area, the market study will be refined and further estimates can be made of the specific market segments to be targeted.

5. Comment: "5. DEIS should also address the need for low/moderate/gap group housing on Kauai and the benefits/costs of providing lots or house and lot packages."

Response: The applicant currently proposes 330 affordable homes on Lot 32 in the Puhi area. These 330 homes represent about 28 percent of the 1,158 total lots proposed for the project area.

6. Comment: "6. A specific coastal ecosystem policy of the Hawaii Coastal Zone Management (CZM) Program is to minimize the disruption or degradation of coastal water ecosystem. The applicant proposes the use of natural drainage ways to convey runoff to Puali and Nawiliwili streams for subsequent discharge into Nawiliwili Harbor. Puali Stream is a perennial stream of moderate to high natural quality as indicated by the U.S. Fish and Wildlife Service's Statewide Inventory of Streams. The change in land use from agricultural to urban uses and their associated impacts on the water quality and ecosystem of Puali Stream should be assessed in the DEIS."

Mr. Kent M. Keith
Department of Planning and Economic Development
June 18, 1986
Page 4

Response: The existing and projected amount of runoff is covered on pages 16-24 of Exhibit 2 of the DEIS. The developer, as stated, will design retention ponds in the golf course and other open areas to control the amount of runoff during storm conditions. These measures will be addressed in a drainage plan that the developer intends to prepare as part of the zoning and subdivision process. At this time, design mitigation measures, such as siltation and catchment facilities, will be examined more closely as part of the final engineering and construction activities undertaken in respect of the project.

7. Comment: "7. The coastal hazards policy of the CZM Program advocates prevention of coastal flooding from inland projects. While the project site itself may not be situated in a flood hazard district, development may lead to increased surface runoff and flooding in lower lying areas. DEIS should describe and assess any potentially adverse effects on properties below the project site."

Response: Please see response to comment numbered 6.

8. Comments: "8. DEIS should also address the Hawaii State Plan, Objectives and Policies for Economy-in-General in regard to the nature of development within the new industrial site."

Response: The proposed industrial area will provide spaces for new business, i.e. light industrial, warehousing and service commercial, that would benefit from the proximity to Lihue town center, the harbor, the existing shopping center, and the community college. By providing space for new businesses, the plan is generally consistent with the objectives of the Hawaii State Plan which are:

- (a) Increased and diversified employment opportunities to achieve full employment, increase income and job choice, and improved living standards for Hawaii's people.
- (b) A growing and diversified economic base that is not overly dependent on a few industries."

The general economic policies of the Hawaii State Plan and Grove Farm Properties, Inc.'s responses in respect of each are as follows:

Mr. Kent M. Keith
Department of Planning and Economic Development
June 18, 1986
Page 5

- (a) "Expand Hawaii's national and international marketing, communication, and organizational ties, to increase the State's capacity to adjust to and capitalize upon economic changes and opportunities occurring outside the State."

Response: The light industrial area (and existing commercial designated areas) provides space for any new business wishing to capitalize on such changes and opportunities.

- (b) "Promote Hawaii as an attractive market for investment activities that benefit Hawaii's people."

Response: The proposed industrial area (and existing commercial areas) will provide a readily available site that is strategically located on Kauai with respect to transportation and education for any business wishing to locate within the State in general and on Kauai in particular.

- (c) "Seek broader outlets for new or expanded Hawaii business investments."

Response: The proposed industrial area provides a location for new companies to pursue this policy.

- (d) "Expand existing markets and penetrate new markets for Hawaii's products and services."

Response: The proposed industrial area provides a location for new companies to pursue this policy.

- (e) "Assure that the basic economic needs of Hawaii's people are maintained in the event of disruption in overseas transportation."

Response: Some of the sites undoubtedly will be used for warehousing and storage of commercial goods. These will assist in meeting resident needs in the event of disruption in overseas transportation over the short term period.

- (f) "Strive to achieve a sustained level of construction activity responsive to, and consistent with, state growth objectives."

Mr. Kent M. Keith
Department of Planning and Economic Development
June 18, 1986
Page 6

Response: Over the short term period, the development of the industrial, residential, and golf course areas will provide construction employment. Over the long term period, the industrial area will potentially provide space for contractor yards and office.

- (g) "Encourage the formulation of marketing cooperatives to assist small scale producers, manufacturers, and distributors."

Response: Individual businesses locating in the proposed industrial area may choose to formulate such marketing cooperatives.

- (h) "Pursue more favorable marketing arrangements at the regional and local levels for Hawaii's export products."

Response: The industrial area is conveniently located to the harbor for any business wishing to pursue such a policy.

- (i) "Encourage labor-intensive activities that are economically satisfying."

Response: The industrial lots would be available for lease or sale to any new business wishing to pursue such a policy.

- (j) "Foster greater cooperation and coordination between the public and private sectors in solving Hawaii's employment problems."

Response: Grove Farm Properties, Inc., as a kamaaina firm, has a longtime commitment to economic development and to the provision of employment opportunities on Kauai. The Company has been involved with the development of commercial and industrial areas in Lihue and Puhi and with the leasing of agricultural lands to Lihue Plantation Co., McBryde Sugar Co., and small diversified agricultural businesses. The development of the light industrial area will be a continuation of this commitment to economic development and employment.

- (k) "Promote economic activities, especially those which benefit areas with substantial unemployment problems."

Mr. Kent M. Keith
Department of Planning and Economic Development
June 18, 1986
Page 7

Response: See previous reply.

- (l) "Maintain acceptable working conditions and standards for Hawaii's workers."

Response: This policy is basically a government enforcement responsibility, with which Grove Farm Properties, Inc., concurs.

- (m) "Provide equal employment opportunities for all segments of Hawaii's population through affirmative action and anti-discrimination measures."

Response: This policy is basically a government enforcement responsibility, with which Grove Farm Properties, Inc., concurs.

- (n) "Encourage business that have favorable financial multiplier effects within Hawaii's economy."

Response: The applicant will be providing leasable space as an opportunity for such businesses, but will not actively target such businesses as tenants.

- (o) "Promote and protect intangible resources in Hawaii, such as scenic beauty and the aloha spirit, which are vital to a healthy economy."

Response: The proposed industrial area is not readily visible from the highway and as such protects the area's visual resource for visitors traveling along the highway.

Again, thank you for your assistance in helping Grove Farm Properties, Inc., finalize the DEIS. At such time as the Final Environmental Impact Statement is available, we will

Mr. Kent M. Keith
Department of Planning and Economic Development
June 18, 1986
Page 8

request the Office of Environmental Quality Control to provide
a copy of the statement to you.

Yours truly,

CASE, KAY & LYNCH

A handwritten signature in dark ink, appearing to read "Dennis M. Lombardi", with a stylized flourish at the end.

Dennis M. Lombardi

DML:kbt/0557K

cc: Grove Farm Properties, Inc.
Office of Environmental Quality Control
Planning Department of the County of Kauai



United States Department of the Interior

GEOLOGICAL SURVEY

Water Resources Division
P.O. Box 50166
Honolulu, Hawaii 96850

May 19, 1986

Mr. Avery H. Youn, Planning Director
Planning Department
County of Kauai
4280 Rice Street
Lihue, HI 96766

Dear Mr. Youn:

Re: Environmental Impact Statement (EIS); General Plan
Change for Grove Farm Properties, Inc.

The Honolulu District Office of the Water Resources Division, United States Geological Survey, has reviewed the above EIS, and has no additional comments.

Thank you for the opportunity to comment on the document. As requested, we are returning the EIS to the Office of Environmental Quality Control.

Sincerely,

Charles J. Huxel
Acting District Chief

CC: D. M. Lombardi ✓
OEQC, w/attachment

RECEIVED MAY 22 1986

CASE, KAY & LYNCH
ATTORNEYS AT LAW
A PARTNERSHIP INCLUDING LAW CORPORATIONS

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COOK, CHOI, QUITQUIT & MATSUKAWA

June 18, 1986

DANIEL H. CASE*
ALAN C. KAY*
PAUL A. LYNCH*
GARY L. WIKOMO*
VALTA A. COOK*
JAMES H. CRIBLEY*
WESLEY W. ICHIDA*
JOHN R. MYRDAL*
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OF COUNSEL
VERNON O. BORTZ*
NORITO KAWAKAMI*

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33 LONO AVENUE, SUITE 470
KAHULUI, MAUI, HAWAII 96732-1681
(808) 871-8351

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KAILUA-KONA, HAWAII 96740
(808) 329-4421

HONOLULU OFFICE
CABLE LOIO
TELEX: 7238523
TELECOPIER: (808) 523-1920

Mr. Charles J. Huxel
Acting District Chief
United States Department of the Interior
Water Resources Division
P.O. Box 50166
Honolulu, Hawaii 96850

Re: Draft Environmental Impact Statement
filed by Grove Farm Properties, Inc., in
respect of its proposed General Plan Change
for the Lihue/Puhi project areas

Dear Mr. Huxel:

Thank you for taking the opportunity to review the Draft Environmental Impact Statement filed by Grove Farm Properties, Inc., in respect to its proposed General Plan Change for the Lihue/Puhi areas of Kauai. We are pleased that you found the Draft Environmental Impact Statement acceptable in its current form. If we can provide any further information to you in the future, please do not hesitate to contact us.

Very truly yours,

CASE, KAY & LYNCH


Dennis M. Lombardi

DML:kbt/0190A/0551K

cc: Grove Farm Properties, Inc.
Office of Environmental Quality Control
Planning Department of the County of Kauai

(P)1494.6

MAY 21 1986

Mr. Avery H. Youn
Planning Director
County of Kauai
4280 Rice Street
Lihue, Kauai, Hawaii 96766

Dear Mr. Youn:

Subject: Draft EIS for General Plan Change
for Grove Farm Properties, Inc.

We have no comments on the proposed General Plan amendment. Thank you for the opportunity to review the draft EIS.

Very truly yours,



TEUANE TOMINAGA
State Public Works Engineer

GS:jnt

cc: ✓ Mr. Dennis M. Lombardi

RECEIVED MAY 22 1986

CASE, KAY & LYNCH
ATTORNEYS AT LAW
A PARTNERSHIP INCLUDING LAW CORPORATIONS

GROSVENOR CENTER
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COOK, CHOI, QUITQUIT & MATSUKAWA

June 18, 1986

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OF COUNSEL
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ALLEN M. STACH
NORITO KAWAKAMI
SA LAW CORPORATION

Mr. Teuane Tominaga
State of Hawaii
Public Works Engineer
Public Works Division
Department of Accounting and General Services
1151 Punchbowl Street
Honolulu, Hawaii 96813

Re: Draft Environmental Impact Statement
filed by Grove Farm Properties, Inc., in
respect of its proposed General Plan Change
for the Lihue/Puhi project areas

Dear Mr. Tominaga:

Thank you for taking the opportunity to review the Draft Environmental Impact Statement filed by Grove Farm Properties, Inc., in respect to its proposed General Plan Change for the Lihue/Puhi areas of Kauai. We are pleased that you found the Draft Environmental Impact Statement acceptable in its current form. If we can provide any further information to you in the future, please do not hesitate to contact us.

Very truly yours,

CASE, KAY & LYNCH


Dennis M. Lombardi

DML:kbt/0188A/0550K

cc: Grove Farm Properties, Inc.
Office of Environmental Quality Control
Planning Department of the County of Kauai

Case, Kay + Lynch - for your information + files

RECEIVED JUN 02 1986

NOTE-O-GRAM

REORDER ITEM # N-R73

DEPARTMENT OF WATER
P.O. BOX 1706 • LIHUE, HAWAII 96766

MESSAGE

TO Office of Environmental Quality Control
465 South King Street, Room 115
Honolulu, HI 96813
DATE May 29, 1986

— Enclosed is the EIS for Grove Farm Properties.

We have no comments at this time. We thank you
for the opportunity to comment.

BY

Pat M. Ray onto (rm)

ITEM # N-R73 • Wheeler Group Inc

REPLY

DATE

SIGNED

CASE, KAY & LYNCH
ATTORNEYS AT LAW
A PARTNERSHIP INCLUDING LAW CORPORATIONS

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TELECOPIER: (808) 523-1920

June 18, 1986

Mr. Ray Sato
Department of Water
County of Kauai
P.O. Box 1706
Lihue, Kauai, Hawaii 96766

Re: Draft Environmental Impact Statement
filed by Grove Farm Properties, Inc., in
respect of its proposed General Plan Change
for the Lihue/Puhi project areas

Dear Mr. Sato:

Thank you for taking the opportunity to review the Draft Environmental Impact Statement filed by Grove Farm Properties, Inc., in respect to its proposed General Plan Change for the Lihue/Puhi areas of Kauai. We are pleased that you found the Draft Environmental Impact Statement acceptable in its current form. If we can provide any further information to you in the future, please do not hesitate to contact us.

Very truly yours,

CASE, KAY & LYNCH


Dennis M. Lombardi

DML:kbt/0189A/0549K

cc: Grove Farm Properties, Inc.
Office of Environmental Quality Control
Planning Department of the County of Kauai

ARIYOSHI
ERROR

FRANCIS M. HATANAKA
SUPERINTENDENT



STATE OF HAWAII
DEPARTMENT OF EDUCATION
P. O. BOX 2360
HONOLULU, HAWAII 96804

RECEIVED MAY 23 1986

OFFICE OF THE SUPERINTENDENT

May 20, 1986

Mr. Avery H. Youn, Planning Director
Planning Department
County of Kauai
4280 Rice Street
Lihue, Hawaii 96766

Dear Mr. Youn:

Subject: General Plan Change for Grove Farm Properties, Inc.

Our review of the subject General Plan Change indicates that the proposed development is projected to generate the following student enrollment:

<u>School</u>	<u>Grades</u>	<u>Approximate Enroll.</u>
Wilcox Elementary	K-6	200 - 400
Kauai High/Inter.	7-12	150 - 300

The projections are based on the proposed 1158 single family units.

A new elementary school being planned somewhere between Lihue and Kapaa will help relieve Wilcox Elementary. The ten-acre school site identified by Grove Farm Properties may be required if additional relief is needed for Wilcox Elementary.

Kauai High/Intermediate School is currently operating at maximum capacity. The subject development will require the budgeting and construction of additional classrooms.

We would appreciate being kept informed of the progress of the development so that the school's facilities can be budgeted in a timely manner.

Should there be any questions, please call Minoru Inouye at 737-4743.

Sincerely,

A handwritten signature in cursive script, reading "Francis M. Hatanaka".

FRANCIS M. HATANAKA
Superintendent of Education
FMH:th (MRI)

cc Kauai District
Mr. V. Honda
Mr. Dennis Lombardi

CASE, KAY & LYNCH
ATTORNEYS AT LAW
A PARTNERSHIP INCLUDING LAW CORPORATIONS

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TELEX: 7238523
TELECOPIER (808) 523-1920

June 18, 1986

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

Re: Draft Environmental Impact Statement
filed by Grove Farm Properties, Inc., in
respect of its proposed General Plan Change
for the Lihue/Puhi project areas

Dear Mr. Hatanaka:

Thank you for your comments concerning the Draft Environmental Impact Statement ("DEIS") filed by Grove Farm Properties, Inc., in respect of its proposed General Plan Change. We appreciate the effort and time you have taken to assist Grove Farm Properties, Inc., in the formulation of its Final Environmental Impact Statement. We have considered your comments and, to the extent appropriate, implemented changes in the Final Environmental Impact Statement on the basis of your suggestions and our responses to your comments. The following are our responses to your comments in the order they are referenced in your letter:

1. Comment: "Our review of the subject General Plan Change indicates that the proposed development is projected to generate the following student enrollment:

<u>School</u>	<u>Grades</u>	<u>Approximate Enroll.</u>
Wilcox Elementary	K-6	200 - 400
Kauai High/Inter.	7-12	150 - 300

Mr. Francis M. Hatanaka
Superintendent of Education
State of Hawaii
Department of Education
June 18, 1986
Page 2

The projections are based on the proposed 1158 single family units."

Response: We appreciate the Department's confirmation of the estimate contained in the DEIS in respect of school age enrollment resulting from the project. Indeed, the Department's estimates are somewhat lower than reflected in the DEIS and the Final Environmental Impact Statement has been revised accordingly.

2. Comment: "A new elementary school being planned somewhere between Lihue and Kapaa will help relieve Wilcox Elementary. The ten-acre school site identified by Grove Farm Properties may be required if additional relief is needed for Wilcox Elementary.

Kauai High/Intermediate School is currently operating at maximum capacity. The subject development will require the budgeting and construction of additional classrooms.

We would appreciate being kept informed of the progress of the development so that the school's facilities can be budgeted in a timely manner."

Response: We will be pleased to keep the Department informed of the development as it progresses.

Again, thank you for your assistance in helping Grove Farm Properties, Inc., finalize the DEIS. At such time as the Final Environmental Impact Statement is available, we will request the Office of Environmental Quality Control to provide a copy of the statement to you.

Yours truly,

CASE, KAY & LYNCH


Dennis M. Lombardi

DML:kbt/0555K

cc: Grove Farm Properties, Inc.
Office of Environmental Quality Control
Planning Department of the County of Kauai

STATE
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF THE ATTORNEY GENERAL
3949 DIAMOND HEAD ROAD, HONOLULU, HAWAII 96816-4495

HIENG

MAY 13 1986

Mr. Avery H. Youn, Planning Director
Planning Department
County of Kauai
4280 Rice Street
Lihue, Hawaii 96766

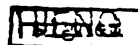
Dear Mr. Youn:

General Plan Change for Grove Farm Properties, Inc.
Lihue and Puh1, Kauai

Thank you for providing us the opportunity to review the above subject project.

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

Yours truly,



Jerry M. Matsuda
Major, Hawaii Air
National Guard
Contr & Engr Officer

Enclosure

cc: Case, Kay & Lynch, Mr. Dennis M. Lombardi

CASE, KAY & LYNCH

ATTORNEYS AT LAW
A PARTNERSHIP INCLUDING LAW CORPORATIONS

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L. MARK WU OHLSON
RAY K. KAMIKAWA

OF COUNSEL
VERNON O. BORTZ
ALLEN M. STACK
NORITO KAWAKAMI
A LAW CORPORATION

June 18, 1986

Mr. Jerry M. Matsuda
Major, Hawaii Air National Guard
Department of Defense
Office of the Adjutant General
3949 Diamond Head Road
Honolulu, Hawaii 96816-4495

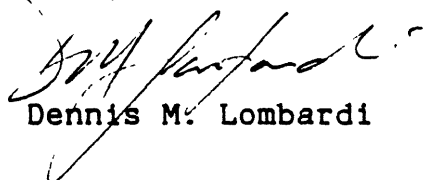
Re: Draft Environmental Impact Statement
filed by Grove Farm Properties, Inc., in
respect of its proposed General Plan Change
for the Lihue/Puhi project areas

Dear Mr. Matsuda:

Thank you for taking the opportunity to review the Draft Environmental Impact Statement filed by Grove Farm Properties, Inc., in respect to its proposed General Plan Change for the Lihue/Puhi areas of Kauai. We are pleased that you found the Draft Environmental Impact Statement acceptable in its current form. If we can provide any further information to you in the future, please do not hesitate to contact us.

Very truly yours,

CASE, KAY & LYNCH


Dennis M. Lombardi

DML:kbt/0554K

cc: Grove Farm Properties, Inc.
Office of Environmental Quality Control
Planning Department of the County of Kauai

GEORGE R. ARIYOSHI
GOVERNOR

WAYNE J. YAMASAKI
DIRECTOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
860 PUNCHBOWL STREET
HONOLULU HAWAII 96813

DEPUTY DIRECTORS
JONATHAN K. SHIMADA P.E.
WALTER T.M. HO
CHERYL D. SOON
ADAM D. VINCENT

IN REPLY REFER TO

STP 8.1358

May 30, 1986

Mr. Avery H. Youn, Planning Director
Planning Department
County of Kauai
4280 Rice Street
Lihue, Hawaii 96766

Dear Mr. Youn:

General Plan Change for Grove Farm Properties, Inc.
Proposed Lihue-Puhi Master Plan, Kauai

We are in agreement regarding the establishment of an internal roadway system. The Commercial Village and Kukui Grove Center areas should be accessible from this system and the proposed Nawiliwili Road extension.

We also concur that the intersections of Puhi Road and the proposed Nawiliwili Road extension with Kaumualii Highway be signalized. In addition, Kaumualii Highway should be widened to four lanes between these intersections and Nawiliwili Road be extended as proposed. All costs for planning and constructing the above improvements should be borne by the developer.

Plans for any work proposed within the State highway right-of-way must be submitted for review and approval by our Highways Division.

After evaluating the alternatives presented, we do not support Alternative I.

