



STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION

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DEPT. OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION

May 12, 2004

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
235 South Beretania Street, Room 702
Honolulu, Hawaii 96813-2437

Dear Ms. Salmonson:

Subject: LUC Docket No. A04-746/Waikapu 28 Investment
Finding of No Significant Impact (FONSI) for Proposed Waiolani Mauka Subdivision
Waikapu, Maui, Hawaii
Tax Map Key: 3-5-04:25

On May 7, 2004, the Land Use Commission made a determination that the subject project will not have significant environmental effects and issued a FONSI.

We respectfully request that this determination be published in the next available issue of The Environmental Notice.

Enclosed please find the following:

- 1) OEQC Bulletin Publication Form
- 2) Project Summary Description (an electronic copy will also be e-mailed)
- 3) Four Copies of the Final Environmental Assessment

A copy of the Commission's Order reflecting its action of May 7, 2004, will be provided to you under separate cover.

Please feel free to contact Bert Saruwatari of my office at 587-3822, should you require clarification or any further assistance.

Sincerely,

A handwritten signature in cursive script that reads "Anthony J. H. Ching".

ANTHONY J. H. CHING
Executive Officer

c: Blaine J. Kobayashi, Esq. (w/o enclosures)
Karlynn Kawahara (w/o enclosures)
Scott Nunokawa (w/o enclosures)

2004-05-23 FONSI
WAIOLANI MAUKA SUBDIVISION

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LAND USE COMMISSION
STATE OF HAWAII
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Final
Environmental Assessment

**PROPOSED WAIOLANI
MAUKA SUBDIVISION
AT TMK 3-5-04:25**

Prepared for:

May 2004

Waikapu 28 Investment, LLC


MUNEKIYO & HIRAGA, INC.

Final
Environmental Assessment

**PROPOSED WAIOLANI
MAUKA SUBDIVISION
AT TMK 3-5-04:25**

Prepared for:

May 2004

Waikapu 28 Investment, LLC


MUNEKIYO & HIRAGA, INC.

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w2811c/waikapu/finalea.rpt

Preface

Waikapu 28 Investment, LLC proposes the development of an approximately 108± lot single-family residential subdivision at Waikapu, Maui, Hawaii (TMK 3-5-04:25). The 28.7-acre parcel will be subdivided to create lots ranging between 7,500 square feet and 12,000± square feet. The proposed subdivision is located on lands classified as "Agricultural" by the State Land Use Commission (Commission). The property is designated "Single-Family" and "Public/Quasi-Public" (2-acre portion) by the Wailuku-Kahului Community Plan. The County of Maui zones the property "Agricultural".

Towards implementing the proposed subdivision, a State Land Use Commission District Boundary Amendment from the "Agricultural" district to the "Urban" district will be required. In addition, a Community Plan Amendment will be required to redesignate the 2-acre Public/Quasi-Public area to Single-Family Residential. Finally, a County Change in Zoning will be needed to establish the R-2, Residential zoning district.

Additionally, the project proposes the installation of approximately 80 feet of drainline across Honoapiilani Highway, a State of Hawaii roadway. Traffic signal warrants at the intersection of Honoapiilani Highway and Pilikana Street are anticipated to be met with the proposed project and, as such, the applicant will be participating in the signalization. While traffic signal and drainline installation may be considered exempt actions under the State Department of Transportation Exemption list, the actions will be covered in this Environmental Assessment.

Inasmuch as the proposed action involves a Community Plan Amendment and work within the State right-of-way, this environmental assessment has been prepared pursuant to Chapter 343, Hawaii Revised Statutes. Accordingly, this report documents the proposed action and addresses potential impacts and mitigation measures anticipated in connection with project implementation. Due to recent litigation in Maui County involving the interpretation of HRS §343, there has been some uncertainty concerning which County or State agency is the "approving agency" for purposes of HRS §343 compliance. In a recent case, the Circuit Court of the Second Circuit ruled that the Commission was the appropriate "approving agency" for purposes of HRS §343 and HAR §11-200 compliance. Therefore, as stated in HRS §343(c), in relevant part, "[w]henver an applicant proposes an action specified by subsection (a), which requires approval of an agency . . . the agency receiving the request for approval shall prepare an environmental assessment of such proposed action at the earliest practicable time to determine whether an environmental impact statement shall be required." (Emphasis added).

The administrative rules ("HAR") for HRS §343, found in Title 11, Department of Health, Chapter 200, has similar language. Specifically, HAR §11-200-9(b) states, in pertinent part "[f]or applicant actions . . . the approving agency shall: (1) Require the applicant, at the earliest practicable time, to seek the advice and input of the lead county agency responsible for implementing the county's general plan" (Emphasis added). The

term "approving agency" is defined in HAR §11-200-2 as "an agency that issues an approval prior to actual implementation of an action."

Based on the foregoing provision, and in particular, the recent Circuit Court ruling, the applicant believes that the Commission can, and should be, the approving agency for the environmental assessment prepared for the project.

Executive Summary

Applicant: Waikapu 28 Investment, LLC

Accepting Authority: State Land Use Commission

Agencies Consulted: A total of three (3) Federal Government agencies, eight (8) State of Hawaii Government agencies, seven (7) County of Maui agencies, two (2) private companies and two (2) community groups were consulted in making the assessment. For further information, refer to Chapter XI of this Final Environmental Assessment.

General Description: The applicant is proposing the construction of the Waiolani Mauka single-family residential subdivision with approximately 108± single-family lots in Waikapu, Maui, Hawaii (TMK 3-5-04:25).

The 28.7-acre site is vacant and was formerly used for sugar cane and pineapple cultivation. The project site is surrounded by single-family residence uses on the south and west borders and vacant former agricultural lands to the east and north. An analysis with regard to the action's technical, economic, social and environmental aspects is provided in the following Final Environmental Assessment.

Chapter 1

Project Overview

I. PROJECT OVERVIEW

A. PROPERTY LOCATION, EXISTING USE AND LAND OWNERSHIP

The applicant for the project is Waikapu 28 Investment, LLC. The proposed Waiolani Mauka single-family residential subdivision involves the construction of approximately 108± single-family lots in Waikapu, Maui, Hawaii (TMK 3-5-04:25). See Figure 1 and Figure 2.

The 28.7-acre site is vacant, being formerly used for sugar cane cultivation. Vegetation on the site include buffelgrass, fingergrass, koa haole, kiawe, and castor bean.

The landowner for the property is Waikapu 28 Investment, LLC.

B. PROPOSED ACTION

The proposed project involves the development of approximately 108± improved lots. See Figure 3. The lot sizes are proposed to be a minimum of 7,500 square feet. Under the project's preliminary marketing concept, improved lots would be sold to interested purchasers in fee simple interest. Sales prices for each lot are projected to range from \$140,000.00 to \$190,000.00.

Improvements proposed in connection with the subdivision include clearing, grubbing and grading; installation of underground water and wastewater systems, drainage works, and utility systems; construction of internal roadways; and street landscaping.

Additionally, the applicant had discussions with the County of Maui administration and has agreed to set aside a 2-acre parcel within the subdivision for a future park. This park land will exceed the subdivision's requirements for its park assessment and will be dedicated to the County

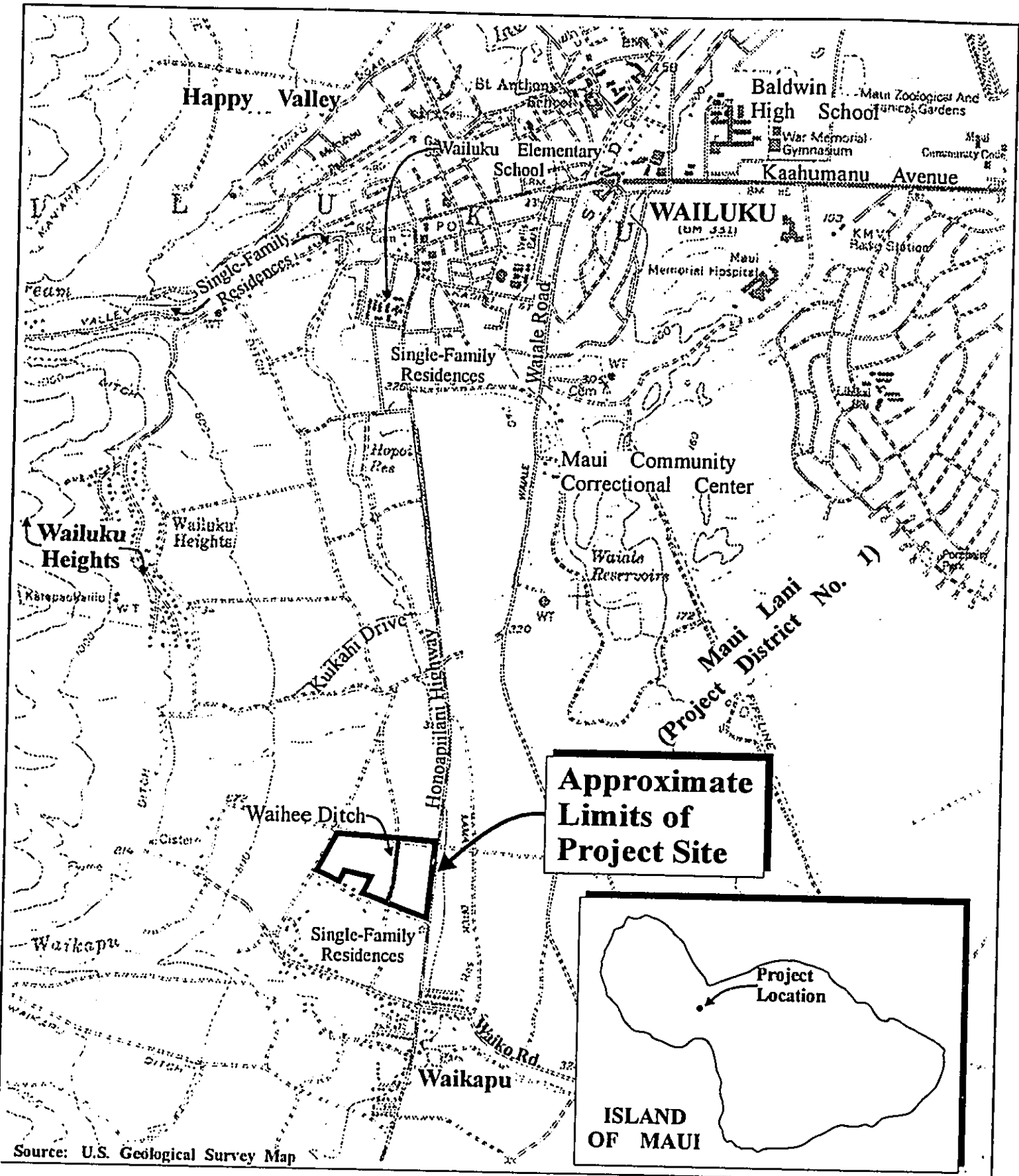
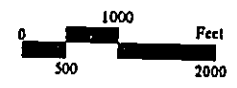


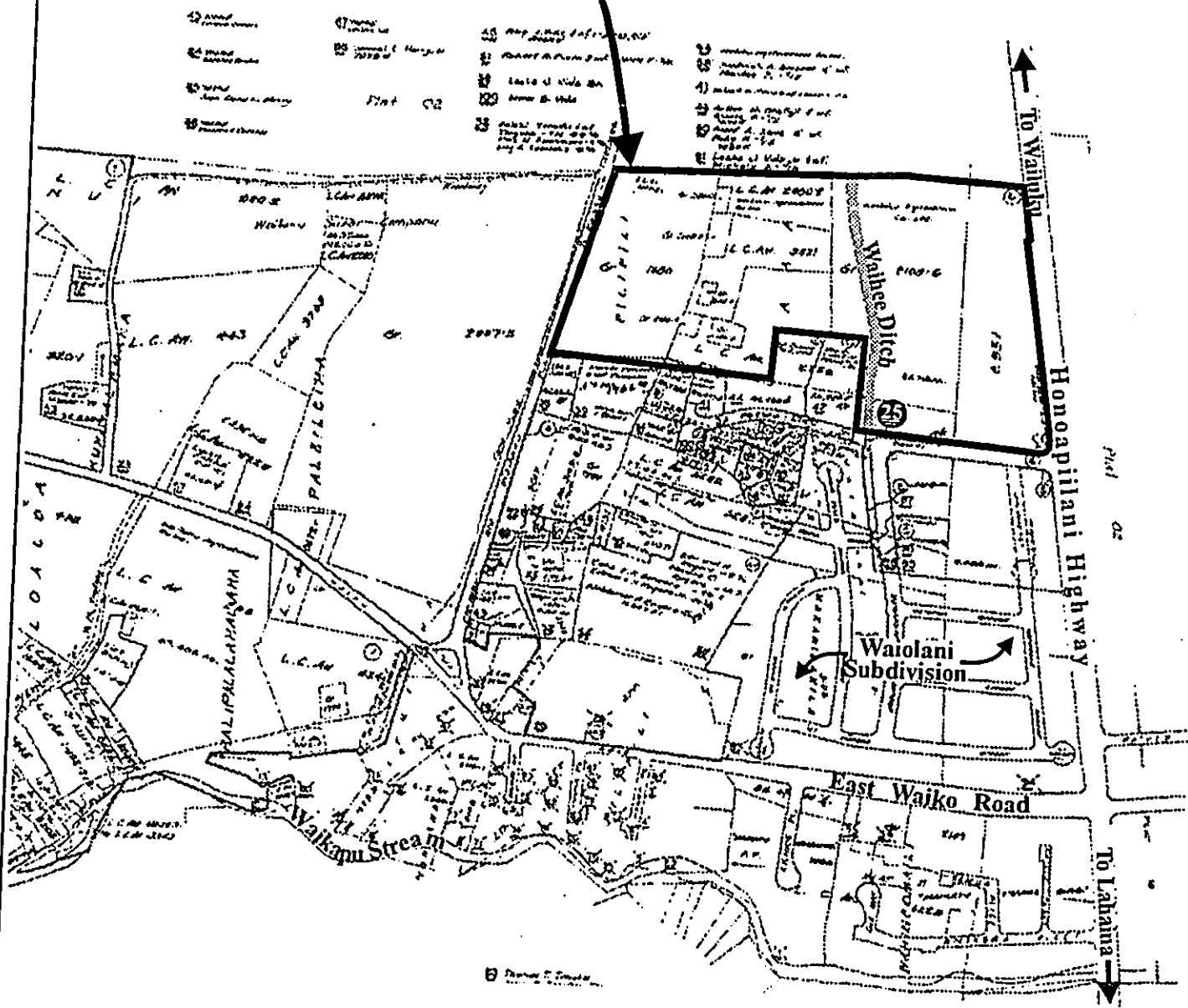
Figure 1 Proposed Waiolani Mauka Subdivision Regional Location Map



Prepared for: Waikapu 28 Investment, LLC

MUNEKIYO & HIRAGA, INC.

Subject Property



Source: Realty Atlas

SECOND DISTRICT	
ZONE	SEC. PLAT.
3	5 04
CONTAINING PARCELS	

Figure 2

**Proposed Waiolani Mauka
Subdivision
Site Location Map**

NOT TO SCALE



Prepared for: Waikapu 28 Investment, LLC

MUNEKIYO & HIRAGA, INC.

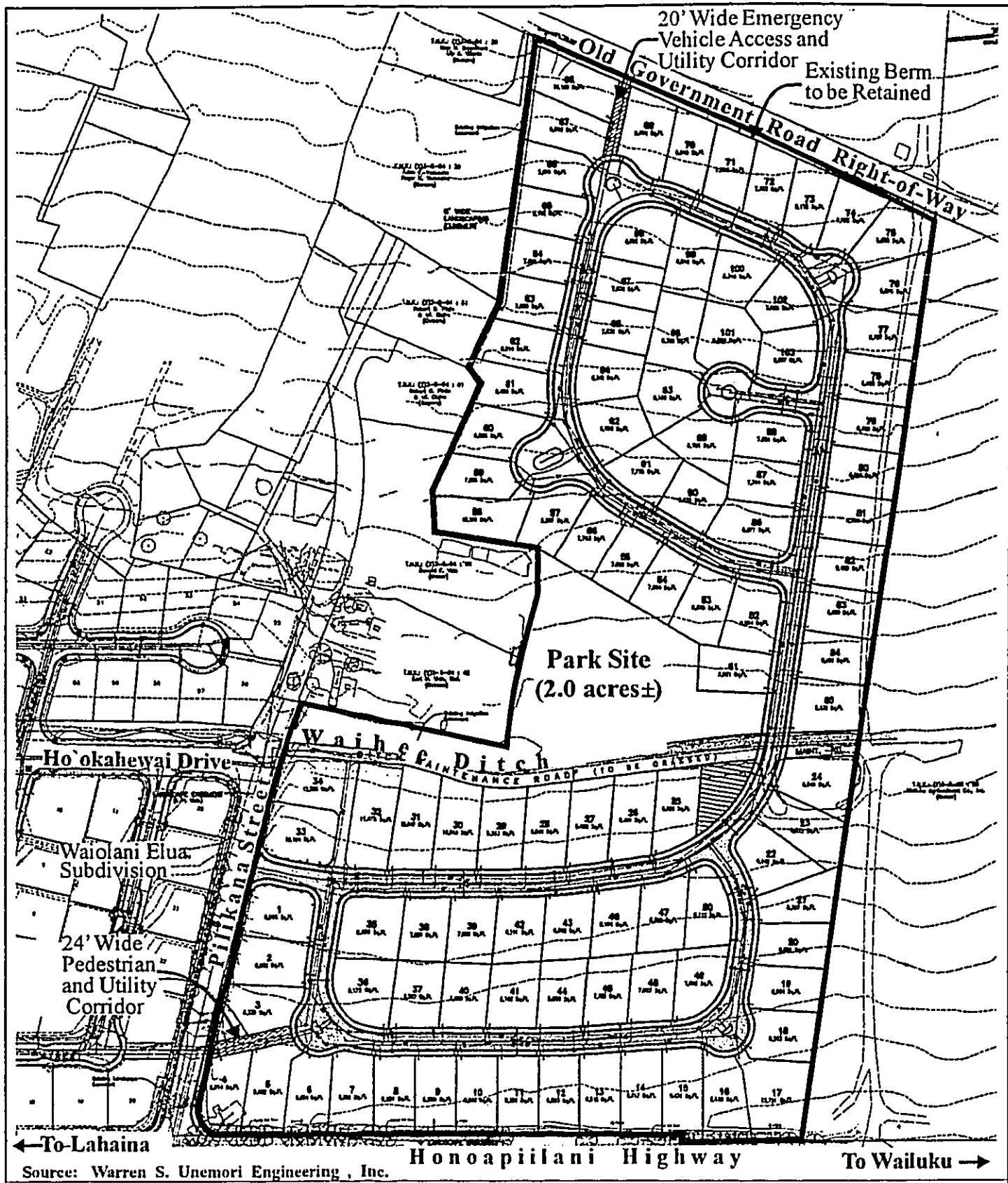


Figure 3

Proposed Waiolani Mauka
Subdivision
Preliminary Subdivision Layout

NOT TO SCALE



Prepared for: Waikapu 28 Investment, LLC

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of Maui once the subdivision process is complete. The park parcel is located near the center of the subdivision, in close proximity to the section of the Waihee Ditch that runs through the property. Wailuku Agribusiness will maintain ownership of the Waihee Ditch. Refer to Figure 3.

The estimated cost for subdivision improvements is \$4,200,000.00. Subdivision improvements are anticipated to begin in late 2005 and will take approximately eight (8) months to complete. Lot sales are anticipated to occur over an 18-month period.

C. REASONS JUSTIFYING THE REQUEST

The Waikapu residential area is surrounded by lands primarily used for agricultural production. However, the project site is located within an area of existing and planned residential development (as reflected by the proposed update to the Wailuku-Kahului Community Plan). The project is designed to reflect a subdivision concept integrated with the original 116-lot Waiolani Subdivision and the 25-lot Waiolani Elua subdivision to the immediate south. In this context, the subdivision's proposed design would reflect compatibility with the neighboring Waiolani Subdivisions in terms of lot layout. Additionally, the property which abuts the project site to the north is also designated by the Community Plan for Single-Family.

With continued stability in local economic conditions, housing demand has exhibited an upward trend. Sales information for single-family subdivisions in Central Maui (e.g., Wailuku Parkside and Maui Lani) indicate that demand for single-family products is strong, with continuing strength in demand anticipated. Sale of single-family "lot-only" demand has also shown strength with very little supply available. See Appendix "A".

D. ENTITLEMENTS REQUIRED

The 28.7-acre parcel is currently classified "Agricultural" by the State Land Use Commission (LUC). As such, a petition for boundary amendment will be filed with the LUC to seek the needed "Urban" classification. The property is also designated Single-Family and Public/Quasi-Public by the Wailuku-Kahului Community Plan. An approximately 2-acre area at the northwest corner of the Pilikana Street-Honoapiilani Highway intersection is designated for Public/Quasi-Public use. This Public/Quasi-Public area was originally intended for a future fire station site. However, the County of Maui has reevaluated the location and determined that another site is more desirable for a future fire station in the Waikapu area. With this in mind, the applicant is seeking to redesignate the Public/Quasi-Public area to Single-Family. Finally, the entire 28-acre site is County-zoned "Agriculture". Implementation of the proposed subdivision requires a change in zoning to the "R-2", Residential district zone. Applications for both Community Plan Amendment and Change-in-Zoning will be filed with the Maui Planning Department for consideration by the Maui Planning Commission and final action by the Maui County Council.

Additionally, the project plans to install approximately 80 feet of drainline across the State of Hawaii's Honoapiilani Highway to connect to a reservoir owned by Wailuku Agribusiness or other off-site drainage improvements. The applicant has secured an access easement to this irrigation reservoir as well as the right to increase its capacity by one (1) acre by dredging or enlarging the area.

Further, the cumulative impact of the subdivision meets the warrants for the installation of a traffic signal at the intersection of Honoapiilani Highway and Pilikana Street. As such, the applicant will be participating in the signalization of the intersection. Although the installation of a traffic

signal is considered an exempt action under the State Department of Transportation's Exempt Action list, it is being included in this Draft Environmental Assessment.

Since a Community Plan Amendment application will be filed and work will be done on a State roadway, this environmental assessment has been prepared pursuant to Chapter 343, Hawaii Revised Statutes.

Chapter II

***Description of the
Existing Environment***

II. DESCRIPTION OF THE EXISTING ENVIRONMENT

A. PHYSICAL SETTING

1. Surrounding Land Uses

The village of Waikapu is located approximately 1.2 miles south of Wailuku Town. Originally developed as a sugar plantation town, Waikapu today is primarily a residential area with limited lands allocated for commercial use along Honoapiilani Highway, in the vicinity of the former Waikapu Stop. The Maui Tropical Plantation is located at the southern extent of Waikapu, approximately 0.42 mile from the subject property. Waiko Road, connecting Honoapiilani Highway with Kuihelani Highway, is also sparsely bordered with commercial enterprises which include Maui Scrap Metal, Brewer Environmental's warehouse facility, Rojac Trucking's baseyard, and a proposed 14.4-acre light industrial subdivision. Lands surrounding Waikapu to the south are cultivated in sugar cane and pineapple.

Honoapiilani Highway forms the eastern boundary to the subject property. The main entrance roadway to the Waiolani Subdivision is Pilikana Street, which forms the south boundary of the subject property. Lands north of the subject property are fallow fields, formerly used for sugar cane cultivation. Further northwest and west of the subject property are the Wailuku Heights residential community and agricultural lands.

Ho'okahewai Drive links with Pilikana Street and forms the western boundary of the project. The Waiolani residential subdivisions are located to the south of the subject property.

2. **Climate**

Like most areas of Hawaii, Maui's climate is relatively uniform year round. Characteristic of Hawaii's climate, the project site experiences mild and uniform temperatures year-round, moderate humidity and a relatively consistent northeasterly tradewind. Variation in climate on the island is largely left to local terrain.

Average temperatures at the project site (based on temperatures recorded at Kahului Airport) range from lows in the 60's to highs in the 80's. August is historically the warmest month, while January and February are the coolest. Rainfall at the project averages 20 to 30 inches per year. Winds in the region are predominantly out of the north-northeast and northeast.

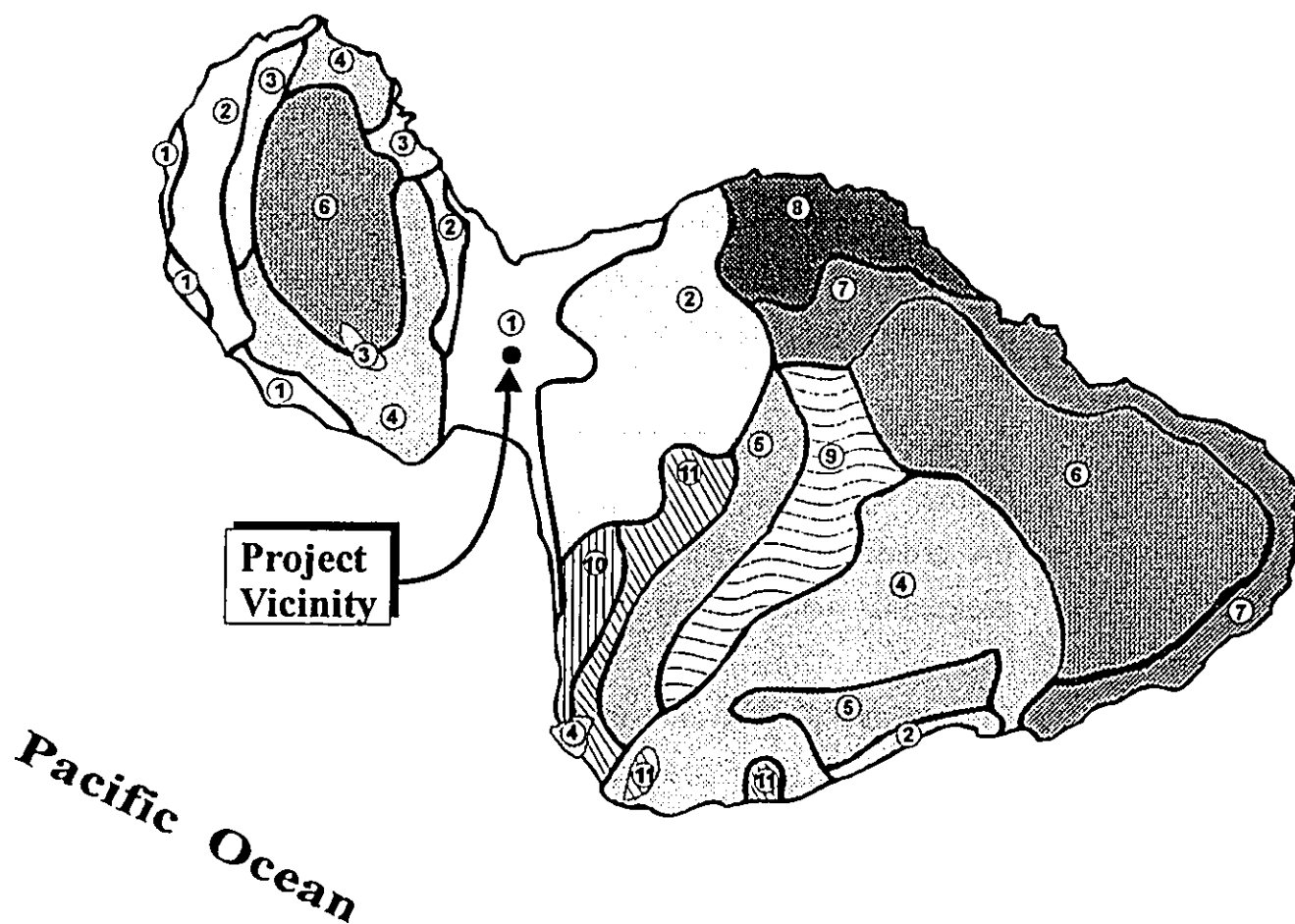
3. **Topography and Soils Characteristics**

Elevations at the project site range from approximately 410 feet to 450 feet above sea level. Average slope is approximately 6.8 percent.

The project site is located along Honoapiilani Highway and is defined by soils within the Pulehu-Ewa-Jaucas association, which is characterized as deep, nearly level to moderately sloping, with well drained soils that have a moderately fine to course textured soil. See Figure 4. Underlying the project site is lao clay, 3 to 7 percent slopes (lcB) soil. Found on smooth alluvial fans and valley fill, this soil type has a 15-inch surface layer of dark brown clay. The 45-inch deep subsoil is dark brown clay and silty clay. The soil is neutral and has moderately slow permeability. With medium runoff, the erosion hazard for lcB soil is slight to moderate. The project site also consists of lao cobbly silty clay, 3 to 7 percent

LEGEND

- | | |
|--|---|
| <p>① Pulahu-Ewa-Jaucas association</p> <p>② Waiakoa-Keahua-Molokai association</p> <p>③ Honolulu-Olelo association</p> <p>④ Rock land-Rough mountainous land association</p> <p>⑤ Puu Pa-Kula-Pane association</p> <p>⑥ Hydrandepts-Tropaquods association</p> | <p>⑦ Hana-Makaalae-Kailua association</p> <p>⑧ Pauwela-Haiku association</p> <p>⑨ Launala-Kaipoi-Olinda association</p> <p>⑩ Keawakapu-Makana association</p> <p>⑪ Kamaoie-Oanapuka association</p> |
|--|---|



Map Source: U.S. Department of Agriculture,
Soil Conservation Service

Figure 4

Proposed Waiolani Mauka
Subdivision
Soil Association Map

NOT TO SCALE



Prepared for: Waikapu 28 Investment, LLC

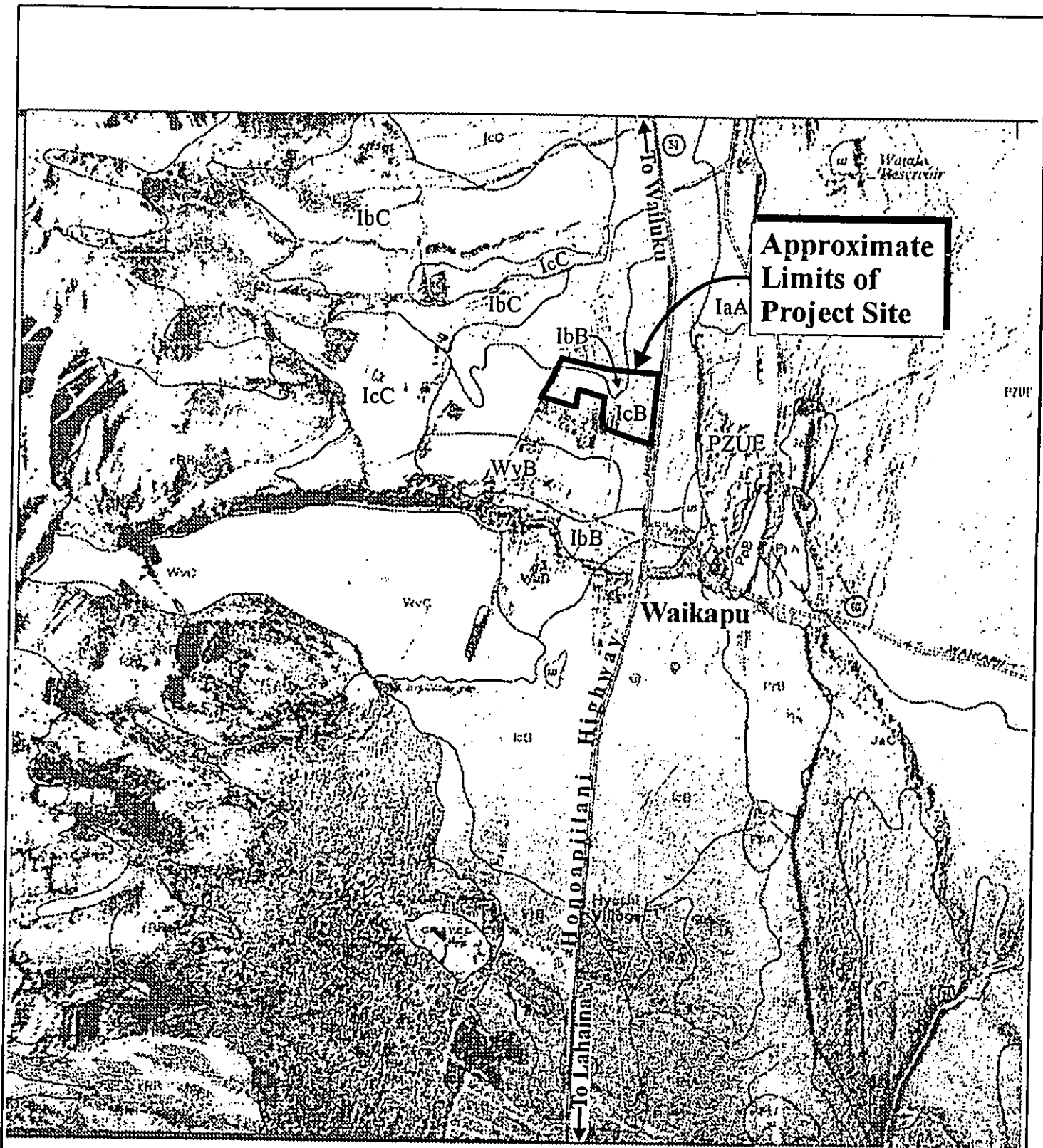
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slopes (IbB) soil, which has a similar profile to the IcB soil type except for the texture of the surface level and the content of cobblestones. This type of soil is used for sugar cane and homesites (U.S. Dept. of Agriculture Soil Conservation Service). See Figure 5.

The State Department of Agriculture has established three (3) categories of Agricultural Lands of Importance to the State of Hawaii (ALISH). Utilizing modern farming methods, "prime" agricultural lands have the soil quality, growing season, and moisture supply needed to produce sustained crop yields economically, while "unique" agricultural lands possess a combination of soil quality, location, growing season, and moisture supply currently used to produce sustained high yields of a specific crop. "Other" important agricultural lands include those which have not been rated "prime" or "unique".

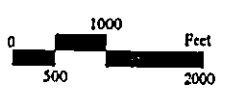
As indicated by the ALISH map, the project site falls within the "prime" agricultural lands categories. See Figure 6. The lands in the project area were formerly utilized to support large scale agricultural activities and are presently fallow and undeveloped.

The University of Hawaii Land Study Bureau classifies productivity characteristics on a scale of "A" to "E", with lands designated as "A" reflecting highest productivity and "E" representing lands ranked lowest. Productivity classifications are further classified by soil types conveying information such as texture, drainage, and stoniness. Land underlying the project site is classified as A80i, which reflects soil that is over 30 inches deep, nonstony, and well to excessively drained. The soil texture ranges from fine and



Source: U.S. Department of Agriculture, Soil Conservation Service

Figure 5 Proposed Waiolani Mauka
Subdivision
Soil Classification Map



Prepared for: Waikapu 28 Investment, LLC

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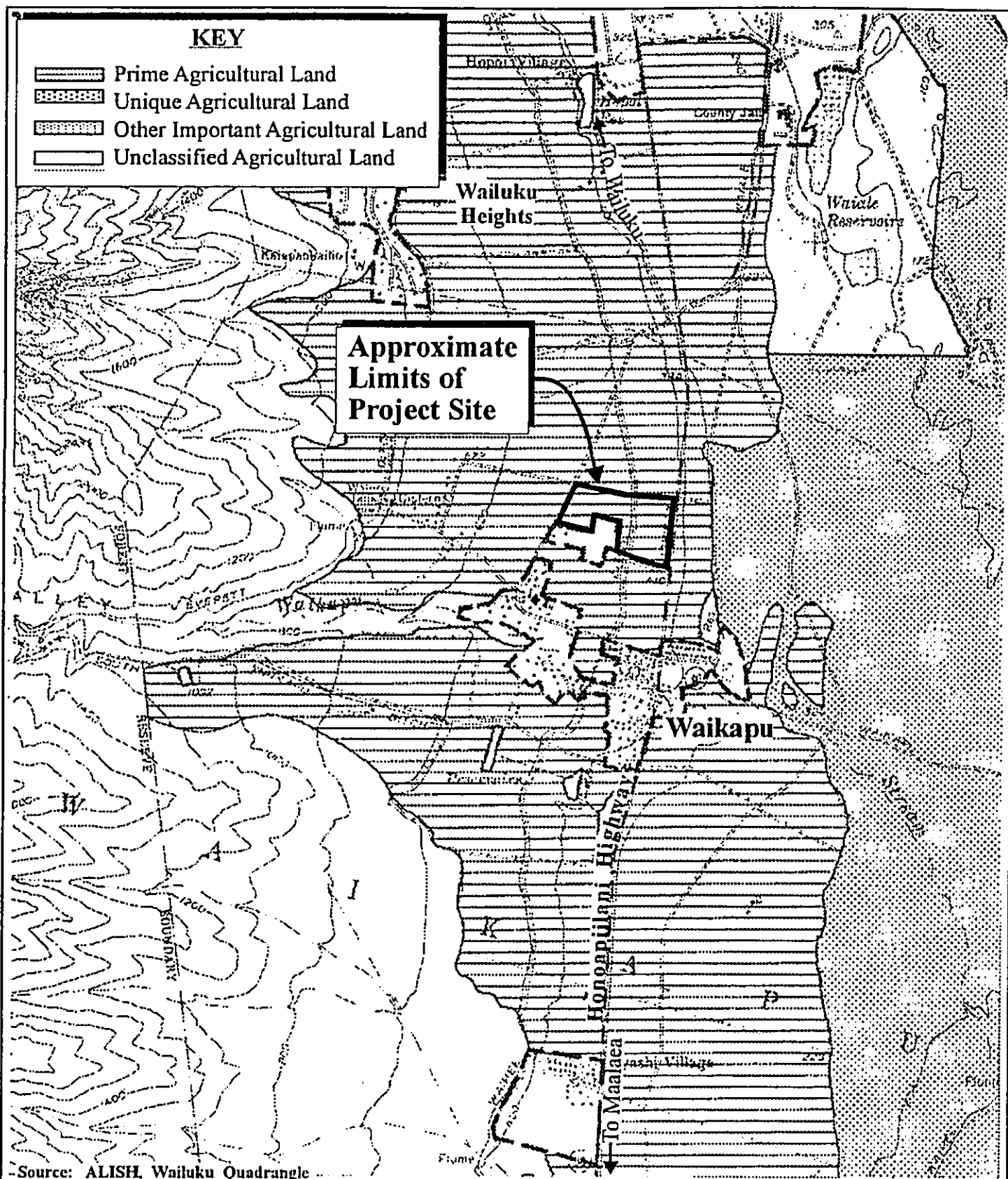
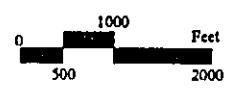


Figure 6 Proposed Waiolani Mauka Subdivision
 Agricultural Lands of Importance to the State of Hawaii



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moderately fine in this area (Land Study Bureau).

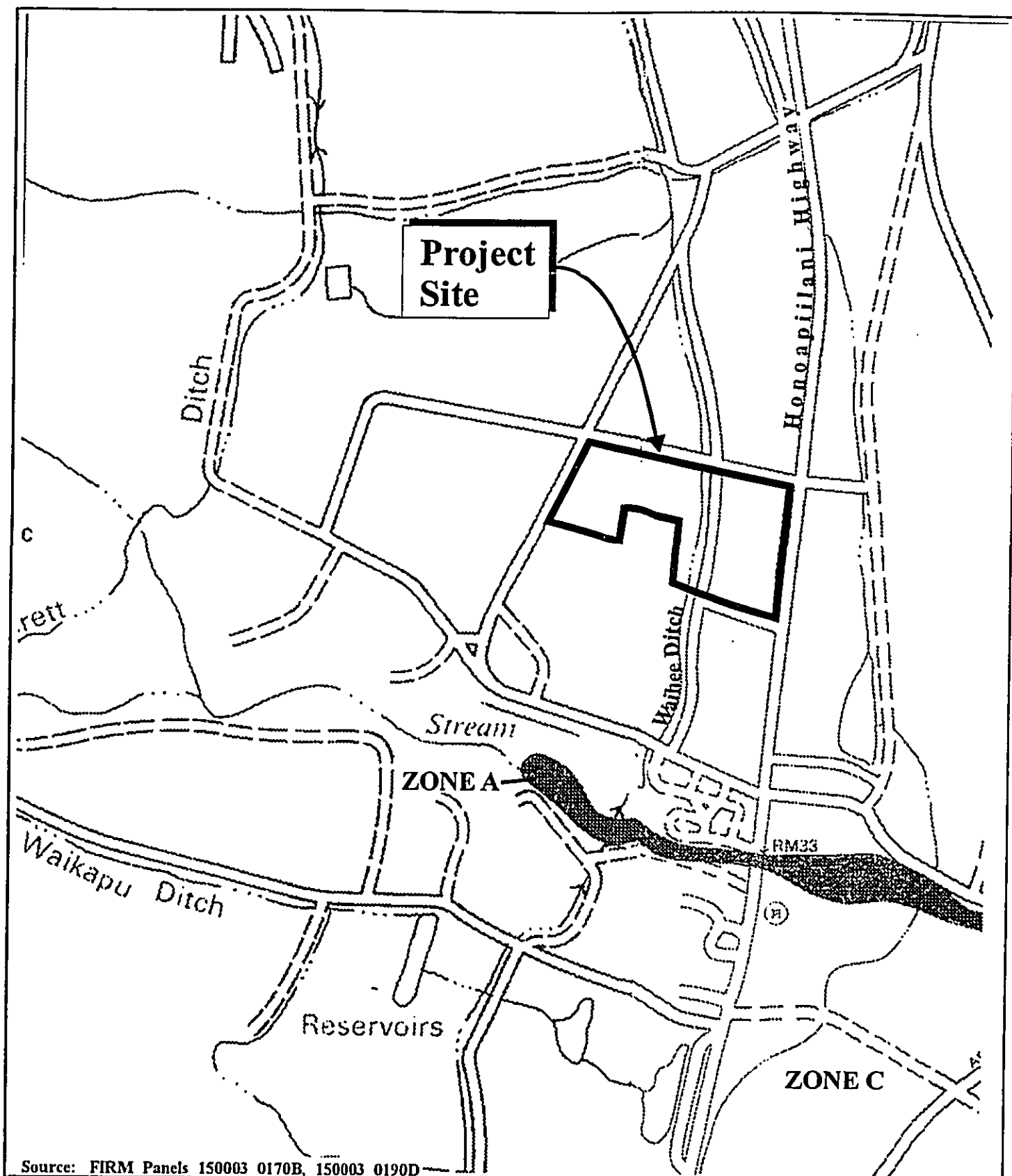
4. **Flood and Tsunami Hazard**

The project site is located near the eastern base of the West Maui Mountains. As indicated by the Flood Insurance Rate Map for the County of Maui, the project site is located within Zone C, an area of minimal flooding (Federal Emergency Management Agency). See Figure 7.

5. **Streams and Reservoirs**

Waikapu Stream is located approximately 0.33 mile to the north of the project site. Waikapu Stream is a perennial stream which originates in the upper reaches of Waikapu Valley, ultimately discharging into Kealia Pond, in the Maalaea flats. According to the Hawaii Stream Assessment, the Waikapu Stream has no listed tributaries and flows to the sea year-round. The Assessment noted that gaging information exists and that dam or diversion weirs have been noted. Further, the Assessment found that the Waikapu Stream was important for taro cultivation in the past and that Waikapu Valley may contain valuable cultural and historic sites (Hawaii Cooperative Park Service Unit, 1990).

A plantation reservoir is located across Honoapiilani Highway to the east, approximately 0.2 mile from the project site. This reservoir is maintained by Wailuku Agribusiness Company, Ltd. and is actively used for sugar cane irrigation. There are no identified wetlands in the vicinity of the subject property.



Source: FIRM Panels 150003 0170B, 150003 0190D

Figure 7 Proposed Waiolani Mauka
Subdivision
Flood Insurance Rate Map



Prepared for: Waikapu 28 Investment, LLC

MUNEKIYO & HIRAGA, INC.

6. **Flora and Fauna**

The site has been formerly utilized for sugar cane cultivation but is currently fallow. Vegetation in the region is generally characterized by introduced grass species. Other plant species typically associated with the area include sandbur, lantana, fingergrass and bristly foxtail. The project site also contains vegetation such as koa haole, kiawe and castor bean.

Terrestrial fauna in the region include introduced species, such as cats, mice, rats, and mongoose. Some of the avifauna introduced to the area include the Spotted Dove, Barred Dove, Japanese white-eye, Cardinal, Red-Crested Cardinal, and Mynah.

There are no known rare, endangered, or threatened species of flora and fauna located within or in the vicinity of the project site.

7. **Archaeological Resources**

An archaeological inventory survey was conducted on the subject parcel by an archaeological consultant. The objective of the inventory survey was to determine the presence/absence, nature, extent and significance of cultural resources in the project area. The scope of work for the investigation, as required by the State Department of Land and Natural Resources' State Historic Preservation Division (SHPD), included limited subsurface testing and pollen analysis.

Results of the investigation identified a segment of State Site 50-50-04-5197, the Waihee Ditch, in the project site. The ditch, constructed between 1905-1907, provides irrigation water to sugar cane and pineapple fields. No other surface cultural remains or

areas of exposed deposits were identified during the survey. Further discussion on the findings of the archaeological inventory survey can be found in Chapter 3 of this report.

8. **Air Quality**

There are no point sources of airborne emissions within proximity of the project site. Air quality in the vicinity of the project site may be affected by a variety of sources, including dust from pineapple cultivation operations to the west of the property, as well as smoke and dust from sugar cane harvesting and cultivation operations to the south and east. Although minimal, airborne pollutants are largely attributable to vehicular exhaust from traffic along the region's roadways. However, these sources are intermittent and prevailing winds quickly disperse the particulates generated by these temporary sources. Overall, air quality in the Waikapu region is considered good.

9. **Noise**

Traffic noise from Honoapiilani Highway is the predominant source of noise in the vicinity of the property. Traffic on East Waiko Road and other local roads in the vicinity are a secondary source of background noise. Other background noise levels are attributed to nearby agricultural operations on an intermittent basis as well as natural conditions such as wind and rain.

10. **Scenic and Open Space Resources**

In addition to Mount Haleakala to the east, Waikapu Valley and the West Maui Mountains define the scenic resources to the west of the project site. Surrounding the project site on three (3) sides is

vast open space, and former agriculture lands. The project site is not part of a scenic corridor.

B. SOCIO-ECONOMIC ENVIRONMENT

1. Population

The population of the island of Maui has exhibited relatively strong growth over the last two (2) decades. The 2000 population was estimated at 117,644, an increase from the 1990 population of 91,361. The Year 2005 population is estimated at 127,950, while the population for the Year 2020 is projected to be 160,090 (SMS, 2002).

The estimated Year 2000 population for the Wailuku-Kahului Community Plan region was 41,503. The region's population shows an estimated increase to 44,883 in the Year 2005. By the Year 2020, population in the region is projected to increase to 55,424 (SMS, 2002).

2. Housing

According to the SMS Socio-Economic Forecast for Maui County, the island of Maui's housing supply in the year 2000 totaled 40,041 units of which 32 percent, or 12,852 were located in the Wailuku-Kahului Community Plan. This area accounts for the largest percentage of housing units on the island. Demand for housing in this region in the year 2000 was 13,528 units. Housing demand in the Wailuku-Kahului area is projected to grow to 16,826 units in the year 2010 while the expected number of households is estimated at 15,985 units. By the year 2020, the housing demand is expected to reach 20,054 units compared to the projected household count of 19,051 units (SMS, pages 58-59).

Based on a separate report compiled by the Hawaii Small Business Development Center Network, 4 percent of the 13,128 housing units in Central Maui were vacant compared to a county-wide vacancy rate of 23 percent. Of the occupied housing units in Maui County, owners reside in 58 percent of the units. Owner occupancy for Central Maui was slightly higher at 61 percent (Hawaii Small Business Development Center).

Average sales price for homes in Central Maui were noticeably lower than the county-wide average. During the month of February 2004, the median sales price of a Central Maui home was \$367,500.00 compared to an island-wide median price of \$550,000.00 (Realtor Association of Maui, March 2004).

Household and Family Characteristics

The average household size in the Wailuku-Kahului area in the year 2000 was 3.17 compared to an island wide average of 2.90. These numbers are expected to decrease to an average of 3.03 and 2.80 respectively by the year 2010 and 2.91 and 2.72 respectively by the year 2020 (SMS, 2002).

The median household income in the Wailuku-Kahului area in the year 2000 was \$43,261.00. A more detailed breakdown of household income based on the Housing and Urban Development (HUD) median county income in this region is provided in Table 1.

3. Economy

The Wailuku region is the island's center of governmental activities, as well as a focal point for professional and business services. Combined with neighboring Kahului, the region's economic

Table 1

HOUSEHOLD INCOME			
<i>Number of Households Earning No More Than</i>	<i>2000</i>	<i>2010</i>	<i>2020</i>
50% of HUD Median	4,212	5,143	6,054
80% of HUD Median	6,712	8,279	9,812
100% of HUD Median	8,682	10,734	12,742
120% of HUD Median	9,923	12,289	14,605
140% of HUD Median	10,816	13,416	15,961
Source: SMS Socio-Economic Forecast 2002.			

character encompasses a broad range of commercial, service and governmental activities. In addition, the region is surrounded by significant agricultural acreages which are currently planted in sugar cane and pineapple. The vast expanse of agricultural land, managed by Hawaiian Commercial & Sugar (HC&S) and Maui Pineapple Company, is considered a key component of the local economy.

4. Employment

In the year 2000, the unemployment rates for Maui County and the island of Maui stood at 4.1 percent and 3.9 percent respectively. As of March 2004, Maui County and the island of Maui unemployment rates were 3.6 percent and 3.4 percent, respectively (Labor and Occupational Information Hawaii, State Department of Labor and Industrial Relations, 2004). In the year 2000, there were a total of 32,851 civilian jobs in the Wailuku-Kahului area, representing 48 percent of the island-wide civilian jobs. Of those jobs, 25,688 were

wage and salary positions while 7,163 were self-employed (SMS, 2002). In terms of job employment distribution, the Wailuku-Kahului region generally follows the county-wide trends for the labor force characteristics shown in Table 2.

Table 2

EMPLOYMENT DISTRIBUTION		
Occupational Category	Maui County	Wailuku-Kahului
Agriculture	3 percent	4 percent
Manufacturing	2 percent	5 percent
Construction	4 percent	1 percent
Transportation, Communication and Utilities	6 percent	10 percent
Trade	21 percent	22 percent
Banking and Finance	4 percent	4 percent
Hotel	14 percent	1 percent
Other Services	16 percent	18 percent
Government	9 percent	14 percent
Self-Employed	21 percent	22 percent
Source: SMS, 2002.		

C. PUBLIC SERVICES

1. Police and Fire Protection

Police protection for the Wailuku-Kahului region is provided by the County Police Department headquartered at the Wailuku Station. The region is served by the Department's Central Maui patrol. The Police Department provides investigative services, uniform patrol services, technical support, and traffic services in an effort to fulfill

its mission to enhance the quality of life for residents and the community (Budget Proposal, Fiscal Year 2004).

Fire prevention, suppression, protection, rescue, and emergency services for the Wailuku-Kahului region is provided by the County Department of Fire and Public Safety's Wailuku Station, located in Wailuku Town on Kinipopo Street and the Kahului Station on Dairy Road (Budget Proposal, Fiscal Year 2004).

2. Health Care

Maui Memorial Medical Center, the only major medical facility on the island, services the Wailuku-Kahului region. Acute, general and emergency care services are provided by the 196 bed facility. In addition, numerous privately operated medical/dental clinics and offices are located in the area to serve the region's residents.

3. Solid Waste

Single-family residential solid waste collection service is provided by the County of Maui on a once-a-week basis. Residential solid waste collected by County crews are disposed at the County's 55-acre Central Maui Landfill, located four (4) miles southeast of the Kahului Airport. In addition to County-collected refuse, the Central Maui Landfill accepts commercial waste from private collection companies.

4. Recreational Resources

The Wailuku-Kahului region encompasses a full range of recreational opportunities, including shoreline and boating activities at the Kahului Harbor and adjoining beach parks, and individual and organized athletic activities offered at numerous County parks.

The Waikapu Community Center is located in the immediate vicinity of the project site. This County owned facility includes a baseball field, basketball court, and community center building. The Wailuku Agribusiness' two (2) Brewer Little League fields are also located near the project site and are available for public use. A nearby park adjacent to the Hale Makana O Waiale Affordable Housing complex contains a baseball field, basketball court, and playground equipment. Other recreational facilities in the Wailuku area include Iao Park, Wells Park, Wailuku Pool, Wailuku Gym, Wailuku Elementary School Park, the Wailuku Community Center, Papohaku Park, War Memorial Athletic Complex, Sakamoto Pool, and Keopuolani Park.

5. **Schools**

The Wailuku-Kahului region is served by the State Department of Education's public school system, as well as several privately operated schools accommodating elementary, intermediate and high schools students. Department of Education facilities in the Wailuku area include Wailuku Elementary School (Grades K to 5), Iao Intermediate School (Grades 6 to 8), and Baldwin High School (Grades 9 to 12). Schools in the Kahului area include Lihikai and Kahului Schools (Grades K to 5), Maui Waena Intermediate School (Grades 6 to 8), and Maui High School (Grades 9 to 12). The enrollments in 2001 for the public schools serving this area can be found in Table 3. Maui Community College, a branch of the University of Hawaii, serves as the island's only community college (Hawaii Small Business Development Center Network, 2002). The community college is scheduled to become a four-year university in the next few years.

Table 3

<i>2001 ENROLLMENT IN PUBLIC SCHOOLS</i>		
<i>School</i>	<i>Enrollment</i>	<i>Grades</i>
Wailuku Elementary	952	K to 5
Iao Intermediate	842	6 to 8
Baldwin High	1,693	9 to 12
Lihikai Elementary	1,144	K to 5
Kahului Elementary	834	K to 5
Maui Waena Intermediate	1,008	6 to 8
Maui High	1,673	9 to 12
Source: Maui County Data Book, 2002.		

D. INFRASTRUCTURE

1. Roadways

Honoapiilani Highway is under the jurisdiction of the State of Hawaii Department of Transportation and is the main artery linking Waikapu to Central, South and West Maui. Honoapiilani Highway is a two-lane, two-way facility with separate left-turn lanes that runs in a north-south direction in the project vicinity. The posted speed limit on Honoapiilani Highway fronting the project site is 30 miles per hour (mph).

Pilikana Street is a two-lane, two-way County roadway that provides access to Honoapiilani Highway from the residential area to the west. The intersection of Pilikana Street and Honoapiilani Highway is unsignalized and contains separate left-turn and right-turn lanes on to the highway. Separate right-turn and left-turn

lanes from Honoapiilani Highway on to Pilikana Street are also provided. Pilikana Street runs in an east-west direction.

East Waiko Road is a two-lane, two-way roadway with portions of the road owned by the County of Maui and by private business. East Waiko Road runs in an east-west direction and connects with the State of Hawaii's Honoapiilani Highway in the west at an unsignalized intersection and with the State of Hawaii's Kuihelani Highway in the east at a signalized intersection.

2. Water

When the Waiolani Subdivision Phase I was constructed, sewer, water and drainline stubouts were provided on the south side of Pilikana Street near its intersection with Honoapiilani Highway. Refer to Preliminary Engineering Report, Appendix "D".

The source of the water for the Waiolani Mauka project will be the Iao Aquifer, the Waihee Aquifer and/or surface water. In keeping with the recommended practice of dispersing their well sites, the Department of Water Supply (DWS) recently drilled a new well at their Waikapu tank site near the end of Waiko Road. They are currently finalizing the design of the deep well pump and equipment for this well.

Additionally, since the designation of the Iao Aquifer by the Commission on Water Resource Management in July 2003, the DWS is moving forward on a number of other projects to address the water resource issue for the Central and South Maui areas. Included in the DWS project list are the design and development of a well at Iao and the improvements to the Iao Treatment Plant,

which utilizes surface water. The Iao Treatment Plant will increase capacity by 2.4 million gallons per day and is anticipated to be on-line by the end of 2004. Refer to DWS comment letter dated January 28, 2004 in Section XI of this report.

3. **Wastewater**

Although a sewer stubout is available at the southeast corner of the project site, the northwest corner of the project site is lower than the elevation of this sewer invert. Therefore, the northeast corner of the project site must be raised by filling in, to provide sufficient fall to the sewer stubout.

The capacity of the Kahului Wastewater Reclamation Facility (KWWRF) was expanded several years ago from 6.0 million gallons per day (MGD) to 7.9 MGD. According to the Division of Wastewater Management for the County of Maui, the current daily flow through the KWWRF is around 5.0 MGD.

4. **Drainage**

A low berm along the east side of the old government road right-of-way keeps offsite runoff from entering the project site. This berm directs offsite runoff towards a natural gully located north of the project site. This gully drains into Waiale Pond, owned and maintained by Hawaiian Commercial & Sugar (HC&S) for irrigation purposes.

Runoff from the present 28.7-acre project site sheet flows across the site in a southwest to northeasterly direction. Although a small amount of runoff sheet flows into Waihee Ditch, most of this sheet flow accumulates at the northeast corner of the site where a low

berm temporarily impounds the flow. When the berm overtops, the water flows onto Honoapiilani Highway and the properties below. There is a small irrigation reservoir below Waihee Ditch adjacent to the north boundary which also serves as an impoundment facility when flow in Waihee Ditch exceeds its capacity.

The present runoff from the undeveloped project site for a 50 year-1 hour storm is estimated to be 27.3 cubic feet per second (cfs).

5. **Electricity, Telephone and Cable Television Systems**

The existing overhead electrical, telephone, and cable television lines located on the easterly side of Honoapiilani Highway provide the source of these utilities for the project site. Maui Electric Company, Verizon Hawaii and Time Warner Oceanic Cable provides electrical, telephone and cable television services, respectively.

Chapter III

Potential Impacts and Mitigation Measures

III. POTENTIAL IMPACTS AND MITIGATION MEASURES

A. IMPACTS TO THE PHYSICAL ENVIRONMENT

1. Surrounding Land Uses

The project site is located adjacent to Waikapu Town and abuts the 116-lot Waiolani Subdivision and the 25-lot Waiolani Elua Subdivision. The proposed action calls for a 108± lot subdivision similar in character and scale to the adjacent Waiolani Subdivision. Waikapu contains primarily single-family residential uses, although there are neighborhood commercial uses along Honoapiilani Highway.

The proposed action will result in a residential community compatible with surrounding residential lands. The proposed action is, for the most part, designated for single-family use by the Wailuku-Kahului Community Plan and is deemed to be a use consistent with the Community Plan's intent to direct residential growth to areas adjacent to existing developed areas. As earlier stated, the County of Maui has determined that the 2-acre Public/Quasi-Public designated area at the corner of Pilikana Street and Honoapiilani Highway is no longer their desired location for a future fire station in Waikapu.

2. Topography and Landform

The 28.7-acre parcel slopes in a west to east direction at an approximate slope of 6.8 percent. Elevations at the mauka or westerly extent of the property are at approximately 525 feet, while elevations at the easterly or makai extent of the property, near Honoapiilani Highway is at roughly 405 feet. Mass grading will be undertaken to provide the necessary grades for subdivision roadway and house pad construction. Grading plans will attempt

to balance excavation and embankment quantities to the extent possible. Drainage patterns will be maintained to ensure impacts to downstream properties are minimized. In general, adverse impacts to topography and landforms resulting from grading activities are not expected.

3. **Flora and Fauna**

There are no known significant habitats or rare, endangered, or threatened species of flora or fauna located on the project site. In addition, the proposed improvements are not anticipated to impact wetland areas and wildlife habitats. As such, the removal of vegetation and displacement of wildlife from the project site is not considered an adverse impact to these components of the natural environment.

4. **Wetland and Streams**

There are no wetlands in the vicinity of the subject property. Waikapu Stream will not be affected by the proposed action. Drainage generated from the property will not be discharged directly into Waikapu Stream.

5. **Cultural Impact Considerations**

a. **Geopolitical Division**

Prior to Western contact in Hawaii, land was divided into units called *ahupua'a*. Ideally, each *ahupua'a* was self-sufficient, running from *mauka*, the mountain, to *makai*, the ocean (MacKenzie, page 3). These divisions served as both cultural and settlement systems as traditional Hawaiian life was tied intimately to the land. Hunting, gathering, cultivation, and habitation took place within three (3) zones

which characterized the *ahupua'a*: the *Mauka* Zone, the Agricultural Zone, and the Coastal Zone. The *Mauka* Zone provided access to a variety of trees, plants, and herbs for various needs, customs and practices. Planting of yams, sweet potato, sugar cane, taro, and other foods took place in the Agricultural Zone where gradual slopes of land allowed terraces to be constructed for more efficient irrigation. The Coastal Zone and low-lying areas was where most of the *kauhale*, group of houses, were found, as well as temples, fishing shrines, and fishponds (Matsuoka, page 77).

Western contact brought changes to the Hawaiian land system along with the introduction of private ownership of land, a concept foreign to the Native Hawaiians. A Board of Land Commissioners was established in 1845 to uphold or reject all private land claims of both foreigners and Hawaiians. The Commission adopted rules pertaining to the proof of claims, right of tenants, and commutation to the government in attempts to achieve the goal of totally partitioning undivided lands. All lands not claimed by February 1848 were to be forfeited to the government (MacKenzie, page 6).

Following the enactment of these rules, the *Mahele* division of 1848 divided all lands of Hawaii between the king and chiefs. Two (2) years later the *Kuleana* act completed the *Mahele* process by authorizing the Land Commission to award fee simple titles to native tenants for their land. These *kuleana* parcels, also known as Land Commission

Awards (LCA), were generally among the richest and most fertile in the islands and came from the king, government, or chief's land. All claims and awards were numbered and recorded in the *Mahele* Book (MacKenzie, page 8). In addition, government lands were sold as "Royal Patent Grants" or "Grants" in order to meet the increasing costs of government. These grants differed from LCAs, as it was not necessary for the recipients to obtain an award for their land from the Land Commission (*The Great Mahele*, pages 27-28).

Prior to the *Mahele*, the division called Na Wai Eha, meaning "The Four Streams," covered the four (4) great valleys of the West Maui Mountains which drained eastward into Central Maui. Waikapu, the southern most stream, was the last of "The Four Streams" (Speakman, pages 107-108).

During the *Mahele* period, the Land Commission awarded over 100 LCAs in the Waikapu *ahupua'a*.

According to the Tax Map Key map for the project site, it appears that three (3) LCAs were granted: LCA 2980, LCA 3521 and LCA 2226. Historical records from the Native Register in 1847 and 1848 indicate that these parcels of lands were used mainly for agricultural purposes as taro *lo'i* (irrigated patches) and contained *hala* (lauhala) trees. The records indicate that there were as many as 40 *lo'i* in the three (3) LCAs. The native Hawaiian testimony also made mention of several *kula* (open pasture lands) in the subject LCAs. The testimony further indicated that some of the *lo'i*

were owned by chiefs or other landowners (*lo'i po'alima* and *lo'i pa'ahao*) and the tenants provided labor on these lands as payment.

b. Traditional and Customary Rights

Hawaiian customs and practices are recognized as "Hawaiian usage" if it can be shown to have been exercised prior to November 25, 1892, which was when the Hawaiian Kingdom Legislature adopted British common law into the Hawaiian legal system (Minerbi, page 98). The traditional and customary rights of Native Hawaiians can be broken down into access rights, gathering rights, burial rights, and religious rights.

Access

Native Hawaiians generally share the same access rights as the general public. However, they have the unique access rights to *kuleana* parcels and between *ahupua'a*. Access to *kuleana* parcels may involve access along ancient trails or expanded access not limited to any route. Additionally, the *Kuleana* Act granted unobstructed access within the *ahupua'a* to obtain items necessary to make the *kuleana* parcel productive. Access rights between *ahupua'a* involve access along ancient or well established trails (MacKenzie, pages 214-220).

Gathering

In terms of gathering rights, the Hawaii Supreme Court has upheld gathering rights within an *ahupua'a* for firewood, house-timber, *aho* cord, thatch, and *ki*-leaf under three (3) conditions. The tenant must physically reside within the *ahupua'a*, the right to gather can only be exercised upon undeveloped lands within the *ahupua'a*, and the right must be exercised only for the purpose of practicing Native Hawaiian customs and traditions (MacKenzie, page 226).

Burial

According to traditional Hawaiian burial beliefs, following death, the *'uhane*, or spirit, must remain near the *na iwi*, or bones. Burial sites are chosen by Hawaiians for symbolic purposes in places for safekeeping. Often, bones were hidden in caves, cliffs, sand dunes, or deposited in the ocean. Today, federal and state laws protect both unmarked and marked burial sites. Island Burial Councils assist the State Historic Preservation Division with inventory and identification of unmarked Hawaiian burial sites and determine the preservation or relocation of native Hawaiian burial sites (MacKenzie, pages 248-254).

Religious

Hawaiian religion and beliefs were intimately tied to the land. While some practices and traditions were lost over the years, basic Hawaiian religious concepts remain. The terms "*aloha 'aina*," love the land and "*malama 'aina*," care for and protect the land, convey the unity of humans, nature, and the gods in Hawaiian philosophy (Minerbi, page 129). Furthermore, Hawaiians honored and worshiped *aumakua*, deities, and *akua*, gods. There were numerous *akua* of farming, fishing, tapa making, dancing, sports, and any other activity of Hawaiian life. The concept of *mana* or sacred attachment to places, people, or things also remains as a significant aspect of Hawaiian religion (MacKenzie, page 232).

The First Amendment of the U.S. Constitution guarantees the freedom to practice religion. To the Native Hawaiians, freedom to practice religion includes a freedom to practice a way of life which acknowledges the sacredness of places, animals, and natural forces (MacKenzie, page 240). However, Hawaii case law has established stringent constitutional tests regarding the infringement on a religious practice. In 1982, the Hawaii Supreme Court ruled that in order to find an act an unconstitutional infringement on religious practice, the following factors must be considered: (1) the legitimacy and sincerity of the practice, (2) whether or not the practice is burdened, (3) the extent of the impact on religious practices, and (4) whether or not the state had a compelling interest that justified the burden (Minerbi, page 131).

c. **Physical Features of the Land at Waikapu**

Waikapu Stream, the only completely landbound of "The Four Streams," traverses the vast Central Maui plain. An abundance of wet plantations and taro patches once extended from the base of Waikapu to below the valley. Sugar cane fields later replaced these plantations, leaving a few plantings preserved in plantation camps, homes, and garden sites (Handy, pages 496-497).

d. **Waikapu's Settlement and Historical Context**

It has been estimated that the lower coastal valleys of West Maui were settled early as an agriculturally oriented society, sustaining an expanding population into the late prehistoric period. Population growth led to the establishment of agricultural complexes in the upper valleys of West Maui. These population centers, located in either coastal or upland regions, were characterized by extensive terrace and pondfield agriculture and dispersed residential structures on the outskirts of the agricultural complexes. Religious structures and fishponds in coastal areas were significant components of the population centers (Titchenal, pages 10-11).

The sugar cane industry entered the region early in the historic period as cane syrup was being produced as early as 1828. In 1863 the Waikapu plantation was established, later becoming part of the Wailuku Sugar Company (Titchenal, page 8). As previously noted, prior to the acquisition of land by Wailuku Sugar Company, the land was used for taro *lo'i* or open, pasture lands.

e. **Archaeological Resources of the Waikapu Area**

Archeological studies have determined that Waikapu, as well as the other of "The Four Streams," had many temples and religious sites. Studies also claim that two (2) *heiau* (religious temples) were located near the Catholic Church in Waikapu, however, both no longer remain today (Titchenal, page 9). A number of battles took place in the region, including Fornander's account of the battle of the Waikapu Commons or the *Ahulau ka pi'ipi'i i Kakanilua*. The following account describes the battle on the sand hills southeast of Wailuku:

...The detachment or regiment known as the Alapa, mustering 800 men, was selected for this hazardous expedition, and with high courage, they started across the isthmus of Kamaomao, now known as the Waikapu common, as the legend says, 'to drink the waters of Wailuku that day.'...Little did this gallant troop apprehend the terrible fate that awaited them...Kahekili distributed his forces in various directions on the Wailuku side of the common, and fell upon the Hawaii corps d'armee as it was entering among the sandhills southeast of Kalua, near Wailuku. After one of the most sanguinary battles recorded in Hawaiian legends,...the gallant and devoted Alapa was literally annihilated; only two out of the 800 escaped alive to tell Kalaniopuu of this Hawaiian Balaclava" (Fornander 1969:153).

f. **Legends and Tales**

According to legend, the name Waikapu was given because in ancient times there was a cave on the south side of the stream located about a mile inland, in which a great conch shell (*pu*) was hidden. The sounds of the conch could be

heard in the valley, thus giving the area the name Waikapu, "water of the conch". A dog named Puapua-lena-lena stole the conch, and since then it has never been heard (Handy, pages 497-498).

g. Informant Interviews

In order to obtain personal perspectives on cultural issues surrounding the subject property, interviews were conducted with individuals having intimate and long-standing knowledge of the area. These interviews are summarized below.

Koichi Yamaoka

Mr. Yamaoka was born in Wailuku in 1925. He lived in Wailuku until he was 8 ½ years old and then his family moved to Japan. They returned six (6) months later and he has lived on the same property in Waikapu since 1934. He owns two (2) lots which abut the subject property. He and his wife still live in the original family home which has seen additions over the years. His two (2) daughters and their families also live on the property.

Mr. Yamaoka's father bought the property and was a farmer who grew vegetables. He remembers when there were farms in the area from the base of the West Maui Mountains down to the area across the Honoapiilani Highway where the Wailuku Agribusiness reservoir stands today. There was a farmer's association back then, but it ceased after farming operations stopped. When Mr. Yamaoka took over the land, he went into the piggery business and away from vegetable farming. The piggery operation stopped in early 1990s. He has *kuleana* water rights tied to his property and has a deed for the property written in native Hawaiian. He remembers Waikapu Town with its few shops; Furukawa Store (the former Waikapu Stop) which used to deliver groceries to the homes and Sakamoto Store, which sold odds and ends and had a gas station.

As far as he can remember, Mr. Yamaoka stated that the project site was used by C. Brewer for sugar cane cultivation

and later, for pineapple. There were some plum trees on both his land and the project site, but the ones on the project site were cut down and now he needs to plant something else for protection from the wind. He did not recall any other use of the land while he has lived next door. To his knowledge, the land has laid fallow for the last five (5) to ten (10) years.

Mr. Yamaoka noted that he does not recall any burials in the vicinity, but stated that there was a graveyard at the old Waikapu Catholic Church near Waiko Road. The church has since been turned into a home according to Mr. Yamaoka. He also noted that a long-time Waikapu family, that has land near the project site, may have family burials on their property.

Wayne Rosario

The interview was carried out in Wailuku, Maui on August 27, 2003.

Mr. Rosario was born at the Malulani Hospital in Wailuku in 1931. He moved to Waikapu in 1942 and lived next door to the subject property. He has since moved from that land, but still lives in Waikapu. He has lived on Maui all of his life, except for ten (10) years when he lived in Ohio. Mr. Rosario is a member of the Cockett family. His grandfather, Joseph Cockett, owned property in Waikapu which was later given to the youngest son, Ruben Cockett. His great-grandfather Cockett, four times removed, was a blacksmith in Lahaina. He also owned lands in Honokowai. Mr. Rosario's great-grandmother was a Kekealii. They owned lands from Waikapu to Iao. Mr. Rosario has five (5) sons, two (2) sets of twins.

Mr. Rosario remembers swimming in the Waihee ditch that runs through the subject property. He also recalled swimming in various punawais around the Waikapu area. Mr. Rosario only remembers the subject property being used for sugar cane and then pineapple cultivation. He remembers when Waikapu Town was "booming." In addition to shops, it had two (2) theaters, a service station, and its own motor pool and hospital.

As far as existing problems that affect Waikapu, he is concerned about traffic, especially on West Waiko Road.

Mr. Rosario noted that he has not observed the subject property being used for traditional cultural practices.

Royal G.L. Vida

The interview was carried out in Wailuku, Maui on August 27, 2003.

Mr. Vida was born at the Maui Memorial Hospital in Wailuku in 1957. He has lived on the parcel that abuts the subject property all of his life, except for a few years while he was away at school and working on Oahu. Mr. Royal G.L. Vida returned to Waikapu in 1981 and has lived there ever since. His family has owned the land in Waikapu for several generations. His grandfather was a member of the Cockett family. The song "Maui Girl" was written about his great-grandmother. Mr. Vida and his wife have two (2) sons and a daughter. They currently live on the property in Waikapu.

Currently, Mr. Vida plants bananas, ti leaves and has fish ponds, palms, plants, etc. He also uses his property, which neighbors the subject property to the south, for his residence. Additionally, Mr. Vida's cousin has horses, pigs and cattle and built an arena to practice roping in a neighboring lot.

Mr. Royal G.L. Vida recalls the subject property as being used for sugar cane and later pineapple cultivation. He felt it was serene with the sugar cane, but later when the pineapple was planted, he could view the surrounding area. He remembers playing in the cane fields after it was plowed and riding his bike on the cane haul roads. He also remembers playing in the ditch by stopping it up and making the water deep enough to go swimming, or to bathe in after chores were done. Mr. Vida also remembered a cement flume that used to run by their house, that they used to swim in as well. He also recalls finding odd shaped stones on the subject property and remembers an uncle who would ask the stone for permission before removing them from any location.

As far as existing problems in the area, Mr. Royal G.L. Vida noted that traffic is a concern as well as dust, since the lands that were in agriculture use are currently fallow. In the future, he is concerned about access in and out of his subdivision whether for everyday use or emergency access. He is also concerned that adequate infrastructure be in place.

He notes that he has not observed any traditional cultural practices on the subject property.

Royal G. Vida

The interview was carried out in Wailuku, Maui on August 27, 2003.

Mr. Vida was born at the Puunene Hospital. He moved to Waikapu in 1936. He has lived on Maui all of his life, except for four (4) years when he served in the military. His family has owned the land in Waikapu for several generations. His father was a member of the Cockett family. The song "Maui Girl" was written about his grandmother as follows:

Maui Girl - Traditional

I love a pretty Maui girl
She lives at Waikapu
With rosy cheeks and pearly teeth
And lovely nut brown hair
Her waist is oh so slender
Her opu too much nui, nui
And of all the wahine I ever did aloha
Sweet Maria beats them all

Hui:

My love to you, ua hiki no
Your love with me, pe la no
Don't tell mama, kulikuli
She'll tell papa luliluli
Nui, nui pilikia with me now

Her father keeps a taro-patch ranch
Next door to Bill Cornwell's sugar mill

And being on a Sunday night
To see them there I went
As I was strolling through the cane field
As on my way I roam
It's there I met sweet Maria
As she drove the pua'a home
I took my Maria for a walk
Among the bright green grass
It's there I whisper words of love
Unto this young country lass
I placed my arm around her opu
And sat down by her side
And asked her to be true
And be my loving bride
And now we name the wedding day
And how happy we should be
No thought of pilikia shall enter
The mind of her or me
But in her farm house
We'll both be happy night and day
And our life shall pass like sunshine
For we'll always be loving and gay

(Source: Copyright 1892 W.E Reynolds - arranged by Ernest Kaai and Ignacio Libornio, some credit this song to Libornio. Maria is also pronounced Maraea, as heard in the older versions.)

He has four sons and a daughter. A son and his family, as well as his daughter and her family, currently live on the property in Waikapu. Mr. Royal G. Vida moved to Kahului in 1987. Mr. Vida's family owns property that abuts the subject property to the south.

Mr. Vida remembers playing in the Waihee ditch that runs through the subject property. He stated that Wailuku Sugar used to have high wooden flumes constructed where they would float the sugar cane down to the railroad cars near Waiale Road. There was a man, who was a luna for the plantation, who would ride on his horse and monitor the flumes. As children, they would play and sometimes stop up the flumes by turning the bundles of sugar cane around. He also remembers being told by his uncle, George Cummings, that he would hear Hawaiian music coming from a rock pile about 100 yards in from the boundary of the subject

property. Mr. Cummings served as a sheriff on Maui. The rock pile was made by Wailuku Sugar, when they were clearing the land for sugar cane cultivation. Mr. Vida also recalled a time when his mother was sitting on the porch early one morning and she said she heard the music of the nose flute. He said that people would go and look for the source of the music when it was heard, but none was ever found. Mr. Vida's Uncle George played the nose flute so they knew what it sounded like. Once the rock pile was removed, no one ever heard the music.

Mr. Vida remembers seeing the original Royal Patents that showed his family's land ownership. He stated that his grandmother gave the papers to her nephew. He also noted that there were records to indicate what various acres of family land had been traded for in the past such as livestock and sewing supplies. He remembers being told that the Cockett family owned much of the land in Waikapu from the base of the mountain to their current lands. His great-grandmother was a Keiki Alii and received a land grant from Kamehameha IV. Mr. Vida noted that their property has kuleana water rights and used to get their water from a ditch that brought water down from the mountain.

As far as he can remember, Mr. Vida stated that the project site was used for sugar cane cultivation and later, for pineapple. He did not recall any other use of the land while he lived next door. Mr. Royal G. Vida was not aware of any cultural practices that took place on the subject property over the course of his life, living in Waikapu.

h. Assessment of Cultural Impacts

Based on the historical review of the Waikapu area, the results of the archaeological inventory survey, and informant interviews on the subject parcel, the proposed project is not anticipated to adversely affect cultural beliefs, practices, resources or gathering rights. Should any archaeological features or human burials be inadvertently located during construction activities, appropriate stop-work, coordination and mitigation measures will be carried out with

a qualified archaeologist to insure that proper protocol is followed, including required consultation with the State Historic Preservation Division and the Maui/Lanai Islands Burial Council.

6. **Archaeological Resources**

As previously mentioned, an archaeological inventory survey was conducted on the subject parcel by an archaeological consultant. The inventory survey identified a segment of State Site 50-50-04-5197, the Waihee Ditch, in the project site. No other surface cultural remains or areas of exposed deposits were identified during the surface survey. Due to extensive previous disturbances throughout the parcel from sugar cane and pineapple cultivation, backhoe trenches were excavated.

A total of six (6) trenches were excavated throughout the parcel to determine the presence or absence and extent of subsurface cultural remains. No subsurface cultural remains or deposits were encountered in any of the trenches.

The results of the subsurface investigations produced no evidence of sedentary cultural activities during the prehistoric and early historic periods in the subject project area. Due to compounded land clearing activities from sugar cane and pineapple cultivation and the construction of Waihee Ditch, no surface cultural remains exist. The negative results from subsurface testing may have been due to these compounded activities; however, the probability of encountering intact buried cultural remains or deposits in the limited number of trenches within a large area is low.

The archaeological consultant recommended that the portion of the Waihee Ditch located on the subject property should be maintained to continue its service of water. Wailuku Agribusiness is the current owner of the ditch. Additionally, it is noted that the pollen analysis, as required by SHPD, is still being completed and the results will be submitted under separate cover. Finally, the archaeologist concluded that based on the negative results of the surface and subsurface testing that no further archaeological work should be required of the project. Refer to Appendix "B".

7. **Air Quality**

Emissions from construction equipment and other vehicles involved in construction activities may temporarily affect the ambient air quality within the immediate vicinity. However, these effects can be minimized by properly maintaining construction equipment and vehicles.

In addition, dust generated during construction, especially from earth-moving operations such as excavating, trenching, and filling, may also result in a temporary decrease in ambient air quality. Mitigation measures include utilizing dust barriers, waterwagons, and/or sprinklers to control dust, and watering graded areas upon the completion of daily construction activities.

On a long-term basis, the proposed residential use in this location is not anticipated to generate adverse air quality impacts.

8. **Noise**

Ambient noise conditions may be temporarily affected by construction activities. Heavy construction machinery, such as

backhoes, dump trucks, front-end loaders, paving equipment, and material transport vehicles, are anticipated to be the dominant noise-generating sources during the construction period.

Proper equipment and vehicle maintenance are anticipated to reduce noise levels. Equipment mufflers or other noise attenuating equipment may also be employed as required. All construction activities will be limited to daylight working hours.

Once completed, the proposed project is not anticipated to generate adverse noise conditions.

9. Scenic and Open Space Resources

Haleakala is visible to the east of the project site with the West Maui Mountains to the west. The project is not part of a scenic corridor and will not affect views from inland vantage points. As such, the proposed project is not anticipated to have an adverse impact upon the visual character of the surrounding area. It may, however, affect views from adjacent homes in the surrounding area.

B. IMPACTS TO THE SOCIO-ECONOMIC ENVIRONMENT

1. Population and Local Economy

On a short-term basis, the proposed action will support construction and construction-related employment.

Over the long term, the proposed project would not induce a population increase in the region. Any increase in population resulting from the project should be within expected growth parameters for the region. In the long term, residential

homeowners will require services related to home maintenance and improvement which is expected to further support local business operators.

2. **Housing**

A market study prepared for the proposed project found that there is a limited supply of single-family residential homes, as well as lot-only product for sale for both the island of Maui and Central Maui in particular. The study found that according to the Maui Board of Realtors Multiple Listing Service (MLS), in the first half of 2003, there were 554 sales of single-family residences on the island of Maui with a median sales price of \$401,750.00. Sales figures in the Wailuku-Kahului area for the same time period were 100 sales with a median price of \$322,500.00. The study went on to note that the sales of residential lots only for the first half of 2003 for Maui and the Wailuku-Kahului area were 176 sales, with a median sales price of \$286,500.00 and 33 sales with a median sales price of \$265,000.00, respectively.

As previously noted, the SMS Maui County Community Plan Update Program: Socio-Economic Forecast Phase I report, provided projections which indicated that the demand for housing product in the Central Maui area would continue to grow through at least the year 2010. The SMS report forecast that approximately 35 percent of the population would continue to be based in the Wailuku/Kahului area in 2005 and 2010. Following these statements, the market study concluded that if 35 percent of the population would continue to be based in the Wailuku/Kahului area, then the annual need for new housing units in the area will be 362 units per year, based on population figures in the SMS study. The

market study noted that aside from possible product available through the Maui Lani and Kehalani subdivisions, in addition to the remaining 8± lots available in the Waiolani Elua subdivision, there does not appear to be other housing inventory planned for market in Central Maui to meet this predicted increase in demand, especially in the case of lot-only product. The market study also noted that while it is difficult to predict the timing of products coming to market, it appears reasonable to assume that there will be a continued demand for additional residential inventory that the proposed Waiolani Mauka project plans to provide.

3. Agriculture

Although the land was previously engaged in large scale agricultural activities, it is presently fallow, undeveloped and predominantly vegetated with scattered kiawe, koa haole and introduced grass species. With the liquidation of Wailuku Agribusiness Company's properties in this vicinity, this parcel's relatively small size did not warrant consideration for continued use for large scale agricultural activities. Further, given the property's location adjacent to existing residential areas, agricultural use by the applicant was not deemed practical nor appropriate in terms of the underlying single-family land use designation by the Wailuku-Kahului Community Plan. The conversion of 28 acres of fallow agricultural lands to urban (single-family) use achieves concurrency with its current community plan designation and is not considered an adverse impact to island-wide agricultural productivity. The use of the subject property for the proposed project is not anticipated to affect agricultural activities.

4. **Police, Fire and Medical Services**

The proposed action is not anticipated to affect the service capabilities of police, fire and emergency medical operations. The project will not extend the existing service area limits for emergency services.

5. **Recreational**

The project involves the development of 108± improved residential lots. Options for meeting parks and playground requirements include the dedication of land or the payment of fees in lieu of land dedication, or a combination of both.

The applicant has held discussions with the Department of Parks and Recreation. The Department noted that it will accept the proposed approximately 2-acre park for the project's park assessment. The applicant and the Department will work together on the dedication of the park land to the County.

6. **Educational Services**

The 108± single-family homes planned for the subdivision is anticipated to generate new student enrollments as follows:

Elementary School	40 Students
Intermediate School	16 Students
High School	16 Students

These numbers were calculated based on a total of 158 units, including ohana units. At this point, Waikapu 28 Investment, LLC plans to allow 50 percent of the lots to have ohana units. The applicant plans to meet with Department of Education officials and discuss the "fair-share" educational assessment for the project.

7. **Solid Waste Management**

A solid waste management plan will be developed for the disposal of materials resulting from the site and construction activities, as appropriate. Once completed, it is anticipated that single-family residential collection will be provided by the County of Maui, Division of Solid Waste Management.

C. **IMPACTS TO INFRASTRUCTURE**

1. **Roadways**

A Traffic Impact Analysis Report (TIAR) was prepared for the proposed project. See Appendix "C". The following methodology was utilized for the study.

An analysis of existing traffic conditions was conducted by reviewing the traffic volumes at the study intersections based on traffic counts and previous traffic studies in the area. Intersection configurations, speed limits and right-of-way control information were collected during field reconnaissances. Two (2) intersections were studied: Pilikana Street and Honoapiilani Highway and East Waiko Road and Honoapiilani Highway. Since intersections are currently unsignalized, the Level-of-Service (LOS) was determined directly from intersection delay studies performed during peak hours. The intersection analysis performed is based upon procedures described in the "2000 Highway Capacity Manual", Institute of Transportation Engineers, 2000.

LOS is a quantitative and qualitative assessment of traffic operations. Levels of Service are defined by LOS "A" through "F"; LOS "A" representing ideal or free-flow traffic operating conditions with no congestion and LOS "F" represents severe congestion with

stop-and-go conditions. There are different LOS criteria for signalized and unsignalized intersections. The LOS definitions are included in the TIAR.

Existing Level of Service

Current Levels of Service were analyzed for two (2) intersections within the project vicinity (Honoapiilani Highway and Pilikana Street and Honoapiilani Highway and East Waiko Road). These intersections are currently unsignalized.

During the AM and PM peak hours, the Honoapiilani Highway and Pilikana Street intersection operates at a LOS "B" for the eastbound right and north bound left turns. The eastbound left turn, however, operates at an LOS of "E" and "D" during the AM and PM peak hours, respectively.

During the AM and PM peak hours, the Honoapiilani Highway and East Waiko Road intersection operates at a LOS "C" or better for most movements. The eastbound left and through at the East Waiko Road intersection operates at a LOS of "F" and "E" during the AM and PM peak hours, respectively.

Trip Generation

The trip generation methodology used in the study is based upon generally accepted techniques and procedures developed by the Institute of Transportation Engineers (ITE) and published in "Trip Generation Handbook," 1998.

The single-family phase of the project will consist of about 108 single-family units. In addition to the single-family units, 50 percent

of the units may have ohana units. Since there are no trip generation rates for ohana units in the "Trip Generation Handbook", trips generated by ohana units were estimated using trip generation rates for apartments. These rates most likely result in an overestimation of the traffic from these units as some ohana units may be used by family members and some may be rented as an "apartment".

The project will generate 113 trips during the morning peak hour, 28 inbound and 85 outbound. During the afternoon peak hour, the project will generate a total of 146 trips, with 92 inbound and 54 outbound.

Traffic Impact Analysis

Traffic impacts were reviewed to include project individually as well as the cumulative impacts of proposed projects in the surrounding area. A discussion of the cumulative traffic impacts can be found in the next section of this chapter.

An analysis in the change in traffic volumes at the study intersections was done. With the proposed project, the morning peak hour traffic volume increases 5.5 percent at the intersection of Honoapiilani Highway and Pilikana Street. During the afternoon peak hour, the increase is 7.5 percent. At the intersection of Honoapiilani Highway and East Waiko Road, the morning and afternoon peak hour traffic increases 2.4 percent and 2.8 percent, respectively. There is no established criteria for significance based on change in peak hour traffic at a signalized intersection. However, it is generally accepted that if the change is 5 percent or greater, some mitigation will be required.

