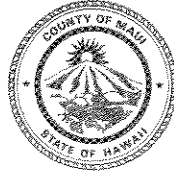


ALAN M. ARAKAWA
Mayor

MICHAEL W. FOLEY
Director

WAYNE A. BOTEILHO
Deputy Director



COUNTY OF MAUI
DEPARTMENT OF PLANNING

RECEIVED

July 13, 2004

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OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

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

Dear Ms. Salmonson:

RE: Final Environmental Assessment (FEA) for the Ke Alii Kai II
Subdivision and Related Improvements located at
TMK: 3-9-019: 004, on 28.57 acres of land in Kihei, Island of Maui,
Hawaii (EA 2004/0001)

The Maui Planning Commission at its regular meeting on July 13, 2004, accepted the Final Environmental Assessment (FEA) for the subject project, and issued a Finding of No Significant Impact (FONSI). Please publish the FEA in the July 23, 2004, Office of Environmental Quality Control (OEQC) Environmental Notice.

We have enclosed a completed OEQC Publication Form and four copies of the FEA. If you have any questions, please call Ms. Kivette A. Caigoy, Environmental Planner, of our office at 270-7735.

Sincerely,

A handwritten signature in black ink that reads "M. W. Foley".

Michael W. Foley
Director of Planning

MWF:KAC:do
Enclosures

c: Wayne A. Boteilho, Deputy Planning Director
Clayton I. Yoshida, AICP, Planning Program Administrator
Kivette A. Caigoy, Environmental Planner
Colleen Suyama, Staff Planner
Applicant
Project File
General File
K:\WP_DOCS\PLANNING\EA\2004\1_KeAliiKaiSubd\OEQCTransmitFEA.wpd

2004-07-23 FONSI
KE ALII KAI II SUBDIVISION & RELATED
OFFSITE IMPROVEMENTS

JUL 23 2004
FILE COPY

Final
Environmental Assessment

**PROPOSED KE ALI'I KAI II
SUBDIVISION AND RELATED
OFFSITE IMPROVEMENTS**

Prepared for:

July 2004

KAK II LLC
and
Accepting Authority,
Maui Planning Commission


MUNEKIYO & HIRAGA, INC.

Final
Environmental Assessment

**PROPOSED KE ALI`I KAI II
SUBDIVISION AND RELATED
OFFSITE IMPROVEMENTS**

Prepared for:

July 2004

KAK II LLC
and
Accepting Authority,
Maui Planning Commission


MUNEKIYO & HIRAGA, INC.

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Preface

The applicant, KAK II LLC, is proposing to develop a 90-lot residential subdivision and related improvements in Kihei, Maui, Hawaii. The subject property is identified by TMK 3-9-19:04 and encompasses an area of 28.57 acres. Lots within the proposed subdivision will range in size from approximately 7,600 to 13,800 square feet. One- and two-story base model homes will contain living areas ranging in size from about 1,540 to 2,240 square feet. Detached and attached ohana dwellings are proposed on up to fifty percent (50%) of the lots.

Since the project site falls within the County of Maui's Special Management Area (SMA), a SMA Use Permit application was prepared and filed with the Maui Planning Department. Agency comments were received through the SMA application review process. Subsequently, it was determined by the Department of Public Works and Environmental Management that an environmental assessment (EA) pursuant to Chapter 343, Hawaii Revised Statutes, would be required to address the construction of an 8-inch offsite sewerline proposed within the County's North-South Collector Road right-of-way. In addition, an 8-inch offsite waterline to serve the subdivision project will fall within the same segment of the County's North-South Collector Road right-of-way. To facilitate construction of roadway improvements fronting the subject property, an existing 16-inch waterline will need to be lowered to provide the required cover depth. While the 8-inch and 16-inch waterline actions are considered actions exempt from Chapter 343, Hawaii Revised Statutes by the Department of Water Supply, these aspects of the project are being addressed by this report as well. Additionally, two (2) new catch basins, a new drain manhole, new 18- and 24-inch drainlines, and connection of the new 24-inch drainline to an existing drain manhole are proposed within the North-South Collector Road right-of-way. Finally, a portion of the County's North-South Collector Road right-of-way which abuts the Kamaole Heights Subdivision is currently unimproved and will need to be brought to County design standards. While this action is not considered a part of the applicant's project, it is being addressed by this report as these roadway improvements will ultimately need to be installed. In the context of this document, therefore, the "proposed action" will include both the subdivision and offsite improvements as described herein.

As the proposed action involves the use of County lands (North-South Collector Road right-of-way), an EA has been prepared for the applicant (KAK II LLC) by its consultant (Munekiyo & Hiraga, Inc.) for processing by the Maui County Planning Department on behalf of the accepting authority (the Maui Planning Commission). This EA has been prepared as required by Chapter 343, Hawaii Revised Statutes to document the project's technical characteristics, environmental impacts and alternatives, and advances findings and conclusions relative to the significance of the project.

Chapter 1

Project Overview

I. PROJECT OVERVIEW

A. PROJECT LOCATION, EXISTING USE, AND LAND OWNERSHIP

KAK II LLC proposes the development of a 90-lot subdivision, including single-family residences and related improvements, on 28.57 acres of land in the Kamaole area of Kihei, Maui. See Figure 1.

The project site is identified by TMK 3-9-19:04 and is located on the makai (west) side of Kananui Road between Kamali'i Elementary School and the Keonekai Heights Subdivision. See Figure 2. The site is presently undeveloped and is occupied by scattered kiawe trees and scrub vegetation. See Appendix "A".

The subject property is situated in an area of existing urban development. To the north of the property is a single-family residential parcel, Kamali'i Elementary School, and the Kamaole Heights Subdivision. To the east, the project site is bordered by Kananui Road, a two-lane County roadway, while to the south, the site abuts the Keonekai Heights Subdivision. In addition to two (2) vacant lots, the Kihei Ali'i Kai and Kihei Regency condominiums border the subject parcel on the west.

The project site is situated in the State "Urban" district and is designated for "Single Family Residential" and "R-2, Residential District" uses by the Kihei-Makena Community Plan and Maui County zoning, respectively. The minimum lot area permitted under R-2, Residential zoning is 7,500 square feet.

The subject property is owned in fee by KAK II LLC.

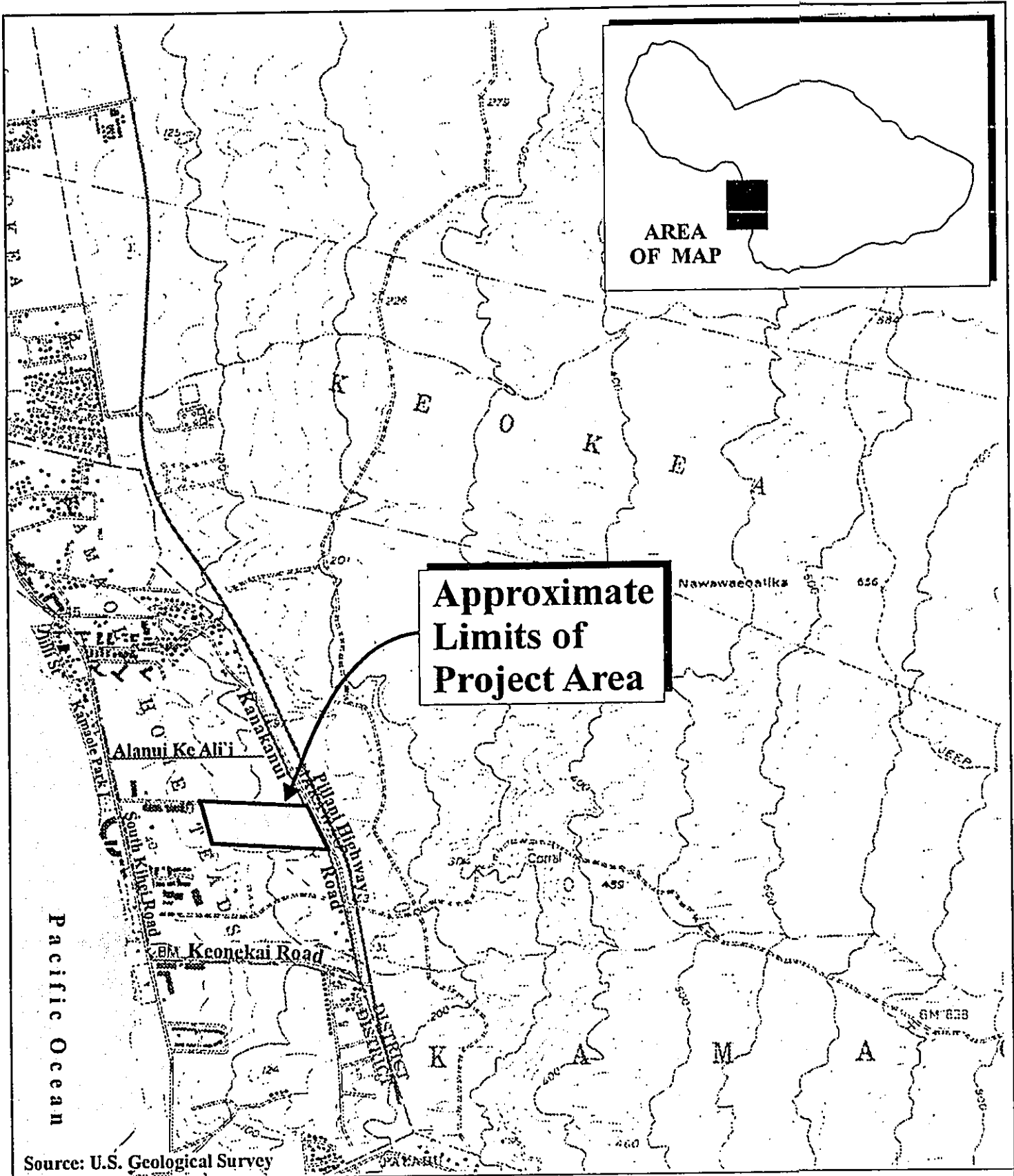
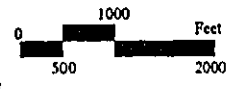


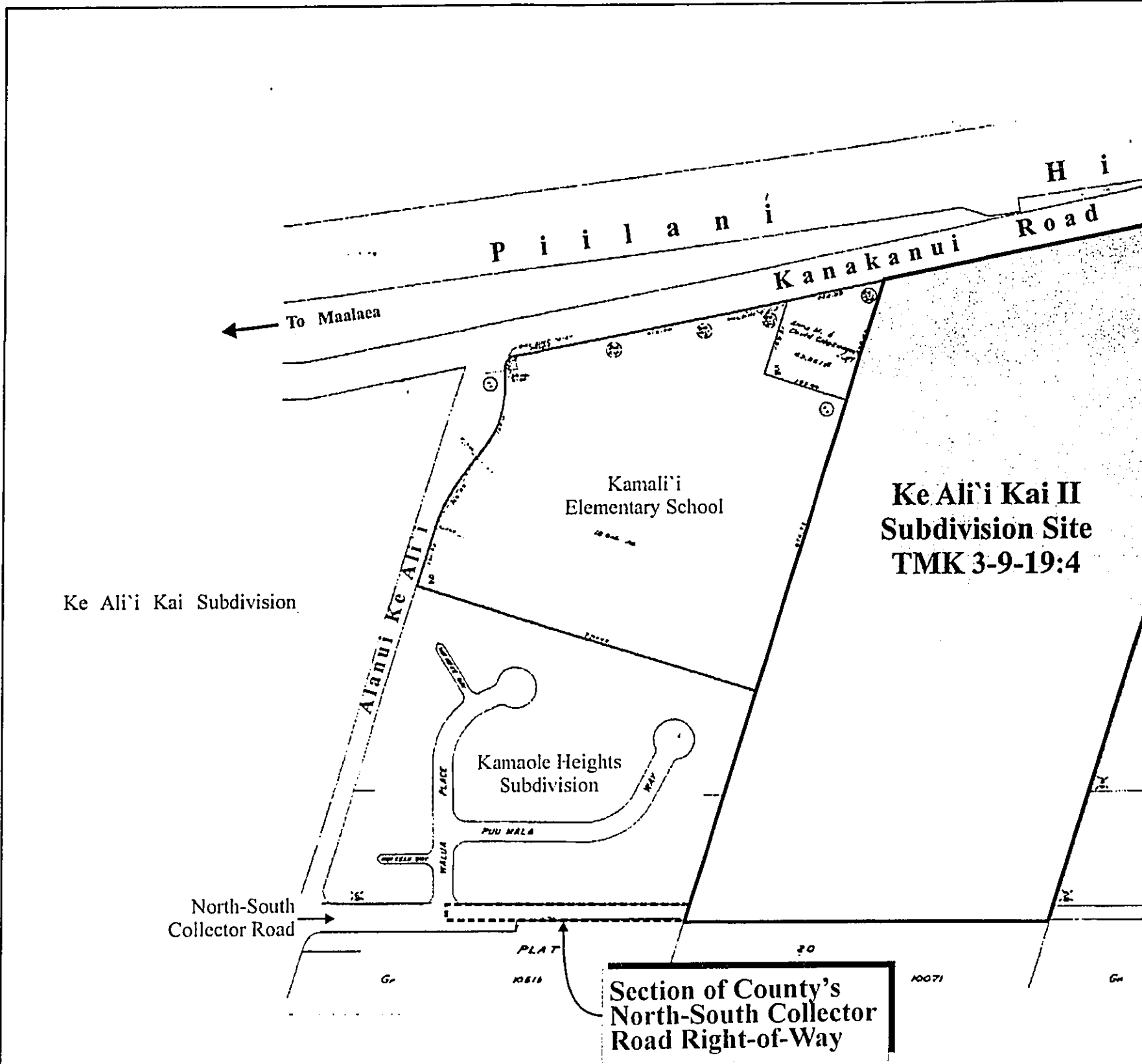
Figure 1 Proposed Ke Ali'i Kai II
 Subdivision and Offsite Improvements
 Regional Location Map



Prepared for: KAK II LLC

MUNEKIYO & HIRAGA, INC.

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Source: Realty Atlas, 35th Edition (2001)

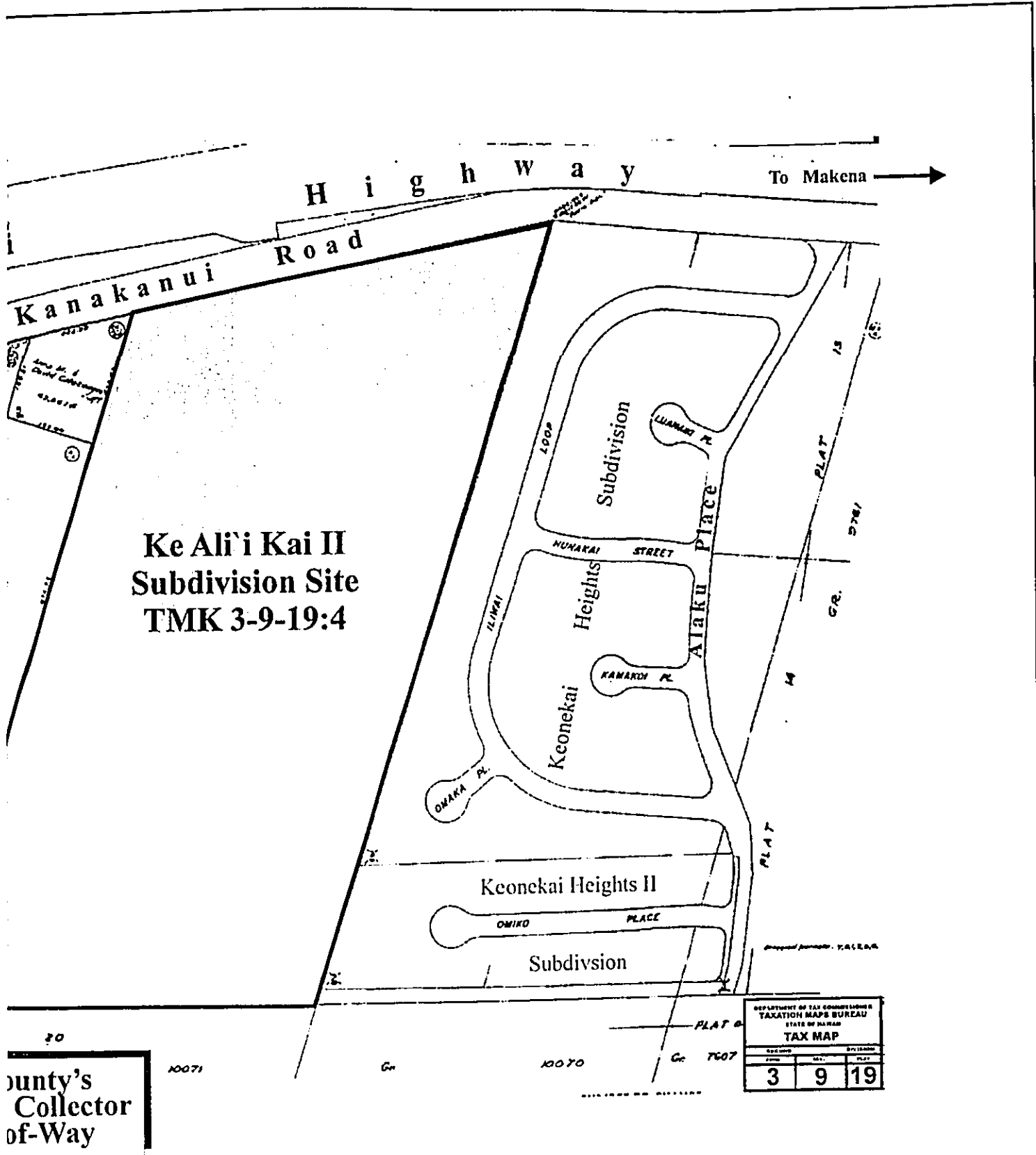
Figure 2



Proposed Ke Ali'i Kai II Subdivision
and Offsite Improvements
Project Area Location Map

Prepared for: KAK II LLC

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Ke Ali'i Kai II Subdivision
Offsite Improvements
Project Area Location Map

NOT TO SCALE

MUNEKIYO & HIRAGA, INC.

B. PROJECT BACKGROUND

The subject property falls within the limits of the Special Management Area (SMA) for the island of Maui. Accordingly, an application for a SMA Use Permit (aka SMA Major) for the proposed subdivision and related improvements (SM1 2003/0013) was filed with the Maui County Planning Department on June 30, 2003 and was distributed for agency review and comments on July 30, 2003. Agency comments received through the SMA agency review process are included in Chapter X of this report document.

Towards addressing comments received on the SMA application, the applicant met with the Maui County Department of Public Works and Environmental Management (DPWEM) to discuss offsite subdivision improvements involving the installation of a new 8-inch sewerline within the existing North-South Collector Road's right-of-way next to the Kamaole Heights Subdivision. As the sewerline installation will involve the use of County lands (roadway right-of-way), the DPWEM has determined that an Environmental Assessment (EA) will need to be prepared. See Appendix "B" (applicant's letter dated November 5, 2003 and the DPWEM letter dated November 14, 2003).

The Maui County Department of Water Supply (DWS) was also consulted to discuss offsite subdivision improvements that will generally lie within the same footprint as the new offsite sewerline and involves the installation of a new 8-inch waterline and the relocation and lowering of about 200 feet of an existing 16-inch waterline. The relocation and lowering of the waterline is necessary in order to extend the existing improved section of the North-South Collector Road to provide access to the proposed subdivision and provide adequate cover depth over the waterline when the new roadway profile is established. From its

perspective, the DWS indicated that the installation and relocation of the waterlines are actions that are exempt from the preparation of an EA. Refer to Appendix "B" (applicant's letter dated November 7, 2003 and the DWS letter dated November 19, 2003).

The proposed offsite sewerline and waterline improvements, as well as proposed offsite drainage system improvements, will lie within an approximately 525 foot long segment of the existing County right-of-way fronting the Kamaole Heights Subdivision. Refer to Figure 2. It is noted that approximately 150 feet of the total 525 feet of right-of-way affected is currently improved to County standards. The improved section of road extends just beyond the North-South Collector's intersection with Walua Drive, which provides access to the Kamaole Heights Subdivision. The remaining segment of the County's 30-foot wide right-of-way is unimproved and will ultimately need to be paved and improved with curbs and gutters. Although improvement of this segment of the North-South Collector is not the responsibility of the applicant, the needed roadway improvements are addressed by this EA as these improvements may be subject to the requirements of Chapter 343, HRS at a future point in time.

As the offsite actions will involve the use of County lands (roadway right-of-way), an EA has been prepared in accordance with Chapter 343, HRS.

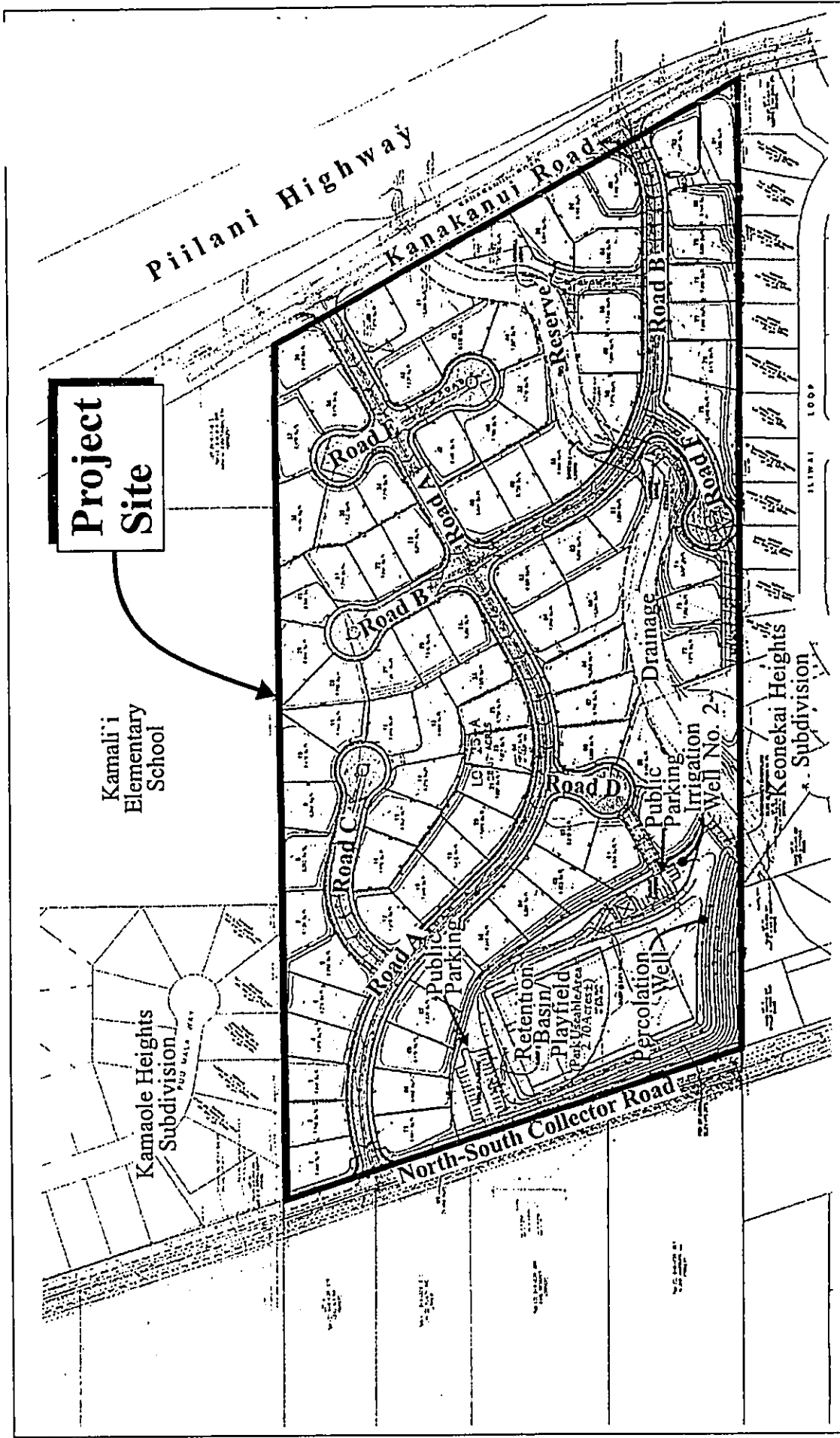
C. PROPOSED ACTION

1. Subdivision Improvements

The proposed project will involve the subdivision of the subject parcel to provide 90 lots for the construction of single-family residences. The subdivision plan has been developed to ensure that the building lots meet the functional and spatial requirements

of house/lot purchasers. Lots within the proposed subdivision will range in size from approximately 7,600 to 13,800 square feet. See Figure 3 and Appendix "C" (Preliminary Development Plans). Base model homes will be one- and two-story dwellings and contain living areas ranging from about 1,540 to 2,240 square feet. Refer to Appendix "C". Ohana (accessory) dwellings are proposed on up to fifty percent (50%) of the lots. The houselots with ohana units will be designated on the project's marketing and construction plans. Limitations on ohana dwellings will be included in the CC&Rs for the subdivision. The ohana units will be available in two (2) different models. The free-standing (detached) ohana model will contain a living area of approximately 469 square feet. Refer to Appendix "C". Depending on the base model home selected, purchasers will have the option of choosing from one (1) of nine (9) different built-in (attached) ohana layouts with living areas ranging from about 260 to 460 square feet. Two (2) off-street parking spaces shall be provided for each main dwelling, while one (1) off-street parking space will be provided for each ohana. Based on market conditions when the SMA application was being prepared, projected sales prices range from approximately \$380,000.00 to \$490,000.00 for the base models, and an additional \$25,000.00 to \$70,000.00 for the ohanas.

In connection with the development of the project, site work and the installation of utilities (water, sewer, electrical, CATV) and street tree plantings are proposed, as well as the construction of internal roadways, a drainage system, and a 3.7-acre retention basin/playfield. The playfield area of the park measures approximately 165 feet in width by 300 feet in length to accommodate youth baseball and soccer activities. Approximately,



Source: Warren S. Unemori Engineering, Inc.

Figure 3 Proposed Ke Alii Kai II Subdivision and Offsite Improvements Preliminary Subdivision Plan



Prepared for: KAK II LLC

NOT TO SCALE



34 parking stalls and a comfort station will also be provided. Refer to Appendix "C". These improvements will be used to address the parks and playground assessment requirements for the subdivision.

Additionally, the mauka adjoining half of the North-South Collector Road right-of-way (fronting the subject property) will be constructed. The design for this section of the roadway will be coordinated with the DPWEM's design for the typical roadway section for the North-South Collector Road.

Access to the proposed subdivision will be provided via two (2) access points along Kananui Road, as well as from an access point via an extension of the North-South Collector Road.

2. Irrigation and Percolation Wells

The applicant also proposes to install a percolation well and an irrigation well on the subject property, as well as provide a temporary electrical line extension to furnish power for the irrigation well. Refer to Figure 3 and Appendix "C". A separate SMA Minor application (SMX 2003/0724) for the subdivision's irrigation and percolation wells was filed with the Maui County Planning Department on November 18, 2003. The SMA Minor Permit (SM2 2003/0010) for the wells was approved on February 3, 2004.

The proposed percolation well will be sited in the southwest quadrant of the subject property. Refer to Figure 3 and Appendix "C". Located within the retention basin for the subdivision project, the percolation well will be situated at an elevation of 72 feet above mean sea level (amsl). The purpose of the percolation well is to drain any impounded storm water captured by the retention basin,

as well as induce the more rapid percolation of the impounded water into the voids of the underlying substrata. The percolation well will consist of a 12-inch borehole drilled through basalt rock to a depth necessary to reach a permeable subsurface layer. A 6-inch Schedule 40 polyvinyl chloride (PVC) perforated casing will be seated and sealed into basalt with cement grout. The grout will extend from the bottom of the casing to the opening of the well at ground level. A filtration system comprised of filter fabric, specially graded and crushed aggregate, plus another layer of filter fabric wrapped around the perforated portion of the well casing extending above finish grade, is expected to minimize the entry of non-point source pollutants into the percolation well.

The proposed irrigation well will also be located in the southwest quadrant of the subject property. Refer to Figure 3 and Appendix "C". Situated at an elevation of 80 feet amsl, the irrigation well will be used as a non-potable water source for dust control during construction of the subdivision project, as well as for irrigating landscaped common areas when the project is completed. The irrigation well will consist of a 12-inch borehole drilled through basalt rock to a depth necessary to reach a water-bearing subsurface layer. A 6-inch Schedule 40 PVC casing will be seated and sealed into basalt with cement grout. The grout will extend from a cement basket on the lower end casing to about 3-inches above ground level and formed into a slab approximately 3 feet wide and 3 feet long. A 25 horsepower Grundfos submersible pump will be installed to the proper depth and suspended by a 3-inch stainless steel column pipe. Once fully operational, the irrigation well will be capable of pumping water at a rate of 350

gallons per minute (g.p.m.) at 70 pounds per square inch (p.s.i.).

In order to provide power for the irrigation pump, a temporary electrical line extension is proposed. The proposed temporary line extension will begin at an existing power pole along Kananui Road, traverse the subject property, and terminate at the irrigation well site. Refer to Appendix "C". The line extension will involve the temporary placement of 10 wood utility poles with a maximum height of 30 feet. Across the subject property and along the future North-South Collector Road, the poles will be placed outside the roadway rights-of-way so as not to interfere with future roadway improvements. The poles and overhead lines will be removed once the underground power system for the subdivision project has been energized.

To minimize mobilization costs, the wells will be drilled sequentially. To the extent possible, the installation of the pump for the irrigation well will be timed to coincide with the completion and energizing of the temporary line extension.

It should be noted that the temporary line extension will also provide power to the irrigation well for the Ke Ali'i Villas Condominium Project, which is proposed on vacant property adjacent and to the northwest of the subject property. The Ke Ali'i Villas property is owned by Ke Ali'i Villas LLC, an affiliate of the applicant's parent company. An SMA Major application for the Ke Ali'i Villas Condominium (SM1 2002/0023) was filed in October 2002. A separate SMA Minor Permit (SM2 2004/0011) for the condominium's percolation and irrigation wells was recently granted by the Planning Department.

3. **Offsite Improvements**

As previously indicated, a new 8-inch offsite sewerline will be installed for the proposed subdivision. The new sewerline will extend from the subdivision access road near the northwest corner of the subject property to an existing sewer manhole which is located at the intersection of Walua Place and the existing improved section of the North-South Collector Road. Refer to Appendix "C". The new 8-inch sewerline will primarily lie within the existing unimproved section of the road's 60-foot wide right-of-way. The new sewerline will be installed within the mauka adjoining half of the North-South Collector Road right-of-way that borders the subject parcel and the Kamaole Heights Subdivision (the 30-foot wide mauka portion of the right-of-way next to Kamaole Heights is unimproved but dedicated to the County and is about 375 feet in length). The total length of the new 8-inch offsite sewerline is approximately 700 feet. The portion of the new sewerline that will lie within the existing County right-of-way adjoining Kamaole Heights is about 525 feet in length. The existing improved section of the North-South Collector Road and the dedicated mauka portion of the right-of-way adjoining Kamaole Heights are under the jurisdiction of the County of Maui and are considered County lands.

As noted earlier, a new 8-inch offsite waterline running parallel to the 8-inch sewerline will also be installed for the proposed subdivision. Refer to Appendix C". Additionally, in order to extend the North-South Collector Road to provide access to the proposed subdivision, approximately 200 feet of an existing 16-inch waterline that lies within the road's proposed 60-foot wide right-of-way will need to be lowered in order to provide adequate cover depth over the waterline when the new roadway profile is established. Refer

to Appendix "C". An existing earth mound at the northwest corner of the subject property will need to be removed to provide the necessary grade and roadway prism for the extension of the North-South Collector Road. The installation of the new 8-inch waterline and the relocation will generally occur within the same footprint as the new 8-inch offsite sewerline. The total length of the new 8-inch offsite waterline is about 700 feet of which approximately 525 feet will lie within the existing County right-of-way adjoining Kamaole Heights. The approximately 200-foot segment of the existing 16-inch waterline which will be lowered, falls within an existing Department of Water Supply waterline easement, which is co-aligned with the future right-of-way for the North-South Collector. The lowering of this segment of the waterline will occur within the limits of the existing waterline easement.