Thank you for this opportunity to provide comments.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Wayne J. Yamasaki", is written over a printed name and title.
Wayne J. Yamasaki
Director of Transportation

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NORITO KAWAKAMI

ALLEN M. STACK

*A LAW CORPORATION

June 18, 1986

Mr. Wayne J. Yamasaki
Director of Transportation
State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Re: Draft Environmental Impact Statement
filed by Grove Farm Properties, Inc., in
respect of its proposed General Plan Change
for the Lihue/Puhi project areas

Dear Mr. Yamasaki:

Thank you for your comments concerning the Draft Environmental Impact Statement ("DEIS") filed by Grove Farm Properties, Inc., in respect of its proposed General Plan Change. We appreciate the effort and time you have taken to assist Grove Farm Properties, Inc., in the formulation of its Final Environmental Impact Statement. We have considered your comments and, to the extent appropriate, implemented changes in the Final Environmental Impact Statement on the basis of your suggestions and our responses to your comments. The following are our responses to your comments in the order they are referenced in your letter:

1. Comment: "We are in agreement regarding the establishment of an internal roadway system. The Commercial Village and Kukui Grove Center areas should be accessible from this system and the proposed Nawiliwili Road extension."

Mr. Wayne J. Yamasaki
State of Hawaii
Department of Transportation
June 18, 1986
Page 2

Response: The Commercial Village and Kukui Grove Center areas, as shown in Figure 1-1 of the Final Environmental Impact Statement, will be accessible from the internal roadway system and the proposed Nawiliwili Road extension.

2. Comment: "We also concur that the intersections of Puhi Road and the proposed Nawiliwili Road extension with Kaumualii Highway be signalized. In addition, Kaumualii Highway should be widened to four lanes between these intersections and Nawiliwili Road be extended as proposed. All costs for planning and constructing the above improvements should be borne by the developer."

Response: The traffic study in Exhibit 2 of the DEIS indicates that the level of service for Nawiliwili Road and Kaumualii Road will increase the same amount with or without project scenario. The traffic problem along the Highway and at the referenced intersections is therefore part of a regional problem that will occur in spite of the proposed project.

As a regional problem, the traffic situation requires the input of regional effort and resources. Currently, a commission of public and private sector members has been formed to study this traffic issue. Findings from this commission should provide coordinated traffic solutions for this regional problem.

3. Comment: "Plans for any work proposed within the State highway right-of-way must be submitted for review and approval by our Highways Division."

Response: Grove Farm Properties, Inc., intends to submit plans for any work proposed in the State highway right-of-way to the Highway Division for review and approval.

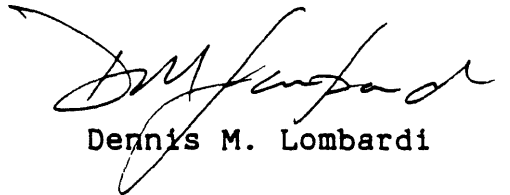
Again, thank you for your assistance in helping Grove Farm Properties, Inc., finalize the DEIS. At such time as the Final Environmental Impact Statement is available, we will

Mr. Wayne J. Yamasaki
State of Hawaii
Department of Transportation
June 18, 1986
Page 3

request the Office of Environmental Quality Control to provide
a copy of the statement to you.

Yours truly,

CASE, KAY & LYNCH



Dennis M. Lombardi

DML:kbt/0553K

cc: Grove Farm Properties, Inc.
Office of Environmental Quality Control
Planning Department of the County of Kauai

86:PLNG/3168

June 16, 1986

Mr. Avery H. Youn, Planning Director
Planning Department
County of Kauai
4280 Rice Street
Lihue, Hawaii 96766

Dear Mr. Youn:

Thank you for the opportunity to review and comment on the Environmental Impact Statement for the Proposed Lihue-Puhi Master Plan.

The proposed master plan indicates a consideration for affordable housing as a part of the mix in the development. We have no objections to the project, however, we recommend that the developer work with the Hawaii Housing Authority (HHA) or the County of Kauai to continue to plan for and develop affordable housing for the proposed community.

For any questions regarding our comments, please contact Colette Sakoda at 848-3226.

Sincerely,

RUSSELL N. FUKUMOTO
Executive Director

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June 18, 1986

Mr. Russell N. Fukumoto
Executive Director
State of Hawaii
Hawaii Housing Authority
P.O. Box 17907
Honolulu, Hawaii 96817-2908

Re: Draft Environmental Impact Statement
filed by Grove Farm Properties, Inc., in
respect of its proposed General Plan Change
for the Lihue/Puhi project areas

Dear Mr. Fukumoto:

Thank you for your comments concerning the Draft Environmental Impact Statement ("DEIS") filed by Grove Farm Properties, Inc., in respect of its proposed General Plan Change. We appreciate the effort and time you have taken to assist Grove Farm Properties, Inc., in the formulation of its Final Environmental Impact Statement. We have considered your comments and, to the extent appropriate, implemented changes in the Final Environmental Impact Statement on the basis of your suggestions and our responses to your comments. The following are our responses to your comments in the order they are referenced in your letter:

1. Comment: "The proposed master plan indicates a consideration for affordable housing as a part of the mix in the development. We have no objections to the project, however, we recommend that the developer work with the Hawaii Housing Authority (HHA) or the County of Kauai to continue to plan for and develop affordable housing for the proposed community."

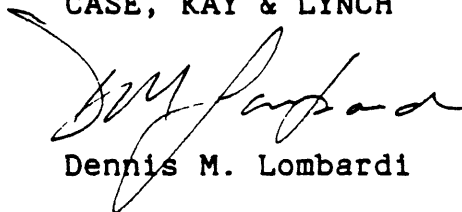
Mr. Russell N. Fukumoto
Executive Director
State of Hawaii
Hawaii Housing Authority
June 18, 1986
Page 2

Response: The applicant's present plan calls for about 330 residential lots on parcel 32 in Puhi. The applicant will explore ways to work with HHA or the County of Kauai to plan for and develop affordable housing for the proposed community on parcel 32.

Again, thank you for your assistance in helping Grove Farm Properties, Inc., finalize the DEIS. At such time as the Final Environmental Impact Statement is available, we will request the Office of Environmental Quality Control to provide a copy of the statement to you.

Yours truly,

CASE, KAY & LYNCH

A handwritten signature in dark ink, appearing to read "Dennis M. Lombardi", is written over the typed name. The signature is fluid and cursive.

Dennis M. Lombardi

DML:kbt/0558K

cc: Grove Farm Properties, Inc.
Office of Environmental Quality Control
Planning Department of the County of Kauai

CHAPTER 13

REFERENCES

Hawaii, State of (November 1985). The State of Hawaii Data Book. Department of Planning and Economic Development.

Kauai Housing Master Plan Study (March 1985). Vol. I and II.

Kauai, County of (June 1982). 1982 Kauai General Plan Update: Summary of Findings and Recommendations. Prepared by Planners Collaborative with Richard A. Moore, Wilson Okamoto & Associates, VTN Pacific and William H. Liggett.

Kauai, County of (December 31, 1978). The Revised Code of Ordinances of the County of Kauai. 1978 Cumulative Supplement.

APPENDICES

EXHIBIT 1

**IMPACT OF REMOVING LAND FROM CANE PRODUCTION
ON THE COST OF PRODUCING SUGAR
LIHUE PLANTATION**

Prepared for: Amfac Property Development Corporation

**By: Peter Garrod, Economist, Department of Agriculture
and Resource Economics, University of Hawaii**

As consultant to: Helber, Hastert, Van Horn & Kimura, Planners

May 15, 1982

**IMPACT OF REMOVING LAND FROM CANE PRODUCTION
ON THE COST OF PRODUCING SUGAR
LIHUE PLANTATION**

A computer program, written in FORTRAN, was prepared to estimate the impact of removing specified parcels of land from cane production on the total costs of producing sugar from cane. In its present form, the program is specific to Amfac's Lihue Plantation, however, its logic is general and it could easily be adapted to plantations at other locations.

The program is designed to be fully interactive. The inputs to the program are read directly from the annual performance reports. The first time the program is run it will ask the operator for specific items from the performance reports by either title or title and accounting code. For subsequent runs, the user has the option of using the data inputted initially, modifying the data, or inputting new information. The model was also designed to interface with the data-base-manager operating at Sam Hirota, Inc. The necessary data has been stored on tape, but the interface has not yet been implemented. With the data-base-manager, it will be possible to enter just the name of the parcel to be removed, and the program will proceed to estimate the impact with no further operator intervention.

As the parameters of the model are based on the most recent cost information available -last year's performance reports - the estimated impact on costs should be

quite accurate as long as the total acreage being removed is not of such magnitude to dramatically alter the operation of the Plantation. A rough rule of thumb would be that the model could be used with confidence when the total acreage removed will represent less than 10 percent of the total cultivatable acreage. Also, it is quite easy to update the cost estimates as new information on operating costs or changes in the planned development occur. In fact, the program was designed to facilitate such updates.

The impact on costs estimated by the model reflect how costs are expected to be altered after the Plantation has had time to adapt its operations and staff to the reduced acreage. Based on conversations with Plantation personnel, it is expected that it would take between one and two years for such adaptations to take place.

The model was designed to provide fast and accurate estimates of changes in the cost of producing sugar resulting from changes in acreage. It is not an operation research model and does not and was not intended to provide management with information on the best way to adapt operations to changes in acreages. The model does, however, provide management with valuable information - the impact of removing land from cane production on the long term cost of producing sugar. These estimated costs can then be used in evaluating the feasibility of development plans.

A Brief Description of the Model

First, total cultivatable acres of the Plantation are allocated between acres planted to cane and acres planted to seed cane such that the same number of acres would be harvested each year. That is, although the number of acres planted and the number of acres harvested will, in practice, vary slightly from year to year, the model adjusts these figures such that there is no variation. The model implicitly assumes that the current practice of not ratooning cane is maintained.

Next, the costs of planting, growing, harvesting, and grinding cane as well as administrative costs are estimated from the most current performance reports available. Depending on the nature of the cost, it is assigned on either a per acre basis, per ton of cane basis, per ton of sugar basis, or per grinding day basis. Some costs are assumed not to vary with production levels or operating schedules and are treated as fixed costs. For example, most planting costs are assigned on a per acre basis, the majority of the

harvesting costs on a per ton of cane basis, while most overhead costs such as depreciation and employee pension plan costs are treated as fixed.

Once all the cost data have been entered or retrieved from files created in previous runs, the program asks for information concerning the parcel or parcels to be removed. If the data-base-manager is used, only the name of the parcel need be entered, otherwise the user must answer the following questions:

Total Cultivable Acres?

Acres Irrigated?

Total Rent?

Cane Production per Acre Index?

Tons Sugar per Ton Cane Index?

Cultivation Cost per Acre Index?

Irrigation Cost per Acre Index?

Crop Control Cost per Acre Index?

Harvest Cost per Ton Cane Index?

Any other costs(+) or Savings(-) other than normal operating costs on an annual basis that would be incurred due to the removal of these parcels?

The indices are based on the assumption that the Plantation average equals 100, and allow different parcels of land to have differential impacts on costs depending on their production and cost characteristics. For example, if the Plantation-wide average production of cane is 150 tons per acre and the average production on the parcel to be removed is 195 tons per acre or 30 percent higher, the index would be 130. The data-base-manager computes the indices directly without any user input.

The program then computes the change in cost per ton of producing sugar caused by the removal of the parcel(s). It will also compute the change in the number of full-time-equivalent employees resulting from the change in acreage. The cost figures are based on one year's operations and it is implicitly assumed that it is a normal year. That is, the number of acres planted, including seed cane plantings, and harvested are consistent with typical Plantation procedures.

At the option of the user, a detailed breakdown of costs before and after the removal of the parcels can be obtained as well as an estimate of impact on net revenues. There are several other options available to the user. Most deal with either data input or making

multiple runs using the same data. The options are self-explanatory and will appear on the screen as questions when the program is executed. The user also has the option of saving any data inputted in a file for use on subsequent runs.

Attached is a listing of the FORTRAN code (Appendix I) and an example of a possible application of the model (Appendix II). The application assumes that 270 acres will be removed, that the land is currently owned by the Plantation (not rented or leased), that the land is irrigated and that all production and costs associated with the parcel are the same as those typical of the entire Plantation. That is, all indices are set equal to 100. The cost data is taken from the 1981 performance reports and the program was run using this data which was previously stored on a data file.

Based on these sample data, the per ton or per pound cost of producing sugar would increase 0.28 percent or 0.07 cents per pound and after the Plantation had a chance to adjust to the reduced acreage, employment measure in full-time-equivalents (FTE) would decrease 1.41 percent or by about 10 full time employees.

Also attached is an example of the data requirements (Appendix III). The information presented was taken from the 1981 performance reports.

APPENDIX I

```

- RT
010 SUBROUTINE BASELN(UNIT,M1,M2)
020 C S.R. TO EITHER INPUT NEW DATA OR MODIFY EXISTING DATA FILE
030 C ALPHA DATA ON 13
040 C REAL DATA ON 14
050 COMMON T(12,50),X(41),YEAR
060 DOUBLE PRECISION UNIT
070 100 WRITE(6,1)UNIT
080 1 FORMAT('WORKING ON ',A8,' DATA',/
090 2' 1. DO YOU WANT TO MODIFY THE DATA ON FILE?, OR'/
100 2' 2. ENTER NEW DATA? ENTER 1 OR 2')
110 READ(5,*)I
120 IF(I.EQ.1)GOTO200
130 IF(I.NE.2)GOTO100
140 C ENTER NEW DATA
150 C
160 IF(M1.NE.1)GOTO40
170 WRITE(6,3)
180 3 FORMAT('0 DATA IS FOR YEAR?')
190 READ(5,*)YEAR
200 40 DO 50 I=M1,M2
210 WRITE(6,4)(T(J,I),J=1,10)
220 4 FORMAT(2X,10A4,' ?')
230
240 READ(5,*)X(I)
250 50 CONTINUE
260 GOTO1000
270 C
280 C MODIFY EXISTING DATA FILE
290 C
300 200 CONTINUE
310 IY=YEAR
320 210 WRITE(6,5)IY
330 5 FORMAT('0BASELINE DATA FOR ',I4,/)
340 DO 60 I=M1,M2
350 60 WRITE(6,6)I,(T(J,I),J=1,10),X(I)
360 6 FORMAT(1X,I3,1X,10A4,' = ',F12.0)
370 WRITE(6,10)
380 10 FORMAT('0 TO CHANGE - ENTER THE NUMBER ON THE LEFT - SPACE'/
390 2' - THE NEW VALUE - HIT RETURN. REPEAT AS OFTEN AS DESIRED.'/
400 2' ENTER 0 0 TO CONTINUE'/' ENTER 99 0 TO REDISPLAY LISTING')
410 300 CONTINUE
420 READ(5,*)I,XX
430 IF(I.EQ.99)GOTO210
440 IF(I.EQ.0)GOTO1000
450 IF(I.GE.M1.AND.I.LE.M2)GOTO 350
460 WRITE(6,7)
470 7
480 70 FORMAT(' *** DATA ENTRY ERROR - REENTER ***')
490 GOTO 300
500 350 CONTINUE
510 X(I)=XX
520 GOTO 300
530 1000 RETURN
540 END
550 C

```

```

02.70      2'          BEFORE      AFTER      % CHANGE' /
03000      2'          $',F12.0,F11.0,4X,F9.2/
03010      2' CENTS/LB',F8.2,F11.2,5X,F9.2/)
03020 60    CONTINUE
03030      WRITE(6,83)
03040 83    FORMAT('ODO YOU WANT TO DELETE ANY MORE PARCELS? Y OR N')
03050      READ(5,50)ANS
03060      IF(ANS.EQ.YES)GOTO12
03070      WRITE(6,85)
03080 85    FORMAT(' ANOTHER RUN WITH SAME DATA BASE? Y OR N')
03090      READ(5,50)ANS
03100      DO 101 I=1,10
03110 101    W(I)=0.0
03120      IF(ANS.EQ.YES)GOTO10
03130      IF(SAVE.EQ.YES)WRITE(13,*)YEAR,X
03140      STOP
03150      END
03160      SUBROUTINE DBM(W)
03170      DIMENSION W(10)
03180 C      W(1)=CULTIVATABLE ACRES
03190 C      W(2)=IRRIGATED ACRES
03200 C      W(3)=TOTAL RENT PAID LAST YEAR
03210 C      W(4)=CANE PRODUCTION INDEX

03      ) C      W(5)=SUGAR PRODUCTION INDEX
03230 C
03240 C      TEST VALUES
03250 C
03260      W(1)=270
03270      W(2)=270
03280      W(4)=125
03290      W(5)=130
033      ) C
03310 C      DEFAULT VALUES FOR USE BY DBM
03320 C
03330      W(6)=100.
03340      W(7)=100.
03350      W(8)=100.
03360      W(9)=100.
03370      WRITE(5,1)
03380 1      FORMAT(' ENTER THE TOTAL RENT PAID LAST YEAR ON THE PARCEL(S) TO B
03390      BE REMOVED')
03400      READ(5,*)W(3)
03410      RETURN
03420      END
READY
ogoff
+UHCC0191I      20.785/ 1232DIO/ 4488KBS/00:28CON
076      CHARGES $      1.76MU      $      .47CON
30 LOGGED OFF TSD AT 15:00:15 ON MAY 13, 1982
AS. STEP COMPLETION CODE WAS USER      000

```

APPENDIX II

===== af

TEMPNAME ASSUMED AS MEMBERNAME

DO YOU WISH TO USE THE DATA ON FILE? Y OR N

Y
DO YOU WISH TO USE THE DATA-BASE-MANAGER? Y OR N

ANSWER THE FOLLOWING QUESTIONS PERTAINING TO THE PARCELS TO BE REMOVED:
TOTAL CULTIVATABLE ACRES = ?

?
270
ACRES IRRIGATED = ?

?
270
TOTAL RENT = ?

?
CANE PRODUCTION PER ACRE INDEX (100=AVERAGE)

?
100
TONS SUGAR PER TON CANE INDEX (100=AVERAGE)

?
100
CULTIVATION COST PER ACRE INDEX (100=AVERAGE)

?
100
IRRIGATION COST PER ACRE INDEX (100=AVERAGE)

?
100
CROP CONTROL COST PER ACRE INDEX (100=AVERAGE)

?
100
HARVEST COST PER TON CANE INDEX (100=AVERAGE)

ENTER ANY OTHER COSTS(+) OR SAVINGS(-), OTHER THAN NORMAL OPERATING
COSTS ON AN ANNUAL BASIS, THAT WOULD BE INCURRED (SAVED) DUE TO THE
REMOVAL OF THESE PARCELS.

SUMMARY - EFFECT OF LAND REMOVAL

	BEFORE	AFTER	% CHANGE
COST/TON	455.64	456.91	0.28
CENTS/LB	22.78	22.85	0.28
LABOR FTE	731.44	721.11	-1.41

DO YOU WANT TO DELETE ANY MORE PARCELS? Y OR N

OR RUN WITH SAME DATA BASE? Y OR N

READY

APPENDIX III

1 af
TE. NAME ASSUMED AS MEMBERNAME
DO YOU WISH TO USE THE DATA ON FILE? Y OR N

WORKING ON FIELD DATA
1. DO YOU WANT TO MODIFY THE DATA ON FILE?, OR
2. ENTER NEW DATA? ENTER 1 OR 2

1
BASELINE DATA FOR 1981

1 TOTAL CULTIVATED ACRES	=	17133.
2 ACRES HARVESTED	=	8006.
3 IRRIGATED ACREAGE	=	10123.
4 TONS FIELD CANE HARVESTED	=	1180545.
5 EQUIVALENTS TONS 96 SUGAR	=	74733.
6 TOTAL FIELD CONTROLLABLE EXPENSES	=	18119600.
7 TOTAL FIELD DEPR. & AMORTIZATION	=	1118320.
8 CONTROLLABLE EXPENSES - CULTIVATION	=	3667560.
9 CONTROLLABLE EXPENSES - IRRIGATION	=	4500037.
10 CONTROLLABLE EXPENSES - CROP CONTROL	=	4437628.
11 CONTROLLABLE EXPENSES - HARVESTING	=	4118135.
12 TOTAL FIELD LABOR HOURS	=	1063973.
13 LABOR HOURS - CULTIVATION	=	245369.
14 LABOR HOURS - IRRIGATION	=	325931.
15 LABOR HOURS - CROP CONTROL	=	61410.
16 LABOR HOURS - HARVESTING	=	172620.