Conclusion

Based on the traffic impact attributable to the Proposed Waiolani Mauka Subdivision project, the traffic engineer offered the following conclusions:

1. A traffic signal warrant analysis for the intersection of Honoapiilani Highway at Pilikana Street concluded that the peak hour warrants for a traffic signal are satisfied for existing conditions.
2. The traffic impact analysis was performed for two scenarios. Scenario A represents conditions with only the Waiolani Elua project as completed for background conditions. Scenario B represents conditions with two (2) other projects within the study area completed. Scenario B is a worse-case scenario.
3. For both scenarios, the intersection of Honoapiilani Highway at Pilikana Street should be signalized.
4. For Scenario B, which represents worse-case conditions, the project does not have a significant impact on either study intersection. Therefore, no mitigation in addition to the installation of the traffic signal noted above is required.

The applicant is willing to participate in the installation of a traffic signal at the intersection of Pilikana Street and Honoapiilani Highway and will discuss partnership in the improvements with the State Department of Transportation and other area projects.

2. **Water**

Although a water distribution stubout has been provided at the northeast corner of the Waiolani Subdivision Phase I project site,

the 300,000 gallon Waikapu storage tank does not have the capacity to provide the required fire flow and maximum day demands for the project.

The DWS' plan is to service Waikapu, as well as the mid-level service area of the Kehalani project, otherwise known as the Wailuku-Kahului Project District 3, from this new well at Waikapu. The developers of Kehalani will be constructing a 1.0 MG storage tank at elevation 670± feet on the south side of Kuikahi Drive to serve their mid-level service area. Therefore, the applicant will be reviewing the possibility of enlarging the size of the tank to provide the additional storage needed for the proposed project, provided a reasonable participatory agreement can be worked out with the developers of Kehalani and DWS. The 108± lot single-family residential project is estimated to require a total storage of about 100,000 gallons. DWS anticipated that the average daily demand for the project will be about 86,000 gpd.

The applicant will explore the option of participating with other developers in installing approximately 3,000 feet of offsite waterlines from the new storage tank to the project site. Within the project site, an 8-inch distribution system will be installed with fire hydrants spaced at intervals not exceeding 350 feet. All water system improvements will be designed in accordance with DWS standards.

Inasmuch as the applicant's entitlements process and project implementation schedule will extend over the next several months, coordination will be undertaken with the DWS to confirm new water source project implementation schedules. If water resources are

not available when land entitlements processing is completed, the applicant understands that delays in project construction may result. The purpose of proceeding with the entitlements process at this time, however, is based on the current and projected need to satisfy housing demands of local residents. Since entitlements processing may extend over a period of two or more years, availability of lands ready for housing development is a key element in assuring timely and responsive provision of new inventory. As governmental and private sector interests recognize the critical nature of housing demands on Maui, there is a unified effort to develop new water sources which will serve the needs for new housing while addressing water resource management constraints.

3. **Wastewater**

The 108± lot single-family residential project is expected to generate 38,150 gallons per day (gpd) of wastewater when fully built out. An 8-inch gravity collector will be installed onsite and connected to the stubout that has been provided at the northeast corner of Waiolani Elua Subdivision. The lots at the northeast corner of the project site will be raised to ensure sufficient fall to the stubout. Since the current average daily flow is approximately 5.0 MGD and the plant capacity is 7.9 MGD, it is reasonable to conclude that the Wailuku-Kahului Wastewater Reclamation Facility has ample capacity to handle the projected flow of 38,150 gpd from this project.

The Division of Wastewater Management for the County of Maui has informed the applicant that he will have to pay his prorata share of offsite sewerline improvements that will be required between Kaahumanu Avenue and Mill Street. The applicant will also be required to pay an assessment for "Facility Expansion of the Wailuku/Kahului Wastewater Treatment System", in accordance with the provisions of Chapter 14.35 of the Maui County Code. Refer to Preliminary Engineering Report, Appendix "D".

4. **Drainage**

The existing berm along the old government road right-of-way at the westerly boundary of the project site will be retained to keep offsite runoff from sheetflowing into the site.

Post-development runoff from the project site during a 50 year-1 hour rainfall is expected to be approximately 62.4 cfs. This is an increase of 35.1 cfs over pre-development conditions.

The additional onsite runoff will be intercepted by catch basins spaced along the subdivision streets and conveyed into a storm drain system that will be directed toward the southeast corner of the project site. A new offsite drainline will be installed across Honoapiilani Highway, then along the east side of said Highway, down into Wailuku Agribusiness' Waikapu reservoir. Approximately 80 feet of new drainline with a maximum 48-inch diameter will be installed across the highway. The applicant has an easement for this drainline. The project has also secured the right to increase the capacity of the reservoir by dredging or enlarging the area of this irrigation reservoir by one (1) acre to accommodate the post-development runoff generated by the project. This irrigation

reservoir, which will serve as a detention basin, has a spillway that conveys water into Waikapu Stream whenever the water surface in the reservoir reaches a preset elevation. Refer to Appendix "D".

5. **Electricity, Telephone and Cable Television Systems**

The electrical, telephone, and cable television distribution system will be extended underground into the subdivision from the Waiolani Subdivision with a tie back to the existing overhead system at some convenient location as determined by the respective utility companies.

D. **CUMULATIVE IMPACTS**

Cumulative impacts are defined as the impact on the environment which results from the incremental impact of action when added to other past, present and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions.

This cumulative impact analysis examines present and reasonably foreseeable future projects in the area that have the potential to contribute to cumulative effects. The analysis uses the best available information at the present time to assess these projects and their potential impacts. Depending on the status of a particular project, each of the projects included in this cumulative impact analysis is supported by different levels of information. Public documents, conceptual plans and documents or applications prepared for environmental reviews or regulatory approvals were the primary sources of information. When adequate data on specific aspects of other projects was unavailable and could not be obtained through reasonable efforts, professional judgement was used to estimate impacts.

1. **Projects Included in the Cumulative Impacts Analysis**

The following criteria were considered in identifying past, present and reasonable foreseeable future projects that could result in cumulative impacts to the region's resources.

- a. Projects that are of a similar nature could affect similar resources or are located in geographic proximity to the proposed project.
- b. Projects that have the potential to generate environmental impacts and when addressed collectively with the proposed project, could result in cumulative impacts to the environment.
- c. Projects that are proposed for development that have received or are pending environmental and/or regulatory reviews or approvals and are expected to be implemented.

To assess cumulative impacts, the Waiolani Mauka subdivision was grouped together with several other projects in the area having scope and scale of a comparable character. These projects include:

- a. **Spencer Homes Waikapu Affordable Housing Project:** This proposed affordable housing subdivision encompasses approximately 94 acres on the makai side of the Honoapiilani Highway in the Waikapu area. The project proposed the development of 400± single-family residences, as well as a linear park.
- b. **Waiolani Pikake Subdivision:** This proposed single-family subdivision encompasses approximately seven (7) acres and is located mauka of the Honoapiilani Highway in the Waikapu area. The project proposes the development of 38 single-family lots.

2. **Assessment of Cumulative Impacts**

In considering the impacts of Waiolani Mauka, together with the Waikapu Affordable Housing project and Waiolani Pikake, the following resource parameters were examined: (1) topography, (2) plant and animal life; (3) noise and air quality; (4) visual resources; (5) cultural resources; (6) water quality; (7) housing and land use; (8) public services; and (9) infrastructure. In assessing cumulative impacts of Waiolani Mauka, and the other area projects noted, a qualitative approach was taken since specific designed-based plans for each of the projects are not fully developed at this time. Further, cumulative impact considerations may change as new projects are introduced or proposed projects are modified in scope and scale over time. Accordingly, the assessment presented herein is intended to identify potential issues, concerns and mitigative measures based on best available planning-level information. Cumulative impact issues relating to each of these resource parameters are described below.

a. **Topography**

Due to strict regulatory controls and cost considerations, projects, such as the Waikapu Affordable Housing project and Waiolani Pikake, seek to minimize cut and fill quantities, thereby minimizing alterations to topographic features. The need to respect existing landforms is required to ensure that visual impacts are minimized, drainage patterns are maintained and infrastructure design criteria are met. When taken collectively, therefore, the cumulative impacts of these projects upon regional topography are not anticipated to be adverse.

b. **Plant and Animal Life**

Each of the projects has or will study the flora and fauna resources affected by their respective actions. For the most part, the proposed actions will affect lands formerly used for sugar or pineapple cultivation activities. Any impacts to flora and fauna parameters are mitigated through proper land planning measures, utilizing to the maximum extent practicable, previously disturbed lands for proposed new development.

c. **Noise and Air Quality**

Construction-related noise is expected for each project. All projects shall comply with Department of Health noise regulations and are expected to employ best management practices to minimize construction-related noise. In the long term, development of areas previously utilized for agricultural purposes will result in changes in noise characteristics in the vicinity of each project within the Waikapu area. Whereas agricultural equipment and cultivation activities were the primary source of noise, once projects are completed, noise generation will be primarily attributed to traffic utilizing project roadways. There are no point sources of noise identified in any of the projects which may result in adverse impacts to surrounding communities.

As with noise, air quality will be temporarily affected during construction. Best management practices are required to ensure compliance with Department of Health and County grading requirements. There are no new point sources of air emissions associated with any of the projects. In the

long term, automobile traffic is expected to be the primary source of air emissions. As projects are implemented, air impacts associated with agricultural lands will be replaced by automobile-related emissions. From a cumulative standpoint, however, the projects cited are not anticipated to have an adverse impact upon regional conditions.

d. Visual Resources

The visual landscape of Waikapu Town will change as each of the projects are implemented. At the Waikapu Affordable Housing and Waiolani Mauka sites, former sugar cane lands will be replaced by residential uses. Similarly, a portion of the Waiolani Pikake subdivision is on former agricultural lands.

At buildout, the projects will collectively reflect a visual character more urban in scale, replacing lands formerly used for agricultural purposes. All three (3) projects are planning park areas within their subdivisions to provide visual relief and functional utility.

e. Cultural Resources

Projects of the size and scale noted considered effects of their individual actions on cultural resources. Based on archaeological studies conducted for each project, appropriate mitigative measures, including preservation, will be utilized to address archaeological resource issues. Collectively, it appears that none of the projects will affect cultural resources and practices as archaeological and cultural assessments for the projects have had similar

results. No items of significance, except for the irrigation ditches constructed for former agricultural operations, were identified in the archaeological surveys.

f. Water Quality

Surface runoff and other non-point source pollutants can affect water quality if unmitigated. Construction activities for each project are subject to the NPDES permitting process and implementation of Best Management Practices (BMPs) to control erosion and sediment loss. It is expected that all projects will comply with applicable regulatory requirements to minimize impacts to downstream water bodies. On a long-term basis, each project will be required to comply with County of Maui drainage regulations to provide required mitigation, including drainage storage areas to ensure that runoff velocities are controlled and water quality effects minimized. From a regional water quality standpoint, compliance with State and local regulatory requirements will help to mitigate adverse impacts to water quality.

g. Housing and Land Use

The availability of affordable housing is an island-wide concern. Cumulatively, the three (3) projects will increase the availability of housing for the island of Maui. The entire Waikapu Affordable Housing project will offer affordable home and lot packages, while Waiolani Pikake was conditioned to provide 10 percent of affordable housing in their project. Specific requirements for Waiolani Mauka will likely be developed as the project advances through the entitlement process.

h. Public Services

Public service parameters addressed from a cumulative perspective include parks and recreation and schools. Waiolani Pikake, the Waikapu Affordable Housing project and Waiolani Mauka all plan to provide park and recreation spaces intended to meet the needs of future residents. Waiolani Pikake proposed a 9,400 square foot park while the Waikapu Affordable Housing project is proposing a linear park of more than one (1) acre in their subdivision. Waiolani Mauka is planning an approximate 2-acre park space, located near the center of the subdivision. At a minimum, the parks dedication requirements, as set forth in Chapter 18.16.320, of the Maui County Code, will need to be met.

Educational assessments will be a requirement for Waiolani Mauka and the Waikapu Affordable Housing project as they meet the criteria of 50 units or more. It is expected that the applicants will work with the Department of Education (DOE) to discuss the educational impact fees. Impact fees assessed and collected are assumed to be earmarked for area schools such as Wailuku Elementary, Iao Intermediate or Baldwin High School. Therefore, it is anticipated that these funds will assist in the upgrade and improvement to schools in the Wailuku area. Waiolani Pikake is exempt from this assessment because it does not meet the minimum number of units under the DOE's assessment policy.

i. Infrastructure

Infrastructure requirements of the projects will be met by respective applicants. The availability of water for the proposed projects has become a significant concern with the designation of the Iao Aquifer in July 2003 and the possible designation of the Waihee Aquifer by the State Department of Land and Natural Resources Commission on Water Resources. All three (3) projects will rely on the County water system. At the Waikapu Affordable Housing project, the County of Maui Administration has stated that it is willing to reserve an allocation of water from the Central Maui Water system for the project. For Waiolani Mauka, the applicant plans to partner with other area projects to develop and fund water improvements, including a new private storage tank and waterline improvements to serve the needs of the subdivision. As previously mentioned, the County of Maui's Department of Water Supply continues to plan and develop projects that will provide new water sources to alleviate the demand on the Iao and Waihee Aquifers.

Wastewater transmission and treatment services are provided by the County Department of Public Works and Environmental Management (DPWEM). Individual projects are expected to provide their own internal collection systems to connect to the County system. Applicable wastewater assessment fees will be required of each applicant. Each of the three (3) projects may also be required to pay for the upgrade of the sewer line that would service the projects. Early consultation comments from the DPWEM noted that the sewer line running under Lower Main Street is nearing

capacity and that the Department may seek an assessment from area projects to fund this upgrade.

Each project is responsible for addressing and mitigating drainage impacts. Waiolani Pikake, for example, plans to handle runoff onsite with catch basins, drain pipes and by utilizing the existing drainage system on Kama Street (Maui Planning Department's report on the M2M, LLC application, March 12, 2002). Waiolani Mauka proposes the utilization of existing berms and the installation of a drainage system that will drain into the Wailuku Agribusiness irrigation reservoir across the Honoapiilani Highway. The applicant has secured an easement for this purpose. Collectively, through these measures, it is anticipated that there will be no adverse impacts to downstream or adjacent properties.

The final infrastructure component which should be examined are roadway systems. Waiolani Mauka, Waiolani Pikake and the Waikapu Affordable Housing project were each required to prepare a traffic impact analysis report. Traffic impacts attributed to each project would be mitigated by respective applicants. It is noted that the Traffic Impact Analysis prepared for the Waiolani Mauka project reviewed the cumulative conditions for the Waikapu area including the Waiolani Pikake and Waikapu Affordable Housing project. See Appendix "C". The analysis made several assumptions including that the Piliikana Street and Honoapiilani Highway, as well as the East Waiko Road and Honoapiilani Highway intersections were signalized as part of the requirements for the Waikapu Affordable Housing project. The Waiolani

Mauka project has also agreed to participate in signalization of the Pilikana Street and Honoapiilani Highway intersection. As projects proceed through the entitlements processes, it is anticipated that conditions relating to fair-share participation for traffic improvements will be considered.

3. **Secondary Impacts**

Secondary impacts are impacts that have the potential to occur later in time or are farther in distance but are still reasonably foreseeable. They can be viewed as actions of others that are taken because of the presence of the project.

Secondary impacts from highway projects can occur, for example, because they can induce development by removing one of the impediments to growth - transportation access.

Related to the Waiolani Mauka project, secondary impacts include new population which will be accommodated through the building of new residences. Such growth may translate to the need for new public services. Public service needs will be met through property tax revenue, new parks, educational assessment fees to area schools and participation in wastewater and water improvements.

Chapter IV

***Relationship to Governmental
Plans, Policies and Controls***

IV. RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES AND CONTROLS

A. STATE LAND USE DISTRICTS

Pursuant to Chapter 205, Hawaii Revised Statutes, all lands in the State have been placed into one (1) of four (4) land use districts by the State Land Use Commission. These land use districts have been designated "Urban", "Rural", "Agricultural", and "Conservation". The project site is classified "Agricultural". See Figure 8. The proposed action involves a request for classification from the "Agricultural" District to the "Urban" District.

B. LAND USE COMMISSION RULES, CHAPTER 15-15, HAWAII ADMINISTRATIVE RULES

The proposed reclassification of the subject property is in conformance with the following standards of the Urban District set forth in Chapter 15-15-18, Hawaii Administrative Rules:

Chapter 15-15-18

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

Comment: The proposed project is adjacent to the 116-lot Waiolani Subdivision and the 25-lot Waiolani Elua Subdivision. It is also in close proximity to Waikapu Town which contains single-family residential, commercial and recreational uses.

- (2) It shall take into consideration the following specific factors:
 - A. Proximity to centers of trading and employment except where the development would generate new centers of trading and employment.

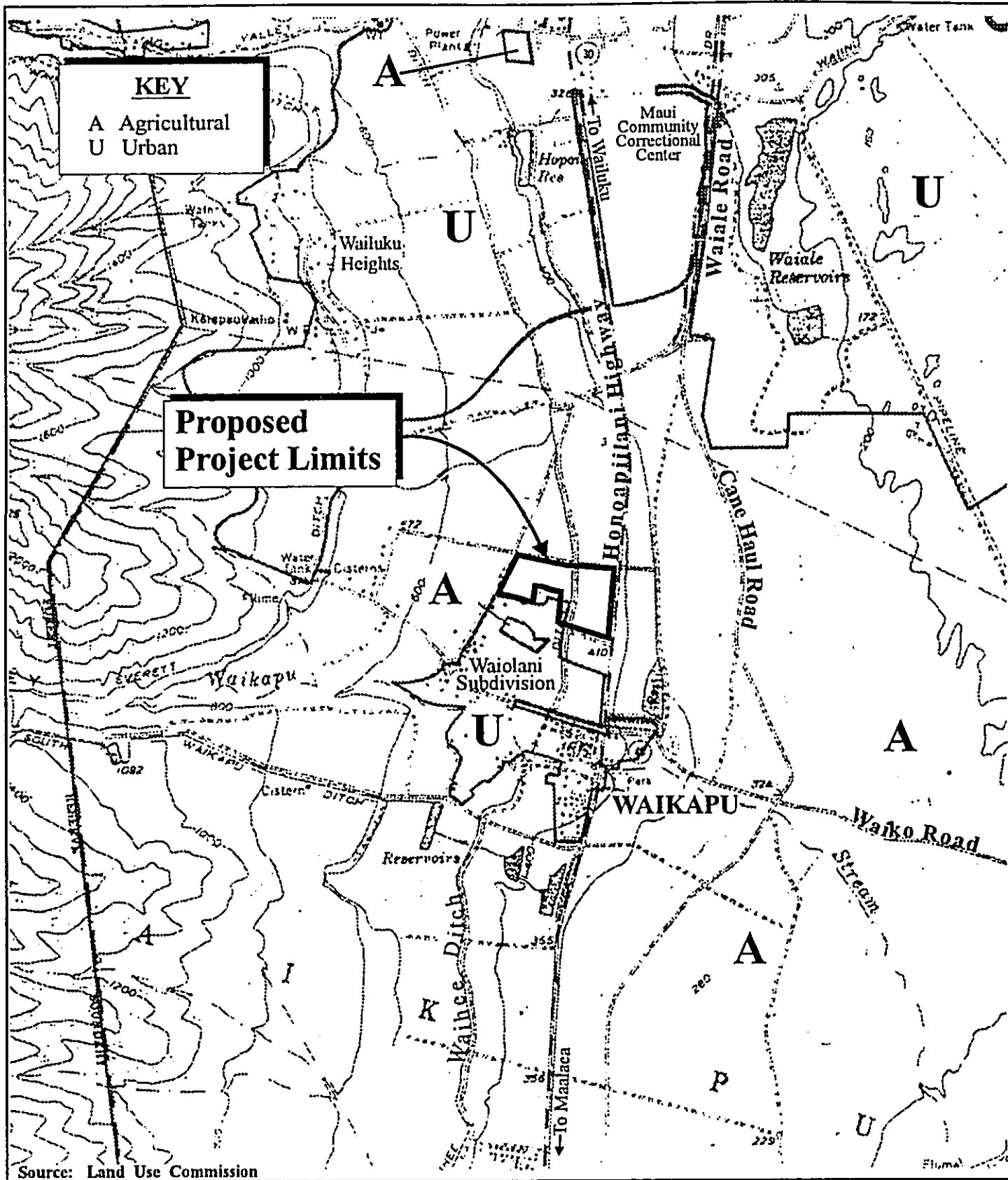
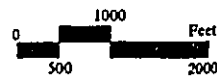


Figure 8

Proposed Waiolani Mauka
 Subdivision
 State Land Use Classifications



Prepared for: Waikapu 28 Investment, LLC

MUNEKIYO & HIRAGA, INC.

Comment: There is a small node of commercial uses in Waikapu Town. However, Waikapu has traditionally been a residential village. It is located approximately 1.2 miles from Wailuku Town which is the County seat and a center of trading and employment.

B. Availability of basic services such as schools, parks, wastewater systems, solid waste disposal, drainage, water, transportation systems, public utilities, and police and fire protection.

Comment: Basic infrastructural services such as transportation systems, sewer and water are available in close proximity to the project. Drainage improvements will comply with County of Maui standards. Schools and parks are available in close proximity. Police and fire services also presently serve Waikapu Town.

C. Sufficient reserve areas for foreseeable urban growth.

Comment: The area of the proposed reclassification utilizes approximately 28 acres for single-family residential purposes. Development of the subject property should address a portion of the demand without significantly affecting reserve areas for urban growth. In particular, additional area for single-family expansion (future urban growth) north of and adjacent to the subject property is provided by the Wailuku-Kahului Community Plan.

(3) It shall include lands with satisfactory topography, drainage, and reasonably free from the danger of any flood, tsunami, unstable soil condition, and other adverse environmental effects.

Comment: The site is relatively flat with an overall grade of 6.8 percent. The project site is located in Zone C, an area of minimal flooding. The project site is not subject to tsunami inundation and unstable soil conditions.

-
- (4) Land contiguous with existing urban areas shall be given more consideration than non-contiguous land, and particularly when indicated for future urban use on state or county general plans.

Comment: Lands pertaining to the subject request are adjacent to areas already in the Urban District.

- (5) It shall include lands in appropriate locations for new urban concentrations and shall give consideration to areas of urban growth as shown on the state and county general plans.

Comment: The subject property is an appropriate location for an Urban District classification as reflected by the underlying single-family designation set forth by the Wailuku-Kahului Community Plan.

- (6) It may include lands which do not conform to the standards in paragraphs (1) to (5):

- A. When surrounded by or adjacent to existing urban development; and
- B. Only when those lands represent a minor portion of this district

Comment: Although the subject property conforms with standards in paragraphs (1) to (5), it is noted that it abuts urban development on two (2) sides and is adjacent to existing urban development. Moreover, the proposed project site represents 0.01 percent of the 248,457 acres within the Agricultural District on the island of Maui.

- (7) It shall not include lands, the urbanization of which will contribute toward scattered spot urban development, necessitating unreasonable investment in public infrastructure or support services.

Comment: The proposed reclassification does not contribute to scattered spot urban development. It is adjacent to the existing Waikapu Town. The proposed development will not necessitate unreasonable public investment in infrastructural facilities or public services. The applicant will comply with applicable provisions regarding provision of infrastructural facilities.

- (8) It may include lands with a general slope of twenty percent or more if the commission finds that those lands are desirable and suitable for urban purposes and that the design and construction controls, as adopted by any federal, state or county agency, are adequate to protect the public health, welfare and safety, and the public's interest in the aesthetic quality of the landscape.

Comment: The subject property is characterized by lands having slopes of approximately 6.8 percent.

C. **CHAPTER 226, HRS, HAWAII STATE PLAN**

Chapter 226, HRS, also known as the Hawaii State Plan, is a long-range comprehensive plan which serves as a guide for the future long-range development of the State by identifying goals, objectives, policies, and priorities, as well as implementation mechanisms. The proposed action is in concert with the following goals of the Hawaii State Plan.

- A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawaii's present and future generations.
- A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.
- Physical, social, and economic well-being, for individuals and families in Hawaii, that nourishes a sense of community responsibility, of caring, and of participation in community life.

1. **Objectives and Policies of the Hawaii State Plan**

The proposed reclassification is in conformance with the following objectives and policies of the Hawaii State Plan:

Chapter 226-5, HRS, Objectives and Policies for Population

226-5(a), HRS: It shall be the objective in planning for the State's population to guide population growth to be consistent with the achievement of physical, economic, and social objectives contained in this chapter.

226-5(b)(1), HRS: Manage population growth statewide in a manner that provides increased opportunities for Hawaii's people to pursue their physical, social, and economic aspirations while recognizing the unique needs of each county.

226-5(b)(3), HRS: Promote increased opportunities for Hawaii's people to pursue their socio-economic aspirations throughout the islands.

Chapter 226-6, HRS, Objective and Policies for the Economy - in General

226-6(b)(b), HRS: Strive to achieve a level of construction activity responsive to, and consistent with, State growth objectives.

Chapter 226-11, HRS, Objectives and Policies for the Physical Environment - Land-Based, Shoreline, and Marine Resources.

226-11(a)(2), HRS: Effective protection of Hawaii's unique and fragile environmental resources.

226-11(b)(3), HRS: Take into account the physical attributes of areas when planning and designing activities and facilities.

226-11(b)(8), HRS: Pursue compatible relationships among activities, facilities, and natural resources.

Chapter 226-12, HRS, Objective and Policies for the Physical Environment - Scenic, Natural Beauty, and Historic Resources.

226-12(b)(5), HRS: Encourage the design of developments and activities that complement the natural beauty of the islands.

Chapter 226-13, HRS, Objectives and Policies for the Physical Environment - Land, Air, and Water Quality.

226-13(b)(2), HRS: Promote the proper management of Hawaii's land and water resources.

226-13(b)(6), HRS: Encourage design and construction practices that enhance the physical qualities of Hawaii's communities.

226-13(b)(7), HRS: Encourage urban developments in close proximity to existing services and facilities.

Chapter 226-19, HRS, Objectives and Policies for Socio-Cultural Advancement - Housing.

226-19(a)(2), HRS: The orderly development of residential areas sensitive to community needs and other land uses.

226-19(b)(1), HRS: Effectively accommodate the housing needs of Hawaii's people.

226-19(b)(3), HRS: Increase home ownership and rental opportunities and choices in terms of quality, location, cost, densities, style, and size of housing.

226-19(b)(5), HRS: 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.

226-19(b)(7), HRS: Foster a variety of lifestyles traditional to Hawaii through the design and

maintenance of neighborhoods that reflect the culture and values of the community.

Chapter 226-23, HRS, Objective and Policies for Socio-Cultural Advancement - Leisure.

226-23(b)(4), HRS: Promote the recreational and educational potential of natural resources having scenic, open space, cultural, historical, geological, or biological values while ensuring that their inherent values are preserved.

2. Priority Guidelines of the Hawaii State Plan

The proposed action is in keeping with the following priority guidelines of the Hawaii State Plan.

Chapter 226-103, HRS, Economic Priority Guidelines:

226-103(1): Seek a variety of means to increase the availability of investment capital for new and expanding enterprises.

a. Encourage investments which:

- (i) Reflect long term commitments to the State;
- (ii) Rely on economic linkages within the local economy;
- (iii) Diversify the economy;
- (iv) Reinvest in the local economy;
- (v) Are sensitive to community needs and priorities; and
- (vi) Demonstrate a commitment to management opportunities to Hawaii residents.

Chapter 226-104, HRS, Population Growth and Land Resources Priority Guidelines

226-104(a)(1), HRS: Encourage planning and resource management to insure that population growth rates throughout the

State are consistent with available and planned resource capacities and reflect the needs and desires of Hawaii's people.

226-104(b)(1), HRS: Encourage urban growth primarily to existing urban areas where adequate public facilities are already available or can be provided with reasonable public expenditures and away from areas where other important benefits are present, such as protection of important agricultural land or preservation of lifestyles.

226-104(b)(2), HRS: Make available marginal or non-essential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.

226-104(b)(12), HRS: Utilize Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline conservation lands, and other limited resources for future generations.

Chapter 226-106, HRS, Affordable Housing Priority Guidelines

226-106(1), HRS: Seek to use marginal or nonessential agricultural land and public land to meet housing needs of low- and moderate-income and gap-group households.

226-106(8), HRS: Give higher priority to the provision of quality housing that is affordable for Hawaii's residents and less priority to development of housing intended primarily for individuals outside of Hawaii.

D. STATE FUNCTIONAL PLANS

The State Functional Plans implement the Hawaii State Plan by identifying needs, problems and issues, and by recommending policies and priority actions which address the identified areas of concern. The proposed reclassification request is consistent with the following State Functional Plans:

1. **State Agriculture Functional Plan**

The proposed action will reclassify approximately 28.7 acres of land from the State Agricultural district to the State Urban district. While the subject property was formerly utilized for sugar cane and pineapple cultivation, it is now fallow. The proximity of the subject property to existing and planned urban land uses coupled with its underlying community plan (Single-Family Residential) designation provide a reasonable nexus and an appropriate foundation for the proposed reclassification request.

2. **State Housing Functional Plan**

Market studies indicate a current shortage of single-family housing in the Central Maui area with the demand for housing increasing. The 108± single-family residential lots within the proposed subdivision will provide residents with the opportunity to purchase a lot and construct a home that best fits their needs.

3. **State Recreational Functional Plan**

The provision of park space within the subdivision will provide residents with an opportunity for leisurely recreational activities.

4. **State Transportation Functional Plan**

The participation in the installation of a traffic signal at the Honoapiilani Highway and Pilikana Street intersection will seek to alleviate transportation impacts of the proposed subdivision. Internal subdivision roads will be constructed to County of Maui standards.

E. GENERAL PLAN OF THE COUNTY OF MAUI

The 1990 update of the Maui County General Plan establishes broad objectives and policies to guide the long-range development of the County. As indicated by the Maui County Charter, the purpose of the general plan shall be to:

"... indicate desired population and physical development patterns for each island within the county; shall address the unique problems and needs of each island and region within the county; shall explain the opportunities and the social, economic, and environmental consequences related to potential developments; and shall set forth the desired sequence, patterns, and characteristics of future developments. The general plan shall identify objectives to be achieved, and priorities, policies and implementing actions to be pursued with respect to population density, land use maps, land use regulations, transportation systems, public and community facility locations, water and sewage systems, visitor destinations, urban design, and other matters related to development."

The Maui County General Plan advances five (5) major themes that focus on the overall goals of the plan. The proposed project responds to the following General Plan theme:

* * *

Theme Number 5

Provide for needed resident housing

- Amendments to the General Plan address the development of resident housing as a major social need in our community.

The proposed action is in keeping with the following General Plan objectives relating to population, land use, economic activity, housing and urban design.

POPULATION

Objective

To plan the growth of resident and visitor population through a directed and managed growth plan so as to avoid social, economic and environmental disruptions.

Policies

- a. Manage population growth so that the County's economic growth will be stable and the development of public and private infrastructures will not expand beyond growth limits specified in the appropriate community plans or negatively impact our natural resources.
- b. Balance population growth by achieving concurrence between the resident employee work force, the job inventory created by new industries, affordable resident/employee housing, constraints on the environment and its natural resources, public and private infrastructure, and essential social services such as schools, hospitals, etc.

LAND USE

Objective

1. To preserve for present and future generations existing geographic, cultural and traditional community lifestyles by limiting and managing growth through environmentally sensitive and effective use of land in accordance with the individual character of the various communities and regions of the County.

Policy

- b. Provide and maintain a range of land uses districts sufficient to meet the social, physical, environmental and economic needs of the community.

Objective

2. To use the land within the County for the social and economic benefit of all the County's residents.

Policies

- c. Encourage land use methods that will provide a continuous balanced inventory of housing types in all price ranges.

ECONOMIC ACTIVITY (General)

Objective

Utilize an equitable growth management program which will guide the economic well-being of the community.

HOUSING

Objective

To provide a choice of attractive, sanitary and affordable homes for all our residents.

Policies

- b. Encourage the construction of housing in a variety of price ranges and geographic locations.

Objective

2. Provide affordable housing to be fulfilled by a broad cross-section of housing types.

URBAN DESIGN

Objective

2. To encourage developments which reflect the character and the culture of Maui County's people.

Policies

- b. Encourage community design which establishes a cohesive identity.

F. WAILUKU-KAHULUI COMMUNITY PLAN

Nine (9) community plans have been established in Maui County. Each region's growth and development is guided by a Community Plan, which contains objectives and policies drafted in accordance with the County General Plan. The purpose of the Community Plan is to outline a relatively detailed agenda for carrying out these objectives. The subject property is, for the most part, designated Single Family by the Wailuku-Kahului Community Plan. An approximately 2-acre area at the northwest corner of the Pilikana Street-Honoapiilani Highway intersection is designated for Public/Quasi-Public Use. The intent of this designation was to accommodate a future fire station facility at this location. However, the Department of Fire and Public Safety has indicated that this specific site is no longer needed as part of its long-term capital and facilities development program. See Figure 9.

The proposed action is in keeping with the following goals, objectives, and policies of the Wailuku-Kahului Community Plan.

Goal (Housing):

A sufficient supply and choice of attractive, sanitary and affordable housing accommodations for the broad cross section of residents, including the elderly.

Objectives and Policies:

2. Provide sufficient land areas for new residential growth which relax constraints on the housing market and afford variety in type, price, and location of units. Opportunities for the provision of housing are presently constrained by a lack

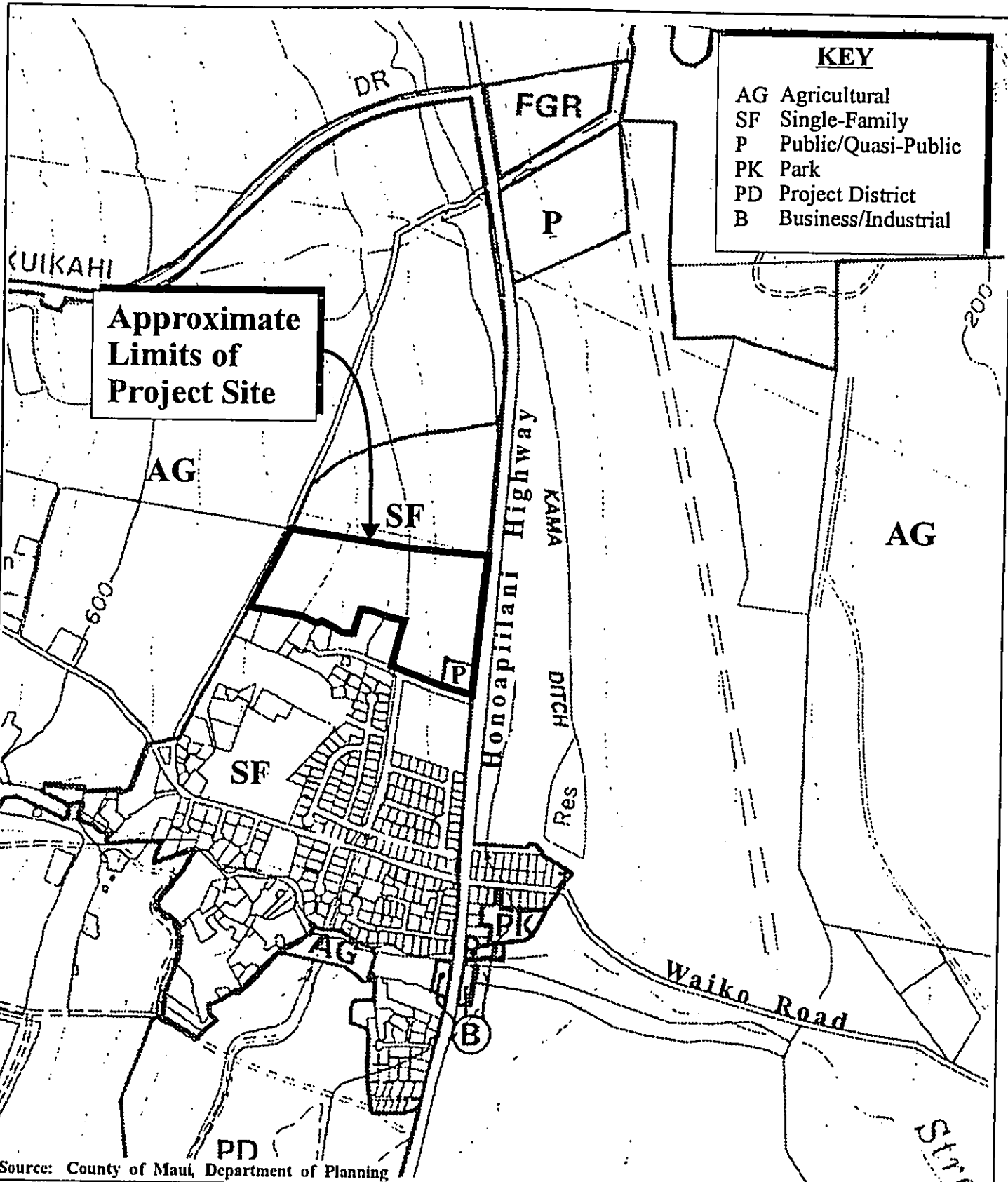
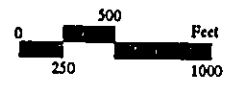


Figure 9 Proposed Waiolani Mauka Subdivision
 Wailuku-Kahului Community Plan
 Land Use Map Designations



Prepared for: Waikapu 28 Investment, LLC

MUNEKIYO & HIRAGA, INC.

of expansion areas. This condition should be relieved by a choice of housing in a variety of locations, both rural and urban in character.

3. Seek alternative residential growth areas within the planning region, with high priority given to the Wailuku and Kahului areas. This action should recognize that crucial issues of maintaining important agricultural lands, achieving efficient patterns of growth, and providing adequate housing supply and choice of price and location must be addressed and resolved.
8. Promote efficient housing designs in order to reduce residential home energy and water consumption.

Goal (Social Infrastructure):

Develop and maintain an efficient and responsive system of public services which promotes a safe, healthy and enjoyable lifestyle, accommodates the needs of young, elderly, disabled and disadvantaged persons, and offers opportunities for self-improvement and community well-being.

Objectives and Policies:

16. Ensure that adequate regional/community park facilities are provided to service new residential developments.

Goal (Urban Design):

An attractive and functionally integrated urban environment that enhances neighborhood character, promotes quality design, defines a unified landscape planting and beautification theme along major public roads and highways, watercourses and at major public facilities and recognizes the historic importance and traditions of the region.

Objectives and Policies for the Wailuku - Kahului Region in General:

5. Integrate stream channels and gulches into the region's open space system for purposes of safety, open space relief, greenways for public use and visual separation. Drainage channels and siltation basins should not be used for building sites, but rather for public open space. Drainage channel rights-of-way and easements may also be used for pedestrian and bikeway facilities.
* * *
8. Maintain shrubs and trees at street intersections for adequate sight distance.
* * *
10. Incorporate drought tolerant plant species and xeriscaping in future landscape planting.

G. COUNTY ZONING

The proposed project site is zoned "Agricultural" by Maui County zoning. Since the current zoning does not allow for the proposed subdivision, a separate Change in Zoning application is being filed with the Maui County Council. The request is being made to change the zoning from "Agricultural" to "R-2, Residential" which would allow for the subdivision of the subject property into single-family homes as the project proposes.

H. COASTAL ZONE MANAGEMENT OBJECTIVES AND POLICIES

Pursuant to Chapter 205A, Hawaii Revised Statutes, projects are evaluated with respect to Coastal Zone Management (CZM) objectives, policies and guidelines. It is noted that while the subject property is not located within the County of Maui's Special Management Area, the project's relationship to applicable coastal zone management considerations have been reviewed and assessed.

(1) Recreational Resources

Objective:

Provide coastal recreational opportunities accessible to the public.

Policies:

- (A) Improve coordination and funding of coastal recreational planning and management; and
- (B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:
 - (i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;
 - (ii) Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the state for recreation when replacement is not feasible or desirable;
 - (iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;
 - (iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;
 - (v) Ensuring public recreational use of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;
 - (vi) Adopting water quality standards and regulating point and non-point sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;
 - (vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and
 - (viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, county planning commissions; and crediting such dedication against the requirements of Section 46-6, HRS.

Response: The proposed project will not affect coastal zone recreational opportunities. Accessibility to shoreline areas will not be impacted by the proposed action.

(2) **Historic resources**

Objective:

Protect, preserve and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Policies:

- (A) Identify and analyze significant archeological resources;
- (B) Maximize information retention through preservation of remains and artifacts or salvage operations; and
- (C) Support state goals for protection, restoration, interpretation, and display of historic resources.

Response: As previously noted, the archaeological inventory survey determined that a portion of the Waihee Ditch is located on the project site. The applicant will work with Wailuku Agribusiness, the owner of the ditch, to construct improvements that will ensure that the ditch maintains its operation for irrigation purposes. No other archaeological resources were identified on the project site.

(3) **Scenic and open space resources**

Objective:

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

Policies:

- (A) Identify valued scenic resources in the coastal zone management area;
- (B) Ensure that new developments are compatible with their visual environment by designing and locating such

-
- developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;
- (C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and
 - (D) Encourage those developments which are not coastal dependent to locate in inland areas.

Response: The proposed project will not adversely impact scenic or open space resources. The proposed project will not involve significant alteration to the existing topographic character of the site and will not affect public views to and along the shoreline.

(4) **Coastal ecosystems**

Objective:

Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

Policies:

- (A) Improve the technical basis for natural resource management;
- (B) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;
- (C) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and
- (D) Promote water quantity and quality planning and management practices which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses which violate state water quality standards.

Response: Appropriate erosion control measures will be implemented during the construction of the project to prevent significant impacts upon coastal water ecosystems. Runoff from the project will be routed to catch basins spaced along the subdivision streets and conveyed into a storm drain system that will be directed toward the southeast corner of the project site. A new

offsite drainline will be installed across Honoapiilani Highway then along side the east side of the highway to Wailuku Agribusiness' Waikapu reservoir. The applicant has secured an easement for the drainline and has an agreement to increase the capacity of the reservoir by dredging or enlarging the area by one (1) acre. This reservoir will serve as a detention basin for the project and has a spillway that conveys water into Waikapu Stream whenever the water surface in the reservoir reaches a preset elevation. The completion of the proposed project will not significantly disrupt or impact coastal ecosystems.

(5) **Economic Uses**

Objective:

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

Policies:

- (A) Concentrate coastal dependent development in appropriate areas;
- (B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and
- (C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:
 - (i) Use of presently designated locations is not feasible;
 - (ii) Adverse environmental effects are minimized; and
 - (iii) The development is important to the State's economy.

Response: The proposed project is not a coastal dependent development. No adverse economic impacts will be generated as a result of the project.

(6) **Coastal Hazards**

Objective:

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

Policies:

- (A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;
- (B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint pollution hazards;
- (C) Ensure that developments comply with requirements of the Federal Flood Insurance Program;
- (D) Prevent coastal flooding from inland projects; and
- (E) Develop a coastal point and nonpoint source pollution control program.

Response: The project site is located within Zone C, which is an area of minimal flooding. Moreover, tsunami inundation parameters do not apply to the subject project.

(7) **Managing development**

Objective:

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

Policies:

- (A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;

-
- (B) Facilitate timely processing of applications for development permits and resolve overlapping of conflicting permit requirements; and
 - (C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life-cycle and in terms understandable to the public to facilitate public participation in the planning and review process.

Response: The district boundary amendment, Community Plan Amendment and Change in Zoning application processes involve review by governmental agencies, the Maui Planning Commission and the Maui County Council. Participation is afforded at public hearings for these processes. In addition, the applicant has held and will continue to hold neighborhood information meetings to receive comments from surrounding owners and lessees. To date, a community meeting was held on November 25, 2003. For further discussion, refer to Chapter IX of this report.

Applicable State and County requirements will be adhered to in the design and construction of the project.

(8) Public Participation

Objective:

Stimulate public awareness, education, and participation in coastal management.

Policies:

- (A) Maintain a public advisory body to identify coastal management problems and to provide policy advice and assistance to the coastal zone management program;
- (B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal-related issues, developments, and government activities; and

-
- (C) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

Response: As previously noted, opportunities for agency and public review of the proposed action are provided through the notification review and comment processes of the County development process. A neighborhood information meeting was organized as noted above.

(9) **Beach Protection**

Objective:

Protect beaches for public use and recreation.

Policies:

- (A) Locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion;
- (B) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and
- (C) Minimize the construction of public erosion-protection structures seaward of the shoreline.

Response: The proposed project does not involve any construction work near the shoreline and will not have any effect on beaches in the region. Onsite runoff will be accommodated by drainage facilities in compliance with County standards.

(10) **Marine Resources**

Objective:

Implement the State's ocean resources management plan.

Policies:

- (A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;
- (B) Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;
- (C) Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency;
- (D) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;
- (E) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and
- (F) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Response: The proposed project is not anticipated to have adverse effects upon marine and coastal resources. While the project site is located in an inland area, away from marine or coastal resources, appropriate BMPs will be utilized to ensure that construction runoff is appropriately handled, minimizing any impacts to coastal waters.

Chapter V

***Adverse Environmental
Impacts Which Cannot
Be Avoided***

V. ADVERSE ENVIRONMENTAL IMPACTS WHICH CANNOT BE AVOIDED

Potential construction-related impacts include noise-generated impacts occurring from site preparation and construction activities. In addition, there may be temporary air quality impacts associated with dust generated from construction activities, and exhaust emissions discharged by construction equipment. These effects are temporary, and appropriate best management practices will be implemented to ensure that these construction-related impacts are mitigated to the maximum extent practicable.

The proposed project is not anticipated to create any significant, long-term, adverse environmental effects.

A. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The proposed project will involve the commitment of fuel, labor, and material resources, as well as private funds.

Development of the proposed project will also involve the commitment of land for improvements, which is consistent with existing land uses surrounding the project site. In this context, the use of this land for single-family residential purposes is not considered a negative impact relative to land resource commitment.

Chapter VI

***Alternatives to
the Proposed Action***

VI. ALTERNATIVES TO THE PROPOSED ACTION

The preferred alternative represents a proposed 108± lot improved residential single-family subdivision to be developed as a community compatible with the surrounding neighborhoods. There are no significant adverse impacts associated with the proposed subdivision plan relating to the environment or local infrastructure. Moreover, current market research indicates conditions warranting demand for additional single-family residential properties.

While agriculture use of the property was previously conducted, it was not considered practical nor appropriate for current use, in light of the current need to increase housing inventory in the Central Maui area. No other land use alternatives were considered for the property.

With regard to site development alternatives, the applicant considered a range of criteria to formulate the proposed subdivision layout. These criteria included density, infrastructure requirements, park dedication needs, access and traffic considerations, and costs and marketability. The proposed subdivision layout with average lot sizes of 8,000 square feet and approximate sales prices of \$140,000.00 to \$190,000.00 per lot, is considered the most viable in terms of meeting the applicant's requirements and the community's needs and desires while addressing regulatory and infrastructure requirements for the subdivision.

Chapter VII

***Anticipated Determination
and Findings and Reasons
Supporting the Determination***

VII. ANTICIPATED DETERMINATION AND FINDINGS AND REASONS SUPPORTING THE DETERMINATION

The "Significance Criteria", Section 12 of the Administrative Rules, Title 11, Chapter 200, "Environmental Impact Statement Rules", were reviewed and analyzed to determine whether the proposed project will have significant impacts to the environment. The following analysis is provided:

1. **No Irrevocable Commitment to Loss or Destruction of any Natural or Cultural Resource Would Occur as a Result of the Proposed Project**

The project will not result in any significant adverse environmental impacts. There are no known, rare, endangered or threatened species of flora, fauna or avifauna located within the project site.

From an archaeological standpoint, the ground surface has been continuously disrupted through prior decades of intensive agricultural production. The resulting ground disturbances make it unlikely that any intact cultural materials could be recovered in the subject area. As previously noted, the archaeological inventory survey conducted for the project found no surface or subsurface cultural remains. The report suggests preservation of the portion of the Waihee Ditch that is located on the project site. The applicant is willing to work with the owner of the ditch, Wailuku Agribusiness, to determine a workable solution which will ensure the ditch maintains its operation. The archaeological consultant noted that based on the negative results of surface and subsurface testing, no further archaeological work should be required. The State Historic Preservation Division concurred that no further archaeological work should be required. See Appendix "B-1". Should any artifacts or human remains be encountered during construction, work will stop in the immediate vicinity of the find and the SHPD and/or the Maui/Lanai Island

Burial Council will be appropriately and immediately notified to establish an appropriate mitigation strategy.

2. **The Proposed Action Would Not Curtail the Range of Beneficial Uses of the Environment**

The use of the subject property for single-family residential use is deemed appropriate as it provides for new housing inventory adjacent to other single-family residential subdivisions. The proposed project and the commitment of land resources will not curtail the range of beneficial uses of the environment.

3. **The Proposed Action Does Not Conflict with the State's Long-term Environmental Policies or Goals or Guidelines as Expressed in Chapter 344, Hawaii Revised Statutes**

The State's Environmental Policy and Guidelines are set forth in Chapter 344, Hawaii Revised Statutes. The proposed action is not contrary to these policies and guidelines.

4. **The Economic or Social Welfare of the Community or State Would Not be Substantially Affected**

The proposed project would have a direct beneficial effect on the local economy during construction. In the long term, the proposed project will support the local economy through homeowners' need for goods and services. The additional housing inventory will benefit the social welfare for the community. The economic and social welfare needs of the community will not be adversely impacted by the proposed subdivision.

5. **The Proposed Action Does Not Affect Public Health**

No impacts to the public's health and welfare are anticipated as a result of the proposed project.

6. **No Substantial Secondary Impacts, Such as Population Changes or Effects on Public Facilities are Anticipated**

No significant population changes are anticipated as a result of the proposed project. The approximately 108± new homes will help to meet existing demand for housing in the Central Maui area.

The proposed subdivision improvements will include hookup to existing County water and wastewater systems. Appropriate design coordination will be undertaken with responsible State and County agencies to ensure service availability. Onsite and offsite surface runoff are expected to be accommodated by improvements to the existing drainage system. The project is not expected to significantly impact public services such as police, fire, and medical services. Impacts upon recreational and solid waste collection and disposal facilities and resources are considered minimal.

7. **No Substantial Degradation of Environmental Quality is Anticipated**

During the construction phase of the project, there will be short-term air quality and noise impacts as a result of the project. In the long term, effects upon air quality and ambient noise levels should be minimal. The project is not anticipated to significantly affect the open space and scenic character of the area. Moreover, no adverse effects to flora, fauna, streams and wetlands are anticipated.

No substantial degradation of environmental quality resulting from the project is anticipated.

8. **The Proposed Action Does Not Involve a Commitment to Larger Actions, Nor Would Cumulative Impacts Result in Considerable Effects on the Environment**

The proposed subdivision improvements will be completed in a single construction phase. The proposed action is not part of a larger action and does not result in cumulative impacts which result in considerable effects on the environment.

9. **No Rare, Threatened or Endangered Species or Their Habitats Would be Adversely Affected by the Proposed Action**

There are no rare, threatened or endangered species of flora, fauna, avifauna or their habitats on the subject property.

10. **Air Quality, Water Quality or Ambient Noise Levels Would Not be Detrimentially Affected by the Proposed Project**

Construction activities will result in short-term air quality and noise impacts. Dust control measures, such as regular watering and sprinkling, will be implemented to minimize wind-blown emissions. Noise impacts will occur primarily from construction-related activities. It is anticipated that construction will be limited to daylight working hours. Water quality is not expected to be affected.

In the long term, the project will likely improve air quality in the area. Single-family residences will generate significantly less dust and airborne chemicals and pesticides than previous agriculture uses. Additionally, the project is not anticipated to have a significant impact on water quality or ambient noise levels.

11. **The Proposed Project Would Not Affect Environmentally Sensitive Areas, Such as Flood Plains, Tsunami Zones, Erosion-prone Areas, Geologically Hazardous Lands, Estuaries, Fresh Waters or Coastal Waters**

The project is not located within and would not affect environmentally sensitive areas. The project site is not subject to flooding or tsunami inundation. Soils of the project site are not erosion-prone. There are no geologically hazardous lands, estuaries, or coastal waters within or adjacent to the project site.

12. **The Proposed Action Would Not Substantially Affect Scenic Vistas and Viewplanes Identified in County or State Plans or Studies**

The project site is not identified as a scenic vista or viewplane. The proposed project will not affect public scenic corridors and coastal scenic and open space resources.

13. **The Proposed Action Would Not Require Substantial Energy Consumption**

The proposed project will involve the short-term commitment of fuel for equipment, vehicles, and machinery during construction activities. However, this use is not anticipated to result in a substantial consumption of energy resources. In the long term, the project will create an additional demand for electricity. However, this demand is not deemed substantial or excessive within the context of the region's overall energy consumption.

Based on the preceding findings, it is anticipated that the proposed action will not result in significant impacts.

Chapter VIII

***List of Permits
and Approvals***

VIII. LIST OF PERMITS AND APPROVALS

The following permits and approvals will be required prior to the implementation of the project.

State of Hawaii

1. State Land Use Commission district boundary amendment
2. NPDES permit (for stormwater discharge associated with construction activities)

County of Maui

1. County change in zoning
2. County community plan amendment
3. Subdivision approval
4. Grading permit

Chapter IX

**Neighborhood
Information Meetings**

IX. NEIGHBORHOOD INFORMATION MEETINGS

A community meeting was held on November 25, 2003 with Waikapu area residents. A general overview of the project and the preliminary subdivision plan were presented. Comments from the community were received. General topics covered in the community discussion were the proposed park site and improvements, infrastructure improvements, as well as the timing and cost for the project. A meeting memorandum, providing further details, can be found in Appendix "E" of this report.

Chapter X

***Agencies Consulted During
the Preparation of the Draft
Environmental Assessment;
Letters Received and Responses
to Substantive Comments***

X. AGENCIES CONSULTED DURING THE PREPARATION OF THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED AND RESPONSES TO SUBSTANTIVE COMMENTS

The following agencies were consulted during the preparation of the Draft Environmental Assessment. Agency comments and responses to substantive comments are also included in this section.

1. Neal Fujiwara, Soil Conservationist
Natural Resources Conservation Service
U.S. Department of Agriculture
210 Imi Kala Street, Suite 209
Wailuku, Hawaii 96793-2100
2. George Young
Chief, Regulatory Branch
U.S. Department of the Army
U.S. Army Engineer District, Hnl.
Attn: Operations Division
Bldg. T-1, Room 105
Fort Shafter, Hawaii 96858-5440
3. Robert P. Smith
Pacific Islands Manager
U. S. Fish and Wildlife Service
300 Ala Moana Blvd., Rm. 3-122,
Box 50088
Honolulu, Hawaii 96813
4. Ted Liu, Director
State of Hawaii
Office of Planning
Department of Business,
Economic
Development and Tourism
P.O. Box 2359
Honolulu, Hawaii 96804
5. Patricia Hamamoto, Superintendent
State of Hawaii
Department of Education
P.O. Box 2360
Honolulu, Hawaii 96804
6. Denis Lau, Chief
Clean Water Branch
State of Hawaii
Department of Health
919 Ala Moana Blvd., Room 300
Honolulu, Hawaii 96814
7. Herbert Matsubayashi
District Environmental Health
Program Chief
State of Hawaii
Department of Health
54 High Street
Wailuku, Hawaii 96793
8. Peter Young
State of Hawaii
Department of Land and Natural
Resources
P. O. Box 621
Honolulu, Hawaii 96809
9. Holly McEldowney
State of Hawaii
Department of Land and Natural
Resources
State Historic Preservation
Division
601 Kamokila Blvd., Room 555
Kapolei, Hawaii 96707
10. Fred Cajigal, Maui District Engineer
State of Hawaii
Department of Transportation
Highways Division
650 Palapala Drive
Kahului, Hawaii 96732

-
- | | |
|---|---|
| <p>11. Colin Kippen, Deputy Administrator
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813</p> <p>12. Carl Kaupalolo, Chief
County of Maui
Department of Fire and Public Safety
200 Dairy Road
Kahului, Hawaii 96732</p> <p>13. Alice Lee, Director
County of Maui
Department of Housing and
Human Concerns
200 S. High Street
Wailuku, Hawaii 96793</p> <p>14. Michael W. Foley, Director
County of Maui
Department of Planning
250 South High Street
Wailuku, Hawaii 96793</p> <p>15. Glenn Correa, Director
County of Maui
Department of Parks and Recreation
700 Hali'a Nako Street, Unit 2
Wailuku, Hawaii 96793</p> <p>16. Thomas Phillips, Chief
County of Maui
Police Department
55 Mahalani Street
Wailuku, Hawaii 96793</p> <p>17. Gilbert S. Coloma-Agaran, Director
County of Maui
Department of Public Works
and Waste Management
200 South High Street
Wailuku, Hawaii 96793</p> <p>18. George Tengan, Director
County of Maui
Department of Water Supply
200 South High Street
Wailuku, Hawaii 96793</p> | <p>19. Maui Electric Company, Ltd.
P. O. Box 398
Kahului, Hawaii 96732</p> <p>20. Avery Chumbley, President
Wailuku Agribusiness Co., Inc.
255 E. Waiko Road
Wailuku, Hawaii 96793</p> <p>21. Tony Levoy, President
Waiolani Homeowners Association
P.O. Box 1376
Wailuku, Hawaii 96793</p> <p>22. Waikapu Community Association
61 Ili Kaponono Street
Wailuku, Hawaii 96793</p> |
|---|---|

JUN 12 2003



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

REPLY TO
ATTENTION OF

June 11, 2003

Regulatory Branch

Mr. Dean K. Frampton, Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

This letter responds to your request for comments on the Waikapu Single-Family Subdivision project, dated June 5, 2003. Based on the information you provided I am unable to determine if a Department of the Army (DA) permit will be required for this project. Please include information in the EIS concerning the presence or absence of streams or other water bodies or wetlands on the property, and if present, what effect the project will have on them. Please place us on the mailing list for the draft EIS.

If you have any questions concerning this matter, please contact William Lennan of my staff at 438-6986 or FAX 438-4060, and reference File No. 200300448.

Please address future correspondence to this office as follows:

Mr. George P. Young, P.E.
Chief, Regulatory Branch
U.S. Army Engineer District, Honolulu
Building 230
Fort Shafter, Hawaii 96858-5440

Sincerely,

A handwritten signature in black ink, appearing to read "George P. Young".

George P. Young, P.E.
Chief, Regulatory Branch



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

JUN 23 2003

REPLY TO
ATTENTION OF

June 19, 2003

Regulatory Branch

Mr. Dean K. Frampton, Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

This letter responds to your request for comments on the Waikapu Single-Family Subdivision project, dated June 5, 2003. Based on the information you provided and a site visit by a member of my staff, I have determined that there are no waters of the U.S., including wetlands, on the project site which would be affected by the project, therefore a Department of the Army (DA) permit will not be required for this project. The Waihee Ditch which bisects the project may be a water of the U.S. If there will be any work which could affect Waihee Ditch, please contact this office for a determination of permit requirements. Please place us on the mailing list for the draft and final EISS.

If you have any questions concerning this matter, please contact William Lennan of my staff at 438-6986 or FAX 438-4060, and reference File No. 200300448.

Sincerely,

George P. Young, P.E.
Chief, Regulatory Branch



August 14, 2003

Mr. George P. Young, P.E.,
Chief, Regulatory Branch
U.S. Army Engineer District, Honolulu
Building 230
Fort Shafter, HI 96858-5440

SUBJECT: Proposed Waikapu Single-Family Subdivision, Waikapu, Maui,
Hawaii, TMK (2) 3-5-004:025 (por.), File No. 200300448

Dear Mr. Young:

Thank you for your letter dated June 19, 2003, providing us with your comments on the proposed project.

Our client, Waikapu 28 Investments, LLC, has no current plans to do any work affecting the portion of Waihee Ditch that is on their property. Should improvements to the ditch be required, however, we will be in contact with you to let you know the scope of work. Please note that we have the Army Corps of Engineers on our mailing list for the Draft Environmental Assessment and the Final Environmental Assessment for this project.

Should you have any questions, please feel free to contact me at (808) 244-2015.

Very truly yours,

Karlynn Kawahara, Planner

KK:tn

cc: Scott Nunokawa, Waikapu 28 Investments, LLC
Warren Unemori; Warren S. Unemori Engineering, Inc.

w2588c/waikapu/army.res

305 High Street, Suite 104 • Wailuku, Hawaii 96793 • ph: (808)244-2015 • fax: (808)244-8729 • planning@mhinconline.com

environment
planning
government.

JUN 12 2003

United States Department of Agriculture

 NRCS Natural Resources
Conservation Service

USDA

Our People...Our Islands...In Harmony
210 Ima Kala Street, Suite #209, Wailuku, HI 96793-2100

Date: June 11, 2003

Mr. Dean K. Frampton, Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

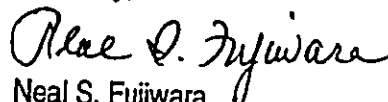
Dear Mr. Frampton,

SUBJECT: Waikapu Single-Family Subdivision; TMK: 3-5-004: por. 025

I am recommending that the drainage from this subdivision does not enter the irrigation reservoir in Waikapu. Two adjoining subdivisions in Waikapu already discharge drainage runoff into this reservoir. I believe that a reservoir should not be utilized as a runoff sediment or retention basin.

Other drainage discharge is highly recommended.

Sincerely,


Neal S. Fujiwara
District Conservationist



August 14, 2003

Neal Fujiwara, District Conservationist
Natural Resources Conservation Service
210 Imi Kala Street, Suite #209
Wailuku, HI 96793

SUBJECT: Waikapu Single-Family Subdivision; TMK: 3-5-004:025 (por.)

Dear Mr. Fujiwara:

Thank you for your letter dated June 11, 2003, providing us with your comments on the subject project.

Our client, Waikapu 28 Investments, LLC, understands your concerns regarding drainage from the subject project flowing into the nearby irrigation reservoir and looks forward to working with you and the other appropriate agencies to address concerns about drainage and specifically drainage into the existing reservoir. A civil engineering consultant has been hired to develop a drainage system for the proposed subdivision which will mitigate any impact to the irrigation reservoir in Waikapu.

Should you have any questions, please feel free to contact me at 244-2015.

Very truly yours,

Kariynn Kawahara, Planner

KK:tn

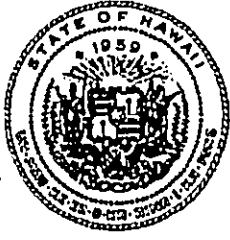
cc: Scott Nunokawa, Waikapu 28 Investments, LLC
Warren S. Unemori, Warren S. Unemori Engineering, Inc.

W2888c/waikapu/nrcs.res

305 High Street, Suite 104 • Wailuku, Hawaii 96793 • ph: (808)244-2015 • fax: (808)244-8729 • planning@mhinonline.com

planning environment
government

JUN 23 2003



**DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM**

LINDA LINGLE
GOVERNOR
THEODORE E. LIU
DIRECTOR
RAYMOND M. JEFFERSON
DEPUTY DIRECTOR

No. 1 Capitol District Building, 250 South Hotel Street, 5th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804
Web site: www.hawaii.gov/dbedt

Telephone: (808) 586-2355
Fax: (808) 586-2377

Ref. No. P-10125

2003: 0609000

June 19, 2003

Mr. Dean K. Frampton, Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

Subject: Early Consultation Request for Waikapu Single-Family Subdivision, Waikapu, Maui, Hawaii, TMK: (2) 3-5-4: 025 (por.)

Thank you for your letter dated June 5, 2003, requesting our early review of your proposal to develop a subdivision of 100 single-family lots on approximately 28.7 acres. It is our understanding that the lots will be not less than 7,500 square feet in size and that the Wailuku-Kahului Community Plan designates most of the subject property for "Single-Family" use.

We have been informed of a 100-acre affordable housing project for 400 homes which will be located immediately to the east of the 28.7-acre project mentioned above. The projects will be separated by Honoapiilani Highway.

The cumulative impacts of both projects should be discussed since the proposed reclassifications from Agricultural to Urban would encompass approximately 128 acres and 500 homes at full buildout.

Should you have any questions, please call the Land Use Division at 587-2842.

Sincerely,

A handwritten signature in black ink, appearing to read "Theodore E. Liu".

Theodore E. Liu

c: Anthony Ching, LUC



August 14, 2003

Theodore E. Liu, Director
Department of Business, Economic
Development & Tourism
P.O. Box 2359
Honolulu, HI 96804

SUBJECT: Proposed Waikapu Single-Family Residential Subdivision, Waikapu,
Maui, Hawaii, TMK: 3-5-004:025 (por.), Ref. No. P-10125

Dear Mr. Liu:

Thank you for your letter dated June 19, 2003, providing us with your comments on the proposed project. The cumulative impacts from the neighboring 100-acre affordable housing project will be addressed in the Environmental Assessment for the subject project, to the extent that information on the other project is available.

Should you have any questions, please feel free to contact me at (808) 244-2015.

Very truly yours,

Karlynn Kawahara, Planner

KK:tn

cc: Scott Nunokawa, Waikapu 28 Investments, LLC

w28iic/waikapu/dbed1.res

LINDA LINGLE
GOVERNOR OF HAWAII



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

JUN 18 2003

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

In reply, please refer to:
EHD / CWB

06058PJS.03

June 17, 2003

Mr. Dean K. Frampton
Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

**Subject: Early Consultation Request for
Waikapu Single-Family Subdivision, Waikapu, Maui, Hawaii
TMK: (2) 3-5-004:025 (por.)**

The Department of Health, Clean Water Branch (CWB), has reviewed your transmittal, dated June 5, 2003, regarding the proposed 100 single-family lots in the residential subdivision on 28.718 acres. The CWB understands that the land is currently classified for agricultural uses.

Please note that Waihee Ditch is classified as a Class 2, Inland Water (Hawaii Administrative Rules [HAR], Section 11-54-05.1). This ditch appears to cross Waikapu Stream which is also classified as a Class 2, Inland Water.

1. The Army Corps of Engineers should be contacted at (808) 438-9258 to identify whether a Federal permit (including a Department of Army permit) is required for this project. Pursuant to Section 401(a)(1) of the Federal Water Pollution Act (commonly known as the "Clean Water Act"), a Section 401 Water Quality Certification is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters...."
2. A National Pollutant Discharge Elimination System (NPDES) general permit coverage is required for the following activities:
 - a. Construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. **An NPDES permit is required before the commencement of the construction activities.;**

Mr. Dean K. Frampton
June 17, 2003
Page 2

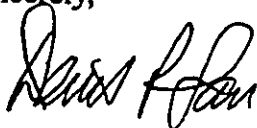
- b. Discharge of hydrotesting water; and
- c. Discharge of construction dewatering effluent.

The CWB requires that a Notice of Intent (NOI) to be covered by a NPDES general permit for any of the above activities be submitted at least 30 days before the commencement of the respective activities. The NOI forms may be picked up at our office or downloaded from our website at <http://www.hawaii.gov/doh/eh/cwb/forms/genl-index.html>.

3. The applicant may be required to apply for an individual NPDES permit if there is any type of activity in which wastewater is discharged from the project into State waters and/or coverage of the discharge(s) under the NPDES general permit(s) is not permissible. An application for the NPDES permit is to be submitted at least 180 days before the commencement of the respective activities. The NPDES application forms may also be picked up at our office or downloaded from our website at <http://www.hawaii.gov/doh/eh/cwb/forms/indiv-index.html>.
4. HAR, Section 11-55-38, also requires the owner to either submit a copy of the NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD) or demonstrate to the satisfaction of the DOH that the project, activity, or site covered by the NOI or application has been or is being reviewed by SHPD. Please submit a copy of the request for review by SHPD or SHPD's determination letter for the project.

If you have any questions, please contact Ms. Joanna L. Seto of the Engineering Section, CWB, at (808) 586-4309.

Sincerely,



DENIS R. LAU, P.E., CHIEF
Clean Water Branch

JLS:rk

c: DHO, Maui [via fax (808) 984-8237 only]



August 14, 2003

Denis Lau, P.E., Chief
Clean Water Branch
Department of Health
P.O. Box 3378
Honolulu, HI 96801-3378

SUBJECT: Proposed Waikapu Single-Family Subdivision, TMK: 3-5-004:025
(por.) CWB: 06058PJS.03

Dear Mr. Lau:

Thank you for your letter dated June 17, 2003, providing us with your comments on the proposed project. Our client, Waikapu 28 Investments, LLC (W28), has been in contact with the Army Corps of Engineers (ACE) for early consultation on the project. Please find attached the response letter from ACE indicating that no Department of Army permit will be required for the proposed project. At this point in time, the developer has no plans to affect the portion of the Waihee Ditch that runs through the property, however, should this change, we will be in contact with the ACE.

Secondly, W28 will work with the contractor to insure that all applicable permits are obtained before the commencement of any construction activities.

Third, an early consultation request was submitted to the Department of Land and Natural Resources, State Historic Preservation Division (SHPD). Please also find attached their response letter. A qualified archaeological consultant has been hired and the archaeological inventory survey is currently being conducted. W28 will comply with HAR, Section 11-55-38 to address SHPD review requirements for the NPDES permit application.

Should you have any questions, please feel free to contact me at (808)244-2015.

Very truly yours,


Karlynn Kawahara, Planner

KK:tn
Enclosures
cc: Scott Nunokawa, Waikapu 28 Investments, LLC
w28llc@waikapu@dohcwb.res



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

JUN 23 2003

REPLY TO
ATTENTION OF

June 19, 2003

Regulatory Branch

Mr. Dean K. Frampton, Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

This letter responds to your request for comments on the Waikapu Single-Family Subdivision project, dated June 5, 2003. Based on the information you provided and a site visit by a member of my staff, I have determined that there are no waters of the U.S., including wetlands, on the project site which would be affected by the project, therefore a Department of the Army (DA) permit will not be required for this project. The Waihee Ditch which bisects the project may be a water of the U.S. If there will be any work which could affect Waihee Ditch, please contact this office for a determination of permit requirements. Please place us on the mailing list for the draft and final EISs.

If you have any questions concerning this matter, please contact William Lennan of my staff at 438-6986 or FAX 438-4060, and reference File No. 200300448.

Sincerely,

A handwritten signature in cursive script, appearing to read "George P. Young".

George P. Young, P.E.
Chief, Regulatory Branch

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

JUL 16 2003

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCE
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

July 11, 2003

Dean Frampton
Munekiyo & Hiraga, Inc.
305 South High Street, Suite 104
Wailuku, Hawaii 96793

LOG NO: 2003.1159
DOC NO: 0307CD18

Dear Mr. Frampton,

**SUBJECT: Chapter 6E-42 Historic Preservation Review – Early Consultation Request for Waikapu Single-Family Subdivision Waikapu Ahupua`a, Wailuku District, Island of Maui
TMK: (2) 3-5-004:025 (por)**

Thank you for the opportunity to provide comments pertaining to the Early Consultation Request for Waikapu Single-Family Subdivision, which was received by our staff June 9, 2003. Please note that this is an information request and our comments are subject to change upon receipt of additional information. Our review is based on reports, maps, and aerial photographs maintained at the State Historic Preservation Division; no field inspection was conducted of the subject property.

Based on the submitted information request, we understand the proposed undertaking consists of the subdivision of the 28.718 acre property into approximately 100 lots for new single-family residences. The proposed project area was previously under commercial agriculture and is now fallow and vacant.

A search of our records indicates an archaeological inventory survey has not been conducted of the subject property. This area in general is likely to have once been the location of pre-Contact farming, perhaps with scattered houses. Our records indicate an LCA and a portion of the Waihe`e Ditch (SIHP 50-50-04-5197) are located on the subject property and numerous LCAs on the surrounding properties.

In 1988, Archaeological Consultants Hawaii (ACH) conducted a cursory walk-through survey (*Preliminary Archaeological Survey of Phase 1A of the Waikapu Master Plan (TMK: 3-5-004: portion of 25)...Kennedy 1988*) and subsequent limited archaeological testing in 1989 (*Archaeological Subsurface Testing Results at Phase 1A of the Waikapu Master Plan...Kennedy 1989*) of an adjacent property located to the south, which originally was part of parcel 25. No historic sites were identified during the survey or subsurface testing. Our records indicate an unmarked cemetery was recently encountered during development of a property which had been previously under commercial agriculture. Lithics and historic artifacts were

Dean Frampton
Page 2

identified on the ground surface during an inventory survey of another property which also was previously under commercial agriculture. Given the above information, we believe historic sites may be present on the subject property, in addition to the portion of the Waihe'e Ditch.

Therefore, in order to determine the effect of the proposed undertaking on historic sites, we recommend an archaeological inventory survey be conducted of the subject property to determine whether significant historic sites are present. An acceptable report documenting the findings of the survey will need to be submitted to this office for review. If significant historic sites are identified, a mitigation plan may need to be developed, in consultation with this office, and executed.

If you have any questions, please call Cathleen A. Dagher at 692-8023.

Aloha,

P. Holly McEldowney

P. Holly McEldowney, Acting Administrator
State Historic Preservation Division

CD:jen

c: Michael Foley, Director, Dept of Planning, 250 South High Street, Wailuku, HI 96793
Cultural Resources Commission, Planning Dept, 250 S. High Street, Wailuku, HI 96793

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

AUG 04 2003

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

July 31, 2003

LD-NAV
SFR2-35425MAUI.RCM

Munekiyo and Hiraga, Inc.
Dean K. Frampton, Planner
305 High Street, Suite 104/
Wailuku, Hawaii 96793

Dear Mr. Frampton:

SUBJECT: Early Consultation for Waikapu Single-Family Subdivision
Waikapu, Island of Maui, County of Maui
TMK: (2) 3-5-004: Portion of 025

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

The Department of Land and Natural Resources' (DLNR) Land Division distributed a copy of your letter (summary of the project) and site map to the following DLNR Divisions for their review and comment:

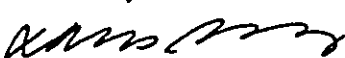
- Division of Aquatic Resources
- Division of Forestry and Wildlife
- Na Ala Hele Trails
- Division of State Parks
- Engineering Division
- Commission on Water Resource Management
- Office of Conservation and Coastal Lands
- Land Division Maui District Land Office

Attached is a copy of the Commission on Water Resource Management and Engineering Division comments.

Based on the attached responses, the Department of Land and Natural Resources has no other comment to offer at this time.

If you have any questions, please feel free to contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 1-808-587-0384.

Very truly yours,


DIERDRE S. MAMIYA
Administrator

C: MDLO

LINDA LINGLE
GOVERNOR OF HAWAII



JUL 10 PM 3:48

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

July 7, 2003

RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

LD/NAV

Ref.: SFR2-35425MAUI.CMT

Suspense Date: 7/21/03

WAIKAPUSFR

MEMORANDUM:

TO: XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Na Ala Hele Trails
XXX Division of State Parks
XXX Engineering Division
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management
XXX Office of Conservation and Coastal Lands
✓ XXX Land-Maui District Land Office

FROM: Deirdre S. Mamiya, Administrator
Land Division

SUBJECT: Early Consultation for Waikapu Single-Family Subdivision
Waikapu, Island of Maui, County of Maui
TMK: (2) 3-5-004: Portion of 025

Please review the attached letter (summary of project) pertaining to the subject matter and submit your comments on Division letterhead signed and dated by the suspense date.

If you have any questions, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

(✓) We have no comments.

() Comments attached.

Division MDLO

Signed: *Joan K. Kyo*

Date: 7-15-03

Title: District Land Agent

LINDA LINGLE
GOVERNOR OF HAWAII



PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER



2003 JUL 16 A.D. 35

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

July 7, 2003

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

LD/NAV

Ref.: SFR2-35425MAUI.CMT

Suspense Date: 7/21/03

WAIKAPUSFR

MEMORANDUM:

TO: XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Na Ala Hele Trails
XXX Division of State Parks
XXX Engineering Division
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management
XXX Office of Conservation and Coastal Lands
XXX Land-Maui District Land Office

FROM: Deirdre S. Mamiya, Administrator
Land Division

SUBJECT: Early Consultation for Waikapu Single-Family Subdivision
Waikapu, Island of Maui, County of Maui
TMK: (2) 3-5-004: Portion of 025

Please review the attached letter (summary of project) pertaining to the subject matter and submit your comments on Division letterhead signed and dated by the suspense date.

If you have any questions, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

() We have no comments.

Comments attached.

Division _____

Signed: Craig T. Dennis

Date: _____

Title: Chief Engineer

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/NAV

Ref.: SFR2-35425MAUI.CMT

COMMENTS

For your information, the project site is located in Zone C (No Shading). This is an area of minimal flooding. The National Flood Insurance Program (NFIP) does not have any regulations or guidelines for development within Zone C.

Should you have any questions, please call Mr. Andrew Monden of the Planning Branch at 587-0229.

Signed: *Eric T. Hirano*
ERIC T. HIRANO, CHIEF ENGINEER

Date: 2/16/03

LINDA LINGLE
GOVERNOR OF HAWAII



PETER T. YOUNG
CHAIRPERSON

MEREDITH J. CHING
CLAYTON W. DELA CRUZ
JAMES A. FRAZIER
CHIYOME L. FUKINO, M.D.
STEPHANIE A. WHALEN

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

ERNEST Y.W. LAU
DEPUTY DIRECTOR

July 17, 2003

TO: Ms. Dede Mamiya, Administrator
Land Division

FROM: Ernest Y.W. Lau, Deputy Director *EYL*
Commission on Water Resource Management (CWRM)

SUBJECT: Waikapu Single-Family Subdivision, TMK 3-5-004: portion of 025

FILE NO.: SFR2-35425MAUI.CMT

Thank you for the opportunity to review the subject document. Our comments related to water resources are marked below.

In general, the CWRM strongly promotes the efficient use of our water resources through conservation measures and use of alternative non-potable water resources whenever available, feasible, and there are no harmful effects to the ecosystem. Also, the CWRM encourages the protection of water recharge areas, which are important for the maintenance of streams and the replenishment of aquifers.

- We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.
- We recommend coordination with the Land Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
- We are concerned about the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.
- A Well Construction Permit and/or a Pump Installation Permit from the Commission would be required before ground water is developed as a source of supply for the project.
- The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the Commission would be required prior to use of this source.
- Groundwater withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.
- We are concerned about the potential for degradation of instream uses from development on highly erodible slopes adjacent to streams within or near the project. We recommend that approvals for this project be conditioned upon a review by the corresponding county's Building Department and the developer's acceptance of any resulting requirements related to erosion control.
- If the proposed project includes construction of a stream diversion, the project may require a stream diversion works permit and amend the instream flow standard for the affected stream(s).
- If the proposed project alters the bed and banks of a stream channel, the project may require a stream channel alteration permit.
- OTHER

The letter document does not address potential increase in water demand. The Iao and Waihee aquifers serve as the water supply for this project and the Iao Aquifer was overpumped beyond its sustainable yield in the recent past and continues to show signs it has not yet fully recovered. The Commission action of November 2002 established criteria under which the Iao and/or Waihee Aquifers will be designated as water management areas. If those criteria are met, all ground-water withdrawals to the purveyor would be subject to water use permits. The service area would be subject to a declaration of water shortage or a water emergency. If withdrawals are constrained, water users may be subject to restrictions by the purveyor.

If there are any questions, please contact Charley Ice at 587-0251.

LINDA LINGLE
GOVERNOR OF HAWAII

RECEIVED



PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER



03 JUL 9 8:37

COMMISSION ON WATER
RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

July 7, 2003

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

LD/NAV

Ref.: SFR2-35425MAUI.CMT

Suspense Date: 7/21/03

WAIKAPUSFR

MEMORANDUM:

TO: XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Na Ala Hele Trails
XXX Division of State Parks
XXX Engineering Division
/ Division of Boating and Ocean Recreation
/ XXX Commission on Water Resource Management
XXX Office of Conservation and Coastal Lands
XXX Land-Maui District Land Office

FROM: Deirdre S. Mamiya, Administrator *[Signature]*
Land Division

SUBJECT: Early Consultation for Waikapu Single-Family Subdivision
Waikapu, Island of Maui, County of Maui
TMK: (2) 3-5-004: Portion of 025

Please review the attached letter (summary of project) pertaining to the subject matter and submit your comments on Division letterhead signed and dated by the suspense date.

If you have any questions, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

() We have no comments.

(✓) Comments attached.

Division CWRM

Signed: W. Poyfandy

Date: 7/10/03

Title: G.W. Regulation Branch Chief

LINDA LINGLE
GOVERNOR OF HAWAII



2003 JUL 19 10:17:07

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

July 7, 2003

CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
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HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

LD/NAV

Ref.: SFR2-35425MAUI.CMT

Suspense Date: 7/21/03

WAIKAPUSFR

MEMORANDUM:

TO: XXX Division of Aquatic Resources
 XXX Division of Forestry & Wildlife
XXX Na Ala Hele Trails
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XXX Land-Maui District Land Office

FROM: Deirdre S. Mamiya, Administrator
Land Division

SUBJECT: Early Consultation for Waikapu Single-Family Subdivision
Waikapu, Island of Maui, County of Maui
TMK: (2) 3-5-004: Portion of 025

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We have no comments.

Comments attached.

Division _____

Signed:

Date: JUL - 9 2003

Title: **MICHAEL G. BUCK, ADMINISTRATOR**
DIVISION OF FORESTRY AND WILDLIFE

8- 5-03: 8:32AM:

MM & KC ✓

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

PETER T. YOUNG
CHAIRPERSON

MEREDITH J. CHING
CLAYTON W. DELA CRUZ
JAMES A. FRAZIER
CHIYOME L. FUKINO, M.D.
STEPHANIE A. WHALEN

ERNEST Y.W. LAU
DEPUTY DIRECTOR

244-8729
12 APR 4 PM

July 17, 2003

TO: Ms. Dede Mamiya, Administrator
Land Division

FROM: Ernest Y.W. Lau, Deputy Director *EYWL*
Commission on Water Resource Management (CWRM)

SUBJECT: Waikapu Single-Family Subdivision, TMK 3-5-004: portion of 025

FILE NO.: SFR2-35425MAUI.CMT

2003 JUL 17 11:05

Thank you for the opportunity to review the subject document. Our comments related to water resources are marked below.

In general, the CWRM strongly promotes the efficient use of our water resources through conservation measures and use of alternative non-potable water resources whenever available, feasible, and there are no harmful effects to the ecosystem. Also, the CWRM encourages the protection of water recharge areas, which are important for the maintenance of streams and the replenishment of aquifers.

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- OTHER

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If there are any questions, please contact Charley Ice at 587-0251.

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

JUL 16 2003

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

July 11, 2003

Dean Frampton
Munekiyō & Hiraga, Inc.
305 South High Street, Suite 104
Wailuku, Hawaii 96793

LOG NO: 2003.1159
DOC NO: 0307CD18

Dear Mr. Frampton,

**SUBJECT: Chapter 6E-42 Historic Preservation Review – Early Consultation Request for Waikapu Single-Family Subdivision
Waikapu Ahupua`a, Wailuku District, Island of Maui
TMK: (2) 3-5-004:025 (por)**

Thank you for the opportunity to provide comments pertaining to the Early Consultation Request for Waikapu Single-Family Subdivision, which was received by our staff June 9, 2003. Please note that this is an information request and our comments are subject to change upon receipt of additional information. Our review is based on reports, maps, and aerial photographs maintained at the State Historic Preservation Division; no field inspection was conducted of the subject property.

Based on the submitted information request, we understand the proposed undertaking consists of the subdivision of the 28.718 acre property into approximately 100 lots for new single-family residences. The proposed project area was previously under commercial agriculture and is now fallow and vacant.

A search of our records indicates an archaeological inventory survey has not been conducted of the subject property. This area in general is likely to have once been the location of pre-Contact farming, perhaps with scattered houses. Our records indicate an LCA and a portion of the Waihe`e Ditch (SIHP 50-50-04-5197) are located on the subject property and numerous LCAs on the surrounding properties.

In 1988, Archaeological Consultants Hawaii (ACH) conducted a cursory walk-through survey (*Preliminary Archaeological Survey of Phase 1A of the Waikapu Master Plan (TMK: 3-5-004: portion of 25)...Kennedy 1988*) and subsequent limited archaeological testing in 1989 (*Archaeological Subsurface Testing Results at Phase 1A of the Waikapu Master Plan...Kennedy 1989*) of an adjacent property located to the south, which originally was part of parcel 25. No historic sites were identified during the survey or subsurface testing. Our records indicate an unmarked cemetery was recently encountered during development of a property which had been previously under commercial agriculture. Lithics and historic artifacts were

Dean Frampton
Page 2

identified on the ground surface during an inventory survey of another property which also was previously under commercial agriculture. Given the above information, we believe historic sites may be present on the subject property, in addition to the portion of the Waihe'e Ditch.

Therefore, in order to determine the effect of the proposed undertaking on historic sites, we recommend an archaeological inventory survey be conducted of the subject property to determine whether significant historic sites are present. An acceptable report documenting the findings of the survey will need to be submitted to this office for review. If significant historic sites are identified, a mitigation plan may need to be developed, in consultation with this office, and executed.

If you have any questions, please call Cathleen A. Dagher at 692-8023.

Aloha,

P. Holly McEldowney

P. Holly McEldowney, Acting Administrator
State Historic Preservation Division

CD:jen

c: Michael Foley, Director, Dept of Planning, 250 South High Street, Wailuku, HI 96793
Cultural Resources Commission, Planning Dept, 250 S. High Street, Wailuku, HI 96793

JUN 20 2003

PATRICIA HAMAMOTO
SUPERINTENDENT

LINDA LINGLE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAII 96804

OFFICE OF THE SUPERINTENDENT

June 20, 2003

Mr. Dean K. Frampton, Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

Subject: Waikapu Single-Family Subdivision
Early Consultation Request
Waikapu, Maui, TMK: (2) 3-5-4:025(por.)

The Department of Education (DOE) is responding to your request for early consultation comments for a 100-lot single-family subdivision in Waikapu.

The DOE will request a fair-share contribution from the project developer when the project goes before the State Land Use Commission and/or the Maui County Planning Department. The DOE would like to know if the subdivision will permit the construction of accessory dwellings. A second home on each of the 100 lots would have a significant impact on the number of school children who may reside in the project.

The DOE has no other comment at this preliminary stage and looks forward to the opportunity to review the forthcoming documents on the project.

Should you have any questions, please call Ms. Rae M. Loui of the Office of Business Services at 586-3444 or Mr. Raynor M. Minami of the Facilities and Support Services Branch at 733-4860.

Thank you.

Very truly yours,


Patricia Hamamoto
Superintendent

PH:hy

cc: Rae M. Loui, OBS

AN AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY EMPLOYER

LINDA LINGLE
GOVERNOR



JUL 03 2003
RODNEY K. HIRAGA
DIRECTOR

Acting Deputy Director
GLENN M. OKIMOTO

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IN REPLY REFER TO:
HWY-M 2.296-03

MAUI DISTRICT
650 PALAPALA DRIVE
KAHULUI, HAWAII 96732

July 1, 2003

MEMORANDUM

TO: Dean Frampton
Munekiyo & Hiraga, Inc.

FROM: Paul M. Chung 
State Highways

SUBJECT: Proposed Waikapu Single Family Subdivision
TMK: 3-5-4: por. of 25
Waikapu, Maui, Hawaii (I.D. NO. ME-03-50)

Thank you for the opportunity to review and comment on the proposed single-family development. Based upon our review of the submittals, we offer the following comments:

1. Submit a Traffic Impact Analysis Report.
2. No additional runoff shall be allowed into the State right-of-way.
3. All vehicular access shall be through Pilikana Street.
4. Will the restrictive covenants allow Ohana units?

If there are any questions or concerns, please call me at 873-3535.

/pmc



December 2, 2003

Paul Chung
Highways Division
Department of Transportation
650 Palapala Drive
Kahului, Hawaii 96732

SUBJECT: Proposed Waiolani Mauka Single-Family Residential Subdivision, Waikapu, Maui, Hawaii, TMK 3-5-004:025 (por.), ID No. ME-03-50

Dear Mr. Chung:

Thank you for your letter dated July 1, 2003, providing us with your comments on the proposed project. We apologize for the delay in responding to your comments. We offer the following responses on behalf of our client, Waikapu 28 Investment, LLC (W28).