Offsite drainage system improvements within the North-South Collector Road right-of-way are also proposed. Refer to Appendix "C". These improvements involve the installation of two (2) new curb inlet catch basins which will be placed about 150 feet south of an existing drain manhole at the intersection of Walua Place and the North-South Collector Road. The new catch basins will be located across the street from each other on the mauka and makai sides of the road. About 60 feet of new 18-inch drainline will link the new catch basins to a new drain manhole which will be installed near the mauka side of the right-of-way. Approximately 150 feet of new 24-inch drainline will be installed to connect the new drain manhole to the existing drain manhole at the Walua Place intersection.

As previously noted, since the existing unimproved section of the North-South Collector Road will ultimately need to be improved, this action is also covered by this EA document. The roadway improvements within this approximately 375-foot section of the right-of-way will be coordinated with the DPWEM's design for the typical roadway section of the North-South Collector Road, which will generally include two (2) paved travel lanes, paved shoulders, concrete curbs and gutters, landscape planting strips, and a bike/pedestrian path. It is noted that the makai half of the North-South Collector Road right-of-way that adjoins the dedicated half of the right-of-way will be improved by the developer of the proposed Ke Ali'i Villas Condominium Project, an affiliate of the applicant's parent company.

The estimated cost of the subdivision is approximately \$15.5 million, while the offsite sewer, water and drainage system improvements, as well as improvements to the North-South Collector Road (fronting the Kamaole Heights Subdivision), is estimated to cost approximately \$560,000.00. Site work for the project, including the completion of the offsite improvements, will be conducted in a single phase and is expected to take about 6 to 8 months, while the construction of homes will be phased according to market demand.

Chapter II

Description of the Existing Environment

II. DESCRIPTION OF THE EXISTING ENVIRONMENT

A. PHYSICAL ENVIRONMENT

1. Surrounding Environment

The project site is located in the Kamaole area of Kihei, Maui, within the southern portion of the Kihei District. The site is located in a part of Kihei which is characterized by school, park, hotel, business/commercial, single-family and multi-family uses.

To the north of the project site, beyond Kamali'i Elementary School and the Kamaole Heights Subdivision, lie various hotel, timeshare, condominium, and single-family residential projects such as the Maui Coast Hotel, Pacific Shores, Maui Vista, Worldmark, and the Ke Ali'i Kai Subdivision. To the east of the site, beyond Kananui Road, are Pi'ilani Highway and a vast expanse of vacant, undeveloped land, while to the south, beyond the Keonekai Heights Subdivision, lie numerous condominium projects including the Kihei Kai Nani, Kihei Akahi, Maui Banyan, and Haleakala Shores. To the west of the site, beyond the two (2) undeveloped parcels and the Kihei Ali'i Kai and Kihei Regency condominiums, lie Kamaole Beach Park II, as well as several condominiums such as the Hale Pau Hana, Kamaole Nalu, and Royal Mauian.

Several retail commercial centers located less than a quarter of a mile to the west of the project site contain convenience stores, restaurants and other retail shops.

2. Climate

The Kihei Coast, which encompasses the site, is generally sunny, warm and dry the entire year. In Kihei Town, the average annual high temperature is in the low 90's with the average low

temperature being in the low 60's. June through August are historically the warmer months of the year, while the cooler months are January to March.

Average rainfall distribution in the Kihei-Makena region varies from under 10 inches per year to 20 inches per year in the higher elevations. Rainfall in the Kihei-Makena region is highly seasonal, with most of the precipitation occurring in the winter months.

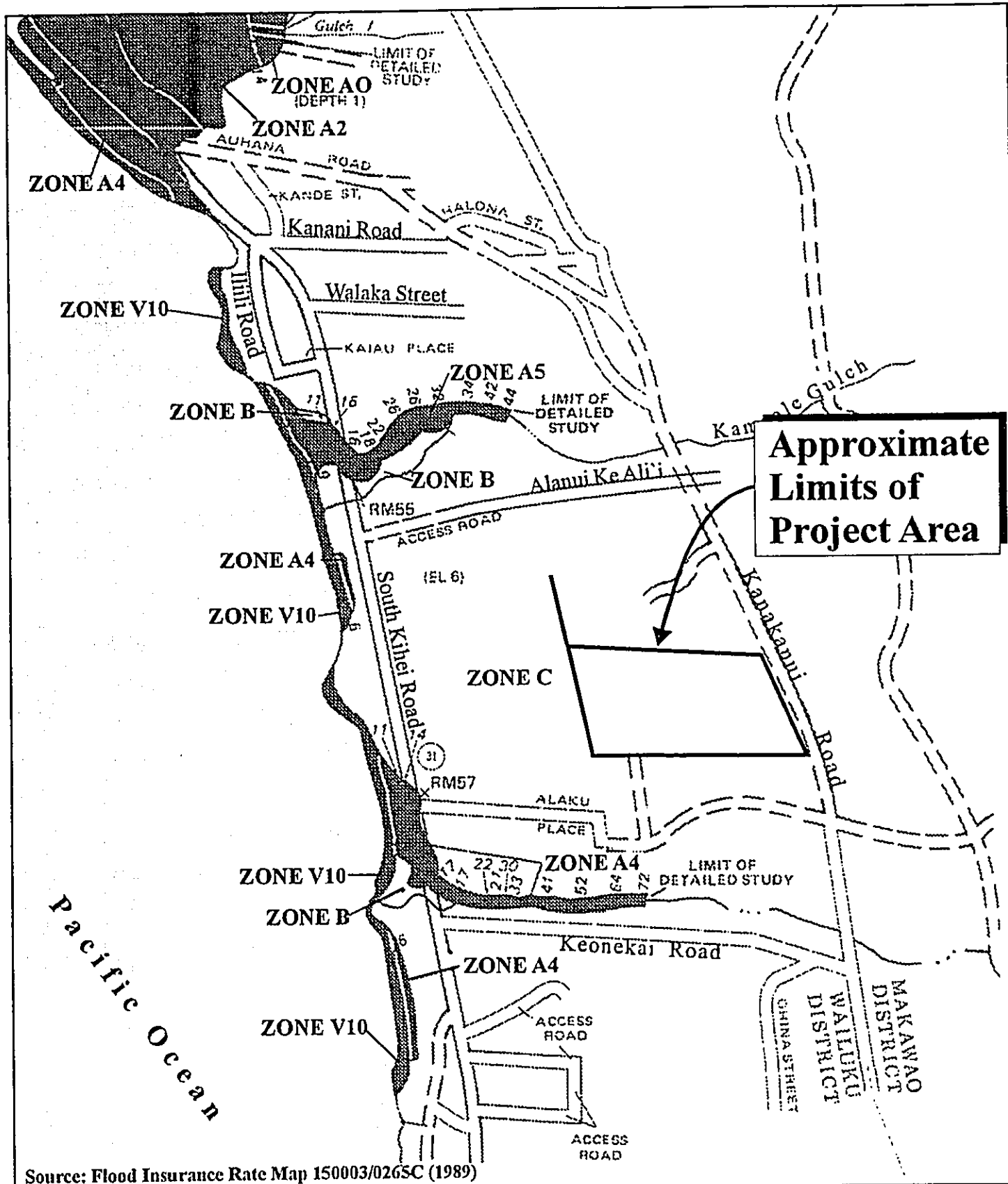
Northeast tradewinds prevail approximately 80 to 85 percent of the time. Winds average 10 to 15 miles per hour during afternoons, with slightly lighter winds during mornings and nights.

3. **Flood and Tsunami Hazards**

According to the Flood Insurance Rate Map prepared for this part of the island by the Federal Emergency Management Agency, the project site is located in Zone C, an area of minimal flooding. See Figure 4.

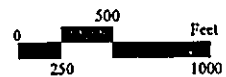
4. **Topography and Soils**

The project site decreases in elevation from 142 feet at its southeast corner to about 64 feet at its southwest corner with an average slope of approximately 4.7 percent. A fairly well-defined but shallow drainage channel meanders across the southeastern quadrant of the site and exits the project site about 400 feet east of its southwestern corner. The portion of the County's North-South Collector Road right-of-way affected by the sewerline and waterline improvements has been graded to accommodate the roadway prism.



Source: Flood Insurance Rate Map 150003/0265C (1989)

Figure 4 Proposed Ke Ali'i Kai II
Subdivision and Offsite Improvements
Flood Insurance Rate Map



Prepared for: KAK II LLC

MUNEKIYO & HIRAGA, INC.

Underlying the project site is the Pulehu-Ewa-Jaucas soil association. See Figure 5. The Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii characterizes the soils of this association as deep, nearly level to moderately sloping, well-drained and excessively drained soils. The underlying material is moderately fine-textured to coarse-textured subsoil. This soil occurs on alluvial fans and in basins. The soil types prevalent around the project site include Jaucas sand (JaC) and Puuone sand (PZUE). See Figure 6. Jaucas sand, 0 to 15 percent slopes, but in most places the slope does not exceed 7 percent. In a representative profile, the soil is single grain, pale brown to very pale brown, sandy, and more than 60 inches deep. Permeability is rapid, and runoff is very slow to slow. The hazard of water erosion is slight, but wind erosion is severe where vegetation has been removed. Puuone sand, 7 to 30 percent slopes, is located on sandhills near the ocean. In a representative profile, the surface layer is grayish brown, calcareous sand approximately 20 inches thick. This is underlain by grayish-brown cemented sand. Permeability is rapid above the cemented layer. Runoff is slow, and the hazard of wind erosion is moderate to severe.

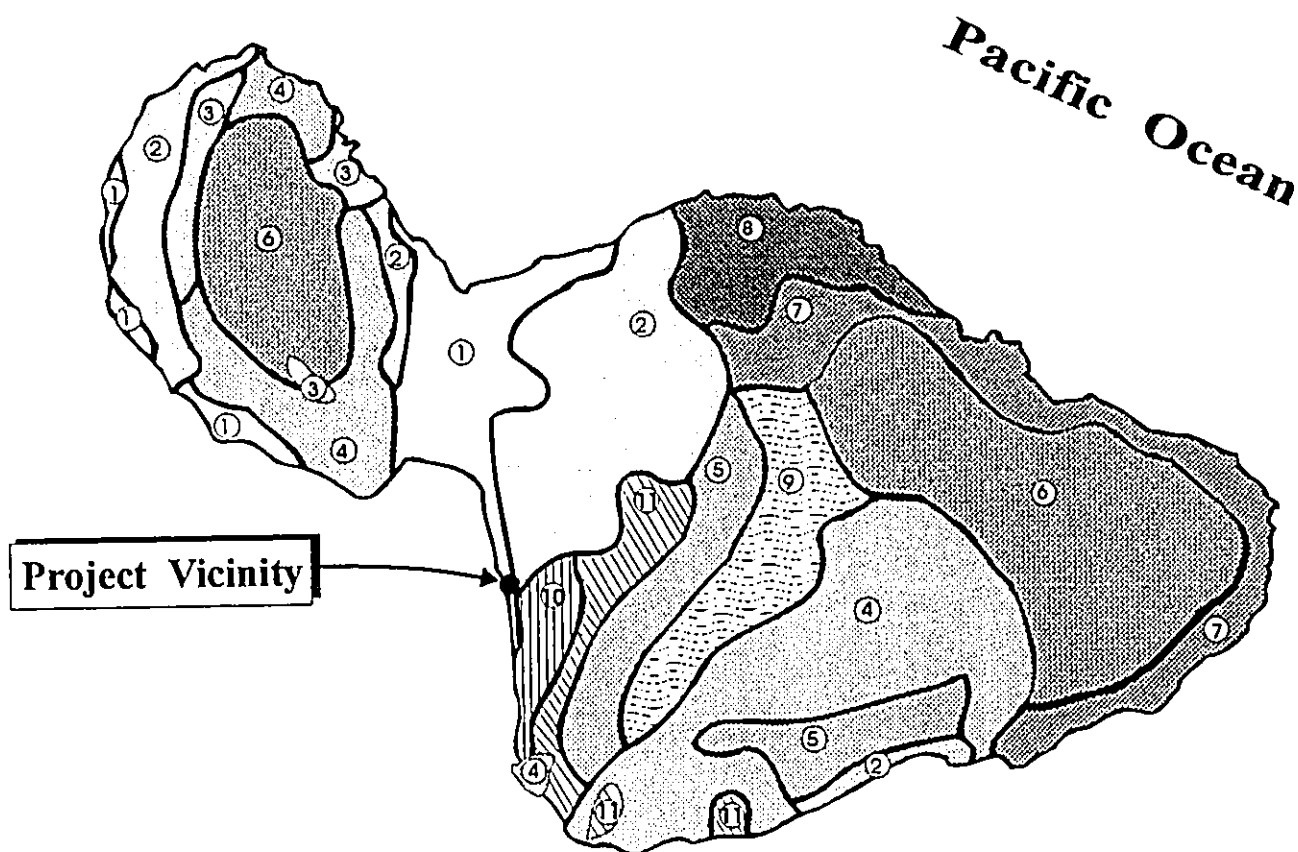
5. **Flora and Fauna**

Vegetation on the subject property and adjoining unimproved section of the North-South Collector Road right-of-way consists primarily of a scattered growth of kiawe trees and scrub vegetation such as buffelgrass.

Fauna and avifauna at the project site and surrounding areas are typical of species found in the urbanized Kihei area. Fauna

LEGEND

- | | |
|--|--|
| ① Pulehu-Ewa-Jaucas association | ⑦ Hanu-Makaalae-Kailua association |
| ② Waiakou-Kealahou-Molokai association | ⑧ Pauwela-Haiku association |
| ③ Honolulu-Olelo association | ⑨ Launaia-Kuipoipoi-Olinda association |
| ④ Rock land-Rough mountainous land association | ⑩ Keuwakapu-Makena association |
| ⑤ Puu Pa-Kula-Pane association | ⑪ Kamaole-Oanapuka association |
| ⑥ Hydrandepts-Tropaquods association | |



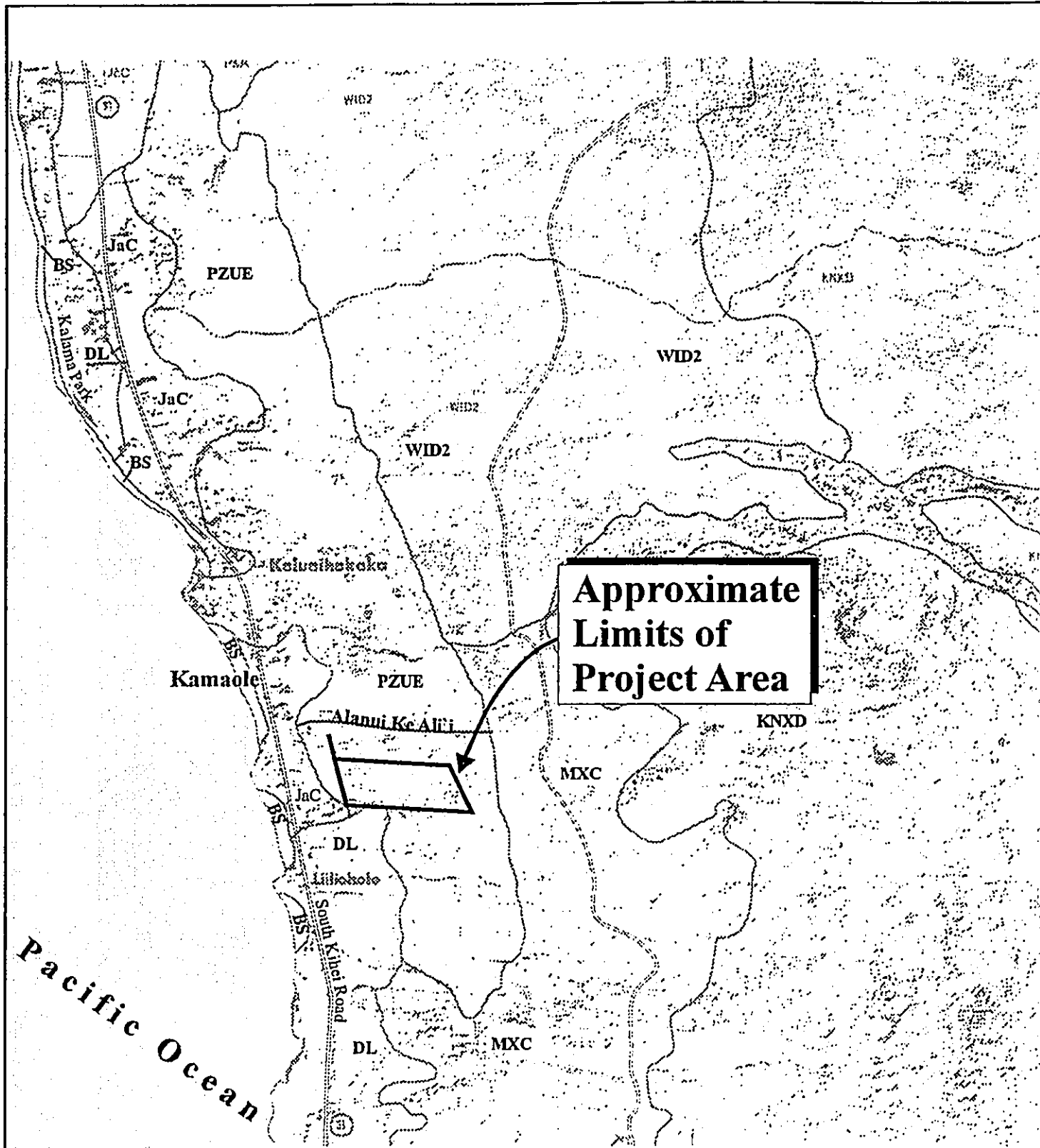
Source: U.S. Department of Agriculture, Soil Conservation Service

Figure 5 Proposed Ke Ali'i Kai II NOT TO SCALE
 Subdivision and Offsite Improvements
 Soil Association Map



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

Figure 6 Proposed Ke Ali'i Kai II
 Subdivision and Offsite Improvements
 Soil Classification Map



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typically found in the vicinity include mongoose, mice, rats, dogs and cats. Avifauna typically include the Northern Cardinal, Common Mynah, Golden Plover, Spotted Dove, House Finch and Gray and Black Francolin.

There are no known rare, threatened or endangered species of plant or animal life associated with the project site nor are there any wetlands or critical habitats at the site.

6. **Air Quality**

There are no point sources of airborne emissions in the immediate vicinity of the project site. The air quality of the Kihei area is considered good with existing airborne pollutants attributed primarily to automobile exhaust from the region's roadways. Another source of airborne emissions is the smoke from sugar cane burning which occurs in the Central Maui isthmus. This source is intermittent, however, and prevailing tradewinds quickly disperse particulates which are generated.

7. **Noise Characteristics**

Background noise in this locale can be attributed to traffic travelling along Kananui Road and Pi'ilani Highway, as well as within the Kamaole Heights and Keonekai Heights Subdivisions.

8. **Archaeological/Cultural Resources**

An archaeological summary report was prepared for the proposed project. See Appendix "D". The report notes that an archaeological inventory survey of the project area was conducted by the Bishop Museum in 1991 in conjunction with the site selection process for a new elementary school in Kihei. The

purpose of the survey was to identify any extant archaeological sites within two (2) adjoining parcels, Lot 1 and Lot 2. Lot 1 is the site of the proposed Ke Ali'i Kai II Subdivision, while Lot 2 is the site of the existing Kamali'i Elementary School. The archaeological work involved the mapping of eight (8) features, the excavation of two (2) subsurface test units, and two (2) shovel tests.

The survey identified a total of eight (8) archaeological sites; five (5) sites were located on Lot 1, two (2) sites on Lot 2, and one (1) site north of and adjacent to Lot 2.

The five (5) sites on Lot 1 that were identified by the Bishop Museum survey include Sites 2840 to 2844. Sites 2840 and 2841 are mounds, Site 2842 is a mound group, Site 2843 is a rock facing, and Site 2844 is the remnant of a historical building. The survey assessed Sites 2840 to 2843 to be in good condition, while Site 2844 was appraised as being in poor condition. The survey recommended no further work for these five (5) sites.

The two (2) archaeological sites on Lot 2 that were located by the Bishop Museum survey include Site 2837 (historical platform) and Site 2838 (L-shape). Site 2839 (shrine), the archaeological site north of and adjacent to Lot 2, seems to have been located in what is now the Ke Ali'i Alanui right-of-way. The survey assessed Sites 2837 and 2838 to be in good condition, while Site 2839 was evaluated as being in fair condition. The survey recommended no further work for Sites 2837 and 2838, and preservation for Site 2839.

In reviewing the SMA Major application for the proposed subdivision, the State Historic Preservation Division (SHPD), in a letter dated September 8, 2003, recommended that an archaeological inspection of the project site be conducted to determine the presence and condition of the archaeological sites in the project area that were identified in the Archaeological Summary Report. See Chapter X. The SHPD also indicated that a report documenting the findings of the inspection will need to be submitted for their review and approval. Furthermore, the SHPD indicated that the condition and integrity of any existing sites will need to be evaluated and that recommendations for any needed mitigation will need to be included in the report.

In response to the SHPD's comment letter, an archaeological field inspection of the project area was conducted in September 2003. A report documenting the findings of the inspection was submitted to the SHPD for review and approval in November 2003. See Appendix "D-1". The inspection of the project area was conducted by walking systematic transects spaced approximately 5 to 15 meters apart. No overhang shelters, petroglyphs or any other cultural remains were observed within the project area, nor was there any evidence of Sites 2840 to 2844. In addition, Site 2839 was not located.

The archaeological inspection report indicates that Sites 2840 to 2844 are no longer in existence and were probably destroyed by past grading or dumping activities. The report also notes that Site 2839 is no longer extant and was probably destroyed during the construction of Alanui Ke Ali'i or the Kamali'i Elementary School.

9. **Scenic and Open Space Resources**

The project site is situated west or makai of Pi'ilani Highway, the major arterial roadway in this region. The Kamaole Beach Parks are located to the west of the site across South Kihei Road. The site offers views of the ocean, as well as views to Haleakala and the West Maui Mountains. The islands of Molokini, Kaho'olawe and Lana'i are also visible from the property. Open space in the Kihei-Makena region is defined by a broad expanse of undeveloped lands mauka of Pi'ilani Highway which extends in an easterly direction toward lower Kula.

The project site and North-South Collector Road right-of-way are not a part of, or in proximity to, scenic corridors.

B. **SOCIO-ECONOMIC ENVIRONMENT**

1. **Land Use and Community Character**

From a regional standpoint, the subject parcel is part of the Kihei-Makena Community Plan region which stretches from Maalaea to La Perouse Bay. The region includes a diverse range of physical and socio-economic environments. With its dry and mild climate and proximity to recreation-oriented shoreline resources, the visitor-based economy has grown steadily over the past few years. The town of Kihei serves as the commercial and residential center of the region with the master-planned communities of Wailea and Makena serving as the focal point for visitor activities.

As previously noted, the area surrounding the project site includes school, park, hotel, business/commercial, single-family, and multi-

family uses. The Kamaole Beach Parks are situated to the west of the subject property beyond South Kihei Road.

2. **Population and Economy**

The population of the County of Maui has exhibited relatively strong growth over the past decade, with the 2000 population of 128,241 increasing about 28 percent over the 1990 population of 100,504. Growth in the County is expected to continue, with a population projection for the year 2010 estimated to be 151,269 (SMS, June 2002).

Just as the County's population has grown, the resident population of the Kihei-Makena region has increased dramatically in the last few decades. Population gains were especially pronounced in the 1970's as the rapidly developing visitor industry attracted many new residents. The current resident population of the Kihei-Makena region is 22,870. A projection of the resident population for the year 2010 is 27,181 (SMS, June 2002).

The economy of Maui is heavily dependent upon the visitor industry. The dependency on the visitor industry is especially evident in Kihei-Makena, which is one of the State's major resort destination areas. The foundation for the region's visitor strength lies in world-class resorts and recreational facilities located in Wailea and Makena. Support for the visitor industry is found in Kihei, where numerous retail commercial centers are found.

C. PUBLIC SERVICES

1. Police and Fire Protection

The County of Maui's Police Department is headquartered at its Wailuku Station. The Department consists of several patrol, investigative and administrative divisions. The Department's Kihei Patrol, which covers the Kihei-Makena region, has a substation at the Kihei Town Center about 1.0 mile to the north of the subject property.

Fire prevention, suppression and protection services are provided by the County's Department of Fire Control. The Kihei Station, which services the Kihei-Makena region, is located on South Kihei Road near Kalama Park approximately 1.0 mile north of the project site. A new fire station is presently being constructed along Kilohana Drive, about 1.0 mile to the south of the project site. The new Wailea Station will service the area from Makena to Kamaole Park II and provide back-up support for the Kihei Station.

2. Health Care

Maui Memorial Medical Center, is the only major medical facility on the island, that services the Kihei-Makena region. Acute, general and emergency care services are provided by the 196-bed facility which is located in Wailuku. Privately operated medical/dental offices are located in the Kihei area to serve the region's residents.

3. Recreation

Diverse recreational opportunities are available in the Kihei-Makena region. Recreational facilities in close proximity to the project site include Kalepolepo Park, Elleair Maui Golf Club, Kalama Park, Kamaole Beach Parks I, II and III, and numerous other beach

parks along the Kihei coastline. Shoreline recreation includes swimming, fishing, picnicking, snorkeling and windsurfing.

The Wailea-Makena resort areas to the south of the project site offer additional opportunities for golf, tennis and ocean-related activities.

4. **Education**

The existing school service area encompasses approximately 32 square miles. The State Department of Education (DOE) operates three (3) schools in the Kihei area. Kihei Elementary School and Kamali'i Elementary School cover grades K to 5. Lokelani Intermediate School includes grades 6 to 8. Public school students in grades 9 through 12 attend Maui High School in Kahului.

5. **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 of at the County's Central Maui Landfill located 4.0 miles southeast of the Kahului Airport. In addition to County-collected refuse, the Central Maui Landfill accepts commercial waste from private collection companies.

D. **INFRASTRUCTURE**

1. **Roadways**

Access to the Kihei region is provided by North Kihei Road from West Maui and the Wailuku area, and Mokulele Highway and Pi'ilani Highway from the Kahului area and "Upcountry". North

Kihei Road becomes South Kihei Road, near its junction with Mokulele Highway and continues southward through Kihei Town.

South Kihei Road is oriented in a north-south direction. This two-lane, two-way County roadway generally follows the coastline through Kihei Town. In the vicinity of the project site, the posted speed limit on South Kihei Road is 30 miles per hour (mph). The intersection of South Kihei Road and Alanui Ke Ali'i is signalized. *The approaches to the intersection include separate turn lanes.* The County has upgraded portions of South Kihei Road to urban collector standards.

Pi'ilani Highway is the primary arterial highway for South Maui. This two-lane, two-way high quality State highway runs parallel to and mauka of South Kihei Road. In addition to paved shoulders, Pi'ilani Highway has traffic signals, as well as left- and right-turn deceleration lanes at major intersections. Pi'ilani Highway begins at North Kihei Road and terminates at Wailea Ike Drive in the Wailea Resort. In the project vicinity, the posted speed limit along Pi'ilani Highway is 40 mph. The Pi'ilani Highway and Alanui Ke Ali'i intersection is signalized. The intersection approaches provide for separate turn lanes. The State Department of Transportation recently completed the restriping of a 5.9 mile section of Pi'ilani Highway, from the intersection of Mokulele Highway to the intersection of Kilohana Drive, to provide two (2) travel lanes in each direction. The primary access to the project site from Pi'ilani Highway will be from its signalized intersection with Alanui Ke Ali'i, about 1,600 feet to the northeast of the project site. No left-turn movements are allowed for westbound traffic on Alanui Ke Ali'i,

except during student drop-off and pick-up periods when Kamali'i Elementary School is in session.

Alanui Ke Ali'i is an urban collector oriented in an east-west direction. This two-lane, two-way County roadway links Pi'ilani Highway and South Kihei Road and lies approximately 800 feet to the north of the project site. This road was designed to function as a four-lane collector. Currently, much of the space set aside for both outside travel lanes has been restriped to provide onstreet parking for beach-goers. In the project area, the posted speed limit on Alanui Ke Ali'i is 20 mph.

Kanakanui Road is a two-lane, two-way roadway that runs parallel to Pi'ilani Highway, between Alanui Ke Ali'i and Keonekai Road. In the vicinity of Kamali'i Elementary School and the intersection with Alanui Ke Ali'i, the intersection is configured to allow two (2) approach lanes from each direction. The intersection of Kananui Road and Alanui Ke Ali'i is "stop sign"- controlled. Kananui Road was recently improved by the County to provide concrete curb, gutter, and sidewalk improvements on the makai side of the road, as well as drainage improvements.

Approximately 300 feet of the North-South Collector Road, from Alanui Ke Ali'i to Walua Place, was constructed by the developer of the Kamaole Heights Subdivision. The roadway improvements consist of concrete curbs and gutters on both sides of the road, a sidewalk on the mauka side, and a paved travel way of about 40 feet. There is one (1) lane in each direction and separate left-turn lanes at the intersections. The intersection of Alanui Ke Ali'i and

the North-South Collector Road segment is "stop sign"-controlled, with the stop sign along the collector road.

2. **Water**

The project site is situated in the Kihei mid-level service area. Wells in upper Waiehu provides the source of water for the mid-level service area. This well source draws water from the basal lens referred to as the Iao Aquifer. As of October 2003, the rolling average on pumpage from the Iao Aquifer was 17.7 million gallons per day (MGD). This pumpage is below the 20.0 MGD regulatory sustainable yield of the aquifer. Additionally, water drawn from wells overlying the Waihee Aquifer supplement the water pumped from the Iao Aquifer. These combined sources provide water for the Central Maui and Kihei regions. According to information provided by the County Department of Water Supply (DWS), two wells in North Waihee contribute a total of approximately 2.0 MGD, while Kanoa Well Nos. 1 and 2 provide a similar amount. New water sources include Kupaa Well No. 1, which is currently under construction and is expected to provide about 1.0 MGD. In addition, a new well at Camp Maluhia is presently in the design and the exploratory well-drilling stage and is anticipated to commence construction in fiscal year 2004. The new Waiolai Well is programmed to start design and exploratory well drilling in the 2004 fiscal year, with construction expected to commence about 2 to 3 years later. The Camp Maluhia and Waiolai Wells are each projected to provide approximately 1.0 MGD. The existing North Waihee and Kanoa Wells provide a total of about 4.0 MGD, while the wells which are currently under development (Kupaa, Camp Maluhia, and Waiolai) will provide a total of approximately 3.0 MGD upon completion. These wells will supplement the water provided

by the Iao Aquifer and provide an additional 7.0 MGD for the Central Maui and Kihei regions.

In July 2003, the State Commission on Water Resources Management (CWRM) designated the Iao Aquifer as a groundwater management area. As a result of this designation, the DWS will not accept reservations for future water meters until new sources are brought on line. In addition, although the DWS will continue to issue water meters for projects that are ready to receive service, it may stop issuing water meters until new sources are developed.

Water from the North Waihee wells is pumped to a 1.0 million gallon (MG) tank at the well site in upper Waiehu at the 485 foot elevation. From this tank, water is transported to the 2.0 MG Kamaole tank above Pi'ilani Highway by a series of 42-, 36-, 30-, and 16-inch transmission lines. A 12-inch line then conveys water from the Kamaole tank to consumers along Kananui Road, Alanui Ke Ali'i, and the North-South Collector Road to Walua Place in the Kamaole Heights Subdivision.