TO CHANGE - ENTER THE NUMBER ON THE LEFT - SPACE
- THE NEW VALUE - HIT RETURN. REPEAT AS OFTEN AS DESIRED.
ENTER 0 0 TO CONTINUE
ENTER 99 0 TO REDISPLAY LISTING

0 0
WORKING ON FACTORY DATA
1. DO YOU WANT TO MODIFY THE DATA ON FILE?, OR
2. ENTER NEW DATA? ENTER 1 OR 2

1
BASELINE DATA FOR 1981

17 GRINDING DAYS	=	209.
18 TOTAL CONTROLLABLE EXPENSES	=	4723091.
19 TOTAL LABOR HOURS	=	253462.
20 SUPV., CLERICAL & TECH. (1-4-740)	=	377052.
21 OPERATING CLEANUP (1-4-780)	=	1632.
22 MISC. NON-OPERATING (1-4-800)	=	15022.
23 R & M OWN LABOR (1-4-820)	=	258960.
24 R & M MATERIAL (1-6-100)	=	870687.
25 OUTSIDE SERVICE - TOTAL	=	524065.
26 OTHER CHARGES - TOTAL	=	-623402.
27 EXPENSE RECOVERY (1-7-945)	=	-1169516.
28 TAXES - TOTAL	=	217471.

TO CHANGE - ENTER THE NUMBER ON THE LEFT - SPACE
THE NEW VALUE - HIT RETURN. REPEAT AS OFTEN AS DESIRED.
ENTER 0 0 TO CONTINUE
ENTER 99 0 TO REDISPLAY LISTING

WORKING ON ADMIN. DATA

1. DO YOU WANT TO MODIFY THE DATA ON FILE?, OR
2. ENTER NEW DATA? ENTER 1 OR 2

?

1

BASELINE DATA FOR 1981

29 TOTAL CONTROLLABLE EXPENSES	=	8737654.
30 TOTAL LABOR HOURS	=	145080.
31 TOTAL PAYROLL EXPENSES	=	2748953.
32 R & M MATERIAL (1-6-100)	=	28183.
33 PENSIONS JH PLANS (1-7-300)	=	23654.
34 ANNUITIES-GRP NBU (1-7-360)	=	207843.
35 ANNUITIES-GRP BU (1-7-380)	=	627039.
36 RENTAL - LAND (1-7-420)	=	250361.
37 RENTAL LAND - PERCENT (1-7-430)	=	329632.
38 RENTAL BUILDING - FIXED (1-7-470)	=	500.
39 RENT - OTHER (1-7-480)	=	9160.
40 DEPR. AND AMOR. (1-7-820)	=	38692.
41 ALLOCATED CORPORATE OVERHEAD	=	1976741.

TO CHANGE - ENTER THE NUMBER ON THE LEFT - SPACE

- THE NEW VALUE - HIT RETURN. REPEAT AS OFTEN AS DESIRED.

ENTER 0 0 TO CONTINUE

ENTER 99 0 TO REDISPLAY LISTING

?

0 0

DO YOU WISH TO SAVE THE NEW OR MODIFIED DATA

Y OR N

n

EXHIBIT 2

PRELIMINARY
ENGINEERING REPORT
FOR PROPOSED
LIHUE/PUHI PROJECT DISTRICT PLAN

Prepared for Grove Farm Properties, Inc.

Prepared by Belt, Collins and Associates

April, 1986

INTRODUCTION

This engineering report was done in conjunction with Grove Farm Properties' preparation of a Chapter 343, HRS, Environmental Impact State (EIS) which was required as part of their General Plan change application for about 464 acres in the Lihue and Puhi areas of Kauai. The analysis and findings contained herein are at a general concept level and reflect the preliminary nature of Grove Farm Properties' proposal at this initial stage of the planning process.

In this report, Grove Farm Properties, Inc., is referred to as "Grove Farm" and the 464 acres of land which is the subject of the General Plan change application, this EIS and this report is referred to as the "subject property." Grove Farm's proposed Lihue/Puhi Project District will also be referred to as "project district."

BACKGROUND

Property Location and Description

The subject property is located within Grove Farm's proposed Lihue/Puhi Project District. This project district encompasses about 892.5 acres in the Lihue and Puhi areas of Kauai and is bordered on the east by Nawiliwili Road and on the north by Kaumualii Highway.

The subject property is about 464 acres in size and accounts for about half of the Lihue/Puhi Project District. The subject property is generally in the area south and west of Nuhou Road and in the area south of the Ulu Ko residential subdivision. The subject property is identified as portions of TMK 3-3-02:01 and 3-3-03:01.

Refer to Figure 1 which shows the location of the project district and the subject property.

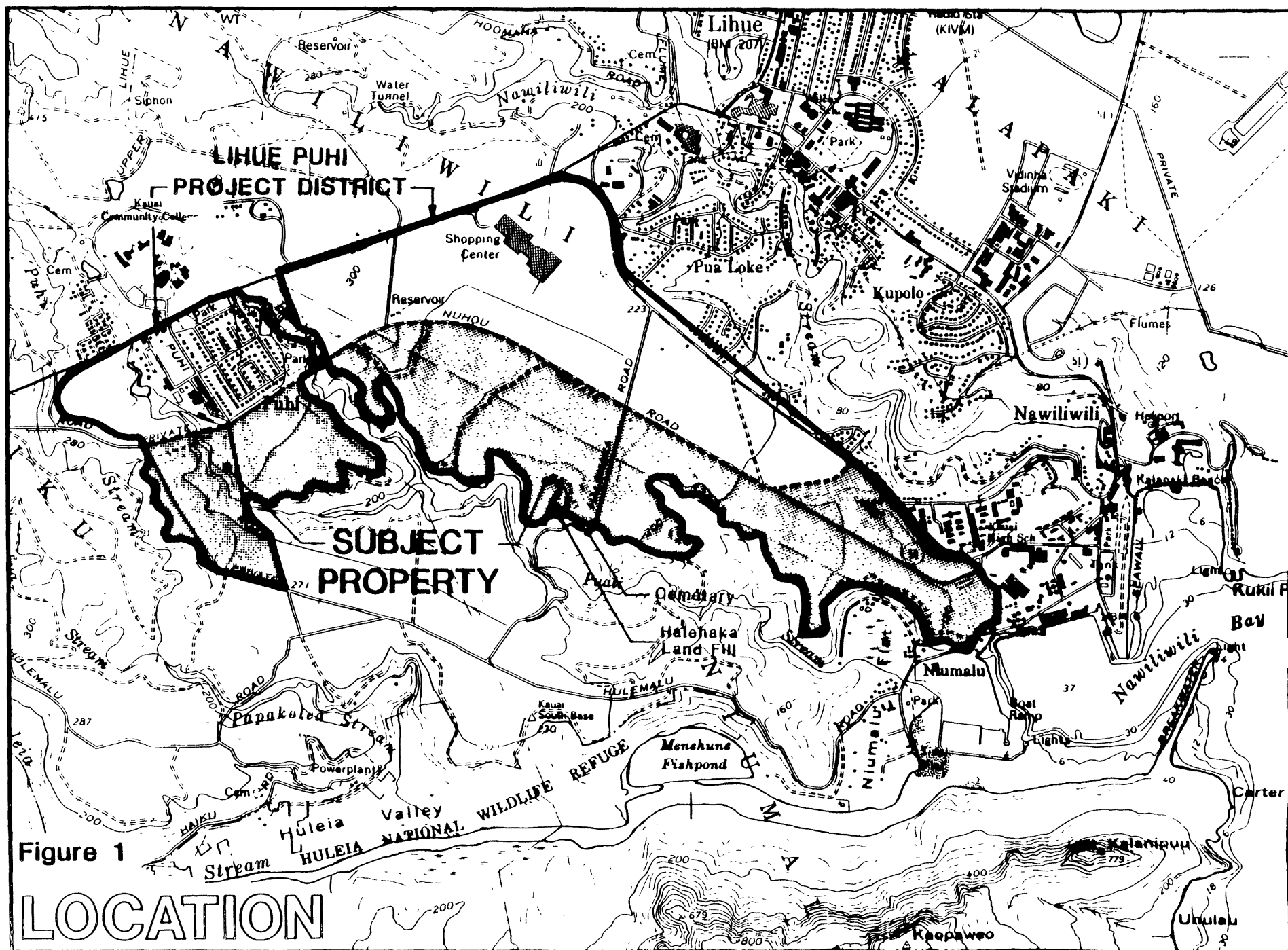
Existing Land Use

Much of the Lihue/Puhi Project District area, including the subject property, is currently in agricultural use. Existing uses on the Lihue side of the project district include the Kukui Grove Shopping Center, the Kukui Grove Commercial Village, the Ulu Ko residential subdivision. Existing uses on the Puhi side include the commercial uses along Kaumualii Highway, the light industrial area in back of the Puhi commercial area, and the Puhi and Komohana residential subdivisions.

In Puhi, the major nearby existing use is the Kauai Community College. In Lihue, major nearby existing uses include Nawiliwili Harbor, Lihue Airport, and Lihue town center.

Proposed Action

Grove Farm wishes to have all of the lands within its Lihue/Puhi Project District



included in the General Plan as "Urban Mixed Use" area. The subject property is presently designated in the General Plan as "Agriculture." As a result, Grove Farm has requested in an application to the County that the 464 acre subject property be redesignated from General Plan "Agriculture" to General Plan "Urban Mixed Use".

As part of this General Plan change application, the County has required that the applicant prepare a Chapter 343, HRS, Environmental Impact Statement (EIS) to assess the probable effects of its proposed action. This engineering report, as stated earlier, was prepared for that required EIS.

Project Description

The Lihue/Puhi Project District Plan proposes urban activities on about 892.5 acres owned by Grove Farm. About 225.5 acres are presently used for commercial (Kukui Grove Center and Commercial Village, and Puhi neighborhood commercial area), industrial (Puhi Light Industrial area), residential subdivisions (Komohana, Puhi and Ulu Ko subdivisions) and parks (Puhi community parks). About 203 acres are within the General Plan "Urban Mixed Use" district and are proposed by Grove Farm for commercial, multi-family, school, park, and golf course activities. The remaining 464 acres, which are the subject of Grove Farm's petition, are not within the General Plan, but are proposed by Grove Farm Properties for single family residential, light industrial and golf course activities. See Figure 2 and Table 1 for a further description of the proposed plan.

Development Phasing

Grove Farm Properties has projected that the period for developing the remainder of their Lihue/Puhi Project District Plan would begin in 1988-1990 and end sometime between 1990-1998. For the purposes of this engineering analysis, the total development, including the area already in the General Plan "Urban Mixed use" district, was broken down into four phases: 1986-1990, 1991-1995, 1996-2000, and 2000+. Refer to Table 2 for a breakdown of the project district by development phases.

ROADS

Overview

The proposal is expected to cause additional traffic flow on the existing roadways, which presently operates with slight delays during the morning and evening peak periods. This section analyzes and summarizes the potential impacts of traffic generated by the proposed development on the existing roadways.

Existing Conditions

Kaunualii Highway is a State facility which connects Lihue with Waimea. It has two 12 foot lanes with 4 foot paved and 10 foot unpaved shoulders on each side.

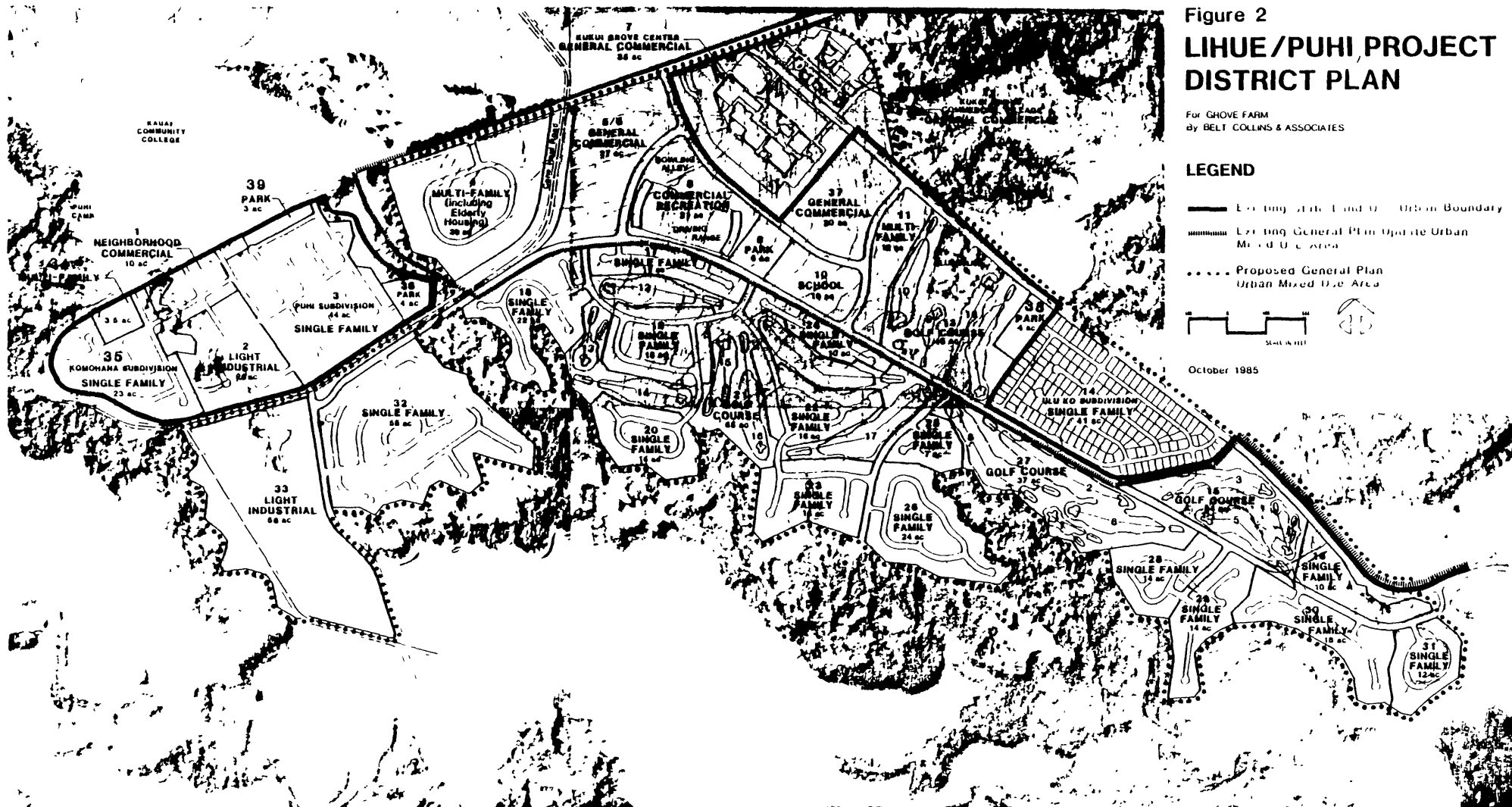


Table 1
Land Use Summary

<u>Land Use</u>	<u>Acreage</u>	<u>No. of Units</u>	<u>Floor Area(sf)</u>
<u>Existing Uses</u>			
<u>within General Plan Urban Mixed Use Area</u>			
Commercial	61	0	451,000
Industrial	28	0	30,000
Multi-Family Residential ¹	3.5	35	0
Single Family Residential	108	415	0
Park and Public Facilities	7	0	0
Roads and Buffer	<u>18</u>	<u>0</u>	<u>0</u>
Subtotal	225.5	450	481,000
<u>Proposed Uses</u>			
<u>within General Plan Urban Mixed Use Area</u>			
Commercial	68	0	455,000
Multi-Family Residential	51	510	0
Golf Course	46	0	0
Parks and Public Facilities	20	0	0
Roads and Buffer	<u>18</u>	<u>0</u>	<u>0</u>
Subtotal	203	510	455,000
<u>Proposed Uses</u>			
<u>within Requested New General Plan Mixed Use Area</u>			
Industrial	56	0	488,000
Single Family Residential	262	1,158	0
Golf Course	126	0	0
Roads and Buffers	<u>20</u>	<u>0</u>	<u>0</u>
Subtotal	464	1,158	488,000
 TOTAL	 892.5	 2,118	 1,424,000
	Acres	Units	Square Feet

¹Undeveloped multi-family parcel. The number of units are estimated.

Table 2. Preliminary Development Phasing

PARCEL	PROPOSED LAND USE	ACREAGE	GFA	UNITS	EXISTING 1986	PHASE 1 1986-1990	PHASE 2 1991-1995	PHASE 3 1996-2000	FUTURE PHASE(S)
5/6	General Commercial	27.0	235,224		0	235,224	0	0	0
7	Kukui Grove Center (Estimated Existing)	35.0	311,000		311,000	0	0	0	0
8	Commercial Recreation	21.0	45,738		0	45,738	0	0	0
12	Kukui Grove Commercial Village (Est.)	16.0	71,000		71,000	0	0	0	0
1	Neighborhood Commercial (Est. Existing)	10.0	69,000		69,000	0	0	0	0
37	General Commercial	20.0	174,240		0	0	174,240	0	0
	SUBTOTAL	129.0	906,202		451,000	280,962	174,240	0	0
2	Light Industrial	28.0	30,000		30,000	0	0	0	0
33	Light Industrial	56.0	487,872		0	487,872	0	0	0
	SUBTOTAL	84.0	517,872		30,000	487,872	0	0	0
9	Park	6.0			0	6	0	0	0
36	Park	4.0			4	0	0	0	0
38	Park	4.0			0	4	0	0	0
39	Park	3.0			3	0	0	0	0
10	School	10.0			0	0	0	0	10
	SUBTOTAL	27.0			7	10	0	0	10
13	Golf Course	46.0			0	0	46	0	0
15	Golf Course	24.0			0	0	24	0	0
21	Golf Course	65.0			0	0	65	0	0
27	Golf Course	37.0			0	0	37	0	0
	SUBTOTAL	172.0			0	0	172	0	0
4	Multi-Family (including Elderly)	39.0		390	0	0	0	130	260
34	Multi-Family (Puh))	3.5		35	0	35	0	0	0
11	Multi-Family	12.0		120	0	0	120	0	0
	SUBTOTAL	54.5		545	0	35	120	130	260
14	Single Family	41.0		164	164	0	0	0	0
16	Single Family	10.0		40	0	40	0	0	0
17	Single Family	11.0		44	0	0	0	44	0
18	Single Family	22.0		88	0	0	0	88	0
19	Single Family	18.0		72	0	0	0	72	0
20	Single Family	15.0		60	0	0	0	60	0
22	Single Family	16.0		64	0	0	0	64	0
23	Single Family	16.0		64	0	0	0	64	0
24	Single Family	10.0		40	0	0	0	40	0

Table 2. Preliminary Development Phasing

[illegible]

Intersections to Kaumualii Highway occur with Nawiliwili Road, Puhi Road, at the Puhi light industrial site, at Komohana and Puhi residential subdivisions and at the Kukui Grove Shopping Center. The intersections of Kaumualii Highway with Puhi Road and the Kukui Grove Shopping Center have separate left turn lanes and acceleration and deceleration lanes to Kaumualii Highway.

Nawiliwili Road is a two lane road which connects the harbor area with Kaumualii Highway. It has two 12 foot lanes with 4 foot stabilized and 10 foot unpaved shoulders on each side. Intersections to Nawiliwili Road occur at Ulu Ko Subdivision, Haleko Road, Halehaka Road, Lala Road, Waapa Road and Kaumualii Highway. The Kukui Grove Center and Commercial Village also have access to Nawiliwili Road. The Nawiliwili Road intersection with Kaumualii Highway is a "T" intersection.

Traffic Volumes and Highway Operations

Traffic volumes on Kaumualii Highway and Nawiliwili Road were counted by the State of Hawaii's Highways Division from 1963 to 1985. These traffic counts are shown in Table 3.

The State data indicates that traffic on Kaumualii Highway increased by over 300 percent from 1963 to 1985. Traffic on Nawiliwili Road increased by approximately 250 percent from 1963 to 1983.

Linear regression equations were calculated from this historical data to depict the growth of traffic on Kaumualii Highway and Nawiliwili Road. The equation calculated for Kaumualii Highway was, $Y = 2998 + 608X$ and for Nawiliwili Road was $Y = 1328 + 166X$, where Y is the traffic in vehicles per day, 2998 and 1328 are the Y intercept and X is the number of years from 1963.

The peak traffic hour was also determined for Kaumualii Highway and Nawiliwili Road using the data from the Highways Division. The data indicates that peak hours occur from 7:00 to 8:00 in the morning and 4:00 to 5:00 in the evening. The AM peak hour is approximately 9 percent of the daily total and the PM peak hour is approximately 10 percent of the daily total. Refer to Table 4.