1. A traffic impact analysis report will be submitted with the Draft Environmental Assessment.
2. The drainage system for Waiolani Mauka will be designed to collect and convey all of the additional and most of the existing runoff from the project site across Honoapiilani Highway to the vicinity of the existing punawai located north of Waikapu Village.

However, there will be runoff from other lands located above and to the north of the Waiolani Mauka project site that will continue to sheet flow onto Honoapiilani Highway as it is now doing. Waiolani Mauka is not responsible for the latter.
3. Conceptual plans call for vehicular access to the subdivision will be through Pilikana Street. The applicant and the civil engineering consultant are in discussions with neighboring subdivisions to possibly partner in the cost of traffic mitigation measures at the Honoapiilani Highway. Consultation with your office will be sought when more details are available.
4. At this point in time, the applicant is contemplating covenants that may restrict ohana units in the subdivision. The traffic study analysis is based on limiting ohana units to 50 percent (50%) of the lots.

Paul Chung
December 2, 2003
Page 2

Should you have any questions, please feel free to contact me at 244-2015.

Very truly yours,



Karlynn Kawahara, Planner

KK:yp

cc: Scott Nunokawa, Waikapu 28 Investment, LLC
Warren Unemori, Warren S. Unemori Engineering, Inc.

w28llc@waikapu.pchungdot.res



DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
COUNTY OF MAUI

JUN 20 2003

ALAN M. ARAKAWA
Mayor

ALICE L. LEE
Director

HERMAN T. ANDAYA
Deputy Director

200 SOUTH HIGH STREET • WAILUKU, HAWAII 96793 • PHONE (808) 270-7805 • FAX (808) 270-7165

June 17, 2003

Mr. Dean K. Frampton, Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

**SUBJECT: EARLY CONSULTATION FOR WAIKAPU SINGLE-FAMILY
SUBDIVISION, WAIKAPU, HAWAII,
TMK (2)3-5-4:025 (POR)**

We have reviewed your June 5, 2003 letter and enclosures and would like to inform you that we will be recommending that the Change In Zoning approval be subject to the provisions of the Maui County Housing Policy that is in effect at that time.

Thank you for the opportunity to comment.

Very truly yours,

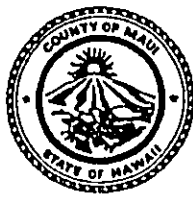
ALICE L. LEE
Director

ETO:hs

Attachment

c: Housing Administrator

ALAN M. ARAKAWA
Mayor



JUL 18 2003
GLENN T. CORREA
Director

JOHN L. BUCK III
Deputy Director

(808) 270-7230
Fax (808) 270-7934

DEPARTMENT OF PARKS & RECREATION

700 Hali'a Nako'a Street, Unit 2, Wailuku, Hawaii 96793

July 11, 2003

Mr. Dean K. Frampton, Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

Subject: **EARLY CONSULTATION REQUEST FOR
WAIKAPU SINGLE FAMILY SUBDIVISION,
TMK 3-5-004:POR. OF 025, WAIKAPU**

This letter is in response to your June 5, 2003 letter to our Department regarding the subject matter.

Our Department has no objections to the subject project. However, we are interested in obtaining land for a park site within the subject property. At your convenience, please schedule a meeting with our Department to discuss this matter.

Thank you for the opportunity to review and comment. Should you have any questions or concerns, please feel free to contact me, or Dyan Ariyoshi, CIP Coordinator of our Planning & Development Division, at phone number 270-7981.

Sincerely,

A handwritten signature in black ink, appearing to read "Glenn T. Correa".

GLENN T. CORREA
Director

c: Patrick Matsui, Chief of Planning & Development Division - DPR



WAIKAPU 28 INVESTMENT, LLC

July 30, 2003

Mr. Glenn T. Correa, Director
Department of Parks & Recreation
County of Maui
700 Hali'a Nakoia Street, Unit 2
Wailuku, Hawaii 96793

RE: Waiolani Mauka (A.K.A. Waikapu Single Family Subdivision)
TMK 3-5-04 025

Dear Director Correa:

Thank you kindly for meeting with us on July 17th to discuss the aforementioned project. We especially appreciate the Department of Parks & Recreation's direct and candid clarification of its Parks Assessment policy as it relates to Waiolani Mauka. Pursuant to our meeting, we are writing to confirm our understanding regarding the clarification of the Department's position.

It is our understanding that due to fiscal constraints and the Department's concern regarding the logistical maintenance issues associated with smaller parks, the Department has elected to request a cash contribution as a Park and Playground Assessment Fee for the project rather than a land contribution as stated in the Department's July 11th letter to us. In keeping with this decision, the Department has determined that it is not in favor of our offer of providing 2-acres of land for a park site or, generally, in obtaining park land within the Waiolani Mauka project area. Given its position, it is our understanding that the Department intends to amend its July 11th letter to Munekiyo & Hiraga to restate its position. Per our discussion, we would appreciate it if the restatement could be forwarded as soon as possible to avoid the confusion likely to result during the processing of this project should the restatement be delayed.

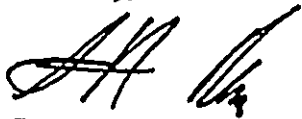
While we understand the Department's concerns and accept the Department's position on this matter, we also share the community's concern that all of Waikapu mauka of Honoapiilani Highway is without a passive park for young children. As such, we will continue to work with the community to seek a solution to this concern. We understand that given the very real constraints that the Department operates under, any solution would require a large community grass roots effort and fiscal problem solving to make such a park possible. We are hopeful that we will be able to return to the Department with reasonable solutions that the Department will be able to support.

P.O. BOX 946 • WAILUKU, HAWAII • 96793
PHONE: 808-986-0099 • FAX: 808-986-0009
HLEMN@AOL.COM • SNUNOKAWA@AOL.COM

Letter to Director Correa
July 30, 2003
Page 2 of 2

Again thank you for meeting with us and for providing us with a clear and concise statement of the Department's position on this matter. Should you have any questions, please do not hesitate to contact me at 986-0099.

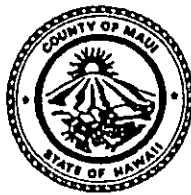
Sincerely,



Scott Nunokawa
Manager

P.O. BOX 948 • WAILUKU, HAWAII • 96793
PHONE: 808-986-0099 • FAX: 808-986-0009
SNUNOKAWA@AOL.COM

ALAN M. ARAKAWA
Mayor



AUG 11 2003
GLENN T. CORREA
Director

JOHN L. BUCK III
Deputy Director

(808) 270-7230
Fax (808) 270-7934

DEPARTMENT OF PARKS & RECREATION

700 Hali'a Nako'a Street, Unit 2, Wailuku, Hawaii 96793

July 31, 2003

Mr. Dean K. Frampton, Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

Subject: **EARLY CONSULTATION REQUEST FOR
WAIKAPU SINGLE FAMILY SUBDIVISION,
TMK 3-5-004:POR. OF 025, WAIKAPU**

This letter shall supercede our previous letter dated July 11, 2003 regarding the subject matter. Also, attached is a copy of Wailuku 28 Investment, LLC's letter to our Department, dated July 30, 2003, confirming the discussions of our July 17, 2003 meeting.

Based on aforementioned meeting, we are requiring the developer to satisfy the park dedication requirements for the subject subdivision with a cash contribution in lieu of land.

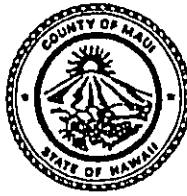
Should you have any questions or concerns, please feel free to contact me, or Dyan Ariyoshi, CIP Coordinator of our Planning & Development Division, at phone number 270-7981.

Sincerely,


GLENN T. CORREA
Director

c: Patrick Matsui, Chief of Planning & Development Division - DPR
Scott Nunokawa, Waikapu 28 Investment, LLC

ALAN M. ARAKAWA
Mayor



DEC 01 2003

GLENN T. CORREA
Director

JOHN L. BUCK III
Deputy Director

(808) 270-7230
Fax (808) 270-7934

DEPARTMENT OF PARKS & RECREATION

700 Hali'a Nako'a Street, Unit 2, Wailuku, Hawaii 96793

November 21, 2003

Mr. Scott Nunokawa
Waikapu 28 Investment, LLC
P.O. Box 946
Wailuku, Hawaii 96793

Dear Mr. Nunokawa:

Subject: **WAIOLANI MAUKA SUBDIVISION**
(aka WAIKAPU SINGLE FAMILY SUBDIVISION)
TMK 3-5-004:POR. OF 025, WAIKAPU

This letter shall supercede our latest letter to your consultant, Dean Frampton of Munekiyo & Hiraga, Inc., dated July 31, 2003.

Our Department will accept dedication of land for parks and playgrounds purposes, in accordance with Section 18.16.320 of the Maui County Code, to satisfy the park dedication requirements for the subject subdivision.

Should you have any questions or concerns, please feel free to contact me, or Dyan Ariyoshi, CIP Coordinator of our Planning & Development Division, at phone number 270-7981.

Sincerely,

A handwritten signature in black ink, appearing to read "Glenn T. Correa".

GLENN T. CORREA
Director

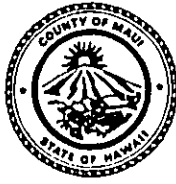
c: Patrick Matsui, Chief of Planning & Development Division - DPR
✓ Karlynn Kawahara, Munekiyo & Hiraga, Inc.

JUN 26 2003

ALAN M. ARAKAWA
Mayor

MICHAEL W. FOLEY
Director

WAYNE A. BOTEILHO
Deputy Director



COUNTY OF MAUI
DEPARTMENT OF PLANNING

June 18, 2003

Mr. Dean Frampton
Munekiyo and Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

RE: Early Consultation for EA
PROJECT NAME: Waikapu 28 Investment LLC
TMK: 3-5-004:Por of 025
I.D. NO.: LTR 2003/2283

Thank you for the opportunity to comment on the above project. No subdivision layout was included in your request so some of our comments may have already been addressed. We would encourage continuation of the main roadway designs located within the Waiolani Subdivision. The Waihee Ditch and access road are used as passive and active recreation areas and should be maintained and improved as such. We would encourage pedestrian access this area be incorporated into the subdivision design. Although there is opposition by some of the existing Waikapu residents to additional traffic being placed on to Old Waikapu Road and Waiko Road, the department would prefer a road way system with an efficient circulation pattern, as opposed to cul-de-sacs.

With the rapid rise in home prices, some developers have found that non-residents and local real-estate agents are aggravating the housing problems by speculating in new home projects. Some developers who are concerned about this problem have placed non-speculative clauses in their contracts. This has reduced the chances of speculators and have allowed permanent residents a chance to purchase a home.

Thank you for your cooperation. If additional clarification is required, please contact Mr. Joseph Alueta, Staff Planner of this office at 270-7735.

Sincerely,

MICHAEL W. FOLEY
Planning Director

Mr. Dean Frampton
June 18, 2003
Page 2

MWF:JWA:lar

c: Clayton Yoshida, AICP, Planning Program Administrator
Joe Alueta, Staff Planner
Project File
General File
K:\WP_DOCS\PLANNING\LETTERS\ltr2003\2283_waikapu28_preEA.wpd

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF HEALTH
MAUI DISTRICT HEALTH OFFICE
54 HIGH STREET
WAILUKU, HAWAII 96793-2198

JUN 30 2003

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

LORRIN W. PANG, M.D., M.P.H.
DISTRICT HEALTH OFFICER

W281LLC - Naikapu

856

June 26, 2003

Mr. Dean K. Frampton
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai'i 96793

Dear Mr. Frampton:

Subject: Request for Early Consultation, Waikapu Single-Family
Subdivision
TMK: (2) 3-5-4:025 (por.)

Thank you for the opportunity to participate in the early consultation process for the environmental assessment. The following comments are offered:

Owners and prospective owners of the subdivision should be made aware of the hog farm that is located in the area of the proposed subdivision and the "Hawaii Right to Farm Act".

Should you have any questions, please call me at 984-8230.

Sincerely,

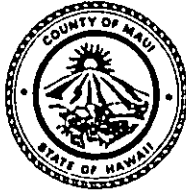
A handwritten signature in black ink, appearing to be "H. Matsubayashi", enclosed in a hand-drawn oval.

Herbert S. Matsubayashi
District Environmental Health Program Chief

ALAN M. ARAKAWA
Mayor

GILBERT S. COLOMA-AGARAN
Director

MILTON M. ARAKAWA, A.I.C.P.
Deputy Director



COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
AND ENVIRONMENTAL MANAGEMENT
DEVELOPMENT SERVICES ADMINISTRATION
250 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

July 15, 2003

JUL 18 2003

RALPH M. NAGAMINE, L.S., P.E.
Development Services Administration

TRACY TAKAMINE, P.E.
Wastewater Reclamation Division

LLOYD P.C.W. LEE, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

JOHN D. HARDER
Solid Waste Division

Mr. Dean Frampton, Planner
MUNEKIYO & HIRAGA, INC.
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

Dear Mr. Frampton:

**SUBJECT: EARLY CONSULTATION
WAIKAPU SINGLE-FAMILY SUBDIVISION
TMK: (2) 3-5-004:025(PORTION)**

We reviewed the subject consultation and have the following comments:

1. Submit a solid waste management plan for the recycling and disposal of cleared and grubbed material and construction waste.
2. Although wastewater capacity is available as of June 26, 2003, the developer should be informed that wastewater capacity cannot be ensured until the issuance of the building permit.
3. The developer shall pay assessment fees for treatment plant expansion costs and is required to fund any necessary off-site improvements to collection system and wastewater pump stations.
4. Provide a sewer impact study to substantiate that the existing wastewater system is adequate to serve this project. Wastewater contribution calculations are required before a building permit is issued. Indicate on the plans the ownership of each easement (in favor of each party). The County will not accept sewer easements which traverse private property. Plans should show the installation of a single service lateral and advanced rise for each lot.

Mr. Dean Frampton, Planner
July 15, 2003
Page 2

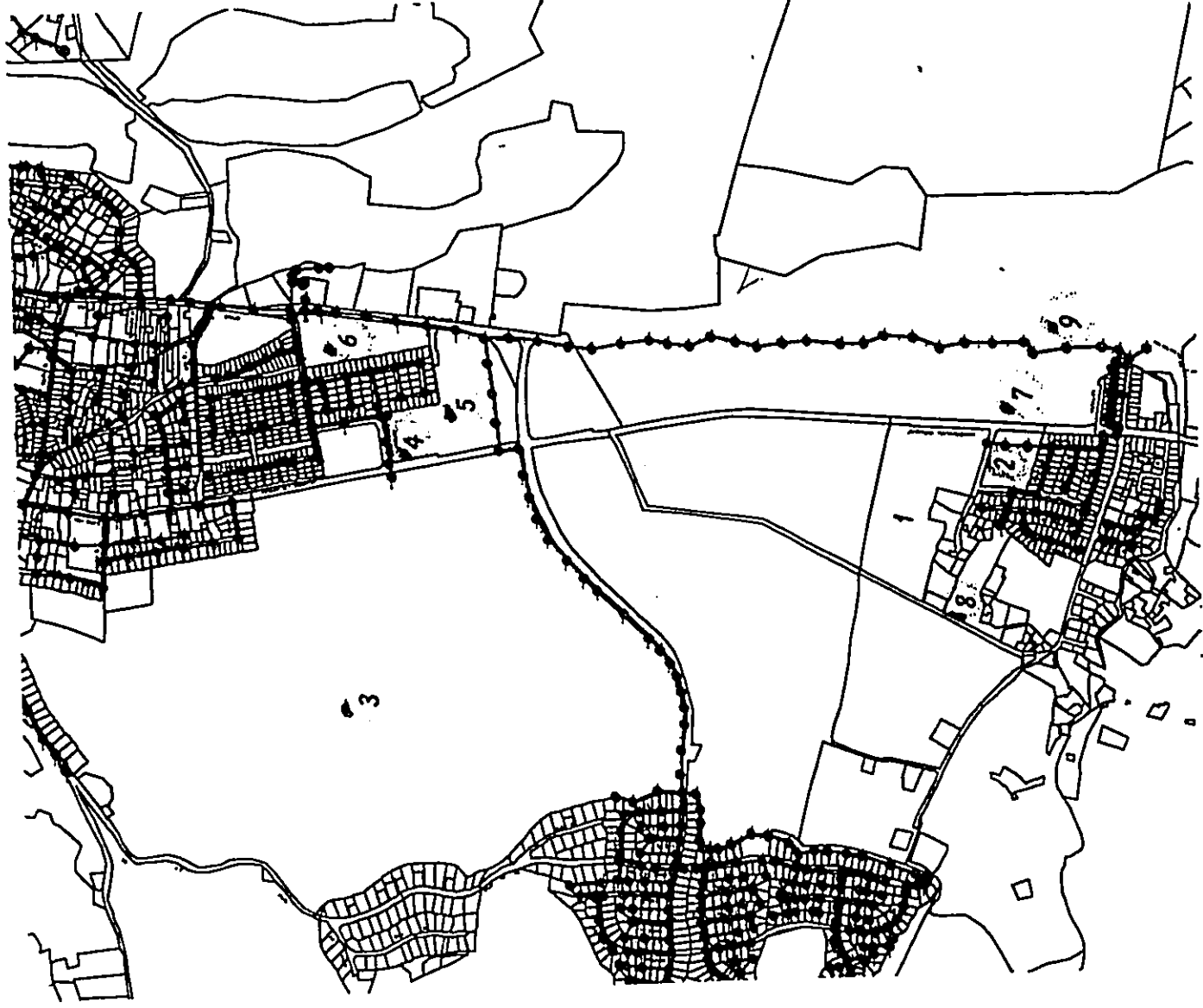
5. Non-contact cooling water and condensate cannot drain to the wastewater system.
6. Upgrades to sewer lines within Lower Main Street will need to be completed prior to any substantial development in this area. Further study will be required to determine if this development will need to fund these improvements (see enclosed).
7. The figures indicate that Waihee Ditch bisects the property. Please advise as to what will become of this ditch.
8. Traffic and Drainage master plans are required.
9. The grading for the project shall comply with the provisions of the grading ordinance. Best management practices shall be implemented to the maximum extent practicable to prevent pollutants including dust and sediment from discharging off the project site.
10. The drainage system design by a licensed engineer shall comply with the provisions of the drainage rules and shall create no additional adverse effects to adjacent and downstream properties.
11. The development of the project shall comply with the provisions of the subdivision ordinance.

If you have any questions regarding this letter, please call Milton Arakawa at 270-7845.

Very truly yours,


for GILBERT S. COLOMA-AGARAN
Director

GSCA:RMN:msc
Enclosure
S:\LUCA\ICZM\walkapubsubdv_ec_35004025_msc.03.wpd



**PROJECTS THAT MAY/WILL CONTRIBUTE TO
THE LOWER MAIN ST. LINE UPGRADE**

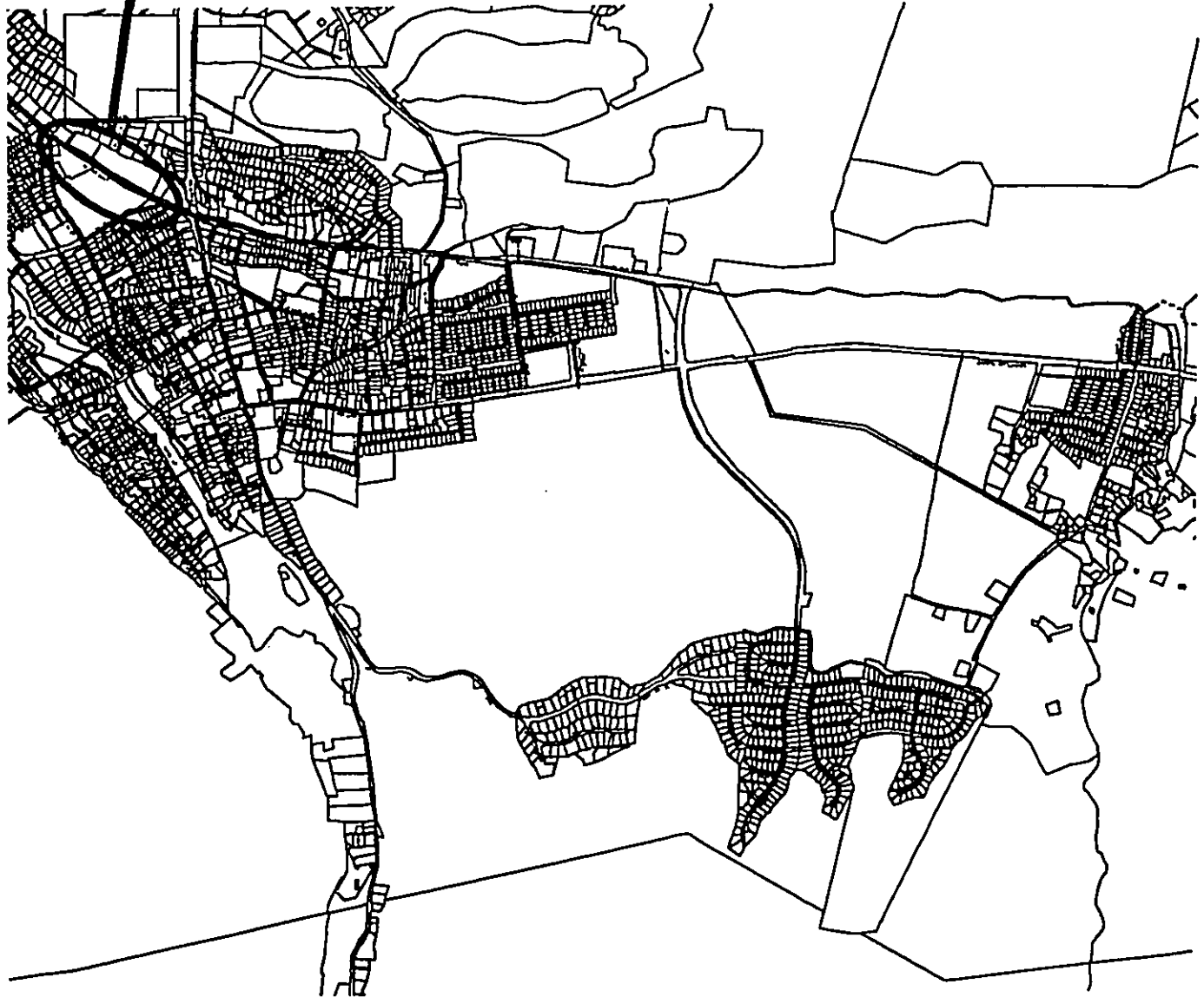
Proposed Project is in yellow
 1. Waikapu Single Family 100 SF Units 35,000 gpd

Projects under construction are green
 2. Waiolani Elua 25 SF units 8,750 gpd

Projects currently processing/discussion are in blue
 3. Kehalani Mauka 1,855 SF units 650,000 gpd
 4. Wailuku Project Dist. C-2 32 SF Units 11,200 gpd
 5. Wailuku Pjt. Dist Comm. 22 Acres 132,000 gpd
 6. Wailuku Pjt. Dist C-6/10 132 MF units 34,000 gpd
 7. Spenser Homes 400 SF units 140,000 gpd
 8. Waiolani Pikake 38 SF units 13,300 gpd
 9. Waiko Baseyard Sub. 19 Comm. 24,500 gpd

The Line that needs to be upgraded at the 525th house constructed.

approximate





August 14, 2003

Gilbert S. Coloma-Agaran, Director
County of Maui
Department of Public Works and
Environmental Management
200 South High Street
Wailuku, HI 96793

SUBJECT: Proposed Waikapu Single-Family Residential Subdivision
TMK: (2) 3-5-004:025 (por.)

Dear Mr. Coloma-Agaran:

Thank you for your letter dated July 15, 2003, providing us with your comments on the proposed project. We offer the following responses on behalf of our client, Waikapu 28 Investments, LLC (W28).

1. We will submit a solid waste management plan for the recycling and disposal of cleared and grubbed material and construction waste prior to the filing for grading and grubbing permits.
2. We understand that wastewater capacity cannot be determined until the issuance of the building permit.
3. W28 plans to pay applicable sewage assessment fees for treatment plant expansion costs and is willing to have further discussions with the Department on costs associated with any necessary off-site improvements to the collection system and wastewater pump station.
4. The sewer impact of the project will be addressed in the Preliminary Engineering Report, which will be submitted with the Draft Environmental Assessment (DEA). Ownership of the easements will be indicated on the plans.
5. We understand that non-contact cooling water and condensate cannot drain into the wastewater system.
6. We understand that improvements to the sewer lines on Lower Main Street may be necessary in the near future. W28 will coordinate with the Department of Public Works and Environmental Management to determine if participation in these improvements is required.
7. At this point in time, W28 has no plans to modify the portion of Waihee Ditch that runs through their property. Wailuku Agribusiness will retain ownership of the Ditch.

Gilbert Coloma-Agaran, Director
August 14, 2003
Page 2

8. A traffic impact analysis report and a drainage report will be submitted with the DEA.
9. W28 plans to work with its contractor to ensure that Best Management Practices (BMPs) are implemented during the grading phase of the project to prevent dust and sediment from discharging off the project site.
10. The civil engineering consultant is in the process of designing a drainage system for the project and will ensure that there will be no additional adverse effects to adjacent and/or downstream properties.
11. W28 plans to comply with all provisions of the subdivision ordinance.

Should you have any questions, please feel free to contact me at 244-2015.

Very truly yours,



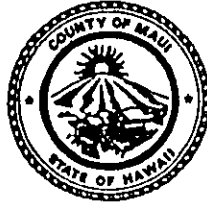
Karlynn Kawahara, Planner

KK:tn

cc: Scott Nunokawa, Waikapu 28 Investments, LLC
Warren Unemori, Warren S. Unemori Engineering, Inc.

w28llc/waikapu/dpwm.res

AUG 21 2003



DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-6109
Telephone (808) 270-7816 • Fax (808) 270-7833

August 18, 2003

Munekiyo & Hiraga, Inc.
Attention: Dean K. Frampton, Planner
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

Project Name: Early Consultation Request for Waikapu Single-Family Subdivision - subdivision of 28.718 acre-lot into 100 single family lots as well as improvements such as curbs, gutters, and sidewalks on TMK: 3-5-004:025 (por)

Thank you for the opportunity to participate in the early consultation process for this project. We provide the following information:

Source Availability and Consumption

The project area is served by the Central Maui System. The main sources of water for this system are the Iao and Waihee aquifers, the Iao tunnel and the Iao-Waikapu Ditch. As of July 21, 2003, the Commission on Water Resource Management (CWRM) has designated Iao aquifer as Groundwater Management Area. DWS will not issue reservations for future meters until new sources are brought on-line. Although the Department continues to issue meters for those ready to receive service at this time, it may also become necessary to stop issuing new meters altogether. The department also asks Central Maui residents to voluntarily conserve water. Water for this project may not be available until new sources are on-line.

The EA should include the source and expected potable and non-potable water use. Anticipated water consumption for this project would be about 86,000 GPD.

System Infrastructure

Two 8-inch waterlines are located on the southernmost part of the property. The applicant will be required to comply with the Department of Water Supply Rules and Regulations for Subdivisions as well as provide for adequate fire protection in accordance with system standards. Domestic, fire and irrigation calculations will be required during the building permit process. Actual fire demand for structures is determined by fire flow calculations prepared, signed and stamped by a certified engineer or architect. The approved fire flow calculation methods for use include - Guidance for Determination of Fire Flow - Insurance Service Office, 1974 and Fire Flow - Hawaii Insurance Bureau, 1991.

Pollution Prevention

The project site overlies the Iao aquifer which has a sustainable yield of 20 MGD. In order to protect ground and surface water resources, we encouraged the applicant to adopt Best Management Practices (BMPs)

By Water All Things Find Life

designed to minimize infiltration and runoff from construction and vehicle operations. We have attached sample BMPs for reference.

Conservation

In order to conserve our island's limited water resources, we recommend that the following water conservation measures and techniques be integrated in the project design and construction as well as convey to new owners, where applicable:

Use brackish and/or reclaimed water sources for dust control during construction, if such alternative is available.

Eliminate Single-Pass Cooling: Single-pass, water-cooled systems should be eliminated per Maui County Code Subsection 14.21.20. Although prohibited by code, single-pass water cooling is still manufactured into some models of air conditioners, freezers, and commercial refrigerators.

Utilize Low-Flow Fixtures and Devices: Maui County Code Subsection 16.20A.680 requires the use of low-flow water fixtures and devices in faucets, showerheads, urinals, water closets, and hose bibs. Water conserving washing machines, ice-makers and other units are also available.

Maintain Fixtures to Prevent Leaks: A simple, regular program of repair and maintenance can prevent the loss of hundreds or even thousands of gallons a day. Refer to the attached handout, "The Costly Drip".


Use Climate-adapted Plants: The project is located in the Maui County Planting Plan - Plant Zone 3. We encourage the applicant to utilize appropriate native and non invasive species and avoid the use of potentially invasive plants. Native plants adapted to the area, conserve water and protect the watershed from degradation due to invasive alien species. Attached is a list of appropriate plants for the zone as well as potentially invasive plants to avoid.

Limit Irrigated Turf: Limit irrigated turf to 25% or less of total landscaped area. Low-water use shrubs and ground covers can be equally attractive and require substantially less water than turf.

Look for Opportunities to Conserve Water In And Around the Property: A few examples of these are as follows: When clearing driveways, etc. of debris, use a broom instead of a hose. When washing cars, use a hand-operated spray nozzle instead of an open hose. Additionally, check for leaks in faucets and toilet tanks.

Should you have questions regarding system infrastructure and requirements, please call our Engineering Division at (808) 270-7835 or for questions on conservation and resource matters, please contact our Water Resources and Planning Division at (808) 270-7199.

Sincerely,


George Y. Tengan
Director

eam

c: Engineering Division

Applicant, with attachments:

The Costly Drip

Maui County Planting Plan - Plant Zone 3 - Saving Water in the Yard - What and How to Plant in your Area

Ordinance No. 2108 - A Bill for an Ordinance Amending Chapter 16.20 of the Maui County Code, Pertaining to the Plumbing Code

Selected BMP's from "Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters"-EPA



November 21, 2003

George Tengan, Director
Department of Water Supply
200 South High Street
Wailuku, Hawaii 96793

SUBJECT: Proposed Waiolani Mauka Subdivision, Waikapu 28
Investments, LLC; TMK 3-5-004:025 (por)

Dear Mr. Tengan:

Thank you for your letter dated August 18, 2003, providing us with your comments on the proposed project. We apologize for the delay in responding to you. We would like to provide the following responses in the order presented in your letter.

Source Availability and Consumption

Waikapu 28 Investment, LLC acknowledges the current groundwater management designation status of the Iao Aquifer and understands possible implications with regard to issuance of new meters.

The environmental assessment for the proposed project will address expected water use estimates.

System Infrastructure

A copy of your letter has been forwarded to the project civil engineer for consideration in formulating water system design criteria for the project.

Pollution Prevention

The applicant will utilize applicable Best Management Practices (BMPs) to protect ground and surface water resources.

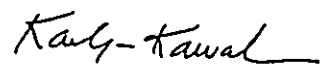
Conservation

Where applicable, conservation measures noted in your letter will be utilized.

George Tengan, Director
November 21, 2003
Page 2

Should you have any questions, please feel free to contact me at 244-2015.

Very truly yours,



Karlynn Kawahara, Planner

KK:tn

cc: Scott Nunokawa, Waikapu 28 Investment, LLC
Warren Unemori, Warren S. Unemori Engineering, Inc.

w2Billc/waikapu/dws.res

Chapter XI

***Letters Received During the
Draft Environmental Assessment
Public Comment Period
and Responses to
Substantive Comments***

XI. LETTERS RECEIVED DURING THE DRAFT ENVIRONMENTAL ASSESSMENT PUBLIC COMMENT PERIOD AND RESPONSES TO SUBSTANTIVE COMMENTS

A Draft Environmental Assessment for the subject project was filed and published in the Office of Environmental Quality Control's The Environmental Notice on February 23, 2004. During the 30-day public comment period, agencies were provided the opportunity to comment on the proposed action. This section incorporates the comments received during the 30-day comment period between February 23, 2004 and March 23, 2004. Responses to the substantive comments are also incorporated herein.



DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96862-5440

REPLY TO
ATTENTION OF

March 25, 2004

Regulatory Branch

Mr. Anthony Ching
Executive Officer
State Land Use Commission
P.O. Box 2359
Honolulu, Hawaii 96804-2359

LAND USE COMMISSION
STATE OF HAWAII
2004 MAR 29 A 03 32

Dear Mr. Ching:

This letter responds to a request by Munekiyo & Hiraga, Inc. to provide you with comments on the Draft Environmental Assessment (DEA) for the Proposed Waiolani Mauka Residential Subdivision by Waikapu 28 Investment, LLC, dated February 25, 2004. Based on the information provided in the DEA, I have determined there will be no discharge of dredged or fill material into waters of the U.S., including wetlands and therefore a Department of the Army (DA) permit will not be required for this project. If a discharge of dredged or fill material into Waihee Ditch is considered in the future, the applicant must coordinate with this office before any such work is started. This does not relieve the applicant from obtaining other authorizations from the State of Hawaii or the County of Maui.

If you have any questions concerning this determination, please contact William Lennan of my staff at 438-6986 or FAX 438-4060, and reference File No. 200300448.

Sincerely,

George P. Young, P.E.
Chief, Regulatory Branch



April 20, 2004

George P. Young, P.E.
Chief, Regulatory Branch
Department of the Army
U.S. Army Engineer District, Honolulu
Ft. Shafter, Hawaii 96858-5440

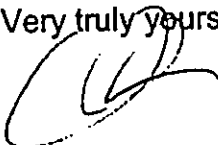
SUBJECT: Proposed Waiolani Mauka Subdivision
(Reference File No. 200300448)

Dear Mr. Young:

Thank you for providing the State Land Use Commission with your comment of March 25, 2004 regarding the subject matter. In response to your comments, the applicant acknowledges that coordination with the Department of the Army will be undertaken should there be a proposal for future dredging or filling of the Waihee Ditch.

If there are additional questions regarding this project, please do not hesitate to call.

Very truly yours,


Karylenn Kawahara, Planner

KK:tn
cc: Scott Nunokawa, Waikapu 28 Investment, LLC
w2Balf/waikapu/army2.res

APR 13 2004

United States Department of Agriculture

 Natural Resources
Conservation Service



Our People...Our Islands...In Harmony
210 Iml Kala Street, Suite #209, Wailuku, HI 96793-2100

Date: April 12, 2004

Ms. Karlynn Kawahara, Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Kawahara,

SUBJECT: Request for Comments on Draft EA for Proposed Waiolani Mauka Residential
Subdivision; TMK: 3-5-004: 025

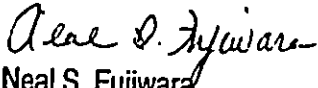
The Land Use Commission may have sent a review of the subject draft EA to our State Office in Honolulu. I have not personally seen it.

I believe I had made comments relating to the drainage system of the proposed subdivision and our concern to it's outlet into the existing reservoir. As long as the existing reservoir will remain a reservoir versus a retention or sediment basin, I do not believe drainage runoff should outlet into it.

We have not seen an operation and maintenance plan developed nor have we seen any effort of maintenance of the reservoir since the existing Waiolani Subdivision has connected its drainage to it.

Thank you for the opportunity to comment.

Sincerely,


Neal S. Fujiwara
District Conservationist



April 20, 2004

Neal S. Fujiwara, District Conservationist
Natural Resources Conservation Service
210 Imi Kala Street, Suite 209
Wailuku, Hawaii 96793-2100

SUBJECT: Proposed Waiolani Mauka Subdivision (TMK: 3-5-04:25)

Dear Mr. Fujiwara

Thank you for your comment letter of April 12, 2004 regarding the subject matter. Towards addressing your comments, the applicant has discussed with the project civil engineer the functional requirements of the reservoir and its capacity to serve as both an irrigation system component, as well as a stormwater receiving reservoir. The engineer has confirmed that the reservoir has served as a drainage system component for the existing Waiolani Subdivision and that the dual purposes of the reservoir has been functionally viable for a number of years. It is noted that as part of the Waiolani Subdivision project, an overflow spillway, together with a overflow discharge pipe to Waikapu Stream, was installed to ensure that reservoir levels are properly controlled. The engineer's drainage analysis indicates that the reservoir's integrity can be maintained with the additional stormwater flows from the proposed Waiolani Mauka Subdivision. It is in this analytical context that the applicant believes that the proposed drainage solution for the project is feasible.

It is noted that Wailuku Agribusiness Company, Ltd. (WACI), the entity responsible for the reservoir's operation, has agreed to the proposed drainage concept. WACI is also aware of the role of proper reservoir maintenance to ensure the continued efficiencies of the irrigation storage and delivery system.

Neal S. Fujiwara, District Conservationist
April 20, 2004
Page 2

If there are additional questions regarding this project, please do not hesitate to call.

Very truly yours,


Karlynn Kawahara, Planner

KK:tn

cc: Scott Nunokawa, Waikapu 28 Investment LLC
Anthony Ching, State Land Use Commission
Blaine Kobayashi, Carlsmith Ball
Warren Unemori, Warren S. Unemori Engineering, Inc.

w28llc/waikapu/nrcs2.res

LINDA LINGLE
GOVERNOR



APR 01 2004

ANTHONY J.H. CHING
EXECUTIVE OFFICER

STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION
P.O. Box 2359
Honolulu, Hawaii 96804-2359
Telephone: 808-587-3822
Fax: 808-587-3827

March 23, 2004

Mr. Michael Munekiyo
Munekiyo & Hiraga Inc.
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

Dear Mr. Munekiyo:

Subject: Docket No. A04-746/Waikapu 28 Investment, LLC
Draft Environmental Assessment ("DEA")
Waiolani Mauka Subdivision

This is to acknowledge receipt of the subject DEA as transmitted on January 5, 2004, by Waikapu 28 Investment, LLC.

Based upon our review of the DEA, we have the following comments:

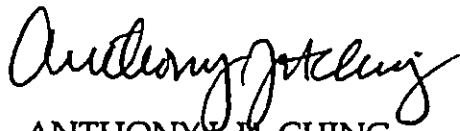
1. Sections II.D. 2. Water and III.C.2 Water: We recommend including discussion of the current situation of water allocation situation regarding the Iao and Waihee aquifers, namely the designation of these aquifers as water management areas by the Commission of Water Resource Management, Department of Land and Natural Resources ("CWRM"). CWRM identified this situation in its July 17, 2003 memorandum included in Section X of the DEA.

CWRM and the Office of Hawaiian Affairs have raised concerns of the potential impacts from the subject project's water demand of approximately 65,400 gallons/day upon the sustainable yield from these aquifers. We recommend more discussion on alternative sources such as surface water sources or any other scenario that might shed more light on this topic.

Mr. Michael Munekiyo
March 23, 2004
Page 2

Should you require clarification or further assistance in this matter, please contact our office at 587-3822.

Sincerely,



ANTHONY J. CHING
Executive Officer

c: Scott Nunokawa
Karlyn Kawahara



April 20, 2004

Anthony Ching, Executive Officer
State of Hawaii
Department of Business, Economic Development
and Tourism
Land Use Commission
P.O. Box 2359
Honolulu, Hawaii 96804-2359


**SUBJECT: Draft Environmental Assessment for the Proposed Waiolani Mauka
Subdivision in Waikapu, Maui, Hawaii**

Dear Mr. Ching:

Thank you for your letter of March 23, 2004 offering your comments regarding water use and resource availability. The Final EA will include additional discussion to address water source limitations resulting from the groundwater management designation of the Iao Aquifer.

Should you have any further questions, please feel free to contact me at (808) 244-2015.

Very truly yours,


for Karlynn Kawahara, Planner

KK:tn

cc: Scott Nunokawa, Waikapu 28 Investments, LLC
Blaine Kobayashi, Carlsmith Ball

w28llc/waikapu/dbed12.res

LINDA LINGLE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAII 96804

LAND USE COMMISSION
STATE OF HAWAII

2004 MAR 12 A 9:06

Judy-me

PATRICIA HAMAMOTO
SUPERINTENDENT

OFFICE OF THE SUPERINTENDENT

March 11, 2004

Mr. Anthony Ching
Executive Director
Land Use Commission
P.O. Box 2359
Honolulu, Hawai'i 96804-2359

Dear Mr. Ching:

Subject: Draft Environmental Assessment (DEA)
for Waiolani Mauka Subdivision
Waikapu, Maui, TMK: 3-5-4:025

The Department of Education (DOE) has reviewed the Petition for the District Boundary Amendment and the Draft Environmental Assessment (DEA) for a 108-lot residential subdivision in Waikapu, Maui.

The DOE requests that the State Land Use Commission include a condition with the standard fair-share language used in decisions on land use boundary amendments. The proposed wording is:

The Applicant shall contribute to the development, funding, and/or construction of school facilities, on a fair-share basis, as determined by and to the satisfaction of the Department of Education. Terms of the contribution shall be agreed upon in writing by the Applicant and the Department of Education prior to obtaining county rezoning.

The DEA indicates that 50 percent of the lot holders in the subdivision will be allowed to build accessory dwellings so the total estimated number of residential units in the project is somewhere between 158 and 162. The DEA also states that the petitioners expect to discuss the fair-share contribution with the DOE.

The DOE has no other comment. We appreciate the opportunity to review the project. If you have any further questions, please call Rae M. Loui, Assistant Superintendent of the Office of Business Services, at 586-3444 or Heidi Meeker of the Facilities and Support Services Branch at 733-4862.

Very truly yours,

Patricia Hamamoto
Superintendent

PH:mp

Attachment

c: OBS
CAS, Maui District

AN AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY EMPLOYER



April 20, 2004

Patricia Hamamoto, Superintendent
State of Hawaii
Department of Education
P.O. Box 2360
Honolulu, Hawaii 96804

SUBJECT: Proposed Waiolani Mauka Subdivision (TMK 3-5-04:25)

Dear Ms. Hamamoto:

Thank you for providing the State Land Use Commission with your comments of March 11, 2004 regarding the subject matter. In response to your comments, the applicant will coordinate with your department to discuss fair-share requirements for education.

If there are additional questions regarding this project, please do not hesitate to call.

Very truly yours,


Kariynn Kawahara, Planner

KK:tn

cc: Scott Nunokawa, Waikapu 28 Investment, LLC
Anthony Ching, State Land Use Commission
Blaine Kobayashi, Carlsmith Ball

w28ilc/waikapu/dao.res

LINDA LINGLE
GOVERNOR OF HAWAII



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

APR 07 2004

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

In reply, please refer to:
EPO-04-009

March 31, 2004

Ms. Karlynn Kawahara
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Kawahara:

SUBJECT: Comments on Draft Environmental Assessment for Proposed Waiolani
Mauka Residential Subdivision by Waikapu 28 Investment, LLC
TMK:(2)3-5-004:025

Thank you for allowing us to review and comment on the subject document. We have the following comments to offer. If you have any questions about these comments please contact Ryan Davenport at 586-4346.

Clean Water Branch Standard Comments

1. The Army Corps of Engineers should be contacted at (808) 438-9258 to identify whether a Federal license or permit (including a Department of Army permit) is required for this project. Pursuant to Section 401(a)(1) of the Federal Water Pollution Act (commonly known as the "Clean Water Act"), a Section 401 Water Quality Certification is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters...."
2. A National Pollutant Discharge Elimination System (NPDES) general permit coverage is required for the following activities:
 - a. Storm water associated with industrial activities, as defined in Title 40, Code of Federal Regulations, Sections 122.26(b)(14)(i) through 122.26(b)(14)(ix) and 122.26(b)(14)(xi).
 - b. Construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. **An NPDES permit is required before the commencement of the construction activities.**
 - c. Discharges of treated effluent from leaking underground storage tank remedial activities.

- d. Discharges of once through cooling water less than one (1) million gallons per day.
- e. Discharges of hydrotesting water.
- f. Discharges of construction dewatering effluent.
- g. Discharges of treated effluent from petroleum bulk stations and terminals.
- h. Discharges of treated effluent from well drilling activities.
- i. Discharges of treated effluent from recycled water distribution systems.
- j. Discharges of storm water from a small municipal separate storm sewer system.
- k. Discharges of circulation water from decorative ponds or tanks.

The CWB requires that a Notice of Intent (NOI) to be covered by a NPDES general permit for any of the above activities be submitted at least 30 days before the commencement of the respective activities. The NOI forms may be picked up at our office or downloaded from our website at <http://www.state.hi.us/health/eh/cwb/forms/genl-index.html>.

3. The applicant may be required to apply for an individual NPDES permit if there is any type of activity in which wastewater is discharged from the project into State waters and/or coverage of the discharge(s) under the NPDES general permit(s) is not permissible (i.e. NPDES general permits do not cover discharges into Class I or Class AA receiving waters). An application for the NPDES permit is to be submitted at least 180 days before the commencement of the respective activities. The NPDES application forms may also be picked up at our office or downloaded from our website at <http://www.state.hi.us/health/eh/cwb/forms/indiv-index.html>.
4. Hawaii Administrative Rules, Section 11-55-38, also requires the owner to either submit a copy of the new NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the DOH that the project, activity, or site covered by the NOI or application has been or is being reviewed by SHPD. Please submit a copy of the request for review by SHPD or SHPD's determination letter for the project.

If you have any questions, please contact the CWB at 586-4309.

Hazard Evaluation & Emergency Response Office

1. A phase I Environmental Site Assessment (ESA) should be conducted for developments or redevelopments. If the investigation shows that a release of petroleum, hazardous substance, pollutants or contaminants occurred at the site, the site should be properly characterized through an approved Hawaii State Department of Health (DOH)/Hazard Evaluation and Emergency Response Office (HEER) soil and or groundwater sampling plan. If the site is found to be contaminated, then all removal and remedial actions to clean up hazardous substance or oil releases by past and present owners/tenants must comply with

chapter 128D, Environmental Response Law, HRS, and Title 11, Chapter 451, HAR, State Contingency Plan.

2. All lands formerly in the production of sugarcane should be characterized for arsenic contamination, If arsenic is detected above the US EPA Region (preliminary remediation goal (PRG) for non-cancer effects, then a removal and or remedial plan must be submitted to the Hazard Evaluation and Emergency Response (HEER) Office of the State Department of Health for approval. The plan must comply with Chapter 128D, Environmental Response Law, HRS, and Title 11, Chapter 451, HAR, State Contingency Plan.
3. If the land has a history of previous releases of petroleum, hazardous substances, pollutants, or contaminants, we recommend that the applicant request a "no further action" (NFA) letter from the Hawaii State Department of Health (DOH)/ Hazard Evaluation and Emergency Response (HEER) Office prior to the approval of the land use change or permit approval.

Wastewater Branch

We have reviewed the subject document, which proposes the construction of the Waiolani Mauka single-family residential subdivision with approximately 108+- single-family lots in Waikapu, Maui, Hawaii. The 28.7 acres site is vacant and was formerly used for sugar cane and pineapple cultivation. The project site is surrounded by single-family residence uses on the south and west borders and vacant former agricultural lands to the east and north. An analysis with regard to the action's technical, economic, social and environmental aspects are provided in the Draft Environmental Assessment.

The subject project is located in the Critical Wastewater Disposal Area (CWDA) as determined by the Maui County wastewater treatment and disposal of the subdivision can be adequately handled by the Wailuku-Kahului Wastewater Reclamation Facility (WRF) and that the Petitioner is also willing to pay their fair-share cost of offsite sewer improvements in the future, we have no objections to the subdivision as long as connection is made to the Wailuku-Kahului WRF.

All wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems". We do reserve the right to review the detailed wastewater plans for conformance to applicable rules. Should you have any questions, please contact the Planning & Design Section of the Wastewater Branch at 586-4294.

Clean Air Branch

Control of Fugitive Dust:

A significant potential for fugitive dust emissions exists during all phases of construction. Proposed construction activities will occur in proximity to existing residences, and major thoroughfares, thereby exacerbating potential dust problems. It is recommended that a dust control management plan be developed which identifies and addresses all activities that have a potential to generate fugitive dust. Implementation of adequate dust control measures during all phases of development and construction activities is warranted.

Construction activities must comply with the provisions of Hawaii Administrative Rules, §11-60.1-33 on Fugitive Dust.

The contractor should provide adequate measures to control dust from the road areas and during the various phases of construction. These measures include, but are not limited to, the following:

- a) Plan the different phases of construction, focusing on minimizing the amount of dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;
- b) Provide an adequate water source at the site prior to start-up of construction activities;
- c) Landscape and provide rapid covering of bare areas, including slopes, starting from the initial grading phase;
- d) Minimize dust from shoulders and access roads;
- e) Provide adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and
- f) Control dust from debris being hauled away from the project site.

If you have any questions on fugitive dust issues, please contact Mr. Barry Ching at 586-4200.

Noise Radiation and Indoor Air Quality Branch

Project activities shall comply with the Administrative Rules of the Department of Health:

- Chapter 11-46 Community Noise Control.

Should there be any questions, please contact Russell S. Takata, Environmental Health Program Manager, Noise, Radiation and Indoor Air Quality Branch, at 586-4701.

Solid and Hazardous Waste Branch

1)
The OSWM recommends the development of a solid waste management plan that encompasses all project phases including demolition, construction, and occupation/operation of the completed project.

Specific examples of elements that the plan should address include:

- The recycling of green-waste during clear and grub activities;
- Recycling construction and demolition wastes, if appropriate;
- The use of locally produced compost in landscaping;
- The use of recycled content building materials;
- The provision of recycling facilities in the design of the project.

2)
The developer shall ensure that all solid waste generated during project construction is directed to a Department of Health permitted solid waste disposal or recycling facility.

Ms. Karlynn Kawahara
March 31, 2004
Page 5

3)
The developer should consider providing space in the development for recycling activities. The provision of space for recycling bins for paper, glass, and food/wet waste would help to encourage the recycling of solid waste(s) generated by building occupants.

4)
The discussion of solid waste issues contained in the document is restricted to activities within the completed project. The OSWM recommends the development of a solid waste management plan that encompasses all project phases, from construction (and or demolition) to occupation of the project.

Specific examples of plan elements include: the recycling of green-waste during clear and grub activities; maximizing the recycling of construction and demolition wastes; the use of locally produced compost in the landscaping of the project; and the provision of recycling facilities in the design of the project.

5)
Hawaii Revised Statutes Chapter 103D-407 stipulates that all highway and road construction and improvement projects funded by the State or a county or roadways that are to be accepted by the State or a county as public roads shall utilize a minimum of ten per cent crushed glass aggregate as specified by the department of transportation in all base-course (treated or untreated) and sub-base when the glass is available to the quarry or contractor at a price no greater than that of the equivalent aggregate.

If you have any questions, please contact the Solid and Hazardous Waste Branch at (808) 586-4240.

Sincerely,

June F. Harrigan-Lum

JUNE F. HARRIGAN-LUM, MANAGER
Environmental Planning Office

c: HEER
WWB
CAB
SHWB
NRAIQ
CWB

LINDA LINGLE
GOVERNOR OF HAWAII



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

MAR 30 2004

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

In reply, please refer to:
EPO-04-009

March 29, 2004

Ms. Karlynn Kawahara
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Kawahara:

SUBJECT: Comments on Draft Environmental Assessment for Proposed Waiolani
Mauka Residential Subdivision by Waikapu 28 Investment, LLC
TMK:(2)3-5-004:025

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Clean Air Branch

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- f) Control dust from debris being hauled away from the project site.

If you have any questions on fugitive dust issues, please contact Mr. Barry Ching at 586-4200.

Noise Radiation and Indoor Air Quality Branch

Project activities shall comply with the Administrative Rules of the Department of Health:

- Chapter 11-46 Community Noise Control.

Should there be any questions, please contact Russell S. Takata, Environmental Health Program Manager, Noise, Radiation and Indoor Air Quality Branch, at 586-4701.

Solid and Hazardous Waste Branch

1)
The OSWM recommends the development of a solid waste management plan that encompasses all project phases including demolition, construction, and occupation/operation of the completed project.

Specific examples of elements that the plan should address include:

- The recycling of green-waste during clear and grub activities;
- Recycling construction and demolition wastes, if appropriate;
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2)
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Ms. Karlynn Kawahara
March 29, 2004
Page 4

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4)
The discussion of solid waste issues contained in the document is restricted to activities within the completed project. The OSWM recommends the development of a solid waste management plan that encompasses all project phases, from construction (and or demolition) to occupation of the project.

Specific examples of plan elements include: the recycling of green-waste during clear and grub activities; maximizing the recycling of construction and demolition wastes; the use of locally produced compost in the landscaping of the project; and the provision of recycling facilities in the design of the project.

5)
Hawaii Revised Statutes Chapter 103D-407 stipulates that all highway and road construction and improvement projects funded by the State or a county or roadways that are to be accepted by the State or a county as public roads shall utilize a minimum of ten per cent crushed glass aggregate as specified by the department of transportation in all base-course (treated or untreated) and sub-base when the glass is available to the quarry or contractor at a price no greater than that of the equivalent aggregate.

If you have any questions, please contact the Solid and Hazardous Waste Branch at (808) 586-4240.

Sincerely,



JUNE F. HARRIGAN-LUM, MANAGER
Environmental Planning Office

c: HEER
WWB
CAB
SHWB
NRAIQ



April 20, 2004

June Harrigan-Lum, Manager
State of Hawaii
Department of Health
Environmental Planning Office
P.O. Box 3378
Honolulu, Hawaii 96801-3378

SUBJECT: Draft Environmental Assessment for Proposed Waiolani Mauka Subdivision, in Waikapu, Maui, Hawaii

Dear Ms. Harrigan-Lum:

We are in receipt of a copy of your letters dated March 29, 2004 and March 31, 2004 regarding the above-mentioned project. On behalf of our client, Waikapu 28 Investment, LLC (W28), we would like to offer the following responses.

Clean Water Branch

The Applicant acknowledges the comment with regards to contacting the Army Corps of Engineers. Preliminary consultation was conducted with the Corps and they found that no Federal license or permit would be needed. The Corps did request further consultation if the portion of Waihee Ditch would be improved. Please refer to the attached letter from the Army Corps of Engineers. The Applicant will also secure any necessary permits including a National Pollutant Discharge Eliminations (NPDES) prior to the start of construction.

Hazard Evaluation & Emergency Response Office

The Applicant acknowledges the agency's comments with regards to the previous uses of the parcel in agricultural uses and the recommendation for a Phase I environmental site assessment. Based on the Applicant's knowledge of the parcel and the context of current regulatory requirements, however, the Applicant is comfortable that a Phase I Environmental Study is not required at this time.

Wastewater Branch

The Applicant concurs with the Wastewater Branch comments.

June Harrigan-Lum, Manager
April 20, 2004
Page 2

Clean Air Branch

The Applicant concurs with the comments related to the control of fugitive dust. A dust control management plan will be developed by the project engineer, to mitigate any impacts to surrounding properties.

Noise Radiation and Indoor Air Quality Branch


The Applicant will work with the contractor, once selected, to comply with Chapter 11-46 with regards to Community Noise Control.

Solid and Hazardous Waste Branch

The Applicant concurs with the Solid and Hazardous Waste Branch comments and will develop a solid waste management plan that encompasses the construction phases of the project. Further, W28 will insure that all solid waste generated during construction will be disposed of in a DOH permitted solid waste disposal or recycling facility. At this point in time, it is likely that a homeowners' association will be formed for the subdivision. While recycling program incentives may be considered by the homeowners' association, it is anticipated that recycling efforts will also be advanced through programs developed by the County of Maui. Finally, the Applicant notes the comment with regards to the required use of glass aggregate for any roads that will be eventually dedicated to the State or County. As noted in the Draft Environmental Assessment, the roadways within the subdivision will be constructed to County standards.

Should you have any further questions, please do not hesitate to call me at (808)244-2015.

Very truly yours,


for Karlynn Kawahara, Planner

KK:tn

Attachment

cc: Scott Nunokawa, Waikapu 28 Investment, LLC
Anthony Ching, State Land Use Commission
Blaine Kobayashi, Carlsmith Ball
Warren Unemori, Warren S. Unemori Engineering, Inc.

w28llc@waikapu.doh.res



DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96866-6440

REPLY TO
ATTENTION OF

March 25, 2004

Regulatory Branch

Mr. Anthony Ching
Executive Officer
State Land Use Commission
P.O. Box 2359
Honolulu, Hawaii 96804-2359

LAND USE COMMISSION
STATE OF HAWAII
ZUM HAR 29 A 03 32

Dear Mr. Ching:

This letter responds to a request by Munekiyo & Hiraga, Inc. to provide you with comments on the Draft Environmental Assessment (DEA) for the Proposed Waiolani Mauka Residential Subdivision by Waikapu 28 Investment, LLC, dated February 25, 2004. Based on the information provided in the DEA, I have determined there will be no discharge of dredged or fill material into waters of the U.S., including wetlands and therefore a Department of the Army (DA) permit will not be required for this project. If a discharge of dredged or fill material into Waihee Ditch is considered in the future, the applicant must coordinate with this office before any such work is started. This does not relieve the applicant from obtaining other authorizations from the State of Hawaii or the County of Maui.

If you have any questions concerning this determination, please contact William Lennan of my staff at 438-6986 or FAX 438-4060, and reference File No. 200300448.

Sincerely,

George P. Young, P.E.
Chief, Regulatory Branch

Attachment

LINDA UNOLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 821
HONOLULU, HAWAII 96820

PETER T. YOUNG
CHAIRPERSON

MERCEDITH J. CHING
CLAYTON W. DELA CRUZ
JAMES A. FRAZIER
CHYONE L. FUKINO, M.D.
STEPHANIE A. WHALEN

ERNEST Y.W. LAU
DEPUTY CHAIRPERSON

LAND USE COMMISSION
STATE OF HAWAII
2004 MAR 24 P 2:49

March 22, 2004

TO: Mr. Anthony J.H. Ching, Executive Officer
Land Use Commission
Department of Business, Economic Development & Tourism

FROM: Peter T. Young, Chairperson
Commission on Water Resource Management

SUBJECT: Waikapu 28 Investment, LLC/Walolana Mauka 108-lot SF Subdivision

FILE NO.: A04-748

Thank you for the opportunity to review the subject document. Our comments related to water resources are marked below.

In general, the CWRM strongly promotes the efficient use of our water resources through conservation measures and use of alternative non-potable water resources whenever available, feasible, and there are no harmful effects to the ecosystem. Also, the CWRM encourages the protection of water recharge areas, which are important for the maintenance of streams and the replenishment of aquifers.

- [X] We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.
- [] We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
- [] We are concerned about the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.
- [] A Well Construction Permit and/or a Pump Installation Permit from the Commission would be required before ground water is developed as a source of supply for the project.
- [] The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the Commission would be required prior to use of this source.
- [] Groundwater withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.
- [] We are concerned about the potential for degradation of instream uses from development on highly erodible slopes adjacent to streams within or near the project. We recommend that approvals for this project be conditioned upon a review by the corresponding county's Building Department and the developer's acceptance of any resulting requirements related to erosion control.
- [] If the proposed project includes construction of a stream diversion, the project may require a stream diversion works permit and amend the instream flow standard for the affected stream(s).
- [] If the proposed project alters the bed and banks of a stream channel, the project may require a stream channel alteration permit.
- [X] OTHER:
 - 1) The project proposes to increase water demand by about 65,400 gpd. The water source for this project is now in a groundwater management area under the State Commission on Water Resource Management (CWRM). Water use permit applications are now required from Iao well owners for uses as of July 21, 2003. Future uses will be addressed after existing uses are considered. If pumpage from this area is restricted, it could result in restrictions of use within the service area.
 - 2) A punawai (spring) is mentioned as located below the Waikapu Ditch near the north boundary of the project. There were Land Commission Awards in this area at one time, and while we have no registered uses of this spring, any valid appurtenant water right claims must be protected. Therefore, the spring may also require protection.
 - 3) Attached are our earlier comments.

If there are any questions, please contact Charley Ica at 587-0251.

c: DLNR, Land Division

LINDA LINDLE
Secretary of Water

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

PETER T. YOUNG
SecretaryMEREDITH J. CHENG
CLAYTON W. DE LA CRUZ
JAMES A. FRADER
CHRISTINE L. FUKINO, M.D.
STEPHANIE A. WHALENERNEST Y.W. LAU
Deputy Director

February 9, 2004

TO: Ms. Dede Mamiya, Administrator
Land Division

FROM: *R/L* Ernest Y.W. Lau, Deputy Director
Commission on Water Resource Management (CWRM)

SUBJECT: Waiolani Mauka 10B-lot SF Subdivision DEIS

FILE NO.: A03-746.CMT2

Thank you for the opportunity to review the subject document. Our comments related to water resources are marked below.

In general, the CWRM strongly promotes the efficient use of our water resources through conservation measures and use of alternative non-potable water resources whenever available, feasible, and there are no harmful effects to the ecosystem. Also, the CWRM encourages the protection of water recharge areas, which are important for the maintenance of streams and the replenishment of aquifers.

- We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.
- We recommend coordination with the Land Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
- We are concerned about the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.
- A Well Construction Permit and/or a Pump Installation Permit from the Commission would be required before ground water is developed as a source of supply for the project.
- The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the Commission would be required prior to use of this source.
- Groundwater withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.
- We are concerned about the potential for degradation of instream uses from development on highly erodible slopes adjacent to streams within or near the project. We recommend that approvals for this project be conditioned upon a review by the corresponding county's Building Department and the developer's acceptance of any resulting requirements related to erosion control.
- If the proposed project includes construction of a stream diversion, the project may require a stream diversion works permit and amend the instream flow standard for the affected stream(s).
- If the proposed project alters the bed and banks of a stream channel, the project may require a stream channel alteration permit.
- OTHER:
 - 1) The project proposes to increase water demand by about 65,400 gpd. The water source for this project is now in a groundwater management area under the State Commission on Water Resource Management (CWRM). Water use permit applications are now required from lao well owners for uses as of July 21, 2003. Future uses will be addressed after existing uses are considered. If pumpage from this area is restricted, it could result in restrictions of use within the service area.
 - 2) A punawai (spring) is mentioned as located below the Waikapu Ditch near the north boundary of the project. There were Land Commission Awards in this area at one time, and while we have no registered uses of this spring, any valid appurtenant water right claims must be protected, and therefore the spring may also require protection.

If there are any questions, please contact Charley Ice at 587-0251.

LINDA LINGLE
Supervisor of Public

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

PETER T. YOUNG
SupervisorMEREDITH A. CHINO
CLAYTON W. DELA CRUZ
JAMES A. FRAZER
CHYOMBE L. FUKONO, M.D.
STEPHANIE A. VMALENERNEST Y.W. LAU
Supervisor

January 26, 2004

TO: Mary Lou Kobayashi, Administrator
Office of Planning

FROM: Ernest Y.W. Lau, Deputy Director
Commission on Water Resource Management

SUBJECT: Waiolani Mauka 108-lot SF Subdivision SLUDBA

FILE NO: A04-746/Waikapu 28 Investment, LLC

Thank you for the opportunity to review the subject document. Our comments related to water resources are marked below.

In general, the CWRM strongly promotes the efficient use of our water resources through conservation measures and use of alternative non-potable water resources whenever available, feasible, and there are no harmful effects to the ecosystem. Also, the CWRM encourages the protection of water recharge areas, which are important for the maintenance of streams and the replenishment of aquifers.

- We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.
- We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
- We are concerned about the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.
- A Well Construction Permit and/or a Pump Installation Permit from the Commission would be required before ground water is developed as a source of supply for the project.
- The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the Commission would be required prior to use of this source.
- Groundwater withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.
- We are concerned about the potential for degradation of instream uses from development on highly erodible slopes adjacent to streams within or near the project. We recommend that approvals for this project be conditioned upon a review by the corresponding county's Building Department and the developer's acceptance of any resulting requirements related to erosion control.
- If the proposed project includes construction of a stream diversion, the project may require a stream diversion works permit and amend the instream flow standard for the affected stream(s).
- If the proposed project alters the bed and banks of a stream channel, the project may require a stream channel alteration permit.
- OTHER:
 - 1) The project proposes to increase water demand by about 65,400 gpd. The water source for this project is now in a groundwater management area under the State Commission on Water Resource Management (CWRM). Water use permit applications are now required from all well owners for uses as of July 21, 2003. Future uses will be addressed after existing uses are considered. If pumpage from this area is restricted, it could result in restrictions of use within the service area.
 - 2) A punawai (spring) is mentioned as located below the Waikapu Ditch near the north boundary of the project. There were Land Commission Awards in this area at one time, and while we have no registered uses of this spring, any valid appurtenant water right claims must be protected. Therefore, the spring may also require protection.

If there are any questions, please contact Charley Ioe at 587-0251.



April 20, 2004

Ernest Y.W. Lau, Deputy Director
State of Hawaii
Department of Land & Natural Resources
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii 96809

**SUBJECT: Draft Environmental Assessment for the Proposed Waiolani Mauka
Subdivision in Waikapu, Maui, Hawaii**

Dear Mr. Lau:

We are in receipt of your comments dated January 26, February 9 and March 22, 2004 on the Draft Environmental Assessment for the proposed Waiolani Mauka subdivision. On behalf of our client, Waikapu 28 Investment, LLC (W28), we would like to offer the following responses.

With regards to your comment to the availability of water for this project, as well as other similar residential projects, the applicant acknowledges and notes that there is a limited amount of developed potable water available for new projects in the Central and South Maui area at this time. It is in this context that the County Department of Water Supply (DWS) has placed a high priority on new source development, including the design and implementation of projects to increase surface water supply.

Inasmuch as the applicant's entitlements process and project implementation schedule will extend over the next several months, coordination will be undertaken with the DWS to confirm new water source project implementation schedules. If water resources are not available when land entitlements processing is completed, the applicant understands that delays in project construction may result. The purpose of proceeding with the entitlements process at this time, however, is based on the current and projected need to satisfy housing demands of local residents. Since entitlements processing may extend over a period of two or more years, availability of lands ready for housing development is a key element in assuring timely and responsive provision of new inventory. As governmental and private sector interests recognize the critical nature of housing demands on Maui, there is a unified effort to develop new water sources which will serve the needs for new housing while addressing water resource management constraints.

Ernest Y.W. Lau, Deputy Director
April 20, 2004
Page 2

W28 is not aware of a spring located near the Waikapu Ditch, near the north boundary of the project. We are aware that parcels in the area have *kuleana* water rights, however, it is our understanding that these agreements are maintained between the landowners and Wailuku Agribusiness. Wailuku Agribusiness owns the water improvements in the area and has reserved an easement for a kuleana waterline on the mauka (west) boundary of the subject property. Thank you again for commenting on the Draft Environmental Assessment. Should you have further questions, please do not hesitate to contact me at (808) 244-2015.

Very truly yours,

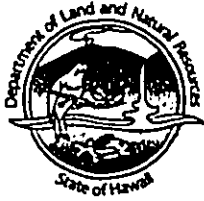

Karlynn Kawahara, Planner

KK:tn

cc: Scott Nunokawa, Waikapu 28 Investment, LLC
Anthony Ching, State Land Use Commission
Blaine Kobayashi, Carlsmith Ball
Warren Unemori, Warren S. Unemori Engineering, Inc.

w28ilc/waikapu/cwrm.res

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

APR 07 2004

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

HAWAII HISTORIC PRESERVATION
DIVISION REVIEW

Log #: 2004.1010
Doc #: 0403CD76
Received: 26 February 2004

Applicant/Agency: Karlynn Kawahara
Address: Munekiyo & Hiraga, Inc.
305 South High Street, Suite 104
Wailuku, Hawaii 96793

SUBJECT: Chapter 6E-42 Historic Preservation Review – Draft Environmental Assessment
for the Proposed Waiolani Mauka Subdivision at TMK: 3-5-04:25

Ahupua`a: Waikapu
District, Island: Wailuku, Maui
TMK: (2) 3-5-004:025

1. We believe there are no historic properties present, because:

- a) intensive cultivation has altered the land
- b) residential development/urbanization has altered the land
- c) previous grubbing/grading has altered the land
- d) an acceptable archaeological assessment or inventory survey found no historic properties
(Pantaleo 2003) (SHPD DOC NO.: 0310MK28/LOG NO.: 2003.2183)
- e) other:

2. This project has already gone through the historic preservation review process, and mitigation has been completed ____.

Thus, we believe that "no historic properties will be affected" by this undertaking

In the event that historic sites (human skeletal remains, etc.) are identified during the construction activities, all work needs to cease in the immediate vicinity of the find, the find needs to be

protected from additional disturbance, and the State Historic Preservation Office needs to be contacted immediately at 243-5169, on Maui, or at (808) 692-8023, on O'ahu.

Staff: Cathleen A. Dagher
Cathleen A. Dagher
Assistant Maui/Lana'i Island Archaeologist
(808) 692-8023

Date: 31 March 2004

LINDA LINGLE
GOVERNOR OF HAWAII



GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186
E-mail: oeqc@health.state.hi.us

February 25, 2004

Anthony Ching
Land Use Commission
235 South Beretania St., 4th floor
Honolulu HI 96813

Attn: Russell Kumabe

Dear Mr. Ching:

Subject: Draft environmental assessment (EA), Waiolani Mauka Subdivision, Maui


We have the following comments to offer:

Although impacts of this and two neighboring residential developments were discussed in the subject document, an analysis of regional cumulative impacts should be carefully examined to avoid the results of incremental planning.

Maui has had a long-standing water shortage. Will enough water be available to accommodate this development along with others of a similar nature?

If you have any questions please contact Nancy Heinrich of my staff at 586-4185.

Sincerely,


GENEVIEVE SALMONSON
Director

c: Karlynn Kawahara, Munekiyo & Hiraga



April 20, 2004

Genevieve Salmonson, Director
State of Hawaii
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Subject: Draft Environmental Assessment (EA), Waiolani Mauka Subdivision,
Waikapu, Maui, Hawaii

Dear Director Salmonson:

We are in receipt of your letter to Mr. Anthony Ching, State of Hawaii, Land Use Commission, dated February 25, 2004, regarding the aforementioned Environmental Assessment. On behalf of Waikapu 28 Investment, LLC (W28), we are providing the following information to further address cumulative impacts.

Cumulative Impact Considerations

The proposed action is being undertaken in close coordination with State and County agencies, the State Land Use Commission, Maui Planning Commission and Maui County Council to ensure that cumulative impacts related to the proposed action and other nearby proposed residential projects are properly addressed. Traffic impacts, for example, have been assessed with consideration being given to trips generated by other area projects. To further ensure that infrastructure issues are adequately addressed, Waikapu 28, LLC is meeting with other area developers to identify infrastructure constraints affecting this sub-region of Waikapu and Wailuku. A result of this coordination has been the formulation of a sub-regional implementation plan for providing new water storage capacity which will collectively benefit projects. In general, the applicant and other area housing developers recognize the need to sensitively address cumulative impacts to ensure that needed housing inventory can be realized without adversely affecting community resources.

Cumulative impacts are also being addressed through proposed adjustments in the Wailuku-Kahului Community Plan, which governs long-term growth in the region. In particular, the plan designates the subject property for Single-Family use, except for an approximately 2-acre portion which is currently designated for Public/Quasi-Public use. The community plan amendment proposed by the applicant is a result of a lengthy coordination process undertaken with the County of Maui Department of Fire and Public

Genevieve Salmonson, Director
April 20, 2004
Page 2

Safety (DFPS) and the Department of Parks and Recreation (DPR). The area designated for Public/Quasi-Public use was initially intended for a future fire station. In carefully assessing its current capital and service area requirements, the DFPS determined that the site no longer meets its technical and capacity needs given the pattern of urban growth and completion of other stations. At the same time, the DPR determined that from a long-term perspective, a neighborhood park is needed for area residents. The community plan amendment will result in acreage set aside for park use. The community plan amendment process, therefore, is being used to address long-term cumulative needs through recognition that land use requirements change over time and that amendments to the plan are an appropriate mechanism to respond to community priorities.

Water Supply

With regards to your comment to the availability of water for this project, as well as other similar residential projects, the applicant acknowledges and notes that there is a limited amount of developed potable water currently available for new projects in the Central and South Maui area. It is in this context that the County Department of Water Supply (DWS) has placed a high priority on new source development, including the design and implementation of projects to increase surface water supply. We note that by letter dated April 12, 2004, the DWS has indicated that additional potable water resource capacity remains available. See Exhibit "A".

Inasmuch as the applicant's entitlements process and project implementation schedule will extend over the next several months, coordination will be undertaken with the DWS to confirm new water source project implementation schedules. If water resources are not available when land entitlements processing is completed, the applicant understands that delays in project construction may result. The purpose of proceeding with the entitlements process at this time, however, is based on the current and projected need to satisfy housing demands of local residents. Since entitlements processing may extend over a period of two or more years, availability of lands ready for housing development is a key element in assuring timely and responsive provision of new inventory. As governmental and private sector interests recognize the critical nature of housing demands on Maui, there is a unified effort to develop new water sources which will serve the needs for new housing while addressing water resource management constraints.

Genevieve Salmonson, Director
April 20, 2004
Page 3

Thank you for the opportunity to respond to your letter. Should you have any further questions, please do not hesitate to call me at (808) 244-2015.

Very truly yours,



for Karlynn Kawahara, Planner

KK:tn
Attachment

cc: Scott Nunokawa, Waikapu 28 Investment, LLC
Anthony Ching, State Land Use Commission
Blaine Kobayashi, Carlsmith Ball
Warren Unemori, Warren S. Unemori Engineering, Inc.

w2Bilc/waikapu/oeqc.res

APR-13-2004 09:22

DEPT. OF WATER SUPPLY

808 270 7833 P.02/05

ALAN M. ARAKAWA
Mayor



GEORGE Y. TENGAN
Director

JEFFREY T. PEARSON, P.E.
Deputy Director

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 South High Street
WAILUKU, MAUI, HAWAII 96793-2165
Telephone (808) 270-7810 • Fax (808) 270-7833
www.mauiwater.org

April 12, 2004

Mr. Anthony Ching, Executive Officer
State Land Use Commission
P.O. Box 2359
Honolulu, Hawaii 96804-2359

Subject: Request for Comments on Draft Environmental Assessment for Proposed Waiolani Mauka Residential Subdivision by Waikapu 28 Investment, LLC, located at TMK: 3-5-004:025

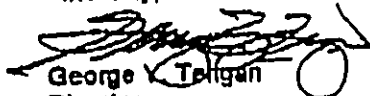
Dear Mr. Ching:

Thank you for the opportunity to provide comments on this Environmental Assessment (EA). Please find attached our comment letters of January 28, 2004 and August 18, 2003. The Department of Water Supply provides the following additional comments:

The County will issue meters up to 800,000 gallons per day from July 1, 2003 to those ready to receive service from the service area of the designated Iao aquifer. The Department has issued meters equivalent to 60% of the 800,000 gallons per day as of March 31, 2004.

Should you have any questions, please contact our Water Resources and Planning Division at 270-7199.

Sincerely,


George Y. Tengan
Director
emb

c: engineering division
Karynn Kawahara, Munakiyo & Hira, Inc.

attachments:
DWS letter 1/28/04
DWS letter 8/18/03

C:\WPdocs\EA\ EIS\Waiolani Mauka DEA.wpd

By Water All Things Find Life

EXHIBIT A



**DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-5109
Telephone (808) 270-7818 • Fax (808) 270-7833**

January 28, 2004

State Department of Business, Economic Development & Tourism
Office of Planning
Attention: Mary Lou Kobayashi, Administrator
235 South Beretania Street, 6th Floor
Honolulu, Hawaii 96804

**Subject: Petition for Amendment to the State Land Use District Boundaries:
108 Single-family lot Subdivision at Waikapu**

Dear Ms. Kobayashi:

Thank you for the opportunity to comment on this petition. We provide the following information:

The project area is served by the Central Maui System. The main sources of water for this system are the Iao and Waihee aquifers, the Iao tunnel and the Iao-Waikapu Ditch. As of July 21, 2003, the Commission on Water Resource Management (CWRM) has designated Iao aquifer as Groundwater Management Area. DWS will not issue reservations for future meters until new sources are brought on-line. Although the Department continues to issue meters for those ready to receive service at this time, it may also become necessary to stop issuing new meters altogether. Water for this project may not be available until new sources are on-line. The current status of Department well development and alternative sources in this area is as follows:

Iao aquifer:

- Iao well. Currently in design. Development anticipated by end 2005
- Waikapu Mauka - developed and pump installed. On hold until foreclosure of additional land required resolved

Waihee aquifer:

- well planned by private developer to be dedicated to the County.
- Kupaa 1: On-line by end 2004

Iao Treatment Plant - increase capacity to 2.4 MGD. Anticipated on-line by end 2004

A change in use from Agriculture to Urban would have a significant impact on the water system. Although agriculture potentially uses more water per acreage, irrigation was not provided by the Central Maui system. Anticipated water use for single family development of the subject property would be about 83,000 gallons per day (GPD), based on system per-acre standards.

By Water All Things Find Life


Exhibit "A" (cont.)

Page 2

The applicant will be required to provide service and fire protection according to Department Rules and Regulations. System requirements will be determined in the subdivision process. As stated by the applicant, there is currently not adequate storage in the Waikapu area to serve the proposed project.

Should you have questions, please contact our Water Resources and Planning Division at (808) 270-7199.

Sincerely,


George Pongan
Director
emb

c: Engineering Division

By Water All Things Find Life

Exhibit "A" (cont.)



DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
 P.O. BOX 1109
 WAILUKU, MAUI, HAWAII 96793-8109
 Telephone (808) 270-7818 • Fax (808) 270-7833

August 18, 2003

Munekyo & Hiraga, Inc.
 Attention: Dean K. Frampton, Planner
 305 High Street, Suite 104
 Wailuku, Hawaii 96793

Dear Mr. Frampton:

Project Name: Early Consultation Request for Walkapu Single-Family Subdivision - subdivision of 28.718 acre-lot into 100 single family lots as well as improvements such as curbs, gutters, and sidewalks on TMK: 3-5-004:025 (por)

Thank you for the opportunity to participate in the early consultation process for this project. We provide the following information:

Source Availability and Consumption

The project area is served by the Central Maui System. The main sources of water for this system are the Iao and Wahee aquifers, the Iao tunnel and the Iao-Walkapu Ditch. As of July 21, 2003, the Commission on Water Resource Management (CWRM) has designated Iao aquifer as Groundwater Management Area. DWS will not issue reservations for future meters until new sources are brought on-line. Although the Department continues to issue meters for those ready to receive service at this time, it may also become necessary to stop issuing new meters altogether. The department also asks Central Maui residents to voluntarily conserve water. Water for this project may not be available until new sources are on-line.

The EA should include the source and expected potable and non-potable water use. Anticipated water consumption for this project would be about 86,000 GPD.

System Infrastructure

Two 8-inch waterlines are located on the southernmost part of the property. The applicant will be required to comply with the Department of Water Supply Rules and Regulations for Subdivisions as well as provide for adequate fire protection in accordance with system standards. Domestic, fire and irrigation calculations will be required during the building permit process. Actual fire demand for structures is determined by fire flow calculations prepared, signed and stamped by a certified engineer or architect. The approved fire flow calculation methods for use include - Guidance for Determination of Fire Flow - Insurance Service Office, 1974 and Fire Flow - Hawaii Insurance Bureau, 1991.

Pollution Prevention

The project site overlies the Iao aquifer which has a sustainable yield of 20 MGD. In order to protect ground and surface water resources, we encouraged the applicant to adopt Best Management Practices (BMPs)

By Water All Things Find Life
 Exhibit "A" (cont.)

Page 2

Dean Frampton
 Waikapu Single Family Subdivision
 August 18, 2003

designed to minimize infiltration and runoff from construction and vehicle operations. We have attached sample BMPs for reference.

Conservation

In order to conserve our Island's limited water resources, we recommend that the following water conservation measures and techniques be integrated in the project design and construction as well as convey to new owners, where applicable:

Use brackish and/or reclaimed water sources for dust control during construction, if such alternative is available.

Eliminate Single-Pass Cooling: Single-pass, water-cooled systems should be eliminated per Maui County Code Subsection 14.21.20. Although prohibited by code, single-pass water cooling is still manufactured into some models of air conditioners, freezers, and commercial refrigerators.

Utilize Low-Flow Fixtures and Devices: Maui County Code Subsection 16.20A.680 requires the use of low-flow water fixtures and devices in faucets, showerheads, urinals, water closets, and hose bibs. Water conserving washing machines, ice-makers and other units are also available.

Maintain Fixtures to Prevent Leaks: A simple, regular program of repair and maintenance can prevent the loss of hundreds or even thousands of gallons a day. Refer to the attached handout, "The Costly Drip".

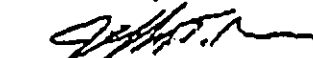
Use Climate-adapted Plants: The project is located in the Maui County Planting Plan - Plant Zone 3. We encourage the applicant to utilize appropriate native and non invasive species and avoid the use of potentially invasive plants. Native plants adapted to the area, conserve water and protect the watershed from degradation due to invasive alien species. Attached is a list of appropriate plants for the zone as well as potentially invasive plants to avoid.

Limit Irrigated Turf: Limit irrigated turf to 25% or less of total landscaped area. Low-water use shrubs and ground covers can be equally attractive and require substantially less water than turf.

Look for Opportunities to Conserve Water In And Around the Property: A few examples of these are as follows: When clearing driveways, etc. of debris, use a broom instead of a hose. When washing cars, use a hand-operated spray nozzle instead of an open hose. Additionally, check for leaks in faucets and toilet tanks.

Should you have questions regarding system infrastructure and requirements, please call our Engineering Division at (808) 270-7835 or for questions on conservation and resource matters, please contact our Water Resources and Planning Division at (808) 270-7199.

Sincerely,


 George Y. Tengan
 Director

cc:

Engineering Division

Applicant, with attachments:

The Costly Drip

Maui County Planting Plan - Plant Zone 3 - Saving Water in the Yard - What and How to Plant in your Area

Ordinance No. 2108 - A Bill for an Ordinance Amending Chapter 16.20 of the Maui County Code, Pertaining to the Plumbing Code

Selected BMP's from "Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters"-EPA

By Water All Things Find Life
 Exhibit "A" (cont.)

TOTAL P.06

PHONE (808) 594-1888



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPOLANI BOULEVARD, SUITE 600
HONOLULU, HAWAII 96813

LAND USE COMMISSION
STATE OF HAWAII
FAX (808) 594-1865

2004 FEB 30 A 8 34
Marl

HRD04/1252

February 26, 2004

Mary Lou Kobayashi
Administrator, Office of Planning
235 S. Beretania St. 6th Floor
Honolulu, HI 96813

Re: Docket A04-746/Waikapu 28 Investment, LLC

Dear Ms. Kobayashi:

OHA is in receipt of the Boundary Amendment Petition for the above referenced project. We also understand that the Draft Environmental Assessment may be submitted to the LUC rather than to the County department of planning. OHA has not received a separate request to review the Draft EA, so we will respond to both at this time. We apologize for our late response.

Boundary Amendment

Under current rules there seems to be no reason to challenge this boundary amendment, especially in light of the need for housing in this area. However, the Legislature is assessing proposed legislation to re-evaluate all agricultural lands. The lands requested for this zone change are prime agricultural lands. It is in the State's best interest to keep agricultural lands in agriculture. OHA suggests that any decision on reclassification be held until after the legislature passes new legislation. If the LUC cannot hold its decision, it should consider rural classification for this property so that it can serve as a buffer between agricultural land, and the surrounding urban properties.

LAND USE COMMISSION
STATE OF HAWAII
2004 MAR -1 A 8 35

Draft Environmental Assessment and Infrastructure

Water

The Draft EA states that the "300,000 gallon Waikapu storage tank does not have the capacity to provide the required fire flow and maximum day demands for the project." Furthermore, the source of water for this project will be the Iao Aquifer, which is currently designated a water management area, and the Waihe'e Aquifer, which is under an MOA with the Commission on Water Resources Management (2/18/04 COWRM minutes) and is limited to pumpage of 4 million gallons per day. The DEA is not clear on whether or not water will ever be available to service this project given that both the Iao Aquifer and the Waihee Aquifer are pumped beyond sustainable limits. OHA requests a full EIS on the basis of the failure of the DEA to adequately address water needs.

Traffic

This project will increase an already bad traffic situation. The LUC should direct the County to address larger scale traffic issues prior to accepting this DEA. While a signalized traffic light may mitigate some of the problem, there will still be traffic control issues. OHA understands that any one project will not have a significant effect on traffic, but the cumulative effect has been shown to be significant. The cumulative impact analysis only states that all projects will participate in fair-share mitigation. It does not actually address impacts. OHA requests an EIS on the basis of the failure of the DEA to address the cumulative impacts of this project in conjunction with other reasonably foreseeable projects.

Recreation

The DEA states that the Department will accept a 2 acre park for the project's park assessment. However, in a letter dated July 30, 2003 from Scott Nunokawa to Mr. Glenn Correa, Director, Maui Dept. of Parks and Recreation, the applicant indicates that the Dept. of Parks and Recreation does not want the park (LUC Petition). OHA requests clarification on this issue.

Density

Fifty-percent of the lots will have 'ohana units. This will impact schools, traffic and infrastructure needs, despite the applicant's assumption that family members will stay in the 'ohana units. OHA requests an Environmental Impact Statement be done based on the failure of the applicant to fully assess the impact of the 'ohana units.

Conclusion

The Office of Hawaiian Affairs believes that it is in the best interest of the State to hold this application until the legislature has redefined the process for designating Agricultural

Lands of Importance to the State of Hawaii. Currently the lands in question are prime agricultural lands, and should be preserved for agriculture or rural use.

OHA requests that an Environmental Impact Statement be done based on the failure of the applicant to assess:

1. The availability of water for this project.
2. The cumulative impact of this project on traffic and adequate mitigation. OHA believes the county should address area wide traffic concerns before allowing further development.
3. The cumulative impact of the 'ohana units on traffic, schools, and other services.

Thank you for this opportunity to comment. If you have further questions, please contact Pua Aiu at 594-1931 or e-mail her at paiu@oha.org.

Sincerely,



Clyde W. Namu'o
Administrator

CC:

Genvieve Salmonson
Office of Environmental Quality Control
Leiopapa A Kamehameha
235 S. Beretania Street, Ste 702
Honolulu, HI 96813

Anthony Ching
Executive Officer
P.O. Box 2359
Honolulu, HI 96804-2359



April 20, 2004

Clyde W. Namu'o, Director
State of Hawaii
Office of Hawaiian Affairs
711 Kapi'olani Boulevard, Suite #500
Honolulu, Hawaii 96813

SUBJECT: Proposed Waiolani Mauka Subdivision - Draft Environmental Assessment, Waikapu, Maui, Hawaii

Dear Mr. Namu'o:

We are in receipt of a copy of your response letter dated February 26, 2004 to Mary Lou Kobayashi of the Office of Planning regarding the above-mentioned project. On behalf of our client, Waikapu 28 Investment, LLC (W28), we would like to offer the following comments.

Boundary Amendment

The proposed project will help reduce the urgent need for housing in Maui County. We also note that the subject parcel was designated for "Single-Family" residential uses in the last update to the Wailuku-Kahului Community Plan as part of an extensive process involving a citizens group, the Maui Planning Commission and the Maui County Council. Given this designation, and the continued need for housing of all price ranges in Maui County, W28 feels that the request for Urban classification is appropriate.

Water

As you correctly noted, water source availability is a major concern in Maui County. It is in this context that the County Department of Water Supply (DWS) has placed a high priority on new source development, including the design and implementation of projects to increase surface water supply. It is also our understanding that each project will need to be reviewed in terms of applicability under Chapter 343, Hawaii Revised Statutes. If required, therefore, source development projects will involve the preparation and processing of separate environmental assessments pursuant to Chapter 343.

Inasmuch as the applicant's entitlements process and project implementation schedule will extend over the next several months, coordination will be undertaken with the DWS to

Clyde W. Namu`o, Director
April 20, 2004
Page 2

confirm new water source project implementation schedules. If water resources are not available when land entitlements processing is completed, the applicant understands that delays in project construction may result. The purpose of proceeding with the entitlements process at this time however, is based on the current and projected need to satisfy housing demands of local residents. Since entitlements processing may extend over a period of two or more years, availability of lands ready for housing development is a key element in assuring timely and responsive provision of new inventory. As governmental and private sector interests recognize the critical nature of housing demands on Maui, there is a unified effort to develop new water sources which will serve the needs for new housing while addressing water resource management constraints.