3. Wastewater

The service area for the County's Kihei Wastewater Reclamation System extends from North Kihei to Makena. The system consists of a number of pump stations and force mains which convey wastewater through the County's transmission lines. Pump Station Nos. 2 to 5 convey flows from North Kihei to Pump Station No. 6 which is located adjacent to the Kihei Fire Station within Kalama Park. Pump Stations 6 to 10 and 16 convey flows from Makena, Wailea and South Kihei to Pump Station No. 6. The combined flows are transported to the Kihei Wastewater Reclamation Facility,

which is located mauka of Pi'ilani Highway and south of the Elleair Maui Golf Club. The existing design capacity of this facility is 8.0 million gallons per day (MGD).

The nearest County sewer system is located at the intersection of Walua Place and the North-South Collector Road, approximately 500 feet from the northwest corner of the project site. This line gravity flows into an 8-inch sewerline on Alanui Ke Ali'i and then into a sewer pump station at Kamaole Beach Park I on the makai side of South Kihei Road. A series of force mains, gravity lines, and other pump stations then conveys the wastewater to the Kihei Wastewater Reclamation Facility for treatment and disposal.

4. **Drainage**

Most of the offsite runoff from the contributory drainage area mauka of Pi'ilani Highway flows into an existing drainageway that traverses the southeast quadrant of the project site. The present offsite runoff from a 100-year, 6-hour recurrence storm is estimated to be around 543 cubic feet per second (cfs), while for a 100-year, 24-hour storm, the runoff is estimated to be 367 cfs. Runoff from the northern half of the project site appears to sheet flow in a northeasterly to southwesterly direction into the existing drainageway and toward the North-South Collector Road corridor and the parcels below. Runoff from the southern half of the site appears to sheet flow into the existing drainage channel. The current runoff from the 28.57-acre project site is estimated to be 27.0 cfs for a 50-year, 1-hour rainfall event.

5. **Power, Telephone and CATV Services**

Existing overhead power, telephone, and cable television (CATV) distribution systems lie along Kananui Road. Underground power and telephone distribution systems are available on the shoulders of the North-South Collector Road between Alanui Ke Ali'i and Walua Place.

Chapter III

Potential Impacts and Mitigation Measures

III. POTENTIAL IMPACTS AND MITIGATION MEASURES

A. IMPACTS TO THE PHYSICAL ENVIRONMENT

1. Surrounding Uses

Various land uses, encompassing commercial, hotel, recreational, and multi- and single-family activities, are found within the general vicinity of the project site.

Situated primarily along South Kihei Road, commercial zoned properties include the Dolphin Plaza, Kamaole Beach Center, Kamaole Shopping Center, Kihei Town Center and Rainbow Mall. The Kihei Alii Kai, Kamaole Sands, Kihei Akahi, Maui Banyan and Maui Vista condominiums represent the larger multi-family properties in the project area. Residential properties within the project vicinity include the Alaku, Ke Ali'i Kai, Kamaole Heights, Kamaole Homesteads, Keonekai Heights and Pacific Terrace Subdivisions. The Maui Coast Hotel and Kamaole Beach Parks I, II and III typify the hotel and recreational land uses within the project area.

The proposed actions are in consonance with the surrounding land uses in the project area.

2. Flora and Fauna

Vegetation associated with the project site, including the County's North-South Collector right-of-way, consists primarily of introduced species such as buffelgrass and kiawe trees. There are no known plants which are listed as rare, threatened or endangered.

Avifauna and fauna in the vicinity are typical of the Kihei-Makena region. There are no known rare, threatened or endangered species of wildlife found in the vicinity of the project site.

The proposed development and offsite improvements are not anticipated to have a significant adverse impact on botanical and wildlife resources since the site is dominated primarily by introduced plants.

3. **Air Quality and Noise**

Existing airborne pollutants are attributed primarily to vehicle-generated exhaust from the region's roadways.

Other sources of airborne pollutants typically include dust resulting from construction activities, and smoke from sugar cane harvesting operations occurring in the Central Maui plain. These sources are considered intermittent, and the generated particulates are quickly dispersed by the prevailing tradewinds.

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 shall be minimized by properly maintaining construction equipment and vehicles.

In addition, dust generated during construction, especially from earth-moving operations, such as clearing, excavating and trenching, 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.

As with air quality, ambient noise conditions will be temporarily impacted by construction activities. Power tools, heavy construction equipment, such as bulldozers, front-end loaders, and materials-carrying trucks and trailers, would be the dominant source of noise during the construction period. All construction activities are anticipated to be limited to normal daylight working hours.

4. **Archaeological Resources**

As previously indicated, an Archaeological Summary Report was prepared for the proposed project. Refer to Appendix "D". The report notes that the 1991 archaeological inventory survey of the project area that was conducted by the Bishop Museum notes that, *"in the sites studied, because of the lack of midden or artifacts, the potential for new or unique data is insignificant. Since the significance of the sites have been realized . . . further intensive data recovery is not recommended"*. The inventory survey recommended no further work for the five (5) archaeological sites (Sites 2840 to 2844) located on Lot 1 (the project site). In addition, archaeological monitoring was recommended during any construction-related clearing and grading activities.

As previously noted, in reviewing the SMA Major application for the proposed subdivision, the State Historic Preservation Division (SHPD), in a letter dated September 8, 2003, recommended that an archaeological inspection of the project site be conducted to determine the presence and condition of the archaeological sites

in the project area that were identified in the archaeological summary report. Refer to Chapter X. The SHPD also indicated that a report documenting the findings of the inspection will need to be submitted for their review and approval. Furthermore, the SHPD indicated that the condition and integrity of any existing sites will need to be evaluated and that recommendations for any needed mitigation will need to be included in the report.

In response to the SHPD's comment letter, an archaeological field inspection of the project area was conducted in September 2003. A report documenting the findings of the inspection was submitted to the SHPD for review and approval in November 2003. Refer to Appendix "D-1". The survey of the project area was conducted by walking systematic transects spaced approximately 5 to 15 meters apart. No overhang shelters, petroglyphs or any other cultural remains were observed within the project area, nor was there any evidence of Sites 2840 to 2844. In addition, Site 2839 was not located.

Pursuant to its review of the archaeological field inspection report, the SHPD, in a letter dated April 30, 2004, indicated that no historic properties will be affected by the proposed project as there are no historic sites located on the subject property, nor is it likely that remnant historic sites are present. See Appendix "D-2".

Due to the presence of sand deposits at the project site and the potential for encountering subsurface sites in an area with known surface sites, the applicant's contractor will have an archaeological monitor present during all ground-altering construction activities should archaeological monitoring be necessary.

Should any archaeological features be exposed during construction activities, work in the vicinity of the find will promptly cease and the State Historic Preservation Division will be immediately notified in order to establish the significance of the unearthed features, and to determine an acceptable course of mitigative action.

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 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 were where most of the *kauhale*, group of houses, were found, as well as temples, fishing shrines, and fishponds (Minerbi 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 of 1848 were to be forfeited to the government (MacKenzie 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 king, government, or chief's land. All claims and awards were numbered and recorded in the *Mahele* Book (MacKenzie 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 (Chinen 27-28).

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 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 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 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 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 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 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 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 131).

c. **Kama'ole Ahupua'a**

The Kama'ole *ahupua'a* lies in the traditional district of Kula. The literal meaning of Kama'ole is "childless". Land conveyance records indicate that much of Kula was government land and in 1911, the territorial government of Hawaii sold these acreages of public land (Pantaleo, 2001). In the Kama'ole *ahupua'a*, 20 L.C.A.'s were awarded although none are noted in the vicinity of the project site. The majority of lands within this *ahupua'a* was used for cattle ranching.

As explained by Pantaleo (2001), permanent or seasonal habitation occurred along the dry coastal areas of Maui around A.D. 1000-1400 as these areas provided ready access to marine resources. Types of features found in coastal areas included enclosures and overhang shelters and mounds and small planting areas in selected localities. Mauka-makai trails linked the permanent upland habitation areas to the coastal areas.

As documented in Haun (2000), the coastal areas of Kama'ole were used for small-scale gardening, fishing and collecting marine resources. Between the shoreline and the

upland residences (2,000 ft. elevation), was a broad, arid area that was largely unoccupied as hypothesized by Cordy. (The upland areas were generally used for permanent habitation.) Sites in this intermediate zone are largely limited to trails linking the coast to the uplands and occasional temporary habitations.

During the historic period, Irish potato and sugar were being cultivated in upland areas. When demand for these products decreased, cattle ranching became predominant. Prior to and during World War II, the lower portion of Kama'ole ahupua'a was used for military training purposes.

d. **Archaeological and Cultural Perspectives**

As cited in Appendices "D" and "D-1", archaeological work was conducted for the subject property. In response to the SHPD's request for an archaeological inspection, a field inspection of the subject property was conducted on September 29, 2003. The inspection found no overhang shelters, petroglyphs, or any other significant cultural remains. The project area contained pockets of sand and silt interspersed among rock outcrops and mounds. No evidence of previously identified sites (Sites 2840-2844) was found. The inspection report indicates that these sites may have been impacted or removed within the last 10 years. Site 2839 appears to have been destroyed during the construction of Alanui Ke Alii Drive and/or Kamali'i Elementary School.

Based upon its review of the archaeological field inspection report, the SHPD indicated that no historic properties will be affected by the proposed project as there are no historic sites located on the subject property, nor is it likely that remnant historic sites are present. Refer to Appendix "D-2".

It is noted that Site 2637, located on TMK 3-9-18:17 (Worldmark), approximately 800 feet to the north of the subject property has been preserved. This site is described as a ko'a or prehistoric fishing shrine (Xamanek Researches, 1995). This shrine was used for offerings by fishermen to assure abundant yields of fish and other marine creatures. Ko'a are usually found along the coastline and a short distance inland along trails connecting the ocean with inland habitation areas. They are often small enclosures constructed against a natural basalt outcrop, as evidenced by Site 2637. Offerings consisted of rounded basalt stones, coral and fish.

In preparing the preservation plan for Site 2637, consultation with native Hawaiians Leslie Kuloloio and Charles Keau were conducted. As documented in the preservation plan, their comments were noted as follows:

- (1) Careful removal of some of the present obscuring vegetation, being sure to prevent disturbance of the intact materials of the prehistoric fishing shrine. This should be done by archaeological personnel.
- (2) Restoration of the ko'a to its pre-excavation condition. This will be achieved by perusal of the field archaeological report and photos, and then placing the coral into a semblance of its original configuration.

This is also a task to be accomplished by archaeologists.

- (3) Mr. Keau wants additional subsurface testing to clearly determine site extent. When this is done, the boundary will be placed 5 meters from the perimeter of the site. Again, it will consist of a single course of stones, 30 to 40 cm. in diameter. Within this boundary, plants indigenous to the Kihei area, such as sedges, *'ilima*, and *pili* grass should be planted. A botanist retained by Xamanek Researches will oversee this phase. Maintenance of the vegetative cover should be part of the perpetual preservation maintenance agreement.
- (4) Mr. Keau is concerned that the public be aware of the importance of the site. He felt this could best be achieved by some kind of educational program done through the nearby Kihei Elementary School. He spoke particularly about educating youngsters to "teach them respect for this and other native Hawaiian sites". A way this might be accomplished is through an "Adopt-a-Site" program involving teachers and students from the appropriate grade level that would be studying Hawaiian Culture.

Leslie Kuloloio and Charles Keau were also consulted during the preparation of the preservation plan for Site 2633. Their comments, as reflected in the preservation plan, were noted as follows:

- (1) Careful removal of some of the present obscuring vegetation, being sure to prevent disturbance of the intact materials of the prehistoric fishing shrine. This should be done by archaeological personnel.
- (2) Restoration of the ko'a to its pre-excavation condition. This will be achieved by perusal of the field archaeological report and photos, and then placing the coral and stone into a semblance of their original configuration. This is also a task to be accomplished by archaeologists.

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- (3) Mr. Keau suggested the site be surrounded with a single course of marking stones, 30 to 40 cm. in diameter. Within this boundary, plants indigenous to the Kihei area, such as sedges, 'ilima, pili grass should be planted. A botanist retained by Xamenek Researches will oversee this phase. Maintenance of the vegetative cover should be part of the perpetual maintenance agreement.
 - (4) Mr. Keau made note of the proximity of the site to the new Kihei Elementary School, and felt some kind of education program should be initiated in order "to teach the youngsters respect for this and other native Hawaiian sites". This might be accomplished by an "Adopt-A-Site" program involving teachers and students from the appropriate grade level that would be studying Hawaiian culture.

e. **Informant Documentation**

To obtain a perspective about cultural resources relative to the subject property, an informant interview was conducted with Mr. Kimokea Kapahulehua. A summary of this interview follows.

Kimokeo Kapahulehua

Mr. Kimokeo Kapahulehua was born on Kauai in 1947. He graduated from Kauai High School in 1965 and studied business administration for three (3) years at Church College of Hawaii (now Brigham Young University). He moved to Maui in 1970 and has been living in Kihei since 1986. He is a member of the Kihei Canoe Club located in Waiakoa Ahupua'a and Halau Maui Nui-O-Kama, a native cultural organization. He is also president of Ke-ie-ie-loko-ia Fishpond in Kalepolepo. Halau Maui Nui-O-Kama is very active in teaching native cultural practices in hula, chants and dissemination of cultural information. It is presently working in partnership with the U.S. Fish and Wildlife Service identifying native plants,

native birds and native insects in the Ma'alaea-Kihei area and with the National Oceanic Atmospheric Administration to identify the sea animals along the coast from Ma'alaea Bay to Makena. Halau Maui Nui-O-Kama teaches native culture at the Kihei Charter High School one (1) hour per week and canoeing and paddling three (3) days per week. In their native cultural studies, the organization actively walks, hikes and paddles the Kihei coastline. They are also active in the reforestation of native plants and sand dune restoration. The main area of their work is in the area makai of South Kihei Road and along the coast from Ma'alaea Bay to Makena.

During a recent inspection of the project site, Mr. Kapahulehua observed ualoa and ilima growing on the property. He indicated that these plant species are common to the area and can be found growing on the mauka and makai sides of Pi'ilani Highway. He also noted that both plants are endemic, non-endangered species whose presence was made more apparent by recent winter rains. The ualoa plant is used for medicinal purposes by native Hawaiians for treating sore throats. The type of ilima growing at the site is a weed-like species about 3 to 4 feet in height with yellow flowers. In addition, Mr. Kapahulehua observed traces of a past brush fire (blackened soil and kiawe) which burned the subject property and the surrounding area.

During the site visit, Mr. Kapahulehua did not observe any archaeological sites or features on the property, nor was there evidence of any paths or trails that native Hawaiians used for travel between the uplands and the coast. He did note, however, that the project site has sandy soil and that archaeological sites have been discovered on other parcels in the area and have been preserved in place. Mr. Kapahulehua indicated that native settlement areas were usually located along the coastline and in gulches or valleys with water resources. He also mentioned that the subject property was likely used as an open range for grazing cattle in the past.

Mr. Kapahulehua is not aware of any native Hawaiian cultural practices occurring on the subject property and indicated that it is unlikely the property was used for traditional cultural practices in the past.

f. Other Informant Documentation

Informant interviews were conducted for the Piilani Highway restriping project. The restriping of Piilani Highway has been completed to provide two (2) travel lanes in each direction between Mokulele Highway and Kilohana Drive. The subject property is located west of and adjacent to the highway (makai of Kananakui Road). In providing cultural perspectives for the Piilani Highway, Mr. Roy Suda and Mr. Kimokeo Kapahulehua described the Kihei area before the Piilani Highway was constructed (Munekiyo & Hiraga, Inc., 2002). Mr. Kapahulehua noted his work in teaching native cultural practices, including the conduct of native cultural studies and organized activities which involve native plant restoration. With regard to the area along the Piilani Highway corridor, he was not aware of native cultural practices or harvesting of plants currently being conducted.

g. Assessment of Cultural Impacts

Based on research conducted in the region and based on findings of other archaeological studies in the surrounding vicinity, the Kama'ole *ahupua'a* contains a number of cultural sites. Importantly, Sites 2637 and 2633 have been preserved to reflect the cultural significance of the Kama'ole *ahupua'a*. Archaeological field work on the subject property found no evidence of sites suggested for confirmation by the SHPD.

As noted, the value of the coastal region of the Kama'ole *ahupua'a* is found in its proximity to marine resources. The coastal areas were characterized by temporary habitation patterns as opposed to the upland's permanent habitation patterns. With the construction of four-lane Piilani Highway, between Mokulele Highway and Kilohana Drive, mauka-makai access opportunities between the two (2) settlement regions is no longer available. Coupled with the growing pattern of urbanization which surrounds the subject property, there has been no evidence or observations that the project would have an adverse impact upon cultural resources or practices. The preservation of Sites 2637 and 2633, in the vicinity of the project site, however, serves as a strong reminder that the Kama'ole *ahupua'a* played an important role in defining native Hawaiian settlement patterns and cultural practices.

6. **Scenic and Open Space Resources**

The proposed subdivision plan has been developed to provide for the efficient use of land while considering topographic, drainage, site, and setback parameters. The proposed project, including the offsite work, will be compatible in scale with surrounding properties which have already been developed. Street tree plantings will be integrated with the subdivision plan to ensure that the project will provide a coherent visual context for this area of Kihei. The project site is not considered to be a part of, or in proximity to, a scenic corridor.

B. IMPACTS TO SOCIO-ECONOMIC ENVIRONMENT

1. Land Use and Community Character

The proposed project is a permitted use within the "R-2, Residential" District. In addition, accessory dwellings (ohanas) are a permitted use for lots within this residential zoning district. The proposed action is considered compatible with land uses found in the surrounding area.

2. Economy

On a short-term basis, the project will support construction and construction-related employment. Over the long term, subdivision residents will support the economy through the contribution of taxes, wages, and salaries, as well as through the purchase of goods and services from local businesses.

3. Police, Fire and Health Care

The proposed project 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.

4. Recreation

In addition to drainage functions, the proposed retention basin/park will include a soccer field which can also be converted to serve as a little league ballfield. The retention basin/park will be sized to accommodate the post-development surface runoff from the project site. Runoff from the adjacent parking and restroom facilities for the playfield is expected to be minimal. The percolation well within the retention basin/park will be utilized to drain any storm water

impounded in the basin and induce the rapid percolation of the impounded water.

During the project's preliminary planning phase, the applicant met with the County Department of Parks and Recreation (DPR) to discuss park dedication requirements for the project.

During this meeting, the applicant proposed the dedication of the project's 3.7-acre retention basin/park to address County park and playground requirements. Pursuant to Section 18.16.320 of the Maui County Code, a subdivider can provide or dedicate land for park and playground purposes. In addition, the land provided or dedicated must have an area of 500 square feet for each unit or lot (in excess of three) resulting from the subdivision. Accordingly, based on the number of proposed housing units the land required to be dedicated is 43,500 square feet (90 units - 3 units = 87 units x 500 sq. ft. = 43,500 sq. ft.).

As a result of this meeting, the DPR indicated its support of the applicant's proposal to dedicate the useable area of the retention basin/park to the County for park use. See Chapter X. Based on further discussions with the DPR, approximately 2.7 acres of the retention basin/park have been designated as useable for parks and playground purposes. The useable areas include the areas encompassed by the playfield, parking, and comfort station improvements. On May 18, 2004, individuals representing the applicant, DPR and DPWEM met to discuss access requirements for the parking area bordering the North-South Collector Road. As a result of this meeting, it was agreed that access from the North-

South Collector Road to this parking area would be permitted via a curb cut and driveway.

Based on the applicant's discussions with the DPR, the subdivision's homeowners association will be responsible for maintaining the park for the initial ten (10) year period after which time the County of Maui will assume the responsibility for park maintenance. Provisions in this regard will be set forth in the park maintenance agreement between the applicant and the County. The applicant will seek parks credits for the excess land area being contributed for the park to satisfy parks and playground requirements for other projects the applicant may develop. The applicant will continue to work the DPR to finalize its park dedication requirements for the project.

5. **Education**

The Kamali'i Elementary School student district covers the area south of Welakahao Road. Approximately 775 students currently attend the school. Classes commence in late July and conclude in early June. Kamali'i Elementary School is the only school on the island that is designed to function as a multi-tract school. The purpose of a multi-tract school is to maximize the use of a school's facilities. With a multi-tract school, students in a school are divided into several groups and attend class on a rotating basis throughout the calendar year. For example, when one group of students is on vacation, the remaining groups are in class. When the group that is on vacation returns to school another group of students goes on vacation. With this multi-tract capability, Kamali'i Elementary School can accommodate up to 25 percent more students than the school's present enrollment.

Projects involving the development of 50 or more housing units were formerly subject to school facilities assessment fees. As of December 1, 2003, the DOE decided it would no longer request fair-share contributions when a residential project was only seeking a SMA Permit. In its letter dated April 1, 2004, the DOE indicated that in keeping with this new practice, it is no longer requesting a fair-share contribution for the proposed project. See Chapter XI.

6. **Solid Waste**

On a short-term basis, construction activities will require the disposal of construction-related solid waste. The applicant will work with the contractor to minimize the amount of solid waste generated during the construction of the project. In the long term, solid waste collection and disposal services for subdivision residents will be provided by the County of Maui.

7. **Housing**

The proposed project is intended to meet the housing needs of moderate income families. This group is viewed as an important segment of the housing market, as the demand for "move-up", moderate housing opportunities is significant among purchasers seeking larger living spaces in a family-friendly environment. In terms of additional inventory contribution, up to fifty percent (50%) of the lots will have the option to have an ohana unit. While the proposed project does not directly provide affordable units, the provision of the new inventory available to residents is considered a key element in bringing stability to the overall housing market.

C. IMPACTS TO INFRASTRUCTURE

1. Roadways

The primary access points to the project site will be off of Kananui Road near the northeast and southeast corners of the site. Another access point, approximately 150 feet south of the northwest corner of the site, will also be provided from the North-South Collector Road. To provide for this access, the North-South Collector Road will be extended southward about 650 feet from Walua Place. Within this section of Kihei, the future North-South Collector Road has a right-of-way of 60 feet. In accordance with Title 18 of the Maui County Code, the applicant will provide 30 feet of right-of-way along the western boundary of the project site for the future extension of the North-South Collector Road. It should be noted that the North-South Collector Road cannot be fully improved until such time that the remaining 30 ft of right-of-way is provided by the adjoining property owners that are located along the roadway corridor to the west of the project site. Nonetheless, the applicant will be responsible for providing roadway improvements within its 30-ft. portion of the right-of-way. Proposed improvements will include paved travelways, curbs, gutters and sidewalk in accordance with County approved design standards. Coordination will be undertaken with the DPWEM to ensure that roadway improvement made with the applicant's 30-ft. portion is consistent with the DPWEM's vision for the ultimate typical section for the North-South Collector Road.

In addition, as noted previously, an approximately 375-ft. segment of the North-South Collector Road, abutting the Kamaole Heights Subdivision, has been dedicated to the County of Maui, but has not been improved. While construction of this segment of the North-

South Collector Road is not the responsibility of the applicant, it is assumed that the improvements made will also be in accordance with the ultimate typical section envisioned for the North-South Collector Road.

A traffic control plan will be prepared and appropriate measures will be implemented during the construction of the project to minimize impacts to traffic flow and provide for the safe passage of vehicles and pedestrians. With regard to Maui Fire Department access requirements, the proposed subdivision plan is in compliance with their requirement for a 32 foot wide curb-to-curb travelway on cul-de-sac streets with a 81 foot diameter proposed paved turnaround.

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

Existing traffic volumes at the study intersections were determined from traffic counts. Using the traffic counts and other collected data, existing traffic operating conditions in the vicinity of the project were determined. The methodology for signalized and unsignalized intersections described in the 2000 Highway Capacity Manual (HCM) was used to determine the level-of-service (LOS) at the study intersections. (Level-of-service is a qualitative measure of traffic operating conditions, with LOS A representing free-flowing conditions and LOS F reflecting severe congestion). The year 2005 was used as the design year (the date for which cumulative traffic conditions are estimated). The design year for the proposed project was established when project planning was initiated during the summer of 2002. The project's implementation schedule has

been adjusted to account for the processing of the EA. Based on this delay, a 2006 target year is now anticipated. Based on the project traffic engineer's review of his analysis, the adjusted 2006 time frame does not alter the findings and conclusions of the TIAR. Cumulative traffic conditions are defined as future traffic volumes without the proposed project. This includes ambient background traffic growth that is the result of regional growth and cannot be attributed to a specific project, and traffic generated by other development projects in the vicinity of the proposed project. Peak hour traffic that would be generated by the proposed project was then estimated using standard trip generation procedures outlined in the Trip Generation Handbook. These trips were then distributed on the available approach and departure routes. The project-related traffic was then superimposed on the 2005 cumulative traffic volumes at the study intersections. The HCM methodology was again utilized to conduct a LOS analysis for cumulative plus project conditions. The results of this analysis were then compared to 2005 cumulative conditions to determine the incremental affects of the project.

Existing Level-of-Service

The results of the existing level-of-service analysis of the signalized intersections (Alanui Ke Ali'i at South Kihei Road, Alanui Ke Ali'i at Pi'ilani Highway) and the unsignalized intersections (Alanui Ke Ali'i at Kananui Road, Alanui Ke Ali'i at North-South Collector, Piilani Highway at Keonekai Road, Keonekai Road at Kananui Road, South Kihei Road at Keonekai Road, North-South Collector at Walua Place) indicates that there is sufficient capacity for all movements and that the levels-of-service are acceptable. All movements operate at LOS C or better during both morning and

afternoon peak hours, except for certain movements at the Alanui Ke Ali'i and South Kihei Road intersection where the southbound left-turn movement operates at LOS D during the AM peak hour and the northbound left-turn movement and the westbound left turn and through movements operate at LOS D during the PM peak hour. This level-of-service is a result of traffic signal timing at this intersection.

It is noted that a traffic signal warrant analysis of the intersection of Ke Ali'i Alanui at Kananui Road was a condition of the SMA approval for the Ke Alii Kai I Subdivision and was required to be performed when the subdivision occupancy was approximately seventy five percent (75%). The warrant analysis was completed in September 2003. The analysis concluded that none of the traffic signal warrants described in the *Manual of Uniform Traffic Control Devices* (FHWA) were triggered. The analysis also determined that the distance between Kananui Road and Piilani Highway was insufficient (i.e., too close), making the coordination and timing of the traffic signals difficult to maintain.

Level-of-Service Analysis with the Project

A level-of-service analysis was performed for cumulative and cumulative plus project conditions. The results of the level-of-service analysis are as follows.

Alanui Ke Ali'i and South Kihei Road - During the AM peak hour, all movements will operate at LOS C or better except for the southbound left which will operate at LOS D without and with the project. During the PM peak hour, all movements will operate at LOS C or better except for the southbound left, the northbound left, and all the westbound movements which will operate at LOS D without and with the project. As the final volume-to-capacity ratios

are all less than 0.70 (the threshold for which significance criteria is applied), there are no significant traffic impacts at this intersection and no mitigation measures are recommended.

Alanui Ke Ali'i at Piilani Highway - All movements will operate at LOS C or better during the morning and afternoon peak hours. All the final volume-to-capacity ratios are less than 0.70; accordingly, no mitigation measures are recommended.

Alanui Ke Ali'i at Kananui Road - All movements will operate at LOS C or better except the southbound left during the PM peak hour which will operate at LOS D without and with the project. It should be noted that a traffic signal warrant analysis is being performed for this intersection as a requirement for the Ke Alii Kai Subdivision.

Alanui Ke Ali'i at North-South Collector - All movements during both peak periods are expected to operate at LOS B or better. Accordingly, no mitigation measures are recommended.

Piilani Highway at Keonekai Road - All movements will operate at LOS B except for the eastbound left which will operate at LOS D during the AM and PM peak hours. Since there is no change in the level-of-service without and with the project, the impact of project-generated traffic at this intersection is not significant.

Keonekai Road at Kananui Road - All movements will operate at LOS B or better during both peak periods. The impact of project-generated traffic at this intersection is not significant.

South Kihei Road at Keonekai Road - All movements during both peak periods will operate at LOS B or better. The impact of project-generated traffic at this intersection is not significant.

North-South Collector Road at Waiua Place - All movements during both peak periods will operate at LOS A without and with the project. The impact of project-generated traffic at this intersection is not significant.

Project Driveways - All movements at the project driveways along Kananui Road will operate at LOS B or better during both peak periods. A left-turn storage lane is not required but is recommended to improve traffic flow. The driveway along the North-South Collector Road will operate at LOS A during both peak periods.

Conclusion

The study notes that the traffic generated by the proposed project will not have a significant impact on South Kihei Road, Pi'ilani Highway, Kananui Road, Alanui Ke Ali'i, Keonekai Road, and the North-South Collector. In addition, the study indicates that the use of traffic-calming devices (speed bumps, speed tables) along Alanui Ke Ali'i should be investigated if requested by adjacent residents and that recommendations should be formulated based upon their input.

The applicant will provide their contribution toward regional traffic improvements should the County's traffic impact fee program for South Maui be in place prior to the issuance of the project's initial building permit.

2. Water

A Preliminary Engineering Report was prepared for the proposed project. See Appendix "F". Based on up to 135 single-family dwellings (including the ohana dwellings), and the Department of Water Supply's (DWS) consumption rate of 600 gallons per unit per day, the average daily water consumption for the proposed project is estimated at 81,000 gallons per day (gpd) at full build out.

A new 8-inch waterline will be installed between the 12-inch line on Kananui Road and the line at the intersection of Walua Place and the North-South Collector Road. A portion of this line falls within the County's North-South Collector Road right-of-way. All lines in cul-de-sacs longer than 150 feet will be looped. Fire hydrants will be installed at intervals of 300 to 350 feet along the

subdivision streets. The applicant will pay the full comprehensive meter assessment to fulfill the source, storage, and transmission requirements for the project.

In accordance with the Hawaii Well Construction and Pump Installation Standards promulgated by the State Commission on Water Resource Management (CWRM), an application for the proposed irrigation well will be prepared and submitted to the CWRM for review and approval. The purpose of the CWRM's standards is to protect and prevent the pollution, contamination, and wasting of ground water in the State. As indicated by the project's civil engineer, the proposed irrigation well will not be located within or penetrate any potential ground water source as identified by the underground injection control (UIC) line shown on the State Department of Health's UIC map of the area (the UIC line delineates the limits of underground sources of drinking water and exempt aquifers). The westerly extent of the UIC line in the Kamaole area follows the 600 foot elevation contour line. The UIC line is located around 8,500 feet (1.6 mile) east of the proposed irrigation well site which is situated at an elevation of 80 feet above mean sea level. The proposed irrigation well is not anticipated to have an adverse effect upon ground water sources.

3. **Wastewater**

A Preliminary Engineering Report was prepared for the proposed project. Refer to Appendix "F". Based on up to 135 single-family dwellings (including the ohana dwellings), the proposed project is estimated to generate about 39,600 gallons of wastewater per day upon full build out. In the year 2000, the capacity of the Kihei Wastewater Reclamation Facility was increased by 2.2 million

gallons per day (MGD) to 8 MGD. The current average daily flow through the facility is 5.9 MGD. The Kihei Wastewater Reclamation Facility has the reserve capacity to handle the additional wastewater generated by the proposed project.

The gravity collection system for the project will be extended northward along the North-South Collector Road to Walua Place and connected to the existing gravity system. In order to accomplish this, the elevation of the lowest lot in the subdivision must be no less than 80 feet above mean sea level. The developer will pay for their share of the transmission system upgrade and Kihei Wastewater Reclamation Facility expansion by contributing a one-time assessment in accordance with Chapter 14.34 of the Maui County Code, relating to wastewater assessment fees for the Kihei regional wastewater treatment system.