The Highways Division data also classified the vehicle types for the peak hours on Kaumualii Highway. The vehicle type classification for the peak hour are shown in Table 5. The data indicates that most traffic is composed of passenger cars and single unit trucks.

The intersection of Kaumualii Highway and Nawiliwili Road currently does not have separate turning lanes and is congested during the peak hours. Vehicles with desires to turn left onto Kaumualii Highway from Nawiliwili Road are experiencing long delays during peak hours.

Table 3
Average Daily Traffic Counts at Select Stations,
in Lihue/Puhi, 1963-1985

<u>Year</u>	<u>Station C-3-C¹</u>	<u>Station C-3-D²</u>
1963	3,975	1,354
1964	4,446	1,926
1965	4,971	1,970
1966	5,285	1,800
1967	5,838	1,766
1968	6,487	2,418
1969	6,978	2,337
1970	7,433	2,071
1971	8,074	2,317
1972	8,851	3,509
1973	9,278	3,756
1974	na	na
1975	11,021	4,670
1976	na	na
1977	13,814	3,767
1978	na	na
1979	13,986	3,969
1980	na	na
1981	14,977	4,021
1983	14,414	4,690
1985	19,974	na

Source: Hawaii, State of, Department of Transportation, Highways Division (April, 1986).

Table 4
Peak hour traffic data Kaumualii Highway
between Lihue and Puhi

<u>Year</u>	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>	
	<u>NE BND</u>	<u>SW BND</u>	<u>NE BND</u>	<u>SW BND</u>
	<u>Lihue</u>	<u>Waimea</u>	<u>Lihue</u>	<u>Waimea</u>
June, 1985	899	404	537	823
April, 1983	443	812	642	662
February, 1981	269	470	639	798

Source: Hawaii, State of, Department of Transportation, Highways Division (April, 1986).

Table 5
Vehicle Types on Kaumualii Highway
During Peak Hours

Vehicle Type	Percentage of Vehicle Type	
	<u>AM Peak Hour</u> <u>7:00-8:00</u>	<u>PM Peak Hour</u> <u>4:00-5:00</u>
Passenger Cars	71.5	76.3
Buses	1.0	0.5
Single Unit Trucks	25.8	22.9
Semi-Trailers	0.8	0.2
Combination Involving Full Trailers	0.9	0.1
Total	100.0	100.0

Source: Hawaii, State of, Department of Transportation, Highways Division (April, 1986).

Projected Conditions

The intersection of Kaumualii Highway and Puhi is not congested currently. The left turn movement from Puhi Road to Kaumualii Highway is experiencing short delays during peak hours.

Future Conditions

Proposed Roadway System

The Lihue/Puhi Project District Plan proposes additional new single family lots, multi-family housing, light industrial, commercial and golf course. These new uses would be served by the existing roadway network plus a system of roads that will be developed as part of the project district.

The roadway system within the subject property will consist of collector, minor and dead end streets. Nuhou Street will be the collector street for the project and will connect Nawiliwili Road west of Waapa Road to Kaumualii Highway at Puhi Road. It is intended for internal use to keep traffic from the new development off of existing Kaumualii Highway and Nawiliwili Road. Refer to Figure 3.

Nawiliwili Road is expected to be realigned to run between the Kukui Grove Center and the Kukui Grove Commercial Village by the Highways Division. With the realignment, the Highways Division expects to construct turning lanes and signalize the intersection with Kaumualii Highway.

Trip Generation

Estimates of vehicular trips which are expected to enter or leave the project site were calculated for the peak hours for the existing condition and the years 1990, 1995 and 2000. Traffic generated by the project were estimated with rates published in "trip generation" by the Institute of Transportation Engineers, 1982. Traffic generation rates and peak hour traffic volumes are shown in Table 6 and 7.

Trip Distribution

The trips generated during peak hours were distributed based on the current distribution of trips. Presently, on Kaumualii Highway, during the PM peak hour, 45% of the trips are heading in the Lihue Direction and 55% in the opposite direction.

Traffic Impact Analysis

The traffic impacts of the proposed project were analyzed for the years 1990, 1995, 2000 with and without the project. The intersections were analyzed using the methods outlined in "Highway Capacity Manual, Special Report 209" Transportation Research Board, 1985. Capacity analyses were made for the

Table 6
Trip Generation Rates

<u>Land Use</u>	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>	
	<u>Enter</u>	<u>Exit</u>	<u>Enter</u>	<u>Exit</u>
Neighborhood Commercial	1.10	1.00	1.40	1.70
Shopping Center	1.00	0.60	1.70	1.80
Single Family Residential	0.10	0.20	0.30	0.10
Multi-Family Residential	0.03	0.19	0.21	0.08
Light Industrial	0.77	0.15	0.25	0.56
Golf Course	0.20	0.05	0.05	0.20

Note: Generation rates are trips/unit except for golf course which is trip/acre.

Source: Institute of Transportation Engineers, Highway Capacity Manual, Special Report 209 (1982).

Table 7
Estimated Volumes in Vehicles per Hour

<u>Development Year</u>	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>	
	<u>Enter</u>	<u>Exit</u>	<u>Enter</u>	<u>Exit</u>
Existing	530	410	860	860
1990	650	500	1370	1440
1995	830	680	1860	1840
2000	880	810	2050	1910

Source: Belt, Collins and Associates (April, 1986).

intersection of Kaumualii Highway and Puhi Road, and Kaumualii Highway and Nawiliwili Road.

Analyses were made for the following scenarios:

1. Nawiliwili Road and Kaumualii Highway with and without the project for the years, 1990, 1995 and 2000.
2. Intersection of Kaumualii Highway and Puhi Road and Kaumualii Highway and Nawiliwili Road with and without the project for the years, 1990, 1995, and 2000.

Scenario One--Nawiliwili Road and Kaumualii Highway: Nawiliwili Road is a two lane State highway with two 12 ft. lanes and two 14 ft. shoulders. The State Highways Division does not have plans to improve the roadway except for the realignment at the Kukui Grove Shopping Center. The realigned roadway will intersect Kaumualii Highway with a "T" intersection. The capacity of the roadway is 2,600 vehicles per hour. The service level for the roadway with and without the project for the years, 1990, 1995, and 2000 are listed in Table 8.

The level of service for Nawiliwili Road and Kaumualii Highway would decrease approximately the same for the with and the without project scenario. During the PM peak hours, long delays are expected along Kaumualii Highway and average to short delays are expected on Nawiliwili Road.

The intersection of Kaumualii Highway and Nawiliwili Road will be relocated when the Highways Division realigns Nawiliwili Road. The intersection is planned to be a "T" intersection with left turn lanes and acceleration and deceleration on Kaumualii Highway. The intersection is also planned to be a signalized. With or without the project, vehicles attempting to turn left from Nawiliwili Road to Kaumualii Highway will experience long delays without the traffic signal. During the PM peak hour, vehicles wishing to turn left from Nawiliwili Road to Kaumualii Highway are experiencing long delays.

Scenario 2--Puhi Road and Kaumualii Highway: Puhi Road is a two lane County road that forms a four-way intersection with Kaumualii Highway. The entrance to the Kauai Community College is the fourth leg of the intersection. The intersection has left turn lanes on Kaumualii Highway. Currently this intersection is not congested. Vehicles wishing to turn left onto Kaumualii Highway are experiencing some difficulty. The Highways Division does not have any plans to signalize this intersection at this time. With or without the project, the delay for vehicles that want to turn left onto Kaumualii Highway will increase in time because of the increase in traffic on Kaumualii Highway. For the with project scenario, delays would be greater than for the without project because more traffic will be using Puhi Road. The left turn movement will decrease from level of service C to F during the PM peak hours for the with project scenario.

Table 8
PM Peak Hour Estimated Trips
and Capacity Estimate

NAWILIWILI ROAD

	Without Project		With Project	
<u>Year</u>	<u>Projected Traffic</u>	<u>LOS</u> ¹	<u>Projected Traffic</u>	<u>LOS</u> ¹
1990	470	B	460	B
1995	530	B	970	B
2000	600	B	1070	C

KAUMUALII HIGHWAY

	Without Project		With Project	
<u>Year</u>	<u>Projected Traffic</u>	<u>LOS</u> ¹	<u>Projected Traffic</u>	<u>LOS</u> ¹
1990	1730	D	1730	D
1995	1970	E	2050	E
2000	2210	E	2300	E

Source: Belt, Collins and Associates (April, 1986).

¹LOS is abbreviation for Level of Service.

Mitigation Measures

Traffic volumes in the Lihue Area has been increasing because of development on Kauai and is expected to increase with or without the project. The project will cause further increase in peak hour traffic.

The ability of the roadway network is constrained by the capacity of the roadway and the intersections. An increase in the peak hour traffic will result in increases in the length of the peak hour. In the future, the State Highways Division will need to improve Kaumualii Highway from Lihue to Puhi to accomodate the increased traffic whether the project is built or not.

The realignment of Nawiliwili Road at the Kukui Grove Shopping Center and the construction of a signalized intersection with Kaumualii Highway is needed in the near future to accommodate the increased traffic.

The signalization of the intersection of Puhi Road and Kaumualii Highway will be needed in the near future to accommodate the increased traffic on Kaumualii Highway and Puhi Road/Kauai Community College entrance.

Estimated Order-of-Magnitude Cost

The order-of-magnitude cost for onsite roadway improvements is estimated at \$12,628,000. This estimate includes engineering and contingencies, but does not include the intersection improvements of Kaumualii Highway with the Nawiliwili Road extension and with Puhi Road. Refer to Table 9 for cost estimate details.

DRAINAGE

Existing Drainage System

Runoff from the project district in the area of the shopping center and along Nawiliwili Road probably flows into Nawiliwili Stream basin. Some runoff from the subject property in Puhi probably flows into Puhi Stream and then into Huleia Stream. Most of the runoff, however, from the subject property flows into the Puali Stream basin. This basin which encompasses about 1,422 acres and includes Puali And Halehaka Streams. The Halehaka Stream merges with Puali Stream about one and one-half mile from the coast. Puali Stream then continues to flow south to Niumalu and emerges at Nawiliwili Harbor. The subject property encompasses about 33% percent of the Puali Stream basin. Refer to Figure 4 which identifies the subject area and the Puali Stream basin.

The present agricultural use on the subject property and project district provides a permeable surface to reduce the runoff into the Puali Stream basin. The present surface runoff flow rate is estimated at 4,435 cfs based upon a 100 year storm, with a 20 minute time of concentration for the entire basin. Rainfall coefficient factors were 0.33 for agricultural use, 0.31 for parks, schools and golf courses, 0.88 for

TABLE 9
ROADWAY COST SUMMARY

CONSTRUCTION COST ESTIMATE			DATE PREPARED:		02-May -1986						
			SHEET		1 OF 1						
PROJECT :GROVE FARM EIS											
LOCATION :LIHUE, KAUAI, HAWAII											
A/E FIRM :BELT, COLLINS & ASSOCIATES											
DRAWING :ROADWAY - WITHIN THE GENERAL PLAN AREA											
			PHASE 1		PHASE 2		PHASE 3		FUTURE PHASES		
ITEM DESCRIPTION	UNIT MEAS.	UNIT COST	NO. UNITS	ITEM COST	NO. UNITS	ITEM COST	NO. UNITS	ITEM COST	NO. UNITS	ITEM COST	TOTAL COST
UNCLASSIFIED EARTHWORK	C.Y.	25	21689	542222	10667	266667	9084	227111	0	0	1036000
COLLECTOR ROADWAY	L.F.	130	4890	634400	2400	312000	0	0	0	0	946400
MINOR ROADWAY	L.F.	100	0	0	0	0	2920	292000	0	0	292000
				=====	=====		=====		=====		=====
TOTAL ENGINEERING ESTIMATE				1176622	578667		519111		0		2274400
20% CONTINGENCY AND ENGINEERING											454880
											=====
TOTAL WITHIN THE GENERAL PLAN AREA											2729280

TABLE 9 CONTINUED
ROADWAY COST SUMMARY

CONSTRUCTION COST ESTIMATE			DATE PREPARED:		02-May -1986						
			SHEET		1 OF 1						
PROJECT :GROVE FARM EIS											
LOCATION :LIHUE, KAUAI, HAWAII											
PA/E FIRM :BELT, COLLINS & ASSOCIATES											
DRAWING :ROADWAY - IN ADDITION TO THE GENERAL PLAN AREA											

			PHASE 1		PHASE 2		PHASE 3		FUTURE PHASES		
ITEM DESCRIPTION	UNIT	UNIT	NO.	ITEM	NO.	ITEM	NO.	ITEM	NO.	ITEM	TOTAL
	MEAS.	COST	UNITS	COST	UNITS	COST	UNITS	COST	UNITS	COST	COST

UNCLASSIFIED EARTHWORK	C.Y.	25	30027	750667	71200	1780000	86480	2162000	0	0	4692667
COLLECTOR ROADWAY	L.F.	130	4320	561600	6360	826800	5080	660400	0	0	2048800
MINOR ROADWAY	L.F.	100	3480	348000	13800	1380000	20540	2054000	0	0	3782000

TOTAL ENGINEERING ESTIMATE				1660267	3986800		4876400		0		10523467
20% CONTINGENCY AND ENGINEERING											2104693

TOTAL IN ADDITION TO THE GENERAL PLAN AREA											12628160

GRAND TOTAL											15357440

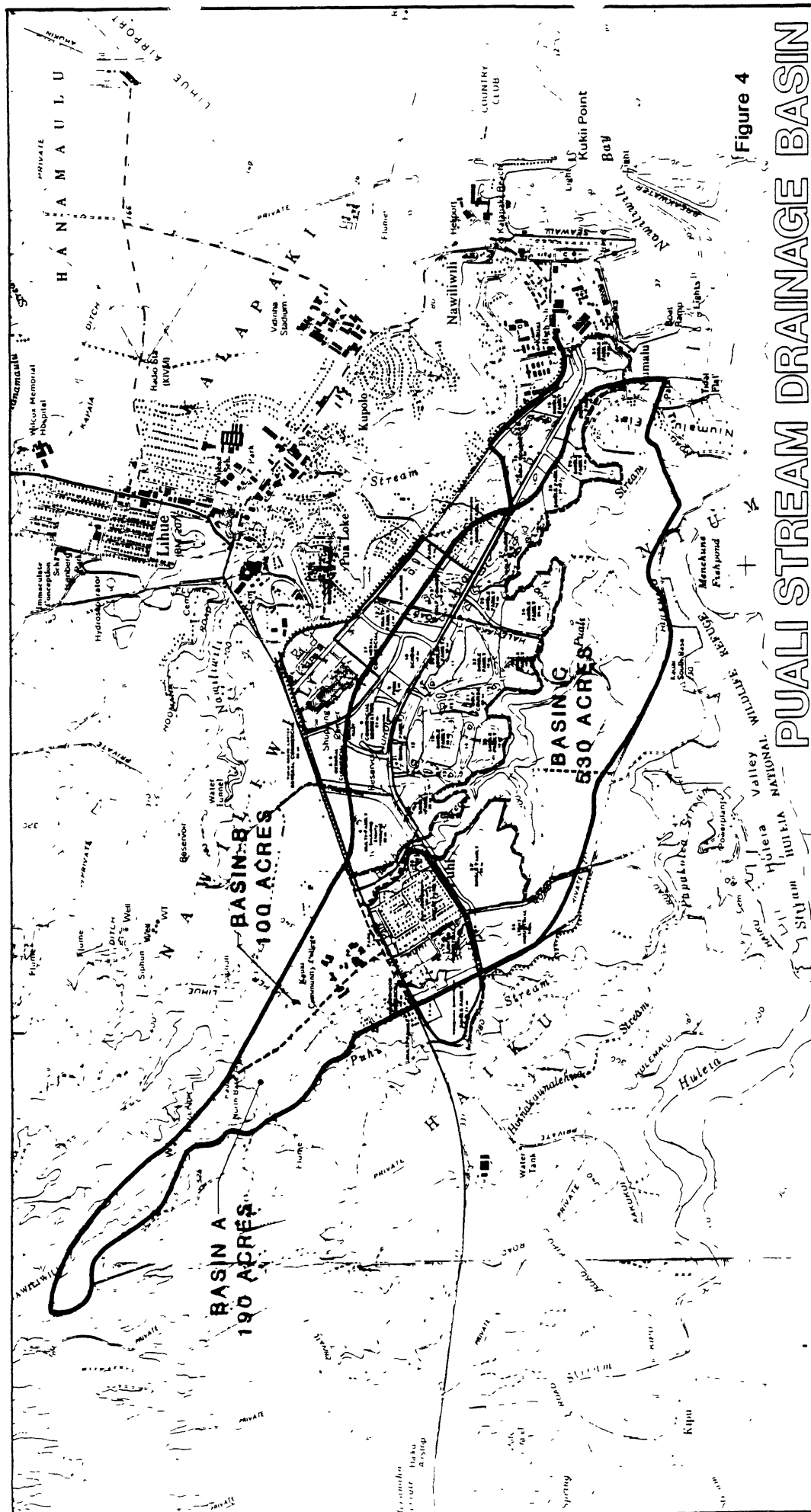


Figure 4

PUALI STREAM DRAINAGE BASIN

Figure 6

WATER

LIHUE/PUHI PROJECT DISTRICT PLAN

For GROVE FARM
By BELT COLLINS & ASSOCIATES

----- Existing Water Line
———— Proposed Water Line



October 1985

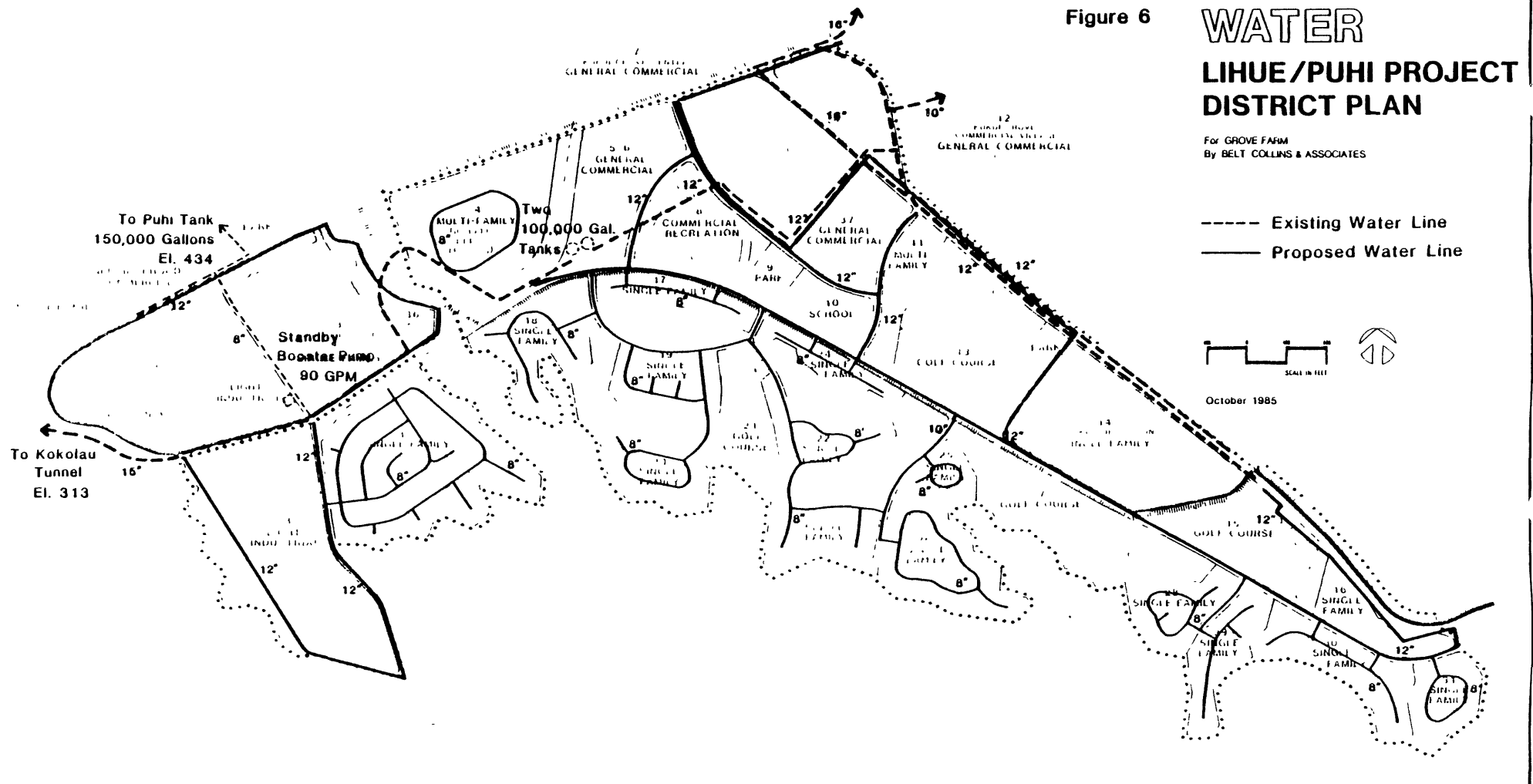


TABLE 13
WATER COST SUMMARY

CONSTRUCTION COST ESTIMATE			DATE PREPARED:		02-May -1986								
			SHEET		1		OF		1				
PROJECT : GROVE FARM EIS													
LOCATION : LIHUE, KAUAI, HAW ..													
A/E FIRM : BELT, COLLINS & ASSOCIATES													
DRAWING : WATER - WITHIN THE GENERAL PLAN AREA													
</													

commercial , and 0.70 for residential. Refer to Table 10 for more details.