Traffic

The traffic impact analysis for the proposed action considers other projects which may be developed in the nearby vicinity. The traffic signal is considered an appropriate mitigative measure which will benefit residents of the Waiolani subdivision, the Waiolani Elua subdivision and other residents using Pilikana Street. It is noted that coordination with the State Department of Transportation (DOT) has been ongoing to ensure that traffic analysis parameters and mitigative measures are appropriate for the conditions anticipated. It is through careful technical analysis and open communication with the DOT that the applicant has advanced measures which are considered to be in the best interest of the community.

Recreation

The County of Maui Department of Parks and Recreation has since submitted a letter to the Applicant, noting that they are in favor of a 2-acre parcel within the subdivision to satisfy the parks assessment for the project. See Attachment "A".

Density

The traffic impact assessment report was done based on 50 percent (50%) of the lots having ohana units and as such, accounted for the traffic impact. Further, in discussions with the Department of Education, it was also noted that ohana units would be allowed. The Department of Education has indicated that any education impact fee will be addressed accordingly.

Conclusion

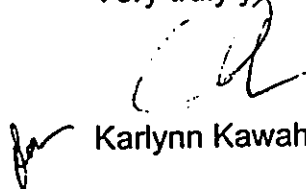
We appreciate the issues raised by the Office of Hawaiian Affairs relative to water, traffic and public service concerns. It is with this in mind that the applicant's environmental assessment document fully disclosed impacts and applicable mitigative measures. In

Clyde W. Namu`o, Director
April 20, 2004
Page 3

analyzing the issues and in undertaking coordination with affected agencies and the community, the applicant believes that the environmental assessment is the appropriate documentation protocol in addressing the requirements of Chapter 343, Hawaii Revised Statutes.

Should you have any further questions regarding this matter, please do not hesitate to call me at (808)244-2015.

Very truly yours,


Karlynn Kawahara, Planner

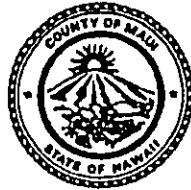
KK:tn

Attachment

cc: Scott Nunokawa, Waikapu 28 Investment, LLC
Anthony Ching, State Land Use Commission
Blaine Kobayashi, Carlsmith Ball

w28ilchwaikapu/oha.res

ALAN M. ARAKAWA
Mayor



DEC 01 2003

GLENN T. CORREA
Director

JOHN L. BUCK III
Deputy Director

(808) 270-7230
Fax (808) 270-7934

DEPARTMENT OF PARKS & RECREATION

700 Hali'a Nakoa Street, Unit 2, Wailuku, Hawaii 96793

November 21, 2003

Mr. Scott Nunokawa
Waikapu 28 Investment, LLC
P.O. Box 946
Wailuku, Hawaii 96793

Dear Mr. Nunokawa:

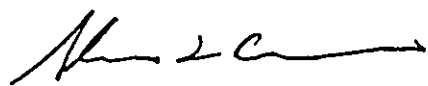
Subject: **WAIOLANI MAUKA SUBDIVISION
(aka WAIKAPU SINGLE FAMILY SUBDIVISION)
TMK 3-5-004:POR. OF 025, WAIKAPU**

This letter shall supercede our latest letter to your consultant, Dean Frampton of Munekiyo & Hiraga, Inc., dated July 31, 2003.

Our Department will accept dedication of land for parks and playgrounds purposes, in accordance with Section 18.16.320 of the Maui County Code, to satisfy the park dedication requirements for the subject subdivision.

Should you have any questions or concerns, please feel free to contact me, or Dyan Ariyoshi, CIP Coordinator of our Planning & Development Division, at phone number 270-7981.

Sincerely,


GLENN T. CORREA
Director

c: Patrick Matsui, Chief of Planning & Development Division - DPR
✓ Karlynn Kawahara, Munekiyo & Hiraga, Inc.

Attachment

ALAN M. ARAKAWA
MAYOR



Sandy file
CARL M. KAUPALOLO
CHIEF

NEAL A. BAL
DEPUTY CHIEF

LAND USE COMMISSION
STATE OF HAWAII

COUNTY OF MAUI
DEPARTMENT OF FIRE AND PUBLIC SAFETY
MARCH 22 A 10:56

200 DAIRY ROAD
KAHULUI, MAUI, HAWAII 96732
(808) 270-7561
FAX (808) 270-7919

March 18, 2004

Anthony Ching, Executive Officer
State Land Use Commission
P.O. Box 2359
Honolulu, HI 96804-2359

Dear Mr. Ching,

I have reviewed a request for comments concerning a Draft Environmental Assessment pertaining to Waiolani Mauka Residential Subdivision, Waikapu, Maui TMK (2)3-5-004:025.

The Department of Fire & Public Safety has no comment at this time.

Sincerely,

A handwritten signature in black ink, appearing to read "Val F. Martin".

Valeriano F. Martin
Captain
Fire Prevention Bureau



DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
 COUNTY OF MAUI

Sandy [unclear]
 ALAN M. AKAKAWA
 Mayor
 ALICE L. LEE
 Director
 HERMAN T. ANDAYA
 Deputy Director

200 SOUTH HIGH STREET • WAILUKU, HAWAII 96793 • PHONE (808) 270-7805 • FAX (808) 270-7165

March 5, 2004

Mr. Anthony Ching
 Executive Officer
 State Land Use Commission
 P. O. Box 2359
 Honolulu, Hawaii 96804-2359

2004 MAR 11 A 8:38
 LAND USE COMMISSION
 STATE OF HAWAII

Dear Mr. Ching:

SUBJECT: WAIOLANI MAUKA RESIDENTIAL SUBDIVISION
TMK: (2) 3-5-004:025
WAIKAPU, MAUI, HAWAII

We have reviewed the draft Environmental Assessment for the subject subdivision and do not have any comments to add to my June 17, 2003 letter to Mr. Dean Frampton of Munekiyo & Hiraga, Inc.

Thank you for the opportunity to comment.

Very truly yours,

ALICE L. LEE
 Director

ETO:hs

c: Housing Administrator

ALAN M. ARAKAWA
Mayor



GLENN T. CORREA
Director

JOHN L. BUCK III
Deputy Director

(808) 270-7230
Fax (808) 270-7934

DEPARTMENT OF PARKS & RECREATION

700 Hall'a Nako'a Street, Unit 2, Wailuku, Hawaii 96793

March 4, 2004

Mr. Anthony Ching, Executive Officer
State Land Use Commission
PO Box 2359
Honolulu, Hawaii 96804-2359

Dear Mr. Ching:

SUBJECT: Draft Environmental Assessment for Proposed Waiolani Mauka
Residential Subdivision by Waikapu 28 Investment, LLC, located at
TMK: (2)3-5-004:025, Waikapu, Maui, Hawaii

We have reviewed the Draft Environmental Assessment for the subject project and find that we have no comments at this time.

Thank you for the opportunity to review and comment. Should there be any questions, please contact Mr. Patrick Matsui, Chief of Parks Planning and Development, at 270-7387.

Sincerely,

A handwritten signature in black ink, appearing to read "Glenn T. Correa".

GLENN T. CORREA
Director

c: Patrick Matsui, Chief of Planning and Development
Karlynn Kawahara, Munekiyo & Hiraga, Inc.



ALAN M. ARAKAWA
MAYOR

OUR REFERENCE
↓
YOUR REFERENCE

COPY
POLICE DEPARTMENT
COUNTY OF MAUI

55 MAHALANI STREET
WAILUKU, HAWAII 96793
(808) 244-6400
FAX (808) 244-6411

March 23, 2004

MAR 25 2004



THOMAS M. PHILLIPS
CHIEF OF POLICE

KEKUHAUPIO R. AKANA
DEPUTY CHIEF OF POLICE

Mr. Anthony Ching
Executive Officer
State Land Use Commission
P.O. Box 2359
Honolulu, HI 96804-2359

Dear Mr. Ching:

SUBJECT: Comments on Draft Environmental Assessment for Proposed
Waiolani Mauka Residential Subdivision by Waikapu 28 Investment,
LLC, located at TMK: (2) 3-5-004:025, Waikapu, Hawaii

Thank you for your letter of February 23, 2004, requesting comments on the above subject.

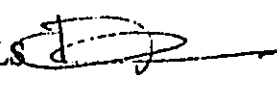
We have reviewed the proposed summary and have enclosed a copy of our comments and recommendations. Thank you for giving us the opportunity to comment on the proposed project.

Very truly yours,

Assistant Chief Sydney Kikuchi
for: Thomas M. Phillips
Chief of Police

Enclosure

c: Michael W. Foley, Planning Department
✓ Ms. Karlynn Kawahara, Munekiyo & Hiraga, Inc.

TO : CHIEF THOMAS PHILLIPS, MAUI POLICE DEPT CHIEF OF POLICE
VIA : CHANNELS  03/22/04
FROM : CRAIG S. BAJADALI, WAILUKU COMMUNITY POLICE OFFICER
SUBJECT : WAIOLANI MAUKA SUBDIVISION (T.M.K. 3-5-04:25)

Sir, this TO/FROM is being submitted regarding the above mentioned subject matter.

Upon reviewing the draft for Waiolani Mauka Subdivision traffic impact is the key concern. It is also noted within the Draft that a Traffic Impact Study was conducted and its conclusion is that of installing a traffic signal at Honoapiilani Hwy and Pilikana Street.

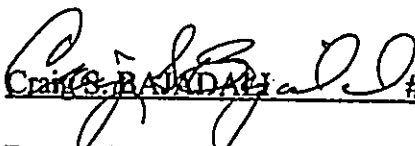
Upon contact with Karlynn KAWAHARA of Munekiyo and Hiraga, Inc on 03/17/04 she confirmed the implementation of a traffic signal at said intersection.

For additional information regarding the traffic study and traffic signal refer to Draft Assessment page 47 subsection C. The conclusion for the traffic signal can be found on page 50.


Due to the thorough Traffic Impact Study and request for a traffic signal at Honoapiilani Highway and Pilikana Street there are no other concerns needed to be addressed at this time.

Respectfully submitted for your perusal.

concerns
mf 3/18/04


Craig S. BAJADALI #E 8914
Date: 03/17/04 Time: 1630 hrs
COMMENTS BY DEC. BAJADALI
NOTED: SA. *14/mw* 3/18/04

While the project might not adversely affect traffic at its point, it will greatly add to the congestion already experienced in the WLU. Elementary area during school hours,


03/22/04



April 20, 2004

Thomas Phillips, Chief
Police Department
County of Maui
55 Mahalani Street
Wailuku, Hawaii 96793

SUBJECT: Proposed Waiolani Mauka Subdivision (TMK 3-5-04:25)

Dear Chief Phillips:

Thank you for providing the State Land Use Commission with your comments of March 23, 2004 regarding the subject matter. As noted in your letter, appropriate traffic mitigation measures will be implemented in connection with the project. Coordination will be undertaken with the State Department of Transportation (DOT) to ensure that mitigation actions taken meet the technical requirements of the DOT.

If there are additional questions regarding this project, please do not hesitate to call.

Very truly yours,

km Karlynn Kawahara, Planner

KK:tn

cc: Scott Nunokawa, Waikapu 28 Investment, LLC
Anthony Ching, State Land Use Commission
Blaine Kobayashi, Carlsmith Ball

w28litc/waikapu/mpd.res

ALAN M. ARAKAWA
Mayor



GEORGE Y. TENGAN
Director
JEFFREY T. PEARSON, P.E.
Deputy Director

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 South High Street
WAILUKU, MAUI, HAWAII 96783-2155
Telephone (808) 270-7818 • Fax (808) 270-7833
www.mauiwater.org

April 12, 2004

Mr. Anthony Ching, Executive Officer
State Land Use Commission
P.O. Box 2359
Honolulu, Hawaii 96804-2359

Subject: Request for Comments on Draft Environmental Assessment for Proposed Walolani Mauka Residential Subdivision by Waikapu 28 Investment, LLC, located at TMK: 3-5-004:025


Dear Mr. Ching:

Thank you for the opportunity to provide comments on this Environmental Assessment (EA). Please find attached our comment letters of January 28, 2004 and August 18, 2003. The Department of Water Supply provides the following additional comments:

The County will issue meters up to 800,000 gallons per day from July 1, 2003 to those ready to receive service from the service area of the designated lao aquifer. The Department has issued meters equivalent to 60% of the 800,000 gallons per day as of March 31, 2004.

Should you have any questions, please contact our Water Resources and Planning Division at 270-7109.

Sincerely,

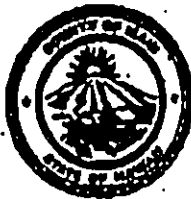

George Y. Tengan
Director
emb

cc: engineering division
Karynn Kawahara, Mumakiyo & Hiraga, Inc.

attachments:
DWS letter 1/28/04
DWS letter 8/18/03

C:\WPdocs\EA\ EIS\Walolani Mauka DEA.wpd

By Water All Things Find Life



DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
 P.O. BOX 1109
 WAILUKU, MAUI, HAWAII 96793-6109
 Telephone (808) 270-7816 • Fax (808) 270-7833

January 28, 2004

State Department of Business, Economic Development & Tourism
 Office of Planning
 Attention: Mary Lou Kobayashi, Administrator
 235 South Beretania Street, 6th Floor
 Honolulu, Hawaii 96804

Subject: Petition for Amendment to the State Land Use District Boundaries:
 108 Single-family lot Subdivision at Waikapu

Dear Ms. Kobayashi:

Thank you for the opportunity to comment on this petition. We provide the following information:

The project area is served by the Central Maui System. The main sources of water for this system are the Iao and Waihee aquifers, the Iao tunnel and the Iao-Waikapu Ditch. As of July 21, 2003, the Commission on Water Resource Management (CWRM) has designated Iao aquifer as Groundwater Management Area. DWS will not issue reservations for future meters until new sources are brought on-line. Although the Department continues to issue meters for those ready to receive service at this time, it may also become necessary to stop issuing new meters altogether. Water for this project may not be available until new sources are on-line. The current status of Department well development and alternative sources in this area is as follows:

Iao aquifer:

- Iao well. Currently in design. Development anticipated by end 2005
- Waikapu Mauka - developed and pump installed. On hold until foreclosure of additional land required resolved

Waihee aquifer:

- well planned by private developer to be dedicated to the County.
- Kupaa 1: On-line by end 2004

Iao Treatment Plant - increase capacity to 2.4 MGD. Anticipated on-line by end 2004

A change in use from Agriculture to Urban would have a significant impact on the water system. Although agriculture potentially uses more water per acreage, irrigation was not provided by the Central Maui system. Anticipated water use for single family development of the subject property would be about 83,000 gallons per day (GPD), based on system per-acre standards.

By Water All Things Find Life

Page 2

The applicant will be required to provide service and fire protection according to Department Rules and Regulations. System requirements will be determined in the subdivision process. As stated by the applicant, there is currently not adequate storage in the Waikapu area to serve the proposed project.

Should you have questions, please contact our Water Resources and Planning Division at (808) 270-7199.

Sincerely,



George Y. Fong

Director
emb

c: Engineering Division

By Water All Things Find Life



DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-8109
Telephone (808) 270-7816 • Fax (808) 270-7833

August 18, 2003

Munekyo & Hiraga, Inc.
Attention: Dean K. Frampton, Planner
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

Project Name: Early Consultation Request for Walkapu Single-Family Subdivision - subdivision of 28.718 acre-lot into 100 single family lots as well as improvements such as curbs, gutters, and sidewalks on TMK: 3-5-004:025 (por)

Thank you for the opportunity to participate in the early consultation process for this project. We provide the following information:

Source Availability and Consumption

The project area is served by the Central Maui System. The main sources of water for this system are the Iao and Wahee aquifers, the Iao tunnel and the Iao-Walkapu Ditch. As of July 21, 2003, the Commission on Water Resource Management (CWRM) has designated Iao aquifer as Groundwater Management Area. DWS will not issue reservations for future meters until new sources are brought on-line. Although the Department continues to issue meters for those ready to receive service at this time, it may also become necessary to stop issuing new meters altogether. The department also asks Central Maui residents to voluntarily conserve water. Water for this project may not be available until new sources are on-line.

The EA should include the source and expected potable and non-potable water use. Anticipated water consumption for this project would be about 86,000 GPD.

System Infrastructure

Two 8-inch waterlines are located on the southernmost part of the property. The applicant will be required to comply with the Department of Water Supply Rules and Regulations for Subdivisions as well as provide for adequate fire protection in accordance with system standards. Domestic, fire and irrigation calculations will be required during the building permit process. Actual fire demand for structures is determined by fire flow calculations prepared, signed and stamped by a certified engineer or architect. The approved fire flow calculation methods for use include - Guidance for Determination of Fire Flow - Insurance Service Office, 1974 and Fire Flow - Hawaii Insurance Bureau, 1991.

Pollution Prevention

The project site overlies the Iao aquifer which has a sustainable yield of 20 MGD. In order to protect ground and surface water resources, we encouraged the applicant to adopt Best Management Practices (BMPs)

By Water All Things Find Life

Page 2

Dean Frampton
 Waikapu Single Family Subdivision
 August 18, 2003

designed to minimize infiltration and runoff from construction and vehicle operations. We have attached sample BMPs for reference.

Conservation

In order to conserve our Island's limited water resources, we recommend that the following water conservation measures and techniques be integrated in the project design and construction as well as convey to new owners, where applicable:

Use brackish and/or reclaimed water sources for dust control during construction, if such alternative is available.

Eliminate Single-Pass Cooling: Single-pass, water-cooled systems should be eliminated per Maui County Code Subsection 14.21.20. Although prohibited by code, single-pass water cooling is still manufactured into some models of air conditioners, freezers, and commercial refrigerators.

Utilize Low-Flow Fixtures and Devices: Maui County Code Subsection 16.20A.680 requires the use of low-flow water fixtures and devices in faucets, showerheads, urinals, water closets, and hose bibs. Water conserving washing machines, ice-makers and other units are also available.

Maintain Fixtures to Prevent Leaks: A simple, regular program of repair and maintenance can prevent the loss of hundreds or even thousands of gallons a day. Refer to the attached handout, "The Costly Drip".

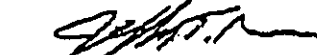
Use Climate-adapted Plants: The project is located in the Maui County Planting Plan - Plant Zone 3. We encourage the applicant to utilize appropriate native and non invasive species and avoid the use of potentially invasive plants. Native plants adapted to the area, conserve water and protect the watershed from degradation due to invasive alien species. Attached is a list of appropriate plants for the zone as well as potentially invasive plants to avoid.

Limit Irrigated Turf: Limit irrigated turf to 25% or less of total landscaped area. Low-water use shrubs and ground covers can be equally attractive and require substantially less water than turf.

Look for Opportunities to Conserve Water In And Around the Property: A few examples of these are as follows: When clearing driveways, etc. of debris, use a broom instead of a hose. When washing cars, use a hand-operated spray nozzle instead of an open hose. Additionally, check for leaks in faucets and toilet tanks.

Should you have questions regarding system infrastructure and requirements, please call our Engineering Division at (808) 270-7835 or for questions on conservation and resource matters, please contact our Water Resources and Planning Division at (808) 270-7189.

Sincerely,


 George Y. Tengan
 Director

cc:

Engineering Division

Applicant, with attachments:

The Costly Drip

Maui County Planting Plan - Plant Zone 3 - Saving Water in the Yard - What and How to Plant in your Area

Ordinance No. 2108 - A Bill for an Ordinance Amending Chapter 18.29 of the Maui County Code, Pertaining to the Plumbing Code

Selected BMP's from "Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters"-EPA

By Water All Things Find Life

TOTAL P.06



April 20, 2004

Mr. George Y. Tengan, Director
Department of Water Supply
200 South High Street
Wailuku, Hawaii 96793

SUBJECT: Draft Environmental Assessment for Proposed Waiolani Mauka
Subdivision by Waikapu 28 Investment, LLC, at TMK: 3-5-004:025 in
Waikapu, Maui, Hawaii

Dear Mr. Tengan:

We are in receipt of your comment letters dated August 18, 2003, January 28, 2004 and April 12, 2004 regarding the subject project. We acknowledge your comments relative to the water service available for the Central Maui area and look forward to the Department of Water Supply's future projects that will provide additional sources of water.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Kawahara", is written over the typed name.

per Karlynn Kawahara, Planner

KK:tn

cc: Scott Nunokawa, Waikapu 28 Investment, LLC
Anthony Ching, State Land Use Commission
Blaine Kobayashi, Carlsmith Ball
Warren Unemori, Warren S. Unemori Engineering, Inc.

w28llc/waikapu/dws2.res

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Appendices

Appendix A

Market Study

CENTRAL MAUI REAL PROPERTY SURVEY

PREPARED BY;

SCOTT NUNOKAWA

AUGUST 2003

Central Maui Real Property Survey

This Central Maui Real Property Survey is a compilation of data available on residential real property on Maui and, more specifically, the central Maui area. This data provides a picture of the current supply and demand dynamics for residential real property products in the central Maui area.

Attached, as exhibit "A" is a Market Analysis completed in March of 2003 by ACM Consultants, Inc., ("ACM"). This Analysis was done as part of an appraisal for the Waiolani Elua subdivision, which neighbors the subject property.¹ In addition, the following supplemental information is provided to update and put into context the Market Analysis as it relates to the proposed Waiolani Mauka project:

I. Supplemental Information to the "Central Maui's Ongoing & Proposed Residential Subdivisions" Sections on Pages 32 -33 of the ACM Market Analysis

The sale of new homes is a good indicator of overall market demand for new residential product. As shown in the ACM Market Analysis, there is a constricted amount of new residential product under construction. It should be noted that since the Market Analysis was completed, Olena Phase II, described in the analysis as planned, started active sales. On page 33 of the ACM Market Analysis, sales prices were estimated at between \$295,000 to \$350,000. However, when Olena Phase II started sales, the actual sales prices were higher than the estimates, ranging from \$320,000 to \$373,500. The homes range in size from +/-1300 sq ft. to +/- 1700 sq. ft. on lot sizes ranging from +/-6000 sq ft. to +/-7600 sq. ft. The project sold out immediately upon being offered. Groundbreaking for the project is anticipated by the end of September. The anticipated delivery of the new units is the first and second quarter of 2004.²

There has also been one additional project announced since the completion of the ACM Market Analysis. Fitting into the category of Central Maui's Proposed Subdivisions, (page 33 of the Market Analysis), Schular Homes has indicated their intent to create a 139 unit residential subdivision in Maui Lani called The Legends. The Lot sizes for these units will be between 3400 sq. ft. and 6000 sq. ft. The initial offering of homes will range from three bedroom, two bath, 1286 sq ft. homes to 4 bedroom, two and one half bath, 1931 sq. ft. homes. The initial price range will be between \$305,000 and \$370,000. The first offering will be for 10 of the 139 homes. To date, the developer has over 270

¹ Reprinted with permission from ACM Consultants, Inc.: Pages 31-52 of the "Appraisal of Waiolani Elua Subdivision A Proposed Single-Family Subdivision Consisting of 25 Home Lots on 6.058 Acres of Land Wailuku, Island and County of Maui, Fee Simple, March 1, 2003."

² Based on information obtained through one or more of the following sources: local appraisers, County Tax office, local realtors, parties connected to the project, or other public records. The information is deemed reasonably accurate, however not guaranteed.

signed applications for this first offering. Sitework for the project commenced around the beginning of July 2003.³

Because the ACM Market Analysis was written as part of an appraisal for the Waiolani Elua subdivision, it does not provide sales information on Waiolani Elua itself. As such, data on Waiolani Elua is provided here. Waiolani Elua is a 25-lot subdivision neighboring the subject property. Except for the affordable homes described below, the subdivision has been marketed as a Lot-Only purchase of fee simple lots. Lot sizes average just over 8000 sq. ft. Indicative of the strength of the market, Waiolani Elua sold and closed all 12 of the 25 lots that it had made available for sale as soon as governmental regulations would allow. The buyers closed on the lots well prior to the civil sitework being completed. These first 12 lots sold at prices between \$134,000 and \$169,000. Except for a condition imposed during the zoning process that required that three affordable homes be constructed prior to the remaining lots being sold, the entire subdivision would have sold out immediately upon offering and would have closed by the end of June 2003. Upon completion of the three affordable homes, the remaining lots in the subdivision will be sold. There is currently a waitlist of over 100 names for the remaining +/-8 units. This waitlist, as well as all product sold to date, were generated without any advertising of any kind.⁴

II. Supplemental Information to the "General Residential Sales Activity" Section on Pages 36 -45 of the ACM Market Analysis

The Maui Board of Realtors provides statistics for homes and land sold through the Multiple Listing Service (MLS). The Market Analysis provides MLS Statistics for Maui as a whole through 2002. To supplement this information, the following are the statistics for the Island of Maui for the first six months of 2003:

The single-family home re-sales for the overall Island of Maui for first six months of the 2003 calendar year were as follows:

<u>Year</u>	<u>Number of Sales</u>	<u>Median Sales Price</u>
2003 (1 st half only)	554	\$401,750

The residential Lot-Only re-sales for the island of Maui first six months of the 2003 calendar year were as follows:

³ See 2 above.

⁴ Information provided by Waiolani Elua, Inc.

<u>Year</u>	<u>Number of Sales</u>	<u>Median Sales Price</u>
2003 (1 st half only)	176	\$286,450

MLS also breaks down sales data regionally. Central Maui, which encompasses the greater Wailuku/Kahului area including Waikapu, is one such region. Central Maui Single-Family home resales for the calendar years 2000-2002 as well as for the first six months of 2003 were as follows:

<u>Year</u>	<u>Number of Sales</u>	<u>Median Sales Price</u>
2000	182	\$215,000
2001	186	\$242,250
2002	214	\$286,750
2003 (1 st half only)	100	\$322,500

Residential Lot-Only re-sales for the Central Maui area for the calendar years 2000-2002 as well as for the first six months of 2003 were as follows:

<u>Year</u>	<u>Number of Sales</u>	<u>Median Sales Price</u>
2000	47	\$170,000
2001	51	\$185,500
2002	52	\$199,950
2003 (1 st half)	33	\$265,000

The MLS data shows only resales of property involving Realtors who are members of the Maui Board of Realtors. Typically, this data tends to underestimate new project sales due to reporting difficulties. Notwithstanding these limitations, the data shows that the number of single-family re-sales for both the island of Maui, and central Maui specifically, has remained relatively level, and very strong relative to the 1990s. The median sales price has increased 36%, and 33%, respectively, for the full years 2000-2002. When comparing the median price data from 2000 with the data for the first six months of 2003, there is an increase of 46% and 50%, respectively.

When looking at the residential Lot Only data for 2000-2002, the median price increased 22%, and 18% for the island of Maui and Central Maui, respectively. Calculations comparing the median price data for the first six months of 2003 with 2000 median prices indicate an even more significant increase of 30% and 56%, respectively. One of the likely causes of these types of increases in median prices is the constricted market supply.

III. Supplemental Information to the "Conclusion" Section on Pages 36 –45 of the ACM Market Analysis

As indicated in the ACM Market Analysis, the availability of residential Lot-Only product in central Maui has been very limited. Aside from Waiolani Elua's remaining lots and, perhaps, Maui Lani's "The Bluffs" subdivision, a 37 unit proposed project in Maui Lani noted on page 32 of the ACM Market Analysis, there does not appear to be new projects featuring the sale of residential Lot-Only product coming to market in the Central Maui area in the near future. It is noteworthy that in 1999 two residential Lot-Only subdivisions were available for closings in Maui Lani. The result of this new residential Lot-Only product inventory offerings was the sale of +/- 133 lots at a price range of \$79,500-\$174,500 for lots ranging in size from 5,640 to 14,000 sq. ft.⁵ Given that no other year in the recent past has come close to matching 1999's sales numbers and that these sales numbers coincide with the large residential Lot-Only inventory that was available to be sold at that time, it is a reasonable conclusion that the residential Lot-Only market has been predominantly restricted because of lack of inventory. Further, it is Waiolani Mauka's intention to emulate the product found in the neighboring Waiolani Elua Subdivision. As it has been clearly shown by Waiolani Elua, demand for residential Lot Only product in the specific location, size, and price range that Waiolani Mauka proposes is very strong.

Based on the SMS Hawaii Housing Study Update 1997, annual demand for new housing units on the Island of Maui will range between 700 and 800 units for the foreseeable future.⁶ The report also indicates that in 1997 just over 20% of potential purchasers indicated that their preferred location would be central Maui.⁷ This indicates that the annual demand for new housing product in Central Maui should be in the 140 to 160-unit range even if one ignored the pent-up demand generated from years of lagging production.

SMS Maui County Community Plan Update Program: Socio-Economic Forecast Phase I Report dated June 14, 2002 provides projections that indicate that the 1997 study may have underestimated the housing needs going forward. According to the Baseline Version of the forecast, deemed as the most likely scenario of the three scenarios found in the forecast, housing production for the years 2000 through 2005 will require an additional 5176 units to meet the demand for the Island of Maui. The forecast indicates that 10,950 units will be needed between the years 2000 and 2010.⁸ According to the

⁵ See 2 above

⁶ Locations, Inc. Research & Consulting Division and SMS Research & Marketing Services, Inc. November 1997 report titled Hawaii Housing Policy Study Update 1997 done on behalf of the County of Maui Department of Housing and Human Concerns et al., Exhibit I-4 "Maui Housing Model".

⁷ Hawaii Housing Policy Study Update 1997 Table A-11 "Preferred Location of New Housing Units, 1997 Preferred Tenancy: Own"

⁸ SMS Maui County Community Plan Update Program: Socio-Economic Forecast Phase I Report dated June 14, 2002, Exhibit I-11, 3:Results: Baseline Version, (page 40).

report, the resident population of Kahului/Wailuku was 41,503 in the year 2000, which represented 35% of the total Island population of the 117,644 at that time. The report forecasts that approximately 35% of the population will continue to be based in Kahului/Wailuku in 2005 and in 2010.⁹ If one assumes that in order to accommodate 35% of the population growth for the Island, 35% of the new housing units will need to be produced in this area, then the annual need for new housing units for the Kahului/Wailuku area will be 362 units per year when using the Baseline Version's forecast for the years 2000-2005 or 383 units per year when using the Baseline Version's forecast for the years 2000-2010.

Aside from possible product available in Maui Lani and Kehalani, and the remaining +/-8 Lots remaining in the Waiolani Elua Subdivision, there does not appear to be additional inventory coming to market in the Central Maui area in the near future to satisfy the aforementioned demand. This is particularly so for those looking to purchase residential Lot-Only product. While predictions on the timing of inventory coming to market is difficult at best, it appears reasonable to assume that there continues to be demand for additional new residential inventory that justifies the need for the type and quantity of product Waiolani Mauka is intending to provide.

⁹ SMS Maui County Community Plan Update Program: Socio-Economic Forecast Phase I Report dated June 14, 2002, Exhibits I-1 & R-4, 3:Results: Baseline Version, (pages 32 & 52 respectively).

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EXHIBIT "A"
Market Analysis

A. MARKET ANALYSIS

For the purpose of determining a market absorption rate for the proposed subdivision, a market study was conducted to determine how current supply and demand for single-family house lots might affect the sale of the subject's 25 parcels. The extent of our survey encompassed new, ongoing and proposed residential and condominium developments in the Maui community to give the reader the best perspective of the overall market.

OVERVIEW

One of the more difficult factors in determining the success of a project's sales is estimating future absorption rates. There are two components to this: First, is the design and pricing of the project. This, of course, is well within the developer's control for a proposed project, but not in an existing project. Second, is the overall market environment at the time of sale. This is, obviously, more difficult to define because it involves such variables as interest rates, overall market conditions, and general and specific sector real estate market conditions. The added complication with most projects are the time frames and time lags involved during the marketing and closing periods where market and interest rate conditions can change significantly. Thus, marketing of a project may commence in a favorable environment and be completed in an unfavorable one (or vice versa). This is especially true for a large construction project with, say, 100 lots or more. For a 25-lot subdivision like the subject, the risk is considered to be lower if the lots are priced at market.

Furthermore, real estate is a cyclical industry and sales activity tends to move in spurts. It is not unusual for a new project to sell half its units in the first year of marketing and require 2 to 3 years (or longer) to sell the remaining half. Thus, the notion of a linear sales rate may be deemed unrealistic for practical purposes, but is a useful and convenient tool for planning.

RESIDENTIAL SUPPLY CHARACTERISTICS

The area identified as the Central Maui region encompasses the civic and business communities of Wailuku and Kahului. This central region provides the core of commercial, industrial and professional activity. Consequently, demand for housing in Central Maui is high.

Research has indicated that single-family sales in Wailuku have been increasing along with prices. The most significant, recent housing projects in the Central Maui region are Olena At Kehalani and the Maui Lani community in Kahului.

Central Maui's Ongoing Residential Subdivisions

Only one subdivision is currently on the market in Central Maui. This subdivision, Maui Lani, is a master planned community and has been active since 1998.

Maui Lani, which consists of about 1,000 acres, is planned to include approximately 3,000 residential units together with a golf course, schools, churches, multi-family and commercial developments. Five phases have been developed to date, consisting of 257 home sites.

The most recently completed phase, Grand Fairways North consisted of approximately 80 lots. Lots in this community have sold for about \$115,000 to \$125,000 each in the past; however, those with golf course frontages sold for about \$179,000 each.

The emphasis has now switched to Maui Lani's newest phase, The Islands. This is a gated community in the vicinity of Maui Memorial Medical Center. The interior, non-golf course lots are being marketed by Schuler Homes at The Islands. There are 55 interior lots ranging in size from 5,647 to 12,522 square feet. They are being sold together with one of 11 model homes at base prices ranging from \$339,500 (1,517 sf house) to \$410,500 (2,453 sf house). Currently, all 57 homes in Phase I have closed since March 29, 2001 with the last closing being in November of 2002.

The lots with golf course frontage are being marketed separately. They are sold as lots only, leaving the house construction to the buyer. Forty one (41) lots were initially brought to the market and, at this time, all of the lots have closed. Original prices for these lots range from \$193,000 to \$209,000 each.

The second phase of The Island began selling in January of 2002. There will be approximately 36 house lots with golf course frontage and about 53 interior lots being marketed by Schuler Homes as house and lot packages. Initial price lists for vacant lots in this phase indicated a price range of \$175,000 to \$205,000. After the first closing in September of 2002, 16 Schuler homes have closed escrow as of February 2003.

Immediately south of The Islands is a 37-lot subdivision known as The Bluffs. This is also planned as a smaller gated community, with golf course lots along its perimeter. Prices have not yet been set; however, one salesperson thought it may cost approximately \$240,000 for a golf course lot.

**Central Maui's
Proposed Subdivisions**

Research with Realtors and developers revealed only one other residential subdivision planned for development this year. **Phase II of Olena at Kehalani** is expected to begin this summer and should contain approximately 30 single-family lots, similar to the first phase (see above). Prices have been preliminarily set to range between \$295,000 to \$350,000. Maui Lani, of course, is on-going, as the second phase of The Island recently opened and began construction.

**Other Ongoing Residential
Subdivisions on Maui**

The **Ke Alii Kai Subdivision** is located in Kihei and consists of 24.09 acres of land. It will contain 96 subdivided house lots ranging in size from 7,503 to 11,778 square feet, with an average size of 8,270 square feet. The subdivision will be serviced primarily by the existing Kananui Road together with a series of roadways within the proposed subdivision. Views of the Pacific Ocean and neighboring islands are available from each site, although the views are expected to be limited when homes are constructed. Pricing began at \$343,990 and ranged up to \$474,990. As of October 1, 2002, all the units have been sold and a total of 38 have closed escrow. Units in this subdivision began closing in March of 2002.

Kenolio Estates is a 51-lot single-family subdivision under construction in the Ka Ono Ulu neighborhood in north Kihei. Sitting on about 11.635 acres, this subdivision will have lots ranging in size from 7,503 to 10,189 square feet, with an average size of 8,160 square feet. This development has homes in various stages of construction, and all 51 homes have been sold at base prices ranging from about \$250,000 to \$350,000. The transactions are closing upon completion of construction. Approximately 95 percent of the homes have been finished.

Piilani Village III is being developed due to the successful sales effort at Piilani Village II. This subdivision will include 117 lots and are expected to be in the same size range as Piilani Village II. The real estate agent at Piilani Village II has indicated that they already have more than enough reservations to close all 117 lots in this phase. Construction recently commenced during the first quarter of 2002. As of January 2003, all of the house and lot packages have been sold and approximately thirty (30) homes have been complete. They have yet to be delivered to the home owners as the developer is still awaiting final subdivision approval from the County of Maui.

Kilohana Hema Subdivision consists of approximately 8.00 acres or about 348,480 square feet of land and will contain 29 subdivided house lots ranging in size from 7,507 to 12,478 square feet, and one

TABLE 3

SINGLE-FAMILY HOUSELOT ACTIVE LISTINGS

7,000 to 11,000 Square Foot Lots

Waialua-Kahului, Maui, Hawaii

Parcel No.	Address	Area	Bedrooms	Bathrooms	Year Built	Price	Status	Subdivision
222613	Hana	14	5	10,890	\$235,000.00	ACTIVE	155	
300197	4888 UAKEA RD	4	4	10,682	\$409,000.00	ACTIVE	40	KE ALI
223377	368 Weku Place	4	4	10,324	\$450,000.00	ACTIVE	98	SUMMIT
223825	SUMMIT ESTATES #1	4	4	10,122	\$415,000.00	ACTIVE	57	Kaanapali Golf Estates
300591	Lot 31 Aka Place	4	4	10,095	\$350,000.00	ACTIVE	8	ISLANDS PH 2
223230	ISLANDS AT MAUI LANI	3	8	10,091	\$265,000.00	ACTIVE	107	MAUI LANI
223446	ph2 lot 3 ISLAND PH2 LOT 3	3	8	10,100	\$255,000.00	ACTIVE	92	PINEAPPLE HILL
218117	624 SILVERSWOOD DR	4	2	9,881	\$1,100,000.00	ACTIVE	533	PINEAPPLE HILL
223634	210 CRESTVIEW RD	4	2	10,050	\$975,000.00	ACTIVE	79	PINEAPPLE HILL
223576	KILOHANA HEMA	3	9	8,200	\$299,000.00	ACTIVE	84	KILOHANA HEMA
223401	KILOHANA RIDGE LOT #2	3	9	7,542	\$295,000.00	ACTIVE	95	KILOHANA RIDGE
221993	SOUTH KIHAI ROAD LOT 2-A-2-C	3	9	10,008	\$1,060,000.00	ACTIVE	211	
223960	2274 S KIHAI RD	3	9	8,480	\$4,300,000.00	ACTIVE	51	KEAWAKAPU VIEWS
221196	131 PONANA ST	3	9	7,515	\$285,000.00	CONTINGENT	273	
300335	0 Ahekololo Place - Lot 12	3	9	7,503	\$295,000.00	ACTIVE	30	
220678	2189 ILIILI RD	3	9	10,545	\$450,000.00	ACTIVE	318	
222739	1614 HALAMA ST	3	9	9,077	\$389,000.00	ACTIVE	146	HALAMA
223193	Lot 86 WAINOHIA ST	3	9	7,513	\$199,900.00	ACTIVE	111	WAIKOA KAI
222470	UAU KULAMANU	2	3	10,108	\$220,000.00	ACTIVE	170	KULAMANU
219550	242 LAHAINALUNA RD	4	6	8,409	\$600,000.00	ACTIVE	416	
300240	232 Lahainaluna Rd	4	6	9,303	\$600,000.00	ACTIVE	32	
300746	Allo Street	4	6	7,623	\$239,000.00	ACTIVE	4	
218574	LOT 142 IRIS PLACE	4	3	7,734	\$449,500.00	ACTIVE	506	KAHANA RIDGE
222550	2913 AINALANI DR	2	3	10,488	\$214,000.00	ACTIVE	161	KULAMALU
220280	2768 KAMELANI LOOP	2	3	10,442	\$240,000.00	ACTIVE	350	
222631	84 ALA'APAPA PL	2	3	10,475	\$238,000.00	ACTIVE	155	KULAMALU
300063	311 Nalani	2	3	10,483	\$225,000.00	ACTIVE	48	
300739	2964 AINALANI DR	2	3	10,466	\$199,000.00	CONTINGENT	176	KULAMALU
223351	381 Kualono Place	2	1	10,562	\$289,000.00	ACTIVE	4	Wailea Pualani Estates
223996	3142 KIKIHI ST.	2	1	9,539	\$579,000.00	ACTIVE	43	Wailea Kialoa
223006	3143 KIKIHI ST	2	1	8,597	\$695,000.00	ACTIVE	124	WALEA KIALOA
220554	#29 Pualoa Nani	2	1	10,894	\$246,000.00	ACTIVE	329	
300383	205 E Panana P.	2	1	9,920	\$585,000.00	ACTIVE	22	
300030	Wailea/Makana	2	1	10,454	\$3,600,000.00	ACTIVE	44	
220825	Old Makana Road Lot 59C	2	1	10,939	\$224,000.00	CONTINGENT	308	
222382	518 MELEMELE ST	3	5	8,819	\$325,000.00	ACTIVE	174	
223292	0 S ALU RD	3	5	10,350	\$215,000.00	ACTIVE	107	
223736	HONUA PLACE LOT#2 905 LEKEONA LOOP	3	3	8,461	\$179,000.00	ACTIVE	65	WALEHU

Source: ACM Consultants, Inc.

lot of 43,606 square feet. The site is located along Kilohana Drive in Kihei. Kilohana Drive acts as the boundary between Kihei town and the Wailea Resort. The Wailea Resort, which abuts Kihei on the south, is a 1,500-acre resort project that has achieved a stature similar to that of Amfac's Kaanapali Resort area in West Maui. The project is complete and all lots were sold prior to completion.

Kilohana Mauka consists of approximately 17.6 acres situated on the lot adjacent to the Keawakapu Subdivision in Kihei. Towne Brown LLC plans 72 single family homesites ranging from 7,500 to 9,500 square feet. A Special Management Area Use Permit was requested on October 10, 2000. Construction has started.

Competitive Single-Family Lot Listings on Maui

Aside from the single-family lots available in the projects, the number of resale listings on Maui is a good indication of real estate market conditions. This market evidence is generally viewed as a "counter-cyclical" indicator, which means that it is typically lower in strong markets and higher in weak ones.

A search was done on the Maui Board of Realtors' Multiple Listing Service for active listings of single-family lots between 7,000 and 11,000 square feet in size. (See Table 3, Page 34) In Central Maui, there are 6 listings of parcels in this size range with 2 being in Maui Lani, and 4 in Wailuku. In the Kihei region, there are a total of nine (9) listings, and four (4) listings in the Wailea/Makena area. In the Lahaina region, there are three (3) listings in Lahaina; four (4) listings in Kaanapali; and, two (2) in Kaanapali/Kapalua area. These two parcels, however, are not viewed as competitive properties since they are being listed for \$975,000 to \$1,100,000.

RESIDENTIAL DEMAND CHARACTERISTICS

Demand is analyzed from two perspectives: The first is "demographic" demand, the number of units needed for a given market or employment base. Second is "effective" demand, the financial demand equation which involves looking at the number of buyers who would be qualified and interested in purchasing single-family residential properties.

Population

Population growth on Maui over the last past 20 years (1980 to 2000) has been exceptionally high, and has outpaced the County's ability to provide adequate infrastructure and housing for this added number of people. Overall, population growth for the County of Maui during 1980 to 1990 was 41.67 percent (refer to Exhibit A at the end of this report). With this growth in population came a surge in real estate prices in the late 1980s. This increase, driven primarily by foreign

and domestic investment and speculation, put the price of homes in Maui County well above the reach of many local residents, and affordable housing has become a major concern to everyone.

Meanwhile, the 2000 census figures indicate that population in Maui County increased by 27.6 percent between 1990 and 2000. **Maui County is the fastest growing county in the state, and leading the growth is the South Maui region at 50.8 percent over the last 10-year period.** Central Maui (Kahului) is ranked third in the state in growth, with an increase of 19.3 percent. Maui County's resident population now stands at 128,094.

General Residential Sales Activity Island of Maui

The number of units sold is the most basic indicator of market activity and is useful in helping estimate the number of new units which a specific market segment may be capable of absorbing. The downturn in the economy between 1991 and 1998 led to development of low-priced housing on Maui. Zero-lot-line housing projects were popularized during this period as developers strived to make housing affordable to Maui residents. Since 1998, however, real estate began a strong recovery. As evidenced in the following section, prices and number of sales increased while marketing times decreased. The tables on the following pages illustrate the general market trends over the past ten (10) years on Maui.

Land: Sales of vacant land fell sharply after 1990 (298) to a level wavering around 100 to 150 sales for the next 6 years. Weakest sales, in terms of units sold, occurred in 1991 when only 116 properties were sold. In 1998, the number of land sales increased to 276 and in 1999, increased again to 408, reflecting a gain of 48 percent. Sales have fallen slightly since 1999 with 372 sales in the year 2000 and 318 sales in 2001. Average monthly days-on-market figures increased steadily from 67 in 1990 to 352 in 1997, but have fallen to 225 in 2002. Meanwhile, median prices have slowly regained ground from a low of \$173,458 in 1999 to \$269,691 in 2002, which is now near 1990 levels. (Refer to Tables 4 & 5 on Pages 38 & 39).

Single-Family: Sales of single-family properties show a decrease after 1990 (560) to a level wavering around 350 to 450 sales for the next 6 years. Weakest sales, in terms of units sold, occurred in 1995 when only 331 properties were sold. In 1997, the number of single-family sales increased to 507 and in 1998, exceeded 1990 results with a figure of 641. The number of sales in 1999 (965 units) was 51 percent more than the number of sales in 1998 (641). Sales were slightly higher in 2000 at 981 units sold, but leveled off in 2001 at

964 units and 978 units in 2002. Median prices in 2001 showed a 9.5 percent increase from \$275,620 in the year 2000, and reached a high for the past decade with a median of \$302,022. In 2002, the median price increased even more to a level of \$377,361, an enormous increase of 25 percent over 2001.

Average monthly days-on-market figures increased steadily from 67 in 1990 to 231 in 1997, but steadily fell to 137 in 2000 and has remained relatively level since that time. (Refer to Tables 6 & 7 on Pages 40 & 41).

Condominiums: Sales of condominium units fell sharply after 1990 (1,459) to a level wavering between 400 to 600 sales for the next 6 years. Weakest sales, in terms of units sold, occurred in 1993 when only 461 properties were sold. In 1997, however, the number of sales increased to 812 and up to 1,486 in 2000. In 2001, condominium sales declined 14 percent to 1,275 units, but rebounded in 2002 to 1,551 sales. Average monthly days-on-market figures increased steadily from 77 in 1990 to 230 in 1996, but has decreased considerably to 134 days by the end of 2002. Meanwhile, median prices fell, with an overall change of -7.0 percent between 1990 and 1999; however, since 1999 the average monthly median price has increased 24 percent to \$201,623 in 2002. (Refer to Tables 8 & 9, Pages 42 & 43).

The monthly 2002 figures for vacant land, single-family and condominium are shown in Table 10, Page 44.

TABLE 4

ACM Consultants, Inc.

**SALES STATISTICS FOR VACANT LAND
MLS RESALE DATA, ISLAND OF MAUI**

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Jan	7	11	7	7	7	6	5	24	20	28	29	15
Feb	7	10	9	13	8	10	12	21	22	25	29	14
Mar	4	16	11	18	11	12	15	17	38	34	32	33
Apr	4	10	7	14	12	10	19	22	29	24	20	42
May	7	13	8	19	12	11	22	24	38	30	25	36
Jun	16	9	14	15	8	12	11	17	48	45	26	39
Jul	22	7	7	14	6	12	12	25	27	46	46	31
Aug	7	6	4	7	11	13	17	19	37	29	32	38
Sep	20	9	5	9	11	6	14	29	28	25	21	47
Oct	4	11	13	10	8	16	11	29	41	31	20	48
Nov	7	4	15	8	14	5	16	19	35	26	20	29
Dec	2	14	21	14	10	13	28	30	47	29	18	23
TOTAL	116	120	121	148	118	126	182	276	408	372	318	393

**Median Sale Price by Month (Land)
(1991 to 2002) (USD)**

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Jan	\$185,000	\$220,000	\$175,000	\$185,000	\$203,000	\$138,750	\$252,500	\$168,500	\$168,000	\$185,832	\$320,000	\$282,760
Feb	\$205,000	\$200,000	\$180,000	\$130,000	\$203,750	\$165,500	\$172,500	\$225,000	\$172,500	\$230,500	\$250,000	\$315,000
Mar	\$195,000	\$207,500	\$215,000	\$299,000	\$265,000	\$197,500	\$170,000	\$180,000	\$150,000	\$230,000	\$257,500	\$275,000
Apr	\$203,750	\$277,500	\$222,500	\$221,500	\$237,500	\$193,750	\$230,000	\$442,500	\$155,000	\$215,000	\$199,480	\$301,501
May	\$179,000	\$190,000	\$174,250	\$175,000	\$265,000	\$172,500	\$181,250	\$330,000	\$139,500	\$187,500	\$293,000	\$237,780
Jun	\$193,750	\$185,000	\$215,000	\$200,000	\$250,000	\$172,000	\$190,000	\$180,000	\$115,000	\$210,000	\$260,000	\$200,000
Jul	\$206,500	\$290,000	\$235,000	\$171,500	\$490,000	\$148,000	\$170,750	\$150,000	\$180,000	\$227,500	\$205,000	\$205,000
Aug	\$200,000	\$202,000	\$100,750	\$187,500	\$185,000	\$180,000	\$182,500	\$150,000	\$184,000	\$240,000	\$250,000	\$309,500
Sep	\$234,000	\$232,500	\$165,000	\$300,000	\$282,000	\$167,500	\$148,500	\$149,000	\$192,500	\$197,000	\$220,000	\$260,000
Oct	\$230,000	\$170,000	\$175,000	\$178,750	\$267,500	\$255,000	\$285,000	\$159,000	\$225,000	\$229,000	\$248,500	\$284,775
Nov	\$265,000	\$370,000	\$175,000	\$173,600	\$170,000	\$175,000	\$204,500	\$169,000	\$185,000	\$275,000	\$321,000	\$242,500
Dec	\$205,000	\$285,500	\$175,000	\$251,250	\$417,500	\$183,000	\$141,900	\$159,000	\$205,000	\$215,000	\$237,500	\$342,500
AVERAGE	\$208,500	\$235,833	\$183,958	\$202,758	\$269,688	\$179,042	\$192,450	\$205,167	\$173,458	\$220,194	\$255,165	\$269,691

**Median Days on the Market by Month (Land)
(1991 to 2002) (D)**

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Jan	133	52	112	382	104	292	327	165	134	263	209	299
Feb	102	128	191	34	140	216	218	309	318	232	233	309.5
Mar	59	167	136	203	183	385	1179	307	334	238	210	275.5
Apr	185	222	355	240	297	291	219	434	348	405	207	215
May	86	162	78	278	247	248	280	437	241	235	204	212
Jun	88	179	224	149	71	227	229	183	357	233	226	236
Jul	183	101	204	171	137	231	223	205	298	249	126	258
Aug	121	201	88	241	378	401	359	263	370	243	270	259
Sep	153	215	307	172	429	570	313	226	291	189	234	148
Oct	170	238	143	176	308	248	345	268	245	214	276	195
Nov	35	106	139	101	473	83	214	183	259	206	202	148
Dec	284	150	126	176	345	314	220	244	345	231	250	139
AVERAGE	132	160	175	194	259	292	344	269	295	245	221	225

TABLE 5

ACM Consultants, Inc.

VACANT LAND SALES 1991 - 2002

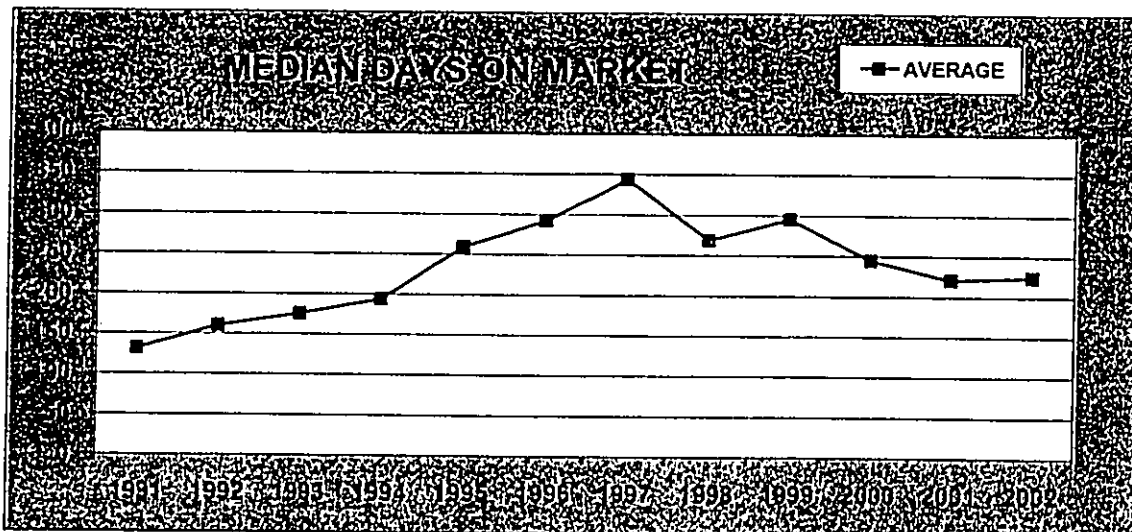
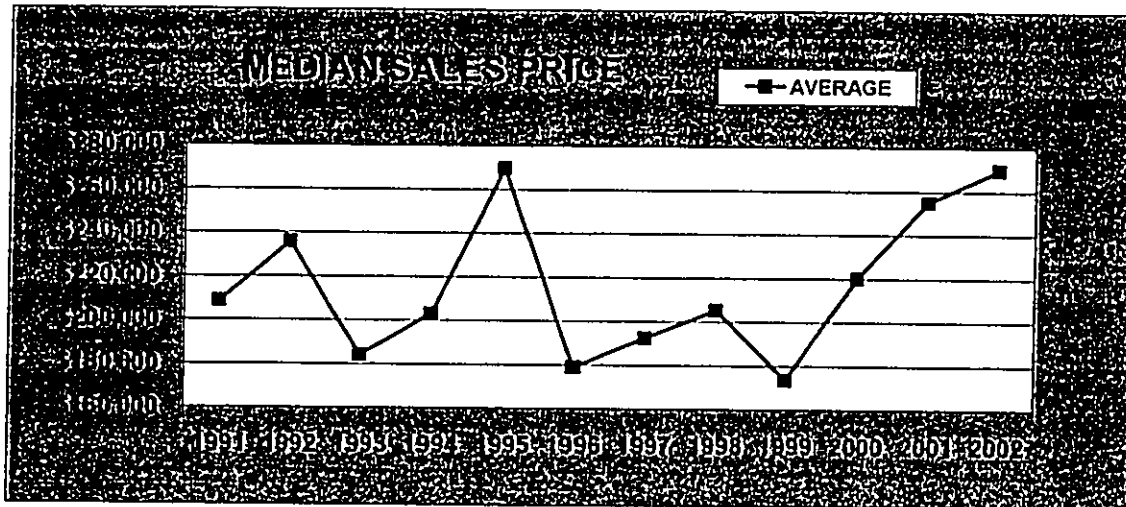
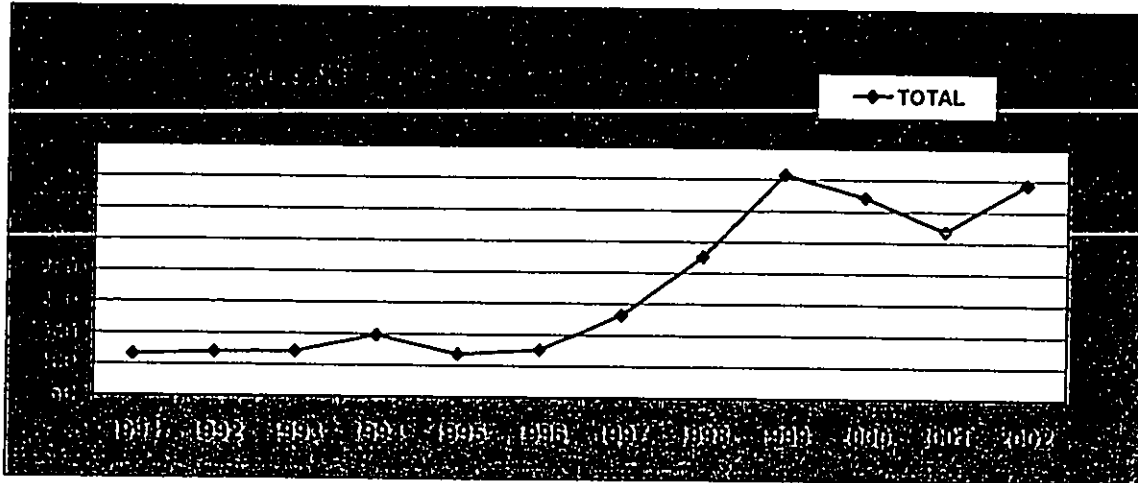


TABLE 6

ACM Consultants, Inc.

**SALES STATISTICS FOR SINGLE FAMILY PROPERTIES
MLS RESALE DATA, ISLAND OF MAUI**

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Jan	24	40	13	31	16	31	29	42	59	75	72	63
Feb	21	28	23	22	20	30	30	38	58	85	60	64
Mar	30	22	24	41	28	33	39	55	93	102	98	77
Apr	34	27	33	30	29	30	37	41	99	89	78	85
May	54	38	32	40	29	35	54	69	88	84	97	87
Jun	45	45	34	38	32	38	41	67	93	95	121	79
Jul	41	39	37	37	33	43	48	64	86	82	74	110
Aug	47	32	26	42	32	50	48	39	67	89	102	80
Sep	36	30	29	28	25	40	42	61	92	74	75	74
Oct	30	29	30	23	33	48	54	48	83	68	70	93
Nov	42	23	31	31	20	32	46	47	83	77	57	88
Dec	28	29	49	41	34	41	39	70	64	61	62	76
TOTAL	430	382	361	404	331	451	507	641	965	981	964	978

Median Sales Price by Month (Single Family) 1991 to March 2002												
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Jan	\$266,000	\$292,500	\$271,250	\$255,000	\$265,000	\$293,000	\$300,750	\$277,500	\$264,000	\$275,000	\$310,760	\$310,000
Feb	\$290,000	\$287,000	\$267,000	\$255,000	\$280,000	\$278,500	\$248,750	\$287,500	\$251,209	\$252,000	\$313,760	\$363,500
Mar	\$305,000	\$270,000	\$259,500	\$325,000	\$272,500	\$260,000	\$265,000	\$257,500	\$244,900	\$279,000	\$351,250	\$400,000
Apr	\$259,500	\$312,000	\$280,000	\$291,500	\$262,500	\$277,500	\$234,000	\$250,000	\$250,000	\$279,000	\$325,000	\$375,000
May	\$248,975	\$280,000	\$281,250	\$273,000	\$270,000	\$265,000	\$300,000	\$239,000	\$233,500	\$288,000	\$265,000	\$369,000
Jun	\$280,000	\$265,000	\$320,000	\$261,750	\$309,000	\$279,125	\$240,000	\$295,000	\$265,500	\$289,000	\$300,000	\$365,000
Jul	\$265,000	\$295,000	\$285,000	\$268,000	\$280,000	\$285,000	\$237,000	\$270,000	\$283,500	\$272,500	\$270,000	\$375,000
Aug	\$290,000	\$292,000	\$254,000	\$277,500	\$246,250	\$264,500	\$255,500	\$249,500	\$234,305	\$270,000	\$258,750	\$352,000
Sep	\$295,000	\$274,750	\$305,000	\$267,500	\$311,000	\$266,000	\$249,000	\$252,000	\$258,500	\$269,050	\$265,000	\$437,000
Oct	\$387,500	\$305,000	\$275,000	\$300,000	\$270,000	\$275,000	\$235,100	\$272,150	\$251,850	\$269,000	\$278,250	\$392,440
Nov	\$272,500	\$275,000	\$280,000	\$270,000	\$265,000	\$212,500	\$252,450	\$240,000	\$255,000	\$280,000	\$387,000	\$388,500
Dec	\$287,500	\$295,000	\$250,000	\$252,000	\$252,000	\$255,000	\$220,200	\$242,227	\$285,000	\$285,000	\$319,500	\$400,890
AVERAGE	\$287,248	\$286,938	\$277,333	\$274,888	\$273,604	\$287,427	\$256,879	\$259,196	\$252,874	\$275,629	\$302,022	\$377,361

Median Days on the Market By Month (Single Family) 1991 to March 2002												
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Jan	89	79	120	125	92	185	156	199	164	163	128	122
Feb	130	121	241	118	89	178	191	219	162	159	145	164
Mar	115	113	184	174	184	213	235	286	136	175	141	149.5
Apr	113	93	206	152	184	219	368	181	180	141	149	170
May	115	100	129	193	185	250	258	261	135	122	137	139
Jun	108	122	152	124	209	274	250	175	141	160	153	176
Jul	108	140	131	105	295	287	222	138	174	110	135	125
Aug	130	188	215	140	270	224	193	169	154	142	155	131
Sep	85	58	180	199	205	242	171	178	168	108	129	109
Oct	120	132	165	115	300	242	189	178	129	124	154	125
Nov	70	139	153	150	271	218	310	176	182	118	138	125
Dec	74	140	135	154	234	221	225	145	148	119	132	110
AVERAGE	103	119	168	146	210	229	231	192	156	137	141	137

TABLE 7

ACM Consultants, Inc.

SINGLE FAMILY SALES 1991 - 2002

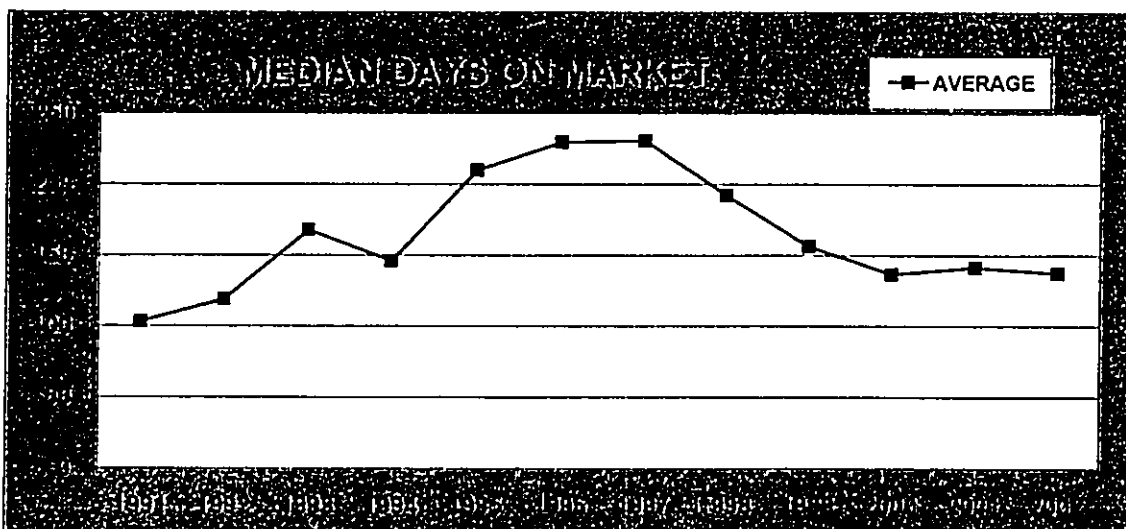
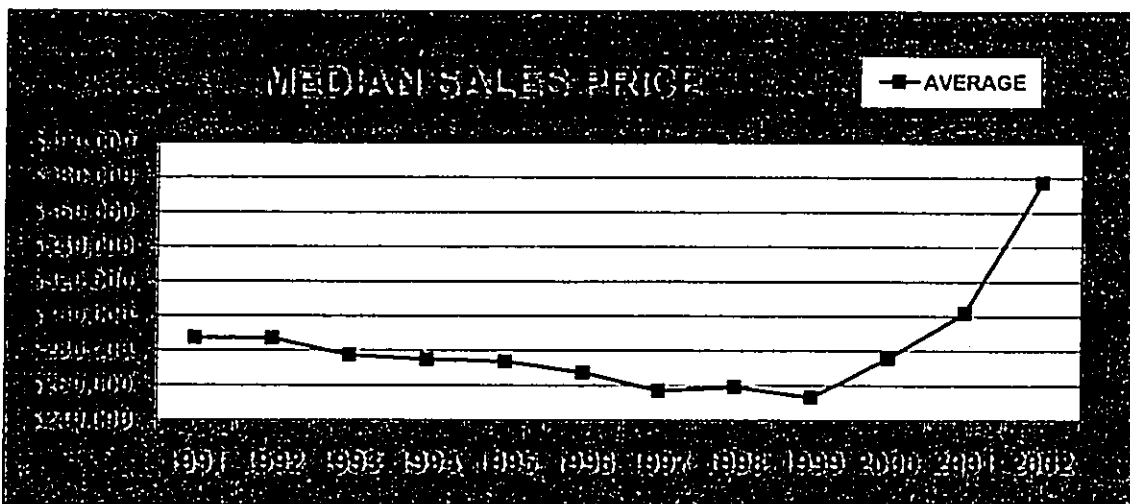
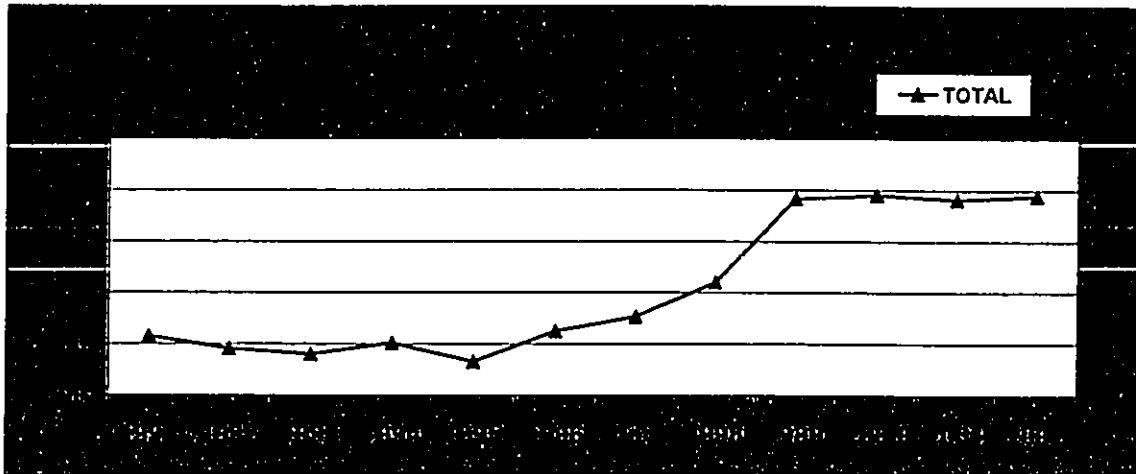


TABLE 8

ACM Consultants, Inc.

SALES STATISTICS FOR CONDOMINIUM PROPERTIES
MLS RESALE DATA, ISLAND OF MAUI

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Jan	40	45	31	38	42	40	59	63	64	116	127	70
Feb	34	35	33	36	41	40	60	51	74	113	102	111
Mar	31	44	38	58	46	51	82	98	101	131	141	131
Apr	52	33	44	50	51	50	74	97	134	129	122	133
May	59	33	39	87	66	62	72	77	121	142	133	145
Jun	51	62	40	50	36	56	56	100	121	162	117	151
Jul	57	53	36	55	34	40	59	95	130	114	107	145
Aug	72	46	46	56	44	48	66	75	132	132	125	143
Sep	57	40	28	44	29	39	61	82	125	102	78	141
Oct	41	38	41	40	34	48	92	85	103	111	100	138
Nov	41	21	36	43	36	42	52	71	112	124	62	119
Dec	58	46	49	35	36	61	79	105	131	110	61	124
TOTAL	593	496	461	592	495	577	812	999	1348	1486	1275	1551

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Jan	\$166,000	\$170,000	\$158,000	\$165,000	\$215,000	\$182,500	\$153,000	\$160,000	\$170,500	\$193,750	\$194,000	\$191,000
Feb	\$164,500	\$162,300	\$155,000	\$223,750	\$160,050	\$148,000	\$188,000	\$175,000	\$158,050	\$184,000	\$215,500	\$245,000
Mar	\$175,000	\$163,200	\$187,500	\$161,200	\$140,000	\$200,000	\$165,000	\$184,250	\$152,000	\$180,000	\$175,600	\$238,000
Apr	\$148,750	\$149,000	\$182,500	\$195,500	\$157,000	\$198,750	\$169,750	\$161,000	\$179,000	\$205,000	\$173,750	\$225,000
May	\$180,000	\$166,000	\$160,000	\$154,000	\$170,000	\$172,500	\$133,050	\$175,000	\$155,000	\$160,450	\$215,000	\$199,000
Jun	\$162,000	\$185,000	\$175,000	\$217,500	\$170,000	\$195,000	\$157,500	\$165,750	\$178,000	\$166,500	\$185,000	\$187,975
Jul	\$147,500	\$169,000	\$217,500	\$167,000	\$192,500	\$135,500	\$132,500	\$170,000	\$169,000	\$200,000	\$242,000	\$215,000
Aug	\$166,750	\$150,000	\$178,500	\$164,500	\$150,000	\$185,000	\$165,750	\$150,000	\$184,950	\$179,000	\$179,500	\$179,000
Sep	\$152,500	\$170,000	\$147,500	\$170,000	\$144,950	\$158,000	\$142,500	\$162,450	\$155,000	\$220,000	\$194,750	\$159,000
Oct	\$165,000	\$161,250	\$180,000	\$198,750	\$142,500	\$171,000	\$147,500	\$155,000	\$140,900	\$160,000	\$163,250	\$205,000
Nov	\$185,000	\$185,000	\$172,500	\$162,500	\$137,200	\$157,500	\$147,000	\$160,000	\$150,000	\$170,000	\$189,500	\$170,000
Dec	\$175,000	\$161,250	\$195,000	\$187,500	\$150,000	\$170,000	\$150,000	\$163,750	\$160,000	\$152,000	\$155,000	\$205,500
AVERAGE	\$165,667	\$166,000	\$175,750	\$180,600	\$160,767	\$172,813	\$154,296	\$165,183	\$162,700	\$180,892	\$180,321	\$201,623

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Jan	116	133	314	219	183	259	262	263	232	167	152	155.5
Feb	70	102	154	172	191	218	239	231	273	142	119	185
Mar	133	162	220	172	303	178	271	235	226	147	113	130
Apr	94	116	225	247	164	279	237	241	184	118	114	116
May	117	163	309	210	144	279	203	168	240	117	129	127
Jun	114	142	209	137	126	225	214	234	213	139	133	141
Jul	126	168	151	183	250	189	240	230	192	143	123	125
Aug	157	172	172	215	296	223	179	257	187	125	135	135
Sep	138	188	265	118	322	192	288	218	182	156	167	119
Oct	133	157	261	198	343	237	251	193	190	138	148	117
Nov	190	199	183	266	289	233	259	181	152	139	164	116
Dec	130	218	370	302	333	252	179	251	202	130	155	140
AVERAGE	127	160	236	203	245	230	235	225	206	138	138	134

TABLE 9

ACM Consultants, Inc.

CONDOMINIUM SALES 1991 - 2002

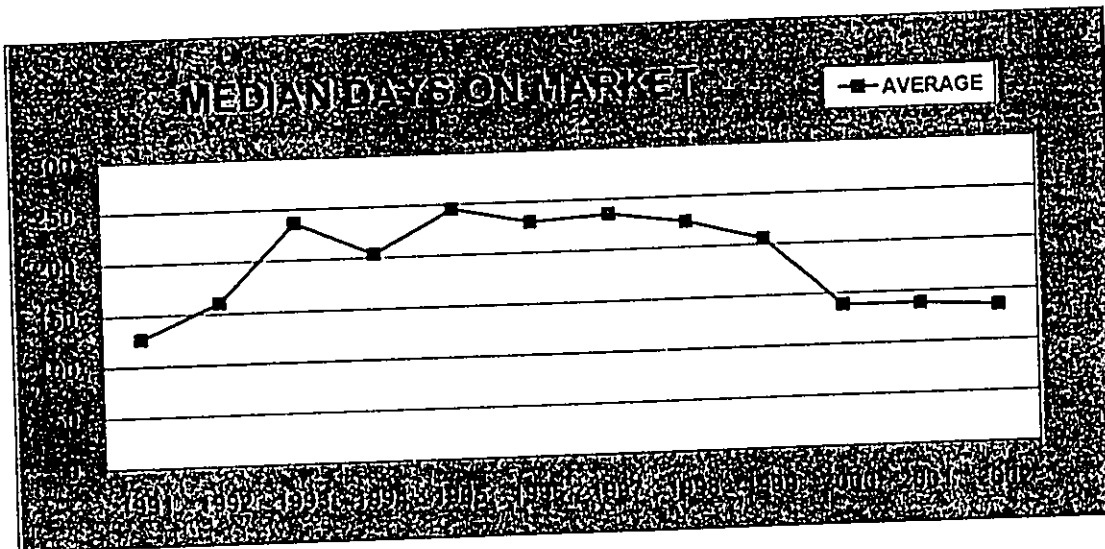
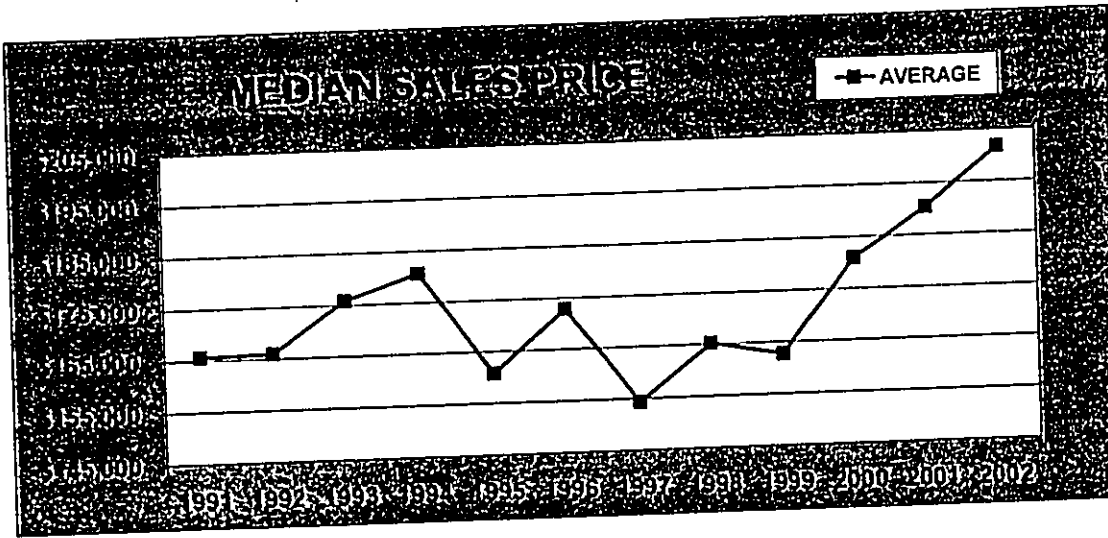
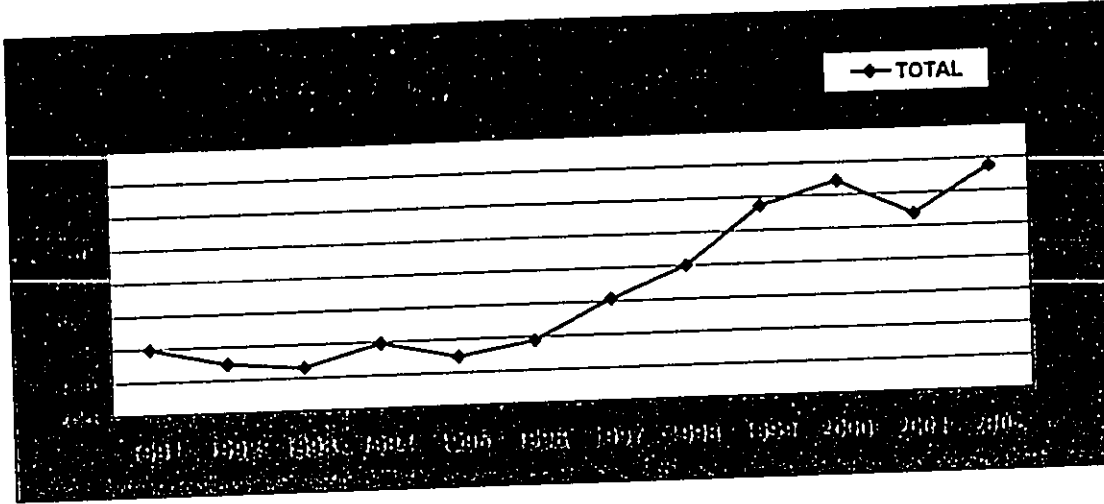
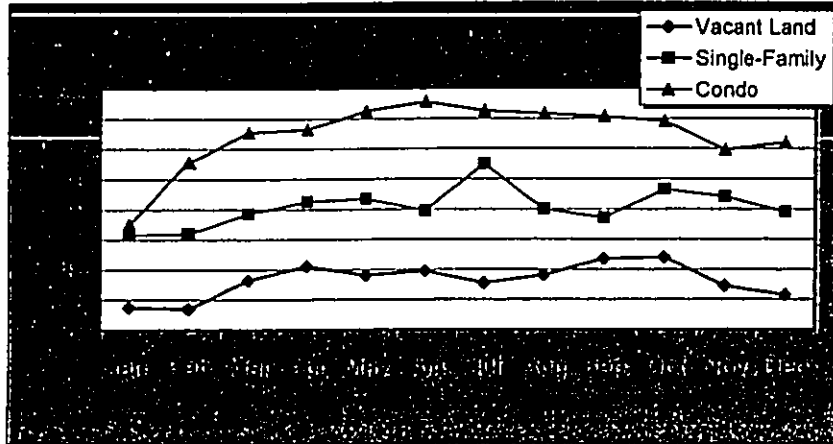


TABLE 10

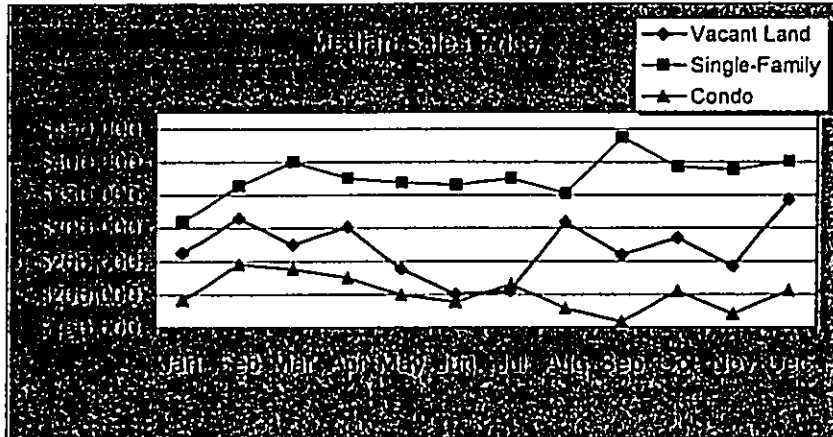
ACM Consultants, Inc.

SALES STATISTICS FOR MAUI 2002 YEAR-TO-DATE

2002	Vacant Land	Single-Family	Condo
Jan	15	63	70
Feb	14	64	111
Mar	33	77	131
Apr	42	85	133
May	36	87	145
Jun	39	79	151
Jul	31	110	145
Aug	36	80	143
Sep	47	74	141
Oct	48	93	138
Nov	29	88	119
Dec	23	78	124



2002	Vacant Land	Single-Family	Condo
Jan	\$262,760	\$310,000	\$191,000
Feb	\$315,000	\$363,500	\$245,000
Mar	\$275,000	\$400,000	\$238,000
Apr	\$301,501	\$375,000	\$225,000
May	\$237,760	\$369,000	\$199,000
Jun	\$200,000	\$365,000	\$187,975
Jul	\$205,000	\$375,000	\$215,000
Aug	\$309,500	\$352,000	\$179,000
Sep	\$260,000	\$437,000	\$159,000
Oct	\$284,775	\$392,440	\$205,000
Nov	\$242,500	\$388,500	\$170,000
Dec	\$342,500	\$400,890	\$205,500



2002	Vacant Land	Single-Family	Condo
Jan	299	122	156
Feb	310	164	185
Mar	276	150	130
Apr	215	170	116
May	212	139	127
Jun	236	176	141
Jul	258	125	125
Aug	259	131	135
Sep	148	109	119
Oct	195	125	117
Nov	148	125	116
Dec	139	110	140

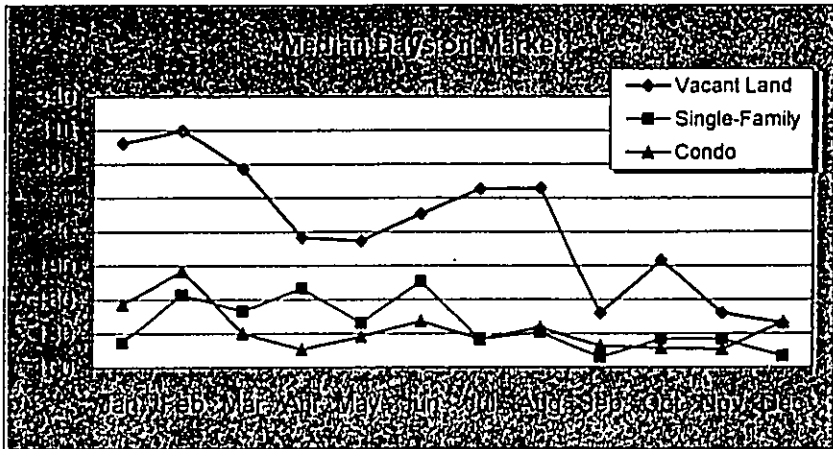


TABLE 11

SUMMARY OF PROJECT SALES
Island of Maui

1	Piilani Village Phase II Kihei, Maui, Hawaii Spencer Homes	114 House and Lot Packages	Single Family	4,441 avg	980 to 1,780 sf	\$179,900 to \$255,793	19	114	6.00
2	Nanea at Kehalani Wailuku Spencer Homes	80 House and Lot Packages	Single Family	6,030 to 8,050 sf	1,144 to 1,717 sf	\$179,900 to \$255,793	8 11/98-7/98	78	9.75
3	Wailuku Parkside Wailuku SCD International	119 House and Lot Packages	Single Family	6000 to 11,502 sf	1,267 to 1,694 sf	\$179,900 to \$285,000	17 12/99-5/01	119	7.00
4	Kamaole Heights Kihei Everett Dowling	40 Lots	Single Family	10,040 to 14,842 sf	N/A	\$129,000 to \$142,500	5 5/99-10/99	40	8.00
5	Maui Lani The Islands (Phase I) Kahului Schuler Homes Hawaii Maui Lani Partners	99 House and Lot Packages 57 41	Single Family	5,647 to 12,522 sf		\$339,500 to \$410,500	10 16	25 32	2.50 2.00
6	Olena at Kehalani Wailuku, Maui SCD Development	31 Lots	Single Family		1,302 to 1,681 sf	\$245,000 to \$318,000	7	30	4.29
7	Kauhale Mahinahina Lahaina K&H Development	19 House and Lot Packages	Single Family	3,000 to 6,000 sf		\$225,000 to \$255,000	3 3/99-5/99	18	6.00
8	Village at Mahinahina Lahaina K&H Development	26 House and Lot Packages	3,000 to 6,000 sf	3,000 to 6,000 sf	1,111 sf to 1,333 sf	\$213,000 to \$245,000	4 12/97-03/98	23	5.75
9	Kahananui Village Lahaina K&H Development	26 House and Lot Packages	3,000 to 6,000 sf	3,000 to 6,000 sf	984 sf to 1,168 sf	\$190,000 to \$222,000	4 05/96-09/96	24	6.00

Source: ACM Consultants, Inc.

Project Sales on Maui

New developments like the subject often create excitement in the market, especially when the product is perceived to offer a particular value to the buyer. Project sales on Maui, especially in subdivisions at the low end of the price range, have met good demand from the market. As shown below, market absorption rates have ranged between 5.00 to 11.00 units per month in the most recent projects. The following is an overview of the single-family sales at these recent subdivisions (Refer to Table 11 on Page 45 for a summary).

Residential Subdivision Sales

Olena at Kehalani, is a 31-lot subdivision that is currently under construction. The lots, which average 6,773 square feet in size, are being sold together with one of four different house models. Pricing within this subdivision ranges from \$245,000 to \$314,000. Marketing began in May 2001 and 30 homes were sold as of January 2002. Over the seven-month period, this equated to a sales rate of **4.29 units per month**.

Nanea at Kehalani is located in a planned community in Wailuku, the County Seat. The project, which consists of 80 single-family homes, began marketing in May 1998. Construction began the next month. Today, all 80 units are built and 78 sales have recorded. **The sales began closing on November 20, 1998 and, within an 8-month period, 78 sales were recorded, at an average rate of 9.75 sales per month.** There were six house models available to the buyers at Nanea. The plans consisted of 3 or 4 bedrooms and living areas are 1,144 sf, 1,205 sf, 1,414 sf, 1,562 sf, 1,694 sf and 1,717 sf. The prices for each model varied according to buyer-selected upgrades. The price ranges are listed below:

<u>Living Area</u>	<u>BR</u>	<u>Bath</u>	<u>Range of Sales Prices</u>
1,144 sq. ft.	3	2	\$179,900 to \$202,788
1,205 sq. ft.	3	2	\$179,900 to \$219,900
1,414 sq. ft.	3	2	\$183,998 to \$212,664
1,562 sq. ft.	3	2	\$192,824 to \$241,730
1,694 sq. ft.	4	3	\$221,450 to \$249,500
1,717 sq. ft.	3 or 4	2.5	\$240,580 to \$255,793

As sales incentives, all of the homes include a landscaped front yard as a part of the purchase. The initial phase of 24 buyers received a free central air conditioning system and a gutter system at the front of the house. Buyers in Phase 2 received a free washer, dryer and refrigerator (valued at \$2,000). Phase 3 buyers received a credit of \$1,000 that could be used for any purpose.

Maui Lani, which consists of about 1,000 acres, is planned to include approximately 3,000 residential units together with a golf course, schools, churches, multi-family and commercial developments. Five phases have been developed to date, consisting of 257 home sites. **Phase IV**, which consists of 75 house lots, began closing sales in May 1999. **In 12 months, all 75 lots closed (6.25 lots per month).** Prices for the vacant lots have ranged from \$79,000 to \$92,800.

Although this project started slowly, real estate agents at the Maui Lani on-site office have indicated that sales reservations have been brisk lately. Maui Lani's recently completed selling **Phase V**, Grand Fairways North. This phase consisted of about 80 homesites ranging from 8,000 to 11,000 square feet. Prices for the vacant lots range from \$115,000 to \$120,000 for interior lots and up to \$179,000 for golf course lots.

The Islands @ Maui Lani - According to Schuler Homes Hawaii, who is selling house and lot packages, 25 interior lots have closed since March 29, 2001. Currently the remaining 33 lots packages are currently under construction. This equates to approximately **2.50 lots closing per month**. Maui Lani Development LLC is developing the golf course lots and has reported that of the 41 lots available in Phase I, 32 have closed since September 2000. This equates to a **closing rate of approximately 2.00 lots per month**. There are 36 golf course lots in Phase II and as of February 2002, eight (8) lots have been sold. The developer has initiated plans for a new phases, called The Bluffs. This phase has not been finalized and will be located within a gated community.