The irrigation system for the proposed subdivision will be designed to accommodate the use of reclaimed water should supply lines be extended to the subdivision site.

4. **Drainage**

A Preliminary Drainage Report was prepared for the proposed project. See Appendix "F".

The shallow drainage channel that traverses the subject property has been designated as a separate lot (drainage reserve) and will be maintained by the subdivision's homeowners association. The depth of the drainage reserve ranges from 1.77 to 4.70 feet. Proposed improvements within the drainage reserve will involve the installation of geocel linings at three (3) separate locations for bank

protection purposes, as well as two (2) 6-ft. x 6-ft. box culverts where Road "B" crosses the drainageway.

After leaving the project site, the drainage channel continues through several lots in the Keonekai Heights Subdivision. It then crosses the North-South Collector Road corridor and two (2) vacant lots. From there, flows cross the parking lot for the Kihei Kai Nani condominium. Two (2) 24-inch culverts on South Kihei Road, with an estimated capacity of 60 cfs, then conveys portions of the runoff into the ocean. Flows in excess of this amount either overtops the curbing on the makai side of South Kihei Road or sheet flows along South Kihei Road and drains toward the Lilioholo Gulch crossing on South Kihei Road approximately 600 feet south of these two (2) culverts.

The offsite flow in the drainage channel is estimated to be around 367 cfs for a 100-year, 24-hour recurrent storm and 543 cfs for a 100-year, 6-hour storm. The higher runoff value will be used to size the project's drainage system because it is a more conservative standard since it is the higher of the two (2) flow rates and is also consistent with the methodology used by the State Department of Transportation for sizing all major drainage structures along Piilani Highway. The entire offsite runoff will be allowed to flow across the southeast quadrant of the site as it is presently doing so in accordance with the provisions of the County's "Rules for the Design of Storm Drainage Facilities". Based on the existing topography and present flow pattern, runoff from the northerly half of the subject parcel appears to sheet flow into the existing channel, as well as across the North-South Collector Road corridor onto the parcels below. Runoff from the

southerly half of the parcel sheet flows into the existing drainageway. The current runoff from the project site is estimated to be 27.0 cfs for a 50-year, 1-hour storm event.

Additional runoff generated by the project that is presently draining into the existing drainage channel will be intercepted by catch basins on the subdivision roads and conveyed by a storm drain system to a 5.0 acre/feet retention basin/park which will be constructed in the southwestern quadrant of the project site. Ancillary retention basin improvements include an emergency overflow spillway which is proposed to convey overflow from the basin to the drainage reserve. In addition, a 4-foot high chain link fence will also be placed around the retention basin to limit access for safety and security purposes. The retention basin/park will be sized to handle 100 percent of the post-development runoff from the site. It is estimated that the average depth of water in the retention basin will be about 36 inches at design capacity. The basin is expected to drain within 1.8 to 6.0 hours. The proposed percolation well is expected to further increase the rate of percolation into the substrata. The dual purpose basin will be designed to accommodate a soccer field that can also be converted to a little league ballfield to serve the community. A percolation well will be drilled at the lower end of the basin to drain the impounded storm water and induce more rapid percolation. The installation of the percolation well is not a requirement, but is a desirable feature to induce more rapid percolation of the impounded water into the substrata for health and safety reasons. The percolation rate for the percolation well will not be known until it is drilled and tested. According to the Soil Survey by the NRCS, (fka, Soil Conservation Service), the predominant soil type at the

project site is PZUE or the Puuone Series which was derived from coral and seashells. The permeability rate for this type of soil is estimated to range between 6 and 20 inches per hour.

An application for the proposed percolation well will be prepared in accordance with the State Department of Health (DOH) rules. The proposed percolation well will be situated at an elevation of 72 feet above mean sea level, approximately 8,500 feet (1.6 mile) west of the makai extent of the underground injection control (UIC) line in the Kamaole area which follows the 600 foot elevation contour line. The percolation well will not be located within or penetrate any potential ground water source as identified by the UIC line shown on the DOH's UIC map of the area.

Pursuant to Section 11-23-06 of the Hawaii Administrative Rules (HAR) pertaining to Underground Injection Control, wells which inject surface fluids (either under pressure or gravity flow) into any geohydrologic formation are permissible and are designated as Subclass C wells. Section 11-23-11, HAR, notes that Subclass C wells are exempt from obtaining a UIC permit provided that an application for the use of a Subclass C well must be reviewed by the DOH for a determination of whether or not an applicant shall be required to obtain a UIC permit to operate the well. Accordingly, an application for the proposed percolation well will be prepared and submitted to the DOH for review and a determination.

The proposed drainage system improvements have been designed to result in no adverse effects to downstream and adjacent properties. The proposed project will not be adding any additional runoff to the existing offsite runoff. Under the proposed drainage

scheme, runoff that is presently draining into the drainage channel from the project site will be retained on site. Therefore, the total flow in the drainage channel is expected to be reduced by approximately 20 cfs following the completion of the project.

Site work for the project will involve cut and fill activities for the subdivision, offsite improvements, and the irrigation and percolation wells. Accordingly, applications for these construction activities will be prepared in accordance with applicable regulatory requirements for submittal to the appropriate governmental agencies for review and approval.

Erosion and sedimentation associated with mass grading activities is expected to be the major non-point pollution source during the construction of the project. Other non-point pollution sources may include pesticides (insecticides, herbicides), fertilizers (for vegetative stabilization), petrochemicals (gasoline, oils, asphalt degreasers), and construction materials (concrete products, sealers, paints, and wash water related to these products).

To minimize impacts to adjacent properties, water quality, and ground water resources due to construction activities, appropriate mitigative measures will be implemented during construction. Examples of such measures, include but are not limited to the following.

- a. Minimize grading by clearing only areas where construction will immediately occur.
- b. Retain existing ground cover until the latest possible date.

-
- c. Stabilize disturbed areas through the timely replanting of vegetative cover.
 - d. Install erosion control measures prior to the denuding of work areas or as soon as grading is complete.
 - e. Inspect and maintain drainage structures and erosion/sedimentation control features on a timely, routine basis.
 - f. Control dust through (non-potable) watering, dust barriers, and proper stockpiling.
 - g. Cover open-topped vehicles carrying soils, gravel or other particulate matter.
 - h. Implement measures to prevent cement products, oil, fuel, and other non-point substances from spilling onto the ground or into runoff (e.g., service and maintain vehicles and equipment at offsite locations).
 - i. Apply pesticides and fertilizers during periods of no or low rainfall to minimize infiltration and runoff.

In addition, any grade differences between the finish grades of the proposed Ke Ali'i Kai II Subdivision and existing lots in adjacent subdivisions will be made up by constructing a retaining wall. For example, a retaining wall will be constructed between the proposed subdivision's southern most cul-de-sac and abutting lots in the Keonekai Heights Subdivision (a solid vinyl fence will also be constructed for privacy purposes along the south side of Lot No. 91, the private driveway serving Lot Nos. 71 through 74).

As the proposed project must comply with all applicable regulatory requirements pertaining to water quality, and soil erosion, and sedimentation control, adverse impacts to water quality or ground water resources are not anticipated. In addition, due to regulatory

requirements governing well construction and the placement of wells, the locations of the proposed subdivision wells in relation to the proposed irrigation and percolation wells on the neighboring Ke Ali'i Villas condominium site are not expected to result in any adverse proximity impacts.

5. **Power, Telephone and CATV Services**

Power, telephone, and cable television (CATV) service will be provided by Maui Electric, Verizon Hawaii, and Hawaiian Cablevision, respectively.

Power, telephone, and cable television distribution systems will be extended underground from the overhead systems along Kananui Road and connected at Walua Place to the underground distribution system along the North-South Collector Road. Street lights will also be provided throughout the subdivision streets in accordance with County street lighting standards. Each of the proposed single-family residences will be equipped with a solar water heating system. Other energy conservation measures such as window tinting or the use of energy efficient cooling systems may be employed by individual homeowners.

D. **CUMULATIVE AND SECONDARY IMPACTS**

The proposed project is not part of a larger action and is not expected to impact population parameters or result in significant new demands for public services and facilities and infrastructure. During the short term, the project will benefit the economy, directly and indirectly, through the payment of wages, salaries, benefits and taxes for employees involved in construction and construction-related jobs. Beneficial long-term housing and economic effects are anticipated from the proposed action.

A cumulative impact issue of concern for this area of Kihei relates to traffic impacts, particularly in the vicinity of the Kamali'i Elementary School. The proposed project is situated along the corridor for the proposed North-South Collector Road, between Ke Alii Alanui and Keonekai Road. The proposed Ke Alii Villas project, located at the southwest corner of Ke Alii Alanui and the North-South Collector will include approximately 150 condominium units and is pending processing of its SMA permit application. Other vacant properties along the North-South Collector corridor are also likely to be developed in the near future. As development along the corridor occurs, cumulative effects on traffic operations will be of greater concern. To address traffic impact issues, KAK II LLC, together with the developer of the Ke Alii Villas project (an affiliate of KAK II LLC), proposes to jointly construct the North-South Collector Road between Ke Alii Alanui and Keonekai Road. The completion of this segment of the roadway will provide circulation redundancy of relieve existing congestion at area intersections. Details and phasing requirements for roadway permitting, design, and construction are being coordinated with the County's Department of Public Works and Environmental Management. An implementation strategy for the North-South Collector Road is currently being prepared and will be submitted to the County of Maui upon its completion. Typical roadway sections for the North-South Collector Road, as well as alternative measures (should implementation of the road not be possible), are included in Chapter XI of this document (refer to the applicant's letter responding to the May 14, 2004 comment letter from the Maui Planning Commission).

Chapter IV

***Relationship to Land Use
Plans, Policies and Controls***

IV. RELATIONSHIP TO LAND USE PLANS, POLICIES AND CONTROLS

A. STATE LAND USE DISTRICTS

Chapter 205, Hawaii Revised Statutes, relating to the State Land Use Commission, establishes the four (4) major land use districts in which all lands in the State are placed. These districts are classified "Urban", "Rural", "Agricultural", and "Conservation". The proposed action is located within the "Urban" district and is compatible with the "Urban" classification. See Figure 7.

B. MAUI COUNTY GENERAL PLAN

The Maui County General Plan (1990 Update) sets forth broad objectives and policies to help guide the long-range development of the County. As stated in the Maui County Charter, "The General Plan shall recognize and state the major problems and opportunities concerning the needs and the development of the County and the social, economic and environmental effects of such development and set forth the desired sequence, patterns and characteristics of future development".

The proposed action is in keeping with the following General Plan objectives and policies:

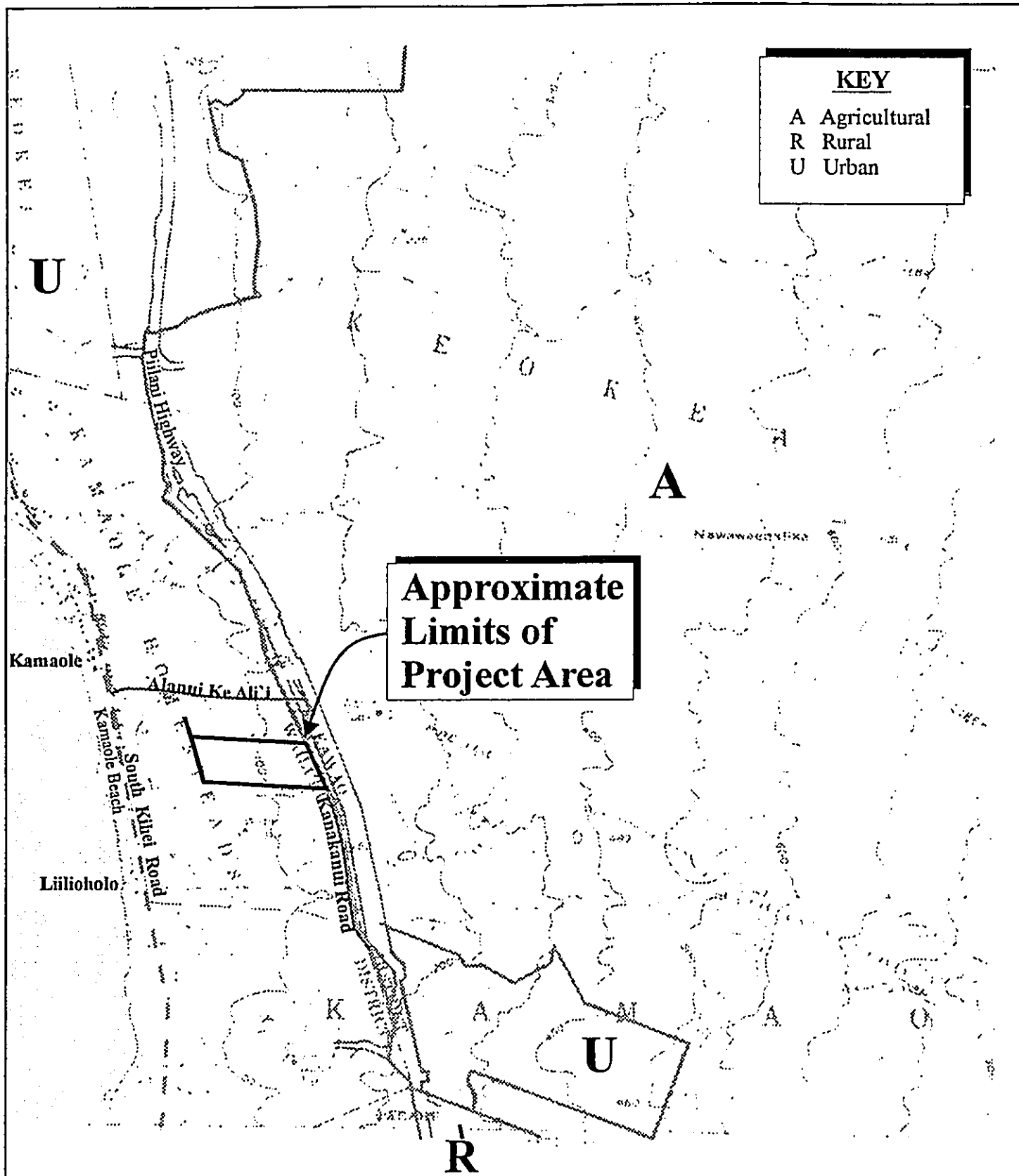
LAND USE

Objective:

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

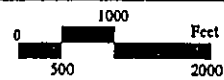
Policy:

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



Source: State Land Use District Boundary Map, Kihei Quad

Figure 7 Proposed Ke Ali'i Kai II
 Subdivision and Offsite Improvements
 State Land Use Classifications



Prepared for: KAK II LLC

MUNEKIYO & HIRAGA, INC.

HOUSING

Objective:

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

Policy:

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

URBAN DESIGN

Objective:

To see that all developments are well designed and are in harmony with their surroundings.

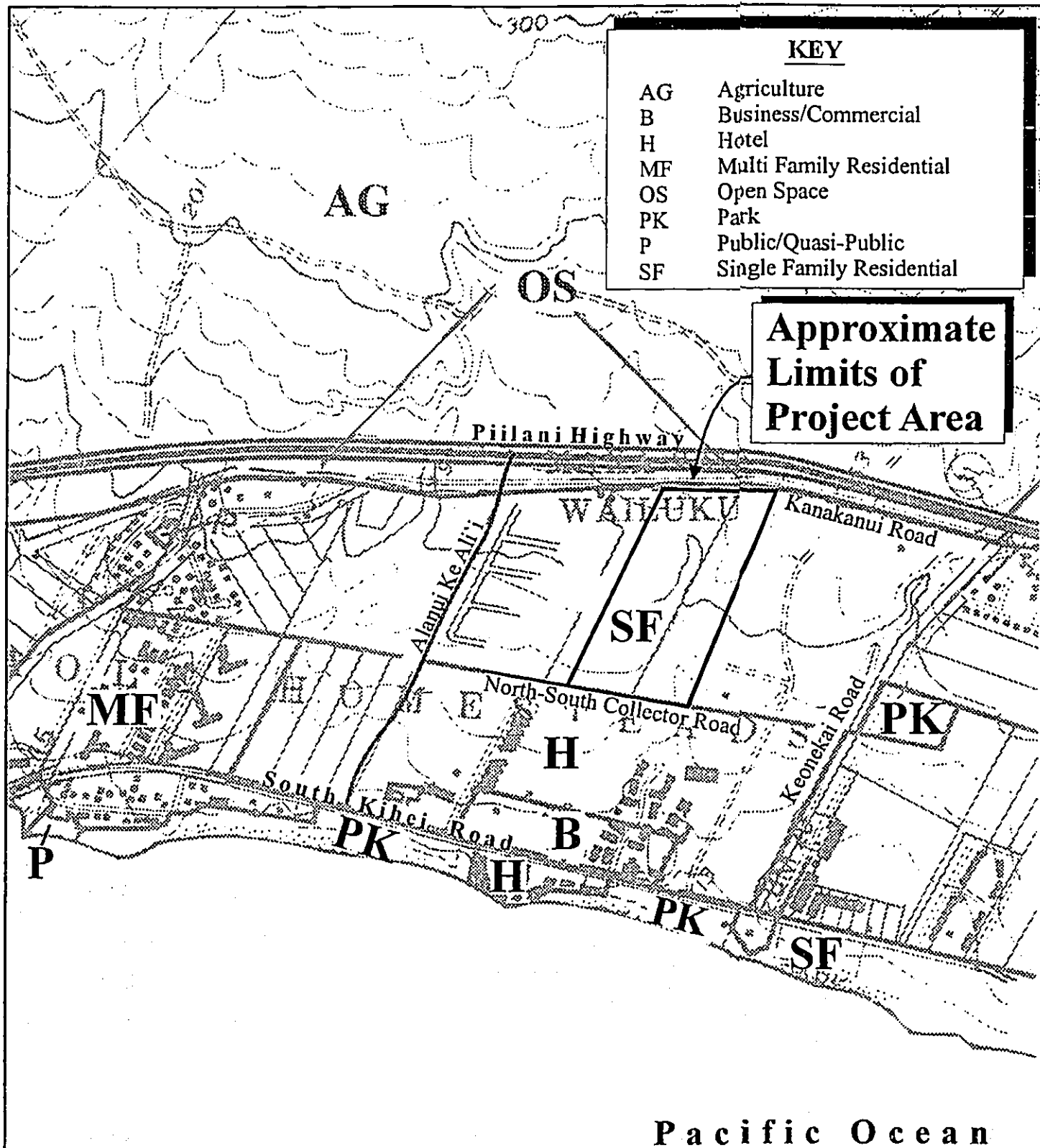
Policy:

Require that appropriate principles of urban design be observed in the planning of all new developments.

C. KIHEI-MAKENA COMMUNITY PLAN

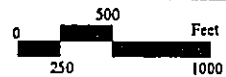
Nine (9) community plan regions have been established in Maui County. Planning for each region is guided by the respective Community Plan, which is designed to implement the Maui County General Plan. Each Community Plan contains recommendations and standards which guide the sequencing, patterns and characteristics of future development in the region.

Land use guidelines are established by the Kihei-Makena Community Plan land use map, and as indicated, the project site is situated within an area designated for "Single Family Residential" use. See Figure 8.



Source: Kihei-Makena Community Plan (1998)

Figure 8 Proposed Ke Ali'i Kai II
 Subdivision and Offsite Improvements
 Kihei-Makena Community Plan
 Land Use Designations



Prepared for: KAK II LLC

MUNEKIYO & HIRAGA, INC.

The Kihei-Makena Community Plan sets forth recommendations consistent with the major categories of objectives and policies of the County General Plan. The proposed project is in consonance with the following community plan goal relating to land use:

A well-planned community with land use and development patterns designed to achieve the efficient and timely provision of infrastructural and community needs while preserving and enhancing the unique character of Ma'alaea, Kihei, Wailea, and Makena as well as the region's natural environment, marine resources, and traditional shoreline uses.

In addition, the project comports with the Community Plan objectives and policies as noted below:

Establish a distribution of land uses which provides housing, jobs, shopping, open space, and recreation areas in close proximity to each other in order to enhance Kihei's neighborhoods and to minimize dependence on automobiles.

Provide an adequate variety of housing choices and range of prices for the needs of Kihei's residents . . .

Minimize the increase in discharge of storm water runoff to coastal waters by preserving flood storage capacity in low-lying areas, and encouraging infiltration of runoff.

Provide for a range of park sizes and types at neighborhood, community, and regional scales. New residential developments shall provide recreational facilities onsite to meet the immediate needs of project residents.

All zoning applications and/or proposed land uses and developments shall be consistent with the Land Use Map and Objectives and Policies of the Kihei-Makena Community Plan.

D. ZONING

The subject property is zoned for R-2, Residential District use by the County of Maui. Pursuant to Chapter 19.08 of the Maui County Code pertaining to the Residential District, uses permitted in this district include the following:

"single-family residences; greenhouses, flower and truck gardens and nurseries; parks and playgrounds, schools, buildings or premises uses by the Federal, State, or County governments for public purposes; accessory buildings located on the same lot (provided such use is necessary to that of the main dwelling or the use of the land); an accessory dwelling (where the area of the lot on which the main dwelling is located is 7,500 square feet or more); day care nurseries, kindergartens, nursery schools, child care homes, day care homes, day care centers, nurseries, preschool kindergartens, babysitting services, and specified bed and breakfast homes."

The proposed project is in consonance with the zoning for the site and will also be developed in accordance with the zoning performance standards for the residential district governing lot area, lot width, building height and building setbacks, as well as the provisions pertaining to accessory dwellings (ohanas).

In addition, the proposed offsite utility and roadway improvements are permitted within the context of the North-South Collector right-of-way designation.

E. COUNTY OF MAUI SPECIAL MANAGEMENT AREA

The subject property is located within the County of Maui's Special Management Area (SMA). Pursuant to Chapter 205A, Hawaii Revised Statutes, and the Rules and Regulations of the Maui Planning Commission, actions proposed within the SMA are evaluated with respect

to SMA objectives, policies and guidelines. This section addresses the project's relationship to applicable coastal zone management considerations, as set forth in Chapter 205A and the Rules and Regulations of the Maui Planning Commission.

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 uses 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, and county authorities; and crediting such dedication against the requirements of Section 46-6, HRS.

Response: The proposed project, including the offsite utility and roadway improvements, is not anticipated to affect existing coastal recreational resources. The project site is located approximately 1,400 feet inland of Kamaole Beach Park No. 1. Access to the shoreline areas will remain unaffected 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: In response to the SHPD's comment letter, an archaeological field survey of the project area was conducted in September 2003. A report documenting the findings of the inspection was submitted to the SHPD for review and approval in November 2003. See Appendix "D-1". The survey of the project area was conducted by walking systematic transects spaced approximately 5 to 15 meters apart. No overhang shelters, petroglyphs or any other cultural remains were observed within the

project area, nor was there any evidence of Sites 2840 to 2844. In addition, Site 2839 was not located. Pursuant to its review of the archaeological field inspection report, the SHPD, in a letter dated April 30, 2004, indicated that no historic properties will be affected by the proposed project as there are no historic sites located on the subject property, nor is it likely that remnant historic site are present. Refer to Appendix "D-2". Due to the potential for locating subsurface archaeological features, archaeological monitoring will be conducted during all ground-altering construction activities as determined by the SHPD. As necessary, an archaeological monitoring plan will be prepared and submitted to the SHPD for review and approval prior to the commencement of construction activities. Should archaeological features be identified during the construction phase of development, appropriate mitigative measures will be developed in coordination with the SHPD.

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 that are not coastal dependent to locate in inland areas.

Response: Topography, drainage, views and open space, lot layout, and building design were examined in detail during the project's design phase. As a result of this process, the proposed project has been developed with consideration for site and drainage conditions, view corridors, open space, and aesthetics. The proposed subdivision and offsite improvements will be designed to assure compatibility with its surroundings, and will be landscaped within the site as well as along its perimeter.

4. **Coastal Ecosystems**

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

Policies:

- (A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;
- (B) Improve the technical basis for natural resource management;
- (C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;
- (D) 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
- (E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.

Response: Improvements proposed are not expected to adversely impact coastal ecosystems. Drainage improvements shall be engineered to ensure that coastal water impacts are mitigated.

Mitigative measures for soil erosion control will be implemented during and after construction.

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 project will provide short-term jobs from construction as well as long-term jobs. The project site does not abut the shoreline and does not affect coastal development necessary to the State's economy. The project is in keeping with the land use patterns established by the Kihei-Makena Community Plan.

6. **Coastal Hazards**

Objectives: 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; and
- (D) Prevent coastal flooding from inland projects.

Response: The project site and adjoining North-South Collector right-of-way fall within Zone C, an area of minimal flooding. A Preliminary Drainage Report has been prepared for the project. Refer to Appendix "F". The proposed drainage measures which will be implemented with the project will ensure that downstream and adjacent properties will not be adversely impacted.

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: In compliance with the Rules of Practice and Procedures for the Maui Planning Commission and the Special Management Area Rules for the Maui Planning Commission, requested documentation for the project will be filed with the County Department of Planning and will undergo public hearing and action by the Maui Planning Commission. Opportunity for public review and consideration of the proposed action is provided through the Special Management Area permitting process, as well as the Chapter 343, HRS review process.

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

8. **Public Participation**

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

Policies:

- (A) Promote public involvement in coastal zone management processes;
- (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 issues, developments, and government activities; and
- (C) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

Response: A public hearing is required as part of the County's SMA process. The proposed project complies with the objective of public awareness, education and participation. It should also be noted that meetings with surrounding property owners were held to present project design parameters and to receive comments

regarding the proposed action. On December 20, 2002, the applicant met with Sandra Shawhan, the principal of Kamali'i Elementary School. Ms. Shawhan indicated that she had no objections to the project and would be following up with the Department of Education's administrative staff to ensure that students from the subdivision are included in the department's future enrollment projections for the school. On January 16, 2003, a project information meeting was held at the Kamali'i Elementary School cafeteria. Notices of the meeting were mailed to property owners within 500 feet of the subject property. Approximately 50 to 60 residents attended the meeting. Comments that surfaced during this meeting related to existing traffic conditions in the area, project-generated traffic, views from adjoining properties, the design and schedule for the North-South Collector Road, funds for improvements to Kamali'i Elementary School, offsite surface runoff, blasting activities during construction, and a concern that the retention basin/park could be used as a hangout for undesirable activity.

The following is noted in response to the preceding comments. Since the community meeting was held, the re-striping of Piilani Highway (from two to four lanes) has been completed and has significantly improved traffic conditions in the area. The level-of-service analysis for the project's traffic study examined future traffic conditions with the widened highway and indicates that project-generated traffic will not have a significant impact upon roadways within the project area. The applicant will work with the County of Maui to identify other appropriate mitigative measures.

With respect to views, all homes in the proposed subdivision will comply with the height regulations for residential district zoning which allows two-story buildings not to exceed 30 feet in height. It is also noted that many homes in the adjoining subdivisions (Keonekai Heights, Kamaole Heights) are two-story structures.

To date, the section of the North-South Collector Road between Waipuilani Road and Halekuai Street has been completed. The design for the segment from Lokelani Intermediate School to Auhana Road is being finalized and construction is anticipated to commence in Fiscal Year (FY) 2005. Preliminary design for the section between Kaonoulu Street to Waipuilani Road is underway, with construction estimated to begin in FY 2006. Due to constraints posed by right-of-way limitations, the County has no current plans to construct a section between Auhana Road and Ke Ali'i Alanui. Preliminary design for the segment from Ke Ali'i Alanui to Keonekai Road has not been programmed at this time.

To address project-related, school facility impact fee requirements in place at the time, the applicant would provide its fair share contribution to the State Department of Education (DOE) for the development, funding, and/or construction of school facilities (as noted earlier, the DOE subsequently determined that they will no longer assess school facility fees for projects requiring SMA approval only).

In terms of drainage, offsite runoff will be allowed to flow through the natural drainage channel in the southeast quadrant of the project site, as it is presently doing pursuant to the Rules for the Design of Storm Drainage Facilities for the County of Maui. Post-

development runoff generated by the project site will be retained onsite by a storm drain system and retention basin.

To the maximum extent practicable, blasting will be avoided for site work unless necessitated by extenuating subsurface site conditions. Should blasting be necessary, the applicant will notify surrounding property owners of the schedule and the manner in which this work is to be conducted. The applicant will also bear the full responsibility of any damages incurred by this activity and will have a builder's risk insurance policy (for liability purposes) in place prior to the commencement of construction.

Should undesirable activities occur at the retention basin/park, the applicant will work with the subdivision's homeowners association and the Maui Police Department to address security-related issues.

The applicant will continue to work with surrounding property owners to address impacts that may be directly attributable to the development of the proposed project.

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, minimize interference with natural shoreline processes, and 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 subject property and adjoining North-South Collector right-of-way are located approximately 1,400 feet from the shoreline. No adverse impact to beaches in the vicinity is anticipated.

10. **Marine Resources**

Objectives: Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

Policies:

- (A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;
- (B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;
- (C) 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;
- (D) 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
- (E) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Response: Improvements proposed will not adversely impact ocean resources. Best Management Practices (BMPs) will be incorporated during construction to support the policies of effective management of marine resources. The proposed project is not anticipated to affect marine and coastal resources.

Chapter V

***Summary of Environmental
Effects Which Cannot
Be Avoided***

V. SUMMARY OF ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

The proposed action will result in unavoidable construction-related impacts which include noise-generated impacts occurring from the proposed improvements. In addition, there may be temporary air quality impacts associated with dust generated from exhaust emissions discharged by construction equipment. Appropriate mitigation measures will be implemented to minimize these construction-related impacts.

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

Chapter VI

*Alternatives to the
Proposed Action*

VI. ALTERNATIVES TO THE PROPOSED ACTION

A. NO ACTION ALTERNATIVE

The "no action" alternative would maintain the existing physical condition of the project site. When considering the land use context for the subject property, the "no action" alternative does not support the most reasonable use of the property as reflected by the Kihei-Makena Community Plan (Single Family Residential) and Maui County zoning (R-2, Residential District) land use designations for the site. Accordingly, the "no action" alternative was not considered.

B. DEFERRED ACTION ALTERNATIVE

A "deferred action" alternative would have similar consequences as the "no action" alternative in that the land use objectives of the proposed project would be delayed and would not be immediately realized.

This alternative could result in potentially higher development costs due to increases in labor and material costs or as a result of changes to infrastructure or the existing physical or socio-economic environment (i.e., window of opportunity and opportunity costs). Based on the preceding, the "deferred action" alternative was not considered.

C. SITE DEVELOPMENT ALTERNATIVES

A number of site plans, building designs, and combinations thereof, were considered during the site development process. The evaluation of site development alternatives included an analysis of various criteria, including but not limited to:

1. Lot sizes, lot layout, and the total number of lots;
2. Setbacks and view corridors;
3. Topographic and drainage conditions;
4. Infrastructure requirements;
5. Offsite improvements;
6. Design, appeal, and quality of the homes;

-
7. Availability of accessory (ohana) dwellings;
 8. Market conditions;
 9. Development costs, including assessment fees and fair share contributions; and
 10. Potential impacts to the environment.