Proposed Drainage System

Basis of Conceptual Drainage Design

A uniform flow generation in terms of cfs/acre was used in the analysis. Following the Storm Drainage Standards of the County of Kauai Department of Public Works, dated February 1972, the Rational Method was employed.

The following parameters were assumed:

C = Runoff Coefficient

<u>Watershed</u>	<u>Agriculture</u>	<u>Commercial</u>	<u>Residential</u>	<u>Parks, Golf Course</u>
Infiltration	0.07	0.20	0.14	0.07
Relief	0.08	0.06	0.06	0.06
Vegetation Cover	0.03	0.07	0.05	0.03
Development	<u>0.15</u>	<u>0.55</u>	<u>0.45</u>	<u>0.15</u>
	0.33	0.88	0.70	0.31

$I = \text{Rainfall Intensity} = 1\text{-Hour Rainfall} \times \text{Rainfall Intensity Factor}$

<u>Storm Duration</u>	<u>1-Hour Rainfall</u>	<u>Rainfall Intensity for Tc</u>	
		<u>@ 10 min.</u>	<u>@ 20 min.</u>
10-Year	3.0	8.4	5.7
50-Year	4.3	12.0	8.2
100-Year	4.5	12.6	8.6

Note: Tc is abbreviation for Time of Concentration.

$Q/A = \text{Flow per unit area (cfs/acre)} = C \times I$
where A = Area in acres

<u>Year</u>	<u>Tc</u>	<u>Agriculture</u>	<u>Commercial</u>	<u>Residential</u>	<u>Parks, Golf Course</u>
10	10	2.77	7.39	5.88	2.60
10	20	1.88	5.02	3.99	1.77
50	10	3.96	10.56	8.40	3.72
50	20	2.71	7.22	5.74	2.54
100	10	4.16	11.09	8.82	3.91
100	20	2.84	7.57	6.02	2.67

TABLE 10

DRAINAGE SUMMARY
GROVE FARM

DATE: 05/02/86

AREA	AREA (ACRES)	PRESENT FLOW RATE (CFS/ACRE)	PRESENT FLOW RATE (CFS)	PROPOSED FLOW RATE (CFS/ACRE)	PROPOSED FLOW RATE (CFS)	% INCREASE
AREAS WITHIN THE GENERAL PLAN						
EXISTING						
- BASIN A	190	2.84	540	2.84	540	0%
- BASIN B	100	2.84	284	2.84	284	0%
- BASIN C	530	2.84	1505	2.84	1505	0%
7 KUKUI GROVE CENTER	3	7.57	23	7.57	23	0%
12 KUKUI GROVE COMMERCIAL VILLAGE						
1 NEIGHBORHOOD COMMERCIAL	10	7.57	76	7.57	76	0%
2 LIGHT INDUSTRIAL	28	7.57	212	7.57	212	0%
14 ULU KO SUBDIVISION	14	6.02	84	6.02	84	0%
3 PUHI SUBDIVISION	44	6.02	265	6.02	265	0%
35 KOMOHANA SUBDIVISION	6	6.02	36	6.02	36	0%
36 PARK	4	2.67	11	2.67	11	0%
39 PARK	3	2.67	8	2.67	8	0%
SUBTOTAL EXISTING	932		3043		3043	0%
PHASE 1						
- OFFSITE						
5/6 GENERAL COMMERCIAL	13	2.84	37	7.57	98	167%
8 COMMERCIAL RECREATION	18	2.84	51	7.57	136	167%
9 PARK	6	2.84	17	2.67	16	-6%
38 PARK	1	2.84	3	2.67	3	-6%
34 MULTI-FAMILY						
SUBTOTAL PHASE 1	38		108		253	135%
SUBTOTAL EXISTING AND PHASE 1	970		3151		3297	5%
PHASE 2						
- OFFSITE						
37 GENERAL COMMERCIAL	6	2.84	17	7.57	45	167%
13 GOLF COURSE	25	2.84	71	2.67	67	-6%
11 MULTI-FAMILY	6	2.84	17	6.02	36	112%
SUBTOTAL PHASE 2	37		105		148	41%
SUBTOTAL EXISTING AND PHASES 1 AND 2	1007		3256		3445	6%
PHASE 3						
- OFFSITE						
4 MULTI-FAMILY	30	2.84	85	6.02	181	112%
SUBTOTAL PHASE 3	30		85		181	112%
SUBTOTAL EXISTING AND PHASES 1, 2 AND 3	1037		3341		3625	9%
FUTURE PHASES						
- OFFSITE						

10	SCHOOL	10	2.84	28	2.67	27	-6%
SUBTOTAL FUTURE PHASES		10		28		27	-6%
TOTAL AREAS WITHIN THE GENERAL PLAN		1047		3370		3652	8%
AREAS IN ADDITION TO THE GENERAL PLAN							
PHASE 1							
-	OFFSITE						
33	LIGHT INDUSTRIAL	56	2.84	159	7.57	424	167%
16	SINGLE-FAMILY						
30	SINGLE-FAMILY	9	2.84	26	6.02	54	112%
31	SINGLE-FAMILY						
SUBTOTAL PHASE 1		65		185		478	159%
PHASE 2							
-	OFFSITE						
15	GOLF COURSE						
21	GOLF COURSE	65	2.84	185	2.67	174	-6%
27	GOLF COURSE	32	2.84	91	2.67	85	-6%
25	SINGLE-FAMILY	7	2.84	20	6.02	42	112%
28	SINGLE-FAMILY	10	2.84	28	6.02	60	112%
29	SINGLE-FAMILY	9	2.84	26	6.02	54	112%
32	SINGLE-FAMILY	55	2.84	156	6.02	331	112%
SUBTOTAL PHASE 2		178		506		747	48%
SUBTOTAL EXISTING AND PHASES 1 AND 2		243		690		1225	77%
PHASE 3							
-	OFFSITE						
17	SINGLE-FAMILY	11	2.84	31	6.02	66	112%
18	SINGLE-FAMILY	22	2.84	62	6.02	132	112%
19	SINGLE-FAMILY	18	2.84	51	6.02	108	112%
20	SINGLE-FAMILY	15	2.84	43	6.02	90	112%
22	SINGLE-FAMILY	16	2.84	45	6.02	96	112%
23	SINGLE-FAMILY	16	2.84	45	6.02	96	112%
24	SINGLE-FAMILY	10	2.84	28	6.02	60	112%
26	SINGLE-FAMILY	24	2.84	68	6.02	144	112%
SUBTOTAL PHASE 3		132		375		795	112%
TOTAL AREAS IN ADDITION TO THE GENERAL PLAN		375		1065		2019	90%
GRAND TOTAL		1422		4435		5671	28%

NOTE: FLOWS BASED ON 100-YEAR STORM, WITH TIME OF CONCENTRATION = 20 MINUTES
FOR ENTIRE BASIN. RAINFALL COEFFICIENT FACTORS = .33 FOR AGRICULTURAL BASINS,
.31 FOR PARKS, SCHOOLS AND GOLF COURSES, .88 FOR COMMERCIAL, AND .70 FOR RESIDENTIAL.

The 100-Year flow was used in sizing the drainage system where a drain pipe would have to replace a large drainageway. The 10-year flow was used in designing most of the drainage system and for comparing runoff impact on the adjoining stream.

Based on these flow values, the drainage system was developed with additional assumptions:

- 1) The drainage runoff would be calculated using the aforesaid rate, and then normalized into drain inlets assuming an average flow of 3 cfs per drain inlet.
- 2) The following table was used to develop the drain line sizes for the drainage plan:

<u>Line Size (inches)</u>	<u>Capacity (cfs)</u>	<u>Capacity (no. of drain inlets)</u>
18	10	3
24	20	6
30	35	11
36	55	18
42	80	26
48	110	36
54	150	50
60	190	63
72	310	103
84	450	150
90	540	180
96	620	206

Note: Capacity based on assumption of inlet control with a ration of headwater to pipe diameter of 1.5.

Projected Flow Rate

Storm runoff will increase with the development of the subject property and the project district. The development of housing and roadways will increase the impermeable surface. This, however, will be offset in part by the proposed golf course which will provide about 126 acres of permeable surface on the subject property and 46 acres in the remaining project district.

Runoff from the project district at the shopping center and along Nawiliwili Road will flow into the Nawiliwili Stream drainage basin. Runoff from the remainder of the project district, including the subject property, will need to be deposited into the Puali Stream basin. Runoff from the Puhi light industrial area (parcel 33) will be diverted into the Puali Stream basin to minimize the impact on Huleia Stream and Menehune Ponds.

If the subject property were developed, the storm runoff flow rate is estimated at 5,671 cfs based on a 100 year storm with a 20 minute time of concentration for the entire basin. This represents an increase of about 28% over present levels. Runoff coefficient factors used were 0.33 for agricultural use, 0.31 for parks, schools and golf courses, 0.88 for commercial, and 0.70 for residential. Refer to Table 10 for more details.

Proposed Mitigative Measures

Runoff created by the development of the subject property will be collected by drain lines in the proposed right-of-ways and then deposited into the Puali Stream basin. All runoff from the industrial lot (parcel 33) would be diverted into Puali Stream basin to reduce the effects on the Huleia Stream environment. Refer to Figure 5 which shows a conceptual drainage plan for the subject property and the rest of the project district.

If it is necessary to reduce the amount of runoff into the drainage basin, the runoff might be held during the heavy runoff periods in retention ponds developed as an integral part of the golf course and in dry wells if their use is appropriate. Determination of more specific design solutions should be done at the zoning and subdivision approval level when more detailed design information is available.

Estimated Order-of-Magnitude Cost

The order-of-magnitude cost for onsite drainage improvements is estimated at \$12,220,000 for the subject property. The estimate includes engineering and contingency costs. The cost estimate is shown on Table 11.

WATER

Existing Water System

The project district is served by the Department of Water's Lihue and Puhi water systems. Sources for these systems incorporate well complexes mauka of Lihue town and a well mauka of the Kauai Community College in Puhi.

These wells feed a system of storage tanks at Lihue, Puhi and Hanamaulu. Two 1 million gallon tanks above the German Hill area serves the Lihue, Kukui Grove Center, Kapaia, and Hanamaulu areas. Two low pressure tanks near the Kauai Nursery serves Pua Loke, Ulu Mahi and Ulu Kukui residential subdivisions located along Nawiliwili Road. A storage tank is located mauka of the Kauai Community College serves the Puhi area. An additional storage tank is to be constructed at Hanamaulu.

Transmission from these storage facilities are by lines ranging in size from 10-18". Grove Farm Properties recently installed a 16" line from the German Hill tanks to service its Kukui Grove Center development and the rest of the project district.

Figure 5

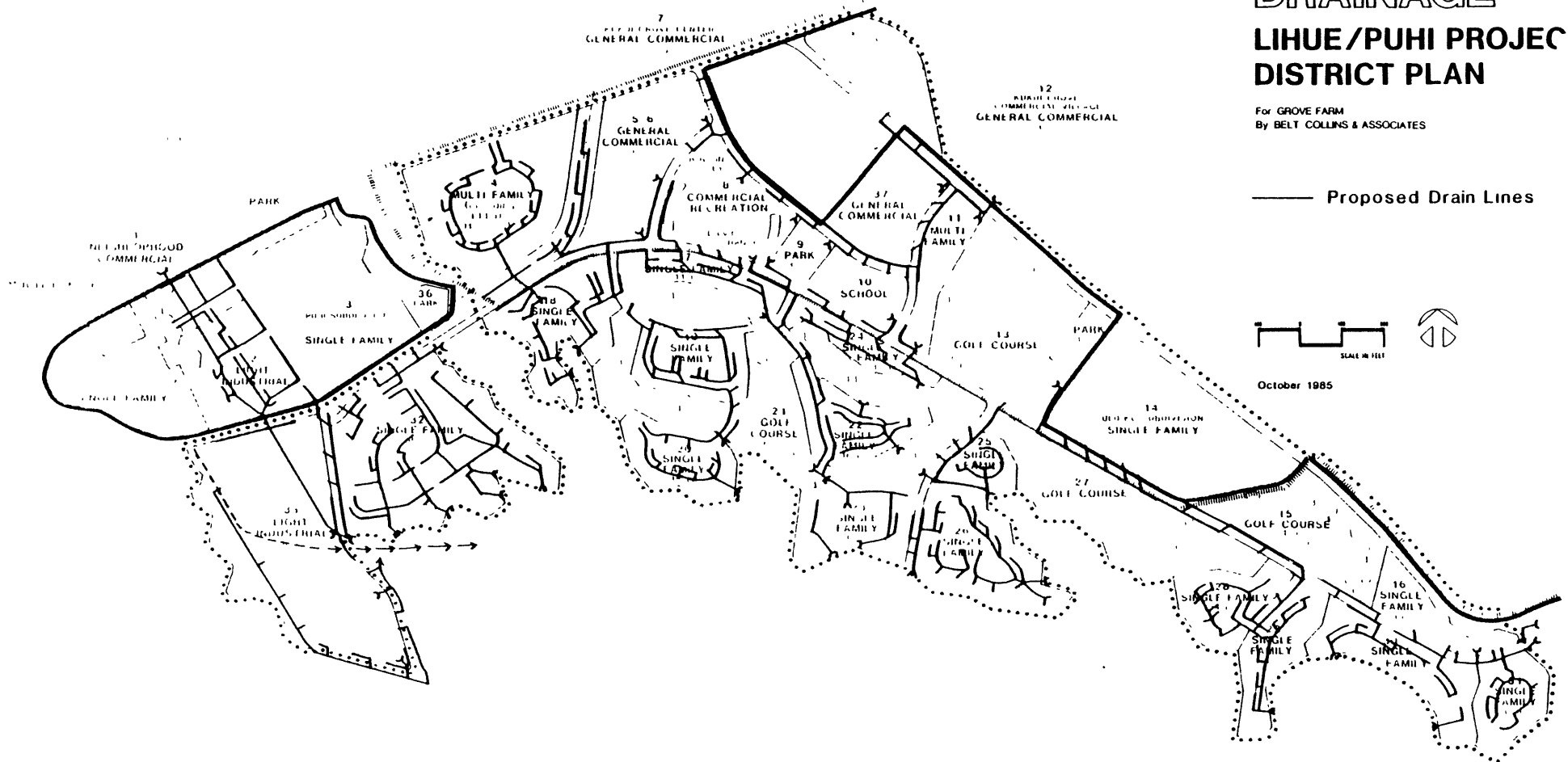
DRAINAGE LIHUE/PUHI PROJECT DISTRICT PLAN

For GROVE FARM
By BELT COLLINS & ASSOCIATES

— Proposed Drain Lines



October 1985



CONSTRUCTION COST ESTIMATE			DATE PREPARED: 02-May -1986								
SHEET 1			OF 1								
PROJECT : GROVE FARM EIS											
LOCATION : LIHUE, KAUAI, HAWAII											
A/E FIRM : BELT, COLLINS & ASSOCIATES											
DRAWING : DRAINAGE - WITHIN THE GENERAL PLAN AREA											
ITEM DESCRIPTION	UNIT MEAS.	UNIT COST	PHASE 1 NO. UNITS	ITEM COST	PHASE 2 NO. UNITS	ITEM COST	PHASE 3 NO. UNITS	ITEM COST	FUTURE PHASES NO. UNITS	ITEM COST	TOTAL COST
UNCLASSIFIED TRENCH EXCAVATION	C.Y.	30	5813	174375	9390	281697	9086	272593	0	0	728665
18" CMP DRAIN PIPE	L.F.	56	1800	100800	1300	72800	5300	296800	0	0	470400
24" CMP DRAIN PIPE	L.F.	63	800	50400	600	37800	2100	132300	0	0	220500
30" CMP DRAIN PIPE	L.F.	71	400	28400	200	14200	900	63900	0	0	106500
36" CMP DRAIN PIPE	L.F.	77	100	7700	100	7700	1000	77000	0	0	92400
42" CMP DRAIN PIPE	L.F.	83	800	66400	300	24900	1000	83000	0	0	174300
48" CMP DRAIN PIPE	L.F.	91	400	36400	200	18200	400	36400	0	0	91000
54" CMP DRAIN PIPE	L.F.	102	400	40800	0	0	200	20400	0	0	61200
60" CMP DRAIN PIPE	L.F.	117	700	81900	500	58500	500	58500	0	0	198900
72" CMP DRAIN PIPE	L.F.	139	0	0	1100	152900	0	0	0	0	152900
84" CMP DRAIN PIPE	L.F.	165	0	0	600	99000	0	0	0	0	99000
90" CMP DRAIN PIPE	L.F.	195	0	0	200	39000	0	0	0	0	39000
96" CMP DRAIN PIPE	L.F.	213	0	0	0	0	0	0	0	0	0
102" CMP DRAIN PIPE	L.F.	245	0	0	0	0	0	0	0	0	0
108" CMP DRAIN PIPE	L.F.	264	0	0	0	0	0	0	0	0	0
HEADWALL STRUCTURE	EACH	11000	4	44000	6	66000	1	11000	0	0	121000
TOTAL ENGINEERING ESTIMATE			631175		872697		1051893		0		2555765
20% CONTINGENCY AND ENGINEERING											511153
TOTAL WITHIN THE GENERAL PLAN AREA											3066918
NOTE: DRAIN PIPE INCLUDES COST OF DRAIN INLETS AND MANHOLES											

TABLE 11 CONTINUED
DRAINAGE COST SUMMARY

CONSTRUCTION COST ESTIMATE			DATE PREPARED: 02-May -1986								
SHEET 1			OF 1								
PROJECT : GROVE FARM EIS											
LOCATION : LINCOLN, NEBRASKA											
A/E FIRM : BELT, COLLINS & ASSOCIATES											
DRAWING : DRAINAGE - IN ADDITION TO THE GENERAL PLAN AREA											
ITEM DESCRIPTION	UNIT MEAS.	UNIT COST	PHASE 1 NO. UNITS	ITEM COST	PHASE 2 NO. UNITS	ITEM COST	PHASE 3 NO. UNITS	ITEM COST	FUTURE PHASES NO. UNITS	ITEM COST	TOTAL COST
UNCLASSIFIED TRENCH EXCAVATION	C.Y.	30	13529	405872	42308	1269242	39439	1183178	0	0	2858292
18" CMP DRAIN PIPE	L.F.	56	5100	285600	13800	772800	15900	890400	0	0	1948800
24" CMP DRAIN PIPE	L.F.	63	1900	119700	4800	302400	9500	598500	0	0	1020600
30" CMP DRAIN PIPE	L.F.	71	1700	120700	4300	305300	3400	241400	0	0	667400
36" CMP DRAIN PIPE	L.F.	77	800	61600	4300	331100	3700	284900	0	0	677600
42" CMP DRAIN PIPE	L.F.	83	300	24900	2100	174300	1700	141100	0	0	340300
48" CMP DRAIN PIPE	L.F.	91	100	9100	700	63700	1800	163800	0	0	236600
54" CMP DRAIN PIPE	L.F.	102	400	40800	700	71400	2200	224400	0	0	336600
60" CMP DRAIN PIPE	L.F.	117	0	0	1100	128700	500	58500	0	0	187200
72" CMP DRAIN PIPE	L.F.	139	0	0	700	97300	2300	319700	0	0	417000
84" CMP DRAIN PIPE	L.F.	165	0	0	2900	478500	500	82500	0	0	561000
90" CMP DRAIN PIPE	L.F.	195	0	0	300	58500	0	0	0	0	58500
96" CMP DRAIN PIPE	L.F.	213	0	0	600	127800	0	0	0	0	127800
102" CMP DRAIN PIPE	L.F.	245	600	147000	0	0	0	0	0	0	147000
108" CMP DRAIN PIPE	L.F.	264	600	158400	0	0	0	0	0	0	158400
HEADWALL STRUCTURE	EACH	11000	8	88000	11	121000	21	231000	0	0	440000
TOTAL ENGINEERING ESTIMATE			1461672		4302042		4419378		0		10183092
20% CONTINGENCY AND ENGINEERING											2936618
TOTAL IN ADDITION TO THE GENERAL PLAN AREA											12219711
GRAND TOTAL											15286629
NOTE: DRAIN PIPE INCLUDES COST OF DRAIN INLETS AND MANHOLES											

Proposed Water System

Expected Water Demand

The average daily water flow generated by the proposed action is estimated at 0.803 mgd. This is based on Department of Water factors of 500 gallons per day per housing unit and 4000 gallons per day per acre of industrial use. Table 12 shows the average water requirements for proposed uses within the General Plan "Mixed Use Area" and for proposed uses in the requested new General Plan "Mixed Use Area."