Wailuku Parkside consists of 119 finished homesites ranging in size from 6,000 to 11,502 square feet. The first phase which consisted of 15 units began writing sales contracts in December 1999 and the first closings took place in late November or early December, 2000. Prices started at \$179,900 to \$250,000, but has progressively increased with each phase. A comparison of the original sales prices in December 1999 with today's prices is shown below. The developer has indicated that the sales process is complete, and within a 17-month time frame from December 1999, all 117 homes have closed. This amounts to an absorption rate of 7.00 units per month.

	<u>Original Price</u>	<u>Current Price</u>
Model A	\$179,900	\$215,000
Model B	\$210,000	\$230,000 - \$240,000
Model C	\$225,000	\$250,000 - \$265,000
Model D	\$250,000	\$275,000 - \$290,000

The "economy" range of under-\$275,000 has also experienced impressive activity in Lahaina, spurred primarily by the zero-lot-line concept. As a result of the adoption of the R-0 Zero Lot Line District zoning ordinance, three small zero-lot-line subdivisions have been developed in Lahaina with a high degree of success. These projects are outlined below.

Kamaole Heights is located in Kihei. The project is a 40-lot subdivision on the hillside makai of the new Kihei School and mauka of Kamaole Beach Park I. The project sold all the lots within a five-month period. The lots range in size from 10,040 square feet to 14,842 square feet and sold at prices ranging from \$129,000 to \$142,500. A bulk sale to developer Jessie Spencer accounted for 13 of the property sales and at a price of \$115,000 per lot. **Based on the five month time period from the first recording in March, the sales trend has been at 8 units per month.** Resales within the project have also been occurring. To date there have been four recordings with percentage increases ranging from 9.47 percent to 23.91 percent with an average of 15.20 percent.

Kauhale Mahinahina is a 19-unit, zero-lot-line subdivision constructed in the community of Mahinahina in Lahaina. It is situated along Mahinahina Gulch between Lower Honoapiilani Road and Honoapiilani Highway. This community is unique in that it is a private, gated subdivision. Homes are attached at the garage or entirely detached. Views are not available from any of the home sites, and the preliminary price range is approximately from \$225,000 to \$255,000. Closings began at the beginning of March in 1999 with 18 sales recorded by the end of May 1999. This equates to approximately **6.00 units sold per month.**

Village at Mahinahina was the second zero-lot-line project for K&H Kahana, Inc. This subdivision possesses lot sizes ranging from 3,000 to 6,000 square feet and the living areas of the homes ranged from 1,111 to 1,333 square feet. Sales prices ranged from \$213,000 to \$245,000 and, to date, 25 of the 26 properties closed escrow over the 5-month period between December 5, 1997 and April 30, 1998. This equates to a sales rate of **5.00 units per month.** It should also be noted that the single remaining was withheld from the market but was later sold in October 1998.

Kahananui Village, developed in 1995 by K&H Kahana, Inc., is located in the Lahaina region and consisted of 26 3-bedroom, 2-bath homes in a zero-lot-line subdivision. The lot sizes ranged from 3,016 to 5,655 square feet, and the homes had living areas of 984, 1,082 and 1,168 square feet. The initial sales prices ranged from \$190,000 to \$222,000. Kahananui Village did not require advertising to sell the

26 properties. Only a public notice was posted in the Maui News stating K&H Kahana, Inc.'s intent to develop a zero-lot-line subdivision in West Maui. From this public notice, and through word-of-mouth advertising, the project was pre-sold, and reservations for every lot was secured by the time the subdivision improvements were completed.

This project received final subdivision approval on June 5, 1996; however, the developers were able to commence closing the sales transactions prior to the final subdivision inspection, since this project had obtained "bonded" final subdivision approval. Twenty-four (24) house & lot transactions were closed during the approximate 4-month period between May 31, 1996 and September 9, 1996, immediately upon completion of the respective homes. Based on these sales, the absorption rate for this subdivision equates to **6.00 units per month**. The two remaining lots were retained by the two principal developers for themselves. These sales both closed in January 1997 at prices of \$195,000 each. One property (Lot 21) was quickly resold for \$224,500 on March 31, 1997. The other (Lot 18) was later sold at a price of \$227,500.

The Wailea Resort is a resort area that is a distinctly separate and high-end market. Prices for house lots in Wailea are significantly higher and would not be judged to be competition for a Wailuku subdivision. Two developments have recently gone on the market in Wailea and their sales are summarized below.

Wailea Fairway Villas is a 118-unit condominium project located on the golf course. The project began closing sales in March 1999 and as of August 1st, 2000, the entire project is sold. **This activity equates to an absorption rate of 7.38 units per month.** The prices for these condominiums have ranged from \$214,000 to \$650,000. Resales within the project have also been occurring. To date there have been twelve recordings with percentage increases ranging from 10.37 percent to 42.38 percent with an average of 30.78 percent.

Wailea Highlands is a 24-lot subdivision with house lots ranging from 20,037 square feet to 30,308 square feet. Several of these lots border a golf course. Prices for these lots ranged from \$425,000 to \$595,000. Lots in this subdivision began selling in April 1998 and in two months, all lots had closed escrow. **This sales activity equates to 11 sales per month.** In late-2000 and early-2001, resales began occurring at prices ranging from \$900,000 to \$1,200,000.

Vacant House Lot Resales in Kihei

In order to further illustrate the market activity for vacant house lots in the subject's size range, a search was conducted on the Multiple

TABLE 12

SINGLE-FAMILY HOUSELOT RESALES SINCE SEPT. 2002
 7,000 to 11,000 Square Foot Lots
 Wailuku-Kahului, Maui, Hawaii

MLS #	District	Address	Zone	Sec	Plat	Par	SE	Original Price	Sale Price	Closing	Days	Count	Location
221290	Kahului	133 HULUHULU ST	3	7	85	45	7,841	\$150,000.00	\$159,900.00	1/2/2003	199	MAUI LANI	
215850	Kahului	THE ISLAND LOT 22	3	8	86	22	10,064	\$199,000.00	\$189,900.00	10/23/2002	570	THE ISLAND	
222646	Kahului	ISLAND PH2 LOT 1	3	8	7	139	10,133	\$199,900.00	\$199,900.00	10/2/2002	1	ISLAND	
222642	Kahului	ISLAND PH2 LOT 7	3	8	7	139	10,123	\$204,000.00	\$204,000.00	10/3/2002	2	ISLAND	
222408	Kahului	ISLAND PH2 LOT 5	3	8	7	139	10,077	\$204,000.00	\$204,000.00	11/29/2002	76	ISLAND	
221922	Kahului	ISLAND PH2 LOT 6	3	8	7	139	10,045	\$204,000.00	\$204,000.00	12/23/2002	144	ISLAND	
221654	Kahului	ISLAND PH2 LOT 3	3	8	7	139	10,100	\$204,000.00	\$204,000.00	12/3/2002	139	MAUI LANI	
221651	Kahului	ISLAND PH2 LOT 2	3	8	7	139	10,045	\$204,000.00	\$204,000.00	10/16/2002	91		
219032	Kahului	ISLAND PH2 LOT 4	3	8	7	139	10,041	\$204,000.00	\$204,000.00	11/29/2002	365		
223316	Kahului	1 THE ISLAND LOT #31	3	8	7	139	10,183	\$255,000.00	\$256,000.00	2/14/2003	84		
220945	Kahului	ISLAND AT MAUI LANI LOT 89	3	8	86	89	10,112	\$212,000.00	\$212,000.00	10/2/2002	144	ISLANDS	
215856	Kahului	THE ISLAND LOT 99	3	8	86	99	10,215	\$199,000.00	\$189,900.00	10/30/2002	577	THE ISLAND	
222287	Spreckelsv	WAIPIUA ST	3	8	78	30	10,000	\$235,000.00	\$235,000.00	9/4/2002	0		
220711	Wailuku	KILOU ST	3	2	20	47	7,627	\$172,000.00	\$172,000.00	11/8/2002	199	OCEANVIEW EST	
221177	Wailuku	516 POLULANI DR	3	5	14	6	10,000	\$230,000.00	\$217,500.00	10/4/2002	120	WAILUKU HEIGHT	
221499	Wailuku	588 KULAIWI DR	3	5	15	71	9,959	\$280,000.00	\$242,500.00	1/10/2003	193	WAILUKU HEIGHT	
222496	Wailuku	726 AUKAI ST	3	3	9	34	7,227	\$169,000.00	\$160,000.00	10/4/2002	11		
							Min	7,227	\$159,900.00				
							Max	10,215	\$256,000.00				
							Avg	9,635	\$203,447.06				
							Med	10,045	\$204,000.00				

Source: ACM Consultants, Inc.

Listing System (See Table 12, Page 50). The results indicated that there were 17 resales of lots between 7,000 and 11,000 square feet since September 2002. These sales ranged in price from \$159,900 to \$256,000 with an average sales price of \$203,000. List prices and sales prices are observed to be trending moderately upward in Central Maui over the past 2 to 3 years.

Marketing Status

Information provided to the appraiser has indicated that all 12 lots in Phase I of Waiolani Elua Subdivision have been reserved without any formal marketing program, and the total number of interested buyers in this subdivision easily number more than 50. This response was expected since there has been great interest in single-family subdivisions in recent years on Maui.

CONCLUSION

As previously stated, the Persian Gulf War and national recession began having its effects on Maui from about 1991 to 1997. Its impact has led to lower visitor figures and an overall lack of confidence in the economy. Although mortgage interest rates during this time frame were reasonable, residents were uncertain about their employment future and economic health of this island. It follows that real estate sales, requiring a hefty financial commitment, declined tremendously and prices up to 1997 to 1998 fell in most areas.

Judging from our market research and our experience in the current marketplace, it appears that Maui has made large positive steps in the real estate market over the past five years. Vacant land, single-family properties and condominiums all registered increases in the number of sales in 1997, 1998 and even larger increases in 1999. Sales volume for condominiums, single-family and vacant land are at their highest point in a decade. Median sales prices have also been on the increase, achieving their highest points for the past decade in 2002.

Our experience in the marketplace is that the affordable properties, falling in the range of, say, \$200,000 to \$300,000 for a single-family home, have provided the most number of sales on Maui. The only major ongoing project in Central Maui that is very successful at this time is Maui Lani. Two ongoing projects that are very successful in Kihei at this time are the Piilani Village II subdivision and Piilani Village III which is currently underway.

The recently completed Piilani Villages Phase II in Kihei recently closed all 114 units by December of 2001. Although it's a single family residential development, prices of the units began around \$179,000, the same range as the units offered by the subject. Their ability to absorb all 114 of their units between May 2000 (the beginning of construction) and December 2001 resulted in an absorption rate of approximately 6.00 units per month. This

continues to show the success of low priced residential development and demand for this type of product.

Piilani Village III has completed the subdivision infrastructure and is beginning to build homes. All 117 homes have been reserved and all of the reservations have been converted to sales contracts. Closings will occur as quickly as the homes can be built.

The proposed Waiolani Elua subdivision is being marketed at a time when there is very little vacant house lots on the market. The strength of the market activity is this project's prime advantage. Prior to the start of construction, and without the aid of any advertising, site office or any other solicitation, the developer reported that all of the 12 lots in Phase I are already reserved, and the entire list of interested buyers for lots in the subdivision easily numbered over 50.

Even if these lots were not already pre-sold, it appears that once the subdivision improvements are completed, the 25 lots should meet with good market reaction for the following reasons: (1) the rapid population growth of the greater Wailuku-Kahului region (2) a strong demand for house lots in the neighborhood; and (3) the increasing real estate activity and prices being experienced in Central Maui and on Maui in general. The project has already generated good interest and demand, and this interest is expected to continue.

In consideration of these market conditions and actual evidence being experienced at the subject, we have projected that Waiolani Elua will require approximately six (6) months to sell all 25 lots, after completion of a 6-month financing, construction and pre-sale period, representing an average absorption rate of 4.17 units per month.

In the Appraiser's opinion, our estimated absorption rate is appropriate in consideration of the state of the economy, the absence of comparable inventory in Wailuku, the competitiveness of the market, and the pricing and appeal of this proposed single-family subdivision with respect to its competition. In addition, the developers have shown the demand for this product by their ability to reserve all 12 lots in Phase I with the number of total interested buyers more than double the amount of available lots.

Appendix B

***Archaeological
Inventory Survey***

ASH

**ARCHAEOLOGICAL INVENTORY SURVEY
FOR THE PROPOSED WAIKAPU MAUKA SUBDIVISION
WAIKAPU AHUPUA'A, WAILUKU DISTRICT, MAUI ISLAND
(TMK 3-5-4:25, por.)**

by

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for

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ABSTRACT

Archaeological Services Hawaii, LLC (ASH) conducted an archaeological inventory survey on a 28.718-acre parcel of land in Waikapu *ahupua'a*, Wailuku District, Maui Island. The project area is being proposed for a residential subdivision. The objective of the current investigation was to determine the presence/absence, nature, extent, and significance of cultural resources in the project area. The scope of work for the current investigation, as required by the State of Hawaii Department of Land and Natural Resources, State Historic Preservation Division (SHPD), included limited subsurface testing (i.e. 6 backhoe trenches) and pollen analysis.

Results of the current investigation identified a segment of State Site 50-50-04-5197, the Waihe'e Ditch, in the project area. This ditch, constructed between 1905-1907, provides irrigation water to the sugarcane and pineapple fields. No other surface cultural remains or areas of exposed deposits were identified during the surface survey. Due to extensive previous disturbances from sugarcane and pineapple cultivation, Dr. Melissa Kirkendall of SHPD recommended that six backhoe trenches be selectively placed throughout the project area. At the direction of Dr. Kirkendall, three trenches were placed along and perpendicular to the Waihe'e Ditch, and three trenches were placed within Land Commission Awards (LCA). Trenches 1, 2 and 5 were placed adjacent to the Waihe'e Ditch, and Trenches 3, 4 and 6 were placed within the boundaries of L.C.A.'s and Grants.

No subsurface cultural remains or deposits were revealed in any of the trenches. Stratigraphic analysis revealed a three layer stratigraphic sequence consisting of alluvium derived from basalt of the West Maui volcano. Underlying the till zone was a transitional zone, designated as Layer Ib, consisting of a mixture of Layer I and Layer II soils. Underlying Layer II was Layer IIIa and Layer IIIb, consisting of rocky silt to silty clay probably deposited during flooding episodes from Waikapu Stream.

Site 50-50-04-5197, the Waihe'e Ditch, is recommended for preservation. Wailuku Agribusiness owns the ditch and the continuation of water flow through this ditch to supply irrigation to sugarcane and pineapple fields is not expected to change due to the Waiolani Mauka Subdivision. However, portions or the entire ditch may be enclosed into pipes and/or covered as is found in the Waiolani Subdivision located adjacent to the south of the subject parcel.

Based on the negative results of subsurface testing, no further archaeological work should be required by SHPD. Prior to commencing this project, Mr. Scott Nunokawa, the landowner's representative, and Ms. Lisa Rotunno-Hazuka of Archaeological Services Hawaii consulted with Dr. Kirkendall to determine if any archaeological investigations were going to be required by SHPD, and if so, ascertain the scope and purpose of these investigations. Following these discussions, SHPD determined that an inventory survey with limited subsurface testing and pollen analysis would be required, provided however, that if the results of testing showed an absence of subsurface cultural remains, SHPD would require no further archaeological work including monitoring.

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INTRODUCTION

At the request of Munekiyo & Hiraga, Inc., Archaeological Services Hawaii, LLC (ASH) of Wailuku, conducted an archaeological inventory survey on a 28.718-acre parcel of land in Waikapu *ahupua'a*, Wailuku District, Maui Island. The subject parcel is proposed for residential development. Field work was conducted on August 1, 2003, by Lisa Rotunno-Hazuka, B.A., and Jenny O'Claray, B.A. Jeffrey Pantaleo, M.A. served as Principal Investigator.

PROJECT AREA

The project area is located along the northeastern alluvial slopes of the West Maui mountains in Waikapu *ahupua'a*, Wailuku District, Maui Island (TMK 3-5-4:25, por.)(Fig. 1). It is bounded by Honoapiilani Highway to the east, Old Wailuku Road to the west, Waiolani Residential Development and Pilikana Place to the south, and a cane road to the north (Fig. 2).

ENVIRONMENT

The project area is situated on the northwestern margin of the isthmus of Maui Island. Terrain of the project area, artificially altered by sugarcane and pineapple cultivation, is relatively flat with Waikapu Stream to the south (Fig. 3). Waihee Ditch extends in a north-south direction through the central portion of the project area. Elevation ranges from 400-520 feet above mean sea level. Rainfall averages between 20-30 inches a year, predominantly occurring during the winter months between November and February. Vegetation in the project area includes fallow pineapple (*Ananas comosus*), *koa haole* (*Leucaena glauca*), and various shrubs and grasses.

Soils in the project area include Iao clay, 3-7% slopes, and Iao cobbly silty clay, 3-7% slopes. Iao clay, 3-7% slopes, occurs on smooth alluvial fans and valley fill. Permeability is moderately slow, runoff is medium, and erosion hazard is slight to moderate. This soil is used for sugarcane and homesites.

Iao cobbly silty clay, 3-7% slopes, is similar to Iao clay, 3-7% slopes, but with more cobblestones. Permeability is moderately slow, runoff is medium, and erosion hazard is slight to moderate. This soil is used for sugarcane and homesites.

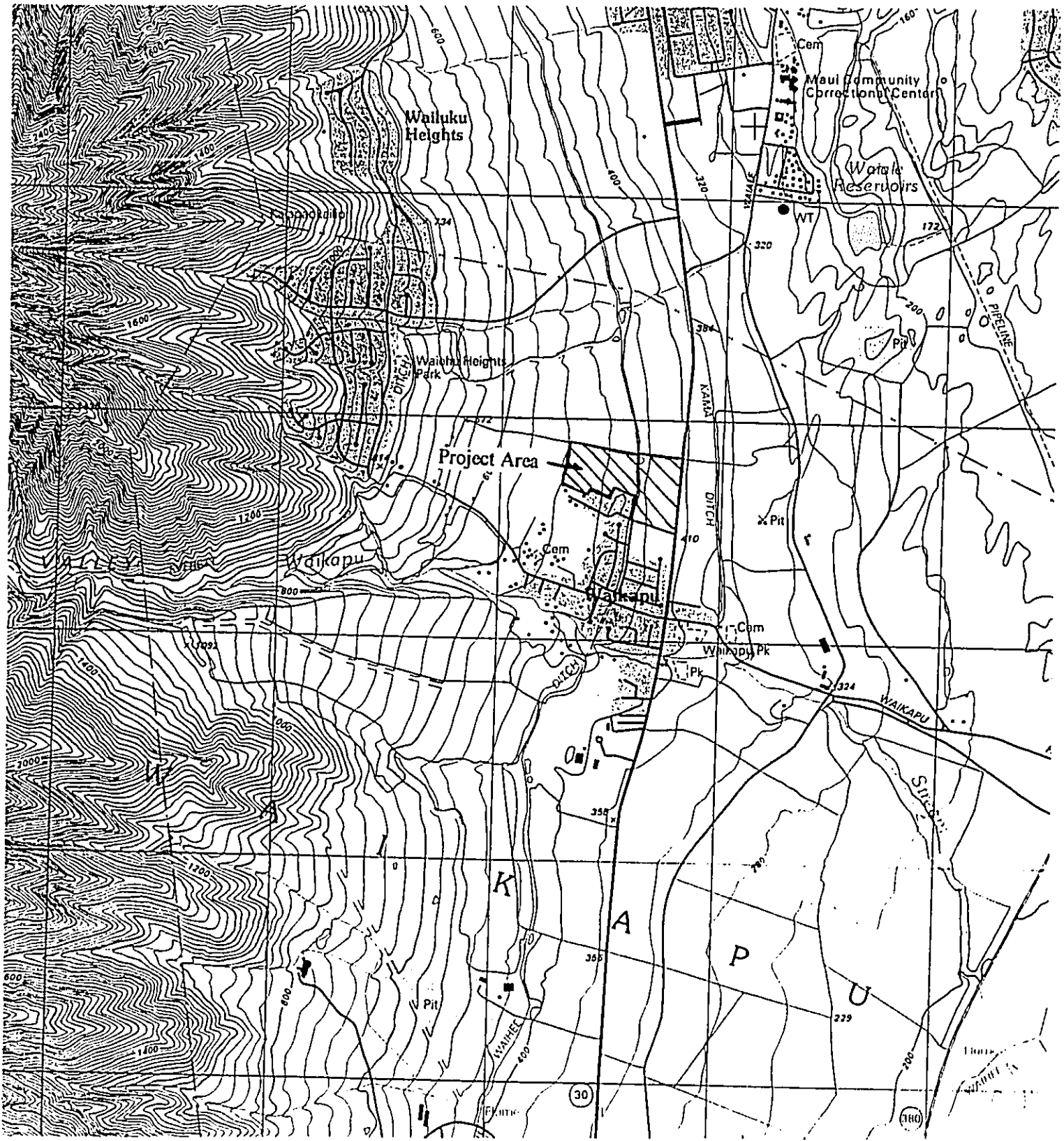


Figure 1. Location of Project Area on U.S.G.S. Wailuku Quad

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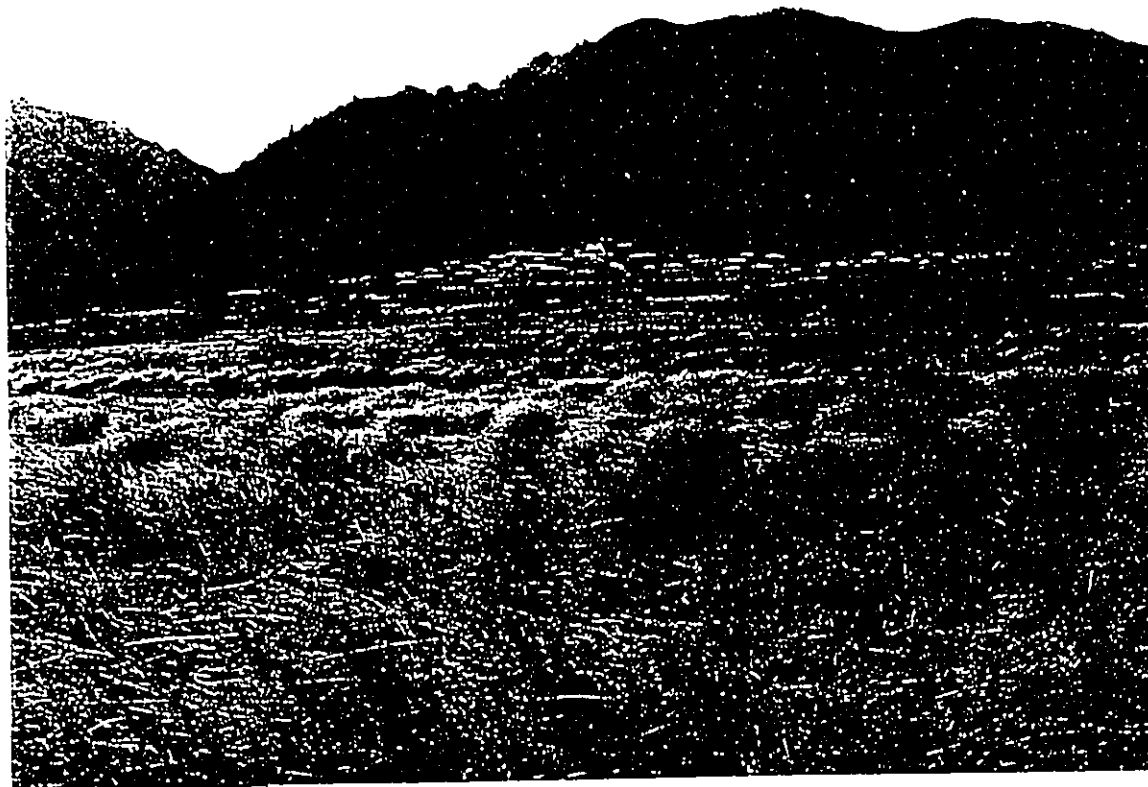
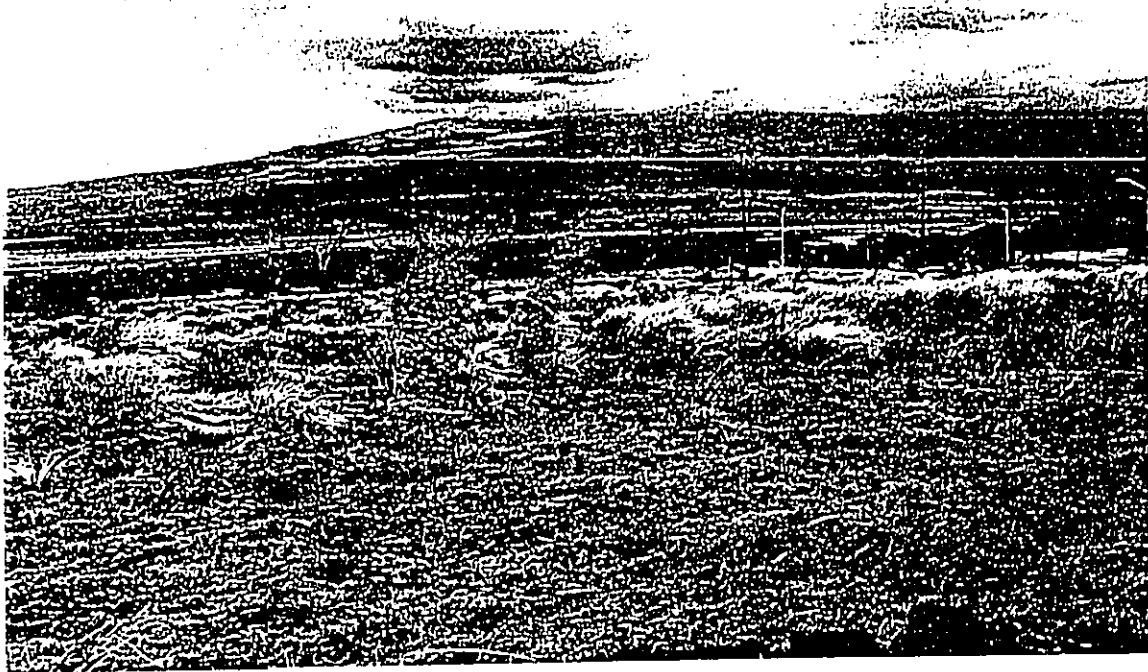


Figure 3. Top: Overview of Project Area, View to East. Bottom: Project Area, View to South

HISTORY

Historical research of Waikapu *ahupua'a* was summarized in Smith (in Brisbin et al. 1991) and Titchenal (1996). The reader is referred to these studies for detailed information. A brief summary of the history and land use of the subject project area is included here.

The current project area is located in Waikapu *ahupua'a*, in the district of Wailuku. The literal meaning of Waikapu is "water of the conch" (Pukui et al. 1974:223). Legends and oral traditions of Waikapu *ahupua'a* include the story describing the origin and meaning of Waikapu. During ancient times a great conch shell (*pu*) was hidden in a cave on the south side of the stream, about a mile inland. Hence the name *Wai-ka-pu*, "water-of-the-conch" (Handy and Handy 1972:497-498). Another account places the cave in the valley, a mile or more above the village. The conch was heard in the valley frequently, but never witnessed by the people. A dog, named Puapualenalena, coveted the conch and finally succeeded in stealing it after which its sound was not heard again.

A number of battles took place in the region, including Fornander's (1969:153) account of the battle of the Waikapu Commons or the *Ahulau ka pi'ipi'i i Kakanilua*. The following account describes the battle on the sand hills southeast of Wailuku:

...The detachment or regiment known as the Alapa, mustering 800 men, was selected for this hazardous expedition, and with high courage they started across the isthmus of Kamaomao, now known as the Waikapu common, as the legend says, "to drink the waters of Wailuku that day. "...Little did this gallant troop apprehend the terrible fate that awaited them...Kahekili distributed his forces in various directions on the Wailuku side of the common, and fell upon the Hawaii corps d'armee as it was entering among the sandhills southeast of Kalua, near Wailuku. After one of the most sanguinary battles recorded in Hawaiian legends,...the gallant and devoted Alapa was literally annihilated; only two out of the 800 escaped alive to tell Kalaniopuu of this Hawaiian Balaclava (Fornander 1969:153).

Early historical references to Waikapu indicated that the valleys of Waikapu and Wailuku supported substantial populations in the 17th century:

The first village of any note on the way to Wai-lu-ku is Wai-ka-pu. It contains a population of about 500. Here the forces of Kamehameha the Great once assembled for battle at the sounding of the conch shell. Hence the name, Wai-ka-pu (water of the conch or trumpet)(Bates 1854:309).

Sugarcane cultivation was introduced to the region by a Spaniard named Antone Catalina, who made syrup at Waikapu in 1828. By 1863, James Louzada started the Waikapu Plantation, and after several changes in ownership, the Wailuku Sugar Company bought the plantation in 1894. Claus Spreckles was awarded a portion of Wailuku *ahupua'a* by King Kalakaua in 1882 and established the Hawaiian Commercial and Sugar Company. In 1926, Alexander and Baldwin took possession of these lands.

Numerous L.C.A.'s and Grants were awarded in Waikapu *ahupua'a*, several of which are located within the current project area (Table 1). Land conveyance records show that four L.C.A.'s (2226, 2980, 3019 and 3521) and three Grants (1680, 2108, and 2951) were awarded within the current project area. L.C.A. 2226, apana 1-3 (R.P. 632), totaling 2.85-acres, was awarded on July 19, 1852, to Keawe for \$4.00. L.C.A. 2980, apana 1-2 (R.P. 5356), totaling 1.8-acres, was awarded on June 25, 1852, to Pakele for \$5.00. L.C.A. 3019, apana 2 (R.P. 5333), totaling 0.25-acres, was awarded on March 19, 1863, to Mehao for \$1.00. L.C.A. 3521, apana 1-2 (R.P. 5325), totaling 2.32-acres, was awarded on February 15, 1853, to Kekuapaa for \$7.00. Land use indicated on all these L.C.A.'s included *lo'i* and *kula*, with a houselot on L.C.A. 2980.

Grant 1680, apana 1-3, totaling 7.07-acres, was awarded to Manuel Flores on April 16, 1855, for \$26.00. Grant 2108, apana 1-6, totaling 7.79-acres, was awarded to B. Cocket on September 15, 1856, for \$153.00. Grant 2951, totaling 17.0-acres, was awarded to James Louzada and Henry Cornwell on March 22, 1864, for \$45.00. No land use was indicated on all these Grants.

Table 1. List of LCAs and Grants

LCA	RP	Apana	Claimant	Date Rec'd	Acreage	Amount	Land Use
2226	632	1-3	Keawe	July 19, 1852	2.85	\$ 4.00	<i>lo'i</i> , <i>kula</i>
2980	5356	1,2	Pakele	June 25, 1852	1.8	\$ 5.00	house lot, <i>lo'i</i> , <i>kula</i>
3019	5333	2	Mehao	March 19, 1863	0.25	\$ 1.00	<i>kula</i>
3521	5325	1,2	Kekuapaa	Feb. 15, 1853	2.32	\$ 7.00	<i>lo'i</i> , <i>kula po'alima</i>
Grant		Apana	Claimant	Date Rec'd	Acreage	Amount	Land Use
1680		1-3	Manual Flores	April 16, 1855	7.07	\$ 26.00	N/A
2108		1-6	Bake Crocket	Sept. 15, 1856	7.79	\$ 153.00	N/A
2951			Charles Louzada/ Henry Cornwell	March 22, 1864	17	\$ 45.00	N/A

Handy and Handy (1972:497) provided descriptions of native Hawaiian planting techniques in Waikapu during the 1930s:

...Spreading north and south from the base of Waikapu to a considerable distance below the valley are the vestiges of extensive wet-taro plantings, now almost obliterated by sugar-cane cultivation; a few here and there are preserved in plantation camps and under house and garden sites along the roads. Among these gardens there were in 1934, a few patches of dry Japanese taro. Far on the north, just above the main road and at least half a mile below the entrance to the canyon, an extensive truck garden on old terrace ground showed the large area and the distance below and away from the valley that was anciently developed in terraced taro culture. (Handy and Handy 1972:497)

PREVIOUS ARCHAEOLOGY

No previous archaeological investigations have been conducted within the subject project area; however, several studies have been conducted in the vicinity (Donham 1991, 1995; Kennedy 1988, 1989; Titchenal 1996). SHPD (Donham 1991) conducted a field inspection of the water pipeline easement across Waikapu stream, Waikapu, Maui Island (TMK 3-5-4:14; 3-6-4:2). No surface structural remains were identified in the easement corridor; however, terraces were noted west of the easement and cattle pens and probable former terraces were noted east of the easement. Donham stated that extensive earthmoving activities that previously occurred within the pipeline easement on both sides of the stream destroyed any agricultural features.

SHPD (Donham 1995) conducted a field inspection of the Richardson family cemetery in Kukuialamaka, Waikapu, Wailuku District, Maui Island (TMK 3-5-4:22). State site number 50-50-04-4001 was assigned to the cemetery.

In 1988, Archaeological Consultants of Hawaii conducted a preliminary archaeological survey of Phase Ia of the Waikapu Master Plan (TMK 3-4-04:25 por.), located adjacent to the south of the current project area. No surface cultural remains were identified. The entire parcel was previously disturbed by pineapple cultivation. Due to the presence of numerous L.C.A.'s within the project area, subsurface testing was recommended near the eastern boundary of L.C.A. 5280 to determine presence/absence of subsurface cultural remains associated with house clusters that were once located in this area. These house sites may be associated with high ranking individuals and taro cultivation.

Archaeological subsurface testing was subsequently undertaken at Phase Ia of the Waikapu Master Plan (Kennedy 1989). A total of six backhoe trenches were excavated in the vicinity of the eastern boundary of L.C.A. 5280. No subsurface cultural remains were encountered in all of the trenches. Kennedy (1989:4) concluded that sugarcane and other recent activities destroyed any subsurface deposits that may have once existed.

Aki Sinoto Consulting (Titchenal 1996) conducted an archaeological inventory survey of the proposed retention basin and adjoining lands in Waikapu and Wailuku *ahupua'a*, Wailuku District, Maui Island (TMK 3-5-01:17, por.; 3-5-02:1, por.), located east of the current project area. No surface cultural remains were located during the surface survey, and no subsurface cultural remains or deposits were identified in the thirteen backhoe trenches excavated in selected localities throughout the project area.

SETTLEMENT PATTERN

Early prehistoric settlement in Waikapu *ahupua'a* was situated along the coastal areas where the majority of known *heiau* were situated. Settlements probably concentrated around these religious structures overlooking fishponds, sheltered bays, and other coastal areas rich in marine resources. During the late prehistoric period, populations expanded into the upland valleys of West Maui, including Iao Valley, where irrigated pondfields existed. These upland settlements were characterized as "extensive terrace and pondfield agricultural systems with dispersed, rather than centralized, residential structures throughout and on the margins of these agricultural complexes." (Titchenal 1996:11). The intermediate area, such as the Wailuku Sand Hills, were left unsettled.

SITE EXPECTABILITY

Due to extensive previous disturbances from sugarcane and pineapple cultivation, the probability of encountering recovering cultural remains through inventory level testing is low. Based on the results of previous archaeological investigations in the vicinity, and the presence of numerous LCA's in the area, isolated artifacts associated with pre-Contact occupation and buried architecture or cultural layers associated with historic plantation activities and habitation may be present in the project area. Recent archaeological investigations in the vicinity have discovered isolated artifacts including an adz fragment (Scientific Consultant Services, pending).

METHODS

Archaeological and historical background researches were undertaken to determine the nature and extent of potential cultural resources in the project area. These researches were conducted at the State Historic Preservation Division (SHPD) library at the Department of Land and Natural Resources (DLNR) in Kapolei, and the Bureau of Conveyances and Land Management Branch of DLNR in Honolulu.

The surface survey entailed initially conducting systematic, walk-through transects spaced at 5-10 m apart depending on vegetation density and ground visibility throughout the parcel. Since the parcel had been previously disturbed by pineapple cultivation, subsurface testing through backhoe trenching was deemed appropriate. A total of six backhoe trenches were excavated, including three along Waihee Ditch and three within L.C.A. awards. The backhoe excavations were undertaken with the supervision of the archaeologist and terminated when sterile subsoil was reached. Each trench was numbered and its location marked with flagging tape and plotted on a base map provided by the client. Representative profiles were recorded and soils were described. Color photographs on 35mm format were taken of project area and trench overviews.

During the course of this project, all accepted standard archaeological procedures and practices were followed. Field notes, maps, and photographs, are being curated by Archaeological Services Hawaii, LLC, in Wailuku.

RESULTS OF SURVEY

A segment of the Waihe'e Ditch (State Site 50-50-04-5197) was identified in the project area. This ditch, oriented in a north-south direction, extends through the central portion of the project area (Fig. 4). No other surface cultural remains or areas of exposed deposits were identified on the surface of the project area. Due to extensive previous disturbances throughout the parcel from sugarcane and pineapple cultivation, backhoe trenches were excavated.

A total of six backhoe trenches were excavated throughout the parcel to determine presence or absence and extent of subsurface cultural remains (Fig. 5). Trenches 1, 2 and 5 were located adjacent to Waihe'e Ditch. Trench 3 was located in the central portion of L.C.A. 2226, Trench 4 was located in the central portion of L.C.A. 3019:2, and Trench 6 was located along the south central boundary of Grant 2108:6. Table 1 presents dimensions and stratigraphic information for each trench. Stratigraphic profiles and photographic overviews are depicted on Figures 6-11.

No subsurface cultural remains or deposits were encountered in any of the trenches. Generally, three stratigraphic layers were encountered during trenching. Layer Ia was the till zone from sugarcane and pineapple cultivation, consisting of silt to a rocky silt with abundant roots and rootlets and black sheeting and irrigation lines. Underlying the till zone was Layer Ib, a transitional zone consisting of a stony silt to a compact silty clay with minimal rootlets. Under Layer Ib was Layer II, stony silt loam to compact silty clay with minimal rocks and rootlets. Under Layer II was Layer IIIa, silty clay with abundant rocks, and Layer IIIb, very rocky silt.

The stratigraphic components of T1-6 are as follows:

Layer Ia (T1-6): till zone, dark brown (10YR 3/3) silt with abundant roots/rootlets and rocks; coarse, crumbly, fine, non-sticky, non-plastic, irregular boundary; black sheeting and irrigation pipes from pineapple cultivation.

Layer Ib (T1-6): transitional zone, dark brown to dark yellowish-brown (10YR 3/3 - 4/4) stony silt to silty clay with minimal rootlets and abundant rocks; fine, abrupt boundary; no cultural remains.

Layer II (T1-6): dark yellowish-brown (10YR 4/4) stony silt to compact silty clay with minimal rootlets; fine, very wavy boundary; no cultural remains.

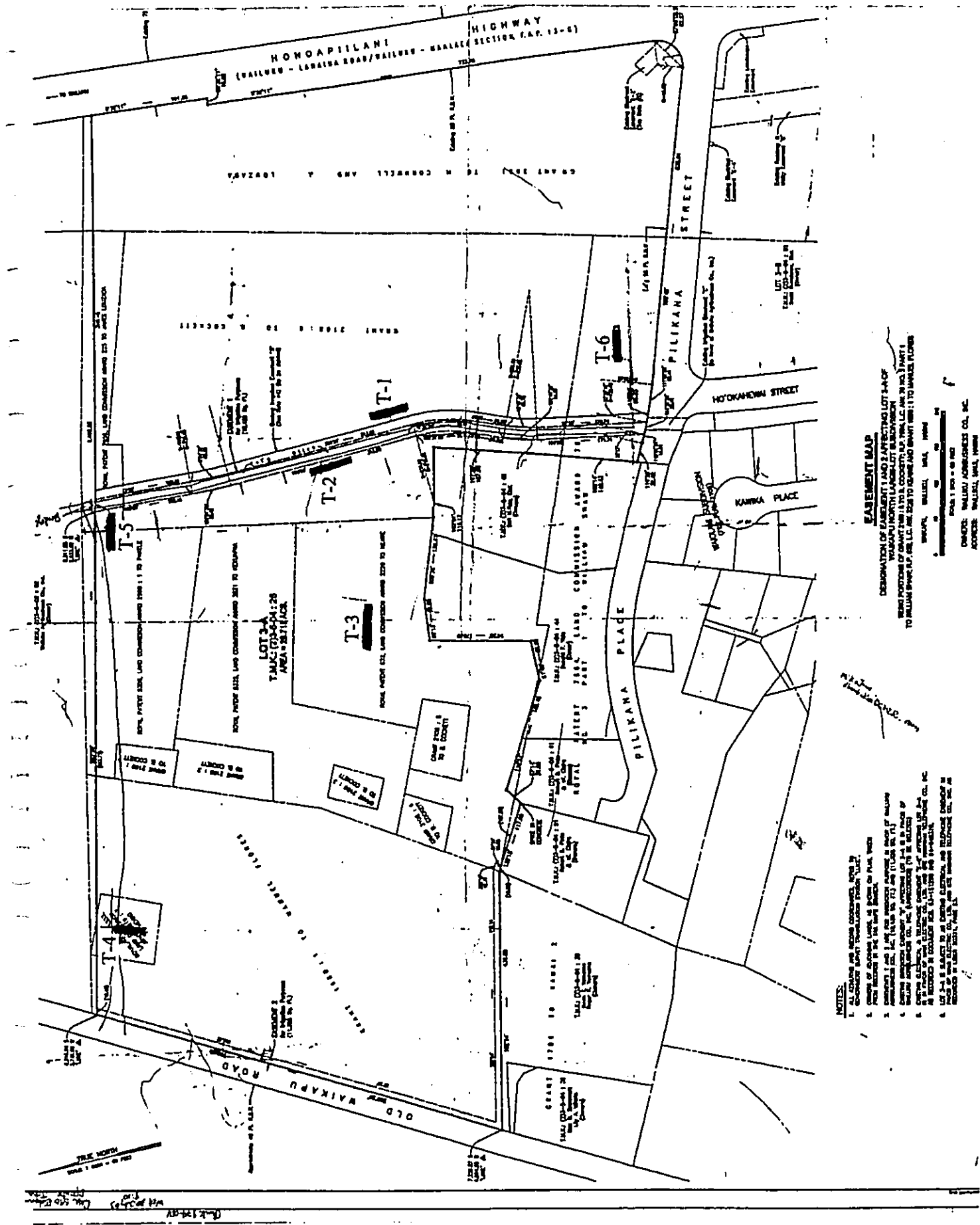
Layer IIIa (T1,4): dark brown (7.5YR 3/2 - 3/4) silty clay with abundant waterworn cobbles/pebbles; abrupt boundary; no cultural remains.

Layer IIIb (T1,4): very cobbly silt; no cultural remains.

RECEIVED AS FOLLOWS



Figure 4. Overview of Waihe'e Ditch, View to Southeast



EASEMENT MAP
 DESIGNATION OF EASEMENT 1 AND 2 AFFECTING LOT 3-A OF
 WAIAIAU NORTH LANDSLIDE SUBDIVISION
 WEST PORTION OF MAP 118 TO A COORDINATE WITH L.C. AND IN NO. 1 PART 1
 TO HAWAII STATE P.L. 86, L.C. 86-228 TO REMOVE AND BRING INTO UNIFORM PLANS

SCALE: 1" = 100' ±
 OWNER: WAIAIAU ADVERTISEMENTS CO., INC.
 ADDRESS: WAIAIAU, HAWAII, 96791

NOTES:

1. ALL EASEMENTS ARE SUBJECT TO THE RECORDS OF THE HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES.
2. CENTER OF GRADE LINE, AS SHOWN ON PLAN, IS THE CENTER OF GRADE LINE OF THE ROAD.
3. EASEMENT 1 IS A 10' WIDE EASEMENT FOR THE INSTALLATION AND MAINTENANCE OF UTILITY LINES.
4. EASEMENT 2 IS A 10' WIDE EASEMENT FOR THE INSTALLATION AND MAINTENANCE OF UTILITY LINES.
5. THE EASEMENTS ARE SUBJECT TO THE RECORDS OF THE HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES.
6. LOT 3-A IS SUBJECT TO AN EASEMENT AND INTEREST IN THE HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES.

Figure 5. Project Area Map Showing Trench Locations

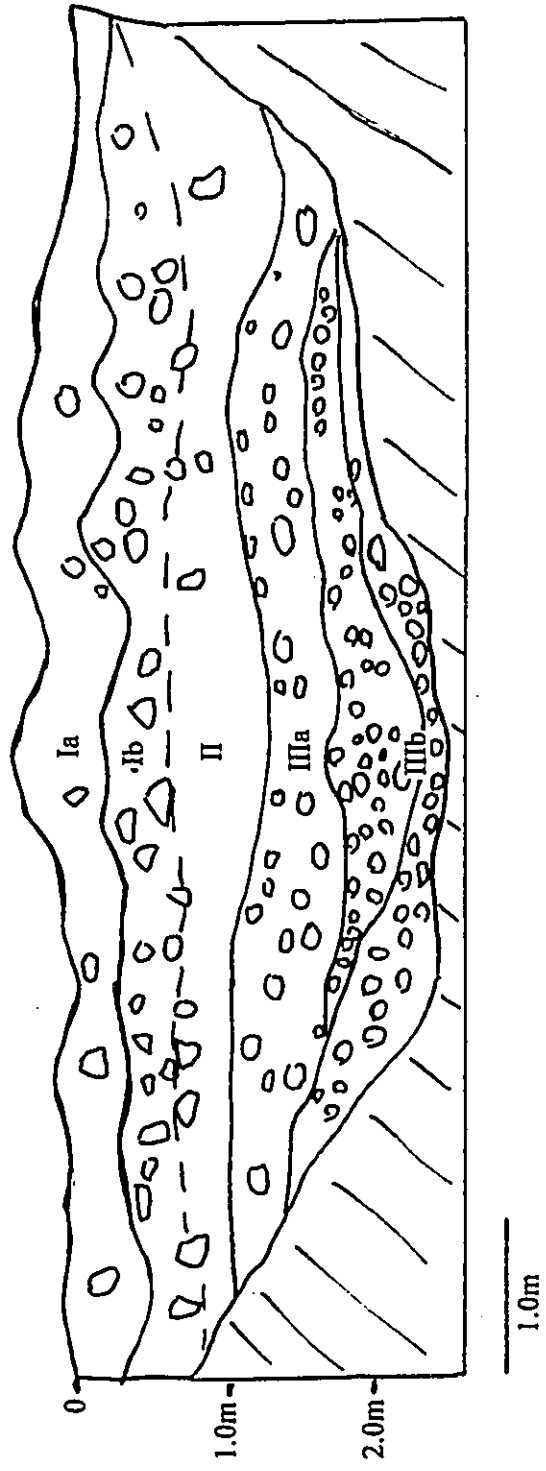


Figure 6. T-1, East Wall Profile

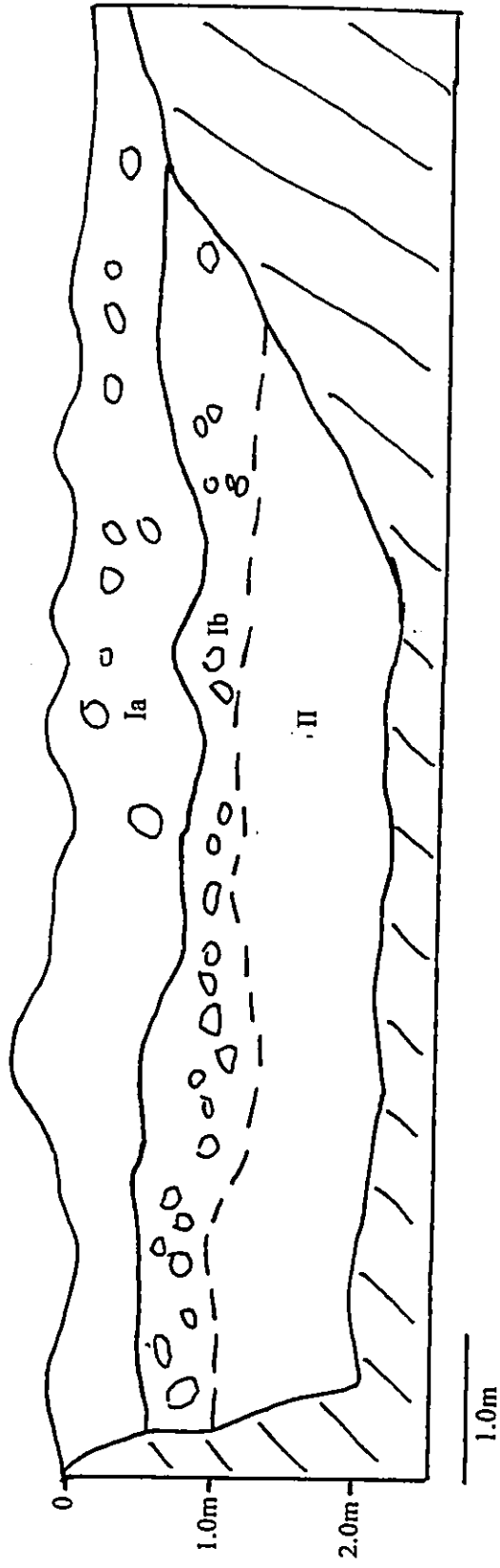


Figure 7. T-2, West Wall Profile

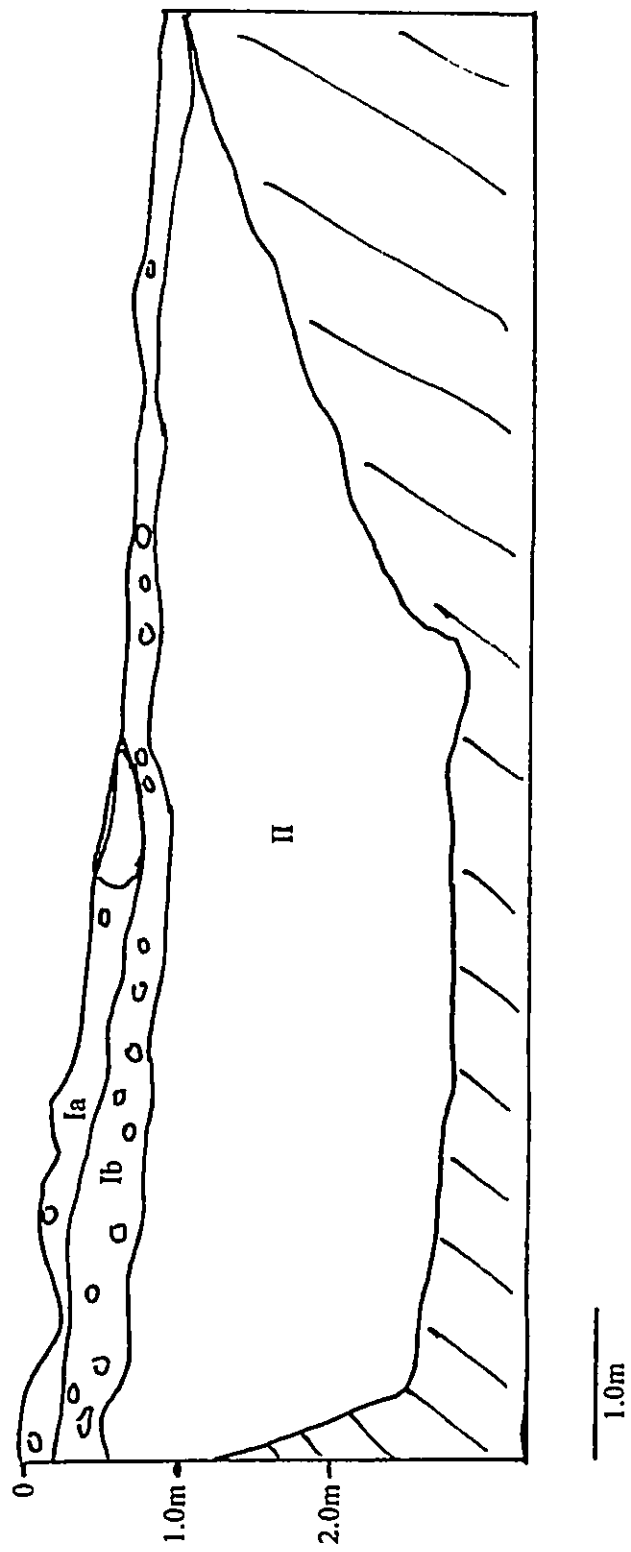


Figure 8. T-3, North Wall Profile

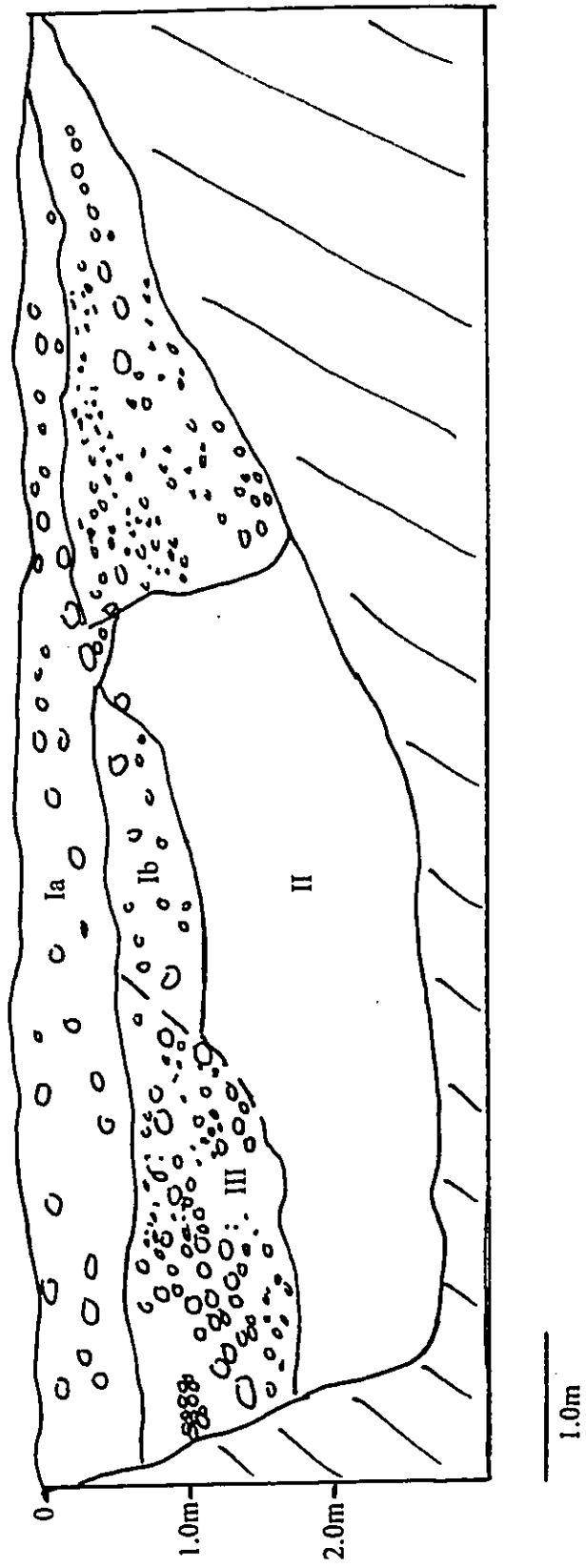


Figure 9. T-4, West Wall Profile

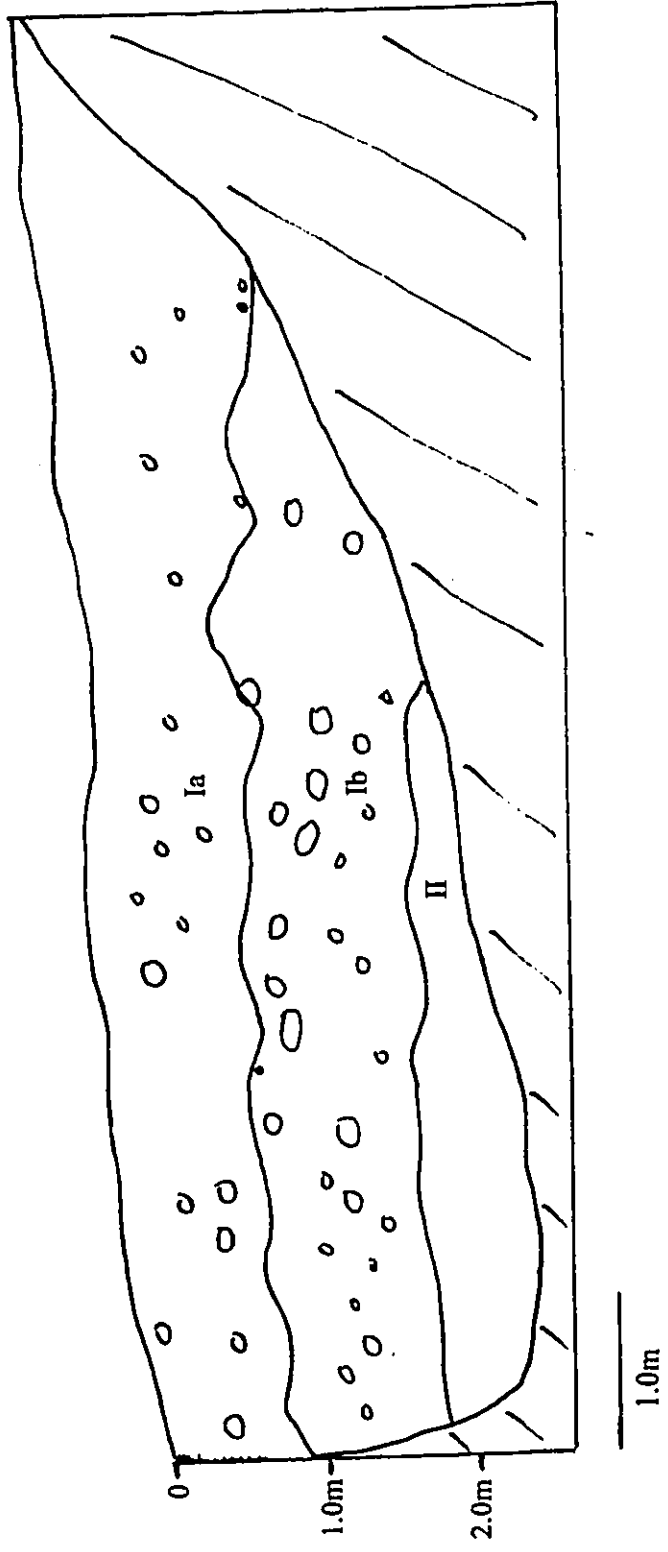


Figure 10. T-5, South Wall Profile



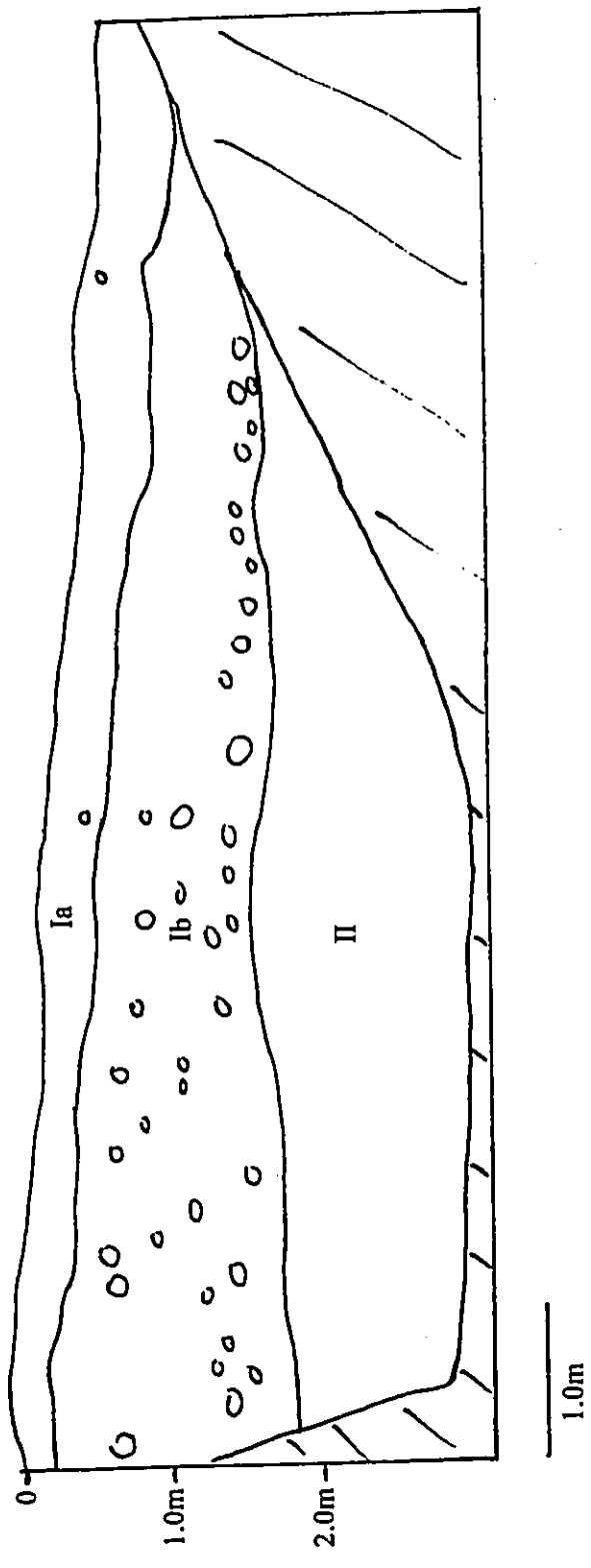


Figure 11. T-6, North Wall Profile

DISCUSSION

A segment of the Waihe'e Ditch extends through the central portion of the project area. This ditch, constructed between 1905 and 1907, was previously assigned as State Site 50-50-04-5197. No other significant surface or subsurface cultural remains were encountered during the inventory survey. The results of the current subsurface investigations produced no evidence for sedentary cultural activities during the prehistoric and early historic periods in the subject project area. However, based on the number of LCAs and Grants in the project area and vicinity, together with the historical background research, Waikapu and Wailuku may have supported substantial populations.

Backhoe testing showed that subsurface cultural remains were absent in all exposed stratigraphic layers. Stratigraphic analysis revealed a three layer stratigraphic sequence consisting of alluvium derived from basalt of the West Maui volcano. The surface of the entire project area consisted of Layer I, the till zone. Underlying the till zone was a transitional zone, designated as Layer Ib, consisting of a mixture of Layer I and Layer II soils. Underlying Layer II was Layer IIIa and Layer IIIb, consisting of rocky silt to silty clay of the Iao Series derived in alluvium from basic igneous rocks.

As required by SHPD, pollen samples were taken from T-3 and T-4 to reaffirm that *kalo* (taro) was cultivated in this area as described in several of the LCA documents. Results of this analysis are still pending.

Due to compounded land clearing activities from sugarcane and pineapple cultivation, and construction of Waihe'e Ditch, no surface cultural remains exist. The negative results from subsurface testing may have been due to these compounded activities; however, the probability of encountering intact buried cultural remains or deposits in the limited number of trenches within a large area is low.

RECOMMENDATIONS

Site 50-50-04-5197, Waihe'e Ditch, is located in the project area. Wailuku Agribusiness Company, Inc. controls this ditch and currently uses it for irrigating existing sugarcane and pineapple fields, as well as other agricultural uses. Wailuku Agribusiness has indicated that water flow will be maintained through the ditch. However, portions or the entire ditch may be enclosed into pipes and/or covered as is found in the Waiolani Subdivision located adjacent to the south of the subject parcel.

Soil samples collected from T3 and T4 were submitted to Paleoresearch Laboratory in Golden, Colorado, for pollen analysis to determine types of agricultural and land use. Results of this analysis are still pending. Upon receipt of this analysis, the results will be incorporated into the current inventory survey report.

In accordance with the agreement with SHPD on the scope of work, the negative results of the subsurface testing, as well as the soil samples collected for pollen analysis, completes all archaeological work required by SHPD. Therefore, no further archaeological work is recommended.

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Appendix B-1

***Letter Dated October 29, 2003
from State Historic Preservation
Division to Archaeological
Services Hawaii, LLC***

LINDA LINBLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUHIHEVA BUILDING, ROOM 555
801 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAVID DAVIDSON
DEPUTY DIRECTOR - LAND

WINSTON Y.H. LAU
DEPUTY DIRECTOR - WATER

AGRICULTURE
(DATING AND OCEAN RECREATION)
BUREAU OF CONVEYANCE
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND -
STATE FUNDS

October 29, 2003

Mr. Jeffrey Pantaleo, M.A.
Archaeological Services Hawaii, LLC
16 South Market Street, Suite G
Wailuku, Hawaii 96793

LOG NO: 2003.2183
DOC NO: 0310MK28

Dear Mr. Pantaleo,

**SUBJECT: Chapter 6E-42 Historic Preservation Review - Archaeological Inventory
Survey Response to Early Consultation Request for Waikapu Single-
Family Subdivision
Waikapu Ahupua'a, Wailuku District, Maui
TMK (2) 3-5-004:025**

Thank you for the opportunity to review this report which our staff received on September 28, 2003 (Pantaleo 2003, *Archaeological Inventory Survey for the proposed Waikapu Mauka Subdivision, Waikapu Ahupua'a Wailuku District, Maui Island [TMK 3-5-4:25, por.]*, ASH, LLC ms). We have previously commented on the proposed subdivision of this 28.718 acre parcel into 100 lots for new single-family residences (Log 2003.1159/Doc 0307CD18) and recommended archaeological inventory survey. An appropriate scope of work resulted from a subsequent discussion between the Maui Staff (Dr. Melissa Kirkendall) and Ms. Lisa Rotunno-Hazuka. The scope included limited testing adjacent to the historic Waihe'e Ditch and on LCA in the parcel with the goal of obtaining pollen samples to examine pre-contact and/or historic agricultural deposits on the LCA.

The background section acceptably establishes the ahupua'a settlement pattern and predicts the likely site pattern in the project area. The historical information provided summarizes the history of the post-contact period land uses. The summary of land use for the awards is acceptable, and the summary of previous archaeological work in the area provides a baseline for the current work.

The survey has adequately covered the project area documenting no historic properties in the project area. Pollen samples have been submitted and a report from Paleo Research Laboratory in Golden Colorado is pending. The results of pollen analysis will be submitted as an addendum report to the current work.

Mr. Jeffrey Pantaleo, M.A.
Page 2

We agree that no further archaeological work is warranted on the parcel. In the event that historic properties are identified during grubbing, grading, and construction, all work should cease in the immediate vicinity of the find, and SHPD-Maui will be notified immediately to determine appropriate mitigation.

We find this report to be acceptable. The historic preservation review process is concluded. We await the results of the pollen/phytolith analysis. As always, if you disagree with our comments or have questions, please contact Dr. Melissa Kirkendall (Maui/Lana'i SHPD 243-5169) as soon as possible to resolve these concerns.

Aloha,

P. Holly McEldowney

P. Holly McEldowney, Acting Administrator
State Historic Preservation Division

MK/jen

- c: Michael Foley, Director, Department of Planning, County of Maui, FAX 270-7834
Bert Raffe, County of Maui, Land Use and Codes, FAX 270-7972
Glen Ueno, County of Maui, Land Use and Codes, FAX 270-7972
Cultural Resources Commission, Planning Dept, 250 S. High St, Wailuku, HI 96793

Appendix C

***Traffic Impact
Analysis Report***

TRAFFIC IMPACT ANALYSIS REPORT FOR
WAIKAPU 28 SUBDIVISION

IN WAIKAPU, MAUI, HAWAII

DRAFT REPORT

Prepared For

WAIKAPU 28 INVESTMENT, LLC

Wailuku, Maui, Hawai'i

Phillip Rowell and Associates
47-273 'D' Hui Iwa Street
Kaneohe, Hawai'i 96744
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October 5, 2003

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1. INTRODUCTION

Phillip Rowell and Associates has been retained to prepare a traffic impact analysis for a proposed residential subdivision in Waikapu, Maui, Hawaii. The purpose of this study is to identify the traffic impacts of the proposed project. The report will be incorporated into the environmental assessment.

This introductory chapter discusses the location of the project, the proposed development, and the study methodology.

Project Location and Description

The project is a single-family residential subdivision. The following is a summary of the project:

1. The project is located along the west side of Honoapiilani Highway and north of Piliikana Street in the Waikapu area of Maui. The approximate location of the project on the Island of Maui is shown in Figure 1.
2. The project will consist of 108± single family detached residential units and up to 54 ohana units. Each ohana unit will be approximately 500 square feet in area.
3. Access will be via Piliikana Street. There will be no direct access to and from the project along Honoapiilani Highway.

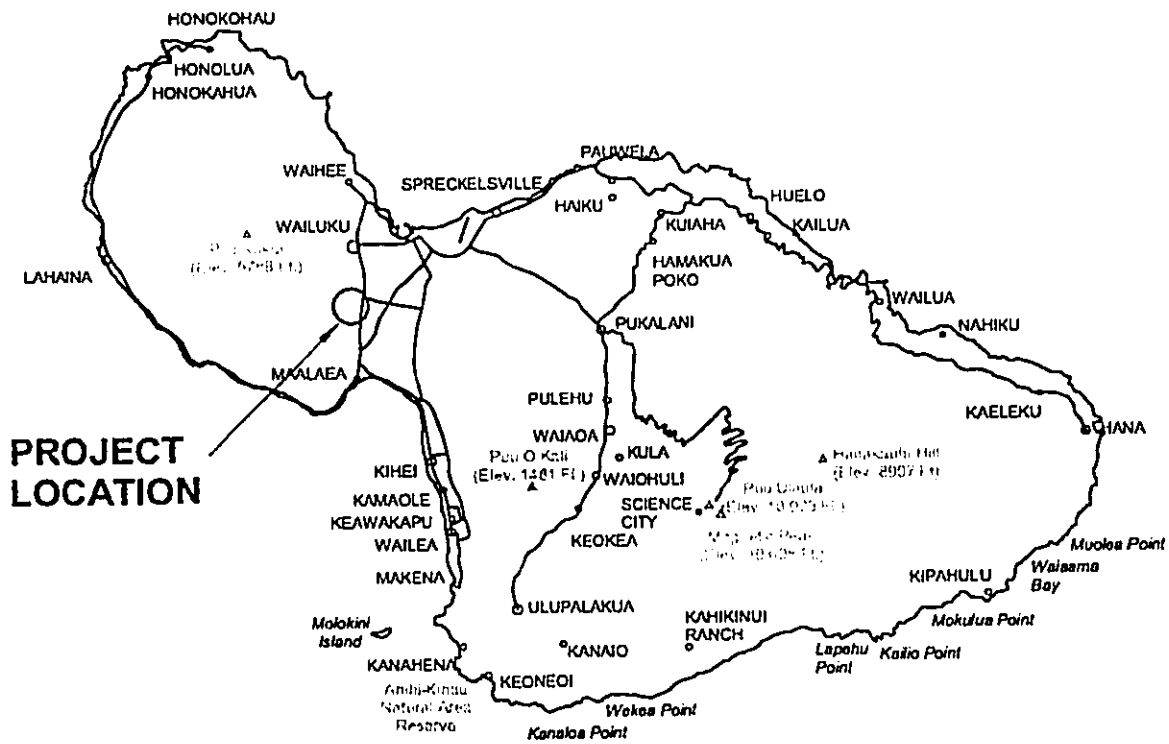
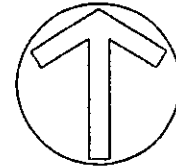


Figure 1
PROJECT LOCATION MAP

Study Methodology and Order of Presentation

1. *Analysis of Existing Traffic Conditions*

Existing traffic volumes at the study intersections were determined from traffic counts and previous traffic studies in the area. Intersection configurations, speed limits and right-of-way control information were collected during the field reconnaissances.

Using the data collected, existing traffic operating conditions in the vicinity of the project were determined. Since the intersections are currently unsignalized, the level-of-service was determined directly from intersection delays studies performed during the peak hours. The level-of-service definitions for unsignalized intersections described in the 2000 *Highway Capacity Manual (HCM)*¹ were used to determine the level-of-service (LOS) at the study intersections.

Existing traffic conditions, the LOS concept and the results of the LOS analysis for existing conditions are presented in Chapter 2.

2. *Determination of Cumulative Traffic Projections*

The year 2008 was used as the design year. This does not necessarily represent the project completion date. It is a date for which background traffic conditions are estimated. Cumulative traffic conditions are defined as future traffic conditions without the proposed project. A description of the process used to estimate 2008 cumulative traffic volumes and the resulting cumulative traffic projections is presented in Chapter 3.

3. *Analysis of Project-Related Traffic Impacts*

The next step in the traffic analysis was to estimate the peak-hour traffic that would be generated by the proposed project. This was done using standard trip generation procedures described in the *Trip Generation Handbook*². The procedures are described in Chapter 4.

These trips were distributed based on the available approach and departure routes. The project-related traffic was then superimposed on 2008 cumulative traffic volumes at the study intersections.

A traffic signal warrant analysis was performed to determine if traffic signals are warranted for future conditions. Since the warrants were satisfied for the intersection of Honoapiilani Highway at Pilikana Street, the methodology for signalized intersections was used to estimate the future levels-of-service for cumulative and cumulative plus project conditions. The results of this analysis were compared to determine the incremental changes in the levels-of-service. Locations where the change in level-of-service was significant were identified and appropriate mitigation measures identified and assessed. The analysis of the project-related impacts and the conclusions of the analyses are presented in Chapter 5.

¹ *Highway Capacity Manual*, Institute of Transportation Engineers, Washington, D.C., 2000

² *Trip Generation Handbook*, Institute of Transportation Engineers, Washington, D.C., 1998

2. ANALYSIS OF EXISTING CONDITIONS

This chapter presents the existing traffic conditions on the roadways adjacent to the proposed project. The level-of-service (LOS) concept and the results of the LOS analysis for existing conditions are also presented. The purpose of this analysis is to establish the base conditions for the determination of the impacts of the project which are described in a subsequent chapter.

Description of Existing Streets and Intersection Controls

The following is summary of the major roadways in the study area:

Honoapiilani Highway

Honoapiilani Highway is a major State highway connecting Wailuku and Maalaea. In the vicinity of the proposed project, the highway is a two-lane, two-way facility with separate left turn lanes. The posted speed limit is 30 miles per hour (mph).

Pilikana Street

Pilikana Street is a two-way street providing access to Honoapiilani Highway from the residential area to the west. The intersection with Honoapiilani Highway is unsignalized.

Figure 2 is a schematic of the roadway conditions adjacent to the project.

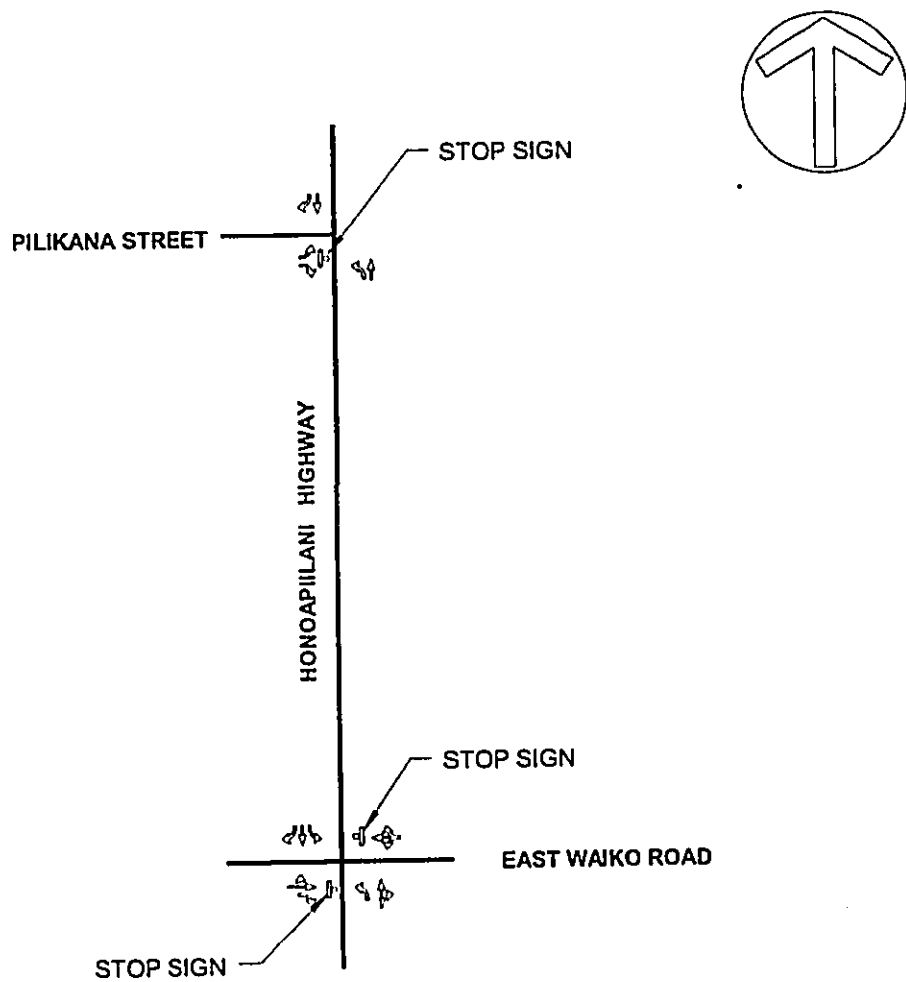


Figure 2
SCHEMATIC OF EXISTING ROADWAY CONFIGURATIONS

Existing Weekday and Peak Hour Traffic Volumes

Total weekday traffic volumes along Honoapiilani Highway were determined from 24-hour traffic counts at the intersection of Honoapiilani Highway at East Waiko Road. The counts were performed by Hawaii Department of Transportation (HDOT) in May 2001. These counts were used to determine the times during which peak hour traffic counts should be performed at the study intersections. The data provided by the Hawaii Department of Transportation counts is summarized as follows:

1. The morning peak hour along Honoapiilani Highway between East Waiko Road and Pilikana Street is between 7:00 AM and 8:00 AM. During this period, the northbound volume is 777 vehicles per day and the southbound volume is 681 vehicles per day.
2. The afternoon peak hour is between 3:30 PM and 4:30 PM. The northbound peak hourly volume is 697 vehicles per day and the southbound peak hourly volume is 661 vehicles per day.
3. The total weekday traffic volume along Honoapiilani Highway between East Waiko Road and Pilikana Street is approximately 15,800 vehicles per day.

The existing morning and afternoon peak hour traffic volumes are shown in Figure 3. The counts shown include buses, large vehicles and motorcycles. They do not include bicycles and mopeds. No pedestrians were observed during the traffic surveys.

The peak hour volumes were determined from previously completed traffic studies of the study intersections. The total approach volumes were compared to the corresponding data provided in the Hawaii Department of Transportation counts. This comparison is shown in Table 1. As shown the traffic counts are consistent with the counts performed by HDOT. Therefore, it is assumed that the traffic counts represent typical weekday conditions.

Table 1 Verification of Peak Hour Traffic Volumes

<u>Source of Volume Data</u>	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>	
	<u>Northbound</u>	<u>Southbound</u>	<u>Northbound</u>	<u>Southbound</u>
2001 HDOT	777	681	697	661
2002 Manual Count	850	715	720	670

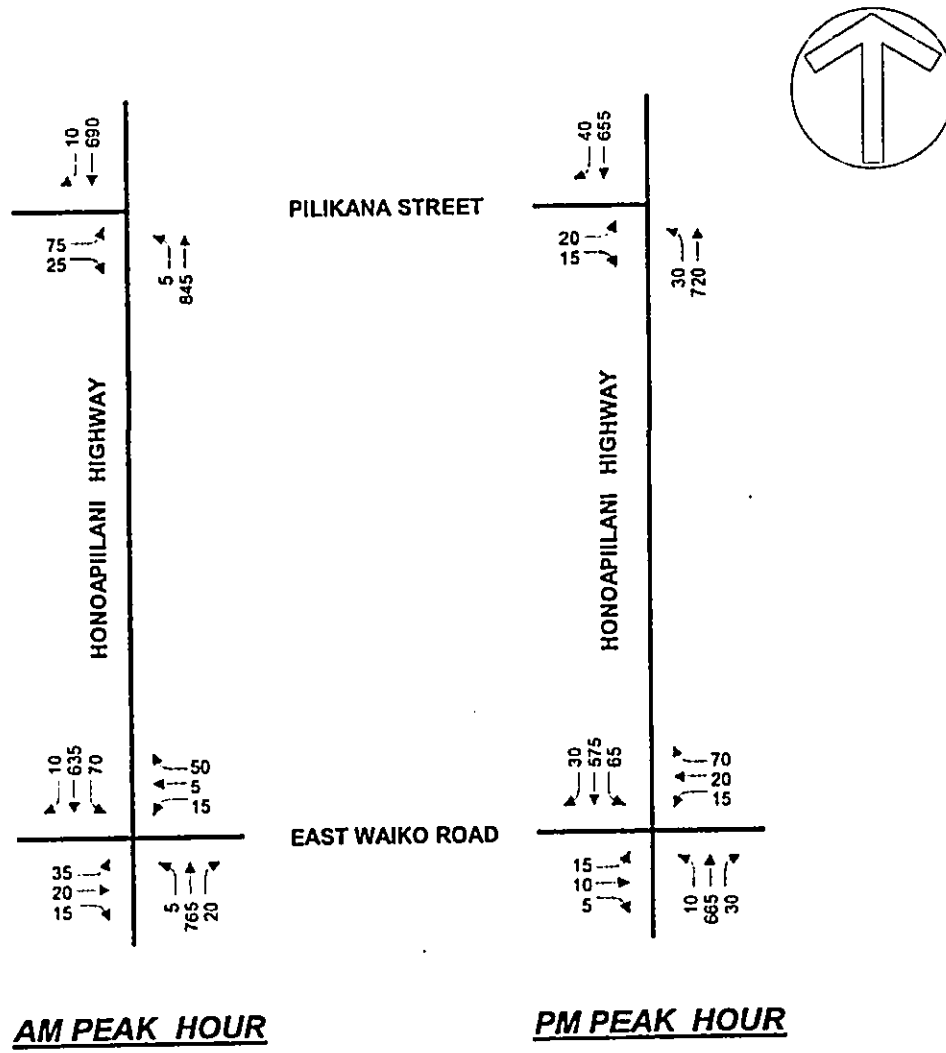


Figure 3
EXISTING (2003)
PEAK HOUR TRAFFIC VOLUMES

Level-of-Service Concept

Signalized Intersections

"Level-of-Service" is a term which denotes any of an infinite number of combinations of traffic operating conditions that may occur on a given lane or roadway when it is subjected to various traffic volumes. Level-of-service (LOS) is a qualitative measure of the effect of a number of factors which include space, speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience.

There are six levels-of-service, A through F, which relate to the driving conditions from best to worst, respectively. The characteristics of traffic operations for each level-of-service are summarized in Table 2. In general, LOS A represents free-flow conditions with no congestion. LOS F, on the other hand, represents severe congestion with stop-and-go conditions. Level-of-service D is typically considered acceptable for peak hour conditions in urban areas.

Corresponding to each level-of-service shown in the table is a volume/capacity ratio. This is the ratio of either existing or projected traffic volumes to the capacity of the intersection. Capacity is defined as the maximum number of vehicles that can be accommodated by the roadway during a specified period of time. The capacity of a particular roadway is dependent upon its physical characteristics such as the number of lanes, the operational characteristics of the roadway (one-way, two-way, turn prohibitions, bus stops, etc.), the type of traffic using the roadway (trucks, buses, etc.) and turning movements.

Table 2 Level-of-Service Definitions for Signalized Intersections⁽¹⁾

Level of Service	Interpretation	Volume-to-Capacity Ratio ⁽²⁾	Stopped Delay (Seconds)
A, B	Uncongested operations; all vehicles clear in a single cycle.	0.000-0.700	<20.0
C	Light congestion; occasional backups on critical approaches	0.701-0.800	20.1-35.0
D	Congestion on critical approaches but intersection functional. Vehicles must wait through more than one cycle during short periods. No long standing lines formed.	0.801-0.900	35.1-55.0
E	Severe congestion with some standing lines on critical approaches. Blockage of intersection may occur if signal does not provide protected turning movements.	0.901-1.000	55.1-80.0
F	Total breakdown with stop-and-go operation	>1.001	>80.0

Notes:

- (1) Source: *Highway Capacity Manual, 2000.*
- (2) This is the ratio of the calculated critical volume to Level-of-Service E Capacity.

Unsignalized Intersections

Like signalized intersections, the operating conditions of intersections controlled by stop signs can be classified by a level-of-service from A to F. However, the method for determining level-of-service for unsignalized intersections is based on the use of gaps in traffic on the major street by vehicles crossing or turning through that stream. Specifically, the capacity of the controlled legs of an intersection is based on two factors: 1) the distribution of gaps in the major street traffic stream, and 2) driver judgement in selecting gaps through which to execute a desired maneuver. The criteria for level-of-service at an unsignalized intersection is therefore based on delay of each turning movement. Table 3 summarizes the definitions for level-of-service and the corresponding delay. A subsequent calculation to determine an overall LOS was made, and these results are presented in tables to summarize traffic conditions using parameters similar to those used for signalized intersections.

Table 3 Level-of-Service Definitions for Unsignalized Intersections⁽¹⁾

Level-of-Service	Expected Delay to Minor Street Traffic	Delay (Seconds)
A	Little or no delay	<10.0
B	Short traffic delays	10.1 to 15.0
C	Average traffic delays	15.1 to 25.0
D	Long traffic delays	25.1 to 35.0
E	Very long traffic delays	35.1 to 50.0
F	See note (2) below	>50.1

Notes:

(1) Source: *Highway Capacity Manual, 2000.*

(2) When demand volume exceeds the capacity of the lane, extreme delays will be encountered with queuing which may cause severe congestion affecting other traffic movements in the intersection. This condition usually warrants improvement of the intersection.

Level-of-Service Analysis of Existing Conditions

The results of the Level-of-Service analysis of the unsignalized intersections are summarized in Table 4. Shown are the control delays and Levels-of-Service of each movement. Volume-to-capacity ratios are not calculated for unsignalized intersections.

Table 4 Existing Levels-of-Service

Intersection and Movement	AM Peak Hour		PM Peak Hour	
	Delay ^{1,2}	LOS ³	Delay	LOS
Honoapiilani Highway at Pilikana Street				
Eastbound Left	35.4	E	34.1	D
Eastbound Right	11.8	B	12.5	B
Northbound Left	10.5	B	10.5	B
Honoapiilani Highway at East Waiko Road				
Northbound Left	10.2	B	9.9	A
Southbound Left	12.3	B	11.2	B
Westbound Left, Thru & Right	26.5	C	24.2	C
Eastbound Left & Thru	76.2	F	41.2	E
Eastbound Right	11.1	B	10.7	B

NOTES:

- (1) Delays for eastbound approaches were determined for field surveys performed during the peak hours. Delays along Honoapiilani Highway were estimated using procedures described in the *Highway Capacity Manual*.
- (2) Delay is in seconds per vehicle.
- (3) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*.
- (4) For level-of-service calculations for existing conditions, see Level-of-Service Worksheets for Case 1 in Appendix C.

The conclusions of the Level-of-Service analysis are:

- 5. Left turns from Honoapiilani Highway onto Pilikana Street and East Waiko Road operate at Level-of-Service B or better, which is considered a good level-of-service.
- 6. Eastbound left turns from Pilikana Street and East Waiko operate at Level-of-Service E and F during the morning peak hour and Level-of-Service D and E during the afternoon peak hour. These are considered poor levels-of-service.

3. PROJECTED CUMULATIVE TRAFFIC CONDITIONS

The purpose of this chapter is to discuss the assumptions and data used to estimate 2005 cumulative traffic conditions. Cumulative traffic conditions are defined as future traffic volumes without the proposed project.

Future traffic growth consists of two components. The first is ambient background growth that is a result of regional growth and cannot be attributed to a specific project. The second component is estimated traffic that will be generated by other development projects in the vicinity of the proposed project.