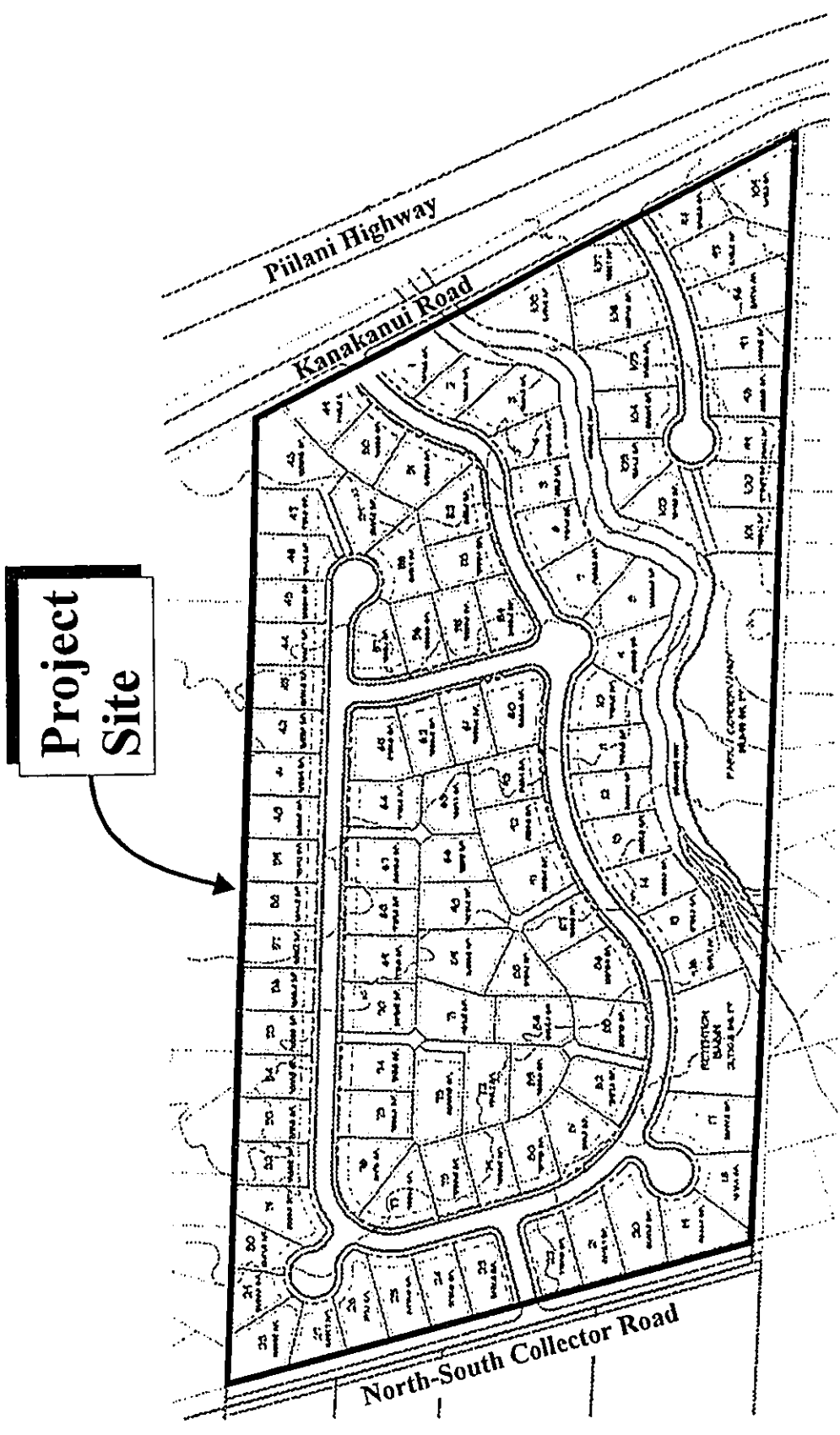
As a result of the site development process, various site plans and building designs were formulated for further consideration by the applicant. An example of an alternative plan is illustrated in Figure 9.

Additionally, the Maui Planning Commission and the Maui Planning Director commented that the two (2) cul-de-sacs located in the north central portion of the project site should be connected (to eliminate the need for these cul-de-sacs). The applicant has prepared an alternative subdivision layout which provides for the connection of the cul-de-sacs. See Figure 10.

After reviewing the option of connecting the two (2) north-central cul-de-sacs, the applicant and the project engineer determined that the proposed cul-de-sac configuration is preferable in this instance. The unique circumstance affecting the proposed subdivision configuration is that both Road "A" and Road "B" provide "*pass-through*" opportunity for non-subdivision traffic from Kananui Road to the North-South Collector Road. From a marketing and traffic safety standpoint, it is considered important that non-subdivision traffic volumes through neighborhoods be controlled via the cul-de-sac design.

D. PREFERRED ALTERNATIVE

As previously described, the proposed action involves the development of a 90-lot single-family residential subdivision and related improvements. Subdivision lots will vary in size from about 7,600 to 13,800 square feet,



Source: Towne Development

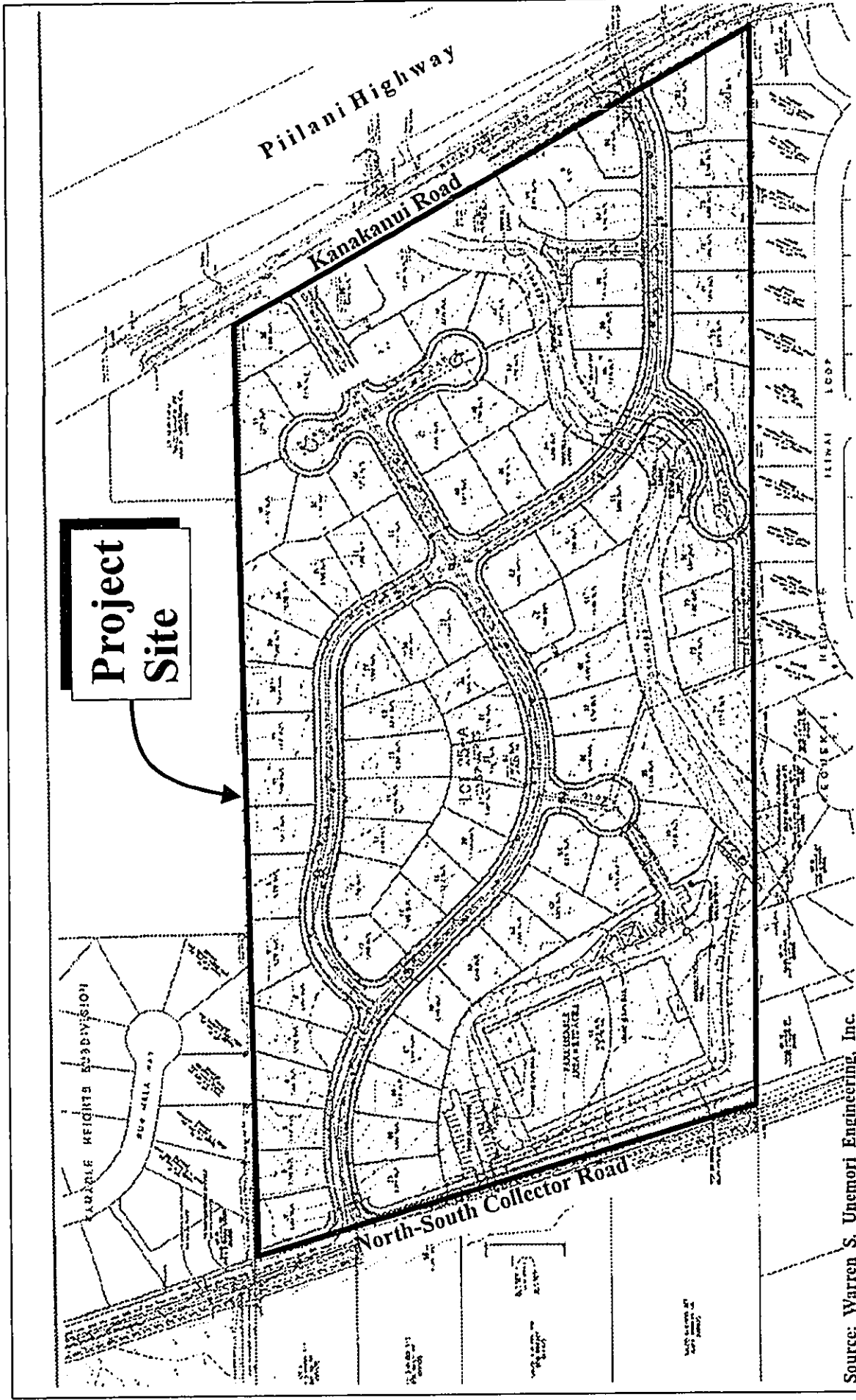
Figure 9 Proposed Ke Alii Kai II Subdivision
 and Offsite Improvements
 Alternative Subdivision Plat
 Illustrative of Early Site Analysis



Prepared for: KAK II LLC



NOT TO SCALE



Source: Warren S. Unemori Engineering, Inc.

Figure 10 Proposed Ke Alii Kai II Subdivision
 and Offsite Improvements
 Alternative Subdivision Plat Connecting
 Two (2) East-West Cul-de-sacs



NOT TO SCALE

Prepared for: KAK II LLC



MUNEKIYO & HIRAGA, INC.

while one- and two-story base model homes will range in size from approximately 1,540 to 2,240 square feet. Built-in and free-standing ohana dwellings are proposed on up to 50 percent of the lots.

The project site is located in an area of existing urban development and is bordered by the Kamali'i Elementary School and the Kamaole Heights Subdivision to the north, Kanakanui Road to the east, the Keonekai Subdivision to the south, and the Kihei Ali'i Kai and Kihei Regency condominiums to the west. The subject property is designated for "Single Family Residential" and "R-2, Residential District" uses by the Kihei-Makena Community Plan and Maui County zoning, respectively, and is in consonance with surrounding land uses in the area.

While larger and smaller lot sizes and the number of lots and ohana dwellings allowable by zoning were examined during the site development process, the proposed site plan is considered optimum in terms of the applicant's overall site development criteria. In addition, the proposed offsite improvements for connections to existing water, sewer, and drainage systems within the North-South Collector Road right-of-way were considered the most feasible from an engineering standpoint to address required infrastructure requirements. Similarly, the lowering of about 200 linear feet of 16-inch waterline within the North-South Collector Road right-of-way is required to meet County design standards. No other feasible design alternatives were identified during the preliminary engineering stages of the project planning.

The proposed action is the product of the site development and planning process, which also considered the potential for short- and long-term adverse impacts related to the development of the project (refer to Chapter III, Potential Impacts and Mitigation Measures). In light of the

foregoing, the proposed action was selected as the preferred alternative.

Chapter VII

Irreversible and Irretrievable Commitments of Resources

VII. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The construction of the proposed project would involve the commitment of land for the proposed action. However, this commitment is consistent with land use policies and plans for the region. There are no other significant irreversible and irretrievable commitment of resources associated with the proposed action.

Chapter VIII

Findings and Conclusions

VIII. FINDINGS AND CONCLUSIONS

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

An archaeological field survey was conducted in response to comments received from the SHPD. No overhang shelters, petroglyphs or any other cultural remains were observed within the project area, nor was there any evidence of Sites 2840 to 2844. In addition, Site 2839 was not located. Based on its review of the field survey, the SHPD indicated that no historic properties will be affected by the proposed project, as there are no historic sites on the subject parcel, nor is it likely that remnant historic sites are present. Due to potential for locating subsurface archaeological features, archaeological monitoring will be conducted, as appropriate in accordance with requirements set forth by the SHPD. Should archaeological features be identified during construction, work will be stopped in the vicinity of the find and appropriate coordination undertaken with the SHPD and the Maui/Lanai Islands Burial Council, as applicable.

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

The proposed project and the commitment of land resources will not curtail the range of beneficial uses of the environment. The proposed

subdivision and offsite utility and roadway work are intended to provide additional housing opportunities for Maui's residents. Use of the land for housing and infrastructure extension/improvement purposes are considered appropriate in the context of the Kihei-Makena Community Plan and current market need for new housing inventory.

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 in consonance with the 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 longer term, the addition of housing units to the market inventory is anticipated to address a portion of the housing demand currently facing Maui residents. Similarly, the offsite infrastructure improvements needed to support the proposed subdivision is essential to providing a viable subdivision project.

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**

The proposed subdivision, including the supporting offsite infrastructure work, is anticipated to accommodate demand from existing residents.

The proposed action is not expected to adversely impact existing water and wastewater systems and facilities. Best Management Practices (BMP's) and appropriate erosion control measures will be utilized during the construction period. Drainage system improvements will be constructed in accordance with applicable regulatory design standards to ensure that surface runoff will not have an adverse effect on adjacent or downstream properties. The project is not expected to adversely impact public services such as police, fire, and emergency medical operations. Recreational facility needs generated by the subdivision will be addressed through applicable contribution requirements set forth by Section 18.16.320 of the Maui County Code pertaining to Parks and Playgrounds.

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.

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 project does not involve a commitment to larger actions.

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 is not anticipated to have a significant impact on air and 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 scenic corridors and coastal scenic and open space resources.

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

The proposed action 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 foregoing findings, it is anticipated that the proposed action will not result in any significant impacts.

Chapter IX

***List of Permits
and Approvals***

IX. LIST OF PERMITS AND APPROVALS

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

County of Maui

1. Special Management Area Use Permit
2. Construction Permits (e.g., building, driveway, demolition, electrical, plumbing, work-to-perform in County right-of-way).

State of Hawaii

1. NPDES Permit
2. Well Drilling Permit for Irrigation Well
3. UIC Permit for Percolation Well (as applicable)
4. Community Noise Permit (as applicable).

Chapter X

*Comments Received During the
SMA Application Review Process*

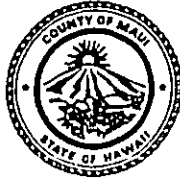
X. COMMENTS RECEIVED DURING THE SMA APPLICATION REVIEW PROCESS

Prior to the DPWEM's determination that an EA was required for the proposed sewerline improvements within the North-South Collector Road right-of-way, a Special Management Area (SMA) Use Permit application was filed with the Maui Planning Department. The list of agencies receiving the application is included in this chapter. Comments received and responses to those agencies submitting substantive comments are included in this chapter.

ALAN M. ARAKAWA
Mayor

MICHAEL W. FOLEY
Director

WAYNE A. BOTEILHO
Deputy Director



COUNTY OF MAUI
DEPARTMENT OF PLANNING

TRANSMITTAL:

July 30, 2003

TO: **State Agencies**

- Dept of Health, Maui (2 copies)
- Dept of Health, Honolulu
- Dept of Transportation,
Statewide Planning Office (3 copies)
- DLNR (5 copies)
- DLNR-Historic Preservation Div.
- DLNR-Maui Office
- Dept of Agriculture, Honolulu
- Dept of Agriculture, Maui
- DAGS, Survey Division (SMA Only)
- DOE, Office of Business Services
- State Land Use Commission
- DBEDT
- DBEDT, Office of State Planning
- Dept of Hawaiian Homes Land
- Dept. of Labor
- Office of Hawaiian Affairs
- Dept. of Human Services-Maui
- Civil Defense (CPA/CIZ only)

County Agencies

- DPWEM, DSA (5 copies)
- Public Wrks & Env Mgmt.
- Water Department
- Parks and Recreation
- Fire Dept
- Police Department
- Housing & Human Concerns
- Corporation Counsel
- County Clerk
- Mayor's Office

Federal:

- Natural Resources
Conservation Service- Maui
- Natural Resources Conserv.
Service-Lanai, Molokai
- Molokai-Lanai Soil & Water
Conservation District
- Fish & Wildlife Service
- Army Corps of Engineers

Others:

- Maui Electric Company

SUBJECT: I.D.: SM1 2003/0013

TMK: 3-9-019:005

Project Name: Ke Alii Kai II Subdivision (90 lots)

Applicant: Takeshi Matsukawa, on behalf of Ke Alii Kai, LLC

TRANSMITTED TO YOU ARE THE FOLLOWING:

Application Booklet

THESE ARE TRANSMITTED AS CHECKED BELOW:

- For Your Comment/Recommendation
- For Your Approval/Signature
- As Requested

Agency Transmittal
July 30, 2003
Page 2

Please address your comments/recommendations directly to Planner Colleen Suyama by September 2, 2003.

Remarks: If additional clarification is required, please contact me at 270-7735.



Colleen Suyama, Staff Planner
for MICHAEL W. FOLEY, Planning Director

MWF:CMS:lar

c: Clayton Yoshida, AICP, Planning Program Administrator
Colleen Suyama, Staff Planner
Daren Suzuki, Staff Planner
Gwen Ohashi Hiraga, Munekiyo & Hiraga, Inc.
Project File
General File
(K:\WP_DOCS\PLANNING\SM1\2003\13_KeAliiKaillSubd\TransmitAgency.wpd)



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

REPLY TO
ATTENTION OF:

August 15, 2003

Civil Works Technical Branch
03 AUG 18 P1:07

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

Ms. Colleen Suyama, Staff Planner
County of Maui
Department of Planning
250 South High Street
Wailuku, Maui, Hawaii 96793

Dear Ms. Suyama:

Thank you for the opportunity to review and comment on the Special Management Area Application and the Project Assessment Report (SMA/PAR) for the Ke Alii Kai II Subdivision, Maui (TMK 3-9-19: 5). The following comments are provided in accordance with Corps of Engineers authorities to provide flood hazard information and to issue Department of the Army (DA) permits.

- a. Based on the information provided, a DA permit is not required for the project.
- b. The flood hazard information provided on page 8 of the PAR is correct.

For further information, please contact Ms. Jessie Dobinchick of my staff at (808) 438-8876 and refer to file number 200300540.

Sincerely,

James Pennaz
James Pennaz, P.E.
Chief, Civil Works
Technical Branch

LHK 08/18/03

United States Department of Agriculture

USDA

 NRCS Natural Resources
Conservation Service

Our People...Our Islands...In Harmony
210 Iml Kala Street, Suite 208, Wailuku, HI 96793-2100

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

Date: August 18, 2003

Mr. Michael W. Foley, Director
County of Maui
Department of Planning
250 S. High Street
Wailuku, Hawaii 96793

Dear Mr. Foley,

SUBJECT: Ke Alii Kai II Subdivision; TMK: 3-9-019: 005
I.D.: SM1 2003/0013

The proposed retention basin/ball field should consider the retention basin as priority over the ball field during planning and design phase. Should an injection well is not approved by the State, an emergency spillway leading to a favorable outlet from the retention basin is needed. Also recommended is an operation and maintenance plan for the basin.

Thank you for the opportunity to comment on this application.

Sincerely,


Neal S. Fujiwara
District Conservationist



September 12, 2003

Neal S. Fujiwara, District Conservationist
Natural Resources Conservation Service
U.S. Department of Agriculture
210 Ima Kala Street, Suite 209
Wailuku, Hawaii 96793

SUBJECT: Ke Ali'i Kai II Subdivision
TMK 3-9-19: 04; SM1 2003/0013

Dear Mr. Fujiwara:

Thank you for your August 18, 2003 letter commenting on the above-referenced project. On behalf of the applicant, KAK II LLC, and as a follow-up to our September 4th discussion regarding your comments, we would like to note the following.

1. The principle function of the retention basin/playfield facility will be to accommodate the post-development runoff from the project site. For ancillary recreational purposes, the retention basin/playfield facility has been designed to enable the level bottom area of the facility to be used as a soccer or baseball field.
2. Should an emergency spillway be installed in lieu of the injection well, the spillway will be appropriately sited in order to avoid drainage impacts to developed downstream properties.
3. Provisions for the maintenance of the retention basin/playfield will be included in the CC&Rs for the subdivision.

Neal S. Fujiwara, District Conservationist
September 12, 2003
Page 2

Please feel free to call me should you have any questions.

Very truly yours,



Glen Tadaki, Planner

GT:yp

cc: Colleen Suyama, Department of Planning
Takeshi Matsukata, KAK II LLC
Warren Unemori, Warren S. Unemori Engineering, Inc.

towndev2\kealii2\ncs.res

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

'03 SEP -9 P12:13

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COUNTY OF MAUI
RECEIVED

September 8, 2003

SEP 09 2003
PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

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ERNEST Y.W. LAU
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KAHOOLAWE ISLAND RESERVE COMMISSION
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SM12003-0013.RCM2

LD-NAV

Honorable Michael W. Foley
Planning Director
County of Maui
Planning Department
250 S. High Street
Wailuku, Hawaii 96793

Dear Mr. Foley:

Subject: Special Management Area Permit Application
I.D. No.: SM1 2003/0013
Project: Ke Alii Kai II 90-Lot Subdivision
Authority: County of Maui Department of Planning
TMK: (2) 3-9-019: 005

This is a follow-up to our letter to you dated September 6, 2003,
pertaining to the subject matter

Attached is a copy of a recently received Engineering Division comment.

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

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/NAV

Ref.: *SM/2003-0013.COM7*

COMMENTS

- We confirm that the project site is located in Zone C.
- Please note that the project site is located in Zone _____.
- Please note that the correct Flood Zone designation for the project site is _____.
- Please note that the project must comply with rules and regulations of the National Flood Insurance Program (NFIP), whenever work is required within a flood zone. If there are questions regarding the NFIP, please contact the State Coordinator, Mr. Sterling Yong, of the Department of Land and Natural Resources at 587-0248. If there are questions regarding flood ordinances, please call the applicable County coordinators below:
 - Mr. Robert Sumimoto at (808) 523-4254 or Mr. Mario Siu Li at (808) 523-4247 of the City and County of Honolulu, Department of Planning and Permitting.
 - Mr. Kelly Gomes at (808) 961-8327 (Hilo) or Mr. Kiran Emler at (808) 327-3530 (Kona) of the County of Hawaii, Department of Public Works.
 - Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning..
 - Mr. Wallace Kudo at (808) 241-6620 of the County of Kauai, Department of Public Works
- The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.
- The applicant should provide the water demands and calculations to the Engineering Division the water demands will be included in the State Water Projects Plan update.
- Additional Comments: *Please correct the discrepancy of the project location reflected in Figure 4 of the Project Assessment Report and Figure 3 of the Preliminary Engineering Report (Appendix 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:

9/4/03

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
POST OFFICE BOX 621
HONOLULU, HAWAII 96809
September 6, 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

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CONSERVATION AND RESOURCES ENFORCEMENT
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LAND
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CMS

'03 SEP -8 PM 49
DEPT OF PLANNING
COUNTY OF MAUI
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SM12003-0013.RCM

LD-NAV

Honorable Michael W. Foley
Planning Director
County of Maui
Planning Department
250 S. High Street
Wailuku, Hawaii 96793

Dear Mr. Foley:

Subject: Special Management Area Permit Application
I.D. No.: SM1 2003/0013
Project: Ke Alii Kai II 90-Lot Subdivision
Authority: County of Maui Department of Planning
TMK: (2) 3-9-019: 005

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

The Department of Land and Natural Resources' (DLNR) Land Division made available or distributed a copy of the document pertaining to the subject matter to the following DLNR Divisions for their review and comment:

- Division of Forestry and Wildlife
- Division of State Parks
- Engineering Division
- Commission on Water Resource Management
- Land-Maui District Land Office

Enclosed is a copy of the Commission on Water Resource comment.

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



PETER T. YOUNG
CHAIRPERSON

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

ERNEST Y.W. LAU
DEPUTY DIRECTOR

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

RECEIVED
LAND DIVISION
1003 AUG 27 A 10:07
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

August 21, 2003

TO: Ms. Dede Mamiya, Administrator
Land Division

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

SUBJECT: Ke Alii Kai II 90-lot SF Subdivision

FILE NO.: SM1 2003/0013

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 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 land 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.

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



September 12, 2003

Dierdre S. Mamiya, Administrator
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

SUBJECT: Ke Ali'i Kai II Subdivision
TMK 3-9-19: 04; SM1 2003/0013

Dear Ms. Mamiya,

Thank you for your September 6, 2003 letter transmitting the Commission on Water Resource Management's comments on the above-referenced project. On behalf of the applicant, KAK II LLC, we would like to note the following.

The applicant will work with the County of Maui, Department of Water Supply to incorporate the project into the County's Water Use and Development Plan.

Thank you again for providing us with your comments and please feel free to call me should you have any questions.

Very truly yours,

Glenn Tadaki, Planner

GT:yp

cc: Colleen Suyama, Department of Planning
Takeshi Matsukata, KAK II LLC
Warren Unemori, Warren S. Unemori Engineering, Inc.

towndev/keall2/dlnrcwmm.res

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2003 SEP 16 12:04

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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

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

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
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KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

September 8, 2003

Mr. Michael Foley, Planning Director
County of Maui
Department of Planning
250 South High Street
Wailuku, Hawaii 96793

LOG NO: 2003.1705
DOC NO: 0309CD14

Dear Mr. Foley,

**SUBJECT: Chapter 6E-42 Historic Preservation Review – Application for Special Management Area Use Permit the Proposed Ke Alii Kai II Subdivision (Subject I.D.: SM1 2003/0013) [County/Planning] Kama`ole Ahupua`a, Wailuku District, Island of Maui
TMK: (2) 3-9-019:004**

Thank you for the opportunity to review and comment on the Application for Special Management Area Use Permit (SMA) the proposed Ke Alii Kai II Subdivision, which was received by our staff August 5, 2003. Based on the submitted SMA, we understand the proposed undertaking consists of the development of a 90-lot subdivision on a 28.57 acre currently vacant lot in Kihei. Based on the description of the vegetation present on the lot (Kiawe trees and scrub vegetation), it appears that the subject property has been subject to previous grading and grubbing activities.

In 1991 the Bishop Museum conducted an archaeological inventory survey of the subject property (*Archaeological Inventory Survey of Proposed Kihei Elementary School Site Lots 1 and 2, Kama`ole, Wailuku, Maui Island*. Hurst et al. 1991). During the survey nine historic sites were identified including a platform, L-shape shelter, modified outcrop, rock mounds, terrace, an historic wooden structure, rock walls, and a shrine. While all sites were deemed significant, only the shrine (SIHP No. 50-50-14-2839) was recommended for preservation, and the report further recommended archaeological monitoring during any construction activities. To date, we have not received any preservation or monitoring plans pertaining to this property.

In any case, the 1991 report documenting the findings does not meet our current inventory survey standards. Due to the extensive development in the area over the past decade, including the apparent grading/grubbing of the subject property, we do not know the condition of the sites or if they are still present on the subject parcel. Therefore, in order to determine the effect of the proposed undertaking on historic sites, we recommend that no action be taken on the subject SMA application until an archaeological inspection has been conducted of the proposed project area to determine whether the previously identified significant historic sites are

Mr. Michael Foley, Planning Director
Page 2

still present and, if so, what their condition is. An acceptable report documenting the findings of the inspection will need to be submitted to this office for review. If the previously identified significant historic sites are present, their condition and integrity should be evaluated, and recommendations for any needed mitigation – particularly preservation of the shrine – should be included in this report. Any mitigation plan – preservation or monitoring – will need to be prepared and approved by our office, prior to any construction taking place.

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: Cultural Resources Commission, Planning Dept, 250 S. High Street, Wailuku, HI 96793



September 23, 2003

P. Holly McEldowney, Acting Administrator
State Historic Preservation Division
Kakuhihewa Building, Room 555
601 Kamokila Boulevard
Kapolei, Hawaii 96707

SUBJECT: Ke Ali'i Kai II Subdivision
TMK 3-9-19: 04; SM1 2003/0013

Dear Ms. McEldowney:

Thank you for your September 8, 2003 letter commenting on the above-referenced project. On behalf of the applicant, KAK II LLC, and as discussed with Cathleen Dagher of your staff, we would like to note the following.

There are five (5) sites that were identified by the Bishop Museum's 1991 survey that were located on the project site (Sites 2840 to 2844). Sites 2840 and 2841 are mounds, Site 2842 is a mound group, Site 2843 is a rock facing, and Site 2844 is the remnant of a historical building. In the Bishop Museum survey, Sites 2840 to 2843 were assessed to be in good condition, while Site 2844 was in poor condition. The survey recommended no further work for these four (4) sites.

The Bishop Museum survey also located three (3) other sites that were located beyond the limits of the project site. Sites 2837 (historical platform) and Site 2838 (L-shape) were located on the Kamali'i Elementary School parcel, while Site 2839 (shrine) appears to have been located in what is now the Ke Alii Alanui right-of-way. The Bishop Museum survey assessed Sites 2837 and 2838 to be in good condition, while Site 2839 was in fair condition. The survey recommended no further work for Sites 2837 and 2838, and preservation for Site 2839.

With regard to the State Historic Preservation Division's (SHPD) recommendations, we would like to note that an archaeological inspection of the project site will be conducted to determine whether the previously identified archaeological sites on the subject property still exist. Upon completion, a report documenting the findings of the inspection will be submitted to the SHPD for review and approval. Should any of the archaeological sites still exist on the subject property, the condition and integrity of these sites will be evaluated in the report. In addition,

P. Holly McEldowney, Acting Administrator
September 23, 2003
Page 2

appropriate mitigative measures will be included in the report as warranted by the significance of any findings. The applicant also acknowledges that any mitigation plan, if required, will need to be reviewed and approved by the SHPD prior to the start of any ground-altering construction activities on the project site.

Thank you again for providing us with your comments and please feel free to call me should you have any questions.

Very truly yours,



Glenn Tadaki, Planner

GT:yp

cc: Colleen Suyama Department of Planning
Takeshi Matsukata, KAK II LLC
Lisa Rotunno-Hazuka, Archaeological Services Hawaii

townedev\kealii@shpd.res

PHONE (808) 594-1888

FAX (808) 594-1885



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPOLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813

'03 SEP 17 12:29
DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

HRD03-1104

September 15, 2003

Colleen Suyama
Staff Planner
Dept. of Planning
County of Maui
250 S. High Street
Wailuku, HI 96793

RE: Ke Ali'i Kai Subdivision, Kihei, Maui (TMK: 3-9-019:005)

Dear Ms. Suyama,

OHA is in receipt of your July 30, 2003 request for comments on the above referenced project. We apologize for our late response and offer the following comments.

Water

The project plans to draw water from the Iao Aquifer which was recently declared a water management area because of over pumping. This project should not be permitted until a water plan is available. The plan must include water set asides for taro and other Native Hawaiian uses as required by law. It should also include adequate planning for this and other upcoming projects in central Maui.

Affordable Housing

There is no discussion of affordable housing in the project proposal. The project must include affordable housing units as required by the Maui County General Plan. OHA is also concerned that the Ohana units not be used for transient housing. We will rely on the developers' assurances that language proscribing transient housing will be included in the Codes and Covenants of the development.

Archaeological and Cultural Monitoring

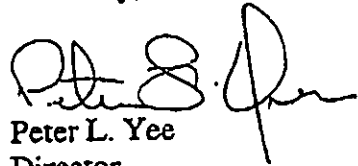
OHA agrees that an archaeological monitor should be on site during ground excavating activities.

Traffic Impact Analysis

OHA realizes that the traffic impact of the proposed subdivision will be minimal. However we suggest that the county of Maui implement a larger, more systematic traffic impact analysis that would account for all new developments in Kihei. Alternatively, the county could require that traffic analysis reports be cumulative and take into account planned and future proposed projects.

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,



Peter L. Yee
Director
Nationhood and Native Rights



November 14, 2003

Peter L. Yee, Director
Nationhood and Native Rights
Office of Hawaiian Affairs
711 Kapi'olani Boulevard, Suite 500
Honolulu, Hawai'i 96813

SUBJECT: Ke Ali'i Kai II Subdivision
TMK 3-9-19:04; SM1 2003/0013

Dear Mr. Yee:

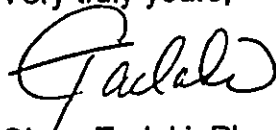
Thank you for your September 15, 2003 letter commenting on the above-referenced project. On behalf of the applicant, KAK II LLC, we would like to note the following.