This estimates in Table 12 do not include golf course water demands since the developer plans to irrigate through use of ditch water from the plantation or sewage effluent from private wastewater facilities at Kukui Grove Center and Kauai Community College. The golf course would require about 1.3 mgd of water for irrigation.

Source Requirements

The Department of Water in their response letter dated January 16, 1986, indicated that the present source capacity is adequate for the proposed action. The department, however, does not commit the adequacy of its source until a development is at the subdivision approval process. Additional source, especially in the Lihue system, may need to be developed prior to subdivision and development if the proposed project is preceded by other developments which utilize the available source capacity.

Storage Requirements

Storage requirements are based upon maximum daily flow estimates. Maximum daily flow for the proposed addition to the General Plan "Urban Mixed Use" area is estimated at 1.205 mgd, assuming the maximum daily flow is 1.5x the amount of the estimated average daily flow. Refer to Table 12.

In addition to domestic water storage, light industrial and residential (R-4) uses require adequate flow for fire protection at 3,000 gpm for 3 hour duration and 750 gpm for 2 hour duration.

In their response letter dated January 16, 1986, the Department of Water indicated that the present storage facilities of the Lihue and Puhi water systems are adequate for only partial development of the proposed development. Additional storage facilities will need to be developed at some point prior to full development. At that point, the Department of Water with input from the developer will determine the location, size, cost and apportionment of the cost of any needed new storage facility.

TABLE 12

WATER SUMMARY					DATE:	05/02/86	
GROVE FARM							MAXIMUM
				DOMESTIC	IRRIGATION	TOTAL	DAILY FLOW
AREA	AREA	NO. OF	UNIT FLOW	AVE. DAILY	AVE. DAILY	AVE. DAILY	(=STORAGE
	(ACRES)	UNITS	(GPD/UNIT)	FLOW (MGD)	FLOW (MGD)	FLOW (MGD)	REQUIREMENT)
							(MGD)
AREAS WITHIN THE GENERAL PLAN							
EXISTING							
7	KUKUI GROVE CENTER	35	35	3000	0.105	0.105	0.158
12	KUKUI GROVE COMMERCIAL VILLAGE	16	16	3000	0.048	0.048	0.072
1	NEIGHBORHOOD COMMERCIAL	10	10	3000	0.030	0.030	0.045
2	LIGHT INDUSTRIAL	28	28	4000	0.112	0.112	0.168
14	ULU KO SUBDIVISION	41	164	500	0.082	0.082	0.123
3	PUHI SUBDIVISION	44	153	500	0.077	0.077	0.115
35	KOMOHANA SUBDIVISION	23	98	500	0.049	0.049	0.074
36	PARK	4	4	2500		0.010	0.015
39	PARK	3	3	2500		0.008	0.011
SUBTOTAL EXISTING				0.503	0.018	0.520	0.780
PHASE 1							
-	OFFSITE						
5/6	GENERAL COMMERCIAL	27	27	3000	0.081	0.081	0.122
8	COMMERCIAL RECREATION	21	21	3000	0.063	0.063	0.095
9	PARK	6	**			0.000	0.000
36	PARK	4	**			0.000	0.000
34	MULTI-FAMILY	3.5	35	350	0.012	0.012	0.018
SUBTOTAL PHASE 1				0.156	0.000	0.156	0.234
SUBTOTAL EXISTING AND PHASE 1				0.659	0.018	0.676	1.014
PHASE 2							
-	OFFSITE						
37	GENERAL COMMERCIAL	20	20	3000	0.060	0.060	0.090
13	GOLF COURSE	46	**			0.000	0.000
11	MULTI-FAMILY	12	120	350	0.042	0.042	0.063
SUBTOTAL PHASE 2				0.102	0.000	0.102	0.153
SUBTOTAL EXISTING AND PHASES 1 AND 2				0.761	0.018	0.778	1.167
PHASE 3							
-	OFFSITE						
4	MULTI-FAMILY	39	390	350	0.137	0.137	0.205
SUBTOTAL PHASE 3				0.137	0.000	0.137	0.205
SUBTOTAL EXISTING AND PHASES 1,2 AND 3				0.897	0.018	0.915	1.372
FUTURE PHASES							
-	OFFSITE						
10	SCHOOL	10	500	*	0.010	0.010	0.015
SUBTOTAL FUTURE PHASES				0.010	0.000	0.010	0.015

TOTAL AREAS WITHIN THE GENERAL PLAN				0.907	0.018	0.925	1.387
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AREAS IN ADDITION TO THE GENERAL PLAN

PHASE 1

-	OFFSITE						
33	LIGHT INDUSTRIAL	56	56	4000	0.224	0.224	0.336
16	SINGLE-FAMILY	10	40	500	0.020	0.020	0.030
30	SINGLE-FAMILY	18	72	500	0.036	0.036	0.054
31	SINGLE-FAMILY	12	48	500	0.024	0.024	0.036
SUBTOTAL PHASE 1					0.304	0.000	0.304

PHASE 2

-	OFFSITE						
15	GOLF COURSE	24	**			0.000	0.000
21	GOLF COURSE	65	**			0.000	0.000
27	GOLF COURSE	37	**			0.000	0.000
25	SINGLE-FAMILY	7	28	500	0.014	0.014	0.021
28	SINGLE-FAMILY	14	56	500	0.028	0.028	0.042
29	SINGLE-FAMILY	14	56	500	0.028	0.028	0.042
32	SINGLE-FAMILY	55	330	500	0.165	0.165	0.248
SUBTOTAL PHASE 2					0.235	0.000	0.235

SUBTOTAL EXISTING AND PHASES 1 AND 2				0.539	0.000	0.539	0.309
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PHASE 3

-	OFFSITE						
17	SINGLE-FAMILY	11	44	500	0.022	0.022	0.033
18	SINGLE-FAMILY	22	88	500	0.044	0.044	0.066
19	SINGLE-FAMILY	18	72	500	0.036	0.036	0.054
20	SINGLE-FAMILY	15	60	500	0.030	0.030	0.045
22	SINGLE-FAMILY	16	64	500	0.032	0.032	0.048
23	SINGLE-FAMILY	16	64	500	0.032	0.032	0.048
24	SINGLE-FAMILY	10	40	500	0.020	0.020	0.030
26	SINGLE-FAMILY	24	96	500	0.048	0.048	0.072
SUBTOTAL PHASE 3					0.264	0.000	0.264

TOTAL AREAS IN ADDITION TO THE GENERAL PLAN				0.803	0.000	0.803	1.205
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GRAND TOTAL				1.710	0.018	1.728	2.592
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* 20 GPD/STUDENT; IRRIGATION WATER TO BE SUPPLIED BY GOLF COURSE SYSTEM.

** IRRIGATION WATER TO BE SUPPLIED BY DITCH WATER OR SEWAGE
TREATMENT PLANT EFFLUENT.

Transmission Requirements

The Department of Water in its response letter dated January 16, 1986, indicated that "The existing transmission facilities for the 'Puhi parcels' are adequate along the Puhi Road at Leleiona Street. The existing transmission facilities for the Lihue parcels are adequate at the Kukui Grove Shopping Village."

Onsite Water System

The onsite water system would be constructed to County standards to allow for dedication. The system, shown in concept in Figure 6 would consist of a 12" distribution lines along the main collector road and in the commercial and industrial use areas. 8" lines would be used within the residential subdivision areas. The golf course and some of the parks using sewage effluent or ditch water would be on a separate private system.

Estimated Order-of-Magnitude Cost

The order-of-magnitude cost of onsite water improvements for the subject property is estimated at \$8,150,000 in 1986 dollars. This estimate assumes that the domestic system would be constructed to County standards and that golf course would not use the domestic water for irrigation. Included in the estimate are costs for engineering and contingencies. Not included in the estimate are costs for the development of new source and/or storage. It is premature to estimate these costs based on the information available. Refer to Table 13.

SEWER

Existing Sewage System

At present, the existing commercial at Kukui Grove Center and Commercial Village are served by an existing 0.160 mgd private wastewater treatment facility located south of the shopping center on Halehaka Road. The facility is presently operating at 0.040 mgd. According to Grove Farm Properties, future expansion to accommodate growing needs is possible by the addition of more tanks.

Existing commercial, industrial and residential uses at Puhi are served by cesspools. The Ulu Ko subdivision presently undergoing subdivision approval is appealing a zoning condition which requires it to install a sewage system which connects to the existing shopping center wastewater treatment facility.

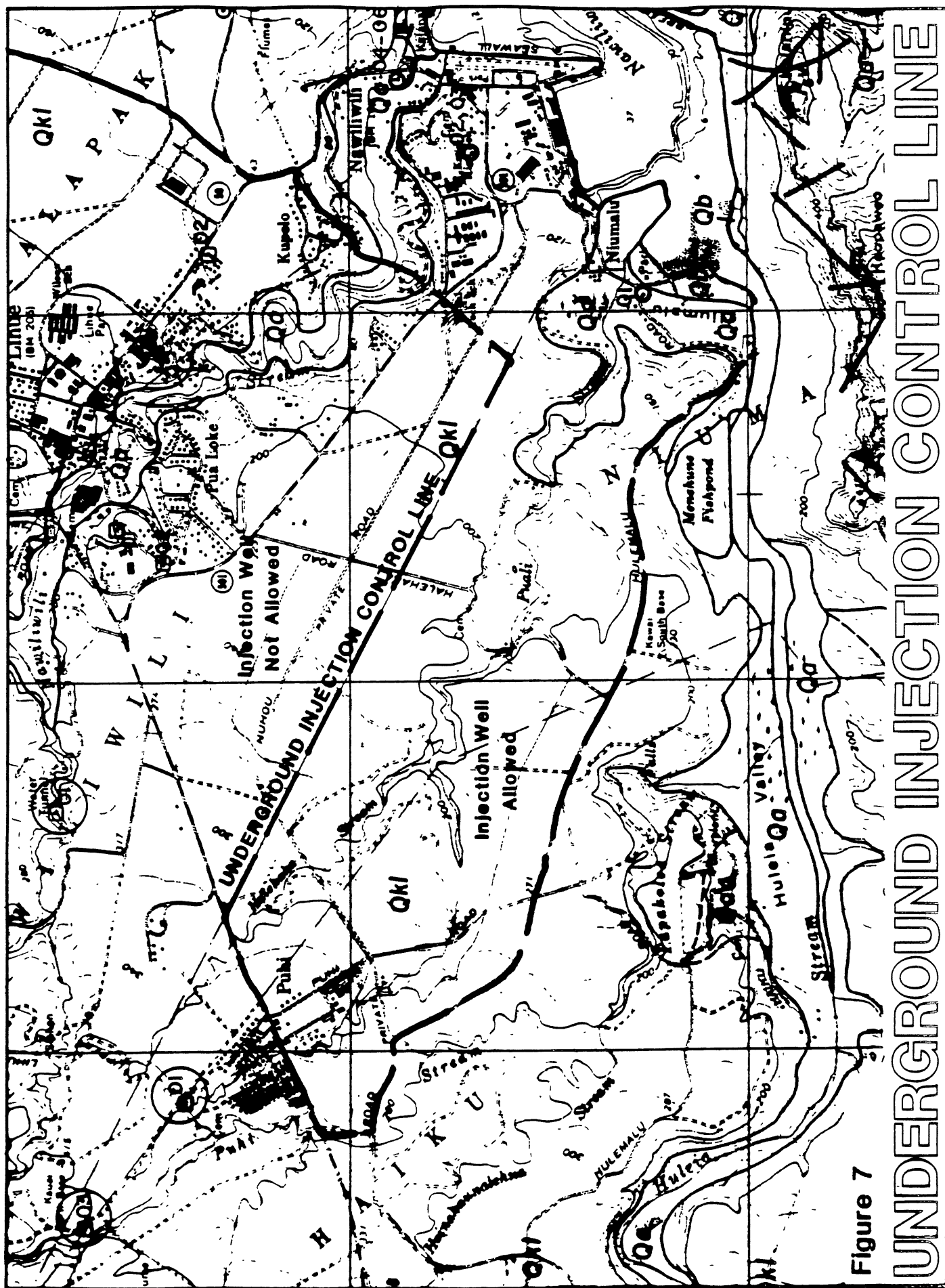
Underground Injection Control (UIC) Area

Rules controlling the use of underground injection wells to protect the groundwater aquifer is established under Chapter 23 of Title 11, Administrative Rules of the Department of Health (DOH). As part of its rules, the DOH has established Underground Injection Control (UIC) boundary lines mauka of which no sewage

02-May -1986
OF 1

!DRAWING : WATER - IN ADDITION TO THE GENERAL PLAN AREA

[illegible]



<u>Sewer Line Size (inches)</u>	<u>Capacity (mgd)</u>	<u>Capacity (no. of single-family units)</u>
4	0.28	122
6	0.63	280
10	1.76	957
12	2.54	
14	3.45	

Note: Capacity in terms of single family lots based on assumption that there is no other mix of development . With mixed development, capacity in terms of flow was used.

Projected Sewage Flow

The estimated sewage flow from the subject property is estimated at 0.687 mgd. This is based on estimated rates of 400 gallons per day per housing unit and 4,000 gallons per day per acre of industrial use. Refer to Table 14.

Proposed Sewage Treatment and Disposal

The subject area was not included in the County's sewerage system plan for Lihue. Nearby residential uses, as well as roadside commercial and light industrial uses at Puhi utilize cesspools. The developer has proposed to utilize cesspools to handle sewage treatment and disposal for the area which is the subject of the General Plan change. Both the County Public Works Department and the State Department of Health indicated a preference for a wastewater system to serve the entire project area.

The determination of whether use of cesspools is appropriate will need to be made by the Department of Health as part of the subdivision approval process. This determination will be based in part upon the suitability of the soil and other relevant factors pertaining to use of cesspools.

For this conceptual engineering analysis, two scenarios were examined. The first assumes cesspools can be used for the single family residential and industrial uses proposed and that general commercial and multi-family uses around the shopping center will need to be served by the existing private wastewater treatment facility. The second scenario assumes that the entire project area, except for existing residential on cesspools, would need to be sewered. As a summary analysis, the per lot costs of sewers vs. cesspools are examined.

TABLE 14

SEWAGE SUMMARY - W / CESSPOOLS

GROVE FARM

DATE: 05/02/86

AREA		AREA (ACRES)	NO. OF UNITS	UNIT FLOW (GPD/UNIT)	AVE. DAILY FLOW (MGD)	NO. OF CESSPOOLS
AREAS WITHIN THE GENERAL PLAN						
EXISTING						
7	KUKUI GROVE CENTER	35	35	6000	0.210	
12	KUKUI GROVE COMMERCIAL VILLAGE	16	16	6000	0.096	
1	NEIGHBORHOOD COMMERCIAL	10				
2	LIGHT INDUSTRIAL	28				
14	ULU KO SUBDIVISION					
3	PUHI SUBDIVISION					
35	KOMOHANA SUBDIVISION					
36	PARK					
39	PARK					
SUBTOTAL EXISTING					0.306	0
PHASE 1						
-	OFFSITE					
5/6	GENERAL COMMERCIAL	27	27	6000	0.162	
8	COMMERCIAL RECREATION	21	21	6000	0.126	
9	PARK					
38	PARK					
34	MULTI-FAMILY	3.5	35			35
SUBTOTAL PHASE 1					0.288	35
PHASE 2						
-	OFFSITE					
37	GENERAL COMMERCIAL	20	20	6000	0.120	
13	GOLF COURSE					
11	MULTI-FAMILY	12	120	250	0.030	
SUBTOTAL PHASE 2					0.150	0
PHASE 3						
-	OFFSITE					
4	MULTI-FAMILY	39	390			390
SUBTOTAL PHASE 3					0.000	390
FUTURE PHASES						
-	OFFSITE					
10	SCHOOL	10	500	25	0.013	
SUBTOTAL FUTURE PHASES					0.013	0
TOTAL AREAS WITHIN THE GENERAL PLAN					0.757	425
AREAS IN ADDITION TO THE GENERAL PLAN						
PHASE 1						
-	OFFSITE					

33	LIGHT INDUSTRIAL	56	560		560
16	SINGLE-FAMILY	10	40		40
30	SINGLE-FAMILY	18	72		72
31	SINGLE-FAMILY	12	48		48
SUBTOTAL PHASE 1				0.000	720
PHASE 2					
-	OFFSITE				
15	GOLF COURSE				
21	GOLF COURSE				
27	GOLF COURSE				
25	SINGLE-FAMILY	7	28		28
28	SINGLE-FAMILY	14	56		56
29	SINGLE-FAMILY	14	56		56
32	SINGLE-FAMILY	55	330		330
SUBTOTAL PHASE 2				0.000	470
PHASE 3					
-	OFFSITE				
17	SINGLE-FAMILY	11	44	400	0.018
18	SINGLE-FAMILY	22	88		88
19	SINGLE-FAMILY	18	72		72
20	SINGLE-FAMILY	15	60		60
22	SINGLE-FAMILY	16	64		64
23	SINGLE-FAMILY	16	64		64
24	SINGLE-FAMILY	10	40	400	0.016
26	SINGLE-FAMILY	24	96		96
SUBTOTAL PHASE 3				0.034	444
TOTAL AREAS IN ADDITION TO THE GENERAL PLAN				0.034	1634
GRAND TOTAL				0.790	1634

TABLE 14

SEWAGE SUMMARY - *CENTRAL STP*
GROVE FARM

DATE: 05/02/86

AREA	AREA (ACRES)	NO. OF UNITS	UNIT FLOW AVE. DAILY (GPD/UNIT)FLOW (MGD)
AREAS WITHIN THE GENERAL PLAN			
EXISTING			
7 KUKUI GROVE CENTER	35	35	6000 0.210
12 KUKUI GROVE COMMERCIAL VILLAGE	16	16	6000 0.096
1 NEIGHBORHOOD COMMERCIAL	10	10	4000 0.040
2 LIGHT INDUSTRIAL	28	28	4000 0.112
14 ULU KO SUBDIVISION			
3 PUHI SUBDIVISION			
35 KOMOHANA SUBDIVISION			
36 PARK			
39 PARK			
SUBTOTAL EXISTING			0.458
PHASE 1			
- OFFSITE			
5/6 GENERAL COMMERCIAL	27	27	6000 0.162
8 COMMERCIAL RECREATION	21	21	6000 0.126
9 PARK			
38 PARK			
34 MULTI-FAMILY	3.5	35	250 0.009
SUBTOTAL PHASE 1			0.297
PHASE 2			
- OFFSITE			
37 GENERAL COMMERCIAL	20	20	6000 0.120
13 GOLF COURSE			
11 MULTI-FAMILY	12	120	250 0.030
SUBTOTAL PHASE 2			0.150
PHASE 3			
- OFFSITE			
4 MULTI-FAMILY	39	390	250 0.098
SUBTOTAL PHASE 3			0.098
FUTURE PHASES			
- OFFSITE			
10 SCHOOL	10	500	25 0.013
SUBTOTAL FUTURE PHASES	10	500	25 0.013
TOTAL AREAS WITHIN THE GENERAL PLAN			1.015
AREAS IN ADDITION TO THE GENERAL PLAN			
PHASE 1			
- OFFSITE			

33	LIGHT INDUSTRIAL	56	56	4000	0.224
16	SINGLE-FAMILY	10	40	400	0.016
30	SINGLE-FAMILY	18	72	400	0.029
31	SINGLE-FAMILY	12	48	400	0.019
SUBTOTAL PHASE 1					0.288
PHASE 2					
-	OFFSITE				
15	GOLF COURSE				
21	GOLF COURSE				
27	GOLF COURSE				
25	SINGLE-FAMILY	7	28	400	0.011
28	SINGLE-FAMILY	14	56	400	0.022
29	SINGLE-FAMILY	14	56	400	0.022
32	SINGLE-FAMILY	55	330	400	0.132
SUBTOTAL PHASE 2					0.188
PHASE 3					
-	OFFSITE				
17	SINGLE-FAMILY	11	44	400	0.018
18	SINGLE-FAMILY	22	88	400	0.035
19	SINGLE-FAMILY	18	72	400	0.029
20	SINGLE-FAMILY	15	60	400	0.024
22	SINGLE-FAMILY	16	64	400	0.026
23	SINGLE-FAMILY	16	64	400	0.026
24	SINGLE-FAMILY	10	40	400	0.016
26	SINGLE-FAMILY	24	96	400	0.038
SUBTOTAL PHASE 3					0.211
TOTAL AREAS IN ADDITION TO THE GENERAL PLAN					0.687
GRAND TOTAL					1.702

Use of Cesspools: This scenario, as indicated earlier, would require that general commercial, recreation commercial and multi-family uses around the shopping center be served by the existing private wastewater treatment plant. Sewage generated by these uses is estimated at 0.790 mgd for the subject property. To serve this increased flow and the rest of the project district, the existing private plant needs to be increased by about .630 mgd. Effluent from the plant would be disposed of as irrigation for the golf course and other landscaped areas.