Background Traffic Growth

The *Maui Long Range Transportation Plan*³ concluded that traffic in Maui would increase an average of 1.6% per year from 1990 to 2020. This growth rate was used to estimate the background growth between 2003 and 2008, which is the design year for this project. The growth factor was calculated to be 1.083 using the following formula:

$$F = (1 + i)^n$$

where F = Growth Factor

i = Average annual growth rate, or 0.016

n = Growth period, or 5 years

This growth factor was applied to through traffic movements along Honoapiilani Highway at the study intersections.

³ Kaku Associates, October 1996

Related Projects

The second component in estimating background traffic volumes is traffic resulting from other proposed projects in the vicinity. Related projects are defined as those projects that are under construction or have been proposed and would significantly impact traffic in the study area. Related projects may be development projects or roadway improvements.

The projects that were identified as related projects and the estimated number of peak hour trips generated by each are summarized in Table 5. The trip generation data was obtained from the traffic impacts study for each project. The approximate locations of these projects is shown in Figure 4.

Table 5 Trip Generation Summary of Related Projects

<u>Related Project</u>	<u>Description</u>	<u>AM Peak Hour</u>			<u>PM Peak Hour</u>		
		<u>In</u>	<u>Out</u>	<u>Total</u>	<u>In</u>	<u>Out</u>	<u>Total</u>
A Waiolani Elua	30 Single Family Units	5	17	22	22	11	33
B Unnamed Project	38 Single Family Units	10	29	39	31	17	48
C Waikapu Affordable Housing Project	400 Single Family Units	77	231	308	261	147	408
TOTALS		92	277	369	314	175	489

2008 Cumulative Traffic Projections

Cumulative projections were prepared for two scenarios, which were designated Scenario A and Scenario B. Cumulative traffic projections for Scenario A are 2008 cumulative traffic with traffic generated by Waiolani Elua. The projections were calculated by expanding the existing traffic volumes by the appropriate growth rate and adding traffic generated by Waiolani Elua. The resulting 2008 cumulative peak hour traffic projections for Scenario A are shown in Figure 5.

Traffic projections for Scenario B represent future traffic conditions with all three of the related projects. Traffic projections were calculated by expanding the existing traffic volumes by the appropriate growth rate and superimposing traffic generated by the three related projects identified. The resulting 2008 cumulative peak hour traffic projections for Scenario B are shown in Figure 6.

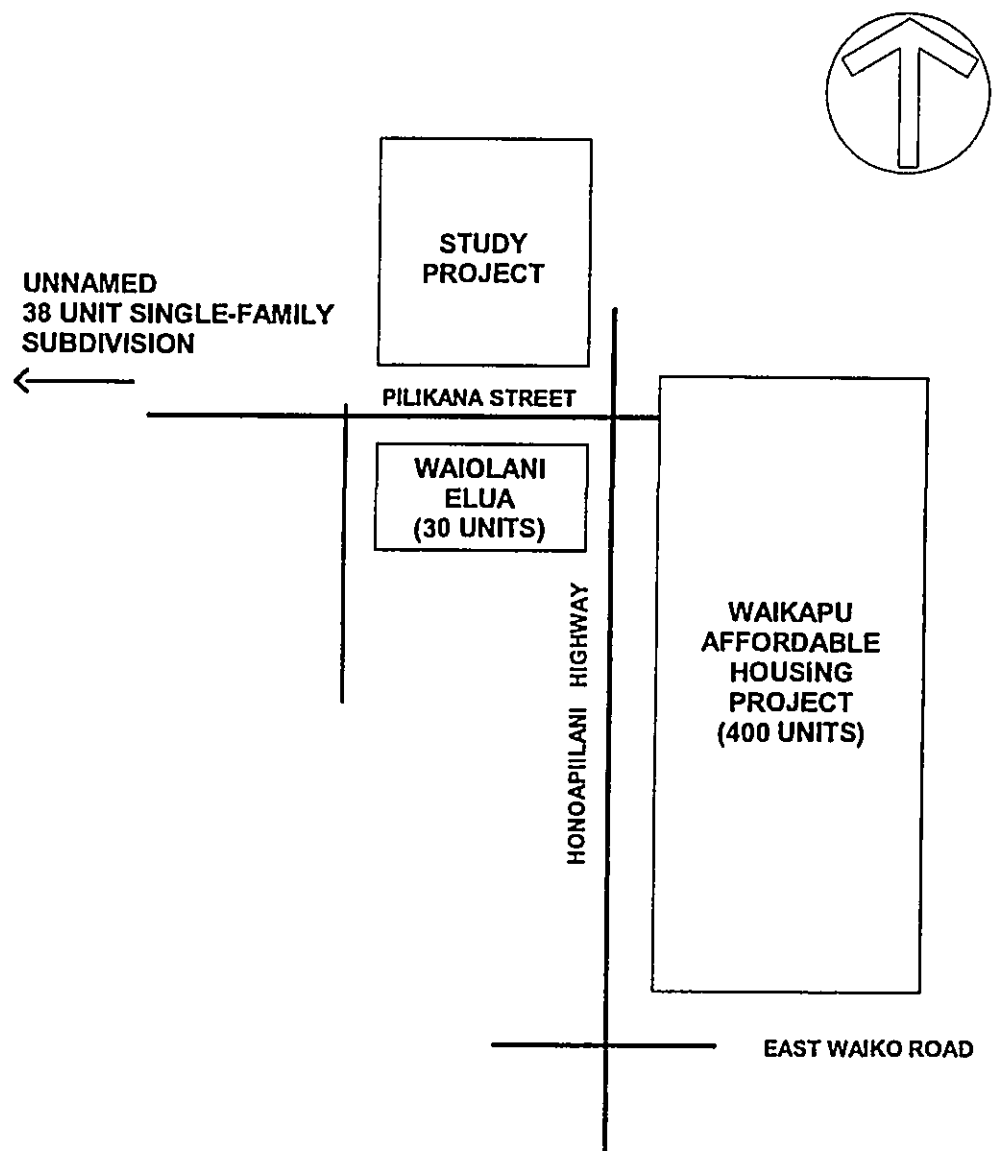


Figure 4
LOCATIONS OF RELATED PROJECTS

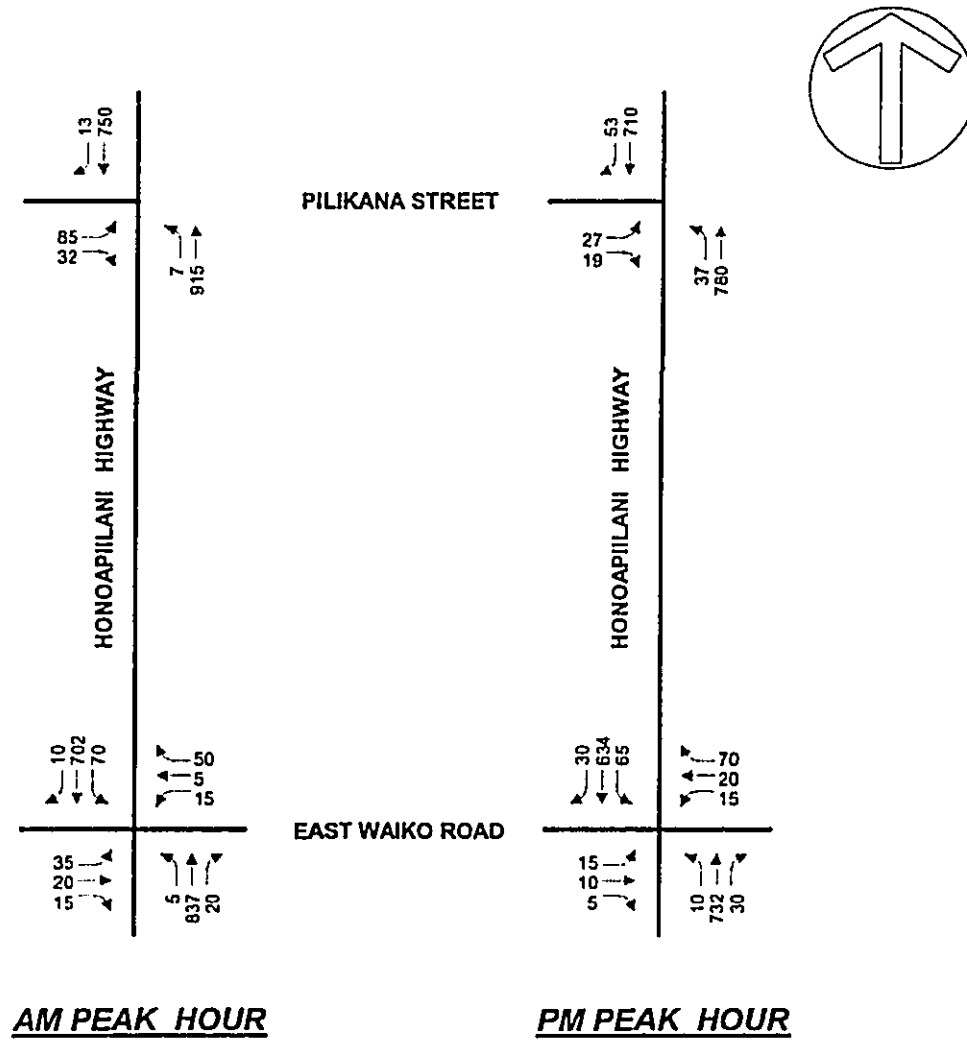


Figure 5
2008 CUMULATIVE PEAK HOUR TRAFFIC PROJECTIONS
FOR SCENARIO A

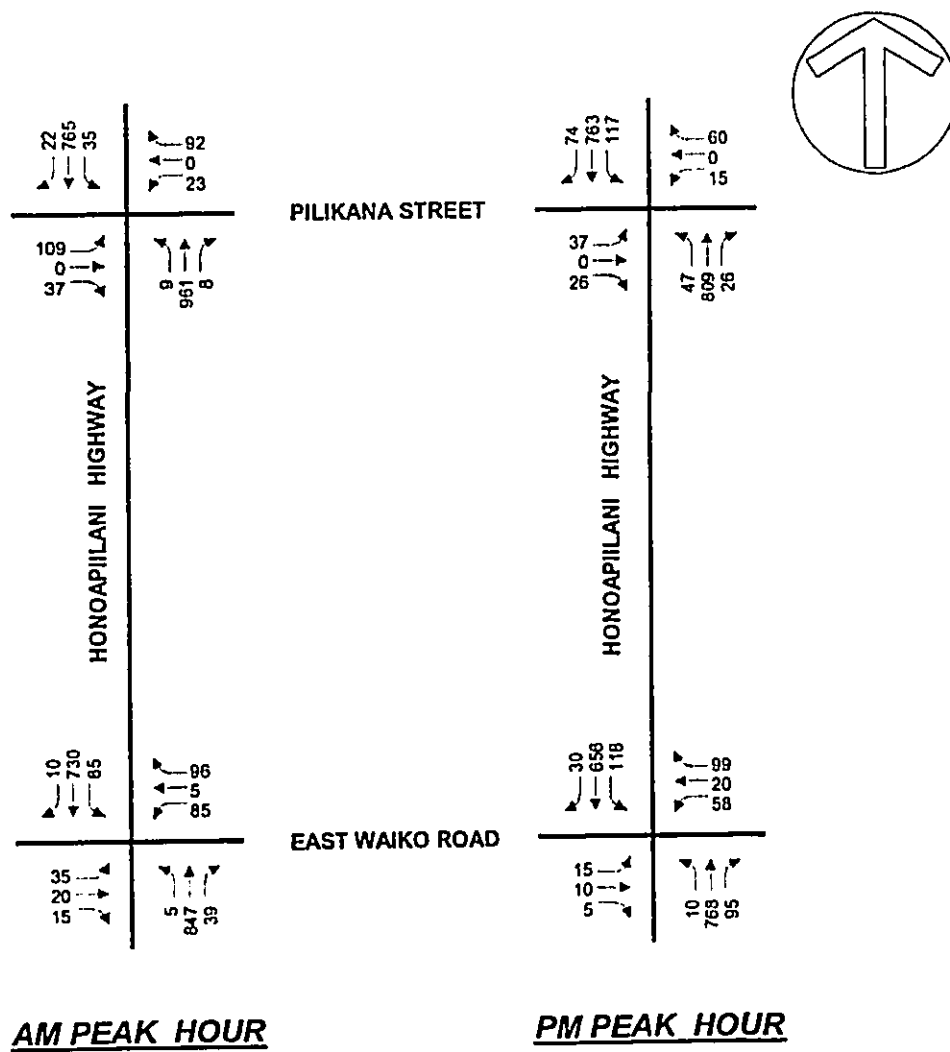


Figure 6
2008 CUMULATIVE PEAK HOUR TRAFFIC PROJECTIONS
FOR SCENARIO B

4. PROJECT-RELATED TRAFFIC CONDITIONS

This chapter discusses the methodology used to identify the traffic-related impacts of the proposed project. Generally, the process involves the determination of weekday peak-hour trips that would be generated by the proposed project, distribution and assignment of these trips on the approach and departure routes, and finally, determination of the levels-of-service at affected intersections and driveways subsequent to implementation of the project. This chapter presents the generation, distribution and assignment of project generated traffic and the cumulative plus project traffic projections. The result of the level-of-service analysis of cumulative plus project conditions is presented in the following chapter.

Project Trip Generation

Future traffic volumes generated by a project are typically estimated using the procedures described in the *Trip Generation Handbook*,⁴ published by the Institute of Transportation Engineers. This method uses trip generation rates to estimate the number of trips that a proposed project will generate during the morning and afternoon peak hours.

⁴ Institute of Transportation Engineers, *Trip Generation Handbook*, Washington, D.C., 1998, p. 7-12

The single-family phase of the project will consist of 108 single-family units. Single-family detached housing is defined by the Institute of Transportation Engineers as follows:

Single-family detached housing includes all single-family detached homes on individual lots. A typical site surveyed is a suburban subdivision.⁵

In addition to the single-family units, 50% of the units may have ohana units. Since there are no trip generation rates for ohana units in the *Trip Generation Handbook*, trips generated by the ohana units were estimated using trip generation rates for apartments. These rates most likely result in an overestimation of the traffic from these units as some ohana units may be used by family members and some may be rented as an apartment. Use of the trip rates for apartments should result in conservative conclusions.

The trip generation analysis is summarized in Table 6. The trips shown are the peak hourly trips generated by the project, which typically coincide with the peak hour of the adjacent street. As shown, the project will generate 113 trips during the morning peak hour, 28 inbound and 85 outbound. During the afternoon peak hour, this phase will generate 92 inbound and 54 outbound trips for a total of 146 trips.

Table 6 Trip Generation Analysis

Period & Direction		Single Family Units			Ohana (Apartment) Units			Total Trips
		Trips per Unit or Percent	Units	Trips	Trips per Unit or Percent	Units	Trips	
AM Peak Hour	Total	0.77	108	83	0.56	54	30	113
	Inbound	25%		21	22%		7	28
	Outbound	75%		62	78%		23	85
PM Peak Hour	Total	1.02		110	0.67		36	146
	Inbound	64%		70	61%		22	92
	Outbound	36%		40	39%		14	54

The Institute of Transportation Engineers recommends that a traffic impact study should be performed if, in lieu of another locally preferred criterion, development generates an additional 100 vehicle trips in the peak direction (inbound or outbound) during the site's peak hour.⁶ Based on the criterion, a traffic impact study is not warranted. To date, the County of Maui has not established criteria for projects within its jurisdiction.

⁵ Institute of Transportation Engineers, *Trip Generation*, Washington, D.C., 1997, p. 262

⁶ Institute of Transportation, *Traffic Access and Impact Studies for Site Development, A Recommended Practice*, 1991, page 5.

Trip Distribution and Assignments

It was assumed that future residential traffic generated by the proposed project would have a distribution pattern comparable to the distribution pattern of existing traffic using Pilikana Street. Therefore, project-related trips were distributed along the anticipated approach routes to the project site based on the directional distribution of existing peak hour traffic along Honoapiilani Highway. The calculated trip distribution of existing traffic into and out of the existing residential development is shown in Figure 7.

Separate morning and afternoon peak hour trip assignments for the single-family and ohana units are shown in Figures 8 and 9, respectively.

2008 Cumulative Plus Project Projections

Cumulative plus project traffic conditions are defined as 2008 background traffic conditions plus project related traffic. The incremental difference between cumulative and cumulative plus project is the traffic impact of the project under study.

2008 cumulative plus project traffic projections were estimated by superimposing the peak hourly traffic generated by the proposed project on the 2008 cumulative peak hour traffic volumes presented in Chapter 3. As there are two background traffic scenarios, the single-family and ohana units were superimposed on each of the scenarios.

The traffic projections for 2008 cumulative for background Scenario A plus the single-family units are shown in Figure 10. Traffic projections for 2008 cumulative background Scenario B plus single-family units are shown in Figure 11. Traffic projections for 2008 cumulative background Scenario A plus single-family plus ohana units are shown in Figure 12. Traffic projections for 2008 cumulative background Scenario B plus single-family plus ohana units are shown in Figure 13.

The traffic projection worksheets are presented as Appendix A.

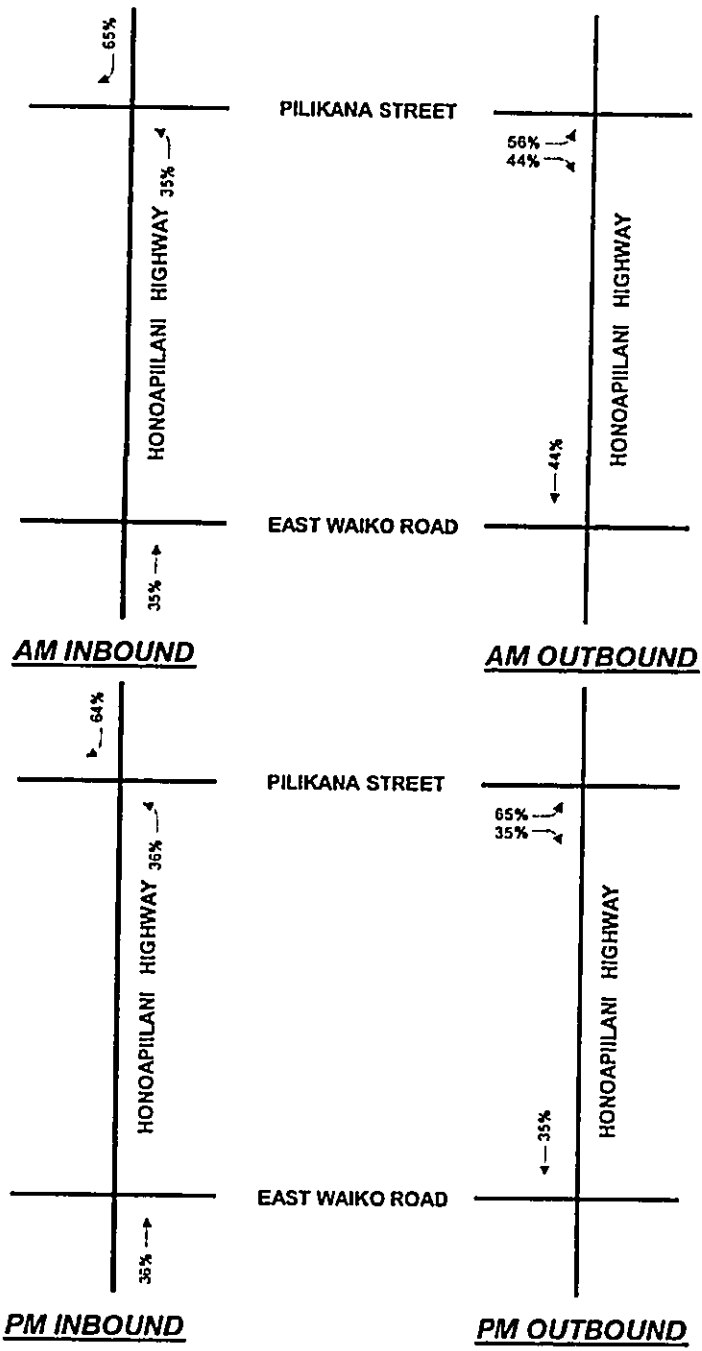
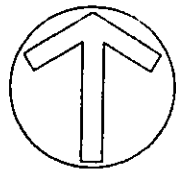


Figure 7
PROJECT TRIP DISTRIBUTION

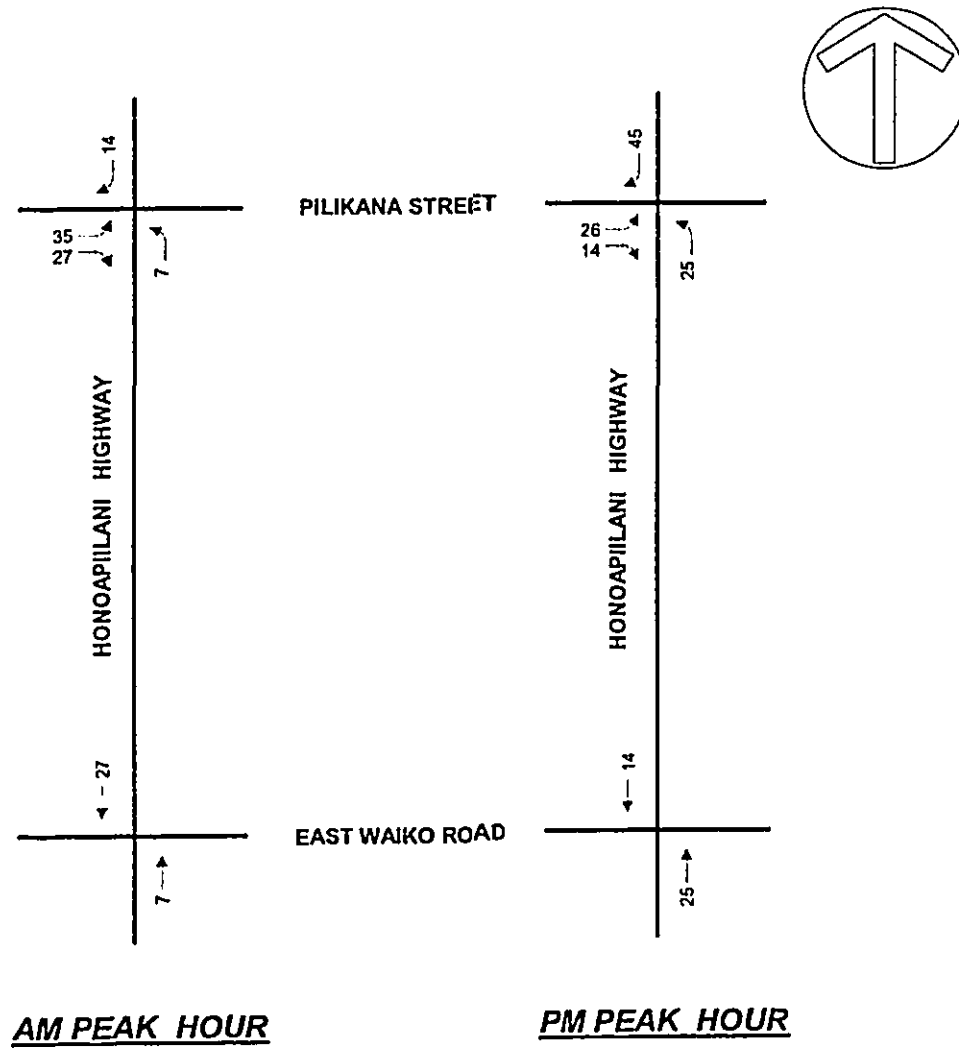


Figure 8
PROJECT PEAK HOUR TRIP ASSIGNMENTS FOR SINGLE-FAMILY UNITS

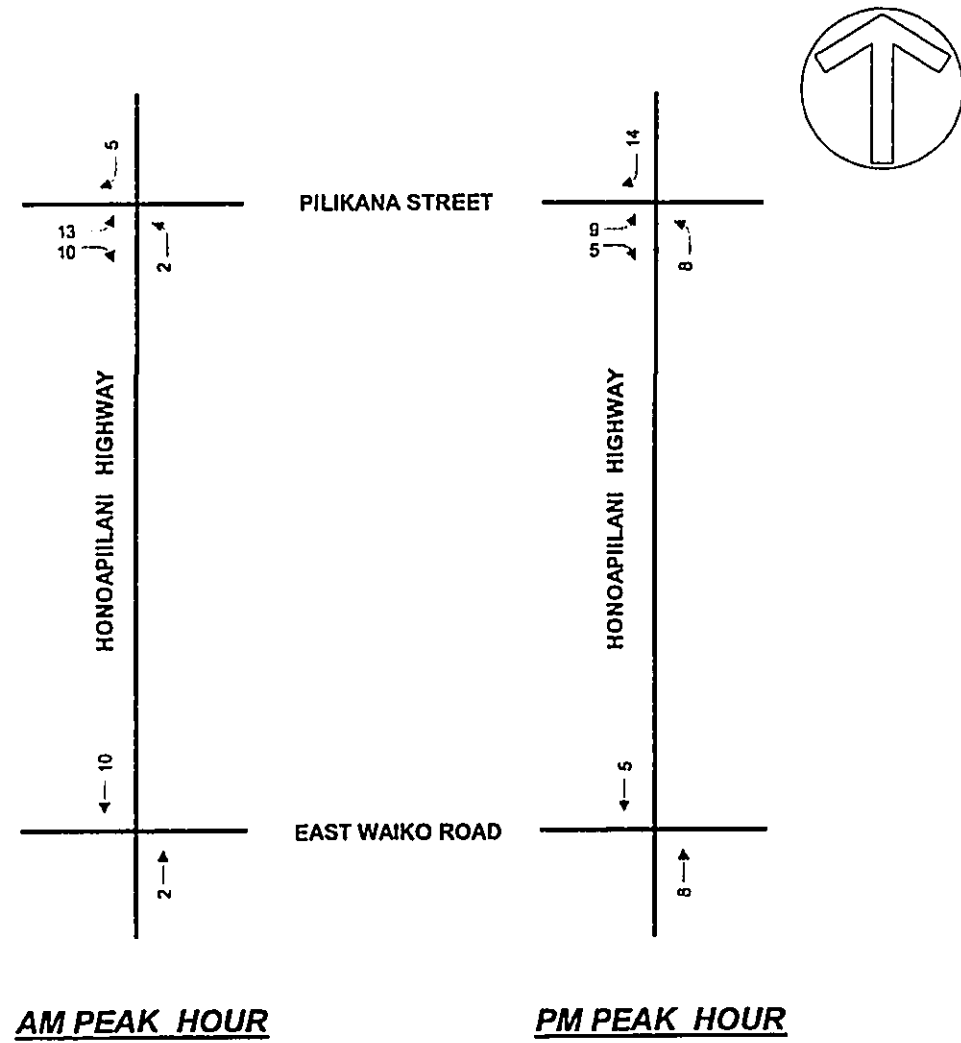


Figure 9
PROJECT PEAK HOUR TRIP ASSIGNMENTS FOR OHANA UNITS

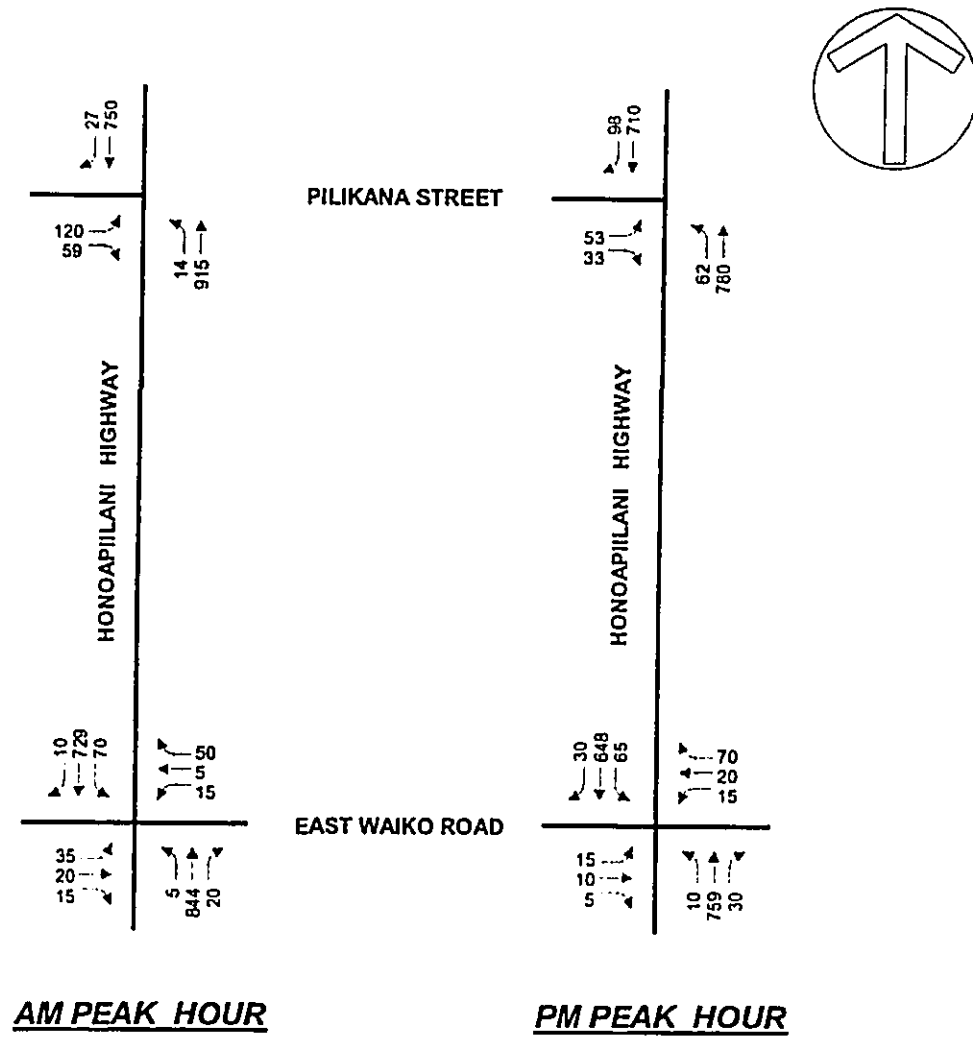


Figure 10
2008 CUMULATIVE PLUS PROJECT PEAK HOUR TRAFFIC PROJECTIONS
FOR SCENARIO A PLUS SINGLE-FAMILY UNITS

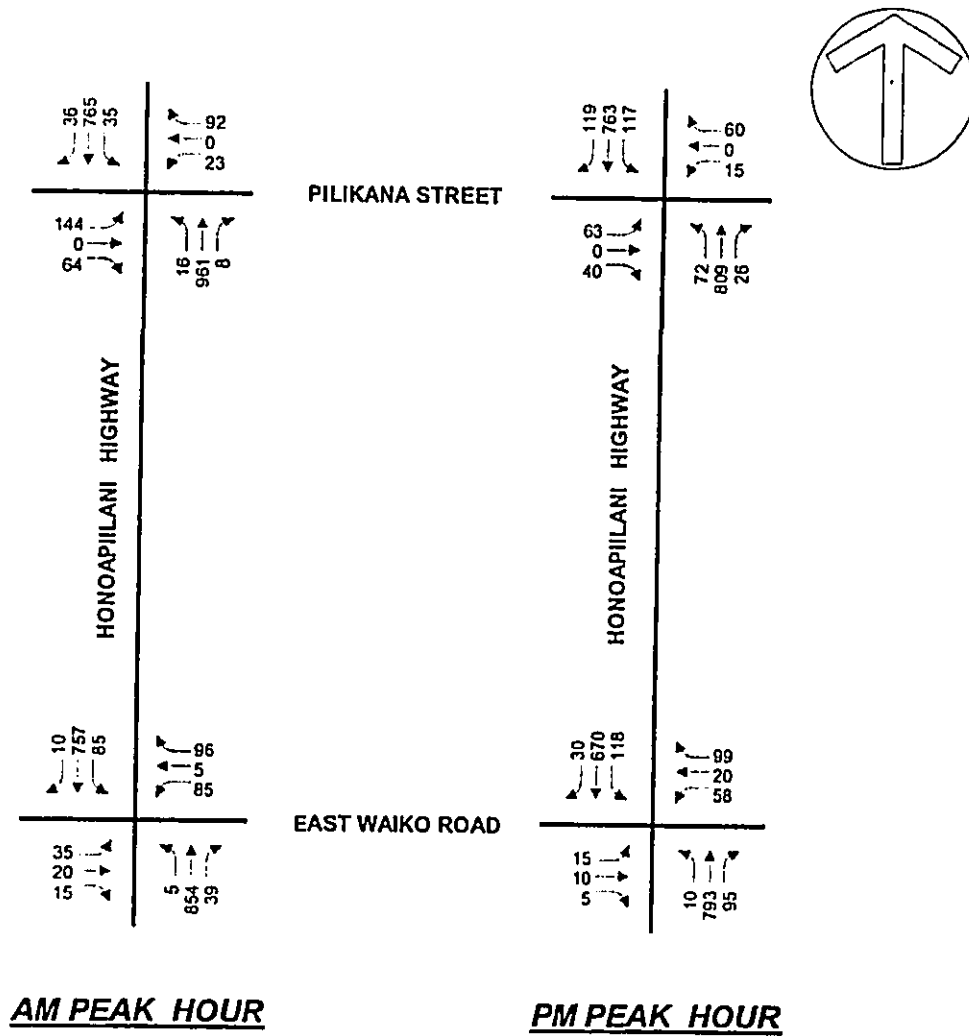


Figure 11
2008 CUMULATIVE PLUS PROJECT PEAK HOUR TRAFFIC PROJECTIONS
FOR SCENARIO B PLUS SINGLE-FAMILY UNITS

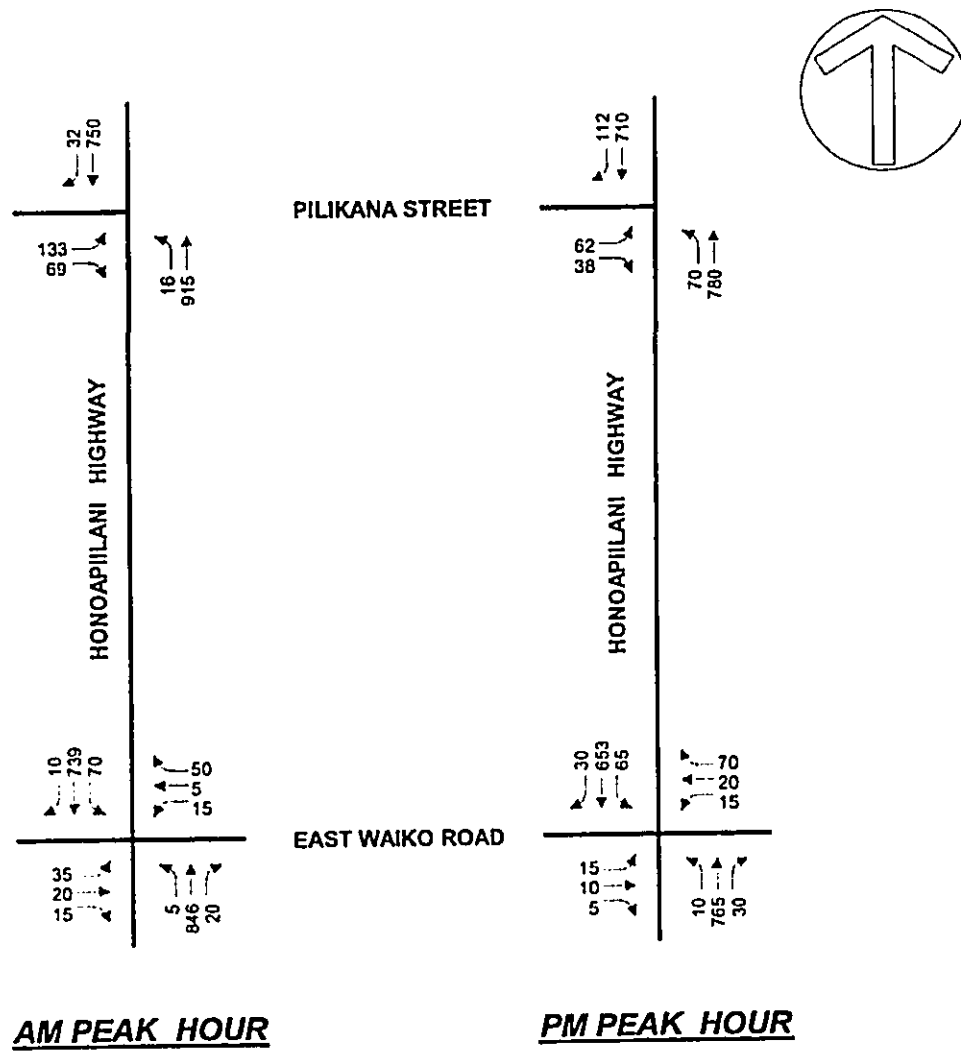


Figure 12
2008 CUMULATIVE PLUS PROJECT PEAK HOUR TRAFFIC PROJECTIONS
FOR SCENARIO A PLUS SINGLE-FAMILY PLUS OHANA UNITS

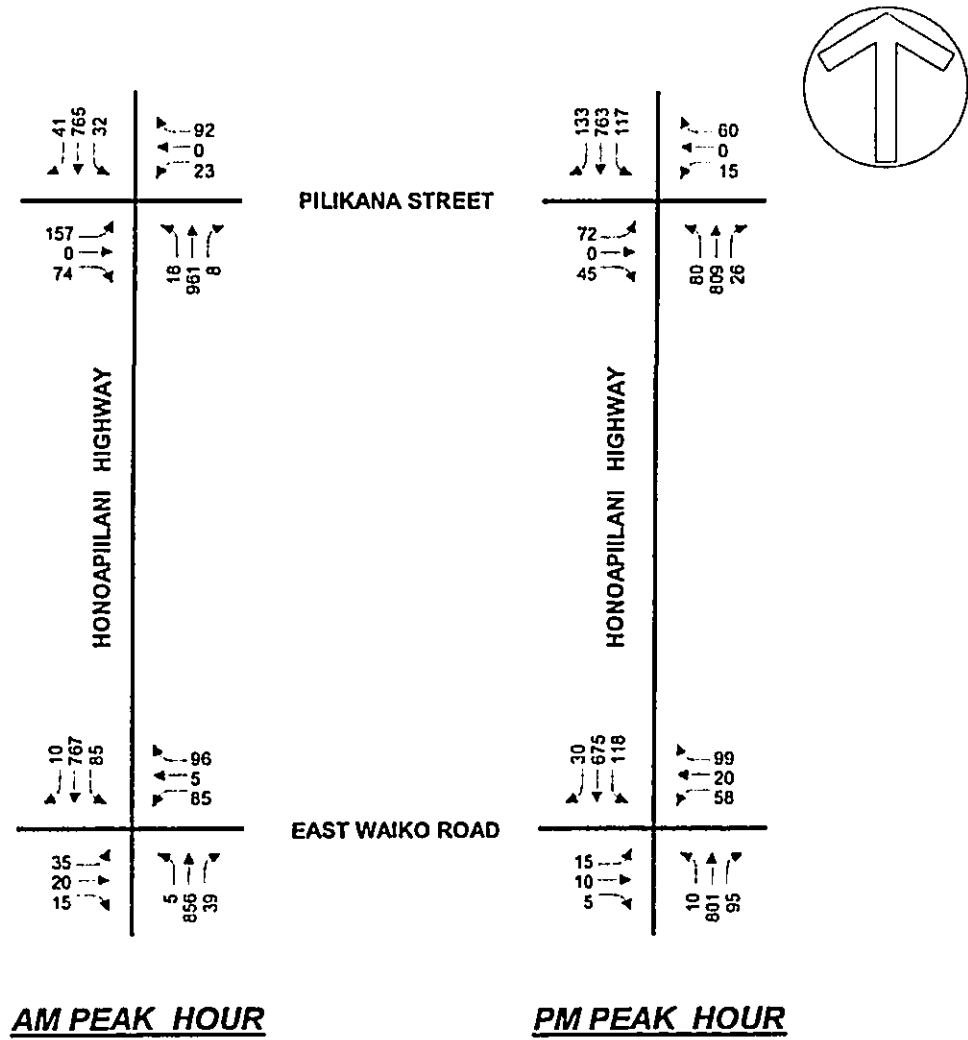


Figure 13
2008 CUMULATIVE PLUS PROJECT PEAK HOUR TRAFFIC PROJECTIONS
FOR SCENARIO B PLUS SINGLE-FAMILY PLUS OHANA UNITS

5. CONCLUSIONS AND RECOMMENDATIONS

The purpose of this chapter is to summarize the results of the level-of-service analysis, which identifies the project-related impacts. In addition, any mitigation measures necessary and feasible are identified and other access, egress and circulation issues are discussed.

Definition of Significant Impacts

Since there is no local criteria defining a significant traffic impact significance, criteria used by Los Angeles Department of Transportation was used for this study. The criteria shown in Table 7 are used to define a significant impact for a signalized intersection:

<u>Final V/C Ratio⁽²⁾</u>	<u>Project Related Increase in V/C</u>
0.700-0.800	equal to or greater than 0.040
0.800 - 0.900	equal to or greater than 0.020
> 0.900	equal to or greater than 0.010

NOTES:

(7) Los Angeles Department of Transportation, *Traffic Study Policies and Procedures*, 1993, page 10

(8) Final volume-to-capacity ratio is for the overall intersection.

There are no similar criteria for unsignalized intersections. The *Traffic Study Policies and Procedures* suggest that (1) unsignalized intersections be analyzed assuming signalized conditions so that intersections are evaluated using comparable criteria and (2) the volume-to-capacity ratio for the overall intersection, rather than each traffic movement, be used to evaluate the intersection.

In calculating the volume-to-capacity ratio for the overall intersection, deficient traffic movements may be overlooked because poor and good levels-of-service may balance, resulting in an acceptable level-of-service. Therefore, the criteria shown in Table 7 is used to define a significant impact for each traffic movement.

Changes in Hourly Traffic Volumes

Table 8 is an analysis of the changes in traffic volumes at the study intersections. Shown are the peak hour volumes without and with the project, the peak hourly change, and the percent change related to the peak hourly volume without the project. The volumes shown are the total volume of traffic approaching the intersection.

There is no established criteria for significance based on the change in peak hour traffic at a signalized intersection. However, it is generally accepted that if the change is 5% or greater, some mitigation will be required.

At the intersection of Honoapiilani Highway at Pilikana Street, the morning peak hour traffic volume increases 5.5%. During the afternoon peak hour, the increase is 7.5%.

At the intersection of Honoapiilani Highway at East Waiko Road, the morning and afternoon peak hour traffic increases 2.4% and 2.8%, respectively.

Table 8 Analysis of Changes in Hourly Traffic Volumes

Intersection	AM Peak Hourly Volume ⁽¹⁾				PM Peak Hour			
	Without Project ⁽²⁾	With Project ⁽³⁾	Change	Percent Change	Without Project	With Project	Change	Percent Change
Honoapiilani Highway at Pilikana Street	2055	2168	113	5.5%	1958	2104	146	7.5%
Honoapiilani Highway at East Waiko Road	1968	2015	47	2.4%	1832	1884	52	2.8%

Note:
 (1) Volumes shown are the total approach volume during the respective peak hour.
 (2) "Without project" refers to Background Scenario B, which includes background traffic growth plus traffic generated by all three related projects.
 (3) "With project" refers to Background Scenario B plus traffic generated by single-family units plus ohana units.

Level-of-Service Analysis for 2008 Cumulative Plus Project Conditions - Scenario A

The level-of-service analysis was performed for cumulative (Case 2), cumulative plus single-family (Case 4) and cumulative plus single-family plus ohana units (Case 6). Both of the future conditions with the project (Cases 4 and 6) were compared to cumulative conditions (Case 2) in order to assess the impact of the project either without or with the ohana units. "Scenario A cumulative plus project conditions" represents conditions with only the Waiolani Elua project developed for background conditions plus traffic generated by the study project.

The assumptions used for the level-of-service analysis are:

1. The intersection of Honoapiilani Highway at Pilikana Street is signalized. This is based on the results of a traffic signal warrant analysis that concluded that the warrants for traffic signals are satisfied for existing peak hour traffic conditions. The Traffic Signal Peak Hour Warrant Analysis

Worksheet are presented as Appendix B. The developer has also agreed to participate in the installation of the traffic signal since the warrants are satisfied.

2. The traffic signal timing is optimized for cumulative plus project conditions. There will be a separate phase for northbound to westbound left turns.
3. No improvements are anticipated for the intersection of Honoapiilani Highway at East Waiko Road. The study project will add traffic only to the northbound and southbound through movements. Also, the increase in traffic using the intersection is less than 3%. Therefore, the intersection will continue to be STOP sign controlled.

The results of the level-of-service analysis is discussed separately for each intersection. The Level-of-Service calculations are provided as Appendix C.

Honoapiilani Highway at Pilikana Street

The results of the level-of-service analysis for the intersection of Honoapiilani Highway at Pilikana Street is summarized in Table 9. The analysis was performed for signalized conditions as previously noted. Shown are the volume-to-capacity ratios, delays and levels-of-service of the overall intersection and each movement for morning and afternoon peak periods, cumulative and cumulative plus project conditions.

Table 9 Level-of-Service Analysis for Scenario A- Honoapiilani Highway at Pilikana Street

Intersection and Movement	Cumulative (Case 2)			Cumulative Plus Single-Family (Case 4)			Changes		Cumulative Plus Single-Family Plus Ohana (Case 6)			Changes	
	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	V/C	Delay	LOS	V/C	Delay
AM Peak Hour	0.64	8.9	A	0.67	10.5	B	0.03	1.6	0.68	11.3	B	0.04	2.4
Eastbound Left	0.44	31.0	C	0.62	35.7	D	0.18	4.7	0.69	40.0	D	0.25	9.0
Eastbound Right	0.07	25.2	C	0.23	27.4	C	0.16	2.2	0.28	28.3	C	0.21	3.1
Northbound Left	0.15	39.4	D	0.31	48.0	D	0.16	8.6	0.35	50.7	D	0.20	11.3
Northbound Thru	0.68	7.2	A	0.68	7.2	A	0.00	0.0	0.68	7.2	A	0.00	0.0
Southbound Thru	0.61	6.8	A	0.61	6.8	A	0.00	0.0	0.61	6.8	A	0.00	0.0
Southbound Right	0.00	2.7	A	0.01	2.7	A	0.01	0.0	0.01	2.8	A	0.01	0.1
PM Peak Hour	0.56	7.5	A	0.60	9.0	A	0.04	1.5	0.61	9.5	A	0.05	2.0
Eastbound Left	0.22	34.1	C	0.43	39.2	D	0.21	5.1	0.50	41.6	D	0.28	7.5
Eastbound Right	0.00	30.7	C	0.12	32.5	C	0.12	1.8	0.17	33.3	C	0.17	2.6
Northbound Left	0.20	33.2	C	0.30	36.0	D	0.10	2.8	0.39	37.2	D	0.19	4.0
Northbound Thru	0.56	3.8	A	0.56	3.8	A	0.00	0.0	0.56	3.8	A	0.00	0.0
Southbound Thru	0.04	3.5	A	0.08	3.6	A	0.04	0.1	0.09	3.7	A	0.05	0.2
Southbound Right	0.66	9.3	A	0.66	9.3	A	0.00	0.0	0.66	9.3	A	0.00	0.0

NOTES:
1. Peak hour conditions analyzed are "worst-case" conditions, which is the sum of the peak hour of the adjacent street plus the peak hour of the generator.
2. V/C denotes volume-to-capacity ratio.
3. Delay is in seconds per vehicle.
4. LOS denotes Level-of-Service calculated using the operations method described in Highway Capacity Manual. LOS is based on delay.
5. Changes refer to the change in volume-to-capacity ratio from Cumulative to Cumulative Plus Project conditions.

During the morning and afternoon peak hours, all traffic movements have final volume-to-capacity ratios for cumulative plus single-family plus ohana units less than 0.70, which is below the threshold of significance. Because all the final volume-to-capacity ratios are less than 0.70, the traffic impacts of the project are insignificant by definition.

Honoapiilani Highway at East Waiko Road

The results of the Level-of-Service analysis for the intersection of Honoapiilani Highway at East Waiko Road is summarized on Table 10.

Table 10 Level-of-Service Analysis for Scenario A- Honoapiilani Highway at East Waiko Road

Intersection and Movement	Cumulative (Case 2)		Cumulative Plus Single Family (Case 4)		Change (Case 4 versus Case 2)	Cumulative Plus Single-Family Plus Ohana (Case 6)		Change (Case 6 versus Case 2)
	Delay	LOS	Delay	LOS	Delay	Delay	LOS	Delay
AM Peak Hour								
Northbound Left	10.6	B	10.9	B	0.3	10.9	B	0.3
Southbound Left	13.3	B	13.4	B	0.1	13.4	B	0.1
Westbound Left, Thru & Right	33.4	D	35.8	E	2.4	36.3	E	2.9
Eastbound Left & Thru	114.7	F	129.2	F	14.5	132.5	F	17.8
Eastbound Right	11.5	B	11.7	B	0.2	11.8	B	0.3
PM Peak Hour								
Northbound Left	10.3	B	10.5	B	0.2	10.5	B	0.2
Southbound Left	11.9	B	12.2	B	0.3	12.3	B	0.4
Westbound Left, Thru & Right	29.5	D	31.9	D	2.4	32.7	D	3.2
Eastbound Left & Thru	53.2	F	57.3	F	4.1	58.8	F	5.6
Eastbound Right	11.0	B	11.1	B	0.1	11.1	B	0.1

NOTES:
1. Peak hour conditions analyzed are "worst-case" conditions, which is the sum of the peak hour of the adjacent street plus the peak hour of the generator.
2. V/C denotes ratio of volume to capacity. V/C ratio is not calculated for unsignalized intersections.
3. Delay is in seconds per vehicle.
4. LOS denotes Level-of-Service calculated using the operations method described in Highway Capacity Manual. LOS is based on delay.

Since the intersection is unsignalized, delays and levels-of-service are shown. Volume-to-capacity ratios are not calculated for unsignalized intersections. During the morning peak hour, traffic along the westbound approach will operate at Level-of-Service D without the project and Level-of-Service E with either project (single family or single family plus ohana). The eastbound left and through movements will operate at Level-of-Service F without and with the project.

During the afternoon peak hour, the westbound approach will operate at Level-of-Service D without and with the project. The eastbound left and through will operate at Level-of-Service F without and with the project.

During both peak periods, the delays to traffic using the eastbound and westbound approaches increases as a result of additional northbound and southbound through traffic along Honoapiilani Highway. A delay analysis of cumulative plus single-family plus ohana (worse-case) conditions concluded that the total cumulative delay for all vehicles of the eastbound approach is 2.1 hours during the morning peak hour and 0.4 hour during the afternoon peak hour. The minimum peak hour delay required to warrant a traffic signal is five hours⁷. The total cumulative delay is relatively low because the peak hour approach volume is small. Since the total delay of the eastbound approach, which is greater than the westbound approach, is less than the minimum required to warrant a traffic signal, a traffic signal is not recommended.

⁷ Federal Highway Administration, U.S. Department of Transportation *Manual of Uniform Traffic Control Devices*, 2000, Washington, D.C., p. 4C-8

Level-of-Service Analysis for 2008 Cumulative Plus Project Conditions - Scenario B

Honoapiilani Highway at Pilikana Street

Scenario B represent future condition when all three of the related projects in the area are completed. This is considered a worse-case scenario.

The level-of-service analysis was performed for cumulative (Case 3), cumulative plus single-family (Case 5) and cumulative plus single-family plus ohana units (Case 7). Both of the future conditions with the project (Cases 5 and 7) were compared to cumulative conditions (case 2) in order to assess the impact of the project either without or with the ohana units. The incremental difference between two conditions is the impact of the project.

The assumptions used for the level-of-service analysis are:

1. The intersection of Honoapiilani Highway at Pilikana Street is signalized. This is based on the results of a traffic signal warrant analysis that concluded that the warrants for traffic signals are satisfied for existing peak hour traffic conditions. The *Traffic Signal Peak Hour Warrant Analysis Worksheet* are presented as Appendix B.
2. The intersection of Honoapiilani Highway at Pilikana Street is a four-way intersection. The westbound approach is added for access and egress for the Waikapu Affordable Housing Project.
3. The intersection of Honoapiilani Highway at East Waiko Road is signalized. Signalization of this intersection is required as part of the Waikapu Affordable Housing Project that is one of the related projects for this background scenario.
4. The traffic signal timings of both intersections are optimized for cumulative plus single-family plus ohana conditions. There will be a separate phase for northbound and southbound left turns.

The results of the level-of-service analysis for the intersection of Honoapiilani Highway at Pilikana Street is summarized in Table 11. Shown are the volume-to-capacity ratios, delays and levels-of-service of the overall intersection and each movement for morning and afternoon peak periods, cumulative and cumulative plus project conditions.

During the morning peak hour, final volume-to-capacity ratios of the northbound through movement, the southbound through movement and the southbound left turn are greater than 0.70. However, the volume-to-capacity ratios of these movements do not change because the proposed project adds no traffic to these movements. Since the study project adds no traffic to these movements and the volume-to-capacity ratio does not change, the traffic impact of the proposed project is insignificant. The Level-of-Service of the southbound left turn is F because the level-of-service is defined by delay which is greater than 90 seconds for this movement. The delay is because vehicles waiting to turn left must wait for the traffic signal to process the other traffic signal phases before a green phase is given to this movement.

All the remaining movements have final volume-to-capacity ratios of 0.70 or less.

During afternoon peak hour, all traffic movements have final volume-to-capacity ratios for cumulative plus single-family plus ohana units less than 0.70, which is below the threshold of significance. Because all the final volume-to-capacity ratios are less than 0.70, the traffic impacts of the project are insignificant.

Table 11 Level-of-Service Analysis for Scenario B- Honoapiilani Highway at Pilikana Street

Intersection and Movement	Cumulative (Case 3)			Cumulative Plus Single-Family (Case 5)			Changes (Case 5 versus Case 3)		Cumulative Plus Single-Family Plus Ohana (Case 7)			Changes (Case 7 versus Case 3)	
	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	V/C	Delay	LOS	V/C	Delay
AM Peak Hour	0.77	18.5	B	0.82	19.2	B	0.05	0.7	0.83	19.6	B	0.06	1.1
Eastbound Left	0.49	25.6	C	0.64	30.6	C	0.15	5.0	0.70	33.3	C	0.21	7.7
Eastbound Thru & Right	0.06	18.9	B	0.17	20.0	C	0.11	1.1	0.21	20.4	C	0.15	1.5
Westbound Left & Thru	0.09	19.2	B	0.09	19.2	B	0.00	0.0	0.10	19.2	B	0.01	0.0
Westbound Right	0.28	21.3	C	0.28	21.3	C	0.00	0.0	0.28	21.3	C	0.00	0.0
Northbound Left	0.20	39.5	D	0.36	49.8	D	0.16	10.3	0.40	53.0	D	0.20	13.5
Northbound Thru	0.89	20.1	C	0.89	20.1	C	0.00	0.0	0.89	20.1	C	0.00	0.0
Northbound Right	0.00	4.4	A	0.00	4.4	A	0.00	0.0	0.00	4.4	A	0.00	0.0
Southbound Left	0.72	93.2	F	0.72	93.2	F	0.00	0.0	0.72	93.2	F	0.00	0.0
Southbound Thru	0.71	11.5	B	0.71	11.5	B	0.00	0.0	0.71	11.5	B	0.00	0.0
Southbound Right	0.00	4.4	A	0.02	4.5	A	0.02	0.1	0.02	4.5	A	0.02	0.1
PM Peak Hour	0.63	14.4	B	0.67	15.5	B	0.04	1.1	0.68	16.0	B	0.05	1.6
Eastbound Left	0.32	35.9	D	0.56	44.9	D	0.24	9.0	0.65	49.8	D	0.33	13.9
Eastbound Thru & Right	0.04	30.5	C	0.15	32.0	C	0.11	1.5	0.18	32.6	C	0.14	2.1
Westbound Left & Thru	0.12	31.7	C	0.15	32.6	C	0.03	0.9	0.17	33.1	C	0.05	1.4
Westbound Right	0.30	34.8	C	0.30	34.8	C	0.00	0.0	0.30	34.8	C	0.00	0.0
Northbound Left	0.27	35.5	D	0.41	38.9	D	0.14	3.4	0.46	40.4	D	0.19	4.9
Northbound Thru	0.69	10.2	B	0.69	10.2	B	0.00	0.0	0.69	10.2	B	0.00	0.0
Northbound Right	0.02	3.9	A	0.02	3.9	A	0.00	0.0	0.02	3.9	A	0.00	0.0
Southbound Left	0.67	50.3	D	0.67	50.3	D	0.00	0.0	0.67	50.3	D	0.00	0.0
Southbound Thru	0.65	9.4	A	0.65	9.4	A	0.00	0.0	0.65	9.4	A	0.00	0.0
Southbound Right	0.05	4.1	A	0.10	4.3	A	0.05	0.2	0.11	4.4	A	0.06	0.3

NOTES:

1. Peak hour conditions analyzed are "worst-case" conditions, which is the sum of the peak hour of the adjacent street plus the peak hour of the generator.
2. V/C denotes ratio of volume to capacity. V/C ratio is not calculated for unsignalized intersections.
3. Delay is in seconds per vehicle.
4. LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. LOS is based on delay.

Honoapiilani Highway at East Waiko Road

The results of the Level-of-Service analysis for the intersection of Honoapiilani Highway at East Waiko Road is summarized on Table 12.

Table 12 Level-of-Service Analysis for Scenario B- Honoapiilani Highway at East Waiko Road

Intersection and Movement	Cumulative (Case 3)			Cumulative Plus Single-Family (Case 5)			Changes (Case 6 versus Case 3)		Cumulative Plus Single-Family Plus Ohana (Case 7)			Changes (Case 7 versus Case 3)	
	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	V/C	Delay	LOS	V/C	Delay
AM Peak Hour	0.77	17.1	B	0.77	17.1	B	0.00	0.0	0.78	17.2	B	0.01	0.1
Eastbound Left & Thru	0.37	28.9	C	0.37	28.9	C	0.00	0.0	0.37	28.9	C	0.00	0.0
Eastbound Right	0.06	23.7	C	0.06	23.7	C	0.00	0.0	0.06	23.7	C	0.00	0.0
Westbound Left	0.87	71.2	E	0.87	71.2	E	0.00	0.0	0.87	71.2	E	0.00	0.0
Westbound Thru & Right	0.37	28.5	C	0.37	28.5	C	0.00	0.0	0.37	28.5	C	0.00	0.0
Northbound Left	0.05	28.7	C	0.05	28.7	C	0.00	0.0	0.05	28.7	C	0.00	0.0
Northbound Thru & Right	0.75	10.7	B	0.76	10.9	B	0.01	0.2	0.76	10.9	B	0.01	0.2
Southbound Left	0.75	62.1	E	0.75	62.1	E	0.00	0.0	0.75	62.1	E	0.00	0.0
Southbound Thru	0.63	8.0	A	0.65	8.4	A	0.02	0.4	0.66	8.5	A	0.03	0.5
Southbound Right	0.01	3.3	A	0.01	3.3	A	0.00	0.0	0.01	3.3	A	0.00	0.0
PM Peak Hour	0.73	17.6	B	0.75	17.9	B	0.02	0.3	0.75	18.0	B	0.02	0.4
Eastbound Left & Thru	0.18	32.1	C	0.18	32.1	C	0.00	0.0	0.18	32.1	C	0.00	0.0
Eastbound Right	0.04	30.0	C	0.04	30.0	C	0.00	0.0	0.04	30.0	C	0.00	0.0
Westbound Left	0.49	41.1	D	0.49	41.1	D	0.00	0.0	0.49	41.1	D	0.00	0.0
Westbound Thru & Right	0.66	46.5	D	0.66	46.5	D	0.00	0.0	0.66	46.5	D	0.00	0.0
Northbound Left	0.06	32.5	C	0.06	32.5	C	0.00	0.0	0.06	32.5	C	0.00	0.0
Northbound Thru & Right	0.75	12.5	B	0.77	13.2	B	0.02	0.7	0.78	13.5	B	0.03	1.0
Southbound Left	0.68	51.8	D	0.68	51.8	D	0.00	0.0	0.68	51.8	D	0.00	0.0
Southbound Thru	0.56	8.4	A	0.58	8.6	A	0.02	0.2	0.58	8.7	A	0.02	0.3
Southbound Right	0.01	4.1	A	0.01	4.1	A	0.00	0.0	0.01	4.1	A	0.00	0.0

NOTES:

1. Peak hour conditions analyzed are "worst-case" conditions, which is the sum of the peak hour of the adjacent street plus the peak hour of the generator.
2. V/C denotes ratio of volume to capacity. V/C ratio is not calculated for unsignalized intersections.
3. Delay is in seconds per vehicle.
4. LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. LOS is based on delay.

During the morning peak hour the volume-to-capacity ratio of the westbound left will be 0.87 without and with the project. The proposed project adds no traffic to this movement and therefore has no impact on this lane group. The volume-to-capacity ratio of the southbound left will be 0.75 without and with the project. There is no change because the project adds no traffic to this movement.

The volume-to-capacity ratio of the northbound through and right will increase for 0.75 to 0.76. The change is 0.01. The change required to be significant of 0.04. Therefore, the impact is insignificant.

During the afternoon peak hour, the volume-to-capacity ratio of the northbound through and right will increase from 0.75 to 0.78. The change is 0.03. The change required for the impact to be significant is 0.04. Therefore, the impact is insignificant.

The final volume-to-capacity ratio of all the remaining movements is less than 0.70, which implies that the impacts of project generated traffic on these movements is insignificant.

Conclusions

1. The project is located along the west side of Honoapiilani Highway and north of Pilikana Street in the Waikapu area of Maui.
2. The project will consist of 108 single family detached residential units and up to 54 ohana units.
3. Access will be via Pilikana Street. There will be no direct access to and from the project along Honoapiilani Highway.
4. The project will generate 113 trips during the morning peak hour, 28 inbound and 85 outbound. During the afternoon peak hour, this project will generate 92 inbound and 54 outbound trips for a total of 146 trips.
5. At the intersection of Honoapiilani Highway at Pilikana Street, the morning peak hour traffic volume increases 5.5%. During the afternoon peak hour, the increase is 7.5%.
6. At the intersection of Honoapiilani Highway at East Waiko Road, the morning and afternoon peak hour traffic increases 2.4% and 2.8%, respectively, for 2008 cumulative plus single-family plus ohana units (worse-case) conditions.
7. A traffic signal warrant analysis for the intersection of Honoapiilani Highway at Pilikana Street concluded that the peak hour warrants for traffic signals are satisfied for existing conditions.
8. The traffic impact analysis was performed for two scenarios. Scenario A represents conditions with only the Waiolani Elua project as completed. Scenario B represents conditions with all three of the related projects within the study area completed. Scenario B is considered a worse-case scenario.
9. For both scenarios, the intersection of Honoapiilani Highway at Pilikana Street should be signalized.
10. For Scenario B, which represents worse-case conditions, the project does not have a significant impact on either study intersection. Therefore, no mitigation in addition to the traffic signal noted above is required.

APPENDIX A
TRAFFIC PROJECTION WORKSHEETS

Part 2.1
Trip Assignment Worksheet
Wakapu 28
September 2003

INTERSECTION NO 1
INTERSECTION OF Honolulu Highway at Palakana Street

Approach No. & Mov.	Exitway		Bird Growth		Vacant Lots		Subtotal 1		Spencer Project		Single Family		Subtotal 2		Project Traffic Single Family		Subtotal 3		Subtotal 4		Project Traffic Chains Units		Subtotal 5		Total Project	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1 N- RT	10	40			13	53			15	53	0	21	22	74	14	45	27	96	36	119	5	14	32	112	41	133
2 TH	690	655	00	55	750	710	0	0	35	117	0	0	765	763	750	710	765	763	765	763	0	0	750	710	765	763
3 LT					0	0	0	0	92	60	0	0	92	60	0	0	0	0	92	60	0	0	0	0	92	60
4 E- RT					0	0	0	0	23	15	0	0	23	15	0	0	0	0	23	15	0	0	0	0	23	15
5 TH					0	0	0	0	8	26	0	0	8	26	0	0	0	0	8	26	0	0	0	0	8	26
6 LT					0	0	0	0	46	20	0	0	46	20	0	0	0	0	46	20	0	0	0	0	46	20
7 S- RT	845	720	70	60	915	780	0	0	0	0	2	10	915	805	7	25	915	780	915	805	2	8	915	780	915	805
8 TH	5	30			7	37			0	0	5	7	7	37	27	14	59	33	64	40	0	0	16	70	16	80
9 LT	25	15			4	19			0	0	0	0	4	19	0	0	0	0	4	19	0	0	0	0	4	19
10 W- RT	75	20			85	27			24	10	24	10	85	27	35	26	120	53	144	63	13	9	133	62	157	72
11 TH					0	0			219	300	40	48	2081	1974	83	110	1885	1736	2144	2064	50	36	1915	1772	2174	2120
12 LT					1802	1626			219	300	40	48	2081	1974	83	110	1885	1736	2144	2064	50	36	1915	1772	2174	2120
TOTAL	1850	1480	130	115	22	31	1802	1626	219	300	40	48	2081	1974	83	110	1885	1736	2144	2064	50	36	1915	1772	2174	2120
Approach Totals	700	695	60	55	3	13	763	763	50	170	0	21	822	954	14	45	777	808	836	999	5	14	782	822	641	1013
From North	0	0	0	0	0	0	0	0	115	75	0	0	115	75	0	0	0	0	115	75	0	0	0	0	115	75
From East	850	750	70	60	2	7	922	817	54	55	2	10	978	892	7	25	929	842	985	907	2	8	931	850	937	915
From South	100	35	0	0	0	0	117	46	0	0	0	0	117	46	62	40	117	88	208	103	22	14	202	109	233	117
From West	1650	1480	130	115	22	31	1802	1626	219	300	40	48	2081	1974	83	110	1885	1736	2144	2064	50	36	1915	1772	2174	2120
Departure Totals	920	740	70	60	10	7	1000	807	138	89	24	10	1162	906	35	28	1035	833	1197	932	13	9	1048	842	1210	941
To North	0	0	0	0	0	0	0	0	43	143	0	0	43	143	0	0	0	0	43	143	0	0	0	0	43	143
To East	715	670	60	55	7	4	782	729	36	68	5	7	825	804	27	14	809	743	852	816	10	5	919	746	862	823
To South	15	70	0	0	0	0	20	90	0	0	11	31	31	121	21	70	41	160	52	191	7	22	48	162	59	213
To West	1650	1480	130	115	22	31	1802	1626	219	300	40	48	2081	1974	83	110	1885	1736	2144	2064	50	36	1915	1772	2174	2120
Leg Totals	1920	1435	130	115	13	20	1763	1570	188	259	33	31	1984	1880	49	71	1812	1841	2033	1921	18	23	1830	1664	2051	1954
North	0	0	0	0	0	0	0	0	158	218	0	0	158	218	0	0	0	0	158	218	0	0	0	0	158	218
East	1565	1420	130	115	9	11	1704	1546	92	123	7	17	1803	1866	34	39	1738	1565	1837	1725	12	13	1750	1598	1849	1738
South	115	105	0	0	0	0	117	104	0	0	0	0	117	104	83	110	220	248	260	204	32	38	250	292	290	330
West	3300	2950	260	230	44	62	3604	3252	438	600	60	68	4172	3948	165	220	3770	3472	4285	4158	60	72	3530	3544	4348	4210
Total	3300	2950	260	230	44	62	3604	3252	438	600	60	68	4172	3948	165	220	3770	3472	4285	4158	60	72	3530	3544	4348	4210

CASE 1

CASE 2

CASE 3

CASE 4

CASE 5

CASE 6

CASE 7

Part 2.2
Trip Assignment Worksheet
Worksheet 28
August 2003

INTERSECTION NO 2
INTERSECTION OF Honolulu Highway at East Waike Road

Approach No	& MVI	Exit/Enter		Blvd Growth		Miscellaneous		Subtotal 1		Subtotal 2		Subtotal 3		Subtotal 4		Subtotal 5		Total Project					
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM		
1	N-	10	30	60	55	7	4	10	30	23	15	5	7	10	30	27	14	10	30	10	30		
2	TH	635	575	70	634	5	7	730	656	15	53	7	7	70	65	27	14	739	653	767	675		
3	LT	70	65	0	70	0	0	85	118	46	28	0	0	85	118	0	0	70	65	85	118		
4	E-	50	70	0	50	0	0	98	99	0	0	0	0	98	99	0	0	50	70	98	99		
5	TH	5	20	0	5	0	0	5	20	0	0	0	0	5	20	0	0	5	20	5	20		
6	LT	15	15	0	15	0	0	65	50	19	43	0	0	65	50	0	0	15	15	65	50		
7	S-	20	30	130	60	2	7	20	30	8	26	2	10	20	30	7	25	20	30	20	30		
8	TH	765	665	70	60	0	0	847	760	0	0	0	0	844	757	0	0	846	765	858	801		
9	LT	5	10	0	5	0	0	5	10	0	0	0	0	5	10	0	0	5	10	5	10		
10	W-	15	5	0	15	0	0	15	5	0	0	0	0	15	5	0	0	15	5	15	5		
11	TH	20	10	0	20	0	0	20	10	0	0	0	0	20	10	0	0	20	10	20	10		
12	LT	35	15	0	35	0	0	35	15	0	0	0	0	35	15	0	0	35	15	35	15		
TOTAL		1645	1510	130	115	0	11	1784	1636	181	231	7	17	1972	1864	34	39	1818	1675	2006	1923	2018	1936
Approach Totals																							
From North		715	670	60	55	7	4	762	729	38	68	5	7	825	604	27	14	809	743	852	818	819	748
From East		70	105	0	0	0	0	70	105	116	72	0	0	186	177	0	0	70	105	186	177	70	105
From South		790	705	70	60	2	7	862	773	27	91	2	10	891	831	7	25	869	797	868	836	871	808
From West		70	30	0	0	0	0	70	30	0	0	0	0	70	30	0	0	70	30	70	30	70	30
Total		1645	1510	130	115	9	11	1784	1636	181	231	7	17	1972	1864	34	39	1818	1675	2006	1923	2018	1936
Departure Totals																							
To North		650	750	70	60	2	7	922	817	54	55	2	10	978	822	7	25	970	842	945	907	931	850
To East		110	105	0	0	0	0	110	105	34	118	0	0	144	223	0	0	110	105	144	223	110	105
To South		665	595	80	55	7	4	732	654	93	58	5	7	830	719	27	14	759	668	857	733	769	673
To West		20	60	0	0	0	0	20	60	0	0	0	0	20	60	0	0	20	60	20	60	20	60
Total		1645	1510	130	115	9	11	1784	1636	181	231	7	17	1972	1864	34	39	1818	1675	2006	1923	2018	1936
Leg Totals																							
North		1565	1420	130	115	9	11	1704	1546	92	123	7	17	1803	1686	34	39	1736	1565	1837	1725	1840	1738
East		190	210	0	0	0	0	190	210	150	190	0	0	330	400	0	0	190	210	330	400	190	210
South		1435	1300	130	115	9	11	1594	1428	120	149	7	17	1721	1592	34	39	1628	1465	1755	1631	1640	1478
West		90	90	0	0	0	0	90	90	0	0	0	0	90	90	0	0	90	90	90	90	90	90
Total		3200	3020	260	230	16	22	3568	3272	362	462	14	34	3944	3766	68	78	3638	3350	4012	3446	4058	3872

CASE 1 CASE 2 CASE 3 CASE 4 CASE 5 CASE 6 CASE 7

APPENDIX B
TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEET

TRAFFIC SIGNAL WARRANT WORKSHEET^{1,2}

Project: Waikapu 28

Major Street: Honoapiilani Highway Critical Approach Speed: 40 mph

Minor Street: Pilikana Street Critical Approach Speed: 25 mph

Critical speed of major street traffic ≥ 40 mph 70% (Rural)

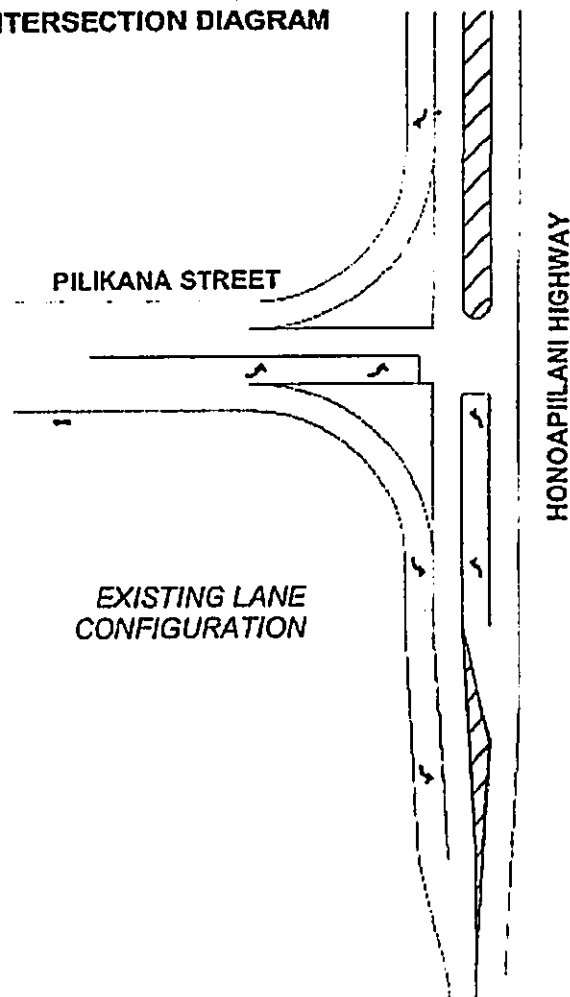
OR
In built-up area of isolated community of < 10,000 population 70% (Rural)

100% (Urban)

Conditions: Existing AM Peak Hour

Calculated By: PJ Rowell Date: 10-05-03

INTERSECTION DIAGRAM



¹ Federal Highway Administration, *Manual of Uniform Traffic Control Devices*, 1988, Section 4C Warrants.

² Caltrans, *Traffic Manual*, 1986, pgs. 9-1 through 9-13.

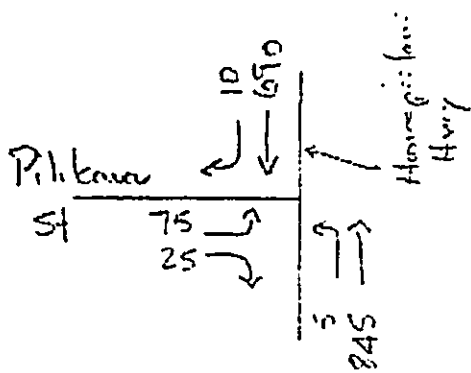
WARRANT 3 - PEAK HOUR

CONDITION A, PEAK HOUR DELAY

Satisfied YES NO

REQUIREMENT	FULFILLED
The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours (vph) for a one-lane approach and five vehicle-hours for a two-lane approach; and	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>
The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic and 150 vph for two moving lanes; and	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>
The total entering volumes serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches and 650 vph for intersections with three approaches.	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>

CALCULATIONS



A. Delay Calcs

$$\begin{aligned}
 Lt: & 75 \times 31.7 \text{ sec/veh} = 2377.5 \\
 Rt: & 25 \times 11.8 \text{ sec/veh} = 295.0 \\
 & \hline
 & 2672.5 \\
 & \div 3600 \\
 & \hline
 & 0.74 \text{ Hrs}
 \end{aligned}$$

B. Approach Vol

$$75 + 25 = 100$$

C. Total Volumes

$$100 + 700 + 850 = 1650$$

CONDITION B, PEAK HOUR VOLUME

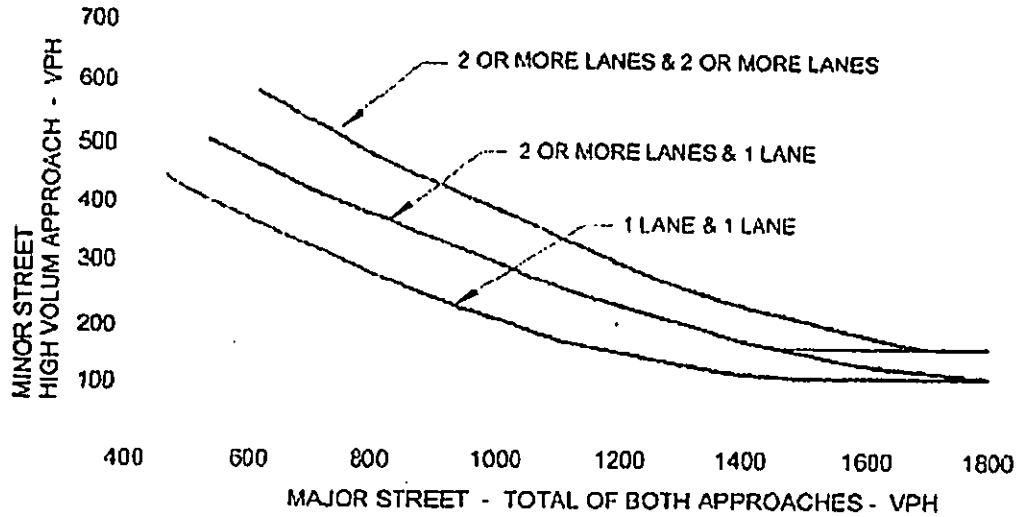
Satisfied YES NO

	APPROACH LANES	AM Peak Hour Volumes
Both approaches, Major Street	1	1545
Highest approaches, Minor Street	1	75 (*)

no left turns not included

100% CONDITIONS

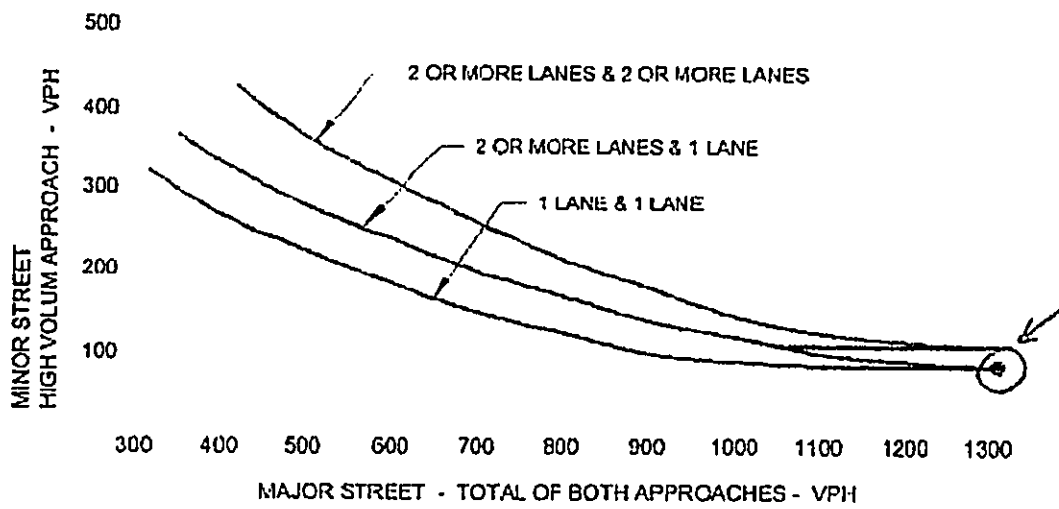
NOTE: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as



the lower threshold volume for a minor street approaching with one lane.

70% CONDITIONS

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 KM/H (40 MPH) ON MAJOR STREET)



NOTE: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

CONCLUSIONS

1. The peak hour volume warrant is satisfied for the morning peak hour, existing conditions.
2. Since traffic volumes for future conditions, both without and with the proposed project, the peak hour volume warrant will also be satisfied for future conditions.

RECOMMENDATIONS

Based on the findings of the traffic signal warrant analysis for existing traffic conditions, a traffic signal should be installed at the study intersection. The analysis assumed that there would be a separate left turn phase for traffic turning from northbound Honoapiilani Highway to westbound Piikana Street.