1. As pointed out in your letter, the Iao Aquifer has been designated a water management area. The sustainable yield of the Iao Aquifer is a matter of concern for the Central and South Maui residents that rely on this aquifer for potable water. To facilitate water use planning, coordination with the County of Maui, Department of Water Supply has been undertaken to ensure that the project is recognized by the County's Water Use and Development Plan.
2. The ohana units are expected to provide long-term affordable living opportunities for family members, as well as other Maui residents. Based on the property's underlying zoning, transient use of the residential units (including ohana units) is prohibited.
3. Due to the presence of sand deposits at the project site, and the potential for encountering subsurface deposits in an area with known surface sites, the applicant's contractor will have an archaeological monitor present during all ground-altering construction activities should archaeological monitoring be required.
4. An update of the Kihei Traffic Master Plan was recently completed for the County of Maui in September 2003. In addition, an update of the 1997 Maui Long Range Land Transportation Plan will commence in the coming year. Both updates are intended to facilitate long-term planning for future traffic improvements in the Kihei region.

Peter L. Yee, Director
November 14, 2003
Page 2

Thank you again for providing us with your comments.

Very truly yours,



Glenn Tadaki, Planner

GT:yp
cc: Colleen Suyama, Department of Planning
Takeshi Matsukata, KAK II LLC
townedev@kaalii2oha.res

LINDA LINGLE
GOVERNOR



SEP 09 2003 PATRICIA HAMAMOTO
SUPERINTENDENT

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

'03 SEP -9 P12:16

OFFICE OF BUSINESS SERVICES DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

September 8, 2003

Ms. Colleen Suyama, Staff Planner
Department of Planning
County of Maui
250 South High Street
Wailuku, Hawai'i 96793

Dear Ms. Suyama:

Subject: Ke Aii Kai II Subdivision
Kihei, Maui, Hawai'i, TMK: 3-9-19:04 (SM1 2003/00013)

The Department of Education (DOE) has reviewed the application for a Special Management Area (SMA) permit for the Ke Aii Kai II Subdivision in Kihei, Maui. The proposed project is on a 28.57 acre parcel immediately south of Kamalii Elementary School. There would be 90 lots in the subdivision. Half of the lots would contain one single-family residence and the other half would contain a single-family residence and an accessory dwelling unit, either free-standing or attached to the main residence. The total number of residential units is expected to be 135.

The DOE requests that the county include a condition with the standard fair-share language used in granting SMA permits. The proposed wording of the condition 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 building permits for any area of development.

The DOE is concerned about the proximity of construction site activity to Kamalii Elementary. The SMA application states there may be impacts on ambient air quality from construction equipment emissions as well as dust and noise. The application does not acknowledge that these project impacts will take place immediately adjacent to an elementary school.

Ms. Colleen Suyama
Page 2
September 8, 2003

The DOE requests that the developer discuss construction schedules with the principal of Kamalii Elementary School. If there is a possibility of scheduling particularly noisy, dusty, or dirty jobs while school is not in session, the students and staff of the school will benefit.

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

Sincerely yours,



Rae M. Loui, Assistant Superintendent
Office of Business Services

RML:hy

c: Raynor M. Minami, FSSB
Principal, Kamalii Elementary School



September 12, 2003

Rae M. Loui, Assistant Superintendent
Office of Business Services
Department of Education
State of Hawaii
P.O. Box 2360
Honolulu, Hawaii 96804

SUBJECT: Ke Ali'i Kai II Subdivision
TMK 3-9-19: 04; SM1 2003/0013

Dear Ms. Loui:

Thank you for your September 8, 2003 letter commenting on the above-referenced project. On behalf of the applicant, KAK II LLC, we would like to note the following.

The applicant will provide its fair share contribution to the Department of Education (DOE) for the development, funding, and/or construction of school facilities. The terms of the applicant's contribution, which shall be agreed upon by the applicant and the DOE, shall be set forth in writing prior to the issuance of building permits for the project.

Best Management Practices and appropriate mitigative measures will be implemented by the contractor during construction to minimize the effects of construction-related dust, noise, runoff, and traffic. The contractor will also discuss the scheduling of construction activities with the principal of Kamalii Elementary School. To the extent possible, the scheduling of construction-related vehicle and equipment traffic will be kept to a minimum immediately prior to and after the opening and closing school bells.

Rae M. Loui, Assistant Superintendent
September 12, 2003
Page 2

Thank you again for providing us with your comments and please feel free to call me should you have any questions.

Very truly yours,



Glenn Tadaki, Planner

GT:yp

cc: Colleen Suyama, Department of Planning
Takeshi Matsukata, KAK II, LLC
Warren Unemori, Warren S. Unemori Engineering, Inc.

towndevkealii21obsdoe.res

LIHDA LINGLE
GOVERNOR OF HAWAII



CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH
LORRIN W. PANG, M.D., M.P.H.
DISTRICT HEALTH OFFICER

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

September 2, 2003

'03 SEP -4 A9:45

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

Mr. Michael W. Foley
Director
Department of Planning
County of Maui
250 South High Street
Wailuku, Hawai'i 96793

Attention: Colleen Suyama

Dear Mr. Foley:

Subject: Ke Alii Kai II Subdivision
TMK: (2) 3-9-019:005
SM1 2003/0013

Thank you for the opportunity to comment on the Special Management Area Use Permit application. The following comments are offered:

1. The noise created during the construction phase of the project may exceed the maximum allowable levels as set forth in Hawaii Administrative Rules (HAR), Chapter 11-46 "Community Noise Control". A noise permit may be required and should be obtained before the commencement of work.
2. Due to the nature and location of the project, there is a significant potential for fugitive dust emissions during site work preparations. It is recommended that a dust control management plan be developed. Implementation of adequate dust control measures during all phases of the project is warranted. Construction activities must comply with the provisions of HAR Chapter 11-60.
3. National Pollutant Discharge Elimination System (NPDES) permit coverage is required for this project. The Clean Water Branch should be contacted at 808 586-4309.
4. The property may be harboring rodents that will be dispersed to the surrounding areas when any buildings are demolished or the site is cleared. The applicant is required by HAR, Chapter 11-26, "Vector Control" to eradicate any rodents prior to demolition or site clearing activities and to notify the Department of Health by submitting Form VC-12 to the Maui Vector Control program when such action is taken. Rodent traps and/or rodenticides should be set out on the project site for at

Mr. Michael W. Foley
September 2, 2003
Page 2

least a week or until the rodent activity ceases. The Maui Vector Control program
phone number is 873-3560.

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

Sincerely,



Herbert S. Matsubayashi
District Environmental Health Program Chief



September 12, 2003

Herbert S. Matsubayashi, District
Environmental Health Program Chief
Department of Health
State of Hawaii
54 High Street
Wailuku, Hawaii 96793

SUBJECT: Ke Ali'i Kai II Subdivision
TMK 3-9-19: 04: SM1 2003/0013

Dear Mr. Matsubayashi:

Thank you for your September 2, 2003 letter commenting on the above-referenced project. On behalf of the applicant, KAK II LLC, we would like to note the following.

The construction of the project will be in accordance with the applicable provisions of Chapter 11-46 (Community Noise Control), Chapter 11-60 (Air Pollution Control), and Chapter 11-26 (Vector Control), as well as NPDES requirements for permit coverage.

Thank you again for providing us with your comments and please feel free to call me should you have any questions.

Very truly yours,

Glenn Tadaki, Planner

GT:yp

cc: Colleen Suyama, Department of Planning
Takeshi Matsukata, KAK II, LLC
Warren Unemori, Warren S. Unemori Engineering, Inc.

towndev\kealii2\sdoh.res

LINDA LINGLER
GOVERNOR



KUSS K. BAITO
Comptroller
KATHERINE H. THOMASON
Deputy Comptroller

03 AUG 22 12:31

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED


STATE OF HAWAII
DEPARTMENT OF ACCOUNTING
AND GENERAL SERVICES
SURVEY DIVISION
P.O. BOX 119
HONOLULU, HAWAII 96810-0119

August 20, 2003

MEMORANDUM

TO: Michael W. Foley, Planning Director
Maui County Planning Department

ATTN: Colleen Suyama, Staff Planner

FROM: Randall M. Hashimoto, State Land Surveyor 
DAGS, Survey Division

SUBJECT: I.D.: SM1 2003/0013
TMK: 3-9-019:005
Project Name: Ke Alii Kai II Subdivision (90 lots)
Applicant: Takeshi Matsukawa, on behalf of Ke Alii Kai, LLC

The subject proposal has been reviewed and confirmed that no Government Survey Triangulation Stations or Benchmarks are affected. Survey has no objections to the proposed project.

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

September 15, 2003

MEMO TO: Michael W. Foley, Planning Director

FROM: 
GLENN T. CORREA, Director

SUBJECT: KE ALII KAI II SUBDIVISION (90 LOTS)
SM1 2003/0013
TMK: 3-9-019:005

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

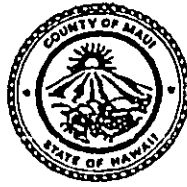
03 SEP 17 P2:13

We have reviewed the subject application and have no objections to the proposed action. We are currently working with the developer to satisfy the park dedication requirement with the construction of the proposed park.

Thank you for the opportunity to review and comment. Please contact me or Mr. Patrick Matsui, Chief of Planning and Development, at extension 7387 if there are any questions.

c: Patrick Matsui, Chief-Planning and Development

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 24, 2003

Mr. Takeshi Matsukata, Vice President
Towne Development of Hawaii, Inc.
220 South King Street, Suite 1270
Honolulu, Hawaii 96813

Dear Mr. Matsukata:

Subject: **KE ALII KAI II SUBDIVISION**
TMK 3-9-019:004, SUBD. FILE NO. 3.2058, KIHEI

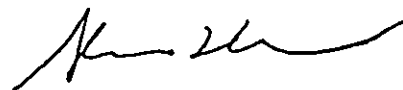
Thank you for meeting with our Department to discuss your desire to dedicate land for park and playground purposes, to satisfy a portion of the park dedication requirements for the subject subdivision, as well as, the proposed Ke Alii Villas Condominium project. As requested, we are providing this letter as confirmation of our Department's support of the proposed park site.

We are in favor of accepting the dedication of the proposed park site, in compliance with Section 18.16.320 of the Maui County Code, to satisfy a portion of the park dedication requirements for the aforementioned projects on the condition that the developer enters into a 10-year maintenance agreement with the County of Maui. In addition, only the usable areas of the proposed park site shall be credited. The balance of the park dedication requirements shall be satisfied with the cost of improvements.

Our Department's envisions the proposed park site having a multi-purpose field for baseball and soccer purposes, and playground structures. Restroom and parking facilities will definitely be necessary. Please continue to work with our Department to finalize the park dedication requirements.

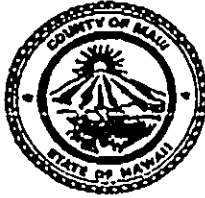
We appreciate your time and efforts on this matter. Should you have any questions or concerns, please feel free to contact me, or Patrick Matsui, Chief of Planning and Development Division, at 270-7387.

Sincerely,



GLENN T. CORREA
Director

c: Patrick Matsui, Chief of Planning and Development Division
Glenn Tadaki, Munekiyo & Hiraga, Inc.



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

03 AUG 25 P2:24

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

August 18, 2003

Ms. Colleen Suyama, Staff Planner
Planning Department
County of Maui
250 S High Street
Wailuku, Hawaii 96793

Dear Ms. Suyama:

Project Name: Ke Alii Kai II Subdivision - development of a 90-lot subdivision including single family residences, 45 with detached ohana and related improvements
TMK: 3-8-019:004
ID: SM1 2003/0013

Thank you for the opportunity to review this application. The Department of Water Supply provides the following information:

Source Availability and Consumption

The project area is served by the Central Maui System. The sources of water for this system are the Iao and Wahee aquifers, the Iao tunnel and the Iao-Waikapu Ditch. As of July 21, 2003, Iao aquifer has been designated by the Commission on Water Resource Management (CWRM) 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.

Anticipated water usage for this project is about 86,000 gallons per day based on system standards. Empirical usage information for Kihei suggests that actual usage will likely be higher.

System Infrastructure

Twelve inch and sixteen inch waterlines border the east and west sides of the project site, respectively. Three fire hydrants are located within 350 feet of the parcel along Pili Highway. The applicant should be required to comply with DWS Rules and Regulations for Subdivisions as well as provide domestic, fire and irrigation services in accordance with 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

By Water All Things Find Life

Office, 1974 and Fire Flow - Hawaii Insurance Bureau, 1991. We encourage the applicant to contact our Engineering Division to discuss water system improvements.

Pollution Prevention

The project overlies the Kamaole aquifer which has a sustainable yield of 11 MGD. We encourage the applicant to adopt Best Management Practices (BMPs) designed to minimize infiltration and runoff from construction and vehicle operations. Additional mitigation measures are enumerated below, and should be implemented during construction:

1. Prevent cement products, oil, fuel, and other toxic substances from falling or leaching into the water.
2. Properly and promptly dispose of all loosened and excavated soil and debris material from drainage structure work.
3. Retain ground cover until the last possible date.
4. Stabilize denuded areas by sodding or planting as soon as possible. Replanting should include soil amendments, fertilizers and temporary irrigation. Use high seeding rates to ensure rapid stand establishment.
5. Avoid fertilizers and biocides, or apply only during periods of low rainfall to minimize chemical runoff.
6. Maintain drainage structures, detention, silting and debris basins.
7. Control dust by proper stockpiling and use non-potable water for dust control.
8. Cover open vehicles carrying soils, gravel or other particulate matter.

Conservation

In light of the recent designation of the Iao aquifer, we recommend that the following water conservation measures and techniques be integrated in the project design and construction as well as convey them to future homeowners, where applicable.

Use brackish and /or reclaimed water sources for dust control during construction, if such alternatives are 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".

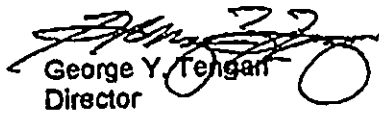
Use Climate -adapted Plants: The project is located in the Maui County Planting Plan - Plant Zones 3. We encourage the applicant to utilize appropriate native and non invasive species and avoid the use of potentially invasive plants. Native plants adapted to the area, conserve water and protect the watershed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

eam
c: engineering division
applicant, with attachments:

The Coaly Drip
Maui County Planning Plan - Plant Zones 3 & 5 - 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
A Checklist of Water Conservation Ideas for the Home and Yard



September 12, 2003

George Y. Tengan, Director
Department of Water Supply
County of Maui
200 South High Street
Wailuku, Hawaii 96793

SUBJECT: Ke Ali'i Kai II Subdivision
TMK 3-9-19: 04; SM1 2003/0013

Dear Mr. Tengan:

Thank you for your August 18, 2003 letter commenting on the above-referenced project. On behalf of the applicant, KAK II LLC, we would like to note the following.

1. The department's comments regarding water source and availability have been duly noted by the applicant.
2. The applicant will comply with the department's Rules and Regulations for Subdivisions. Plumbing fixture count worksheets for the single-family homes will be submitted to the department for review during the building permit process.
3. Appropriate Best Management Practices will be utilized during construction to minimize infiltration and runoff from construction-related activities.
4. The water conservation measures referenced in your letter will be considered and appropriate measures implemented.

George Y. Tengan, Director
September 12, 2003
Page 2

Please feel free to call me should you have any questions.

Very truly yours,



Glen Tadaki, Planner

GT:yp

cc: Colleen Suyama, Department of Planning
Takeshi Matsukata, KAK II, LLC
Warren Unemori, Warren S. Unemori Engineering, Inc.

townedev\kealii2\dws.res

ALAN M. ARAKAWA
Mayor

GILBERT S. COLOMA-AGARAN
Director

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

Telephone: (808) 270-7845
Fax: (808) 270-7955



03 OCT -1 P1 27
COUNTY OF MAUI
**DEPARTMENT OF PUBLIC WORKS
AND ENVIRONMENTAL MANAGEMENT**
RECEIVED
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RALPH 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

September 29, 2003

MEMO TO: MICHAEL W. FOLEY, PLANNING DIRECTOR

FROM: *G* GILBERT S. COLOMA-AGARAN, DIRECTOR OF PUBLIC WORKS
AND ENVIRONMENTAL MANAGEMENT *Michael Coloma*

SUBJECT: SPECIAL MANAGEMENT AREA PERMIT APPLICATION
KE ALII KAI II SUBDIVISION
TMK: (2) 3-9-019:004
SM1 2003/0013

We reviewed the subject application and have the following comments:

1. Submit a solid waste management plan for the composting and disposal of cleared and grubbed material and the recycling and disposal of construction waste.
2. Although wastewater capacity is available as of August 6, 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. 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 manhole and advanced riser for each lot.

**Memo to Michael W. Foley, Planning Director
September 29, 2003
Page 2**

5. Non-contact cooling water and condensate cannot drain to the wastewater system.
6. The development is proposing an injection well to drain the basin and mitigate any health hazard standing water may create. Additional information should be provided as to how the basin will be drained into the injection well from the retention basin. It is recommended that the well be under private ownership and not be dedicated to the County.
7. As the drainage retention pond will also be used as a soccer field, the control and maintenance of this pond should be under the Department of Parks and Recreation.
8. It is proposed to have a planter in the middle of the "bulb" at the end of the cul-de-sacs. Due to the high maintenance of such a planter in the "circle", it is recommended that the developer (or homeowners association) be responsible for its maintenance in perpetuity and an easement be created for that purpose.
9. The Department of Fire and Public Safety and Solid Waste Division should review the planting plan and the planters in the cul-de-sacs. Trucks need to have sufficient space to maneuver around the "circles" of the cul-de-sacs.
10. It is recommended to have the drainage channel be kept under private maintenance and ownership and not be dedicated to the County.
11. The architect and owner are advised that the project is subject to possible flood inundation. As such, said project must conform to Ordinance No. 1145, pertaining to flood hazard districts.
12. Road-widening lots shall be provided for the adjoining halves of the future North-South Collector Road and Kananui Road to provide for future 60 foot wide rights-of-way, respectively and improved to County standards, to include, but not be limited to pavement widening, construction of curb, gutter and sidewalk, street lights and relocation of utilities underground. Said lots shall be dedicated to the County upon completion of the improvements.

Memo to Michael W. Foley, Planning Director
September 29, 2003
Page 3

13. All structures, such as walls, trees, etc., shall be removed or relocated from the road-widening strip. The rear boundaries of the road-widening strip shall be clearly marked to determine if said structures have been properly removed and relocated.
14. A 30 foot radius shall be provided at the intersections of proposed subdivision roads and the adjoining County roads.
15. The existing Kananui Road and the North-South Collector Road do not meet County standards based on roads located in urban zoning and, therefore, shall be improved to County standards.
16. A detailed and final drainage report and a Best Management Practices Plan (BMP) shall be submitted with the grading plans for review and approval prior to the issuance of grading permits. The drainage report shall include hydrologic and hydraulic calculations and the schemes for the disposal of runoff waters. It must comply with the provisions of the "Rules and Design of Storm Drainage Facilities in the County of Maui" and must provide verification that the grading and runoff water generated by the project will not have an adverse effect on downstream properties. The BMP plan shall show the location and details of structural and non-structural measures to control erosion and sedimentation to the maximum extent practicable.
17. A site plan and sight distance report to determine required sight distance and available sight distance at existing and proposed street intersections and for each lot shall be provided for our review and approval.
18. The 100-year flood inundation limits shall be shown on the project site plans. Lot geometrics cannot be approved until such data is submitted and approved.
19. 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.

Memo to Michael W. Foley, Planning Director
September 29, 2003
Page 4

20. The final drainage system design by a licensed engineer shall comply with the provisions of the drainage rules and shall create no additional adverse impacts to adjacent and downstream properties.
21. The subdivision shall comply with the provisions of Title 18, Maui County Code, the subdivision ordinance.

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

GSCA:MA:msc
S:\LUCA\CZM\keafika2_sm1_39019004_mso.03.wpd



December 3, 2003

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

SUBJECT: Ke Ali'i Kai II Subdivision
TMK 3-9-19: 04: SM1 2003/0013

Dear Mr. Coloma-Agaran:

Thank you for your September 29, 2003 letter providing comments on the above-referenced project. On behalf of the applicant, KAK II LLC, we would like to note the following:

1. The applicant acknowledges the department's standard provisions of Comment Nos. 1 through 3 which indicate that a solid waste management plan be submitted to the department, that wastewater capacity cannot be ensured until the issuance of building permits, and that the payment of assessment fees is required for treatment plant expansion costs and offsite improvements to the wastewater collection system and pump stations.
2. With regard to Comment No. 4, it is our understanding that wastewater contribution calculations are not typically required for building permits involving single-family dwellings. The subdivision plat map will identify the ownership of each easement and show the installation of a single service manhole and advanced riser for each lot.
3. In terms of Comment No. 5, the applicant acknowledges that non-contact cooling water and condensate cannot drain into the County wastewater system.
4. As far as Comment No. 6 is concerned, the percolation well will be located at a low point within the retention basin. The bottom of the retention basin will have a slight slope to allow water impounded within the basin to drain toward and enter the percolation well. The applicant will initially assume the ownership and maintenance of the well. Upon completion of the project, it is anticipated that the homeowners

Gilbert S. Coloma-Agaran, Director
December 3, 2003
Page 2

association will assume the ownership of the well, as well as be responsible for its long-term maintenance.

5. With regard to Comment No. 7, while the retention basin will also function as a playfield, based on preliminary discussions with the Department of Parks and Recreation to discuss park requirements, the maintenance of the basin is expected to be the responsibility of the homeowners association.
6. In terms of Comment No. 8, the landscape planter within the "bulb" of each cul-de-sac has since been deleted.
7. As far as Comment No. 9 is concerned, the cul-de-sacs have been designed to accommodate fire truck and waste disposal truck maneuvers.
8. With regard to Comment No. 10, the applicant will be responsible for the initial upkeep of the drainage channel. Upon completion of the project, the long-term maintenance of the drainage channel will be the responsibility of the homeowners association.
9. In terms of Comment No. 11, we would like to note that while the Flood Insurance Rate Map for this part of the island indicates that the subject property is located within Zone C (an area of minimal flooding), the applicant recognizes that the possibility of flood inundation exists within the drainageway that traverses a portion of the project site. A separate lot will be created to establish a drainage reserve for the drainageway. The ownership and maintenance of the drainage reserve will be the responsibility of the homeowners association. No dwelling units will be constructed within the limits of the drainage reserve.
10. Insofar as Comment Nos. 12 through 15 are concerned, the applicant acknowledges the department's standard provisions set forth by these comments as they relate to road widening lots and roadway improvements.
11. The applicant acknowledges the department's standard provisions set forth by Comment Nos. 16 through 20 which call for final drainage report, Best Management Practices (BMPs), site plan and sight distance report submittals, the delineation of the 100-year flood inundation limits on the subdivision plat map, compliance with the provisions of the grading and subdivision ordinances, and the implementation of BMPs for dust and sediment control.

Gilbert S. Coloma-Agaran, Director
December 3, 2003
Page 3

A copy of your letter has been provided to the project's civil engineer for design coordination purposes.

Thank you again for providing us with your comments.

Very truly yours,



Glenn Tadaki, Planner

GT:yp

cc: Colleen Suyama, Department of Planning
Takeshi Matsukata, KAK II LLC
Warren Unemori, Warren S. Unemori Engineering, Inc.

townedevkcal1121dpwem.res



DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
COUNTY OF MAUI

ATAN 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

August 13, 2003

'03 AUG 14 P1 58

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

TO: COLLEEN SUYAMA, Staff Planner
Department of Planning

FROM: ALICE L. LEE, Director
Department of Housing and Human Concerns

SUBJECT: I.D. No.: SM1 2003/0013
TMK: 3-9-019:005
PROJECT NAME: KE ALII KAI II SUBDIVISION (90 LOTS)
APPLICANT: TAKESHI MATSUKAWA, ON BEHALF OF KE ALII
KAI, LLC

We have reviewed the subject application and are pleased that two types of accessory (ohana) dwellings are being offered as an option for up to fifty percent (50%) of the lots in the subdivision and that one off-street parking space will be provided for each ohana unit. This option will help to increase the inventory of affordable housing units in the Kihei area.

Thank you for the opportunity to comment. We are returning the application for your use.

ETO:hs

Enclosure

c: Housing Administrator

TO SUPPORT AND ENHANCE THE SOCIAL WELL-BEING OF THE CITIZENS OF MAUI COUNTY



03 AUG -7 P12:27

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

August 6, 2003

Ms. Colleen Suyama
Staff Planner
County of Maui
Department of Planning
250 S. High Street
Wailuku, HI 96793

Dear Ms. Suyama:

Subject: Ke Aili Kai II Subdivision (90 Lots)
TMK: 3-9-019:005
I.D.: SM1 2003/0013

Thank you for allowing us to comment on the subject project.

In reviewing the information transmitted and our records, we have no objection to the subject project. We encourage the developer's electrical consultant to meet with us as soon as practical to verify the project's electrical requirements so that service can be provided on a timely basis

If you have any questions or concerns, please call Dan Takahata at 871-2385.

Sincerely,

DT: *Neal Shinyama*
Neal Shinyama
Manager, Energy Delivery

NS/dt:ikh

Chapter XI

***Comments Received During the
Draft Environmental Assessment
30-Day Public Comment Period***

XI. COMMENTS RECEIVED DURING THE DRAFT ENVIRONMENTAL ASSESSMENT 30-DAY COMMENT PERIOD

Comments on the Draft EA were received during the 30-day public comment period. Comments, as well as responses to substantive comments, are included in this chapter. In addition to agency comments, the Draft EA was reviewed and discussed by the Maui Planning Commission at its meeting of May 11, 2004. The Planning Commission's comments and the applicant's response to those comments are also incorporated in this chapter.



'04 MAR 29 P1:18

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

March 26, 2004

Ms. Kivette A. Caigoy
Staff Planner
County of Maui
Department of Planning
250 S. High Street
Wailuku, HI 96793

Dear Ms. Caigoy:

Subject: Ke Aii Kai II Subdivision and Related Improvements
TMK: (2) 3-9-019:005
I.D.: EA 2004/0001 and SM1 2003/0013

Thank you for allowing us to comment on the subject project.

Please refer to our letter dated August 6, 2003 to the County of Maui Planning Department for our comments about the subject project. If you have any questions or concerns, please call Dan Takahata at 871-2385.

Sincerely,

Neal Shinyama
Manager, Engineering

NS/dt:ikh

United States Department of Agriculture



NRCS Natural Resources Conservation Service

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

Date: March 29, 2004

Ms. Kivette A. Caigoy, Staff Planner
County of Maui
Department of Planning
250 S. High Street
Wailuku, Hawaii 96793

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED
04 MAR 30 AM 11:18

Dear Ms. Caigoy,

SUBJECT: Ke Aii Kai II Subdivision and Related Improvements; TMK: 3-9-019-0000
I.D.: EA 2004/0001, SM1 2003/0013

We have reviewed the Draft Environmental Assessment of the subject parcel and have no comment.

Thank you for the opportunity to comment.

Sincerely,

Neal S. Fujiwara
District Conservationist

Apr-15-04 11:04am From-DEPT OF PLANNING COUNTY OF MAUI

808-242819

T-555 P.06/09 F-685



DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
COUNTY OF MAUI

ALAN M. ARAKAWA
Mayor

ALICE L. LEE
Director

HERMAN T. ANDAYA
Deputy Director

200 SOUTH HIGH STREET • WAILUKU, HAWAII 96793 • PHONE (808) 270-7605 • FAX (808) 270-7165

March 29, 2004

04 APR -2 09:27
DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

TO: KIVETTE A. CAIGOY, Staff Planner
Department of Planning

FROM: ALICE L. LEE, Director *ALB*
Department of Housing and Human Concerns

SUBJECT: I.D.: EA 2004/0001 AND SMI 2003/0013
TMK: (2) 3-09-019:004
PROJECT NAME: KE ALII KAI II SUBDIVISION
AND RELATED IMPROVEMENTS
APPLICANT: MUNEKIYO & HIRAGA, INC.

It is our understanding that the detached and attached ohana dwellings that are proposed for up to fifty percent (50%) of the lots is an option that will be offered to the buyers. That being the case, there is a possibility that no ohana units will be constructed by KAK II LLC in the subject project. Therefore, we would like to recommend that the developer consider constructing a few ohana units and offer the main dwelling and ohana unit as a "package", as the ohana units will add to the inventory of affordable units in the Kihei area.

Thank you for the opportunity to comment. We are returning the draft Environmental Assessment for your use.

ETO:hs

Enclosure

c: Housing Administrator

TO SUPPORT AND ENHANCE THE SOCIAL WELL-BEING OF THE CITIZENS OF MAUI COUNTY



April 16, 2004

Alice L. Lee, Director
Department of Housing
and Human Concerns
County of Maui
200 South High Street
Wailuku, Hawaii 96793

SUBJECT: Draft Environmental Assessment in Support of the SMA Use Permit Application for the Proposed Ke Ali'i Kai II Subdivision and Related Improvements; EA 2004/0001, SM1 2003/0013; TMK 3-9-19: 04

Dear Ms. Lee:

Thank you for your March 29, 2004 letter commenting on the above-referenced project. On behalf of the applicant, KAK II LLC, we would like to note the following.

Based on market demand, ohana units will be offered on up to 50 percent of the houselots. The applicant will offer main dwelling and ohana unit packages based on market demand and identify these packages in the project's sales and marketing plans.

Thank you again for providing us with your comments.

Very truly yours,

Glenn Tadaki, Planner

GT:yp

cc: Kivette Caigoy, Department of Planning
Richard Lachmann and Takeshi Matsukata, KAK II LLC

towndev\kealii2\dlh\ic.deares

environment
planning

APR 06 2004

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 96793-2155
Telephone (808) 270-7816 • Fax (808) 270-7833
www.mauwater.org

March 30, 2004

Ms. Kivette A. Caigoy, Staff Planner
Department of Planning
County of Maui
250 South High Street
Wailuku HI 96793

Re: I.D.: EA 2004/0001, SM1 2003/0013
TMK: 3-9-19:004
Project Name: Ke Alii Kai II Subdivision and Related Improvements

Dear Ms. Caigoy:

Thank you for the opportunity to comment on this application. We note that a copy of our August 18 2003 comment letter to the SM1 application for this project is included in the application material. We provide the following additional information:

As stated in the application material, water use for the single-family development would be about 81,000 gallons per day (GPD) based on system per-unit standards. Based on per-acre standards consumption would be about 86,000 GPD. Using on-site brackish water for irrigation of common areas may decrease water use.

System Infrastructure

Fire flow requirements for single-family subdivision is 1000 gallons per minute/350 ft spacing/2 hours. System improvements are determined in the subdivision review process.

Conservation

We note that an on-site well will be used for dust control during construction and irrigation of common areas. We recommend that the following additional water conservation measures be included in project design and construction as well as conveyed to homeowners, where applicable:

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. Native plants adapted to the area conserve water and protect the watershed from degradation due to invasive alien

By Water All Things Find Life

Kivette Calgoy
Ke Alll Kai Subdivision
Page 2

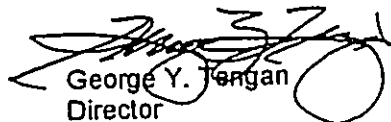
species. Please refer to the attached brochure: "Saving Water In The Yard - What and How to Plant In Your Area". Please distribute the brochure to future homeowners.
Prevent Over-Watering By Automated Systems: Provide rain-sensors on all automated irrigation controllers. Check and reset controllers at least once a month to reflect the monthly changes in evapotranspiration rates at the site. As an alternative, provide the more automated, soil-moisture sensors on controllers.

Pollution Prevention

We are pleased to note that the applicant will implement best management practices listed in the application material. These measures will minimize infiltration and runoff threats to the underlying Kamaole aquifer. Detailed sample BMPs for your reference were attached with our August 18, 2003 comment letter.

Should you have any questions, please contact our Water Resources and Planning Division at 270-7199.