The cesspools for the single family residential and light industrial lots would be developed according to Department of Health standards. Costs for the cesspools would be borne by the lot owners.

The use of cesspools would need to be approved by the Department of Health based on the adequacy of the terrain, soil, and other factors. The use of cesspools is appropriately determined at the zoning and subdivision approval process.

Soil on the subject property are predominantly of the Lihue and Puhi series. These soil types, according the Soil Conservation Service's soil survey study (August, 1972), have slight limitations on slopes of 0 to 8 percent and moderate limitations on slopes of 8 to 15 percent for use as septic tank filter fields.

Installation of a Sewage System: This scenario assumes that all proposed new uses as well as existing commercial, industrial and multi-family uses would be part of project wide system that connected to the existing private wastewater treatment plant. Existing single-family residential uses presently on cesspools would not be part of the system.

Based upon sewage flows estimated at 1.702 mgd for the entire project district, the present plant would need to be expanded to 1.542 mgd. The expanded plant would require a site of about 4-6 acres.

Disposal, at this point, may become a problem as there will be 1.697 mgd for the entire project district which needs to be disposed of. If the golf course utilized about 1.3 mgd of this for irrigation, there would be an additional .402 mgd which still needed to be disposed of. One solution might be to use injection wells in the golf course area makai of Ulu Ko subdivision where the Underground Injection Control boundary line runs.

Estimated Order-of-Magnitude Cost

The order-of-magnitude cost of a sewage disposal system utilizing cesspools for the subject property is estimated at \$2,093,000 in 1986 dollars. This estimate includes costs for engineering and contingencies. Refer to Table 15. The development of a sewage system without cesspools for the subject property is estimated to be about \$7,666,000 more.

BLE 15
SEWER COST SUMMARY FOR STP/CESSPOOL COMBINATION

CONSTRUCTION COST ESTIMATE
DATE PREPARED: 02-May -1986
SHEET 1 OF 1
PROJECT : GROVE FARM EIS
LOCATION : LIHUE, KAUAI, HAWAII
P/E FIRM : BELT, COLLINS & ASSOCIATES
DRAWING : SEWER - WITHIN THE GENERAL PLAN AREA

ITEM DESCRIPTION	UNIT MEAS.	UNIT COST	PHASE 1		PHASE 2		PHASE 3		FUTURE PHASES		TOTAL COST
			NO. UNITS	ITEM COST	NO. UNITS	ITEM COST	NO. UNITS	ITEM COST	NO. UNITS	ITEM COST	
UNCLASSIFIED TRENCH EXCAVATION	C.Y.	40	8702	348067	0	0	0	0	0	0	348067
8" GRAVITY SEWER PIPE	L.F.	41	0	0	0	0	0	0	0	0	0
10" GRAVITY SEWER PIPE	L.F.	46	4800	220800	0	0	0	0	0	0	220800
12" GRAVITY SEWER PIPE	L.F.	56	600	33600	0	0	0	0	0	0	33600
15" GRAVITY SEWER PIPE	L.F.	71	3000	213000	0	0	0	0	0	0	213000
18" GRAVITY SEWER PIPE	L.F.	85	4500	382500	0	0	0	0	0	0	382500
21" GRAVITY SEWER PIPE	L.F.	101	0	0	0	0	0	0	0	0	0
24" GRAVITY SEWER PIPE	L.F.	116	0	0	0	0	0	0	0	0	0
4" SEWER FORCE MAIN	L.F.	40	0	0	0	0	0	0	0	0	0
6" SEWER FORCE MAIN	L.F.	50	0	0	0	0	0	0	0	0	0
8" SEWER FORCE MAIN	L.F.	60	0	0	0	0	0	0	0	0	0
10" SEWER FORCE MAIN	L.F.	70	1800	126000	0	0	0	0	0	0	126000
CESSPOOLS (PHASE 1)	EACH	800	35	28000	0	0	0	0	0	0	28000
CESSPOOLS (PHASE 2)	EACH	800	0	0	0	0	0	0	0	0	0
CESSPOOLS (PHASE 3)	EACH	800	0	0	0	0	390	312000	0	0	312000
1205 GPM SPS (PHASE 1)	L.S.	200000	1	200000	0	0	0	0	0	0	200000
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
STP EFFLUENT WELLS (PHASE 1)	L.S.	200000	1	200000	0	0	0	0	0	0	200000
STP EFFLUENT WELLS (PHASE 2)	L.S.	100000	0	0	1	100000	0	0	0	0	100000
STP EXPANSION (PHASE 1)	L.S.	1736000	1	1736000	0	0	0	0	0	0	1736000
STP EXPANSION (PHASE 2)	L.S.	600000	0	0	1	600000	0	0	0	0	600000
STP EXPANSION (PHASE 3)	L.S.	52000	0	0	0	0	1	52000	0	0	52000
			=====		=====		=====		=====		=====
TOTAL ENGINEERING ESTIMATE				3487967		700000		364000		0	4551967
20% CONTINGENCY AND ENGINEERING											910393
											=====
TOTAL WITHIN THE GENERAL PLAN AREA											5462360

NOTE: SEWER PIPE INCLUDES COST OF MANHOLES

FILE 15 CONTINUED
SEWER COST SUMMARY FOR STP/CESSPOOL COMBINATION

CONSTRUCTION COST ESTIMATE
DATE PREPARED: 02-May -1986
SHEET 1 OF 1
PROJECT : GROVE FARM EIS
LOCATION : LIHUE, KAUAI, HAWAII
P/E FIRM : BELT, COLLINS & ASSOCIATES
DRAWING : SEWER - IN ADDITION TO THE GENERAL PLAN AREA

ITEM DESCRIPTION	UNIT MEAS.	UNIT COST	PHASE 1		PHASE 2		PHASE 3		FUTURE PHASES		TOTAL COST
			NO. UNITS	ITEM COST	NO. UNITS	ITEM COST	NO. UNITS	ITEM COST	NO. UNITS	ITEM COST	
UNCLASSIFIED TRENCH EXCAVATION	C.Y.	40	0	0	0	0	1233	49333	0	0	49333
8" GRAVITY SEWER PIPE	L.F.	41	0	0	0	0	3700	151700	0	0	151700
10" GRAVITY SEWER PIPE	L.F.	46	0	0	0	0	0	0	0	0	0
12" GRAVITY SEWER PIPE	L.F.	56	0	0	0	0	0	0	0	0	0
15" GRAVITY SEWER PIPE	L.F.	71	0	0	0	0	0	0	0	0	0
18" GRAVITY SEWER PIPE	L.F.	85	0	0	0	0	0	0	0	0	0
21" GRAVITY SEWER PIPE	L.F.	101	0	0	0	0	0	0	0	0	0
24" GRAVITY SEWER PIPE	L.F.	116	0	0	0	0	0	0	0	0	0
4" SEWER FORCE MAIN	L.F.	40	0	0	0	0	0	0	0	0	0
6" SEWER FORCE MAIN	L.F.	50	0	0	0	0	0	0	0	0	0
8" SEWER FORCE MAIN	L.F.	60	0	0	0	0	0	0	0	0	0
10" SEWER FORCE MAIN	L.F.	70	0	0	0	0	0	0	0	0	0
CESSPOOLS (PHASE 1)	EACH	800	720	576000	0	0	0	0	0	0	576000
CESSPOOLS (PHASE 2)	EACH	800	0	0	470	376000	0	0	0	0	376000
CESSPOOLS (PHASE 3)	EACH	800	0	0	0	0	444	355200	0	0	355200
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
STP EFFLUENT WELLS (PHASE 3)	L.S.	100000	0	0	0	0	1	100000	0	0	100000
STP EXPANSION (PHASE 1)	L.S.	0	1	0	0	0	0	0	0	0	0
STP EXPANSION (PHASE 2)	L.S.	0	0	0	1	0	0	0	0	0	0
STP EXPANSION (PHASE 3)	L.S.	136000	0	0	0	0	1	136000	0	0	136000
TOTAL ENGINEERING ESTIMATE				576000		376000		792233		0	1744233
20% CONTINGENCY AND ENGINEERING											348847
TOTAL IN ADDITION TO THE GENERAL PLAN AREA											2093080
GRAND TOTAL											7555440

NOTE: SEWER PIPE INCLUDES COST OF MANHOLES

SOLID WASTE

Basis for Solid Waste Estimate

The following values were assumed in estimating solid waste generation by the proposed development:

1. Domestic Waste Generation Rate
 - = 5.3 lbs./capita/day
 - = 13.3 lbs./unit/day for multi-family
 - = 21.2 lbs./unit/day for single family
 - = 300. lbs./acre/day for general commercial
 .with floor area ratio = .25
 - = 300. lbs./acre/day for neighborhood commercial
 - = 300. lbs./acre/day for light industrial
 - = 4. lbs./capita/day for school

2. Construction Waste Generation Rate
 - = 80. lbs./unit/day for multi-family
 - = 80. lbs./unit/day for single family
 - = 65. lbs./acre/day for general commercial
 - = 65. lbs./acre/day for neighborhood commercial
 .with floor area ratio = 0.25
 - = 65. lbs./acre/day for light industrial
 .with floor area ratio = 0.25
 - = 65. lbs./acre/day for school

Proposed Solid Waste Disposal

Domestic solid waste is expected to be disposed of by private services for commercial and industrial uses and by the County for residential lots. The amount of domestic solid waste generated by light industrial users and residents is estimated at 41,350 lbs. per day. Refer to Table 16.

The disposal site is expected to be the County's Halehaka landfill site and/or Kekaha landfill site. The Halehaka landfill site, according to the County, has a life of another two years. The County has suggested in their response letter dated December 13 that additional landfill area be provided in areas where the golf course is being proposed.

The County in the same comment letter indicated that there should be no structures located over the landfill site. The developer concurs with this comment and will revise his subdivision design at the zoning and subdivision approval level to meet those County concerns.

TABLE 16

SOLID WASTE SUMMARY
GROVE FARM

DATE:

05/02/86

AREA	AREA (ACRES)	NO. OF UNITS	DOMESTIC UNIT RATE (#/UNIT)	DOMESTIC WASTE RATE (#/DAY)	CONSTRUCTION UNIT RATE (#/UNIT)	CONSTRUCTION WASTE RATE (#/DAY)
AREAS WITHIN THE GENERAL PLAN						
EXISTING						
7 KUKUI GROVE CENTER	35	35	300	10500	65	2275
12 KUKUI GROVE COMMERCIAL VILLAGE	16	16	300	4800	65	1040
1 NEIGHBORHOOD COMMERCIAL	10	10	300	3000	65	650
2 LIGHT INDUSTRIAL	28	28	300	8400	65	1820
14 ULU KO SUBDIVISION	41	164	21	3477	80	13120
3 FUHI SUBDIVISION	44	153	21	3244	80	12240
35 KOMOHANA SUBDIVISION	23	98	21	2078	80	7840
36 PARK	4	4	0	0	0	0
39 PARK	3	3	0	0	0	0
SUBTOTAL EXISTING				35498		38985
PHASE 1						
- OFFSITE						
5/6 GENERAL COMMERCIAL	27	27	300	8100	65	1755
8 COMMERCIAL RECREATION	21	21	300	6300	65	1365
9 PARK	6	6	0	0	0	0
38 PARK	4	4	0	0	0	0
34 MULTI-FAMILY	3.5	35	13.3	466	80	2800
SUBTOTAL PHASE 1				14866		5920
SUBTOTAL EXISTING AND PHASE 1				50364		44905
PHASE 2						
- OFFSITE						
37 GENERAL COMMERCIAL	20	20	300	6000	65	1300
13 GOLF COURSE *	46	46	0	150	0	0
11 MULTI-FAMILY	12	120	13	1596	80	9600
SUBTOTAL PHASE 2				7746		10900
SUBTOTAL EXISTING AND PHASES 1 AND 2				58110		55805
PHASE 3						
- OFFSITE						
4 MULTI-FAMILY	39	390	13	5187	80	31200
SUBTOTAL PHASE 3				5187		31200
SUBTOTAL EXISTING AND PHASES 1,2 AND 3				63297		87005
FUTURE PHASES						
- OFFSITE						
10 SCHOOL	10	500	4	2000	65	650

SUBTOTAL FUTURE PHASES				2000		650
TOTAL AREAS WITHIN THE GENERAL PLAN				65297		87655
AREAS IN ADDITION TO THE GENERAL PLAN						
PHASE 1						
-	OFFSITE					
33	LIGHT INDUSTRIAL	56	56	300	16800	3640
16	SINGLE-FAMILY	10	40	21	848	3200
30	SINGLE-FAMILY	18	72	21	1526	5760
31	SINGLE-FAMILY	12	48	21	1018	3840
SUBTOTAL PHASE 1				20192		16440
PHASE 2						
-	OFFSITE					
15	GOLF COURSE	24	24	0	0	0
21	GOLF COURSE	65	65	0	0	0
27	GOLF COURSE	37	37	0	0	0
25	SINGLE-FAMILY	7	28	21	594	2240
28	SINGLE-FAMILY	14	56	21	1187	4480
29	SINGLE-FAMILY	14	56	21	1187	4480
32	SINGLE-FAMILY	55	330	21	6996	26400
SUBTOTAL PHASE 2				9964		37600
SUBTOTAL EXISTING AND PHASES 1 AND 2				30156		54040
PHASE 3						
-	OFFSITE					
17	SINGLE-FAMILY	11	44	21	933	3520
18	SINGLE-FAMILY	22	88	21	1866	7040
19	SINGLE-FAMILY	18	72	21	1526	5760
20	SINGLE-FAMILY	15	60	21	1272	4800
22	SINGLE-FAMILY	16	64	21	1357	5120
23	SINGLE-FAMILY	16	64	21	1357	5120
24	SINGLE-FAMILY	10	40	21	848	3200
26	SINGLE-FAMILY	24	96	21	2035	7680
SUBTOTAL PHASE 3				11194		42240
TOTAL AREAS IN ADDITION TO THE GENERAL PLAN				41350		96280
GRAND TOTAL				106646		183935

* INCLUDES CLUBHOUSE AT 150 #/DAY DOMESTIC RATE.

ESTIMATED ORDER-OF-MAGNITUDE COSTS

The order-of-magnitude cost for providing on-site and off-site improvements for the subject property is estimated at \$44,091,000 in 1986 dollars. Total project district cost would be about \$60,266,000. Refer to Table 17 . This cost includes roads, on-site water, drainage, the use of cesspools for single family residential and Puhi light industrial areas, and an expansion of the existing private wastewater treatment facility. Not included are estimated costs for off-site water source and storage facilities and highway intersection improvements, including traffic lights, that may be required.

If a sewage system were required for the entire project district, the estimated cost to develop the subject property would increase to \$51,757,000. Total project district cost would be about \$71,606,000.

Table 17
Total Estimated Order-of-Magnitude Costs

<u>Proposed Improvement</u>	<u>Estimated Cost in GP Urban Mixed Use Area</u>	<u>Estimated Cost for Subject Property</u>	<u>Total Estimate</u>
COST ESTIMATE WITH CESSPOOLS			
Road	\$2,729,000	\$12,628,000	\$15,357,000
Drainage	\$3,067,000	\$12,220,000	\$15,287,000
Water	\$1,917,000	\$8,150,000	\$10,067,000
Sewer with Cesspools	\$5,462,000	\$2,093,000	\$7,555,000
<u>Electrical/Telephone</u>	<u>\$3,000,000</u>	<u>\$9,000,000</u>	<u>\$12,000,000</u>
TOTAL COST ESTIMATE	\$16,175,000	\$44,091,000	\$60,266,000
COST ESTIMATE WITHOUT CESSPOOLS			
Road	\$2,729,000	\$12,628,000	\$15,357,000
Drainage	\$3,067,000	\$12,220,000	\$15,287,000
Water	\$1,917,000	\$8,150,000	\$10,067,000
Sewer	\$9,136,000	\$9,759,000	\$18,895,000
<u>Electrical/Telephone</u>	<u>\$3,000,000</u>	<u>\$9,000,000</u>	<u>\$12,000,000</u>
TOTAL COST ESTIMATE	\$19,849,000	\$51,757,000	\$71,606,000

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EXHIBIT 3

• A STUDY OF RESIDENTIAL
LAND IN THE LIHUE DISTRICT

COUNTY OF KAUAI, HAWAII

PREPARED FOR: GROVE FARM
PREPARED BY: BELT, COLLINS & ASSOCIATES

MAY 26, 1983

INTRODUCTION

In 1981, Grove Farm submitted a request to rezone a 40-acre parcel in Lihue and identified by Tax Map Key 3-3-3: por. 1, Fourth Division, from Agriculture to R-4, residential. In reviewing this rezoning petition, the County requested answers to five questions that were intended to address the need for additional residentially-zoned lands in the Lihue District. This brief report is intended to provide updated answers to those questions.

SUMMARY AND FINDINGS

The five questions asked by the County and reviewed in this study are as follows:

1. A list of vacant residential houselots in the Lihue District, the Owners and their addresses, and whether they own other residential real estate on Kauai.
2. A list of residential lots for sale in the Lihue District.
3. A list of vacant, unsubdivided urban properties and the potential number of units possible on these properties.
4. Of the lots in more recent residential subdivision in Lihue, a breakdown of owner-occupants, second and third buyers.
5. Breakdown of persons on waiting list for lots in Lihue parcel subdivision, with place of residence vs. ownership of other residential real estate on Kauai.

Each of the County's questions were carefully reviewed and appropriately answered based on the best sources available to the consultant. The list of vacant residential houselots and large available parcels were identified by 1982 MLS tax assessment printouts, current County zoning maps and selected onsite field checks. Lots for sale patterns were identified by a survey of current MLS publications and newspaper classified

sections. Ownership information was collected from the Kauai County Tax Office's field books and their most current listing of Kauai property owners.

Based on the research, the consultants have found that:

1. The Lihue District, despite being a major employment area in the County, provides only a minor portion of the new residential lots on Kauai;
2. There are only a limited number of vacant large unsubdivided urban properties, including the subject property, available for urban residential (use in the Lihue District);
3. Not all these vacant large unsubdivided urban parcels are being actively pursued for subdivision;
4. There is a large public interest in the proposed Grove Farm Lihue subdivision by Kauai residents as demonstrated by the lengthy waiting list. Additionally, about half of those on the list own no other real estate on Kauai.
5. There appears to be a need for more residential lots in the Lihue District.

QUESTION #1: A list of vacant residential houselots in the Lihue District, the owners and their addresses, and whether they own other residential real estate on Kauai.

A review of the major residential subdivisions in the Lihue District indicated that there were a little over a 120 vacant lots available for use as houselots. A little over 60 percent of these lots belonged to persons owning other real estate properties on Kauai as summarized in Table 1. A full listing of the vacant lots in Lihue District residential subdivisions as identified by an MLS property assessment printout is presented as Appendix A. This inventory has been only partially verified in the field and is intended for planning purposes only.

Table 1. Vacant Residential Lots in the Lihue District

<u>Subdivision</u>	<u>No. of Vacant Lots</u>	<u>Lots With Owners With Other Kauai Real Estate</u>
1. Kalapaki	12	10
2. Hale Nani Tract	3	2
3. Unnamed Subdivision	9	8
4. Molokoa Village Units I and II	14	7
5. Ulu Mahi Subdivision	12	7
6. Lihue Town Estates	23	10
7. Ulu Mahi Subdivision Unit II	20	14
8. Wiliko Home Tract Unit II	23	10
9. Wiliko Home Tract Unit I	<u>6</u>	<u>6</u>
TOTALS	122	74

Source: Vacant Lots - McGraw-Hill printout of vacant lots for 1982 with field check by Belt, Collins & Associates.