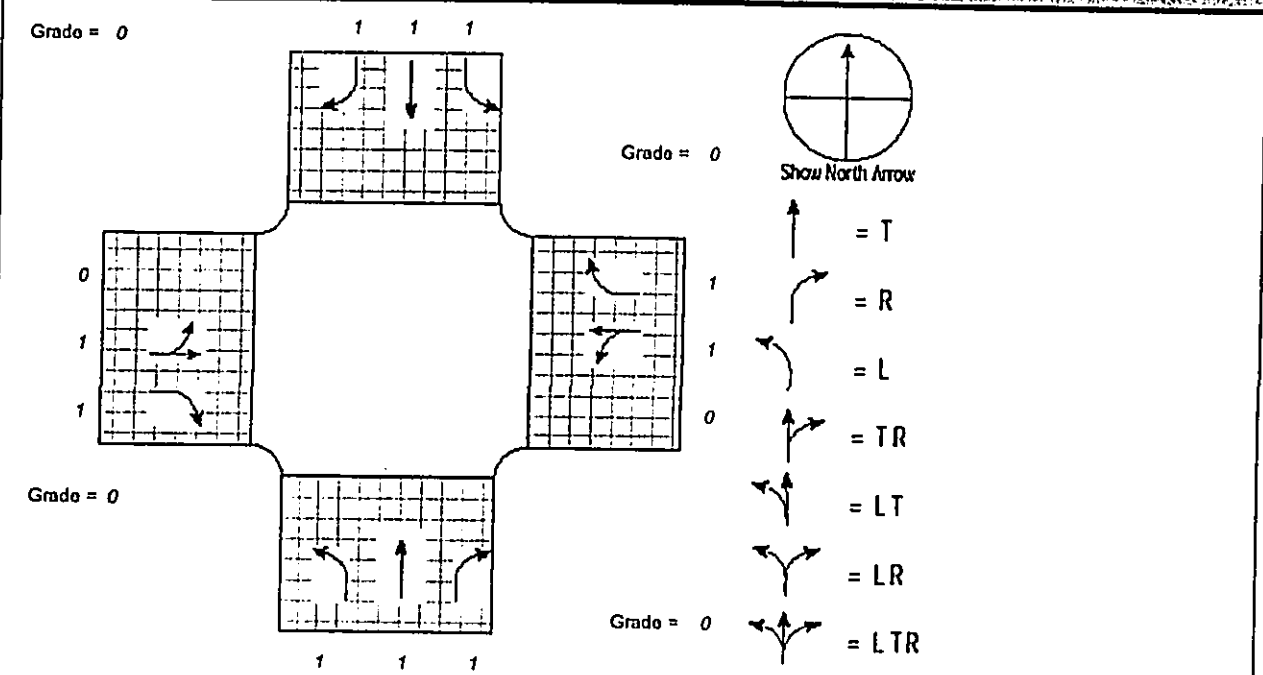
APPENDIX C
LEVEL-OF-SERVICE ANALYSIS WORKSHEETS

INPUT WORKSHEET

General Information		Site Information	
Analyst	PJR	Intersection	Case 1.1am
Agency or Co.	PRA	Area Type	All other areas
Date Performed	7/31/2003	Jurisdiction	
Time Period	AM Peak Hour	Analysis Year	Existing

Project Description *Waikapu 28 Case 1.1am*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	75	0	25	0	0	0	5	845	0	0	690	10
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.65	0.65	0.65	0.65	0.65	0.65	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type		3	3		3	3	3	3	3	3	3	3
Unit Extension		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0		20	0		20	0		4	0		0
Lane Width		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr		0	0		0	0	0	0	0	0	0	0
	EW Perm	02	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 14.5	G =	G =	G =	G = 1.8	G = 40.8	G =	G =				
	Y = 3	Y =	Y =	Y =	Y =	Y = 3	Y =	Y =				
Duration of Analysis (hrs) = 0.25							Cycle Length C = 63.1					

CAPACITY AND LOS WORKSHEET

General Information											
Project Description <i>Waikapu 28 Case1.1am</i>											
Capacity Analysis											
	EB		WB		NB			SB			
Lane group	LT	R	LT	R	L	T	R	L	T	R	
Adj. flow rate	115	8	0	0	6	939	0	0	767	11	
Satflow rate	524	1615	1900	1615	1805	1900	1615	1805	1900	1615	
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Green ratio	0.23	0.23	0.23	0.23	0.03	0.65	0.65	0.03	0.65	0.65	
Lane group cap.	120	371	437	371	51	1229	1044	51	1229	1044	
v/c ratio	0.96	0.02	0.00	0.00	0.12	0.76	0.00	0.00	0.62	0.01	
Flow ratio	0.22	0.00	0.00	0.00	0.00	0.49	0.00	0.00	0.40	0.01	
Crit. lane group	Y	N	N	N	Y	Y	N	N	N	N	
Sum flow ratios	0.72										
Lost time/cycle	6.00										
Critical v/c ratio	0.79										
Lane Group Capacity, Control Delay, and LOS Determination											
	EB		WB		NB			SB			
Lane group	LT	R	LT	R	L	T	R	L	T	R	
Adj. flow rate	115	8	0	0	6	939	0	0	767	11	
Lane group cap.	120	371	437	371	51	1229	1044	51	1229	1044	
v/c ratio	0.96	0.02	0.00	0.00	0.12	0.76	0.00	0.00	0.62	0.01	
Green ratio	0.23	0.23	0.23	0.23	0.03	0.65	0.65	0.03	0.65	0.65	
Unif. delay d1	24.0	18.8	18.7	18.7	29.9	7.8	3.9	29.8	6.6	4.0	
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
Increm. delay d2	71.6	0.1	0.0	0.0	4.7	4.5	0.0	0.0	2.4	0.0	
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Control delay	95.6	18.9	18.7	18.7	34.5	12.3	3.9	29.8	9.0	4.0	
Lane group LOS	F	B	B	B	C	B	A	C	A	A	
Approch. delay	90.6					12.5			8.9		
Approach LOS	F					B			A		
Intersec. delay	16.2		Intersection LOS						B		

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	PJR			Intersection	Case 1.1am			
Agency/Co.	PRA			Jurisdiction				
Date Performed	8/5/2003			Analysis Year	Existing			
Analysis Time Period	AM Peak Hour							
Project Description Waikapu 28								
East/West Street: Pilikana Street				North/South Street: Honoapiilani Highway				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	5	845	0	0	690	10		
Peak-Hour Factor, PHF	0.65	0.65	0.90	0.90	0.65	0.65		
Hourly Flow Rate, HFR	7	1300	0	0	1061	15		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			1		
Lanes	1	1	0	0	1	1		
Configuration	L	T			T	R		
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	0	0	0	75	0	25		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR	0	0	0	83	0	27		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			1		
Lanes	0	0	0	1	0	1		
Configuration				L		R		
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	7					83		27
C (m) (vph)	664					199		573
v/c	0.01					0.42		0.05
95% queue length	0.03					1.90		0.15
Control Delay	10.5					35.5		11.6
LOS	B					E		B
Approach Delay	--	--				29.6		
Approach LOS	--	--				D		

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TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	PJR			Intersection	Case 1.1pm			
Agency/Co.	PRA			Jurisdiction				
Date Performed	8/5/2003			Analysis Year	Existing			
Analysis Time Period	PM Peak Hour							
Project Description Waikapu 28								
East/West Street: Piliikana Street				North/South Street: Honoapiilani Highway				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	30	720	0	0	655	40		
Peak-Hour Factor, PHF	0.65	0.65	0.90	0.90	0.65	0.65		
Hourly Flow Rate, HFR	46	1107	0	0	1007	61		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			1		
Lanes	1	1	0	0	1	1		
Configuration	L	T			T	R		
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	0	0	0	20	0	15		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR	0	0	0	22	0	16		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			1		
Lanes	0	0	0	1	0	1		
Configuration				L		R		
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	46					22		16
C (m) (vph)	696					139		488
v/c	0.07					0.16		0.03
95% queue length	0.21					0.54		0.10
Control Delay	10.5					35.7		12.6
LOS	B					E		B
Approach Delay	--	--				26.0		
Approach LOS	--	--				D		

>

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	PJR			Intersection	Case 1.2am			
Agency/Co.	PRA			Jurisdiction				
Date Performed	8/5/2003			Analysis Year	Existing			
Analysis Time Period	AM Peak Hour							
Project Description Waikapu 28								
East/West Street: East Waiko Road				North/South Street: Honoapiilani Highway				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	5	765	5	70	635	10		
Peak-Hour Factor, PHF	0.65	0.65	0.65	0.65	0.65	0.65		
Hourly Flow Rate, HFR	7	1176	7	107	976	15		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	1	1	0	1	1	1		
Configuration	L		TR	L	T	R		
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	15	5	50	35	20	15		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR	16	5	55	38	22	16		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	1	0	0	1	1		
Configuration		LTR		LT		R		
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR		LT		R
v (vph)	7	107		76		60		16
C (m) (vph)	706	597		242		106		605
v/c	0.01	0.18		0.31		0.57		0.03
95% queue length	0.03	0.65		1.29		2.67		0.08
Control Delay	10.2	12.3		26.5		76.2		11.1
LOS	B	B		D		F		B
Approach Delay	--	--	26.5			62.5		
Approach LOS	--	--	D			F		

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TWO-WAY STOP CONTROL SUMMARY

General Information			Site Information					
Analyst	PJR	Intersection	Case 1.2pm					
Agency/Co.	PRA	Jurisdiction						
Date Performed	8/5/2003	Analysis Year	Existing					
Analysis Time Period	PM Peak Hour							
Project Description Waikapu 28								
East/West Street: East Waiko Road			North/South Street: Honoapiilani Highway					
Intersection Orientation: North-South			Study Period (hrs): 0.25					
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	10	665	10	65	575	30		
Peak-Hour Factor, PHF	0.65	0.65	0.65	0.65	0.65	0.65		
Hourly Flow Rate, HFR	15	1023	15	100	884	46		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	1	1	0	1	1	1		
Configuration	L		TR	L	T	R		
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	15	20	70	15	10	5		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR	16	22	77	16	11	5		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	1	0	0	1	1		
Configuration		LTR		LT		R		
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L	LTR			LT		R
v (vph)	15	100	115			27		5
C (m) (vph)	744	678	301			126		642
v/c	0.02	0.15	0.38			0.21		0.01
95% queue length	0.06	0.52	1.73			0.77		0.02
Control Delay	9.9	11.2	24.2			41.2		10.7
LOS	A	B	C			E		B
Approach Delay	--	--	24.2			36.4		
Approach LOS	--	--	C			E		

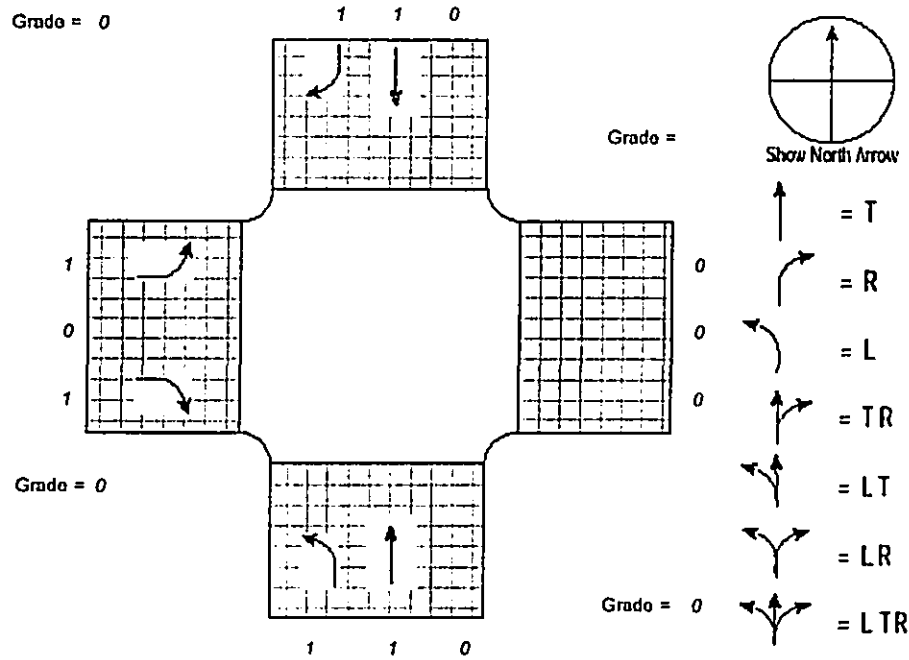
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INPUT WORKSHEET

General Information		Site Information	
Analyst	PJR	Intersection	Case 2.1am
Agency or Co.	PRA	Area Type	All other areas
Date Performed	7/31/2003	Jurisdiction	
Time Period	AM Peak Hour	Analysis Year	Case 2

Project Description Waikapu 28 Case2.1am

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	85		32				7	915			750	13
% Heavy veh	0		0				0	0			0	0
PHF	0.65		0.65				0.90	0.94			0.90	0.90
Actuated (P/A)	P		P				P	P			P	P
Startup lost time	2.0		2.0				2.0	2.0			2.0	2.0
Ext. eff. green	2.0		2.0				2.0	2.0			2.0	2.0
Arrival type	3		3				3	3			3	3
Unit Extension	3.0		3.0				3.0	3.0			3.0	3.0
Ped/Bike/RTOR Volume	0		20	0						0		0
Lane Width	12.0		12.0				12.0	12.0			12.0	12.0
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0		0				0	0			0	0
	EB Only	02	03	04	NB Only	Thru & RT	07	08				
Timing	G = 11.5	G =	G =	G =	G = 2.0	G = 50.5	G =	G =				
	Y = 3	Y =	Y =	Y =	Y =	Y = 3	Y =	Y =				
Duration of Analysis (hrs) = 0.25							Cycle Length C = 70.0					

CAPACITY AND LOS WORKSHEET

General Information

Project Description *Waikapu 28 Case2.1am*

Capacity Analysis

	EB			WB			NB			SB	
	L		R				L	T		T	R
Lane group							8	973		833	14
Adj. flow rate	131		18				1805	1900		1900	1615
Satflow rate	1805		1615				2.0	2.0		2.0	2.0
Lost time	2.0		2.0				0.03	0.75		0.72	0.72
Green ratio	0.16		0.16				0.15	0.68		0.61	0.01
Lane group cap.	297		265				52	1425		1371	1165
v/c ratio	0.44		0.07				0.00	0.51		0.44	0.01
Flow ratio	0.07		0.01				N	Y		N	N
Crit. lane group	Y	N	N		N		N	Y		N	N
Sum flow ratios	0.58										
Lost time/cycle	6.00										
Critical v/c ratio	0.64										

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB	
	L		R				L	T		T	R
Lane group							8	973		833	14
Adj. flow rate	131		18				52	1425		1371	1165
Lane group cap.	297		265				0.15	0.68		0.61	0.01
v/c ratio	0.44		0.07				0.03	0.75		0.72	0.72
Green ratio	0.16		0.16				33.2	4.5		4.8	2.7
Unif. delay d1	26.4		24.7				0.50	0.50		0.50	0.50
Delay factor k	0.50		0.50				6.2	2.7		2.0	0.0
Increm. delay d2	4.7		0.5				1.000	1.000		1.000	1.000
PF factor	1.000		1.000				39.4	7.2		6.8	2.8
Control delay	31.0		25.2				D	A		A	A
Lane group LOS	C		C				7.4			6.8	
Apprch. delay	30.3						A			A	
Approach LOS	C						A			A	
Intersec. delay	8.9			Intersection LOS						A	

TWO-WAY STOP CONTROL SUMMARY

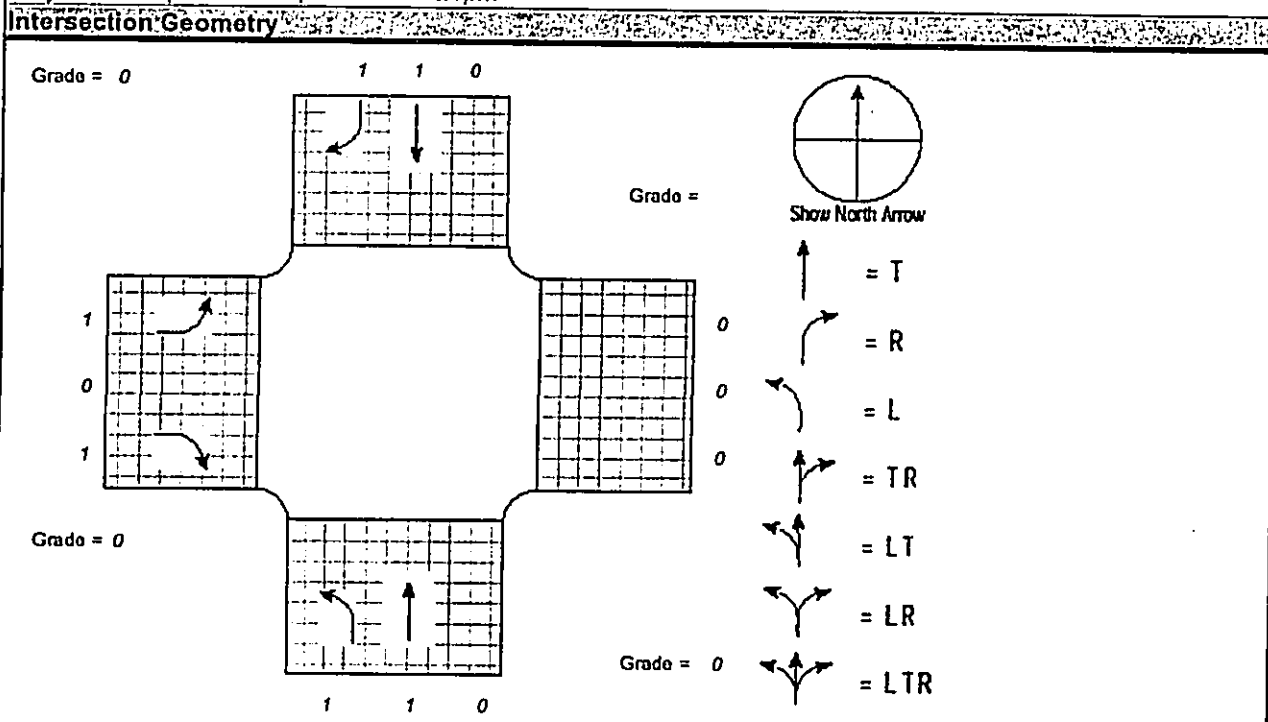
General Information			Site Information					
Analyst	PJR		Intersection	Case 2.1am				
Agency/Co.	PRA		Jurisdiction					
Date Performed	8/5/2003		Analysis Year	Case 2				
Analysis Time Period	AM Peak Hour							
Project Description: Waikapu 28								
East/West Street: Pilikana Street			North/South Street: Honoapiilani Highway					
Intersection Orientation: North-South			Study Period (hrs): 0.25					
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	7	915	0	0	750	13		
Peak-Hour Factor, PHF	0.65	0.65	0.90	0.90	0.65	0.65		
Hourly Flow Rate, HFR	10	1407	0	0	1153	20		
Percent Heavy Vehicles	0	-	--	0	-	--		
Median Type	Undivided							
RT Channelized			0			1		
Lanes	1	1	0	0	1	1		
Configuration	L	T			T	R		
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	0	0	0	85	0	32		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR	0	0	0	94	0	35		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			1		
Lanes	0	0	0	1	0	1		
Configuration				L		R		
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	10					94		35
C (m) (vph)	613					169		540
v/c	0.02					0.56		0.06
95% queue length	0.05					2.88		0.21
Control Delay	11.0					50.2		12.1
LOS	B					F		B
Approach Delay	--	--				39.8		
Approach LOS	--	--				E		

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INPUT WORKSHEET

General Information		Site Information	
Analyst	PJR	Intersection	Case 2.1pm
Agency or Co.	PRA	Area Type	All other areas
Date Performed	7/31/2003	Jurisdiction	
Time Period	PM Peak Hour	Analysis Year	Case 2

Project Description *Waikapu 28 Case 2.1pm*



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	27		19				37	780			53	710
% Heavy veh	0		0				0	0			0	0
PHF	0.65		0.65				0.90	0.90			0.90	0.90
Actuated (P/A)	P		P				P	P			P	P
Startup lost time	2.0		2.0				2.0	2.0			2.0	2.0
Ext. eff. green	2.0		2.0				2.0	2.0			2.0	2.0
Arrival type	3		3				3	3			3	3
Unit Extension	3.0		3.0				3.0	3.0			3.0	3.0
Ped/Bike/RTOR Volume	0		0	0						0		30
Lane Width	12.0		12.0				12.0	12.0			12.0	12.0
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0		0				0	0			0	0

	EB Only	02	03	04	NB Only	Thru & RT	07	08
Timing	G = 8.0	G =	G =	G =	G = 8.5	G = 54.0	G =	G =
	Y = 3	Y =	Y =	Y =	Y = 0	Y = 3	Y =	Y =

Duration of Analysis (hrs) = 0.25 Cycle Length C = 76.5

CAPACITY AND LOS WORKSHEET

General Information												
Project Description <i>Waikapu 28 Case 2.1pm</i>												
Capacity Analysis												
	EB			WB			NB			SB		
Lane group	L		R				L	T		T	R	
Adj. flow rate	42		29				41	867		59	756	
Satflow rate	1805		1615				1805	1900		1900	1615	
Lost time	2.0		2.0				2.0	2.0		2.0	2.0	
Green ratio	0.10		0.10				0.11	0.82		0.71	0.71	
Lane group cap.	189		169				201	1552		1341	1140	
v/c ratio	0.22		0.17				0.20	0.56		0.04	0.66	
Flow ratio	0.02		0.02				0.02	0.46		0.03	0.47	
Crit. lane group	Y	N	N		N		Y	N		N	Y	
Sum flow ratios	0.51											
Lost time/cycle	6.00											
Critical v/c ratio	0.56											
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
Lane group	L		R				L	T		T	R	
Adj. flow rate	42		29				41	867		59	756	
Lane group cap.	189		169				201	1552		1341	1140	
v/c ratio	0.22		0.17				0.20	0.56		0.04	0.66	
Green ratio	0.10		0.10				0.11	0.82		0.71	0.71	
Unif. delay d1	31.4		31.2				30.9	2.4		3.4	6.2	
Delay factor k	0.50		0.50				0.50	0.50		0.50	0.50	
Increm. delay d2	2.7		2.2				2.3	1.5		0.1	3.0	
PF factor	1.000		1.000				1.000	1.000		1.000	1.000	
Control delay	34.1		33.4				33.2	3.8		3.5	9.3	
Lane group LOS	C		C				C	A		A	A	
Approch. delay	33.8						5.1			8.8		
Approach LOS	C						A			A		
Intersec. delay	8.0			Intersection LOS						A		

TWO-WAY STOP CONTROL SUMMARY								
General Information			Site Information					
Analyst	PJR		Intersection	Case 2.1pm				
Agency/Co.	PRA		Jurisdiction					
Date Performed	8/5/2003		Analysis Year	Case 2				
Analysis Time Period	PM Peak Hour							
Project Description Waikapu 28								
East/West Street: Pilikana Street			North/South Street: Honoapiilani Highway					
Intersection Orientation: North-South			Study Period (hrs): 0.25					
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	37	780	0	0	710	53		
Peak-Hour Factor, PHF	0.65	0.65	0.90	0.90	0.65	0.65		
Hourly Flow Rate, HFR	56	1200	0	0	1092	81		
Percent Heavy Vehicles	0	-	-	0	-	-		
Median Type	Undivided							
RT Channelized			0			1		
Lanes	1	1	0	0	1	1		
Configuration	L	T			T	R		
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	0	0	0	27	0	19		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR	0	0	0	30	0	21		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			1		
Lanes	0	0	0	1	0	1		
Configuration				L		R		
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	56					30		21
C (m) (vph)	647					112		454
v/c	0.09					0.27		0.05
95% queue length	0.28					1.00		0.15
Control Delay	11.1					48.5		13.3
LOS	B					E		B
Approach Delay	--	--				34.0		
Approach LOS	--	--				D		

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TWO-WAY STOP CONTROL SUMMARY

General Information			Site Information					
Analyst	PJR		Intersection	Case 2.2am				
Agency/Co.	PRA		Jurisdiction					
Date Performed	8/5/2003		Analysis Year	Case 2				
Analysis Time Period	AM Peak Hour							
Project Description <i>Waikapu 28</i>								
East/West Street: <i>East Waiko Road</i>			North/South Street: <i>Honoapiilani Highway</i>					
Intersection Orientation: <i>North-South</i>			Study Period (hrs): <i>0.25</i>					
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	5	837	5	70	702	10		
Peak-Hour Factor, PHF	0.65	0.65	0.65	0.65	0.65	0.65		
Hourly Flow Rate, HFR	7	1287	7	107	1080	15		
Percent Heavy Vehicles	0	-	-	0	-	-		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	1	1	0	1	1	1		
Configuration	L		TR	L	T	R		
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	15	5	50	35	20	15		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR	16	5	55	38	22	16		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	1	0	0	1	1		
Configuration		LTR		LT		R		
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L	LTR			LT		R
v (vph)	7	107	76			60		16
C (m) (vph)	645	542	201			85		566
v/c	0.01	0.20	0.38			0.71		0.03
95% queue length	0.03	0.73	1.65			3.43		0.09
Control Delay	10.6	13.3	33.4			114.7		11.5
LOS	B	B	D			F		B
Approach Delay	--	--	33.4			93.0		
Approach LOS	--	--	D			F		

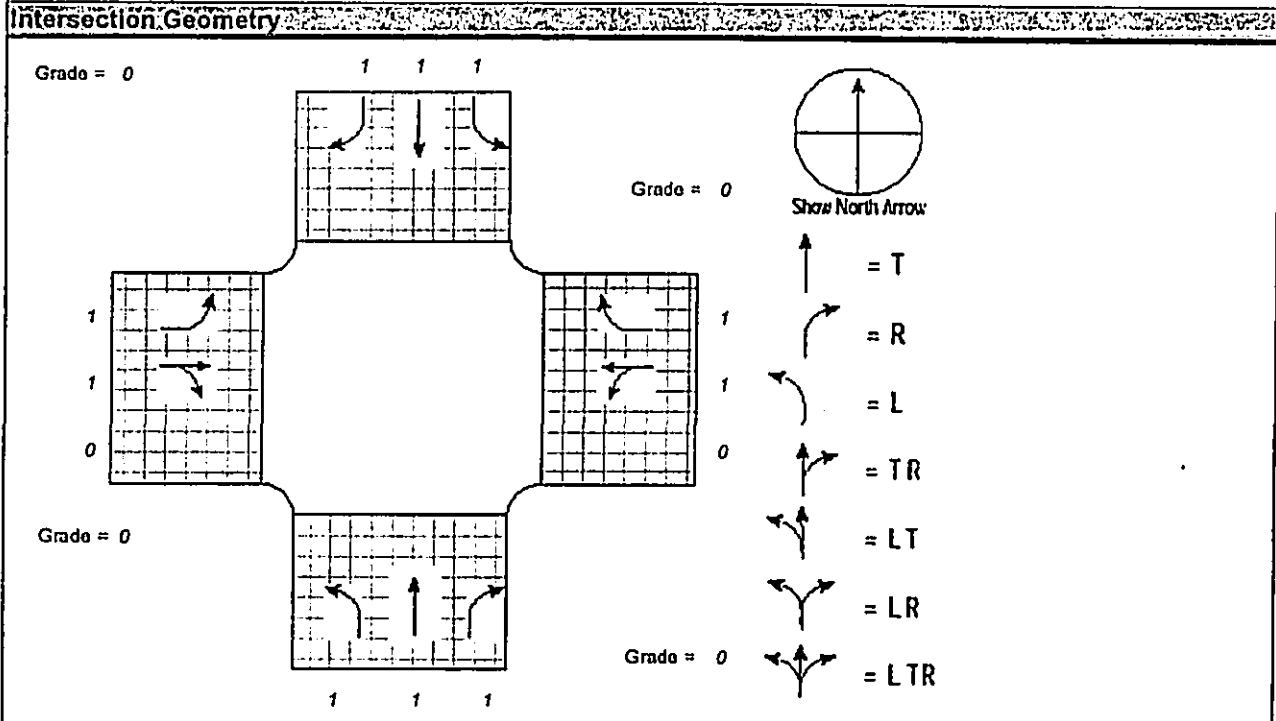
TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	PJR			Intersection	Case 2.2pm			
Agency/Co.	PRA			Jurisdiction				
Date Performed	8/5/2003			Analysis Year	Case 2			
Analysis Time Period	PM Peak Hour							
Project Description	Waikapu 28							
East/West Street:	East Waiko Road			North/South Street: Honoapiilani Highway				
Intersection Orientation:	North-South			Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	10	732	10	65	634	30		
Peak-Hour Factor, PHF	0.65	0.65	0.65	0.65	0.65	0.65		
Hourly Flow Rate, HFR	15	1126	15	100	975	46		
Percent Heavy Vehicles	0	-	-	0	-	-		
Median Type	Undivided							
RT Channelized			0				0	
Lanes	1	1	0	1	1	1		
Configuration	L		TR	L	T	R		
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	15	20	70	15	10	5		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR	16	22	77	16	11	5		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	1	0	0	1	1		
Configuration		LTR		LT		R		
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR		LT		R
v (vph)	15	100		115		27		5
C (m) (vph)	688	620		259		101		606
v/c	0.02	0.16		0.44		0.27		0.01
95% queue length	0.07	0.57		2.14		0.99		0.02
Control Delay	10.3	11.9		29.5		53.2		11.0
LOS	B	B		D		F		B
Approach Delay	--	--	29.5			46.6		
Approach LOS	--	--	D			E		

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INPUT WORKSHEET

General Information		Site Information	
Analyst	PJR	Intersection	Case 3.1am
Agency or Co.	PRA	Area Type	All other areas
Date Performed	7/31/2003	Jurisdiction	
Time Period	AM Peak Hour	Analysis Year	Case 3

Project Description *Waikapu 28 Case3.1am*



Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	109	0	37	23	0	92	9	961	8	32	765	22
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.65	0.65	0.65	0.65	0.65	0.65	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (PIA)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time	2.0	2.0			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	3	3			3	3	3	3	3	3	3	3
Unit Extension	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0		20	0		20	0		4	0		20
Lane Width	12.0	12.0			12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0	0			0	0	0	0	0	0	0	0
	EW Perm	02	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 16.0	G =	G =	G =	G = 1.8	G = 40.8	G =	G =				
	Y = 3	Y =	Y =	Y =	Y =	Y = 3	Y =	Y =				
Duration of Analysis (hrs) = 0.25							Cycle Length C = 64.6					

CAPACITY AND LOS WORKSHEET

General Information

Project Description *Waikapu 28 Case3.1am*

Capacity Analysis

	EB			WB		NB			SB		
	L	TR		LT	R	L	T	R	L	T	R
Adj. flow rate	168	26		35	111	10	1068	4	36	850	2
Satflow rate	1395	1615		1535	1615	1805	1900	1615	1805	1900	1615
Lost time	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Green ratio	0.25	0.25		0.25	0.25	0.03	0.63	0.63	0.03	0.63	0.63
Lane group cap.	346	400		380	400	50	1200	1020	50	1200	1020
v/c ratio	0.49	0.06		0.09	0.28	0.20	0.89	0.00	0.72	0.71	0.00
Flow ratio	0.12	0.02		0.02	0.07	0.01	0.56	0.00	0.02	0.45	0.00
Crit. lane group	Y	N		N	N	N	Y	N	Y	N	N
Sum flow ratios	0.70										
Lost time/cycle	6.00										
Critical v/c ratio	0.77										

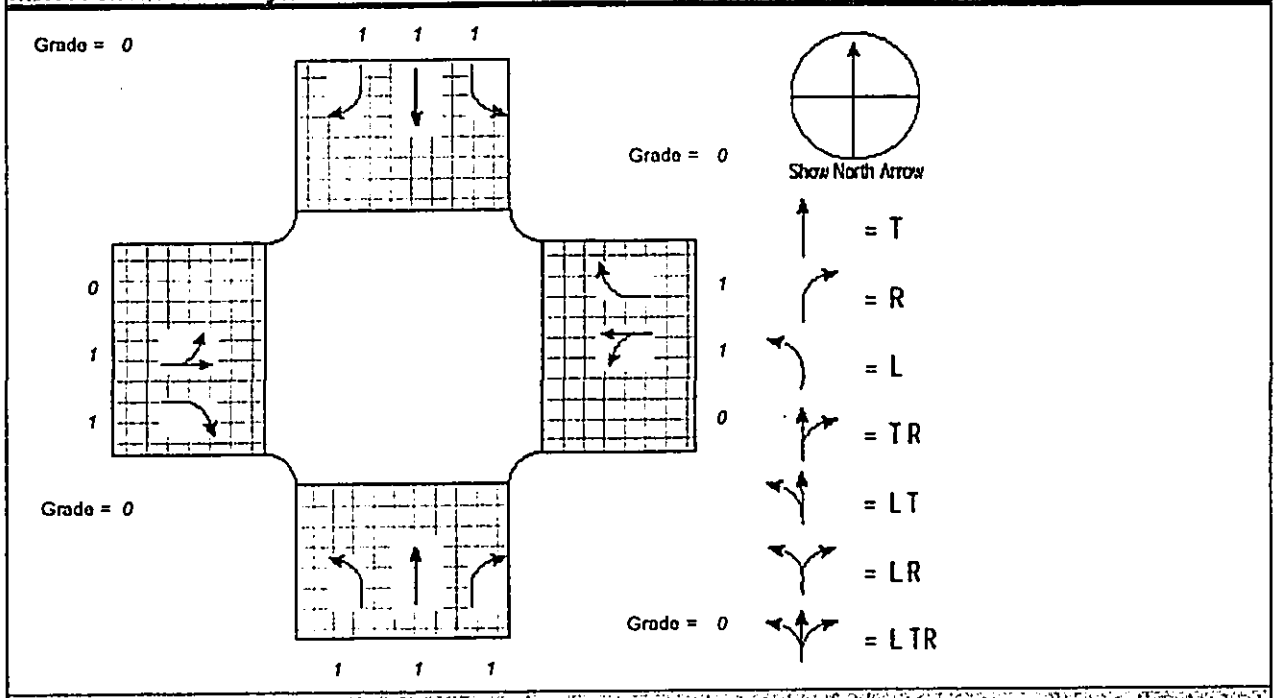
Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB		NB			SB			
	L	TR		LT	R	L	T	R	L	T	R	
Adj. flow rate	168	26		35	111	10	1068	4	36	850	2	
Lane group cap.	346	400		380	400	50	1200	1020	50	1200	1020	
v/c ratio	0.49	0.06		0.09	0.28	0.20	0.89	0.00	0.72	0.71	0.00	
Green ratio	0.25	0.25		0.25	0.25	0.03	0.63	0.63	0.03	0.63	0.63	
Unif. delay d1	20.8	18.6		18.7	19.6	30.7	10.0	4.4	31.2	7.9	4.4	
Delay factor k	0.50	0.50		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
Increm. delay d2	4.8	0.3		0.5	1.7	8.8	10.1	0.0	62.0	3.5	0.0	
PF factor	1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Control delay	25.6	18.9		19.2	21.3	39.5	20.1	4.4	93.2	11.5	4.4	
Lane group LOS	C	B		B	C	D	C	A	F	B	A	
Apprch. delay	24.7			20.8		20.2			14.8			
Approach LOS	C			C		C			B			
Intersec. delay	18.5			Intersection LOS						B		

INPUT WORKSHEET

General Information		Site Information	
Analyst	PJR	Intersection	Case 3.1pm
Agency or Co.	PRA	Area Type	All other areas
Date Performed	7/31/2003	Jurisdiction	
Time Period	PM Peak Hour	Analysis Year	Case 3

Project Description *Waikapu 28 Case3.1pm*



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	37	0	26	15	0	60	47	809	26	117	763	74
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.65	0.65	0.65	0.65	0.65	0.65	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type		3	3		3	3	3	3	3	3	3	3
Unit Extension		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0		20	0		20	0		4	0		20
Lane Width		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr		0	0		0	0	0	0	0	0	0	0
	EW Perm	02	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 10.0	G =	G =	G =	G = 8.5	G = 54.0	G =	G =				
	Y = 3	Y =	Y =	Y =	Y = 0	Y = 3	Y =	Y =				
Duration of Analysis (hrs) = 0.25							Cycle Length C = 78.5					

CAPACITY AND LOS WORKSHEET

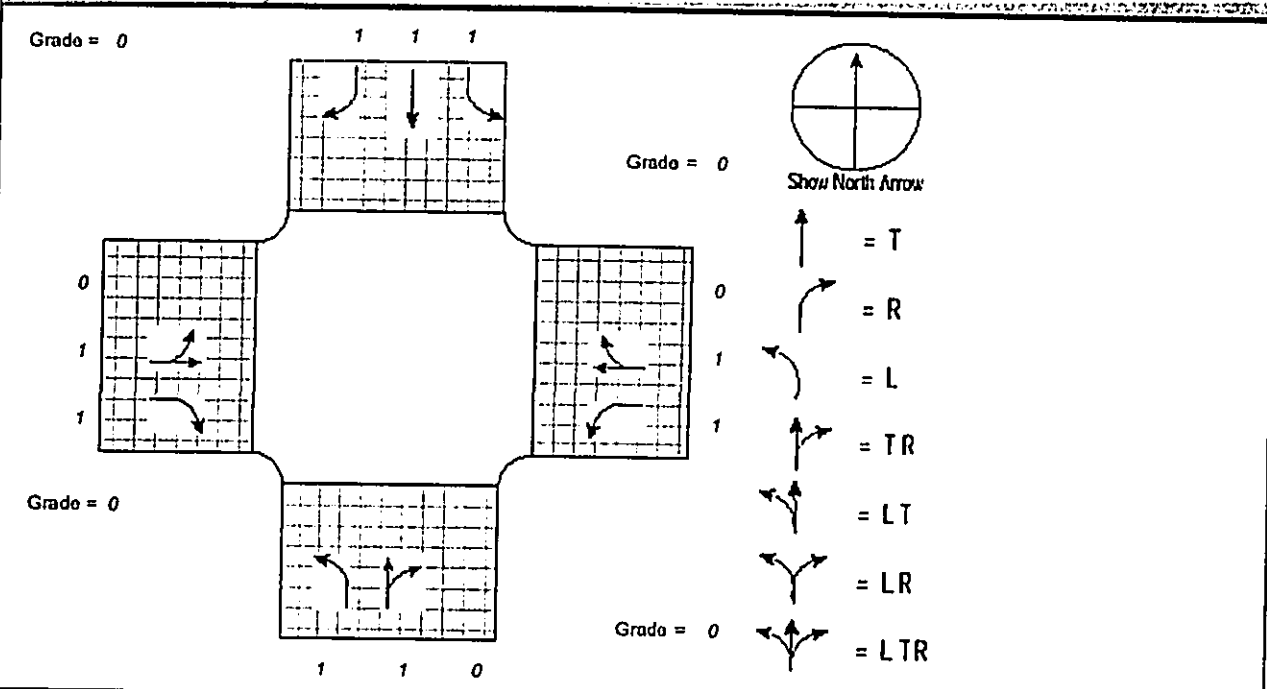
General Information											
Project Description <i>Waikapu 28 Case3.1pm</i>											
Capacity Analysis											
	EB		WB		NB			SB			
	LT	R	LT	R	L	T	R	L	T	R	
Lane group											
Adj. flow rate	57	9	23	62	52	899	24	130	848	60	
Satflow rate	1388	1615	1464	1615	1805	1900	1615	1805	1900	1615	
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Green ratio	0.13	0.13	0.13	0.13	0.11	0.69	0.69	0.11	0.69	0.69	
Lane group cap.	177	206	186	206	195	1307	1111	195	1307	1111	
v/c ratio	0.32	0.04	0.12	0.30	0.27	0.69	0.02	0.67	0.65	0.05	
Flow ratio	0.04	0.01	0.02	0.04	0.03	0.47	0.01	0.07	0.45	0.04	
Crit. lane group	Y	N	N	N	N	Y	N	Y	N	N	
Sum flow ratios	0.59										
Lost time/cycle	6.00										
Critical v/c ratio	0.63										
Lane Group Capacity, Control Delay, and LOS Determination											
	EB		WB		NB			SB			
	LT	R	LT	R	L	T	R	L	T	R	
Lane group											
Adj. flow rate	57	9	23	62	52	899	24	130	848	60	
Lane group cap.	177	206	186	206	195	1307	1111	195	1307	1111	
v/c ratio	0.32	0.04	0.12	0.30	0.27	0.69	0.02	0.67	0.65	0.05	
Green ratio	0.13	0.13	0.13	0.13	0.11	0.69	0.69	0.11	0.69	0.69	
Unif. delay d1	31.2	30.1	30.4	31.1	32.1	7.3	3.9	33.6	6.9	4.0	
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
Increm. delay d2	4.8	0.4	1.4	3.7	3.3	3.0	0.0	16.6	2.5	0.1	
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Control delay	35.9	30.5	31.7	34.8	35.5	10.2	3.9	50.3	9.4	4.1	
Lane group LOS	D	C	C	C	D	B	A	D	A	A	
Apprch. delay	35.2		34.0		11.4			14.2			
Approach LOS	D		C		B			B			
Intersec. delay	14.4		Intersection LOS						B		

INPUT WORKSHEET

General Information		Site Information	
Analyst	PJR	Intersection	Case 3.2am
Agency or Co.	PRA	Area Type	All other areas
Date Performed	7/31/2003	Jurisdiction	
Time Period	AM Peak Hour	Analysis Year	Case 3

Project Description *Waikapu 28 Case 3.2am*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	35	20	15	85	5	96	5	847	39	85	730	10
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.65	0.65	0.65	0.65	0.65	0.65	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time		2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Ext. eff. green		2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Arrival type		3	3	3	3		3	3		3	3	3
Unit Extension		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Ped/Bike/RTOR Volume	0		5	0		40	0		15	0		5
Lane Width		12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	12.0
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr		0	0	0	0		0	0		0	0	0
	EW Perm	02	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 10.0	G =	G =	G =	G = 4.5	G = 44.0	G =	G =				
	Y = 3	Y =	Y =	Y =	Y =	Y = 3	Y =	Y =				
Duration of Analysis (hrs) = 0.25							Cycle Length C = 64.5					

CAPACITY AND LOS WORKSHEET

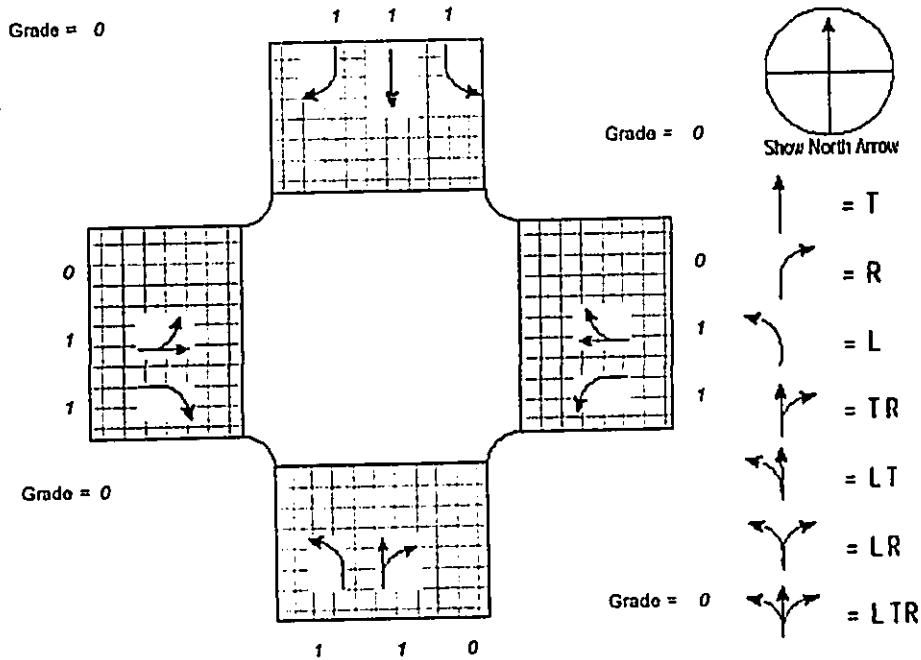
General Information											
Project Description <i>Waikapu 28 Case 3.2am</i>											
Capacity Analysis											
	EB		WB		NB		SB				
Lane group	LT	R	L	TR	L	TR	L	T	R		
Adj. flow rate	85	15	131	94	6	968	94	811	6		
Satflow rate	1486	1615	974	1639	1805	1892	1805	1900	1615		
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Green ratio	0.16	0.16	0.16	0.16	0.07	0.68	0.07	0.68	0.68		
Lane group cap.	230	250	151	254	126	1291	126	1296	1102		
v/c ratio	0.37	0.06	0.87	0.37	0.05	0.75	0.75	0.63	0.01		
Flow ratio	0.06	0.01	0.13	0.06	0.00	0.51	0.05	0.43	0.00		
Crit. lane group	N	N	Y	N	N	Y	Y	N	N		
Sum flow ratios	0.70										
Lost time/cycle	6.00										
Critical v/c ratio	0.77										
Lane Group Capacity, Control Delay, and LOS Determination											
	EB		WB		NB		SB				
Lane group	LT	R	L	TR	L	TR	L	T	R		
Adj. flow rate	85	15	131	94	6	968	94	811	6		
Lane group cap.	230	250	151	254	126	1291	126	1296	1102		
v/c ratio	0.37	0.06	0.87	0.37	0.05	0.75	0.75	0.63	0.01		
Green ratio	0.16	0.16	0.16	0.16	0.07	0.68	0.07	0.68	0.68		
Unif. delay d1	24.4	23.2	26.6	24.4	28.0	6.7	29.4	5.7	3.3		
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50		
Increm. delay d2	4.5	0.5	44.6	4.1	0.7	4.0	32.6	2.3	0.0		
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Control delay	28.9	23.7	71.2	28.5	28.7	10.7	62.1	8.0	3.3		
Lane group LOS	C	C	E	C	C	B	E	A	A		
Apprch. delay	28.2		53.4		10.8		13.5				
Approach LOS	C		D		B		B				
Intersec. delay	17.1		Intersection LOS					B			

INPUT WORKSHEET

General Information		Site Information	
Analyst	PJR	Intersection	Case 3.2pm
Agency or Co.	PRA	Area Type	All other areas
Date Performed	7/31/2003	Jurisdiction	
Time Period	PM Peak Hour	Analysis Year	Case 3

Project Description *Waikapu 28 Case3.2pm*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	15	10	5	58	20	99	10	768	95	118	656	30
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.65	0.65	0.65	0.65	0.65	0.65	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (PIA)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time		2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Ext. eff. green		2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Arrival type		3	3	3	3		3	3		3	3	3
Unit Extension		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Ped/Bike/RTOR Volume	0		0	0		20	0		4	0		20
Lane Width		12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	12.0
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr		0	0	0	0		0	0		0	0	0
	EW Perm	02	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 11.0	G =	G =	G =	G = 8.5	G = 54.0	G =	G =				
	Y = 3	Y =	Y =	Y =	Y = 0	Y = 3	Y =	Y =				
Duration of Analysis (hrs) = 0.25							Cycle Length C = 79.5					

CAPACITY AND LOS WORKSHEET

General Information

Project Description *Waikapu 28 Case3.2pm*

Capacity Analysis

	EB		WB		NB		SB		
Lane group	LT	R	L	TR	L	TR	L	T	R
Adj. flow rate	38	8	89	153	11	954	131	729	11
Satflow rate	1543	1615	1304	1673	1805	1870	1805	1900	1615
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Green ratio	0.14	0.14	0.14	0.14	0.11	0.68	0.11	0.68	0.68
Lane group cap.	213	223	180	231	193	1270	193	1291	1097
v/c ratio	0.18	0.04	0.49	0.66	0.06	0.75	0.68	0.56	0.01
Flow ratio	0.02	0.00	0.07	0.09	0.01	0.51	0.07	0.38	0.01
Crit. lane group	N	N	N	Y	N	Y	Y	N	N
Sum flow ratios	0.67								
Lost time/cycle	6.00								
Critical v/c ratio	0.73								

Lane Group Capacity, Control Delay, and LOS Determination

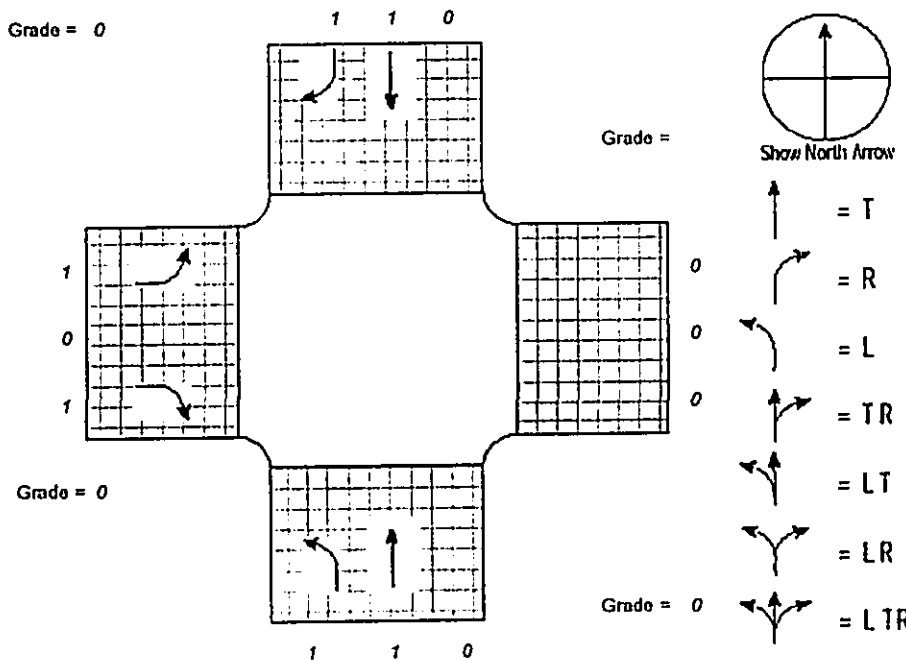
	EB		WB		NB		SB			
Lane group	LT	R	L	TR	L	TR	L	T	R	
Adj. flow rate	38	8	89	153	11	954	131	729	11	
Lane group cap.	213	223	180	231	193	1270	193	1291	1097	
v/c ratio	0.18	0.04	0.49	0.66	0.06	0.75	0.68	0.56	0.01	
Green ratio	0.14	0.14	0.14	0.14	0.11	0.68	0.11	0.68	0.68	
Unif. delay d1	30.3	29.7	31.7	32.5	31.9	8.4	34.2	6.6	4.1	
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
Increm. delay d2	1.8	0.3	9.4	14.0	0.6	4.1	17.6	1.8	0.0	
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Control delay	32.1	30.0	41.1	46.5	32.5	12.5	51.8	8.4	4.1	
Lane group LOS	C	C	D	D	C	B	D	A	A	
Apprch. delay	31.7		44.5		12.7		14.9			
Approach LOS	C		D		B		B			
Intersec. delay	17.6		Intersection LOS					B		

INPUT WORKSHEET

General Information		Site Information	
Analyst	PJR	Intersection	Case 4.1am
Agency or Co.	PRA	Area Type	All other areas
Date Performed	7/31/2003	Jurisdiction	
Time Period	AM Peak Hour	Analysis Year	Case 4

Project Description *Waikapu 2B Case4.1am*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	120		59				14	915			750	27
% Heavy veh	0		0				0	0			0	0
PHF	0.65		0.65				0.90	0.94			0.90	0.90
Actuated (P/A)	P		P				P	P			P	P
Startup lost time	2.0		2.0				2.0	2.0			2.0	2.0
Ext. eff. green	2.0		2.0				2.0	2.0			2.0	2.0
Arrival type	3		3				3	3			3	3
Unit Extension	3.0		3.0				3.0	3.0			3.0	3.0
Ped/Bike/RTOR Volume	0		20	0						0		20
Lane Width	12.0		12.0				12.0	12.0			12.0	12.0
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0		0				0	0			0	0
	EB Only	02	03	04	NB Only	Thru & RT	07	08				
Timing	G = 11.5	G =	G =	G =	G = 2.0	G = 50.5	G =	G =				
	Y = 3	Y =	Y =	Y =	Y =	Y = 3	Y =	Y =				
Duration of Analysis (hrs) = 0.25							Cycle Length C = 70.0					

CAPACITY AND LOS WORKSHEET

General Information

 Project Description *Waikapu 28 Case4.1am*
Capacity Analysis

	EB		WB		NB		SB	
	L	R			L	T	T	R
Lane group								
Adj. flow rate	185	60			16	973	833	8
Satflow rate	1805	1615			1805	1900	1900	1615
Lost time	2.0	2.0			2.0	2.0	2.0	2.0
Green ratio	0.16	0.16			0.03	0.75	0.72	0.72
Lane group cap.	297	265			52	1425	1371	1165
v/c ratio	0.62	0.23			0.31	0.68	0.61	0.01
Flow ratio	0.10	0.04			0.01	0.51	0.44	0.00
Crit. lane group	Y	N	N		N	Y		N
Sum flow ratios	0.61							
Lost time/cycle	6.00							
Critical v/c ratio	0.67							

Lane Group Capacity, Control Delay, and LOS Determination

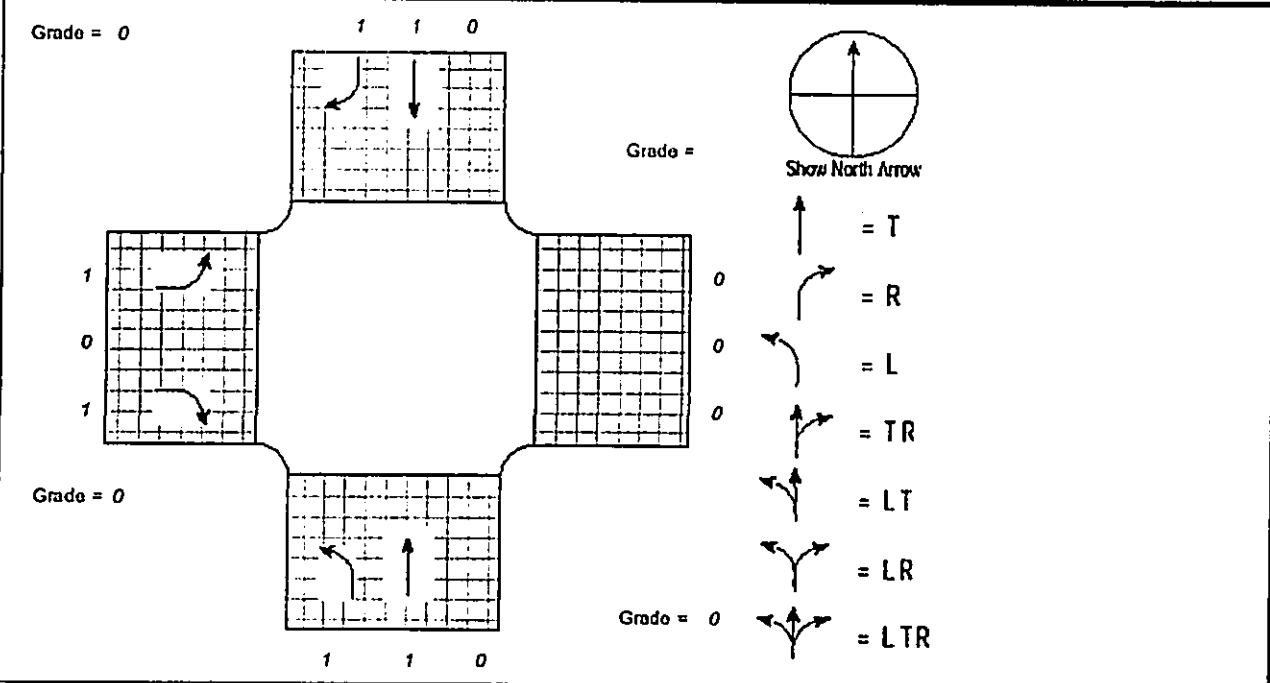
	EB		WB		NB		SB	
	L	R			L	T	T	R
Lane group								
Adj. flow rate	185	60			16	973	833	8
Lane group cap.	297	265			52	1425	1371	1165
v/c ratio	0.62	0.23			0.31	0.68	0.61	0.01
Green ratio	0.16	0.16			0.03	0.75	0.72	0.72
Unif. delay d1	27.2	25.4			33.3	4.5	4.8	2.7
Delay factor k	0.50	0.50			0.50	0.50	0.50	0.50
Increm. delay d2	9.5	2.0			14.7	2.7	2.0	0.0
PF factor	1.000	1.000			1.000	1.000	1.000	1.000
Control delay	36.7	27.4			48.0	7.2	6.8	2.7
Lane group LOS	D	C			D	A	A	A
Apprch. delay	34.4				7.8		6.8	
Approach LOS	C				A		A	
Intersec. delay	10.5		Intersection LOS				B	

INPUT WORKSHEET

General Information		Site Information	
Analyst	PJR	Intersection	Case 6.1pm
Agency or Co.	PRA	Area Type	All other areas
Date Performed	7/31/2003	Jurisdiction	
Time Period	PM Peak Hour	Analysis Year	Case 6

Project Description *Waikapu 28 Case 6.1pm*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	62		38				70	780			112	710
% Heavy veh	0		0				0	0			0	0
PHF	0.65		0.65				0.90	0.90			0.90	0.90
Actuated (PIA)	P		P				P	P			P	P
Startup lost time	2.0		2.0				2.0	2.0			2.0	2.0
Ext. eff. green	2.0		2.0				2.0	2.0			2.0	2.0
Arrival type	3		3				3	3			3	3
Unit Extension	3.0		3.0				3.0	3.0			3.0	3.0
Ped/Bike/RTOR Volume	0		20	0						0		30
Lane Width	12.0		12.0				12.0	12.0			12.0	12.0
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0		0				0	0			0	0

	EB Only	02	03	04	NB Only	Thru & RT	07	08
Timing	G = 8.0	G =	G =	G =	G = 8.5	G = 54.0	G =	G =
	Y = 3	Y =	Y =	Y =	Y = 0	Y = 3	Y =	Y =

Duration of Analysis (hrs) = 0.25 Cycle Length C = 76.5

CAPACITY AND LOS WORKSHEET

General Information												
Project Description <i>Waikapu 28 Case6.1pm</i>												
Capacity Analysis												
	EB			WB			NB			SB		
Lane group	<i>L</i>		<i>R</i>				<i>L</i>	<i>T</i>			<i>T</i>	<i>R</i>
Adj. flow rate	<i>95</i>		<i>28</i>				<i>78</i>	<i>867</i>			<i>124</i>	<i>756</i>
Satflow rate	<i>1805</i>		<i>1615</i>				<i>1805</i>	<i>1900</i>			<i>1900</i>	<i>1615</i>
Lost time	<i>2.0</i>		<i>2.0</i>				<i>2.0</i>	<i>2.0</i>			<i>2.0</i>	<i>2.0</i>
Green ratio	<i>0.10</i>		<i>0.10</i>				<i>0.11</i>	<i>0.82</i>			<i>0.71</i>	<i>0.71</i>
Lane group cap.	<i>189</i>		<i>169</i>				<i>201</i>	<i>1552</i>			<i>1341</i>	<i>1140</i>
v/c ratio	<i>0.50</i>		<i>0.17</i>				<i>0.39</i>	<i>0.56</i>			<i>0.09</i>	<i>0.66</i>
Flow ratio	<i>0.05</i>		<i>0.02</i>				<i>0.04</i>	<i>0.46</i>			<i>0.07</i>	<i>0.47</i>
Crit. lane group	<i>Y</i>	<i>N</i>	<i>N</i>		<i>N</i>		<i>Y</i>	<i>N</i>			<i>N</i>	<i>Y</i>
Sum flow ratios	<i>0.56</i>											
Lost time/cycle	<i>6.00</i>											
Critical v/c ratio	<i>0.61</i>											
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
Lane group	<i>L</i>		<i>R</i>				<i>L</i>	<i>T</i>			<i>T</i>	<i>R</i>
Adj. flow rate	<i>95</i>		<i>28</i>				<i>78</i>	<i>867</i>			<i>124</i>	<i>756</i>
Lane group cap.	<i>189</i>		<i>169</i>				<i>201</i>	<i>1552</i>			<i>1341</i>	<i>1140</i>
v/c ratio	<i>0.50</i>		<i>0.17</i>				<i>0.39</i>	<i>0.56</i>			<i>0.09</i>	<i>0.66</i>
Green ratio	<i>0.10</i>		<i>0.10</i>				<i>0.11</i>	<i>0.82</i>			<i>0.71</i>	<i>0.71</i>
Unif. delay d1	<i>32.4</i>		<i>31.2</i>				<i>31.6</i>	<i>2.4</i>			<i>3.5</i>	<i>6.2</i>
Delay factor k	<i>0.50</i>		<i>0.50</i>				<i>0.50</i>	<i>0.50</i>			<i>0.50</i>	<i>0.50</i>
Increm. delay d2	<i>9.2</i>		<i>2.1</i>				<i>5.6</i>	<i>1.5</i>			<i>0.1</i>	<i>3.0</i>
PF factor	<i>1.000</i>		<i>1.000</i>				<i>1.000</i>	<i>1.000</i>			<i>1.000</i>	<i>1.000</i>
Control delay	<i>41.6</i>		<i>33.3</i>				<i>37.2</i>	<i>3.8</i>			<i>3.7</i>	<i>9.3</i>
Lane group LOS	<i>D</i>		<i>C</i>				<i>D</i>	<i>A</i>			<i>A</i>	<i>A</i>
Apprch. delay	<i>39.7</i>						<i>6.6</i>			<i>8.5</i>		
Approach LOS	<i>D</i>						<i>A</i>			<i>A</i>		
Intersec. delay	<i>9.5</i>			Intersection LOS						<i>A</i>		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information					
Analyst	PJR	Intersection	Case 4.2am				
Agency/Co.	PRA	Jurisdiction					
Date Performed	8/5/2003	Analysis Year	Case 4				
Analysis Time Period	AM Peak Hour						
Project Description <i>Waikapu 28</i>							
East/West Street: <i>East Waiko Road</i>		North/South Street: <i>Honoapiilani Highway</i>					
Intersection Orientation: <i>North-South</i>		Study Period (hrs): <i>0.25</i>					
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume	5	844	5	70	729	10	
Peak-Hour Factor, PHF	0.65	0.65	0.65	0.65	0.65	0.65	
Hourly Flow Rate, HFR	7	1298	7	107	1121	15	
Percent Heavy Vehicles	0	--	--	0	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	1	1	0	1	1	1	
Configuration	L		TR	L	T	R	
Upstream Signal		0			0		
Minor Street	Westbound			Eastbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume	15	5	50	35	20	15	
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR	16	5	55	38	22	16	
Percent Heavy Vehicles	0	0	0	0	0	0	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	1	0	0	1	1	
Configuration		LTR		LT		R	
Delay, Queue Length, and Level of Service							
Approach	NB	SB	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	L	L	LTR			LT	R
v (vph)	7	107	76			60	16
C (m) (vph)	622	537	191			80	552
v/c	0.01	0.20	0.40			0.75	0.03
95% queue length	0.03	0.74	1.77			3.66	0.09
Control Delay	10.9	13.4	35.8			129.2	11.7
LOS	B	B	E			F	B
Approach Delay	--	--	35.8			104.5	
Approach LOS	--	--	E			F	

>

TWO-WAY STOP CONTROL SUMMARY							
General Information			Site Information				
Analyst	PJR		Intersection	Case 4.2pm			
Agency/Co.	PRA		Jurisdiction				
Date Performed	8/5/2003		Analysis Year	Case 4			
Analysis Time Period	PM Peak Hour						
Project Description Waikapu 28							
East/West Street: East Waiko Road			North/South Street: Honoapiilani Highway				
Intersection Orientation: North-South			Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume	10	757	10	65	648	30	
Peak-Hour Factor, PHF	0.65	0.65	0.65	0.65	0.65	0.65	
Hourly Flow Rate, HFR	15	1164	15	100	996	46	
Percent Heavy Vehicles	0	-	-	0	-	-	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	1	1	0	1	1	1	
Configuration	L		TR	L	T	R	
Upstream Signal		0			0		
Minor Street	Westbound			Eastbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume	15	20	70	15	10	5	
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR	16	22	77	16	11	5	
Percent Heavy Vehicles	0	0	0	0	0	0	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	1	0	0	1	1	
Configuration		LTR		LT		R	
Delay, Queue Length, and Level of Service							
Approach	NB	SB	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	L	L	LTR			LT	R
v (vph)	15	100	115			27	5
C (m) (vph)	675	600	246			95	598
v/c	0.02	0.17	0.47			0.28	0.01
95% queue length	0.07	0.59	2.31			1.06	0.03
Control Delay	10.5	12.2	31.9			57.3	11.1
LOS	B	B	D			F	B
Approach Delay	--	--	31.9			50.1	
Approach LOS	--	--	D			F	

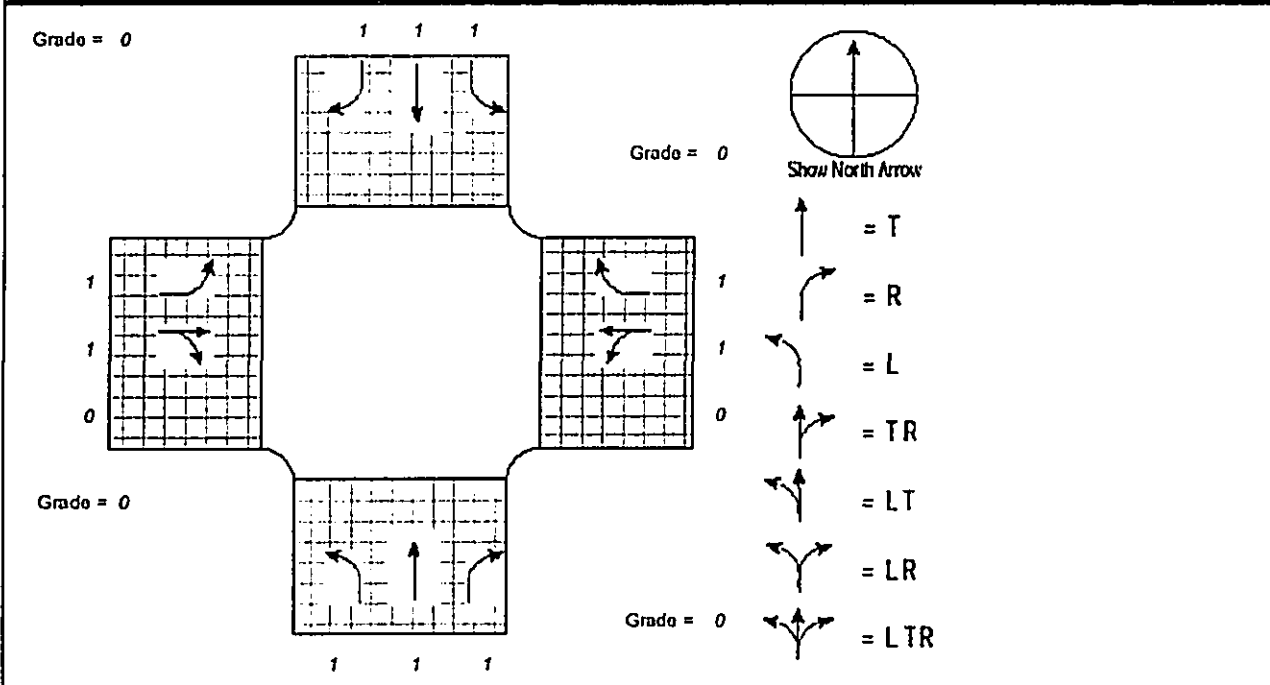
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INPUT WORKSHEET

General Information		Site Information	
Analyst	PJR	Intersection	Case 5.1am
Agency or Co.	PRA	Area Type	All other areas
Date Performed	7/31/2003	Jurisdiction	
Time Period	AM Peak Hour	Analysis Year	Case 5

Project Description *Waikapu 28 Case 5.1am*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	144	0	64	23	0	92	16	961	8	32	765	36
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.65	0.65	0.65	0.65	0.65	0.65	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time	2.0	2.0			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	3	3			3	3	3	3	3	3	3	3
Unit Extension	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0		20	0		20	0		4	0		20
Lane Width	12.0	12.0			12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0	0			0	0	0	0	0	0	0	0
	EW Perm	02	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 16.0	G =	G =	G =	G = 1.8	G = 40.8	G =	G =				
	Y = 3	Y =	Y =	Y =	Y =	Y = 3	Y =	Y =				
Duration of Analysis (hrs) = 0.25							Cycle Length C = 64.6					

CAPACITY AND LOS WORKSHEET												
General Information												
Project Description <i>Waikapu 28 Case5.1am</i>												
Capacity Analysis												
	EB			WB		NB			SB			
	L	TR		LT	R	L	T	R	L	T	R	
Lane group												
Adj. flow rate	222	68		35	111	18	1068	4	36	850	18	
Satflow rate	1395	1615		1496	1615	1805	1900	1615	1805	1900	1615	
Lost time	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Green ratio	0.25	0.25		0.25	0.25	0.03	0.63	0.63	0.03	0.63	0.63	
Lane group cap.	346	400		371	400	50	1200	1020	50	1200	1020	
v/c ratio	0.64	0.17		0.09	0.28	0.36	0.89	0.00	0.72	0.71	0.02	
Flow ratio	0.16	0.04		0.02	0.07	0.01	0.56	0.00	0.02	0.45	0.01	
Crit. lane group	Y	N		N	N	N	Y	N	Y	N	N	
Sum flow ratios	0.74											
Lost time/cycle	6.00											
Critical v/c ratio	0.82											
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB		NB			SB			
	L	TR		LT	R	L	T	R	L	T	R	
Lane group												
Adj. flow rate	222	68		35	111	18	1068	4	36	850	18	
Lane group cap.	346	400		371	400	50	1200	1020	50	1200	1020	
v/c ratio	0.64	0.17		0.09	0.28	0.36	0.89	0.00	0.72	0.71	0.02	
Green ratio	0.25	0.25		0.25	0.25	0.03	0.63	0.63	0.03	0.63	0.63	
Unif. delay d1	21.7	19.1		18.7	19.6	30.8	10.0	4.4	31.2	7.9	4.4	
Delay factor k	0.50	0.50		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
Increm. delay d2	8.8	0.9		0.5	1.7	19.0	10.1	0.0	62.0	3.5	0.0	
PF factor	1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Control delay	30.6	20.0+		19.2	21.3	49.8	20.1	4.4	93.2	11.5	4.5	
Lane group LOS	C	C		B	C	D	C	A	F	B	A	
Apprch. delay	28.1			20.8		20.5			14.6			
Approach LOS	C			C		C			B			
Intersec. delay	19.2			Intersection LOS						B		

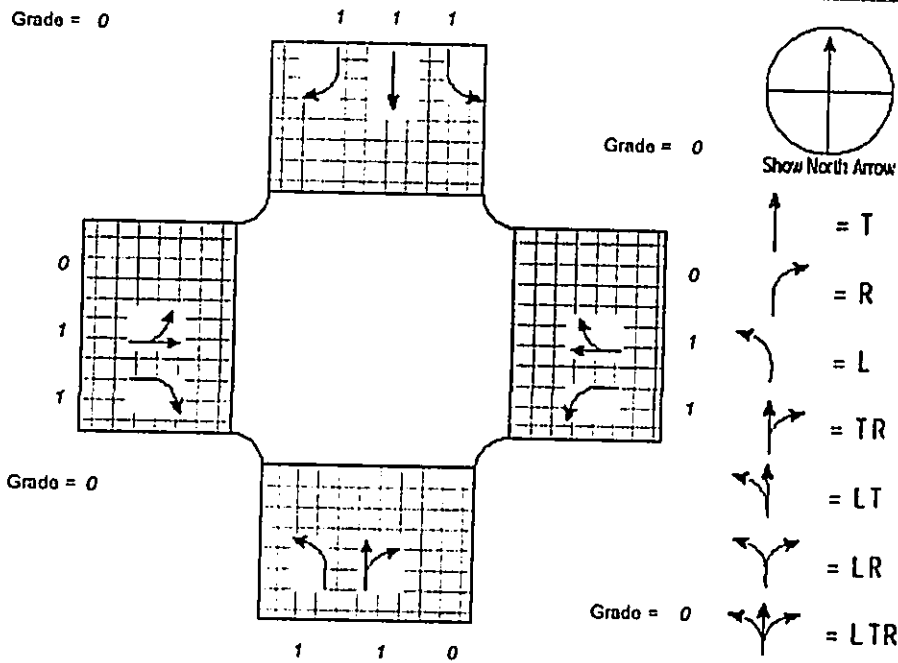
CAPACITY AND LOS WORKSHEET											
General Information											
Project Description Waikapu 28 Case5.1pm											
Capacity Analysis											
	EB		WB		NB			SB			
Lane group	LT	R	LT	R	L	T	R	L	T	R	
Adj. flow rate	97	31	23	62	80	899	24	130	848	110	
Satflow rate	1348	1615	1195	1615	1805	1900	1615	1805	1900	1615	
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Green ratio	0.13	0.13	0.13	0.13	0.11	0.69	0.69	0.11	0.69	0.69	
Lane group cap.	172	206	152	206	195	1307	1111	195	1307	1111	
v/c ratio	0.56	0.15	0.15	0.30	0.41	0.69	0.02	0.67	0.65	0.10	
Flow ratio	0.07	0.02	0.02	0.04	0.04	0.47	0.01	0.07	0.45	0.07	
Crit. lane group	Y	N	N	N	N	Y	N	Y	N	N	
Sum flow ratios	0.62										
Lost time/cycle	6.00										
Critical v/c ratio	0.67										
Lane Group Capacity, Control Delay, and LOS Determination											
	EB		WB		NB			SB			
Lane group	LT	R	LT	R	L	T	R	L	T	R	
Adj. flow rate	97	31	23	62	80	899	24	130	848	110	
Lane group cap.	172	206	152	206	195	1307	1111	195	1307	1111	
v/c ratio	0.56	0.15	0.15	0.30	0.41	0.69	0.02	0.67	0.65	0.10	
Green ratio	0.13	0.13	0.13	0.13	0.11	0.69	0.69	0.11	0.69	0.69	
Unif. delay d1	32.2	30.5	30.5	31.1	32.7	7.3	3.9	33.6	6.9	4.1	
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
Increm. delay d2	12.7	1.5	2.1	3.7	6.3	3.0	0.0	16.6	2.5	0.2	
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Control delay	44.9	32.0	32.6	34.8	38.9	10.2	3.9	50.3	9.4	4.3	
Lane group LOS	D	C	C	C	D	B	A	D	A	A	
Apprch. delay	41.8		34.2		12.4			13.8			
Approach LOS	D		C		B			B			
Intersec. delay	15.5		Intersection LOS						B		

INPUT WORKSHEET

General Information		Site Information	
Analyst	PJR	Intersection	Case 5.2am
Agency or Co.	PRA	Area Type	All other areas
Date Performed	7/31/2003	Jurisdiction	
Time Period	AM Peak Hour	Analysis Year	Case 5

Project Description *Waikapu 28 Case.5am*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	35	20	15	85	5	96	5	854	39	85	757	10
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.65	0.65	0.65	0.65	0.65	0.65	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time		2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Ext. eff. green		2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Arrival type		3	3	3	3		3	3		3	3	3
Unit Extension		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Ped/Bike/RTOR Volume	0		5	0		40	0		15	0		5
Lane Width		12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	12.0
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr		0	0	0	0		0	0		0	0	0
	EW Perm	02	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 10.0	G =	G =	G =	G = 4.5	G = 44.0	G =	G =				
	Y = 3	Y =	Y =	Y =	Y =	Y = 3	Y =	Y =				
Duration of Analysis (hrs) = 0.25							Cycle Length C = 64.5					

CAPACITY AND LOS WORKSHEET

General Information

Project Description *Waikapu 28 Case.5am*

Capacity Analysis

	EB		WB		NB		SB			
	LT	R	L	TR	L	TR	L	T	R	
Lane group										
Adj. flow rate	85	15	131	94	6	976	94	841	6	
Satflow rate	1486	1615	974	1639	1805	1892	1805	1900	1615	
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Green ratio	0.16	0.16	0.16	0.16	0.07	0.68	0.07	0.68	0.68	
Lane group cap.	230	250	151	254	126	1291	126	1296	1102	
v/c ratio	0.37	0.06	0.87	0.37	0.05	0.76	0.75	0.65	0.01	
Flow ratio	0.06	0.01	0.13	0.06	0.00	0.52	0.05	0.44	0.00	
Crit. lane group	N	N	Y	N	N	Y	Y	N	N	
Sum flow ratios	0.70									
Lost time/cycle	6.00									
Critical v/c ratio	0.77									

Lane Group Capacity, Control Delay, and LOS Determination

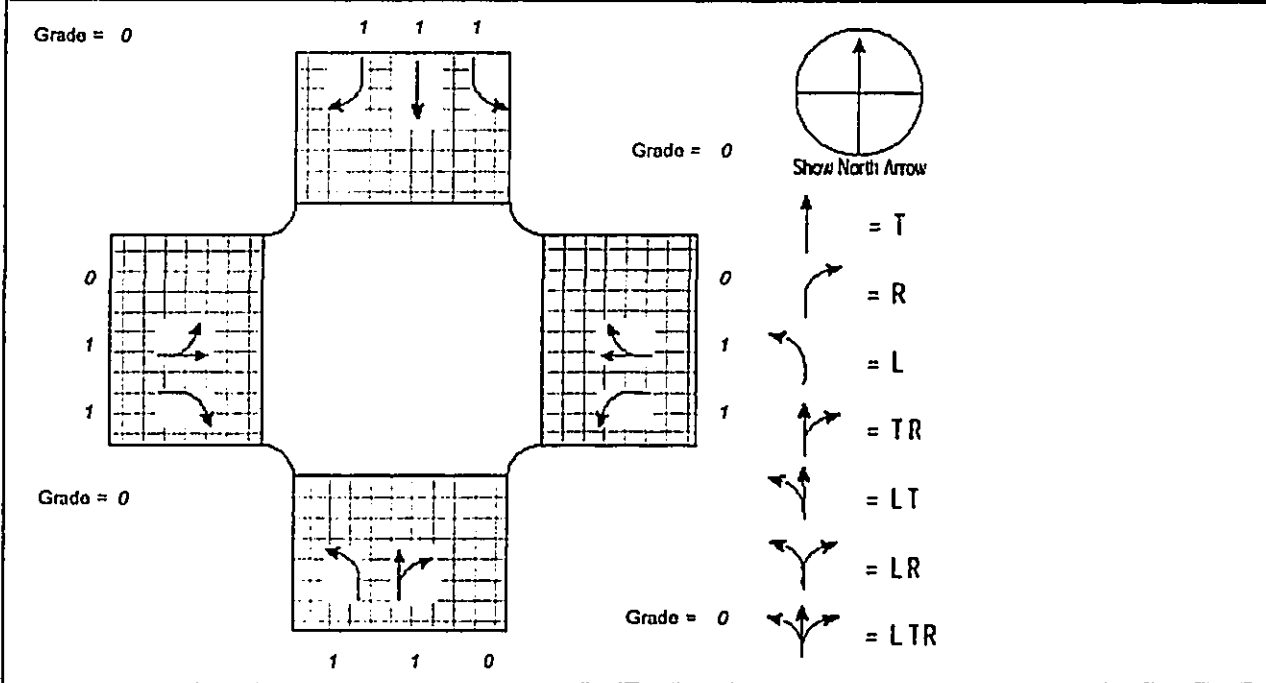
	EB		WB		NB		SB			
	LT	R	L	TR	L	TR	L	T	R	
Lane group										
Adj. flow rate	85	15	131	94	6	976	94	841	6	
Lane group cap.	230	250	151	254	126	1291	126	1296	1102	
v/c ratio	0.37	0.06	0.87	0.37	0.05	0.76	0.75	0.65	0.01	
Green ratio	0.16	0.16	0.16	0.16	0.07	0.68	0.07	0.68	0.68	
Unif. delay d1	24.4	23.2	26.6	24.4	28.0	6.7	29.4	5.8	3.3	
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
Increm. delay d2	4.5	0.5	44.6	4.1	0.7	4.2	32.6	2.5	0.0	
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Control delay	28.9	23.7	71.2	28.5	28.7	10.9	62.1	8.4	3.3	
Lane group LOS	C	C	E	C	C	B	E	A	A	
Apprch. delay	28.2		53.4		11.0		13.7			
Approach LOS	C		D		B		B			
Intersec. delay	17.1		Intersection LOS					B		

INPUT WORKSHEET

General Information		Site Information	
Analyst	PJR	Intersection	Case 5.2pm
Agency or Co.	PRA	Area Type	All other areas
Date Performed	7/31/2003	Jurisdiction	
Time Period	PM Peak Hour	Analysis Year	Case 5

Project Description *Waikapu 28 Case5.2pm*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	15	10	5	58	20	99	10	793	95	118	670	30
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.65	0.65	0.65	0.65	0.65	0.65	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time		2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Ext. eff. green		2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Arrival type		3	3	3	3		3	3		3	3	3
Unit Extension		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Ped/Bike/RTOR Volume	0		0	0		20	0		4	0		20
Lane Width		12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	12.0
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr		0	0	0	0		0	0		0	0	0
	EW Perm	02	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 11.0	G =	G =	G =	G = 8.5	G = 54.0	G =	G =				
	Y = 3	Y =	Y =	Y =	Y = 0	Y = 3	Y =	Y =				
Duration of Analysis (hrs) = 0.25							Cycle Length C = 79.5					

CAPACITY AND LOS WORKSHEET

General Information

Project Description *Waikapu 28 Case5.2pm*

Capacity Analysis

	EB		WB		NB		SB		
Lane group	LT	R	L	TR	L	TR	L	T	R
Adj. flow rate	38	8	89	153	11	982	131	744	11
Satflow rate	1543	1615	1304	1673	1805	1871	1805	1900	1615
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Green ratio	0.14	0.14	0.14	0.14	0.11	0.68	0.11	0.68	0.68
Lane group cap.	213	223	180	231	193	1271	193	1291	1097
v/c ratio	0.18	0.04	0.49	0.66	0.06	0.77	0.68	0.58	0.01
Flow ratio	0.02	0.00	0.07	0.09	0.01	0.52	0.07	0.39	0.01
Crit. lane group	N	N	N	Y	N	Y	Y	N	N
Sum flow ratios	0.69								
Lost time/cycle	6.00								
Critical v/c ratio	0.75								

Lane Group Capacity, Control Delay and LOS Determination

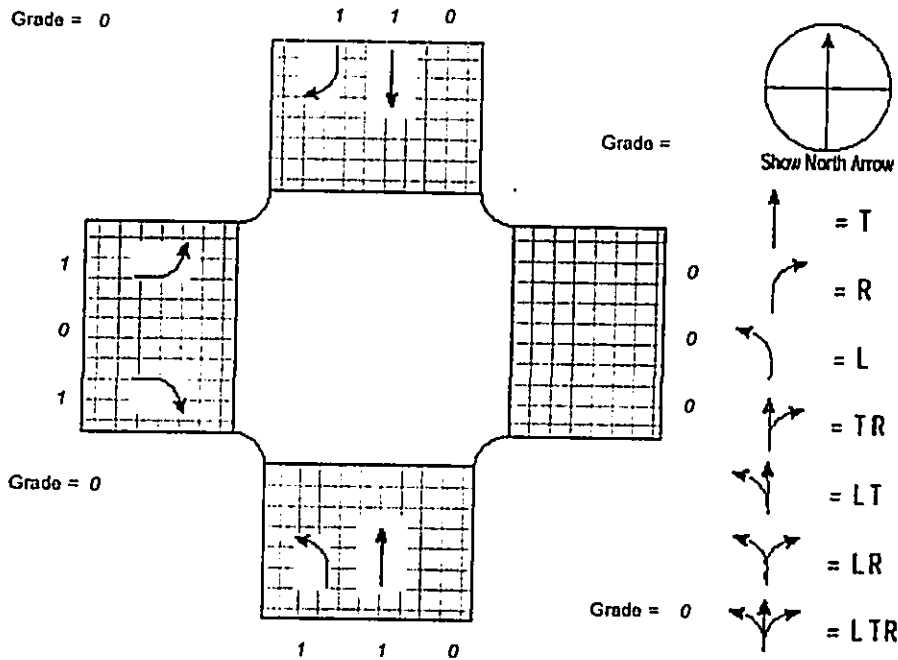
	EB		WB		NB		SB		
Lane group	LT	R	L	TR	L	TR	L	T	R
Adj. flow rate	38	8	89	153	11	982	131	744	11
Lane group cap.	213	223	180	231	193	1271	193	1291	1097
v/c ratio	0.18	0.04	0.49	0.66	0.06	0.77	0.68	0.58	0.01
Green ratio	0.14	0.14	0.14	0.14	0.11	0.68	0.11	0.68	0.68
Unif. delay d1	30.3	29.7	31.7	32.5	31.9	8.6	34.2	6.7	4.1
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Increm. delay d2	1.8	0.3	9.4	14.0	0.6	4.6	17.6	1.9	0.0
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Control delay	32.1	30.0	41.1	46.5	32.5	13.2	51.8	8.6	4.1
Lane group LOS	C	C	D	D	C	B	D	A	A
Apprch. delay	31.7		44.5		13.4		14.9		
Approach LOS	C		D		B		B		
Intersec. delay	17.9		Intersection LOS				B		

INPUT WORKSHEET

General Information		Site Information	
Analyst	PJR	Intersection	Case 6.1am
Agency or Co.	PRA	Area Type	All other areas
Date Performed	7/31/2003	Jurisdiction	
Time Period	AM Peak Hour	Analysis Year	Case 6

Project Description *Waikapu 28 Case 6.1am*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	133		69				16	915			750	32
% Heavy veh	0		0				0	0			0	0
PHF	0.65		0.65				0.90	0.94			0.90	0.90
Actuated (P/A)	P		P				P	P			P	P
Startup lost time	2.0		2.0				2.0	2.0			2.0	2.0
Ext. eff. green	2.0		2.0				2.0	2.0			2.0	2.0
Arrival type	3		3				3	3			3	3
Unit Extension	3.0		3.0				3.0	3.0			3.0	3.0
Ped/Bike/RTOR Volume	0		20	0						0		20
Lane Width	12.0		12.0				12.0	12.0			12.0	12.0
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0		0				0	0			0	0
	EB Only	02	03	04	NB Only	Thru & RT	07	08				
Timing	G = 11.5	G =	G =	G =	G = 2.0	G = 50.5	G =	G =				
	Y = 3	Y =	Y =	Y =	Y =	Y = 3	Y =	Y =				
Duration of Analysis (hrs) = 0.25							Cycle Length C = 70.0					

CAPACITY AND LOS WORKSHEET

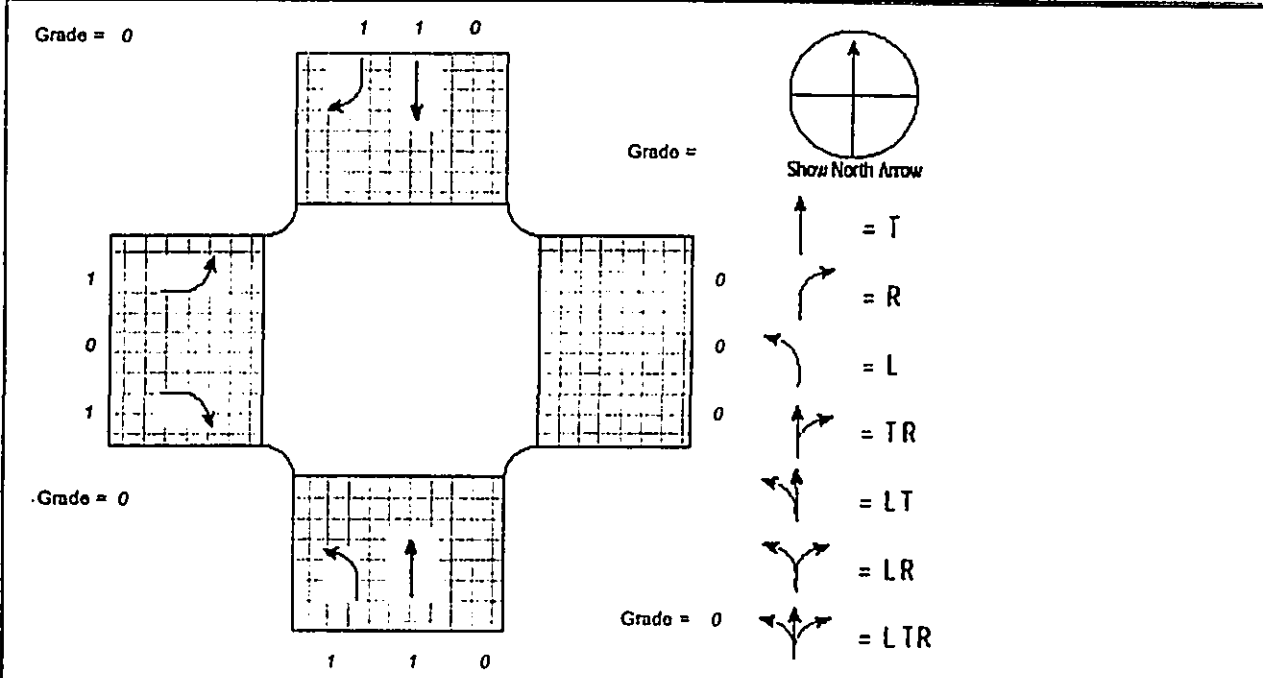
General Information												
Project Description <i>Waikapu 28 Case6.1am</i>												
Capacity Analysis												
	EB			WB			NB			SB		
Lane group	<i>L</i>		<i>R</i>				<i>L</i>	<i>T</i>			<i>T</i>	<i>R</i>
Adj. flow rate	<i>205</i>		<i>75</i>				<i>18</i>	<i>973</i>			<i>833</i>	<i>13</i>
Satflow rate	<i>1805</i>		<i>1615</i>				<i>1805</i>	<i>1900</i>			<i>1900</i>	<i>1615</i>
Lost time	<i>2.0</i>		<i>2.0</i>				<i>2.0</i>	<i>2.0</i>			<i>2.0</i>	<i>2.0</i>
Green ratio	<i>0.16</i>		<i>0.16</i>				<i>0.03</i>	<i>0.75</i>			<i>0.72</i>	<i>0.72</i>
Lane group cap.	<i>297</i>		<i>265</i>				<i>52</i>	<i>1425</i>			<i>1371</i>	<i>1165</i>
v/c ratio	<i>0.69</i>		<i>0.28</i>				<i>0.35</i>	<i>0.68</i>			<i>0.61</i>	<i>0.01</i>
Flow ratio	<i>0.11</i>		<i>0.05</i>				<i>0.01</i>	<i>0.51</i>			<i>0.44</i>	<i>0.01</i>
Crit. lane group	<i>Y</i>	<i>N</i>	<i>N</i>		<i>N</i>		<i>N</i>	<i>Y</i>			<i>N</i>	<i>N</i>
Sum flow ratios	<i>0.63</i>											
Lost time/cycle	<i>6.00</i>											
Critical v/c ratio	<i>0.68</i>											
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
Lane group	<i>L</i>		<i>R</i>				<i>L</i>	<i>T</i>			<i>T</i>	<i>R</i>
Adj. flow rate	<i>205</i>		<i>75</i>				<i>18</i>	<i>973</i>			<i>833</i>	<i>13</i>
Lane group cap.	<i>297</i>		<i>265</i>				<i>52</i>	<i>1425</i>			<i>1371</i>	<i>1165</i>
v/c ratio	<i>0.69</i>		<i>0.28</i>				<i>0.35</i>	<i>0.68</i>			<i>0.61</i>	<i>0.01</i>
Green ratio	<i>0.16</i>		<i>0.16</i>				<i>0.03</i>	<i>0.75</i>			<i>0.72</i>	<i>0.72</i>
Unif. delay d1	<i>27.6</i>		<i>25.6</i>				<i>33.4</i>	<i>4.5</i>			<i>4.8</i>	<i>2.7</i>
Delay factor k	<i>0.50</i>		<i>0.50</i>				<i>0.50</i>	<i>0.50</i>			<i>0.50</i>	<i>0.50</i>
Increm. delay d2	<i>12.4</i>		<i>2.7</i>				<i>17.3</i>	<i>2.7</i>			<i>2.0</i>	<i>0.0</i>
PF factor	<i>1.000</i>		<i>1.000</i>				<i>1.000</i>	<i>1.000</i>			<i>1.000</i>	<i>1.000</i>
Control delay	<i>40.0</i>		<i>28.3</i>				<i>50.7</i>	<i>7.2</i>			<i>6.8</i>	<i>2.8</i>
Lane group LOS	<i>D</i>		<i>C</i>				<i>D</i>	<i>A</i>			<i>A</i>	<i>A</i>
Apprch. delay	<i>36.8</i>						<i>7.9</i>			<i>6.8</i>		
Approach LOS	<i>D</i>						<i>A</i>			<i>A</i>		
Intersec. delay	<i>11.3</i>			Intersection LOS						<i>B</i>		

INPUT WORKSHEET

General Information		Site Information	
Analyst	PJR	Intersection	Case 4.1pm
Agency or Co.	PRA	Area Type	All other areas
Date Performed	7/31/2003	Jurisdiction	
Time Period	PM Peak Hour	Analysis Year	Case 4

Project Description *Waikapu 28 Case4.1pm*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	53		33				62	780			98	710
% Heavy veh	0		0				0	0			0	0
PHF	0.65		0.65				0.90	0.90			0.90	0.90
Actuated (P/A)	P		P				P	P			P	P
Startup lost time	2.0		2.0				2.0	2.0			2.0	2.0
Ext. eff. green	2.0		2.0				2.0	2.0			2.0	2.0
Arrival type	3		3				3	3			3	3
Unit Extension	3.0		3.0				3.0	3.0			3.0	3.0
Ped/Bike/RTOR Volume	0		20	0						0		30
Lane Width	12.0		12.0				12.0	12.0			12.0	12.0
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0		0				0	0			0	0
Timing	EB Only	02	03	04	NB Only	Thru & RT	07	08				
	G = 8.0	G =	G =	G =	G = 8.5	G = 54.0	G =	G =				
	Y = 3	Y =	Y =	Y =	Y = 0	Y = 3	Y =	Y =				
Duration of Analysis (hrs) = 0.25							Cycle Length C = 76.5					

CAPACITY AND LOS WORKSHEET

General Information

Project Description *Waikapu 28 Case 4.1pm*

Capacity Analysis

	EB		WB		NB		SB	
Lane group	L	R			L	T	T	R
Adj. flow rate	82	20			69	867	109	756
Satflow rate	1805	1615			1805	1900	1900	1615
Lost time	2.0	2.0			2.0	2.0	2.0	2.0
Green ratio	0.10	0.10			0.11	0.82	0.71	0.71
Lane group cap.	189	169			201	1552	1341	1140
v/c ratio	0.43	0.12			0.34	0.56	0.08	0.66
Flow ratio	0.05	0.01			0.04	0.46	0.06	0.47
Crit. lane group	Y	N	N	N	Y	N	N	Y
Sum flow ratios	0.55							
Lost time/cycle	6.00							
Critical v/c ratio	0.60							

Lane Group Capacity, Control Delay, and LOS Determination

	EB		WB		NB		SB	
Lane group	L	R			L	T	T	R
Adj. flow rate	82	20			69	867	109	756
Lane group cap.	189	169			201	1552	1341	1140
v/c ratio	0.43	0.12			0.34	0.56	0.08	0.66
Green ratio	0.10	0.10			0.11	0.82	0.71	0.71
Unif. delay d1	32.1	31.1			31.4	2.4	3.5	6.2
Delay factor k	0.50	0.50			0.50	0.50	0.50	0.50
Increm. delay d2	7.1	1.4			4.6	1.5	0.1	3.0
PF factor	1.000	1.000			1.000	1.000	1.000	1.000
Control delay	39.2	32.5			36.0	3.8	3.6	9.3
Lane group LOS	D	C			D	A	A	A
Approch. delay	37.9				6.2		8.6	
Approach LOS	D				A		A	
Intersec. delay	9.0		Intersection LOS				A	