Sincerely,


George Y. Fengan
Director
emb

c: engineering division

applicant, with attachments:

The Costly Drip

Maul 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

A Checklist of Water Conservation Ideas For the Home

By Water All Things Find Life



April 16, 2004

George Y. Tengan, Director
Department of Water Supply
County of Maui
200 South High Street
Wailuku, Hawaii 96793

SUBJECT: Draft Environmental Assessment in Support of the SMA Use Permit Application for the Proposed Ke Ali'i Kai II Subdivision and Related Improvements; EA 2004/0001, SM1 2003/0013; TMK 3-9-19: 04

Dear Mr. Tengan:

Thank you for your March 30, 2004 letter commenting on the above-referenced project. On behalf of the applicant, KAK II LLC, we would like to note the following.

Your comments regarding water use and system infrastructure are duly acknowledged. The water conservation measures referenced in your letter will be considered and appropriate measures implemented. In addition, appropriate Best Management Practices will be utilized during construction to minimize infiltration and runoff from construction-related activities.

Thank you again for providing us with your comments. Please feel free to call me should you have any questions.

Very truly yours,

A handwritten signature in black ink, appearing to read "Glenn Tadaki", written in a cursive style.

Glenn Tadaki, Planner

GT:yp

cc: Kivette Caigoy, Department of Planning
Richard Lachmann and Takeshi Matsukata, KAK II LLC
Warren Unemori, Warren S. Unemori Engineering, Inc.

towndev\kealii2\dws.eares

LINDA LINGLE
GOVERNOR



PATRICIA HAMAMOTO
SUPERINTENDENT

APR 01 2004

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

'04 APR -2 P 1:11

OFFICE OF BUSINESS SERVICES

DEPT OF PLANNING
COMMUNITY DEVELOPMENT
RECEIVED

April 1, 2004

Mr. Michael W. Foley, Director
County of Maui
250 South High Street
Wailuku, Hawaii 96793

Dear Mr. Foley:

Subject: Draft Environmental Assessment for
Ke Alii Kai II Subdivision, Kihei, Maui, Hawaii
TMK: 3-9-19:04 (EA2004/0001) (SM12003/00013)

The Department of Education (DOE) has reviewed the Draft Environmental Assessment (DEA) for a Special Management Area (SMA) permit for the Ke Alii Kai II Subdivision in Kihei, Maui. The proposed project is on a 28.57 acre parcel immediately south of Kamalii Elementary School. There would be 90 lots in the subdivision. Half of the lots would contain one single-family residence and the other half would contain a single-family residence and an accessory dwelling unit, either free-standing or attached to the main residence. The total number of residential units is expected to be 135.

As of the first of December 2003, the DOE decided that it would refrain from requesting fair-share contributions when a residential project was only seeking an SMA permit. When we originally commented on the SMA application on September 8, 2003, we did make that request; but in keeping with our present practice, we are no longer asking for a fair-share condition.

The DOE appreciates the time and consideration that your department and the commissioners give to our requests for the schools. If you have any questions, please call me at 586-3444 or Heidi Meeker of the Facilities and Support Services Branch at 733-4862.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Rae M. Loui".

Rae M. Loui
Assistant Superintendent

RML:mp

c: Donna Whitford, CAS/Baldwin, Maui, Kekaulike Complexes



April 16, 2004

Rae M. Loui, Assistant Superintendent
Department of Education
State of Hawaii
P.O. Box 2360
Honolulu, Hawaii 96804

SUBJECT: Draft Environmental Assessment in Support of the SMA Use Permit Application for the Proposed Ke Ali'i Kai II Subdivision and Related Improvements; EA 2004/0001, SM1 2003/0013; TMK 3-9-19: 04

Dear Ms. Loui:

Thank you for your April 1, 2004 letter commenting on the above-referenced project. On behalf of the applicant, KAK II LLC, we would like to acknowledge that the note the following.

The applicant acknowledges the department's recent change in practice of no longer requesting fair share contributions for school facilities when applications for SMA permits are involved.

Thank you again for providing us with your comments.

Very truly yours,

Glenn Tadaki, Planner

GT:yp

cc: Kivette Caigoy, Department of Planning
Richard Lachmann and Takeshi Matsukata, KAK II LLC

lowmedevkcaali2doe.deares

environment
planning

Apr-19-04 11:04am From-DEPT OF PLANNING COUNTY OF MAUI

808-242819

T-555 P.02/09 F-685

ALAN M. ARAKAWA
Mayor



GLENN T. CORREA
Director

JOHN L. BUCK III
Deputy Director

(608) 270-7230
Fax (808) 270-7934

DEPARTMENT OF PARKS & RECREATION

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

April 6, 2004

'04 APR 12 AM 9:33
DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

MEMO TO: Kivette Calgoy, Staff Planner
Department of Planning

VIA: Michael Foley, Director
Department of Planning

FROM: 
GLENN T. CORREA, Director

SUBJECT: KE ALII KAI II SUBDIVISION AND RELATED IMPROVEMENTS
TMK: 3-9-019:004, KIHEI
I.D. NO.: EA 2004/0001 AND SM1 2003/0013

Our Department has reviewed the subject application and we have no comments at this time. As indicated in our November 24, 2003 letter to Mr. Takeshi Matsukata, Vice President of Towne Development of Hawaii, Inc., the developer should continue to work with our Department to finalize the park dedication requirements for the subject subdivision.

Thank you for the opportunity to review and comment on this matter. Should you have any questions or concerns, please contact me, or Patrick Matsui, Chief of our Planning and Development Division, at extension 7387.

c: Patrick Matsui, Chief of Planning and Development Division

Apr-19-04 11:04am

From-DEPT OF PLANNING COUNTY OF MAUI

808-242819

T-555 P.03/09 F-685



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 223
FORT SHAFTER, HAWAII 96858-5440

REPLY TO
ATTENTION OF: CEPOH-ECT

'04 APR 14 11:51

April 13, 2004

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

Civil Works Technical Branch


Ms. Kivette A. Caigoy, Staff Planner
County of Maui
Department of Planning
250 South High Street
Wailuku, Maui, Hawaii 96793

Dear Ms. Caigoy:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment for the Ki Alii Kai II Subdivision Project, Maui (TMK 3-9-19: 4). We do not have any additional comments to offer beyond those previously provided in our letter dated August 15, 2003.

If you require additional information, please feel free to contact Ms. Jessie Dobinchick of our Civil Works Technical Branch staff at (808) 438-8876.

Sincerely,

for 
James Pennaz, P.E.
Chief, Civil Works
Technical Branch



APR 22 2004

STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813

HRD04/1104

April 20, 2004

Kivette A. Caigoy
Staff Planner
County of Maui
Department of Planning
250 South High Street
Wailuku, HI 96793

**RE: Requested Comments on the Draft Environmental Assessment for Ke Aii Kai II
Subdivision and Related Improvements, Kihei, Maui, TMK 3-9-019:004**

Dear Kivette A. Caigoy,

The Office of Hawaiian Affairs is in receipt of your March 17, 2004, request for comments on the above project, which proposes to create 90 lots for the construction of single-family homes, with the potential of 45 ohana dwellings. We offer the following comments.

The current infrastructure inadequacies and drought situation on Maui mean that descriptions of the impacts of yet another subdivision must include the estimated impacts on existing infrastructure and water resources, and any necessary mitigations. This is a classic example of the importance of examining the cumulative impact of all related and surrounding impacts on the resource in that resource's present condition. It is not clear that such a cumulative study has been done.

Water

This project includes plans to drill an irrigation well for non-potable water and to rely on potable water from the Iao Aquifer, which is already in an overdrawn situation. While an SMA Minor Permit has been approved for the well, OHA notes that a scientific estimate of the amount of water to be obtained from the well should be included in the Environmental Assessment so that a more accurate determination can be made about how much water will be available from the well, and how much the proposed project will have to use the Iao Aquifer. OHA will rely on the assurances of the project's civil engineer that the proposed irrigation well will not impact on any potential groundwater source.

The Iao Aquifer was labeled a groundwater management area in July 2003, and therefore must not be further drawn upon until after a water plan is created that includes water set asides for

taro, other Native Hawaiian uses, and habitat protection, as required by law and as further explained in the Hawai'i Supreme Court's Waiahole decision (*In the Matter of the Water Use Permit Applications*, 94 Haw. 97; 9 P.3d 409 (2000)).

It is unclear from the Draft EA from whence, precisely, the proposed project will be drawing its water. On page 29, the applicant notes that the project site is located in a service area that draws from the Iao Aquifer. The Draft EA then describes sources of additional water, but does not state where this project anticipates that it will obtain its water. Page 30 notes the designation of Iao Aquifer as a groundwater management area, and states that "the [Department of Water Supply] will continue to issue water meters for projects that are ready to receive service." This language seems to come from the Maui County Department of Water Supply's August 18, 2003, letter of comment on the SMA Use Permit application. OHA would like to see the rest of the language from the respective paragraph in DWS's letter incorporated in the EA: "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."

OHA also notes that DWS wrote: "Anticipated water usable for this project is about 86,000 gallons per day based on system standards. Empirical usage information for Kihei suggests that actual usage will likely be higher." This language also was not incorporated in the Draft EA. Instead, the applicant estimated that the project would use 81,000 gallons per day (page 56), which seems far too low. OHA would like to see more accurate numbers used.

OHA recommends that Maui County condition the project on requirements to implement water conservation measures wherever possible, including the use of brackish and/or reclaimed water for irrigation and non-potable water uses; native plantings; low-flow fixtures and devices; a maintenance plan for fixtures to prevent leaks; limited irrigated turf; and creative water conservation methods. The water conservation measures listed in the above-referenced August 18, 2003, letter from DWS should be conditions required. The applicant's response letter of September 12, 2003, which reads that such measures would "be considered and appropriate measures implemented," is not good enough, considering Maui's current water problems.

Cultural Resources

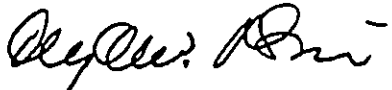
Because the proposed project site contains sand deposits, the possibility remains of encountering traditional Hawaiian burials and cultural sites. OHA commends the applicant for planning to retain an archaeological monitor during all ground-disturbing activities in the project area. We will rely on assurances that should iwi or Native Hawaiian cultural or traditional deposits be found during ground excavation, work will cease and the appropriate agencies will be contacted pursuant to applicable law.

OHA further commends the applicant for consulting with Leslie Kuloloio and Charles Keau, who have provided the applicant with excellent suggestions for preservation and restoration of the ko'a sites. The sites should be cleared of obscuring vegetation, protected with a marking stone border, replanted with flora indigenous to the Kihei area, restored to pre-excavation conditions, maintained under a perpetual preservation agreement, and made part of an education program for local school children. This area is obviously still relevant and useful to the

continuing renaissance of Native Hawaiian culture. Therefore, guidelines for maintenance and preservation of the ko'a should incorporate Native Hawaiian stewardship opportunities.

Thank you for the opportunity to comment. If you have further questions, please contact Heidi Guth at 594-1962 or e-mail her at heidig@oha.org.

Sincerely,



Clyde W. Namu'o
Administrator

CC: Office of Environmental Quality Control
Munekio & Hiraga, Inc.



May 6, 2004

Clyde W. Namu`o, Administrator
Office of Hawaiian Affairs
711 Kapi`olani Boulevard, Suite 500
Honolulu, Hawai`i 96813

SUBJECT: Draft Environmental Assessment (EA) in Support of the SMA Use Permit Application for the Proposed Ke Ali`i Kai II Subdivision and Related Improvements; EA 2004/0001, SM1 2003/0013;
TMK 3-9-19:04

Dear Mr. Namu`o:

Thank you for providing your April 20, 2004 comments on the above-referenced project. On behalf of the applicant, KAK II LLC, we would like to note the following.

1. In terms of a cumulative study on existing water resources, a Infrastructure Assessment Update was recently completed for the County of Maui. In addition to assessing parking, and water, wastewater, drainage, and electrical systems in the County's community plan regions, the Update also examines existing water systems/service, existing demand, existing system constraints and opportunities, and future system service requirements. For the Central Maui Water System, which serves the Wailuku-Kahului and Kihei-Makena regions, as well as the lower Paia Town area, the Update indicates that additional groundwater sources need to be developed in the long term, to provide additional sources and to meet future demands. As noted in the Draft EA, the County Department of Water Supply is currently in the process of developing new water sources (Kupaa Well No. 1, Camp Maluhia Well and Waiolai Well) to supplement the water pumped from the Iao Aquifer.
2. The amount of (non-potable) water available from the irrigation well will be determined by drilling and testing once the well drilling permit application has been approved by the State Commission on Water Resource Management. Adverse impacts to ground water resources and water quality are not anticipated due to current regulations and compliance standards for the drilling, operation, and maintenance of irrigation wells.

Clyde W. Namu'o, Administrator
May 6, 2004
Page 2

3. The project site is located in the Kihei mid-level service area which is served by the Central Maui Water System wells in north Waiehu.
4. On page 30, the Draft EA notes that, "... *it (the DWS) may stop issuing water meters until new sources are developed*". The applicant acknowledges that water for the project may not be available until new sources are brought on line.
5. In its March 30, 2004 letter commenting on the project's Draft EA, the County Department of Water Supply (DWS) indicated that potable water use for the project would be about 81,000 gallons per day (gpd) based on the department's per-unit standards and approximately 86,000 gpd based on per-acre standards. Based on these estimates, the applicant acknowledges that the average daily water demand for the project could range from 81,000 to 86,000 gpd. In terms of average daily demand, the difference between the per-unit and per-acre standards translates to a slight increase of 37 gallons per unit per day (including the ohana units). In its March 30th letter, the DWS acknowledged the applicant's use of the irrigation well for dust control and common area irrigation and further indicated that the use of this well for irrigation may decrease water use.
6. The irrigation well will be utilized for dust control during construction and for the irrigation of common area landscaping. Water conservation measures such as the use of low-flow fixtures and devices, use of rain sensors on automated irrigation controllers, elimination of single-pass cooling systems will be implemented for the project.
7. Sites 2637 and 2633 are situated beyond the limits of the subject property and have been preserved in place at the World Mark Resort and at the Kamaole Heights Subdivision, respectively, in accordance with preservation plans which were approved by the SHPD.

Clyde W. Namu`o, Administrator
May 6, 2004
Page 3

Thank you for your comments. Please feel free to call me should you have any questions.

Very truly yours,



Glenn Tadaki, Planner

GT:yp

cc: Kivette Caigoy, Department of Planning
Takeshi Matsukata, KAK II LLC
Warren Unemori, Warren S. Unemori Engineering, Inc.
Lisa Rotunno-Hazuka, Archaeological Services Hawaii

townedev\keali2\oha.deares



ALAN M. ARAKAWA
MAYOR

OUR REFERENCE
YOUR REFERENCE

**POLICE DEPARTMENT
COUNTY OF MAUI**

55 MAHALANI STREET
WAILUKU, HAWAII 96793
(808) 244-6400
FAX (808) 244-6411



THOMAS M. PHILLIPS
CHIEF OF POLICE

KEKUAPIO R. AKANA
DEPUTY CHIEF OF POLICE

April 21, 2004


MEMORANDUM

TO : MICHAEL W. FOLEY, PLANNING DIRECTOR
FROM : THOMAS M. PHILLIPS, CHIEF OF POLICE
SUBJECT : I.D. : EA 2004/0001 and SM1 2003/0013
TMK : (2) 3-9-019: 004
Project Name : Ke Alii Kai II Subdivision and Related Improvements
Applicant : Munekiyo & Hiraga

DEPT OF PLANNING
COUNTY OF MAUI
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'04 APR 22 A9:58

- No recommendation or comment to offer.
 Refer to enclosed comments and/or recommendations.

Thank you for giving us the opportunity to comment on this project.


Assistant Chief Sydney Kikuchi
For: THOMAS M. PHILLIPS
Chief of Police

Enclosure

RUSH

MAUI PLANNING DEPARTMENT	TY	COMMENTS	SEE ME	ASSIGN	DATE	DRAFT RESPONSE
DIRECTOR						
DEPUTY DIRECTOR						
CURRENT						
ZAED						
LONG RANGE						
DEPT. SECRETARY						
<i>SM (copy)</i>						
<i>KAE</i>						
<i>CTE-WMK</i>						

Due Date: _____
By: *CM* Date: *4/22/04*

CPTED:

Page 2

Community Police Officers (CPO's) in Maui County have been trained in CPTED concepts. This Officer recommends that the applicant use "best practices" in CPTED when developing this area. This Officer is also available to assist with advice regarding this matter based on my training and experience.

If there are any questions regarding the concerns or comments provided regarding this project please feel free to contact this Officer @ 870-7205 or 875-8190.

Respectfully Submitted,

Officer Brad Hickle
04/16/04



E-9966
1630 hours

*Notes:
At Lt. Wa... 900
04/18/04 of 2985 hr.
Recommendations considered
or follow concerns and
input from Officer Hickle
M...
WA-024, 8038*



April 30, 2004

Thomas M. Phillips, Chief
Department of Police
County of Maui
55 Mahalani Street
Wailuku, Hawaii 96793

SUBJECT: Draft Environmental Assessment in Support of the SMA Use Permit Application for the Proposed Ke Ali'i Kai II Subdivision and Related Improvements; EA 2004/0001, SM1 2003/0013; TMK 3-9-19: 04

Dear Mr. Phillips:

Thank you for your April 21, 2004 letter commenting on the above-referenced project. On behalf of the applicant, KAK II LLC, we would like to note the following.

The department's comments regarding Crime Prevention Through Environmental Design (CPTED) design are acknowledged and have been provided to the project's architect and landscape architect for design consideration.

Thank you again for providing us with your comments.

Very truly yours,

Glenn Tadaki, Planner

GT:yp

cc: Kivette Caigoy, Department of Planning
Takeshi Matsukata, KAK II LLC

townedevkealii2@mpd.deares

LINDA LINGLE
GOVERNOR OF HAWAII



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

APR 23 2004

GENEVIEVE SALMONSON
DIRECTOR

April 22, 2004

Mr. Michael Foley
County of Maui
Department of Planning
250 South High Street
Wailuku, Hawaii 96793

Dear Mr. Foley:


Subject: Draft EA for Ke Ali'i Kai II Subdivision and Related Offsite Improvements

Thank you for the opportunity to review the subject document. We have the following comments.

1. Please explain whether any action will be taken to investigate the destruction of archaeological sites 2839 to 2844.
2. Please describe the cumulative impacts of this project.
3. Please describe whether the signal timing at the Alanui Ke Ali'i and South Kihei Road intersection will be adjusted to improve the level of service.
4. Please consult with adjacent neighbors and include a list of the consulted parties.

Should you have any questions, please call Jeyan Thirugnanam at 586-4185.

Sincerely,


Genevieve Salmonson
Director

c: Munekiyo & Hiraga, Inc.



May 6, 2004

Genevieve Salmonson, Director
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

SUBJECT: Draft Environmental Assessment (EA) in Support of the SMA Use Permit Application for the Proposed Ke Ali'i Kai II Subdivision and Related Improvements; EA 2004/0001, SM1 2003/0013;
TMK 3-9-19:04

Dear Ms. Salmonson:

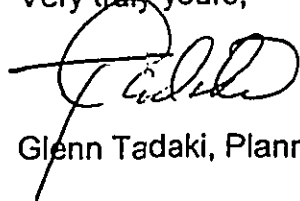
Thank you for your April 22, 2004 letter commenting on the above-referenced project. On behalf of the applicant, KAK II LLC, we would like to note the following.

1. Recent discussions with the State Historic Preservation Division have indicated that no further work is required for Sites 2839 to 2844.
2. A section on cumulative impacts will be included in the Final EA.
3. The traffic study for the proposed project notes that the volume-to-capacity ratios at the intersection of Alanui Ke Ali'i and South Kihei Road are all less than 0.70 (the threshold for which significance criteria is applied). As indicated by the traffic study, there are no significant traffic impacts upon this intersection; therefore, no mitigation measures are recommended.
4. On January 16, 2003, the applicant held a project information meeting with property owners and lessees within a 500-ft. radius of the subject property. A meeting summary is included in Chapter IV, Section E of the Draft EA.

Genevieve Salmonson, Director
May 6, 2004
Page 2

Thank you again for providing us with your comments.

Very truly yours,



Glenn Tadaki, Planner

GT:yp

cc: Kivette Caigoy, Department of Planning
Takeshi Matsukata, KAK II LLC
Lisa Rotunno-Hazuka, Archaeological Services Hawaii
Phil Rowell, Phillip Rowell and Associates

lowmedevkcalil2loeqc.deares

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF HEALTH
MAUI DISTRICT HEALTH OFFICE
54 HIGH STREET
WAILUKU, MAUI, HAWAII 96793-2102

DEPT OF PLANNING
COUNTY OF MAUI
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'04 APR 27 08:41

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

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

April 26, 2004

Mr. Michael W. Foley
Director
Department of Planning
County of Maui
250 South High Street
Wailuku, Hawai'i 96793

Attention: Kivette A. Caigoy

Dear Mr. Foley:

Subject: Ke Aili Kal II Subdivision and Related Improvements
TMK: (2) 3-9-019:004
EA 2004/0001 and SM1 2003/0013

Thank you for the opportunity to comment on the land use permit application for the proposed subdivision. Comments from this office were transmitted to our Honolulu Office. A coordinated response is forthcoming.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Herbert S. Matsubayashi".

Herbert S. Matsubayashi
District Environmental Health Program Chief

c: EPO

LYNDA LINGLE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF ACCOUNTING
AND GENERAL SERVICES
SURVEY DIVISION
P.O. BOX 119
HONOLULU, HAWAII 96810-0119

KCS
KUSU K. SAITO
Comptroller

KATHERINE K. THOMASON
Deputy Comptroller

'04 APR 27 P1:17

DEPT OF PLANNING
COUNTY OF MAUI
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April 26, 2004

MEMORANDUM

TO: Michael W. Foley, Planning Director
Maui County Planning Department

ATTN: Kivette A. Caigoy, Staff Planner

FROM: Randall M. Hashimoto, State Land Surveyor
DAGS, Survey Division

SUBJECT: I.D.: EA 2004/0001 and SM1 2003/0013
TMK: 3-9-19:04
Project Name: Ke Alii Kai II Subdivision and Related Improvements
Applicant: Munekiyo & Hiraga

The subject proposal has been reviewed and confirmed that no Government Survey Triangulation Stations or Benchmarks are affected. Survey has no objections to the proposed project.

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

April 28, 2004

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

DAN DAVIDSON
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ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
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STATE PARKS

SM12003-0013.RCM3

LD-NAV

Honorable Michael W. Foley
Planning Director
County of Maui
Planning Department
250 S. High Street
Wailuku, Hawaii 96793

Dear Mr. Foley:

Subject: I.D. Nos.: SM1 2003/0013 and EA 2004-0001 (March 2004)
Applicant: Munekiyo & Hiraga c/o Kai II LLC
Project: Ke Alii Kai II Subdivision
Authority: County of Maui Department of Planning
TMK: (2) 3-9-019: 004

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

The Department of Land and Natural Resources' (DLNR) Land Division made available or distributed a copy of the document pertaining to the subject matter 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-Maui District Land Office
- Land-Planning and Development

Enclosed please find a copy of the Commission on Water Resource Management and Engineering Division comment.

Based on the attached responses, the Department of Land and Natural Resources has no other comment to offer on the subject matter.

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

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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
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HONOLULU, HAWAII 96809

PETER T. YOUNG
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LAND
STATE PARKS

March 23, 2004
LD/NAV
EA2004-0001

SM12003-0013.CMT
Suspense Date: 4/7/04

MEMORANDUM:

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

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

SUBJECT: I. D. No.: SM1 2003/0013 (March 2004)
Applicant: Munekiyo & Hiraga c/o Kai II LLC
Project: Ke Alii Kai II Subdivision
TMK: 2nd/ 3-9-019 004
Authority: County of Maui Department of Planning

Please review the document pertaining to the subject matter and submit your comment (if any) on Division letterhead signed and dated by the suspense date.

*Note: One copy of the document is available for your review in the Land Office, Room 220.

Should you have any questions, please contact Nicholas A. Vaccaro at ext.: 7-0384. If this office does not receive your comments by the suspense date, we will assume there are no comments.

We have no comments.

Comments attached.

Division: MDLO

Signed: *Jason K. Koy*

Date: 4-2-04

Print Name: Jason K. Koy

LINDA LINGLE
GOVERNOR OF HAWAII



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

DAH DAVIDSON
DEPUTY DIRECTOR - LAND
ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER



2004 MAR 29 10 31 AM

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

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

March 23, 2004
LD/NAV
EA2004-0001

SM12003-0013.CMT
Suspense Date: 4/7/04

MEMORANDUM:

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

FROM: Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: I. D. No.: SM1 2003/0013 (March 2004)
Applicant: Munekiyo & Hiraga c/o Kai II LLC
Project: Ke Alii Kai II Subdivision
TMK: 2nd/ 3-9-019 004
Authority: County of Maui Department of Planning

Please review the document pertaining to the subject matter and submit your comment (if any) on Division letterhead signed and dated by the suspense date.

*Note: One copy of the document is available for your review in the Land Office, Room 220.

Should you have any questions, please contact Nicholas A. Vaccaro at ext.: 7-0384. If this office does not receive your comments by the suspense date, we will assume there are no comments.

() We have no comments.

Additional
 Comments attached.

Division: Engineering

Signed: _____

Date: MAR 29 2004

Print Name: ERIC T. HIRANO, CHIEF ENGINEER

**DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION**

LANAI

Ref: EA 2004-0001

COMMENTS

- () We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone ____.
- () Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Zone ____.
- () Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ____.
- () Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyan-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

- () Mr. Robert Sumimoto at (808) 523-4254 or Mr. Mario Sin Li at (808) 523-4247 of the City and County of Honolulu, Department of Planning and Permitting.
- () Mr. Kelly Gomes at (808) 961-8327 (Hilo) or Mr. Kiran Emler at (808) 327-3530 (Kona) of the County of Hawaii, Department of Public Works.
- () Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.
- () Mr. Mario Antonio at (808) 241-6620 of the County of Kauai, Department of Public Works.

- () The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.
- () The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

X Additional Comments: *Please correct map orientation (True North Arrow) of Figure 1 of the Preliminary Engineering Report, Appendix F.*

() Other: _____

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

Signed: Andrew M. Monden
For ERIC T. HIRANO, CHIEF ENGINEER
Date: 3/29/04

8577

LINDA LINGLE
GOVERNOR OF HAWAII



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DIVISION
STATE
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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES &
LAND DIVISION
POST OFFICE BOX 62 STATE OF HAWAII
HONOLULU, HAWAII 96809

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

DAVID DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

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KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

March 23, 2004
LD/NAV
EA2004-0001

SM12003-0013.CMT
Suspense Date: 4/7/04

MEMORANDUM:

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

FROM: Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: I. D. No.: SM1 2003/0013 (March 2004)
Applicant: Munekiyo & Hiraga c/o Kai II LLC
Project: Ke Alii Kai II Subdivision
TMK: 2nd/ 3-9-019 004
Authority: County of Maui Department of Planning

- ADMINISTRATOR
- ASST ADMIN
- AV BR
- PLAN BR
- CONSERV BR
- CLERICAL
- ADMIN ASST
- INTERP BR
- INFO
- POST/STAFF RM
- COMMENTS & REC
- DRAFT REPLY
- FILE
- FOLLOW UP
- INFO
- RUN COPIES
- RUSH DUE
- SEE ME
- FAX/SEND COPY TO

Please review the document pertaining to the subject matter and submit your comment (if any) on Division letterhead signed and dated by the suspense date.

*Note: One copy of the document is available for your review in the Land Office, Room 220.

Should you have any questions, please contact Nicholas A. Vaccaro at ext.: 7-0384. If this office does not receive your comments by the suspense date, we will assume there are no comments.

(x) We have no comments.

() Comments attached.

Division: State Parks

Signed: [Signature]

Date: 4/1/04

Print Name: Daniel S. Quinn

LITDA LEIHE
GOVERNOR OF HAWAII



DIVISION OF AQUATIC RESOURCES	
DIR. OFF.	<input type="checkbox"/>
COM. SERVICES	<input type="checkbox"/>
AD. REC. MGMT	<input type="checkbox"/>
AD. PLAN.	<input type="checkbox"/>
STAT. DIV.	<input type="checkbox"/>
ENFORCEMENT	<input type="checkbox"/>
STATE PARKS	<input type="checkbox"/>
CONSERVATION	<input type="checkbox"/>
BOATING & OCEAN RECREATION	<input type="checkbox"/>
WATER RESOURCE MGMT	<input type="checkbox"/>
COASTAL LANDS	<input type="checkbox"/>
LAND MAUI DISTRICT OFFICE	<input type="checkbox"/>
LAND PLANNING & DEVELOPMENT	<input type="checkbox"/>



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 23, 2004
LD/NAV
EA2004-0001

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

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAI
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
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BUREAU OF COMPLIANCE
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

SM12003-0013.CMT
Suspense Date: 4/7/04

MEMORANDUM:

TO: XXX Division of Aquatic Resources (DD)
*XXX Division of Forestry & Wildlife
*XXX Na Ala Hele Trails
XXX Engineering Division (DD)
*XXX Division of State Parks
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 (DD)
*XXX Land-Planning and Development

FROM: Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: I. D. No.: SM1 2003/0013 (March 2004)
Applicant: Munekeyo & Hiraga c/o Kai II LLC
Project: Ke Alii Kai II Subdivision
TMK: 2nd/ 3-9-019 004
Authority: County of Maui Department of Planning



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NATURAL RESOURCES
STATE OF HAWAII

2004 APR - 7 P 3:57

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Please review the document pertaining to the subject matter and submit your comment (if any) on Division letterhead signed and dated by the suspense date.

*Note: One copy of the document is available for your review in the Land Office, Room 220.

Should you have any questions, please contact Nicholas A. Vaccaro at ext.: 7-0384. If this office does not receive your comments by the suspense date, we will assume there are no comments.

(X) We have no comments.

() Comments attached.

Division: Aquatic Resources

Signed: H. Devick

Date: 4/6/04

Print Name: William S. Devick
Administrator

LINDA LINGLE
GOVERNOR OF HAWAII



RECEIVED
LAND DIVISION

2004 MAR 31 A 9 43

DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

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

IAN 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

March 23, 2004
LD/NAV
EA2004-0001

SM12003-0013.CMT
Suspense Date: 4/7/04

MEMORANDUM:

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

FROM: Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: I. D. No.: SM1 2003/0013 (March 2004)
Applicant: Munekiyo & Hiraga c/o Kai II LLC
Project: Ke Alii Kai II Subdivision
TMK: 2nd/ 3-9-019 004
Authority: County of Maui Department of Planning

Please review the document pertaining to the subject matter and submit your comment (if any) on Division letterhead signed and dated by the suspense date.

*Note: One copy of the document is available for your review in the Land Office, Room 220.

Should you have any questions, please contact Nicholas A. Vaccaro at ext.: 7-0384. If this office does not receive your comments by the suspense date, we will assume there are no comments.

We have no comments.

Comments attached

Division: _____

Signed:

Date: MAR 24 2004

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

LINDA LINGOLE
CO-ORDINATOR 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
DIRECTOR

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

ERNEST Y.W. LAU
DEPUTY DIRECTOR

March 31, 2004

TO: Ms. Dede Mamiya, Administrator
Land Division

FROM: Ernest Y.W. Lau, Deputy Director ^{PI}
Commission on Water Resource Management (CWRM)

SUBJECT: Ke Alii Kai II Subdivision

FILE NO.: SM1 2003/0013

RECEIVED
LAND DIVISION
2004 MAR 32 A 8:02
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

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 applicant has filed incomplete applications for two irrigation wells, one each on this property ("Ke Alii Kai II") and its companion development, "Ke Alii Villas". As for potable service, the primary water source for this project, Iao Aquifer System area is now a ground-water management area under the State Commission on Water Resource Management (CWRM). Other water sources, from Waihee Aquifer System area, for the service area face full commitment as soon as they are available. 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 Iao is restricted, it could result in restrictions of use within the service area.