Ownership Data - Compiled by Belt, Collins & Associates from Kauai County tax books, February 16, 1983.

Question #2: A List of Residential Lots for Sale in the Lihue District.

The opportunities to acquire a place to live in the Lihue District are very limited despite its being the major employment center of Kauai. The Multiple Listing Service (MLS) publication of May 16, 1983 listed only 12 residential properties and 19 vacant lots for sale in the Lihue District. This represented less than 5 percent of the total residential lots and vacant lots available on Kauai. A review of the residential and vacant lots listed for sale by MLS in 1982-83 indicates that this is a typical situation. Refer to Table 2.

A review of the classified ads in the Wednesday issues of the Kauai Garden Islands newspaper for 1982-83 would seem to support the MLS pattern. Residential properties listed for sale in the Lihue District generally ranged for 0 to 6 properties per issue as shown in Table 3.

Table 2. MLS Listing of Residential Lots and Vacant Lots for Sale on Kauai, 1982-83.

<u>District</u>	<u>Residential</u>		<u>Vacant</u>	
	<u>No. of Lots</u>	<u>%</u>	<u>No. of Lots</u>	<u>%</u>
January 25, 1982				
Waimea	7	3	5	2
Koloa	47	19	38	13
Lihue	15	6	7	2
Kawaihau	99	40	126	45
Hanalei	<u>79</u>	<u>32</u>	<u>107</u>	<u>38</u>
TOTALS	247	100	283	100
February 22, 1982				
Waimea	7	3	5	2
Koloa	52	20	42	14
Lihue	12	4	11	4
Kawaihau	105	41	127	42
Hanalei	<u>83</u>	<u>32</u>	<u>118</u>	<u>39</u>
TOTALS	259	100	303	101
March 22, 1982				
Waimea	8	3	5	2
Koloa	56	21	54	17
Lihue	13	5	12	4
Kawaihau	101	38	127	39
Hanalei	<u>88</u>	<u>34</u>	<u>125</u>	<u>39</u>
TOTALS	266	101	323	101
April 19, 1982				
Waimea	9	3	4	1
Koloa	60	22	61	18
Lihue	14	5	11	3
Kawaihau	113	41	144	42
Hanalei	<u>80</u>	<u>29</u>	<u>124</u>	<u>36</u>
TOTALS	276	100	344	100

<u>District</u>	<u>Residential</u>		<u>Vacant</u>	
	<u>No. of Lots</u>	<u>%</u>	<u>No. of Lots</u>	<u>%</u>
May 17, 1982				
Waimea	8	3	8	2
Koloa	65	23	60	17
Lihue	14	5	9	3
Kawaihau	108	39	146	42
Hanalei	<u>82</u>	<u>30</u>	<u>125</u>	<u>36</u>
TOTALS	277	100	348	100

June 28, 1982				
Waimea	7	3	9	2
Koloa	62	22	59	17
Lihue	14	5	10	3
Kawaihau	112	40	150	43
Hanalei	<u>84</u>	<u>30</u>	<u>122</u>	<u>35</u>
TOTALS	279	100	350	100

July 26, 1982				
Waimea	7	2	8	2
Koloa	65	23	57	16
Lihue	15	5	9	3
Kawaihau	113	40	150	42
Hanalei	<u>86</u>	<u>30</u>	<u>130</u>	<u>37</u>
TOTALS	286	100	354	100

August 23, 1982				
Waimea	9	3	7	2
Koloa	75	24	56	16
Lihue	17	6	10	3
Kawaihau	119	39	152	43
Hanalei	<u>87</u>	<u>28</u>	<u>125</u>	<u>36</u>
TOTALS	307	100	350	100

<u>District</u>	<u>Residential</u>		<u>Vacant</u>	
	<u>No. of Lots</u>	<u>%</u>	<u>No. of Lots</u>	<u>%</u>
September 20, 1982				
Waimea	12	4	7	2
Koloa	69	23	58	16
Lihue	17	6	22	6
Kawaihau	123	41	151	42
Hanalei	<u>82</u>	<u>27</u>	<u>119</u>	<u>33</u>
TOTALS	303	100	357	100

October 18, 1982

Waimea	13	4	8	2
Koloa	66	22	20	19
Lihue	19	6	23	6
Kawaihau	124	41	148	40
Hanalei	<u>82</u>	<u>27</u>	<u>120</u>	<u>33</u>
TOTALS	304	100	369	100

November 29, 1982

Waimea	12	4	8	2
Koloa	65	21	71	19
Lihue	21	7	23	6
Kawaihau	124	40	151	41
Hanalei	<u>90</u>	<u>29</u>	<u>118</u>	<u>32</u>
TOTALS	312	100	371	100

January 24, 1983

Waimea	10	3	3	1
Koloa	56	20	62	19
Lihue	20	7	18	6
Kawaihau	118	41	139	45
Hanalei	<u>83</u>	<u>29</u>	<u>90</u>	<u>29</u>
TOTALS	287	100	312	100

<u>District</u>	Residential		Vacant	
	<u>No. of Lots</u>	<u>%</u>	<u>No. of Lots</u>	<u>%</u>
February 1983				
Waimea	11	4	3	1
Koloa	62	21	66	20
Lihue	23	8	16	5
Kawaihau	121	40	154	46
Hanalei	<u>82</u>	<u>27</u>	<u>99</u>	<u>29</u>
TOTALS	299	100	338	100

March 7, 1983				
Waimea	10	3	3	1
Koloa	62	21	61	19
Lihue	23	8	19	6
Kawaihau	123	41	145	45
Hanalei	<u>79</u>	<u>27</u>	<u>93</u>	<u>29</u>
TOTALS	297	100	321	100

April 18, 1983				
Waimea	10	3	3	1
Koloa	54	18	65	20
Lihue	18	6	19	6
Kawaihau	132	44	147	45
Hanalei	<u>84</u>	<u>28</u>	<u>92</u>	<u>28</u>
TOTALS	298	100	326	100

May 16, 1983				
Waimea	12	4	5	1
Koloa	52	18	73	20
Lihue	12	4	19	5
Kawaihau	130	46	159	44
Hanalei	<u>77</u>	<u>27</u>	<u>107</u>	<u>29</u>
TOTALS	283	100	363	100

Table 3. The Garden Island Newspaper Classified Section: Residential Real Estate and Houses for Sale, Wednesday Issues, 1982-83.

<u>Date of Issue</u>	<u>No. of Residential Real Estate and Houses for Sale</u>	<u>Date of Issue</u>	<u>No. of Residential Real Estate and Houses for Sale</u>
Year 1983		Year 1982	
JAN 5	0	JAN 6	2
12	1	13	1
19	1	20	3
26	2	27	2
FEB 2	1	FEB 3	2
9	1	10	0
16	2	17	4
23	4	24	NA
MAR 2	NA	MAR 3	1
9	1	10	0
16	0	17	3
23	1	24	1
30	1	31	1
APR 6	1	APR 7	0
13	2	14	0
20	4	21	3
27	2	28	2
MAY 4	0	MAY 5	2
		12	1
		19	1
		26	1
		JUN 2	2
		9	NA
		16	2
		23	4
		30	3
		JUL 7	2
		14	2
		21	2
		28	4
		AUG 4	2
		11	4
		18	4
		25	2

<u>Date of Issue</u>	<u>No. of Residential Real Estate and Houses for Sale</u>	<u>Date of Issue</u>	<u>No. of Residential Real Estate and Houses for Sale</u>
Year 1982 (continued)			
SEP 1	4	NOV 3	2
8	0	10	3
15	2	17	1
22	3*	24	NA
29	2*		
OCT 6	1	DEC 1	1
13	5*	8	1
20	3	15	0
27	3	22	0
		29	0

*Plus Governor Kanoa Estate Lots.

Source: Garden Island Newspaper, Wednesday issues for 1982-83.

QUESTION #3: A list of vacant, unsubdivided urban properties.

A review of vacant parcels in the Lihue District identified 9 large unsubdivided urban properties that were within both the State Urban District and the County Residential and Agricultural zoned areas. The Grove Farm's Lihue parcel (TMK 3-3-3: por. 1, Fourth Division) was among those identified. Refer to Table 4.

Based on estimated zoning densities and information from the County's subdivision and rezoning files, the possible number of lots was estimated at 950 single family residential lots. Of these lots, however, only 170 lots or 18% of the total possible lots are currently being processed for subdivision approval. Despite available developers' projections, the actual construction and sales of the other possible lots remain uncertain and any combination of them may be developed at some future time.

Table 4. Vacant, Unsubdivided Urban Properties in the Lihue District with Estimated Lots Possible.

<u>TMK</u>	<u>Owner's Name</u>	<u>Zoning</u>	<u>Est.No. of Lots</u>	<u>Comments</u>
3-2-2:2, 5, 7 and 9	Kanoa Estates, Inc.	0	27	Preliminary subdivision approval on 5/31/83 (extension date)
3-2-5:21	Lake, Bonnie B.	R-2	11	--
3-2-6:4	Lovell, Inc. et al	R-4	8	--
3-2-2:por. 1	Grove Farm, Inc.	R-6	99	Preliminary subdivision approval on 9/8/82
3-3-3:por. 1	Grove Farm, Inc.	A	160 @ R-4	Rezoning required
3-6-1:15	United Citizens Mortgage Company	R-6	121	--
3-6-2:por. 1	Lihue Plantation Co. (Molokoa Project)	R-4 R-6	36+ 250+	
3-7-03:por. 1	Lihue Plantation Co. (North Hanamaulu Project)	R-6	158	Development contingent on completion of Hanamaulu by-pass scheduled for 1985
		R-6 STP	36	Potential school expansion site. Amfac schedule is 1992
3-8-0t:por. 3	Kaumualii Investment Co. (Kaumualii Estates)	R-4	44	Preliminary subdivision approval on 5/12/82
TOTAL SF LOTS IN THE LIHUE DISTRICT			950 Lots	

QUESTION #4: Of the lots in more recent residential subdivisions in Lihue, a breakdown of owner occupants, second and third buyers.

A review of selected Lihue subdivisions built between 1969-80 indicates that about 86% of the lots in the selected subdivision remained under their original owner as shown in table 5. The more stable subdivision was the Puhi subdivision and may reflect the nature of its agriculture employee residents. The more recent Ulu Mahi subdivision experienced a higher turnover of ownership and may reflect the higher mobility of more recent residents, the use of real estate as an investment, and the employment and economic conditions of the County. There is insufficient data to draw any certain conclusions.

Table 5. Ownership Pattern at Selected Residential Subdivision in Lihue

<u>Subdivision</u>	<u>Ownership¹</u>				
	<u>One</u>	<u>Two</u>	<u>Three</u>	<u>Four or More</u>	
Puhi Subdivision (1969-71)	140	2	0	0	
Wiliko Home Tract Unit I (1973-74)	58	8	1	0	
Lihue Town Estates (1975-76)	122	27	8	4	
Wiliko Home Tract Unit II (1978)	140	6	2	0	
Ulu Mahi Subdivision Unit I ² (1979)	11	10	2	0	
Ulu Mahi Subdivision Unit II ² (1980)	22	11	0	0	
	—	—	—	—	
TOTALS	493	64	13	4	574
	85.9%	11.1%	2.3%	0.7%	100.0%

Source: Compiled by Belt, Collins & Associates from Kauai County Tax Office Field Books, May 23, 1983.

¹ The ownership count does not include the developer/builder, the Hawaii Housing Authority, or transfers between family members.

² The lot count for Ulu Mahi may not be accurate due to difficulty in identifying which lots were part of the original subdivision.

QUESTION #5: Breakdown of persons on waiting list for lots in Lihue parcel subdivision, with place of residence vs. ownership of other residential real estate on Kauai.

There were over 400 names on the Lihue parcel subdivision waiting list. Of these names, about half owned other real estate on Kauai and the other half owned no real estate on Kauai. Most persons desiring lots in the subdivision resided on Kauai.

Table 6. Comparison of Place of Residence vs. Ownership of Other Real Estate on Kauai for Persons on the Grove Farm Lihue Subdivision.

<u>Place of Residence</u>	<u>Kauai Real Estate Ownership</u>			<u>Total</u>	<u>%</u>
	<u>Owens Property</u>	<u>Owens No Property</u>	<u>Unknown</u>		
Waimea District	7	9	0	16	3
Koloa District	53	32	0	85	18
Lihue District	147	107	2	256	53
Kawaihau District	26	20	0	46	9
Hanalei District	8	3	0	11	2
Elsewhere in State	5	22	0	27	6
Out-of-State	1	10	0	11	2
Unknown	<u>18</u>	<u>16</u>	<u>0</u>	<u>34</u>	<u>7</u>
TOTAL	265	219	2	486	100
Percent	55%	45%	Negligible	100%	

Source: List of Interested Parties and Place of Residence: Grove Farms, Inc.
 Property Ownership: Kauai County Tax Office Alpha Listing,
 February 16, 1983.

Appendix A. List of Vacant Residential Houselots in the Lihue District.

<u>Subdivision and Parcel Description</u>	<u>Owners' Name</u>	<u>No. of Vacant Lots</u>	<u>Ownership of Other Kauai Real Estate</u>
Kalapaki		12	
TMK 3-2-08: 9	R. Electric Retirement Income Plan		0
14	Crowell, Edwin K., et al.		1
69	Mizutani, Charles H., et al.		1
75	Au, Allen K.L., et al.		2
77	Vierra, Joseph, et al.		2
80	Ishimoto, Gail A., et al.		1
81	Matsunaga, Shigeru/Tomie S.		4
82	Akana, William A.S.		7
83	Masamura, Alan H./Dale M.		1
84	Demakus Gus/wf. Kimiko		0
TMK 3-2-08:85	Takiguchi, Mary S.		1
86	Crowell, Keikilani R. Sasaki, Henry I/Mildred E.		1
Hale Nani Tract		3	
TMK 3-6-08: 5	Halemanu, Alfred L., et al.		-
8	Carvalho, Raymond S., et al.		1
12	Uchida, Michiyuki and wf.		1

<u>Subdivision and Parcel Description</u>	<u>Owners' Name</u>	<u>No. of Vacant Lots</u>	<u>Ownership of Other Kauai Real Estate</u>
Unnamed Subdivision		9	
TMK 3-6-10: 7	Kato, Eric T., et al.		1
66	Hashimoto, Sueo/Janet		1
67	Aiu, Raymond H./Verlie, et al.		3
TMK 3-6-11:32	Onishi, Terry M./Candace N.		-
36	Hale Kauai Ltd.		10
37	Hale Kauai Ltd.		10
38	Hale Kauai Ltd.		10
39	Hale Kauai Ltd.		10
40	Hale Kauai Ltd.		10
Molokoa Village Units 1 & 2		14	
TMK 3-6-15:45	Matsuwaki, Chiyuki/Kay K.		-
53	Yoneji Isao/Miyuki		2
56	Rapozo, Raymond P./Maureen		1
59	Doi, Malcolm Y./Violet		-
62	Mashizume, Taichi/Edith		1
TMK 3-6-16:26	Umemoto, Satoshi, et al.		1
45	Ushio, Setsuo/Edith S.		1
48	Hiranaka, Jane		-
57	Galindo, Benedicto/Adelaida		-
59	Shinsekí, Tamotsu/Fudeko		3
TMK 3-6-17: 4	Akama, Betsy K., et al.		-

<u>Subdivision and Parcel Description</u>	<u>Owners' Name</u>	<u>No. of Vacant Lots</u>	<u>Ownership of Other Kauai Real Estate</u>
TMK 3-6-18:19	Uyeda, Jane M., et al.		-
TMK 3-6-19: 8	Reynolds, Bernice A.		-
20	M. Ajimura, Inc.		4
Ulu Mahi		12	
TMK 3-6-22:55	Lopes, Frank, Jr. and wf.		3
58	Cosner, Vincent L. and wf.		-
60	Murashige, Hiroshi/Ann Y.		2
61	Watt, Michael J./Margaret		3
64	Ellis, Wayne/Helen R.		1
65	Ellis, Wayne/Helen R.		1
66	Funaku, Michiye F.		-
67	Senda, Dean Y.		-
69	Toyofuku, Guy K./Lori M.		-
72	Villanueva, Jovencio B./J.B.		2
73	Puhi Enterprises		NA
75	Mikasa, Henry Y., et al.		1
Lihue Town Estates Increments 1 and 2		23	
TMK 3-6-23:25	Ravalio, Rudy L., et al.		-
26	Kishaba, Edward Y./Ruth Y.		-
29	Murashige, Brian		-
34	Nilson, Edwin F./Lydia B.		1
36	Aguada, Manuel E./Leyte		1

<u>Subdivision and Parcel Description</u>	<u>Owners' Name</u>	<u>No. of Vacant Lots</u>	<u>Ownership of Other Kauai Real Estate</u>
38	Maeda, Richard K./Yukie		4
51	Shikiya, Gilbert K./Katsumi		-
56	Madriaga Felicismo M./ Andrea, Rida, Robert A., Jr./ Rosalita		1
75	Bautista, Laurentina		NA
77	Rego, John, et al.		1
TMK 3-6-24:14	Gano, Tito R./Marina B.		1
23	Pajardo, Lucio B./Tesita P.		-
38	Agcadili, Florencio B./Gloria		4
45	Yamamoto, Alfred M./Nancy		-
48	Nobrega, Joseph F./Rose R.		
49	Franco, Pacifico L.		-
53	Furuta, Masao/Hannah		-
57	Matsuyama, Warren D./Melanie		1
59	Batangan, Reuben, et al.		-
64	Kusaka, Henry M.		-
65	Peahu, Rolland B./Evelyn		2
66	Hiranata, Isamu/Yoshino		1
75	Hiranata, Clayton K./Sheare S.		NA
Ulu Mahi Subdivision Unit II		20	
TMK 3-6-25: 1	Sloggett, Richard H., Jr./B.B.		1
2	Hiranaka, Leslie A./Lynn L.		-
3	Uyeno, John M., et al.		2

<u>Subdivision and Parcel Description</u>	<u>Owners' Name</u>	<u>No. of Vacant Lots</u>	<u>Ownership of Other Kauai Real Estate</u>
4	Maeda, Richard/Yukie		-
5	Chiba, Melvin I./Sharon N.		1
6	Kishaba, Edward Y./Ruth Y.		3
7	Matsuyama, Warren/Melanie		1
8	Matsuwaki, Chiyuki/Kay K.		5
9	Araki, Richard T., et al.		1
12	Prosser, Robert Jean/Sue Ann		5
14	Nishiguchi, Earl K./Lorna U.		1
17	Ishii, Chica Y., et al.		1
20	Shiraishi, Clinton I.		9
21	Goodale, David W./Heidi H.		1
23	Wada, John C./Diane B.		-
29	Peters, Hollis J.K./Isabella M.		-
30	Harada, Frank S./Arlene S.		1
33	Agata, Yoshio/Kimiko		-
34	Ogata, Winston F./wf. Marian		2
36	Emura, Ray S., et al. Nakamatsu, Miles C./wf. Amy T.		1
Wiliko Homes Tract Unit II		23	
TMK 3-7-05: 5	Inagaki, Laraine N., et al.		-
26	Miyabara, Katsunaga		-
100	Miller, Rodney J./wf. Emily wf.		-
TMK 3-7-06: 4	Tateishi, Herbert T.		1
19	Pascual, Criscente R., et al.		-

<u>Subdivision and Parcel Description</u>	<u>Owners' Name</u>	<u>No. of Vacant Lots</u>	<u>Ownership of Other Kauai Real Estate</u>
22	Monroid, Albrium M./Lucy, et al.		1
24	Uchiyama, William M.		3
25	Carvalho, Richard S./Albena A.		1
TMK 3-7-06:26	Taparo, Olivia/Soledad		-
30	Ragasa, Theodore O., et al.		-
31	Suehira, Kojun		-
32	Okuhara, Milton/Faith M.		1
33	Rapozo, Leonard A., Sr./Laola P.		1
34	Saulibio, Leon/Leonara R.		1
41	Yamamoto, Mitsuo/Mary M.		6
45	Morehead, Bruce A./Angela M.		-
46	Arita, Masaharu/Jane M.		1
47	Bolosar, Eliseo/Geraldine V.		1
60	Rapozo, Wallace/Liese, et al.		-
65	Acosta, Numeriano R./N., et al.		-
84	Micar and Associates		-
85	Estebar Caesar P./Gloria D.		-
94	Carvalho, Marie A.		-
Wiliko Homes Tract Unit I		6	
TMK 3-7-08:49	Hanamaulu, Hui - A		NA
50	The Southland Corporation		NA
51	Hanamaulu, Hui - A		NA
65	Hanamaulu, Hui - A		NA
66	Hanamaulu, Hui - A		NA
67	Hanamaulu, Hui - A		NA