TWO-WAY STOP CONTROL SUMMARY						
General Information			Site Information			
Analyst	PJR		Intersection	Case 6.2am		
Agency/Co.	PRA		Jurisdiction			
Date Performed	8/5/2003		Analysis Year	Case 6		
Analysis Time Period	AM Peak Hour					
Project Description Waikapu 28						
East/West Street: East Waiko Road			North/South Street: Honoapiilani Highway			
Intersection Orientation: North-South			Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments						
Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	5	846	5	70	739	10
Peak-Hour Factor, PHF	0.65	0.65	0.65	0.65	0.65	0.65
Hourly Flow Rate, HFR	7	1301	7	107	1136	15
Percent Heavy Vehicles	0	-	-	0	-	-
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	1
Configuration	L		TR	L	T	R
Upstream Signal		0			0	
Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	15	5	50	35	20	15
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	16	5	55	38	22	16
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration		LTR		LT		R
Delay, Queue Length, and Level of Service						
Approach	NB	SB	Westbound		Eastbound	
Movement	1	4	7	8	9	10 11 12
Lane Configuration	L	L	LTR		LT R	
v (vph)	7	107	76		60 16	
C (m) (vph)	614	536	189		79 546	
v/c	0.01	0.20	0.40		0.76 0.03	
95% queue length	0.03	0.74	1.79		3.70 0.09	
Control Delay	10.9	13.4	36.3		132.5 11.8	
LOS	B	B	E		F B	
Approach Delay	--	--	36.3		107.1	
Approach LOS	--	--	E		F	

TWO-WAY STOP CONTROL SUMMARY							
General Information			Site Information				
Analyst	PJR		Intersection	Case 6.2am			
Agency/Co.	PRA		Jurisdiction				
Date Performed	8/5/2003		Analysis Year	Case 6			
Analysis Time Period	AM Peak Hour						
Project Description Waikapu 28							
East/West Street: East Waiko Road			North/South Street: Honoapiilani Highway				
Intersection Orientation: North-South			Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume	5	846	5	70	739	10	
Peak-Hour Factor, PHF	0.65	0.65	0.65	0.65	0.65	0.65	
Hourly Flow Rate, HFR	7	1301	7	107	1136	15	
Percent Heavy Vehicles	0	-	-	0	-	-	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	1	1	0	1	1	1	
Configuration	L		TR	L	T	R	
Upstream Signal		0			0		
Minor Street	Westbound			Eastbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume	15	5	50	35	20	15	
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR	16	5	55	38	22	16	
Percent Heavy Vehicles	0	0	0	0	0	0	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	1	0	0	1	1	
Configuration		LTR		LT		R	
Delay, Queue Length, and Level of Service							
Approach	NB	SB	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	L	L	LTR			LT	R
v (vph)	7	107	76			60	16
C (m) (vph)	614	536	189			79	546
v/c	0.01	0.20	0.40			0.76	0.03
95% queue length	0.03	0.74	1.79			3.70	0.09
Control Delay	10.9	13.4	36.3			132.5	11.8
LOS	B	B	E			F	B
Approach Delay	--	--	36.3			107.1	
Approach LOS	--	--	E			F	

TWO-WAY STOP CONTROL SUMMARY								
General Information			Site Information					
Analyst	PJR		Intersection	Case 6.2pm				
Agency/Co.	PRA		Jurisdiction					
Date Performed	8/5/2003		Analysis Year	Case 6				
Analysis Time Period	PM Peak Hour							
Project Description Waikapu 28								
East/West Street: East Waiko Road			North/South Street: Honoapiilani Highway					
Intersection Orientation: North-South			Study Period (hrs): 0.25					
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	10	765	10	65	653	30		
Peak-Hour Factor, PHF	0.65	0.65	0.65	0.65	0.65	0.65		
Hourly Flow Rate, HFR	15	1176	15	100	1004	46		
Percent Heavy Vehicles	0	-	-	0	-	-		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	1	1	0	1	1	1		
Configuration	L		TR	L	T	R		
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	15	20	70	15	10	5		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR	16	22	77	16	11	5		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	1	0	0	1	1		
Configuration		LTR		LT		R		
Delay, Queue Length and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L	LTR			LT		R
v (vph)	15	100	115			27		5
C (m) (vph)	671	593	242			93		595
v/c	0.02	0.17	0.48			0.29		0.01
95% queue length	0.07	0.60	2.36			1.08		0.03
Control Delay	10.5	12.3	32.7			58.8		11.1
LOS	B	B	D			F		B
Approach Delay	--	--	32.7			51.4		
Approach LOS	--	--	D			F		

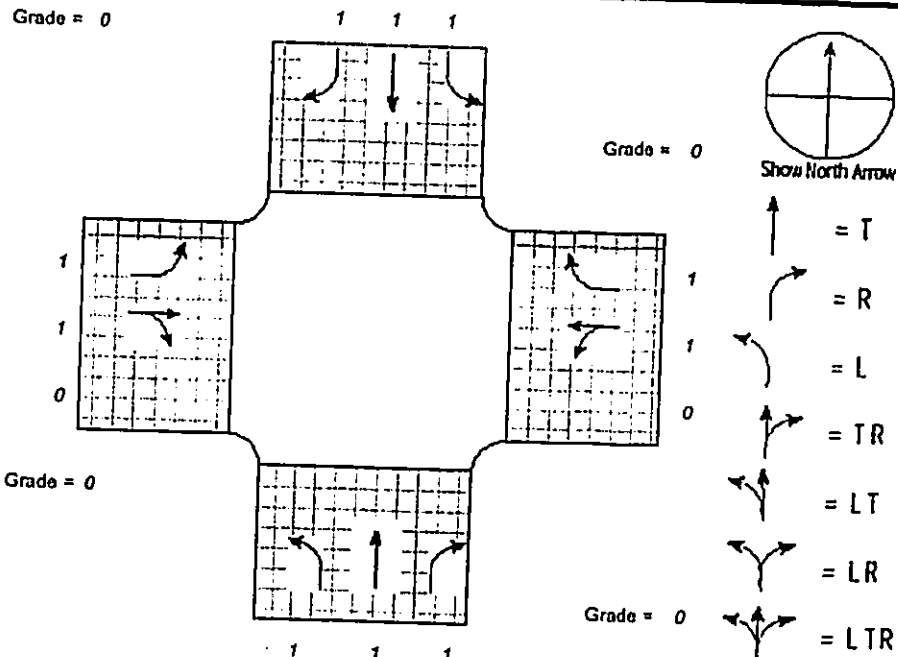
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INPUT WORKSHEET

General Information		Site Information	
Analyst	PJR	Intersection	Case 7.1am
Agency or Co.	PRA	Area Type	All other areas
Date Performed	7/31/2003	Jurisdiction	
Time Period	AM Peak Hour	Analysis Year	Case 7

Project Description *Waikapu 28 Case 7.1am*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	157	0	74	23	0	92	18	961	8	32	765	41
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.65	0.65	0.65	0.65	0.65	0.65	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time	2.0	2.0			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	3	3			3	3	3	3	3	3	3	3
Unit Extension	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0		20	0		20	0		4	0		20
Lane Width	12.0	12.0			12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0	0			0	0	0	0	0	0	0	0
	EW Perm	02	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 16.0	G =	G =	G =	G = 1.8	G = 40.8	G =	G =				
	Y = 3	Y =	Y =	Y =	Y =	Y = 3	Y =	Y =				
Duration of Analysis (hrs) = 0.25							Cycle Length C = 64.6					

CAPACITY AND LOS WORKSHEET

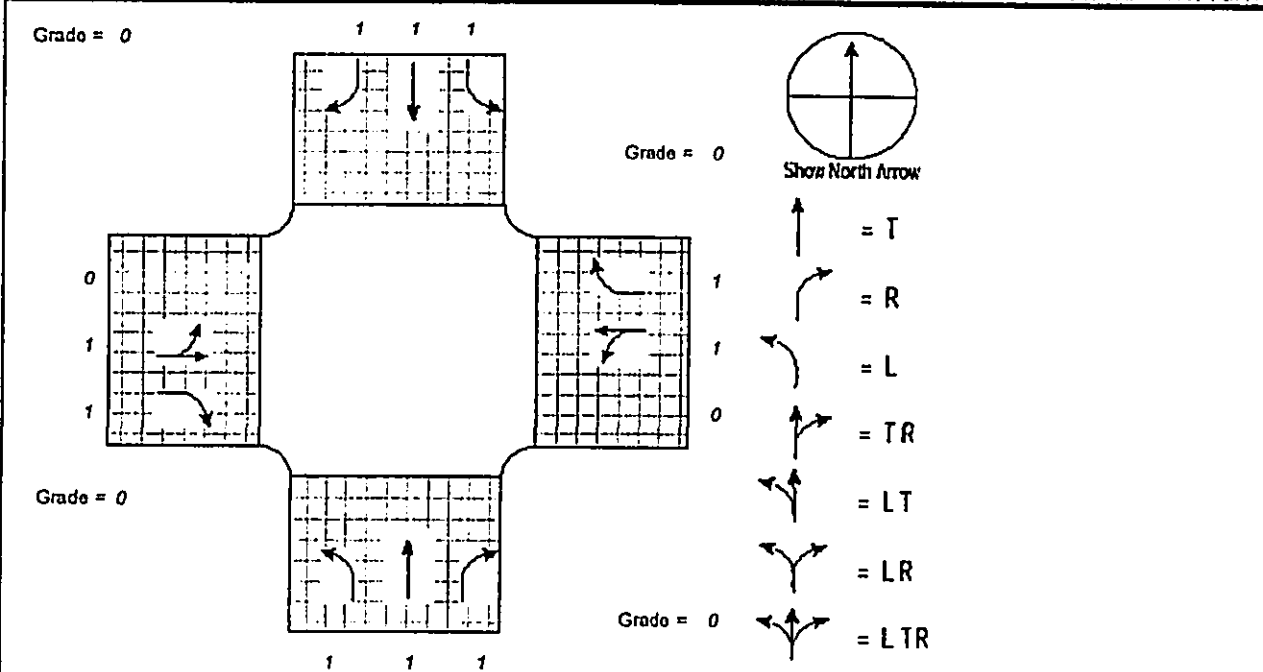
General Information												
Project Description <i>Waikapu 28 Case 7.1am</i>												
Capacity Analysis												
	EB			WB			NB			SB		
Lane group	L	TR		LT	R	L	T	R	L	T	R	
Adj. flow rate	242	83		35	111	20	1068	4	36	850	23	
Satflow rate	1395	1615		1483	1615	1805	1900	1615	1805	1900	1615	
Lost time	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Green ratio	0.25	0.25		0.25	0.25	0.03	0.63	0.63	0.03	0.63	0.63	
Lane group cap.	346	400		367	400	50	1200	1020	50	1200	1020	
v/c ratio	0.70	0.21		0.10	0.28	0.40	0.89	0.00	0.72	0.71	0.02	
Flow ratio	0.17	0.05		0.02	0.07	0.01	0.56	0.00	0.02	0.45	0.01	
Crit. lane group	Y	N		N	N	N	Y	N	Y	N	N	
Sum flow ratios	0.76											
Lost time/cycle	6.00											
Critical v/c ratio	0.83											
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
Lane group	L	TR		LT	R	L	T	R	L	T	R	
Adj. flow rate	242	83		35	111	20	1068	4	36	850	23	
Lane group cap.	346	400		367	400	50	1200	1020	50	1200	1020	
v/c ratio	0.70	0.21		0.10	0.28	0.40	0.89	0.00	0.72	0.71	0.02	
Green ratio	0.25	0.25		0.25	0.25	0.03	0.63	0.63	0.03	0.63	0.63	
Unif. delay d1	22.1	19.3		18.7	19.6	30.9	10.0	4.4	31.2	7.9	4.4	
Delay factor k	0.50	0.50		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
Increm. delay d2	11.2	1.2		0.5	1.7	22.2	10.1	0.0	62.0	3.5	0.0	
PF factor	1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Control delay	33.3	20.4		19.2	21.3	53.0	20.1	4.4	93.2	11.5	4.5	
Lane group LOS	C	C		B	C	D	C	A	F	B	A	
Aprch. delay	30.0			20.8			20.6			14.5		
Approach LOS	C			C			C			B		
Intersec. delay	19.6			Intersection LOS						B		

INPUT WORKSHEET

General Information:		Site Information:	
Analyst	PJR	Intersection	Case 7.1pm
Agency or Co.	PRA	Area Type	All other areas
Date Performed	7/31/2003	Jurisdiction	
Time Period	PM Peak Hour	Analysis Year	Case 7

Project Description *Waikapu 28 Case 7.1pm*

Intersection Geometry:



Volume and Timing Input:

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	72	0	45	15	0	60	80	809	26	117	763	133
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.65	0.65	0.65	0.65	0.65	0.65	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type		3	3		3	3	3	3	3	3	3	3
Unit Extension		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0		20	0		20	0		4	0		20
Lane Width		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr		0	0		0	0	0	0	0	0	0	0
	EW Perm	02	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 10.0	G =	G =	G =	G = 8.5	G = 54.0	G =	G =				
	Y = 3	Y =	Y =	Y =	Y = 0	Y = 3	Y =	Y =				
Duration of Analysis (hrs) = 0.25							Cycle Length C = 78.5					

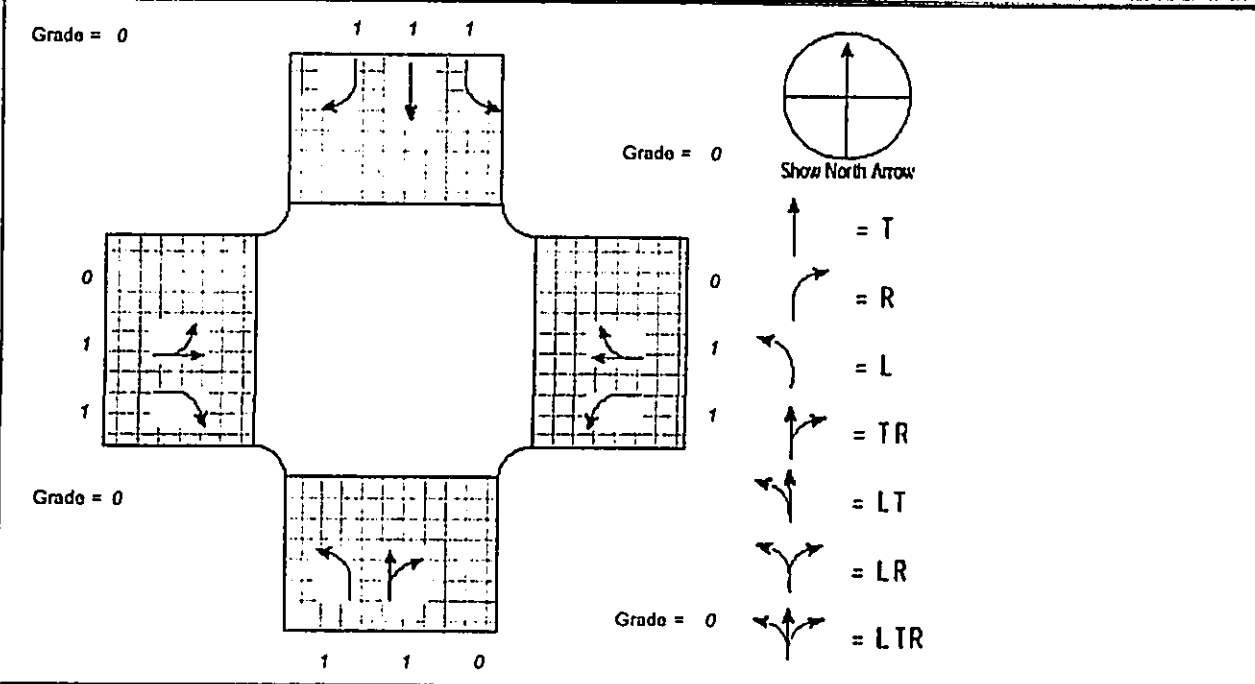
CAPACITY AND LOS WORKSHEET													
General Information													
Project Description Waikapu 28 Case 7.1pm													
Capacity Analysis													
	EB		WB		NB			SB					
	LT	R	LT	R	L	T	R	L	T	R			
Lane group													
Adj. flow rate	111	38	23	62	89	899	24	130	848	126			
Satflow rate	1348	1615	1084	1615	1805	1900	1615	1805	1900	1615			
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0			
Green ratio	0.13	0.13	0.13	0.13	0.11	0.69	0.69	0.11	0.69	0.69			
Lane group cap.	172	206	138	206	195	1307	1111	195	1307	1111			
v/c ratio	0.65	0.18	0.17	0.30	0.46	0.69	0.02	0.67	0.65	0.11			
Flow ratio	0.08	0.02	0.02	0.04	0.05	0.47	0.01	0.07	0.45	0.08			
Crit. lane group	Y	N	N	N	N	Y	N	Y	N	N			
Sum flow ratios	0.63												
Lost time/cycle	6.00												
Critical v/c ratio	0.68												
Lane Group Capacity, Control Delay, and LOS Determination													
	EB		WB		NB			SB					
	LT	R	LT	R	L	T	R	L	T	R			
Lane group													
Adj. flow rate	111	38	23	62	89	899	24	130	848	126			
Lane group cap.	172	206	138	206	195	1307	1111	195	1307	1111			
v/c ratio	0.65	0.18	0.17	0.30	0.46	0.69	0.02	0.67	0.65	0.11			
Green ratio	0.13	0.13	0.13	0.13	0.11	0.69	0.69	0.11	0.69	0.69			
Unif. delay d1	32.6	30.6	30.5	31.1	32.8	7.3	3.9	33.6	6.9	4.1			
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50			
Increm. delay d2	17.2	2.0	2.6	3.7	7.5	3.0	0.0	16.6	2.5	0.2			
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Control delay	49.8	32.6	33.1	34.8	40.4	10.2	3.9	50.3	9.4	4.4			
Lane group LOS	D	C	C	C	D	B	A	D	A	A			
Apprch. delay	45.4		34.3		12.7			13.6					
Approach LOS	D		C		B			B					
Intersec. delay	16.0		Intersection LOS						B				

INPUT WORKSHEET

General Information:		Site Information:	
Analyst	PJR	Intersection	Case 7.2am
Agency or Co.	PRA	Area Type	All other areas
Date Performed	7/31/2003	Jurisdiction	
Time Period	AM Peak Hour	Analysis Year	Case 7

Project Description *Waikapu 28 Case.2am*

Intersection Geometry:



Volume and Timing Input:

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	35	20	15	85	5	96	5	856	39	85	767	10
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.65	0.65	0.65	0.65	0.65	0.65	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time		2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Ext. eff. green		2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Arrival type		3	3	3	3		3	3		3	3	3
Unit Extension		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Ped/Bike/RTOR Volume	0		5	0		40	0		15	0		5
Lane Width		12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	12.0
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr		0	0	0	0		0	0		0	0	0
Timing	EW Perm	02	03	04	Excl. Left	Thru & RT	07	08				
	G = 10.0	G =	G =	G =	G = 4.5	G = 44.0	G =	G =				
	Y = 3	Y =	Y =	Y =	Y =	Y = 3	Y =	Y =				
Duration of Analysis (hrs) = 0.25							Cycle Length C = 64.5					

CAPACITY AND LOS WORKSHEET											
General Information											
Project Description <i>Waikapu 28 Case.2am</i>											
Capacity Analysis											
	EB		WB		NB		SB				
Lane group	LT	R	L	TR	L	TR	L	T	R		
Adj. flow rate	85	15	131	94	6	978	94	852	6		
Satflow rate	1486	1615	974	1639	1805	1892	1805	1900	1615		
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Green ratio	0.16	0.16	0.16	0.16	0.07	0.68	0.07	0.68	0.68		
Lane group cap.	230	250	151	254	126	1291	126	1296	1102		
v/c ratio	0.37	0.06	0.87	0.37	0.05	0.76	0.75	0.66	0.01		
Flow ratio	0.06	0.01	0.13	0.06	0.00	0.52	0.05	0.45	0.00		
Crit. lane group	N	N	Y	N	N	Y	Y	N	N		
Sum flow ratios	0.70										
Lost time/cycle	6.00										
Critical v/c ratio	0.78										
Lane Group Capacity, Control Delay, and LOS Determination											
	EB		WB		NB		SB				
Lane group	LT	R	L	TR	L	TR	L	T	R		
Adj. flow rate	85	15	131	94	6	978	94	852	6		
Lane group cap.	230	250	151	254	126	1291	126	1296	1102		
v/c ratio	0.37	0.06	0.87	0.37	0.05	0.76	0.75	0.66	0.01		
Green ratio	0.16	0.16	0.16	0.16	0.07	0.68	0.07	0.68	0.68		
Unif. delay d1	24.4	23.2	26.6	24.4	28.0	6.7	29.4	5.9	3.3		
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50		
Increm. delay d2	4.5	0.5	44.6	4.1	0.7	4.2	32.6	2.6	0.0		
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Control delay	28.9	23.7	71.2	28.5	28.7	10.9	62.1	8.5	3.3		
Lane group LOS	C	C	E	C	C	B	E	A	A		
Apprch. delay	28.2		53.4		11.0		13.8				
Approach LOS	C		D		B		B				
Intersec. delay	17.2		Intersection LOS					B			

CAPACITY AND LOS WORKSHEET											
General Information											
Project Description <i>Waikapu 28 Case7.2pm</i>											
Capacity Analysis											
	EB		WB		NB		SB				
Lane group	LT	R	L	TR	L	TR	L	T	R		
Adj. flow rate	38	8	89	153	11	991	131	750	11		
Satflow rate	1543	1615	1304	1673	1805	1871	1805	1900	1615		
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Green ratio	0.14	0.14	0.14	0.14	0.11	0.68	0.11	0.68	0.68		
Lane group cap.	213	223	180	231	193	1271	193	1291	1097		
v/c ratio	0.18	0.04	0.49	0.66	0.06	0.78	0.68	0.58	0.01		
Flow ratio	0.02	0.00	0.07	0.09	0.01	0.53	0.07	0.39	0.01		
Crit. lane group	N	N	N	Y	N	Y	Y	N	N		
Sum flow ratios	0.69										
Lost time/cycle	6.00										
Critical v/c ratio	0.75										
Lane Group Capacity, Control Delay, and LOS Determination											
	EB		WB		NB		SB				
Lane group	LT	R	L	TR	L	TR	L	T	R		
Adj. flow rate	38	8	89	153	11	991	131	750	11		
Lane group cap.	213	223	180	231	193	1271	193	1291	1097		
v/c ratio	0.18	0.04	0.49	0.66	0.06	0.78	0.68	0.58	0.01		
Green ratio	0.14	0.14	0.14	0.14	0.11	0.68	0.11	0.68	0.68		
Unif. delay d1	30.3	29.7	31.7	32.5	31.9	8.7	34.2	6.8	4.1		
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50		
Increm. delay d2	1.8	0.3	9.4	14.0	0.6	4.8	17.6	1.9	0.0		
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Control delay	32.1	30.0	41.1	46.5	32.5	13.5	51.8	8.7	4.1		
Lane group LOS	C	C	D	D	C	B	D	A	A		
Aprch. delay	31.7		44.5		13.7		14.9				
Approach LOS	C		D		B		B				
Intersec. delay	18.0		Intersection LOS					B			

APPENDIX D
SCHEMATIC DIAGRAMS OF STUDY INTERSECTIONS

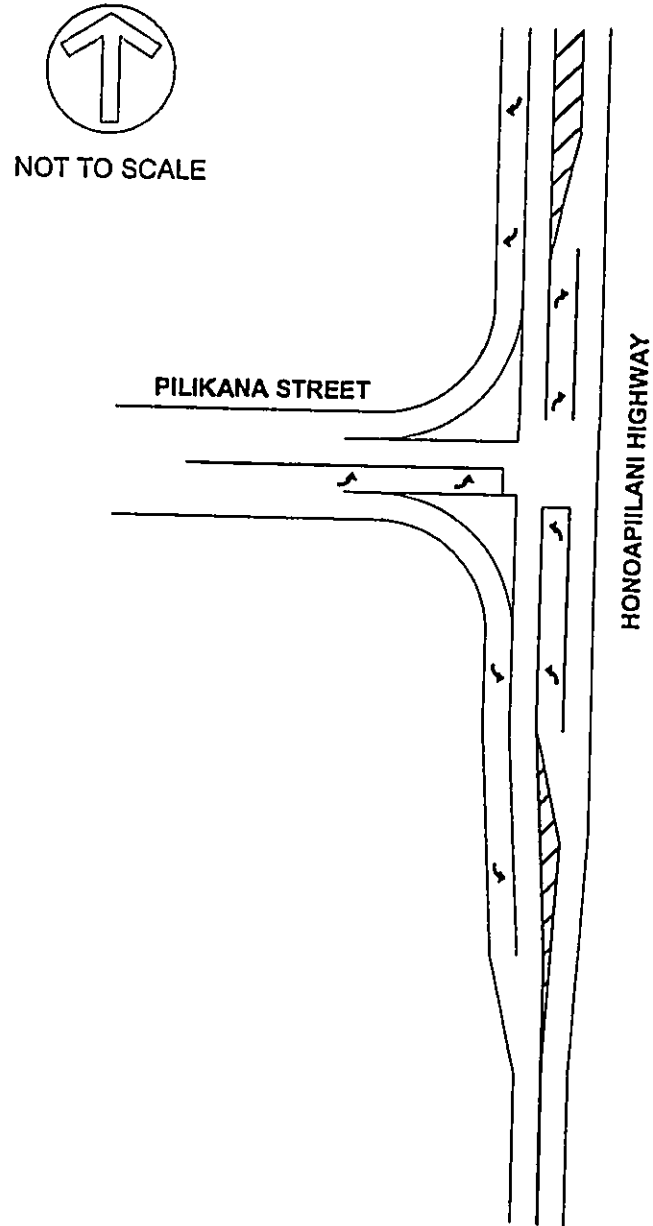
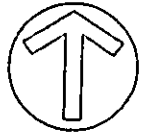


Figure D1
SCHEMATIC OF EXISTING INTERSECTION CONFIGURATION
HONOAPLILANI HIGHWAY AT PILIKANA STREET

Phillip Rowell and Associates



NOT TO SCALE

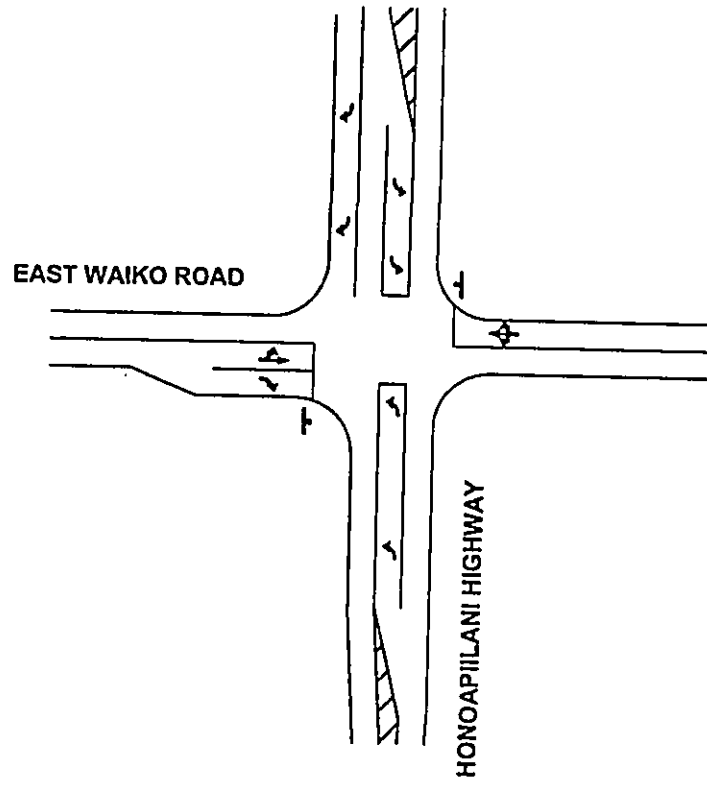


Figure D2
SCHEMATIC OF EXISTING INTERSECTION CONFIGURATION
HONOAPILANI HIGHWAY AT EAST WAIKO ROAD

Phillip Rowell and Associates



Appendix D

***Preliminary
Engineering Report***

Established 1969

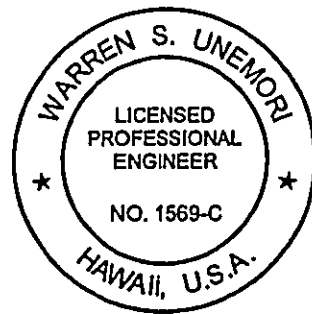
Preliminary Engineering Report for

Waiolani Mauka

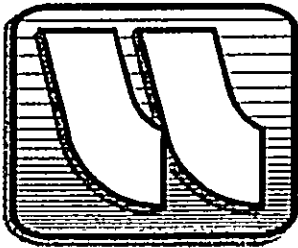
Waikapu, Maui, Hawaii
TMK: (2) 3-5-04: 025

Prepared For: Waikapu 28 Investments LLC
Waikapu, Maui

DRAFT



Date: August 2003



WARREN S. UNEMORI ENGINEERING, INC.
Civil and Structural Engineers - Land Surveyors
Wells Street Professional Center - Suite 403
2145 Wells Street
Wailuku, Maui, Hawaii 96793

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**Preliminary Engineering Report
for
Waiolani Mauka**

I. PROJECT LOCATION

The project site is located on the north side of Pilikana Street in Waikapu. It is bounded by Honoapiilani Highway along its easterly boundary and an old government road right-of-way to the west. The site is approximately 925 feet wide and 1,650 feet long and contains a gross area of 28.7 acres. Waihee Ditch owned by Wailuku Agribusiness Company bifurcates the property in the north-south direction. There also is a small punawai below Waihee Ditch adjacent to the north boundary. The site slopes from elevation 525 feet at its southwest corner to 405 feet at its northeast corner for an overall grade of 6.8%. (See Exhibit 1)

This report briefly describes existing infrastructure in the vicinity of the project site. It also summarizes probable infrastructural improvements that may be needed to support the project.

II. PROJECT DESCRIPTION

The applicant is planning to subdivide the property to create 109 single family R-2 lots when all entitlements are secured. Lot sizes are expected to range from a minimum of 7,500 square feet to around 12,721 square feet. Minimum average lot width will be 65 feet. Improvements will consist of paved streets with concrete curb and gutter on both sides, 4 feet wide sidewalk on one side, underground electrical, telephone and CATV distribution systems, 8 inch water distribution system with fire hydrants, gravity sewer collection system, storm drain system, mass grading and landscaping. (See Exhibit 2)

III. EXISTING INFRASTRUCTURE

3.1 Water System

When the Waiolani Subdivision Phase I was constructed, sewer, water and drainline stubouts were provided on the south side of Pilikana Street near its intersection with Honoapiilani Highway.

3.2 Sewer System

Although a sewer stubout is available at the southeast corner of the project site, as mentioned above, the northwest corner of the project site is lower than the elevation of this sewer invert. Therefore, the northeast corner of the project site must be raised by filling in order to provide sufficient fall to the sewer stubout.

The capacity of the Kahului Wastewater Reclamation Facility (KWWRF) was expanded several years ago from 6.0 MGD to 7.9 MGD. According to the Division of Wastewater Management for the County of Maui, the current average daily flow through the KWWRF is around 5.0 MGD.

3.3 Drainage

A low berm along the east side of the old government road right-of-way keeps offsite runoff from entering the project site. This berm directs offsite runoff toward a natural gully located north of the project site. This gully drains into Waiale pond owned and maintained by HC&S for irrigation.

Runoff from the present 28.7 acre project site sheet flows across the site in a southwest to northeasterly direction. Although a small amount of the runoff sheet flows into Waihee Ditch, most of this sheet flow accumulates at the northeast corner of the site where

a low berm temporarily impounds the flow. When the berm overtops, the water flows onto Honoapiilani Highway and the properties below. There is a small irrigation reservoir below Waihee Ditch adjacent to the north boundary which also serves as an impoundment facility when flow in Waihee Ditch exceeds its capacity.

The present runoff from the 28.7 acres undeveloped site for a 50 year - 1 hour storm is estimated to be 27.3 cfs.

According to the Flood Insurance Rate Map prepared by FEMA, the entire project site is situated in Zone C, which represents areas subject to only minimal flooding.

3.4 Electrical, Telephone and CATV Systems

There are existing overhead electrical, telephone and CATV transmission lines along the easterly boundary of the project site.

3.5 Access Road

The main access to the project site will be from Pilikana Street. Pilikana Street at Honoapiilani Highway is a stop control intersection. Pilikana Street was designed and constructed as a local collector street with ample width for left turn storage lanes. This street is fully improved.

IV. PROPOSED IMPROVEMENTS

4.1 Water System

Although a water distribution stubout has been provided at the northeast corner of the Waiolani Subdivision Phase I project site as previously mentioned, the 300,000

gallon Waikapu storage tank does not have the capacity to provide the required fire flow and max day demands of the project.

The source of water for the Waiolani Mauka project will presumably be the Iao Aquifer. In keeping with the recommended practice of dispersing their well sites, DWS recently drilled a new well at their Waikapu tank site near the end of Waiko Road. They are currently finalizing the design of the deep well pump and equipment for this well.

The Department of Water Supply's plan is to feed, not only Waikapu, but also the mid-level service area of the Kehalani project, otherwise known as the Wailuku-Kahului Project District 3, from this new well at Waikapu. The developers of Kehalani will be constructing a 1.0 MG storage tank at elevation 670± feet on the south side of Kuikahi Drive to serve their mid-level service area. Therefore, the developer of Waiolani Mauka hopes to enlarge the size of this tank to provide the additional storage needed for his project, provided a reasonable participatory agreement can be worked out with the developers of Kehalani and DWS. The 109 lot single family residential project is estimated to require a total storage of about 100,000 gallons. Based on DWS' domestic consumption guidelines, the anticipated average daily demand for the project is 65,400 gpd.

The applicant will also be participating with other developers in installing approximately 3,000 feet of offsite waterline from the new storage tank to the project site. Within the project site, an 8 inch distribution system will be installed with fire hydrants spaced at intervals not exceeding 350 feet. All water system improvements will be designed in accordance with DWS standards.

4.2 Wastewater System

The 109 lot single family residential project is expected to generate 38,150 gpd of wastewater when fully built out. An 8 inch gravity collector will be installed onsite and connected to the stubout that has been provided at the northeast corner of Waiolani Elua Subdivision. The lots at the northeast corner of the project site will be raised to ensure sufficient fall to the stubout. Since the current average daily flow is around 5.0 MGD and the plant capacity is 7.9 MGD, it is reasonable to conclude that the KWWRF has ample capacity to handle the projected flow of 38,150 gpd from this project.

The Division of Wastewater Management for the County of Maui, has forewarned the applicant that he will have to pay his prorata share of offsite sewerline improvements that will be required between Kaahumanu Avenue and Mill Street. He will also be required to pay an assessment for "Facility Expansion of the Wailuku/Kahului Wastewater Treatment System", in accordance with the provisions of Chapter 14.35 of the Maui County Code. The applicant is aware of these requirements and is willing to pay for his fair-share cost of improvements.

4.3 Drainage

The existing berm along the old government road right-of-way at the westerly boundary of the project site will be retained to keep offsite runoff from sheet-flowing into the site.

Post development runoff from the project site during a 50 year - 1 hour rainfall is expected to be approximately 62.4 cfs. This is an increase of 35.1 cfs over pre-development conditions.

The additional onsite runoff will be intercepted by catch basins spaced along the subdivision streets and conveyed into a storm drain system that will be directed toward the

southeast corner of the project site. A new offsite drainline will be installed across Honoapiilani Highway then along the east side of said Highway down into Wailuku Agribusiness' Waikapu reservoir (Punawai). The applicant has an easement for this drainline. He also secured the right to increase the capacity of the reservoir by dredging or enlarging the area of this irrigation reservoir by one (1) acre to accommodate the post development runoff generated by his project. This irrigation reservoir which will serve as a detention basin has a spillway that conveys water into Waikapu Stream whenever the water surface in the reservoir reaches a preset elevation.

4.4 Electrical, Telephone and CATV System

The electrical, telephone and CATV distribution system will be extended underground into the subdivision from Waiolani Subdivision with a tie back to the existing overhead system at some convenient location as determined by the respective utility companies.

4.5 Access Road

As stated earlier, the main access to the project site will be from Pilikana Street. The Tee intersection will be located approximately 430 feet west of Honoapiilani Highway and 160 feet east of Kawika Street.

The subdivision streets will be built to County minor road standards with concrete curb and gutter on each side, wheel chair ramps at appropriate locations, four (4) feet wide sidewalk on one side and traffic calming facilities at appropriate locations within the project site to discourage speeding.

V. SUMMARY AND CONCLUSION

Although the cost to install 3,000 feet of offsite waterline seems substantial, the applicant expects to receive appropriate transmission line credit in the comprehensive meter fee or qualify for reimbursement of 50% of its cost over five (5) years as provided for in the Rules and Regulations of the Department of Water Supply.

The developer will also have a storage tank credit of \$1,140/lot in the meter fee. Therefore, the cost of constructing the tank should be offsetted by the storage tank allocation in the comprehensive meter fee.

Extending the offsite drainline to the Waikapu Punawai appears to be the biggest cost. However, the applicant will not have to set aside part of his zoned land for a retention basin, which should offset some of the drainage costs.

Based on the foregoing, it is our professional opinion, that topographically and also from the infrastructural stand point, the proposed site is suitable for the single family residential project being proposed.

VI. REFERENCES

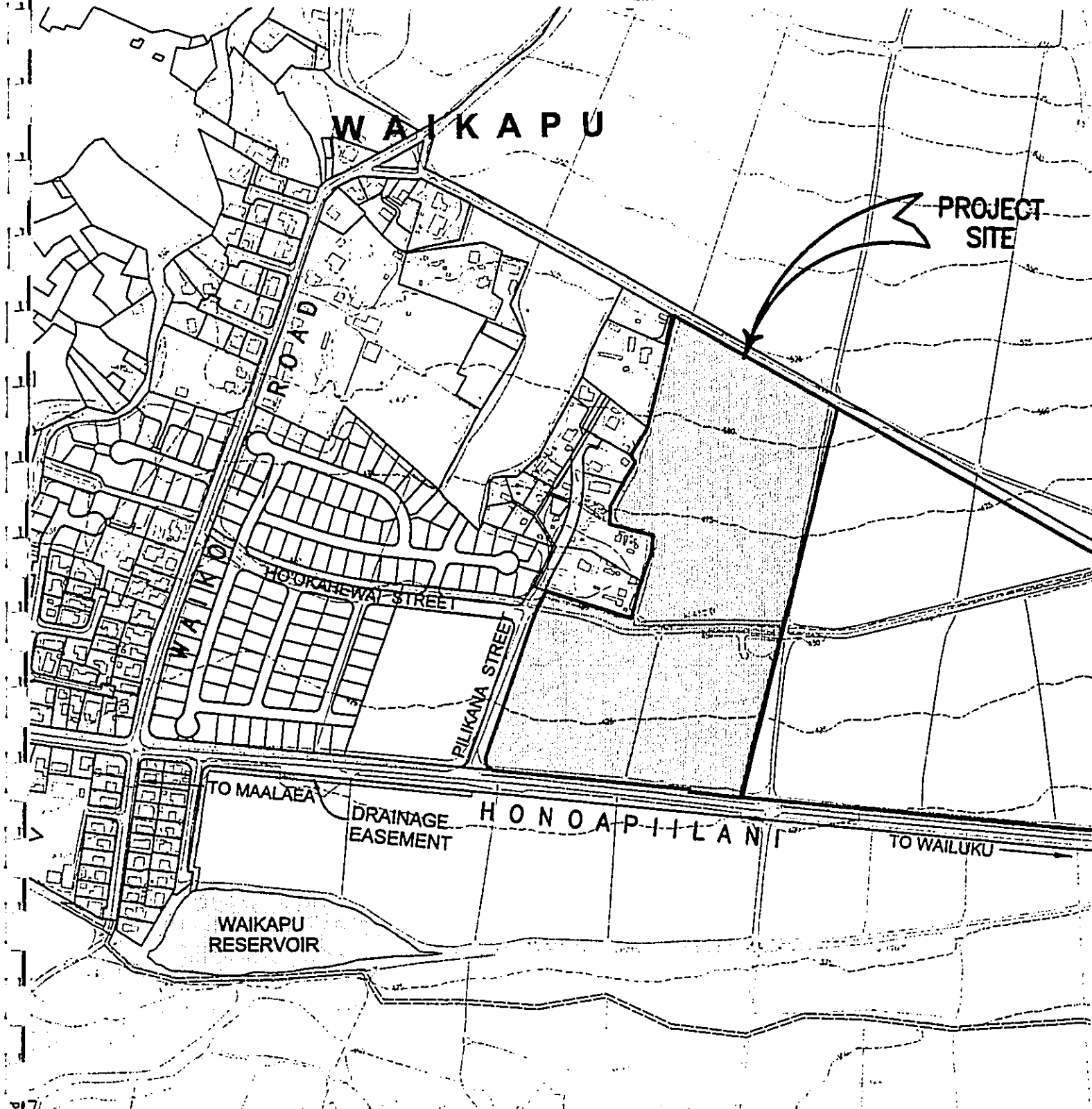
1. *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii.* August 1972. United States Department of Agriculture, Soil Conservation Service.
2. *Flood Insurance Rate Map, Maui County, Hawaii.* Community-Panel Number 150003 0139B. June 1, 1981. Federal Emergency Management Agency, Federal Insurance Administration.
3. *Rainfall Frequency Atlas of the Hawaiian Islands, Technical Paper No. 43.* 1962. U.S. Department of Commerce, Weather Bureau.
4. *Rules for the Design of Storm Drainage Facilities in the County of Maui.* July 1995. Department of Public Works and Waste Management, County of Maui.

EXHIBITS

- 1 Location Map
- 2 Site Plan

TRUE NORTH

SCALE: 1 INCH = 500 FEET



W A I K A P U

PROJECT SITE

TO MAALAEA

DRAINAGE EASEMENT

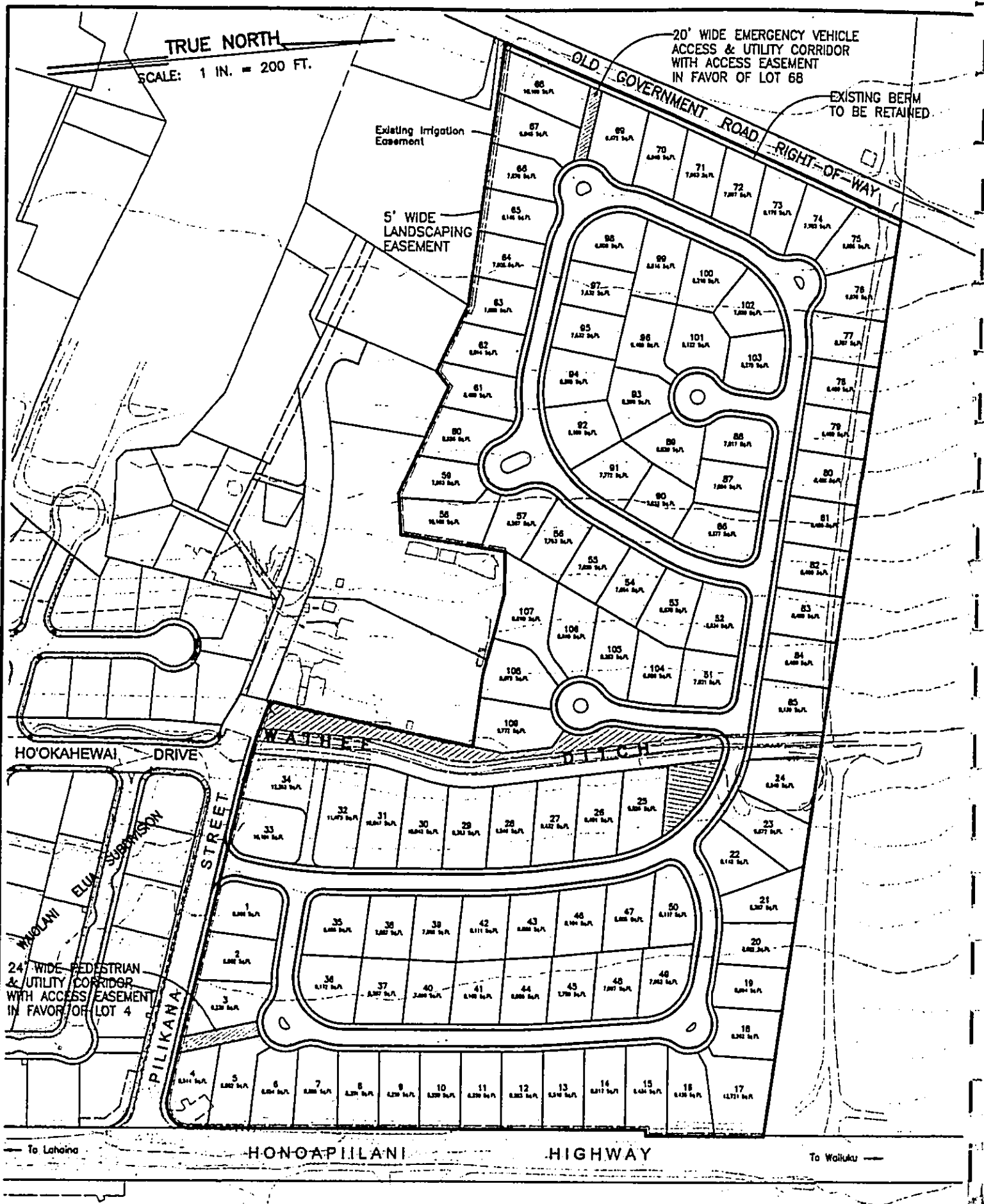
H O N O A P I I L A N I

TO WAILUKU

WAIKAPU RESERVOIR

0305
0304
0303

**EXHIBIT 1
LOCATION MAP**



T.M.K.: (2)3-5-04 : 25

**EXHIBIT 2
SITE PLAN**

dwg: 12.dwg

ADDENDUM

PRELIMINARY DRAINAGE REPORT

Established 1969

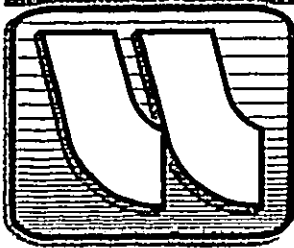
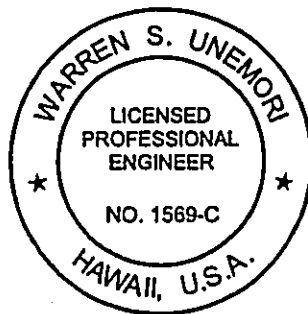
Preliminary Drainage Report

Walolani Mauka

Waikapu, Maui, Hawaii
TMK: (2) 3-5-04:025

Prepared For: Waikapu 28 Investments LLC
Waikapu, Maui

DRAFT



Warren S. Unemori Engineering, Inc.
Civil and Structural Engineers - Land Surveyors
2145 Wells Street, Suite 403
Wailuku, Hawaii 96793

Date: September, 2003

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EXHIBITS

- 1 Location Map
- 2 Site Plan
- 3 Soil Survey Map
- 4 Flood Insurance Rate Map
- 5 Drainage Area

APPENDICES

- A Hydrologic Calculations

**Preliminary Drainage Report
for
Waiolani Mauka**

I. PROJECT LOCATION

The project site is located on the north side of Pilikana Street in Waikapu. It is bounded by Honoapiilani Highway along its easterly boundary and an old government road right-of-way to the west. (See Exhibit 1) The site is approximately 925 feet wide and 1,650 feet long and contains a gross area of 28.7 acres. Waihee Ditch owned by Wailuku Agribusiness Company bifurcates the property in the north-south direction. There also is a small punawai below Waihee Ditch adjacent to the north boundary. The site slopes from elevation 525 feet at its southwest corner to 405 feet at its northeast corner for an overall grade of 6.8%. (See Exhibit 2)

This report briefly describes existing drainage conditions and drainage improvements proposed.

II. PROJECT DESCRIPTION

The applicant is planning to subdivide the property to create 109 single family R-2 lots when all entitlements are secured. Lot sizes are expected to range from a minimum of 7,500 square feet to around 12,721 square feet. Minimum average lot width will be 65 feet. Improvements will consist of paved streets with concrete curb and gutter on both sides, 4 feet wide sidewalk on one side, underground electrical, telephone and CATV distribution systems, 8 inch

water distribution system with fire hydrants, gravity sewer collection system, storm drain system, mass grading and landscaping.

III. EXISTING CONDITIONS

The project site was previously used for sugar cane and pineapple cultivation. It is currently vacant and not being used for any particular purpose.

According to the *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*¹, prepared by the United States Department of Agriculture, Soil Conservation Service, the predominant soil classification found on the project site is the Iao Clay, 3 to 7 percent slopes (IcB). The Iao Clay is characterized as having a medium runoff with a slight to moderate erosion hazard. (See Exhibit 3). The remainder of the project sight is comprised of Iao Cobbly Silty Clay, 3 to 7 percent slopes (IbB). The Iao Cobbly Silty Clay has the same characteristics as the Iao Clay.

The project site is not situated within any flood plain. According to FIRM² map dated March 16, 1995, the site is designated Zone C which is subject to only minimal flooding but outside any flood plain. (See Exhibit 4)

Currently, surface runoff from lands west of and above the project site sheet flows toward the old Government road right-of-way that borders the westerly boundary of the project site.

A low berm along the east or makai side of the old Government road right-of-way keeps offsite runoff from entering the project site. This berm directs offsite runoff toward a natural gully located north of the project site. This gully drains into Waiale pond owned and maintained by HC&S for irrigation.

Runoff from the present 28.7 acre project site sheet flows across the site in a southwest to northeasterly direction. Although a small amount of the runoff sheet flows into Waihee Ditch, most of this sheet flow accumulates at the northeast corner of the site where a low berm temporarily impounds the flow. When the berm overtops, the water flows onto Honoapiilani Highway and the properties below. There is small irrigation reservoir below Waihee Ditch adjacent to the north boundary which also serves as an impoundment facility when flow in Waihee Ditch exceeds its capacity.

The present runoff from the 28.7 acre undeveloped site for a 50 year - 1 hour storm is estimated to be 27.32 cfs. (See Appendix A for calculations)

IV. PROPOSED DRAINAGE IMPROVEMENTS

The existing berm along the old Government road right-of-way at the westerly boundary of the project site will be retained to keep offsite runoff from flowing into the site.

Post development runoff from the project site during a 50 year - 1 hour rainfall is expected to be approximately 62.4 cfs. This is an increase of 35.1 cfs over pre-development conditions.

The additional onsite runoff will be intercepted by catch basins spaced along the subdivision streets and conveyed into a storm drain system that will be directed toward the southeast corner of the project site. A new offsite drainline will be installed across Honoapiilani Highway then along the east side of said Highway down into Wailuku Agribusiness' Waikapu reservoir (Punawai). The applicant has an easement for this drainline. He also secured the right to increase the capacity of the reservoir by dredging or enlarging the area of this irrigation reservoir by one (1) acre to accommodate the post development runoff generated by his project. This irrigation reservoir which

will serve as a detention basin has a spillway that conveys water into Waikapu Stream whenever the water surface in the reservoir reaches a preset elevation. (See Exhibit 5)

V. CONCLUSION

Based on the foregoing, it is our professional opinion that the drainage system proposed for the project will greatly improve conditions on Honoapiilani Highway fronting the project site. It will also improve conditions for properties below the highway.

VI. REFERENCES

1. *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii.* August 1972. United States Department of Agriculture, Soil Conservation Service.
2. *Flood Insurance Rate Map, Maui County, Hawaii.* Community-Panel Number 150003 00190 D, March 16, 1995. Federal Emergency Management Agency, Federal Insurance Administration.
3. *Flood Insurance Rate Map, Maui County, Hawaii.* Community-Panel Number 150003 00170 B, June 1, 1981. Federal Emergency Management Agency, Federal Insurance Administration
4. *Rainfall Frequency Atlas of the Hawaiian Islands, Technical Paper No. 43.* 1962. U.S. Department of Commerce, Weather Bureau.
5. *Rules for the Design of Storm Drainage Facilities in the County of Maui.* July 1995. Department of Public Works and Waste Management, County of Maui.

EXHIBITS

- 1 Location Map
- 2 Site Plan
- 3 Soil Survey Map
- 4 Flood Insurance Rate Map
- 5 Drainage Area

TRUE NORTH

SCALE: 1 INCH = 500 FEET

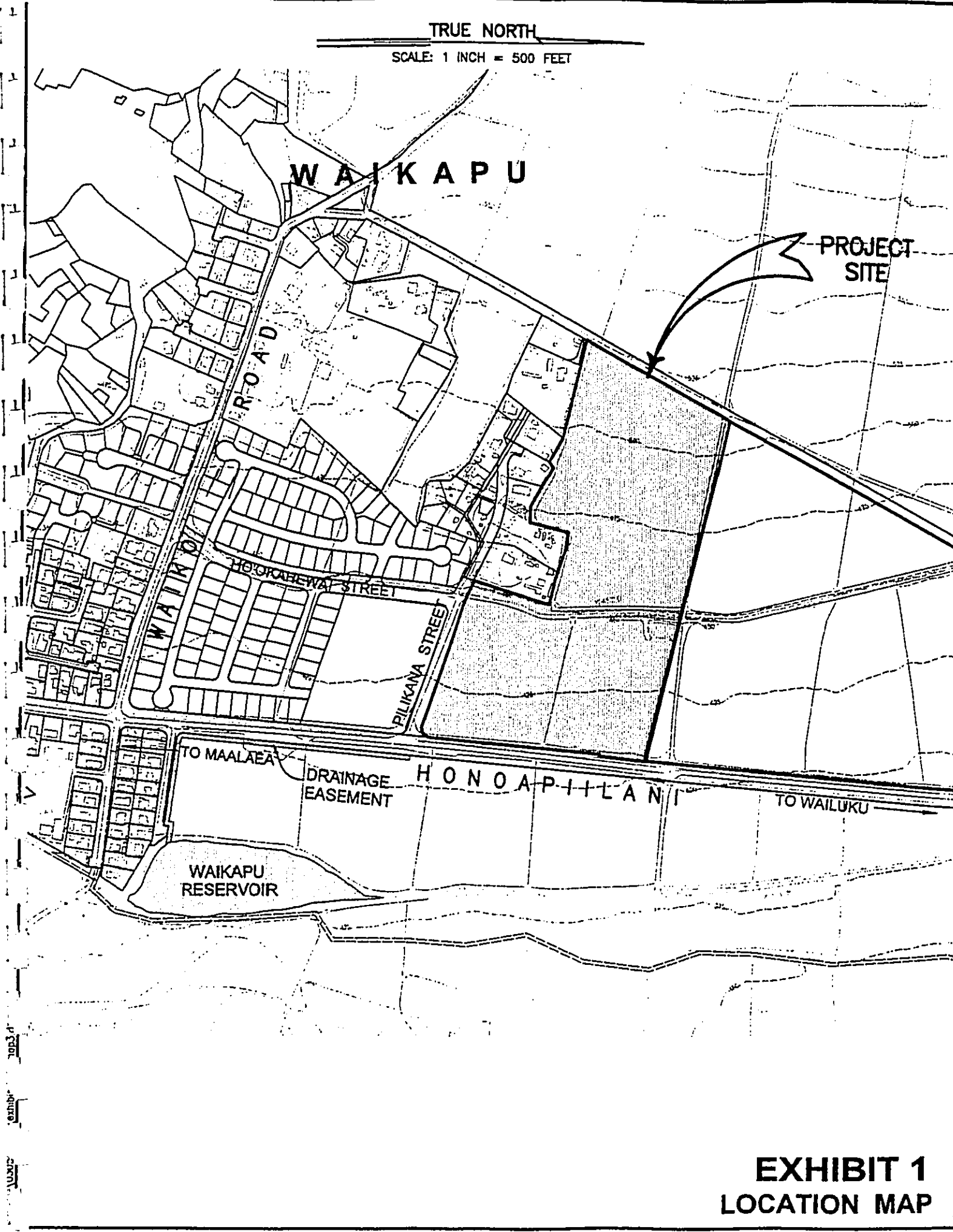


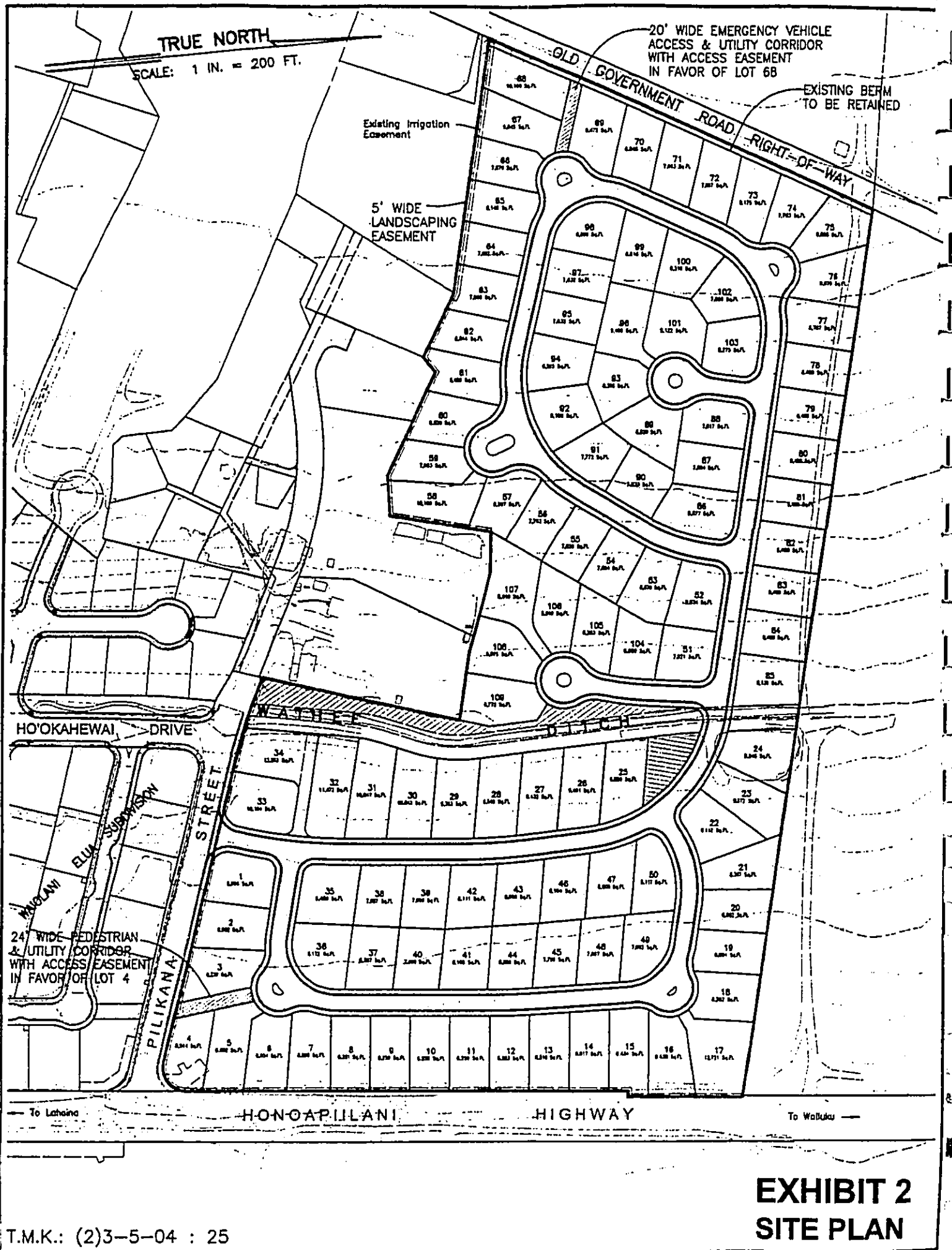
EXHIBIT 1
LOCATION MAP

TRUE NORTH

SCALE: 1 IN. = 200 FT.

20' WIDE EMERGENCY VEHICLE ACCESS & UTILITY CORRIDOR WITH ACCESS EASEMENT IN FAVOR OF LOT 68

EXISTING BERM TO BE RETAINED



T.M.K.: (2)3-5-04 : 25

EXHIBIT 2
SITE PLAN

TRUE NORTH

SCALE: 1 IN. = 200 FT.

20' WIDE EMERGENCY VEHICLE ACCESS & UTILITY CORRIDOR WITH ACCESS EASEMENT IN FAVOR OF LOT 68

EXISTING BERM TO BE RETAINED

Existing Irrigation Easement
5' WIDE LANDSCAPING EASEMENT

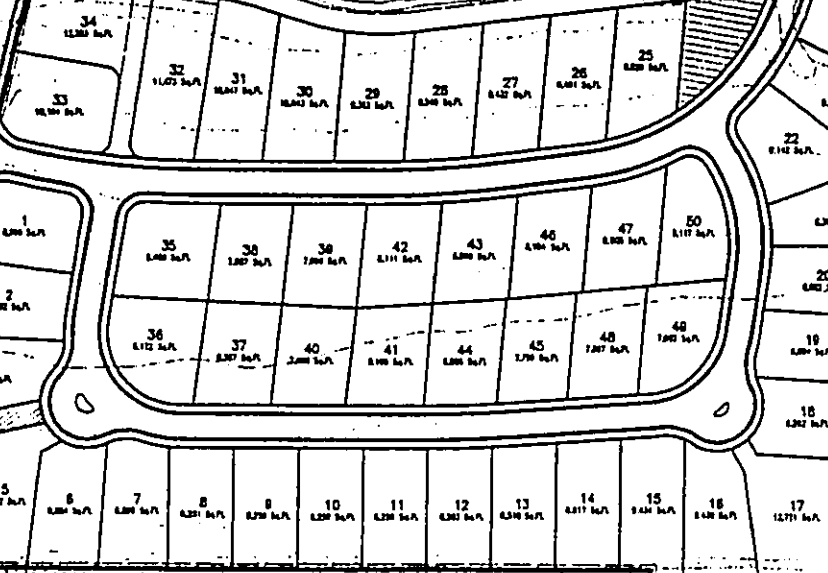
OLD GOVERNMENT ROAD RIGHT-OF-WAY

HO'OKAHEWAI DRIVE

WASHIE DRIVE

24' WIDE PEDESTRIAN & UTILITY CORRIDOR WITH ACCESS EASEMENT IN FAVOR OF LOT 4

PILIKANA STREET



HONOAPILANI HIGHWAY

To Lahaina

To Waialua

EXHIBIT 2 SITE PLAN

T.M.K.: (2)3-5-04 : 25

TRUE NORTH

SCALE: 1 INCH = 500 FEET



EXHIBIT 3

SOIL SURVEY MAP

0305
-hib-
-as.d

TRUE NORTH

SCALE: 1 INCH = 500 FEET

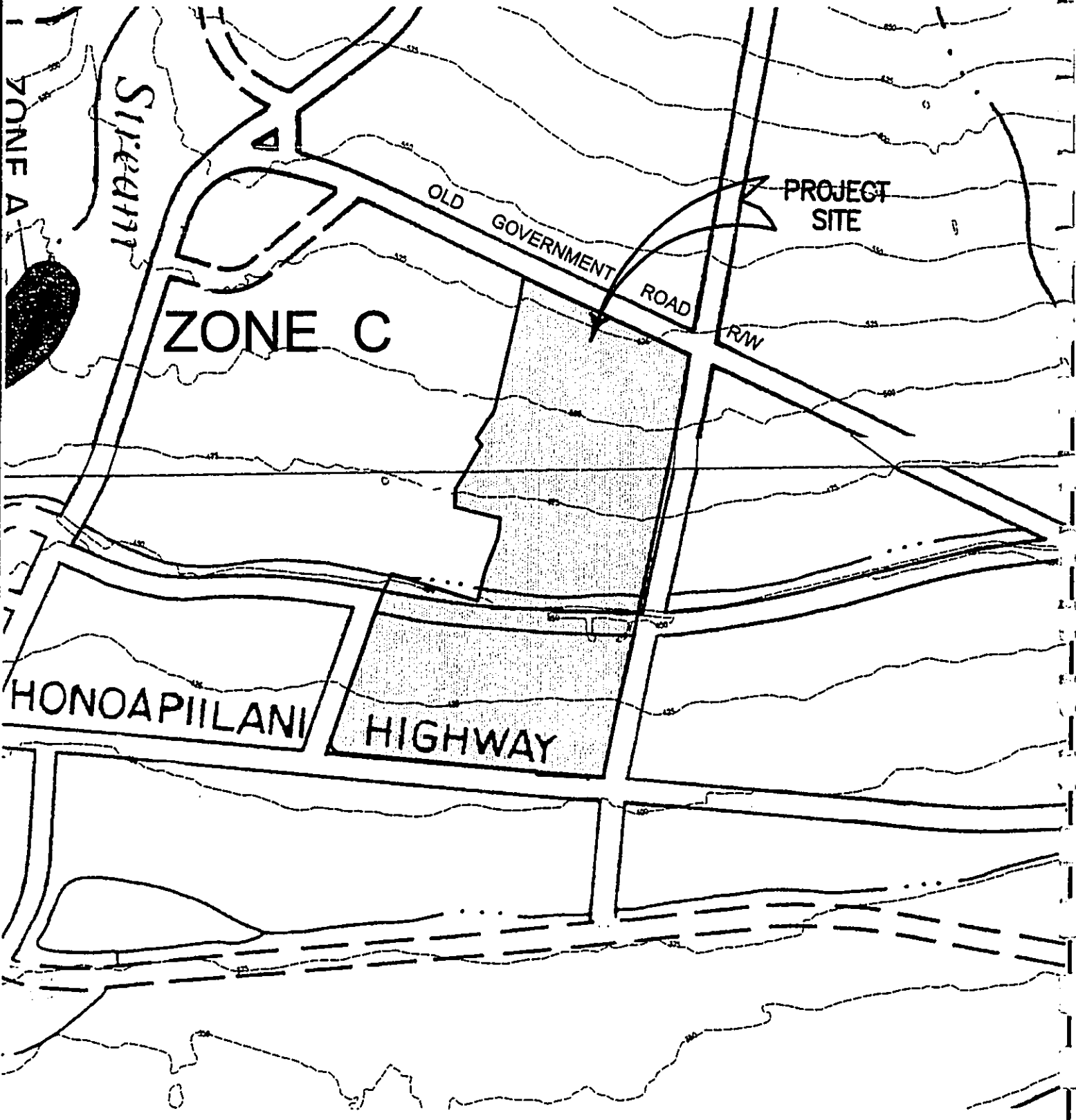


EXHIBIT 4

FLOOD INSURANCE RATE MAP

0 03056 exhibit map.dwg

TRUE NORTH

SCALE: 1 INCH = 500 FEET

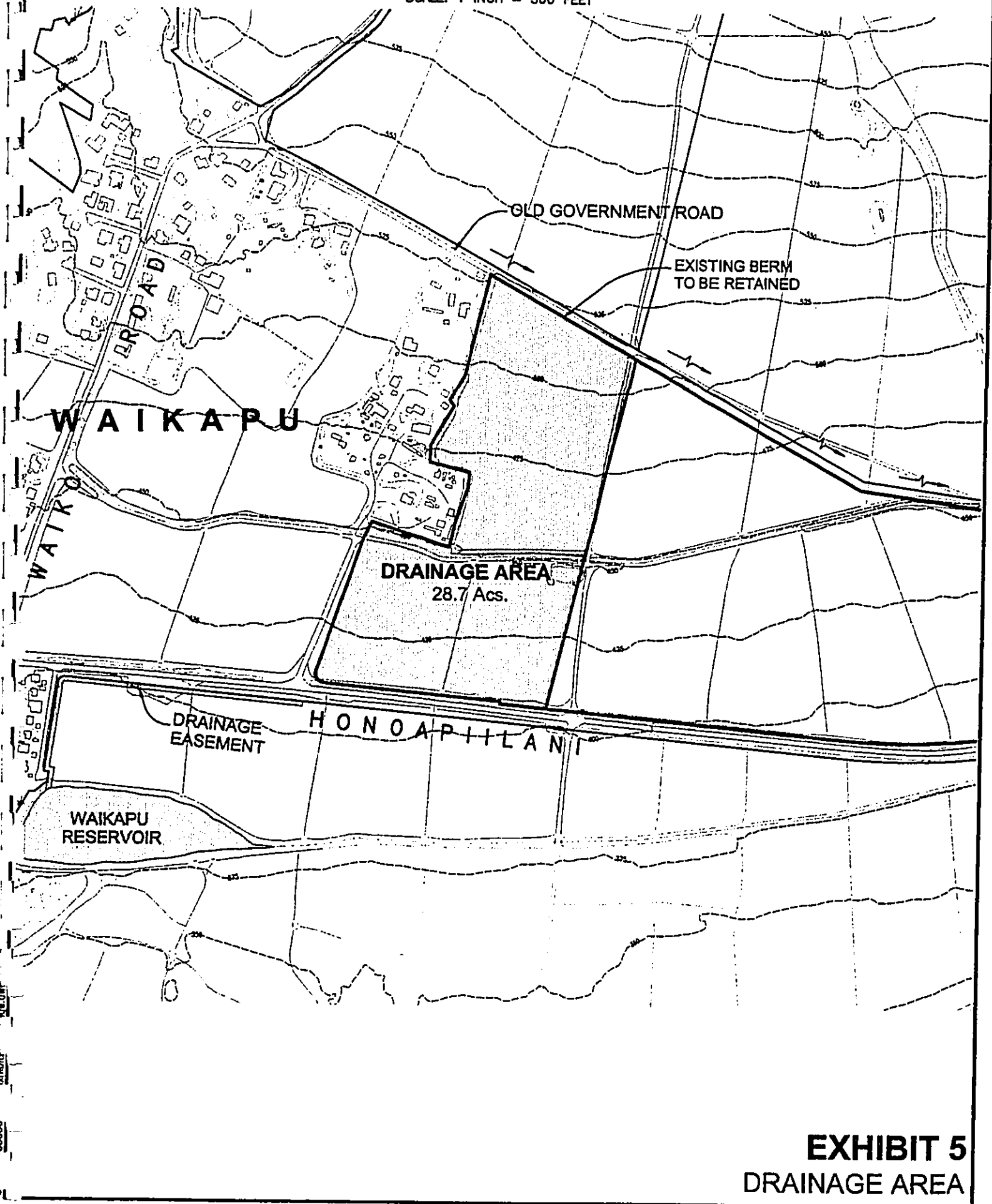


EXHIBIT 5
DRAINAGE AREA

APPENDIX A

HYDROLOGIC CALCULATIONS

Warren S. Unemori Engineering, Inc.
 Wells Street Professional Center
 2145 Wells Street, Suite 403
 Wailuku, Maui, Hawaii 96793

Date: June 21, 2002

HYDROLOGIC CALCULATIONS: PRE-DEVELOPMENT

Objective: To determine the pre-development runoff for the Project Site.

1. 50-Yr. - 1 Hr. Rainfall:

From "Rainfall Frequency Atlas of the Hawaiian Islands", for Wailuku, Maui,
 R(50 Yr.-1Hr.) = 2.50 inches

2. Total Area:

Area (Ac.): 28.70

3. Runoff Coefficients:

Infiltration:	Medium	0.07
Relief:	Rolling (5-15%)	0.03
Vegetal Cover:	Good (10-50%)	0.03
Development Type:	Agricultural	0.15
Runoff Coefft., C:		0.28

4. Time of Concentration:

Approx. Elev. Diff. (ft.)		115
Higher Elev. (ft.):	525	
Lower Elev. (ft.):	410	
Approx. Runoff Length (ft.):		1,800
Average Slope:		6.39%
Time of Concentration (min.):		31

5. Intensity:

Intensity (in./hr.): 3.4

6. Total Runoff:

$Q = C \times I \times A$ (cfs): 27.32

Warren S. Unemori Engineering, Inc.
 Wells Street Professional Center
 2145 Wells Street, Suite 403
 Wailuku, Maui, Hawaii 96793

Date: June 21, 2002

HYDROLOGIC CALCULATIONS: POST-DEVELOPMENT

Objective: To determine the post-development runoff for the Project Site.

1. 50-Yr. - 1 Hr. Rainfall:

From "Rainfall Frequency Atlas of the Hawaiian Islands", for Wailuku, Maui,
 R(50 Yr.-1Hr.) = 2.50 inches

2. Total Area:

Area (Ac.): 28.70

3. Runoff Coefficients:

Infiltration:	Medium	0.07
Relief:	Rolling (5-15%)	0.03
Vegetal Cover:	Good (10-50%)	0.03
Development Type:	Residential	0.40
<hr/>		Runoff Coefft., C:
		0.53

Minimum Runoff Coefficient for built-up residential areas: 0.55

4. Time of Concentration:

Approx. Elev. Diff'l. (ft.)		115
Higher Elev. (ft.):	525	
Lower Elev. (ft.):	410	
Approx. Runoff Length (ft.):		1,800
Average Slope:		6.39%
Time of Concentration (min.):		22.8

5. Intensity:

Intensity (in./hr.): 3.95

6. Total Runoff:

$Q = C \times I \times A$ (cfs): 62.35

HYDROLOGIC REPORT FOR
WAIKAPU 28 ACRES
UNIVERSAL RATIONAL HYDROGRAPH

Q (PEAK) = C*I*A
50 YEAR STORM FREQUENCY

BASIN IDENTIFIER PRE DEVELOPMENT ONSITE RUNOFF
DISCHARGES INTO BASIN

BASIN AREA = 28.70 ACRES
RUNOFF COEFF. = 0.28
RAINFALL INT. = 3.46 IN/HR
TIME OF CONC. = 31.00 MINUTES
VOLUME = 125778.66 CUBIC FEET

TIME (MIN)	RUNOFF (C.F.S.)
0.0	0.0
15.5	1.8
31.0	3.7
46.5	3.9
62.0	4.2
77.5	16.0
93.0	27.8
108.5	19.9
124.0	11.9
139.5	10.9
155.0	9.9
170.5	6.9
186.0	3.9
201.5	3.5
217.0	3.0
232.5	2.9
248.0	2.9
263.5	1.6
279.0	0.3
294.5	0.2
310.0	0.0
325.5	0.0
341.0	0.0
356.5	0.0
372.0	0.0
387.5	0.0
403.0	0.0
418.5	0.0
434.0	0.0
449.5	0.0

HYDROLOGIC REPORT FOR
WAIKAPU 28 ACRES
UNIVERSAL RATIONAL HYDROGRAPH

Q (PEAK) = C*I*A
50 YEAR STORM FREQUENCY

BASIN IDENTIFIER POST DEVELOPMENT ONSITE RUNOFF
DISCHARGES INTO BASIN

BASIN AREA = 28.70 ACRES
RUNOFF COEFF. = 0.55
RAINFALL INT. = 3.92 IN/HR
TIME OF CONC. = 23.00 MINUTES
VOLUME = 217941.91 CUBIC FEET

TIME (MIN)	RUNOFF (C.F.S.)
0.0	0.0
11.5	3.9
23.0	7.8
34.5	13.0
46.0	18.2
57.5	40.0
69.0	61.9
80.5	46.1
92.0	30.3
103.5	25.4
115.0	20.5
126.5	14.5
138.0	8.5
149.5	7.9
161.0	7.4
172.5	5.3
184.0	3.3
195.5	1.6
207.0	0.0
218.5	0.0
230.0	0.0
241.5	0.0
253.0	0.0
264.5	0.0
276.0	0.0
287.5	0.0
299.0	0.0
310.5	0.0
322.0	0.0
333.5	0.0

Warren S. Unemori Engineering, Inc.
Wells Street Professional Center
2145 Wells Street, Suite 403
Wailuku, Maui, Hawaii 96793

Date: September 8, 2003

SUMMARY OF BASIN CALCULATIONS

Drainage Area	Pre-Development Runoff (cfs)	Post Development Runoff (cfs)	Additional Runoff (cfs)	Post Development Volume (ft³)	Pre-Development Volume (ft³)	Required Storage Volume (ft³)
Onsite	27.3	62.4	35.1	217,942	125,779	92,163

Appendix E

***Meeting Memorandum
Community Meeting
November 25, 2003***



December 22, 2003

MEETING MEMORANDUM

Date: November 25, 2003
From: Karlynn Kawahara, Planner
Subject: Summary of Community Meeting - Waikapu 28 Investment, LLC,
Proposed Waiolani Mauka Subdivision

A community meeting was held on November 25, 2003. Meeting began at approximately 6:35 p.m. with approximately 39 community members. A general overview of the Waiolani Mauka project was presented by Waikapu 28 Investment, LLC (W28) representatives Scott Nunokawa and Haunani Lemn. They stated that the subdivision map is very preliminary and not set in stone. The project still needs to seek its land entitlements, including a District Boundary Amendment (DBA) from the State, a Community Plan Amendment and a Change In Zoning from the County.

The following are the observations and questions received from the attendees at the community meeting on the Waiolani Mauka Project:

1. A community member felt that the project should consider including a restroom in the park. W28 noted that it would be dedicating the land to the County to develop the park. W28 also noted that the County determined that the appropriate park for the area was a "passive, neighborhood park", and that such parks were characterized as being without restrooms or parking. W28 also noted that it may be that the County would no longer be interested in supporting a public park should an "active park", which would include restroom and parking, be considered given that these public facilities would then require on-going maintenance and care. W28 further noted that it had taken some convincing by W28 to get the County to consider supporting a park site at all, as versus the County only wanting park dedication fees from the project.
2. A community member asked where the park would be located. W28 stated that the park site is currently planned to be located about the middle of the parcel, directly mauka of the Waihee Ditch. That location was selected for a number of reasons. One, that location is very central to upper Waikapu area and allows for access to run on a parallel level with existing roads and walkway patterns. Second, based on discussions with property owners neighboring the project, that location had received

support from adjacent neighboring property owners. W28 noted a community member living adjacent to the property, who, at the meeting, voiced that he would not support a park near his home. W28 noted that the park site location was identified because the property owners that would be directly neighboring that location indicated that they would be receptive to a park adjacent to their property. W28 noted that other neighboring property owners mauka of the location indicated that they would not support a park adjacent to their lots. W28 also noted that the location was selected because the rest of the property was fairly sloped while that location was relatively level.

3. A community member asked what the price range for the project would be and whether the project would be "affordable." W28 responded that it is too preliminary to know the exact price range for the project given that a number of the factors related to product and cost assessment for the project were still unknown. For instance, W28 noted that the costs to produce the project are not completely specified or determined until the project is well into the subdivision phase. As such, it is too early to determine an accurate cost assessment for the project or corresponding prices for the lots. Additionally, W28 also noted that market conditions may be different when the project is ready to open. For example, the size and types of products being offered by other projects would also affect the final decision as to the size and type of product that the project would finally offer. However, W28 did note that, as with a similar project, the principal decision-makers of W28 were involved with, (i.e. Waiolani Elua), W28 intended to create products targeted for purchase by middle-of-the-bell curve working class families. Given the foregoing, W28 noted that it is too preliminary to discuss specific prices for the project given the factors unknown to date.
4. A community member asked if the project was planning to sell home/lot packages. W28 responded not at this time. Current plans call for improved lot sales only. However, these plans may change due to regulatory requirements, (i.e. affordable housing requirements), imposed on the project during the land entitlement phase or due to changes in market conditions.
5. A community member asked if there would be a "buyer" definition, where buyer would be required to live on the property they purchased. W28 responded that while there are no requirements currently anticipated that purchasers "live" on the property they purchase, W28 noted that as with the Waiolani Elua project, the kind of product Waiolani Mauka would be offering would be targeted for local families seeking to build homes for themselves.
6. A community member asked if there was the possibility of another access point because they thought Pilikana Street had too much traffic. The person suggested using the old cane haul access further north of Pilikana Street. W28 stated that it is unlikely that the State Department of Transportation (SDOT) will allow another

access there because the sight distance is poor at that area. Additionally SDOT will not want too many accesses to Honoapiilani Highway.

7. A community member asked if ohana units would be allowed. W28 responded that the policy on ohana units for the subdivision has not been set yet. W28 may allow attached or detached ohana units but will likely require that at least two (2) off-street parking spaces be provided for any ohana units. W28 would also be looking at designating only fifty percent (50%) of lots that are allowed to have ohana units. W28 noted that legislators specifically limited ohana units to only fifty percent (50%) of the lots in the Waiolani Elua project and noted that zoning conditions on the project may be similar in Waiolani Mauka.
8. A community member asked that W28 explain the 2-acre "Public/Quasi-Public" designation and its relationship to the park proposed in the subdivision. W28 responded that a 2-acre parcel, located near the intersection of Pilikana Street and Honoapiilani Highway, was designated by the latest update to the Wailuku-Kahului Community Plan for "Public/Quasi-Public" use as a future Waikapu fire station site. In meetings with the County Administration and departments, W28 and the County agreed that instead of using that site for a future fire station, the County preferred a park site on the mauka side of the highway. Pursuant to these discussions, W28 had offered to donate a park site for the County to develop as a public park at the location noted on the preliminary subdivision map. W28 noted that while park requirements mandated land dedication for the project in the form of a one-acre requirement, W28 proposed to donate a 2-acre amount in order to make the park more viable as a public park.
9. A community member asked if the County is seeking another site for a future fire station. W28 responded yes, that the County is looking further south. W28 noted that given 5-mile insurance ratings, the projected developments in Ma'alaea, and the location of existing fire stations, the County intended to designate another location for a fire station that would be more appropriate given the foregoing factors.
10. A community member asked about the access easement that goes from the subdivision to the Old Government Road and whether there might be future plans to expand it to a legal vehicle access. W28 responded that it was not W28's intention to do so. The access easement shown was primarily to permit the accommodation of current pedestrian walking patterns. W28 also noted that the access easement may also accommodate emergency vehicular access when necessary. W28 also noted that upgrading any connection to the Old Government Road for major vehicular access was unlikely at this time given that the ownership and responsibilities involved with the Road remain unclear and in limbo. W28 noted the desire by a number of community members present to prevent major vehicular access onto the Old Government Road.

11. A community member asked if there will eventually be a connection to Waiale Road from Pilikana Street. W28 responded that he thought if the Spencer Homes project moved forward, there was a possibility that an indirect connection may occur.
12. A community member commented that she saw people taking traffic counts at Waiko Road a couple weeks ago. She didn't know the purpose or outcome of such activity but thought that maybe the intersection was being studied by the DOT.
13. A community member stated that they would oppose the expansion of the Old Government Road into a paved road for general access. W28 stated that the subdivision is not considering this option at this time, but if W28 heard that the County was considering it, W28 would let the community know.
14. A community member asked why the community couldn't tell the developer what it wanted in the form of a park and then have the developer build it. He noted that the community had done a survey of what it wanted as far as a future park was concerned at the request of the County. W28 stated that many factors affected the park situation. W28 noted that conversations regarding the park had been going on for sometime prior to the survey being taken and dated back to the development of the Waiolani Elua project. In those conversations, the many different reiterations of the size and nature of the park had been discussed. The outcome of the discussions had been inconclusive. In addition, while the previous County administration had been leaning toward a certain direction on the issue, the current administration had initially indicated it was not in favor of a park site and wanted only park fees. Consequently, W28 indicated that only after numerous discussions with community members and the County had the current location and size been arrived at. W28 noted that a factor in the current park proposal rested on the fact that W28 felt that it could spearhead the proposal to completion. Contemplation of other plans for a park mauka of Honoapiilani Highway would require coordination that may prove to leave the community without a park whatsoever.
15. A community member said that he would rather have no development at all. He stated that in the earlier project (Waiolani Elua) the W28 principal decision-makers had originally said that they would be farming the land and then ended up selling home lots. W28 responded that the community member's statement was not accurate and that a clarification of what occurred was in order. First, W28 noted that the owners of the property, (Scott Nunokawa and Haunani Lemn), had never represented that they would be farming the property. In fact, what had occurred is that the Waiolani Elua owners had specifically told the Waiolani Homeowner's Association's Board that it would be looking at all of its options with regard to its use of the property and that those options included farming. At no time was there a representation that farming was the only use being looked at for the property. In addition, the comment regarding farming was done at that time to put people on notice that farming was being considered. W28 noted that the owners felt that such a statement should be made given that it had already gotten a very strong and

negative reaction to the consideration that the property was to be farmed. W28 noted that some Waiolani residents had reacted strongly given corresponding problems inherent with farming including "dust, rodents, chemical use..." W28 noted that Haunani Lemn's family had farmed all of her life and that the question of farming and living on the property had been seriously considered. However, given the public's reaction and the fact that Scott and Haunani ran into infrastructural issues when trying to get their home constructed on the lot, Scott and Haunani looked at other ways to use the property. W28 noted that it was never stated that farming was the only thing that was going to be done of the land.

With regard to the community member's reaction against development of the project. W28 pointed out that housing had to be located somewhere and that the County's current housing shortage spoke to the need for additional housing. W28 noted that the appropriateness of the project site for housing had not been determined by W28 but by the community plan process. W28 further noted that it had taken 12 years for the current Wailuku-Kahului Community Plan update to be passed. During that 12 year process, citizen advisory committees, the County's Planning Commission, and the County Council were involved in numerous meetings and hearings to come to a determination of community plan designations. As such, the determination of the appropriate use of the property had already been settled in the community plan process prior to W28 purchase of the property.

16. A community member stated that there is an attempt to separate Wailuku and Waikapu and provide a "green belt" in between the two (2) towns. This is what Bill 84 currently before the County Council is trying to do--set limits on development with boundaries and determine where the community wants things such as housing, retail, parks, etc. The current community plan designation of the project site for single-family use is in keeping with this concept.
17. A community member asked what the chances were of the layout of the subdivision changing (as presented in the preliminary subdivision map). W28 stated that there was a good chance of it changing. The project still needs to go through the government process and a lot more people will have a say in what the final layout looks like.
18. A community member asked if the W28 representatives will commit to living in the area through the construction period. W28 stated that yes, they currently planned to live in Waiolani Elua in the house they were constructing. The community member requested that they continue to be sure to see to dust control measures being implemented to minimize the impact to the surrounding neighbors.
19. A community member asked if the next time W28 comes back to the community, if they could present an overall plan of what developments will be happening in Waikapu. He went on to ask if it was possible to have a comprehensive park with the planned developments in the area such as W28, Spencer Homes, Waiolani

Pikake, etc. W28 stated that this would be difficult to do because W28 is unsure what the status of the other projects were. The park dedication of 2 acres is over the parks assessment requirement for W28. However, since funding is an issue for the County Parks Department, perhaps they could ask those other area projects for their parks assessment in cash and use that money to improve the 2-acre parcel. W28 noted that coordination may result in there not being a park mauka of Honoapiilani Highway being developed. W28 noted that the 2-acre park mauka of the highway was a maverick to current plans given that the County had already made a commitment to Wailuku Agribusiness, Inc. to purchase the existing two (2) ball fields along Waiko road linking to the Spencer project's linear greenway concept, a 5-acre parcel running south of the Waikapu Community Center, and the extension of Waiale Road up to Waiko Road.

20. A community member asked what W28 will do with the portion of Waihee Ditch that runs through their property. W28 responded that they are looking into different options, including fencing or covering (via culvert installation) the ditch. Ultimately, the decision will be W28's with approval by Wailuku Agribusiness, who will retain ownership of the ditch.

Meeting concluded at approximately 7:55 p.m.


Kariynn Kawahara, Planner

KK:tn

cc: Scott Nunokawa and Haunani Lemn, Waikapu 28 Investment, LLC
Martin Luna and Blaine Kobayashi, Carlsmith Ball

w28ilcwaikapuvmtg112503.memo.wpd