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



May 6, 2004

Diedre Mamiya, Administrator
Land Division
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

SUBJECT: Draft Environmental Assessment (EA) in Support of the SMA Use Permit Application for the Proposed Ke Ali'i Kai II Subdivision and Related Improvements; EA 2004/0001, SM1 2003/0013; TMK 3-9-19:04

Dear Ms. Mamiya:

Thank you for your April 28, 2004 letter transmitting comments on the above-referenced project from the department's various branches. On behalf of the applicant, KAK II LLC, we would like to note the following.

1. In terms of the Engineering Division's comments, the orientation of the north arrow shown on Figure 1 (Location Map) of the Preliminary Engineering Report will be revised as suggested.
2. With regard to the Commission on Water Resource Management's (CWRM) comments, information about the project was submitted to the Department of Water Supply on September 10, 2003 for inclusion in the County's Water Use and Development Plan.

On April 19, 2004, Well Construction/Pump Installation Permit applications were submitted to the CWRM for the proposed irrigation well on the subject property, as well as for the proposed irrigation well on the adjoining Ke Ali'i Villas condominium parcel. Pursuant to the CWRM's letter of April 20, 2004, the applicant acknowledges that the process of constructing a well is regulated and permitted in two (2) steps. The first step involves the issuance of a well construction permit for drilling and testing purposes only. Based on information furnished by the applicant through a Well Completion Report Part 1 (Well Construction), a pump installation permit may then be issued to authorize pump work upon receipt of a completed application. For the installation of

Diedre Mamiya, Administrator
May 6, 2004
Page 2

a pump, a Well Completion Report Part 2 (Pump Installation) will be required. Since the applicant submitted the Well Construction/Pump Installation Permit applications at the same time, the Part 2 phase will be completed with the information provided from the Part 1 process and submitted to the CWRM. Furthermore, the applicant will work with the CWRM to ensure that all well construction and pump installation submittal requirements are addressed for the proposed irrigation wells.

The applicant acknowledges the CWRM's comments regarding the designation of the Iao Aquifer as a ground water management area, as well its comments about water source and availability.

3. We note that the Maui District Land Office, the Division of State Parks, the Division of Aquatic Resources, and the Division of Forestry and Wildlife reviewed the Draft EA and had no comments.

Thank you again for your comments. Please feel free to call me should you have any questions.

Very truly yours,



Glenn Tadaki, Planner

GT:yp

cc: Kivette Caigoy, Department of Planning
Takeshi Matsukata, KAK II LLC
Warren Unemori, Warren S. Unemori Engineering, Inc.

towndev\kealil2\dnlr.deares

May-05-04 10:33am From-DEPT OF PLANNING COUNTY OF MAUI

808-242819

T-713 P.02/02 F-036

ALAN M. ARAKAWA
MAYOR



CARL M. KAUPALOLO
CHIEF

NEAL A. BAL
DEPUTY CHIEF

COUNTY OF MAUI
DEPARTMENT OF FIRE AND PUBLIC SAFETY

200 DAIRY ROAD
KAHULUI, MAUI, HAWAII 96732
(808) 270-7561
FAX (808) 270-7919

May 3, 2004

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED
04 MAY -4 10:34

Kiverte A. Caigoy, Staff Planner
Department of Planning
County of Maui
250 South High Street
Wailuku, HI 96793

Subject: EA 2004/0001 & SM1 2003/0013, Ke Alii Kai II Subdivision, TMK (2)3-9-019:004

Dear Kiverte A. Caigoy,

I would like to thank you for the opportunity to comment on the above subject. At this time, we have no specific requests. We do anticipate working with the developer on the infrastructure when plans are submitted during the permit process.

Please feel free to contact Lt. Scott English at 270-7122 if you have any questions.

Sincerely,

Valeriano F. Martin
Captain
Fire Prevention Bureau

May-13-04 08:56am From-DEPT OF PLANNING COUNTY OF MAUI

808-242819

T-776 P.02/02 F-164

ALAN M. ARAKAWA
Mayor

GILBERT S. COLOMA-AGARAN
Director

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

Telephone: (808) 270-7845
Fax: (808) 270-7955



COUNTY OF MAUI
**DEPARTMENT OF PUBLIC WORKS
AND ENVIRONMENTAL MANAGEMENT**
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RALPH 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

May 10, 2004

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED
04 MAY 13 AM 8:33

MEMO TO: MICHAEL W. FOLEY, PLANNING DIRECTOR

FROM: *sn* GILBERT S. COLOMA-AGARAN, DIRECTOR OF PUBLIC WORKS
AND ENVIRONMENTAL MANAGEMENT *Milton Arakawa*

SUBJECT: ENVIRONMENTAL ASSESSMENT AND SPECIAL MANAGEMENT
AREA USE PERMIT APPLICATION
KE ALII KAI II SUBDIVISION
TMK: (2) 3-9-019:004
EA 2004/0001 SM1 2003/0013

We reviewed the subject application and have the following comments:

1. Our previous comments to the Department of Planning on September 29, 2003, are still valid.
2. Preliminary approval was granted to the subject subdivision on August 8, 2003. All requirements outlined in our preliminary approval letter must be complied with prior to our granting of final subdivision approval.
3. Although wastewater system capacity is currently available as of April 12, 2004, wastewater system capacity cannot be ensured until the issuance of the building permit.

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

GSCA:MA:sn
S:\LUCA\ICZM\kealii2_sm1_39019004_sn04.wpd



June 28, 2004

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

SUBJECT: Environmental Assessment for Ke Alii II Subdivision (TMK 3-9-19:004;
EA 2004/0001)

Dear Mr. Coloma-Agaran:

We have received from the Department of Planning, your memorandum of May 10, 2004 regarding the subject matter. We note that the applicant will work with your Department to address your previous comments of September 29, 2003 (as reflected in our response letter to you dated December 3, 2003).

With respect to subdivision processing, the applicant is working towards addressing comments of the preliminary approval granted on August 8, 2003.

Finally, the applicant understands that wastewater system capacity cannot be ensured until the issuance of building permit.

Your comments on the Draft Environmental Assessment are very much appreciated.

Very truly yours,

Glenn Tadaki, Planner

GT:msg

cc: Takeshi Matsukata, KAK II LLC
Warren Unemori, Warren S. Unemori Engineering, Inc.

townedevelkealii2dpwem.dea

May-21-04 08:56am

From-DEPT OF PLANNING COUNTY OF MAUI

808-242819

T-838 P.02/03 F-286

LINDA LINGLE
GOVERNOR



'04 MAY 21 A8:49

RODNEY K. HARAGA
DIRECTOR

Deputy Director
BRUCE Y. MATSUI
LINDEN H. JOESTING
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

STP 8.1159

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

May 14, 2004

Mr. Michael W. Foley
Director
Department of Planning
County of Maui
250 South High Street
Wailuku, Hawaii 96793

Dear Mr. Foley:

Subject: Ke Alii Kai II Subdivision and Related Improvements
Draft Environmental Assessment (EA 2004/0001) and
Special Management Area Use Permit Application (SM1 2003/0013)
TMK: (2) 3-9-019: 004

Thank you for your transmittal requesting our review of the subject project. We have the following comments:

1. The subject project will have an impact on our State highways, particularly at the intersections of Piilani Highway at Alanui KeAlii Street, and at Keonekai Street.
2. The Traffic Impact Analysis Report (TIAR) should be updated to reflect the following:
 - a. The TIAR was based on traffic counts collected in 2002, when Piilani Highway was a two-lane highway. In 2003 Piilani Highway was widened to four lanes. The TIAR should be revised to reflect current conditions.
 - b. During AM and PM school peak hours, no left turns are allowed for traffic coming off Piilani Highway onto Alanui KeAlii Street and onto Kananui Road. Figure 3 of the TIAR shows illegal left turns onto Kananui Road. These restricted left turns should not be included in future projections. The TIAR should be reassessed and revised accordingly.

Mr. Michael W. Foley
Page 2
May 14, 2004

STP 8.1159

- c. We recommend improvements be made at the Piilani Highway/Alanui KeAlii Street intersection to provide a double left turn for eastbound traffic on Alanui KeAlii Street to go northbound on Piilani Highway.
 - d. We recommend a right turn deceleration lane be constructed for traffic turning off Piilani Highway into Keonekai Road.
3. The applicant should be responsible for implementing required and recommended traffic mitigation measures. In this regard, the applicant should be encouraged to coordinate and seek cost arrangements with the neighboring developers especially those who may also benefit from improvements made to the two above said intersections.
 4. The applicant should be required to participate and contribute to their fair share of regional roadway improvements.

We appreciate the opportunity to provide comments.

Very truly yours,



& RODNEY K. HARAGA
Director of Transportation



June 24, 2004

Rodney K. Haraga, Director
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

SUBJECT: Draft Environmental Assessment (EA) in Support of the SMA Use Permit Application for the Proposed Ke Ali'i Kai II Subdivision and Related Improvements;
EA 2004/0001, SM1 2003/0013; TMK 3-9-19: 04

Dear Mr. Haraga:

Thank you for your May 14, 2004 letter commenting on the above-referenced project. On behalf of the applicant, KAK II LLC, we would like to note the following.

1. The Traffic Impact Analysis Report (TIAR) for the proposed project indicates that the level of service at the intersection of Ke Alii Alanui and Piilani Highway will operate at LOS C or better during the morning and afternoon peak hours of traffic. The level of service at the Keonekai Road/Piilani Highway intersection is projected to operate at LOS B during the a.m. and p.m. peak hours of traffic except for the eastbound left-turn movement which will operate at LOS D during both peak hours.
2. With respect to comments offered on the TIAR, we note the following:
 - a. The TIAR utilizes traffic counts that were taken after Piilani Highway was widened from two (2) to four (4) lanes.
 - b. The restricted left-turn movements from Ke Alii Alanui to Kananakui Road will not be included in any future traffic projections.
 - c., d. Toward improving traffic circulation in the Kihei region, the applicant is proposing to construct the North-South Collector Road (NSCR) from Ke Alii Alanui to Keonekai Road. The Department of Transportation's (DOT) recommendations of providing a double-left turn movement at the Ke Alii Alanui/Piilani Highway intersection and a right-turn/deceleration from Piilani Highway onto Keonekai Road will be examined as alternative measures in lieu of the NSCR.

Rodney K. Haraga, Director
June 24, 2004
Page 2

3. The proposed NSCR segment between Ke Alii Alanui and Keonekai Road is viewed as an improvement which will complement the State's existing transportation system, enhance traffic flow on State facilities in the Kihei area, and provide functional benefits which will accrue to the traveling public. The applicant has been in discussions with landowners abutting the proposed NSCR segment between Ke Alii Alanui and Keonekai Road to facilitate right-of-way acquisition for the NSCR proposed. Should the NSCR not proceed due to regulatory or right-of-way acquisition constraints, the applicant is willing to discuss cost sharing arrangements with other area developers to implement the double left turn and deceleration lane recommendations advanced by the Department.
4. The applicant recognizes the need to mitigate traffic impacts in the vicinity of the project and is therefore willing to commit funds for the NSCR. Should the NSCR not proceed due to regulatory or right-of-way acquisition constraints, the applicant would have no objections to contributing to other roadway improvements based on a fair-share contribution methodology for the Kihei-Makena region.

Thank you for providing us with your comments. Please feel free to call me should you have any questions.

Very truly yours,



Glenn Tadaki, Planner

GT:yp

cc: Kivette Caigoy, Department of Planning
Takeshi Matsukata, KAK II LLC
Phil Rowell, Phillip Rowell & Associates

towndev\kealii2\dot.deares

MAY 17 2004

ALAN M. ARAKAWA
Mayor

MICHAEL W. FOLEY
Director

WAYNE A. BOTEILHO
Deputy Director



COUNTY OF MAUI
DEPARTMENT OF PLANNING

May 14, 2004

Mr. Glenn Tadaki
Munekiyo & Hiraga
305 South High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Tadaki:

RE: Maui Planning Commission Comments on the Draft Environmental Assessment (DEA) for the Ke Alii Kai II Subdivision and Related Improvements located at TMK: 3-9-019: 004, on 28.57 Acres of Land in Kihei, Island of Maui, Hawaii (EA 2004/0001)

At its regular meeting on May 11, 2004, the Maui Planning Commission (Commission) reviewed the above-referenced project and had the following comments:

1. The Drainage Reserve traverses through the southeast quadrant of the property.
 - a. Identify the responsible party for maintaining the area.
 - b. Is the area proposed as a separate lot or easement?
 - c. What is the range of depth?
 - d. What kind of improvements or construction will be required? Discuss potential impacts and mitigative measures.
 - e. Page 58 refers to a 100-year storm event. Discuss the methodology for using this measurement for the project.
 - f. Describe the channel downgradient from the property, and the stormwater flow and final discharge point. Discuss potential impacts and mitigative measures to downgradient properties.
2. The on-site Drainage Detention Basin located in the southwest corner measures approximately 3.7 acres in total area. This area is proposed to serve the dual purpose of a drainage detention basin and as a park playground.

Mr. Glenn Tadaki
May 14, 2004
Page 2

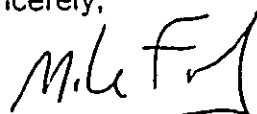
- a. Discuss how the proposed detention basin and project will meet the County park requirements.
 - b. If the detention basin is accepted as a public park, consult with Department of Public Works & Environmental Management (DPWEM) as to acceptable accessways to the park and the area designated on the Site Plan as "Optional Future Public Parking."
 - c. Identify the responsible party for maintaining the detention basin and park playground.
 - d. Since the area is serving a dual purpose, the playfield may flood during heavy rainfall events and pose a safety hazard for children and residents. Discuss mitigative measures and identify the responsible party for maintaining these measures. For instance, if a gated fence is proposed along the perimeter, who will be responsible for ensuring access is restricted during heavy rainfall events?
3. Discuss the percolation rate for the injection well.
 4. Discuss energy conservation measures incorporated into the proposed project.
 5. Will the irrigation system be capable of connecting to reclaimed water lines should the County extend such services to the area at some point in the future?
 6. The southern cul-de-sac and road extension run along, and in close proximity, to the property boundary. Discuss potential impacts and mitigative measures to adjacent property owners.
 7. As mentioned in Section C, alternative site plans were considered. Include a description and copies of the alternative Site Plans in the Final EA.
 8. Provide a discussion on the alternative roadway design within the subdivision that would provide a through street connecting the two (2) north central cul-de-sacs.
 9. The design year used in the Traffic Impact Analysis Report is 2005. Is this reasonable considering the construction schedule of the project?

Mr. Glenn Tadaki
May 14, 2004
Page 3

10. The applicant proposes, as a separate project, the construction of the North-South Collector Road between Alanui Ke Ali'i Road and Keonekai Road to mitigate traffic concerns in the area.
 - a. Discuss how the applicant proposes to complete this project.
 - b. Describe the cross sections that will be used.
 - c. Discuss alternative mitigative measures and recommendations for traffic should this project not be approved or completed.
11. A traffic signal warrant analysis was completed for the intersection at Alanui Ke Ali'i and Kananui Roads. Discuss the results of the analysis. Discuss the applicability of implementing temporary mitigative measures at this intersection pending completion of the North-South Collector Road segment in Item #10 above.
12. Discuss what consideration was given to providing affordable units in this project.

Thank you for your cooperation. If additional clarification is required, please contact Ms. Kivette A. Caigoy, Environmental Planner, of this office at 270-7735.

Sincerely,



MICHAEL W. FOLEY
Planning Director

MWF:KAC:lar

c: Wayne Boteilho, Deputy Planning Director
Clayton I. Yoshida, AICP, Planning Program Administrator
Kivette A. Caigoy, Environmental Planner
Colleen Suyama, Staff Planner
EA Project File
SM1 Project File
General File
(K:\WP_DOCS\PLANNING\EA\2004\1_KeAliiKaiSubd\MP\CDEAComments.wpd)



June 29, 2004

Michael W. Foley, Director
County of Maui
Department of Planning
Attention: Kivette Caigoy
250 South High Street
Wailuku, Hawaii 96793

SUBJECT: Maui Planning Commission Comments on the Draft Environmental Assessment for the Ke Ali'i Kai II Subdivision and Related Improvements (EA 2004/001)

Dear Mr. Foley:

Thank you for your letter of May 14, 2004 transmitting the Maui Planning Commission's comments on the subject Draft Environmental Assessment (EA). We are providing the following information to address the comments offered by the Commission. The responses below are numbered to correspond to the numbering of comments in your letter.

1. a. Maintenance responsibility for the drainage reserve shall rest with the homeowners association of the Ke Alii Kai II Subdivision.
- b. The drainage reserve is designated as a separate lot.
- c. The depth of the drainage reserve ranges between 1.77 feet and 4.70 feet.
- d. The following limited improvements are proposed to ensure that the functional integrity and operational efficiency of the drainage reserve is maintained.
 - Geocell linings will be installed at three (3) separate locations along the drainage way. The linings are installed at bends in the drainage reserve for bank protection purposes.
 - Twin 6-ft. x 6-ft. box culverts will be installed where the drainage reserve crosses Road "B".

Michael W. Foley, Director
June 29, 2004
Page 2

- An emergency overflow spillway is proposed to convey overflow from the drainage retention basin to the drainage reserve.

The locations of the improvements are depicted on the Conceptual Grading Plan included in Appendix "C" (Preliminary Development Plans) of the EA document

The proposed improvements will not alter drainage patterns or capacity characteristics, nor will it adversely impact downstream or adjacent properties.

- e. Although the "*Rules for the Design of Storm Drainage Facilities in the County of Maui*" stipulates that for drainage areas of 100 acres or more, the NRCS hydrograph method with a recurrence interval of 100 years based on 24-hour storm be used, the project civil engineer adopted the flow rate for a 100-year, 6-hour storm instead because it was the higher of the two (2) flow rates and is a more conservative approach. It also corresponds to the rationale adopted by the State Department of Transportation in sizing all major drainage structures on Piilani Highway.
- f. After leaving the project site, the existing drainage channel continues through TMK parcels 3-9-43:25 and 26 of the Keonekai Heights Subdivision (File Plan 1923) and TMK parcels 3-9-43:90, 91, 93 and 94 of the Keonekai Heights IV Subdivision. It then crosses the North-South Collector Road corridor and vacant lots (TMK parcels 3-9-20:4 and 32). From there, it flows across the middle of the parking lot for the Kihei Kai Nani condominium. Two (2) 24-inch culverts on South Kihei Road, located between TMK parcel 3-9-20:1 and Kamaole Beach Park No. 2, then conveys portions of the runoff into the ocean. The capacity of these two (2) culverts is estimated to be around 60 cubic feet per second (cfs). Flows in excess of this amount either overtops the curbing on the makai side of South Kihei Road or sheet flows along South Kihei Road and drains toward the Lilioholo Gulch crossing on South Kihei Road approximately 600 feet south of these two (2) culverts. See Exhibit "A" and Exhibit B".

Condition 14 of Article 15-04-06 "*Design Standards of the Rules for Design of Storm Drainage Facilities in the County of Maui*" states that,

"offsite flows may be passed safely through a development provided there are no additional adverse effects resulting from the new development to adjacent and downstream properties."

Michael W. Foley, Director
June 29, 2004
Page 3

Since the Ke Alii Kai II Subdivision project will not be adding any runoff to the existing offsite runoff, there should not be any additional adverse effects resulting from the new development to adjacent and downstream properties. Instead, under the proposed drainage plan, runoff that is presently draining into the drainage channel from the project site will be retained on site. Therefore, the total flow in the drainage channel is expected to be reduced by approximately 20 cfs following the completion of the Ke Alii Kai II Subdivision.

2. a. The area designated as useable for parks and playground purposes amounts to approximately 2.7 acres. The useable areas include the play fields, parking areas and comfort station site. The total land dedication area required for the 90-lot subdivision is 43,500 square feet ((90-3) x 500 s.f./lot). The applicant will seek parks credit for the excess land area for the park, to satisfy the parks and playground requirements for other projects the applicant may develop. This information will be included in the Final EA.
- b. On May 18, 2004, project representatives met with Milton Arakawa of the Department of Public Works and Environmental Management, and Glenn Correa, John Buck, and Pat Matsui of the Department of Parks and Recreation to discuss access requirements for the area designated as "*Optional Future Public Parking*". It was agreed by the departments that parking should be provided in this designated area to meet the needs of parks users. Site conditions were examined to consider design alternatives and to determine if adverse effects would result from the provision of a curb cut and driveway from the North-South Collector Road to the public parking area. After consideration of parking lot use patterns, it was agreed that access from the North-South Collector Road would be permitted (via a curb cut and driveway) to the "*Optional Future Public Parking*" area. A schematic access and parking layout plan for the park has been prepared and is included in Appendix "C" (Preliminary Development Plans) of the Final EA.
- c. Pursuant to discussions, with the Department of Parks and Recreation, the homeowners association of the Ke Alii Kai II Subdivision will have maintenance responsibility for the park for the initial ten (10)-year period time after which the County of Maui will assume the responsibility for park maintenance. Provisions in this regard will be set forth in a maintenance agreement between the applicant and the County.

- d. A four (4)-ft. high chain link fence will secure the retention basin site. The purpose of the fence is to prevent young children from gaining ready access to the retention area. The fencing is intended to serve as a physical barrier to alert parents and responsible adults that the use of the play field during retention conditions is not appropriate.
3. The percolation rate for the percolation well will not be known until it is drilled and tested. However, according to the Soil Survey by the NRCS, (fka, Soil Conservation Service), the predominant soil type at the project site is PZUE or the Puuone Series. This soil was derived from coral and seashells. The permeability rate for this type of soil is estimated to range between 6 and 20 inches per hour. See Exhibit "C".

As the average depth water in the retention basin is estimated to be around 36 inches at design capacity, the basin is expected to drain within 1.8 hour to 6 hours. The percolation well is expected to further hasten percolation into the substrata when completed.

4. Each of the single-family residences will be equipped with a solar water heating system. Other energy conservation measures such as window tinting or use of energy efficient cooling systems may be employed by individual homeowners.
5. The irrigation system will be designed to facilitate the use of reclaimed water should supply lines be extended to the subdivision site.
6. Any grade differential between the proposed road right-of-way and adjacent lot will be made up by constructing a retaining wall. In addition, a solid vinyl fence will be constructed for privacy along the south side of lot 91, the private driveway serving lots 71 through 74 inclusive.
7. Alternative site plans will be addressed in the Final EA.
8. After reviewing the option of connecting the two (2) north-central cul-de-sacs, the applicant and the project engineer determined that the proposed cul-de-sac configuration is preferable in this instance. The unique circumstance affecting the proposed subdivision configuration is that both Road "A" and Road "B" provide "pass-through" opportunity for non-subdivision traffic from Kananui Road to the North-South Collector Road. From a marketing and traffic safety standpoint, it is considered important that non-subdivision traffic volumes through neighborhoods be controlled via the cul-de-sac design. We note that the preliminary subdivision approval for the Ke Alii

Michael W. Foley, Director
June 29, 2004
Page 5

Kai II Subdivision was granted by the Director of Public Works and Environmental Management on August 8, 2003. The approval of the preliminary plat layout was based on the design's compliance with provisions of Title 18 of the Maui County Code relating to "Subdivisions".

Since the matter of the cul-de-sac connection was raised as part of the Maui Planning Commission's deliberations, the applicant has asked the project's civil engineer to prepare an alternative subdivision layout scheme which provides for the connection of the cul-de-sacs. The alternative plan will be included in the Final EA document.

With regard to Maui Fire Department access requirements, the plans are in compliance with their requirement for a 32 feet wide curb-to-curb travelway on cul-de-sac streets with a 81 feet diameter paved turnaround.

9. The design year for the project was established when project planning was initiated during the summer of 2002. The project implementation schedule has been adjusted to account for the processing of the EA. Based on this delay, a 2006 target year is now anticipated. Based on the traffic engineer's review of his analysis, the adjusted 2006 time frame does not alter the findings and conclusions of the TIAR.
10.
 - a. A coordinated phasing program is envisioned for the implementation of the North-South Collector Road, between Alanui Ke Alii and Keonekai Road. In summary, the applicant and its affiliate proposes to jointly pay for permitting, design, right-of-way acquisition and construction of the roadway to standards agreed upon by the Department of Public Works and Environmental Management. If condemnation proceedings by the County of Maui are required, the applicant will pay the cost of land acquisition under said proceedings. A copy of the phasing program is currently being prepared and will be furnished to the department upon completion.
 - b. The North-South Collector roadway section between Walua Place and the southern boundary of the Ke Alii Kai II Subdivision will be completed to full County standards. The typical roadway sections proposed by the applicant and its affiliate have been reviewed and accepted by the Department of Public Works and Waste Management. See Exhibit "D. The remaining section of the North-South Collector Road, from the southern boundary of the Ke Alii Kai II Subdivision to Keonekai Road will involve the construction of two (2) travel lanes only. As adjoining properties are developed, it is anticipated that these

Michael W. Foley, Director
June 29, 2004
Page 6

properties will contribute towards the completion of the roadway to full County standards (i.e., curbs, gutter, sidewalks, bikelane and bikepath).

- c. The following are various alternative measures should implementation of the North-South Collector Road not be possible due to regulatory or right-of-way constraints.
- (1) Modify the intersection of Ke Ali'i Alanui at Kananui Road to prohibit north-south through movements and left turns from westbound Ke Ali'i Alanui to southbound Kananui Road.
 - (2) Widen the eastbound approach of Ke Ali'i Alanui at Piilani Highway to provide two (2) eastbound to northbound left turn lanes.
 - (3) Construct on and off slip ramps between the southbound lanes of Piilani Highway to Kananui Road. This will provide an alternative for the left turns prohibited as described in No. (2) above.
 - (4) Installation of a traffic signal system at the intersection of Piilani Highway at Kanani Road. The State Department of Transportation has indicated that this intersection should be signalized within the next 12 months.
 - (5) Installation of a traffic signal system at the intersection of Piilani Highway at Keonekai Road.
 - (6) Construct a roundabout along Kananui Road south of Kamalii Elementary School to slow down traffic in the vicinity of the school.

The applicant is willing to provide their fair-share contribution towards required roadway improvements in the Kihei-Makena region.

11. A traffic signal warrant analysis of the intersection of Ke Ali'i Alanui at Kananui Road was a condition of the SMA approval for the Ke Alii Kai Subdivision and was required to be performed when the subdivision occupancy was approximately seventy five percent (75%).

The warrant analysis was completed in September 2003 and submitted to the Maui Department of Planning. The analysis concluded that none of the traffic signal warrants described in the *Manual of Uniform Traffic Control Devices* (FHWA) were triggered.

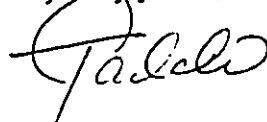
Michael W. Foley, Director
June 29, 2004
Page 7

The analysis also determined that the distance between Kananui Road and Piilani Highway was insufficient, making the coordination and timing of the traffic signals difficult to maintain.

12. The proposed subdivision project is intended to meet the housing needs of moderate income families. This group is viewed as an important segment of the housing market, as the demand for "move-up" moderate housing opportunities is significant among purchasers seeking larger living spaces in a family-friendly environment. In terms of additional inventory contribution, up to fifty percent (50%) of the lots will have the option to have an ohana unit. While the proposed project does not directly provide affordable units, the provision of new inventory available to residents is considered a key element in bringing stability to the overall housing market.

We appreciated the Commission's thoughtful review of the Draft EA. We look forward to discussing with them the Final EA, and subsequently, the project's Special Management Area Use Permit Application.

Very truly yours,

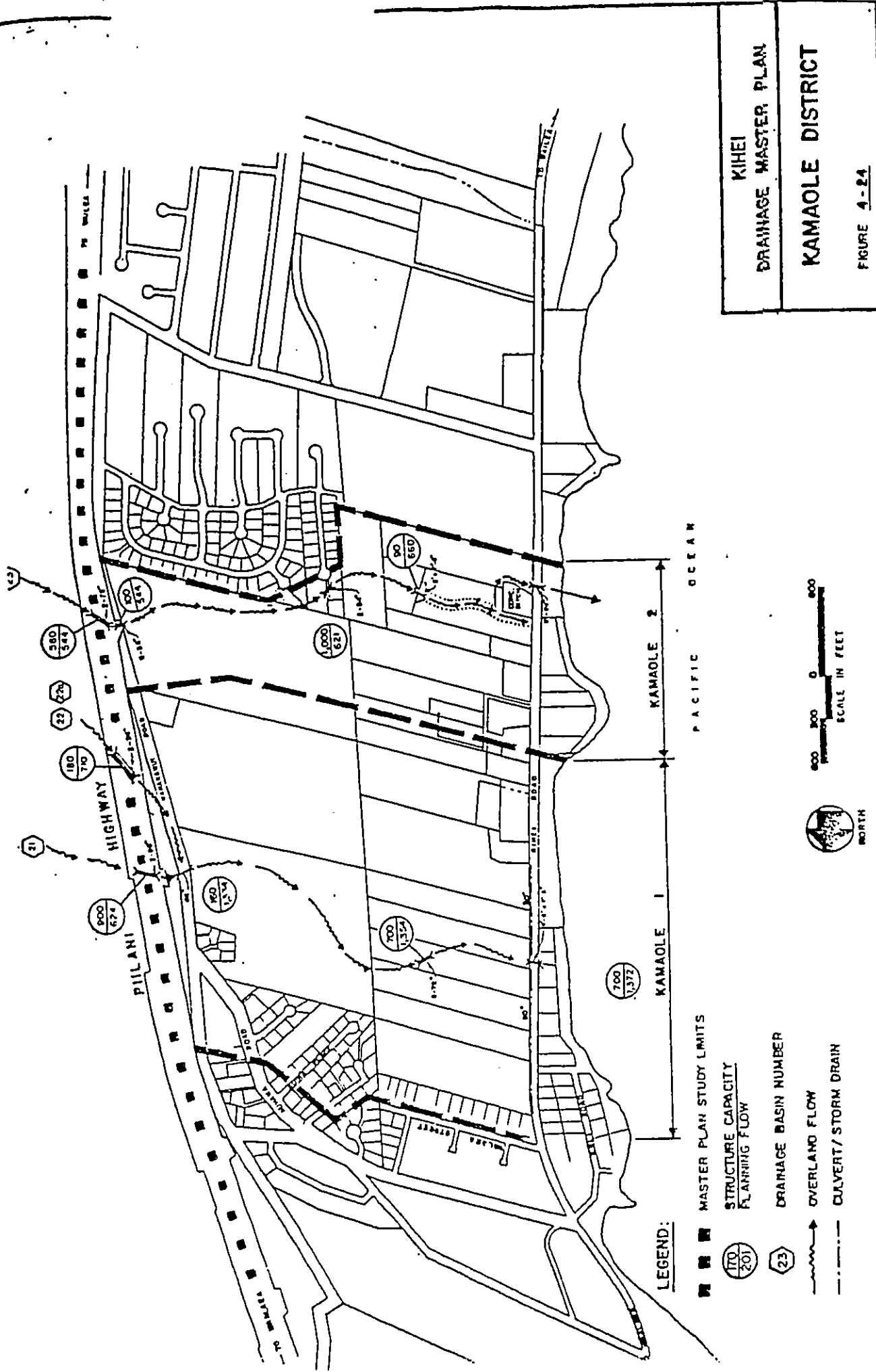


Glenn Tadaki, Planner

GT:yp
Enclosures

cc: Takeshi Matsukata, Towne Development of Hawaii (w/enclosures)
Warren Unemori, Warren S. Unemori Engineering, Inc. (w/out enclosures)
Phillip Rowell, Phillip Rowell & Associates (w/out enclosures)

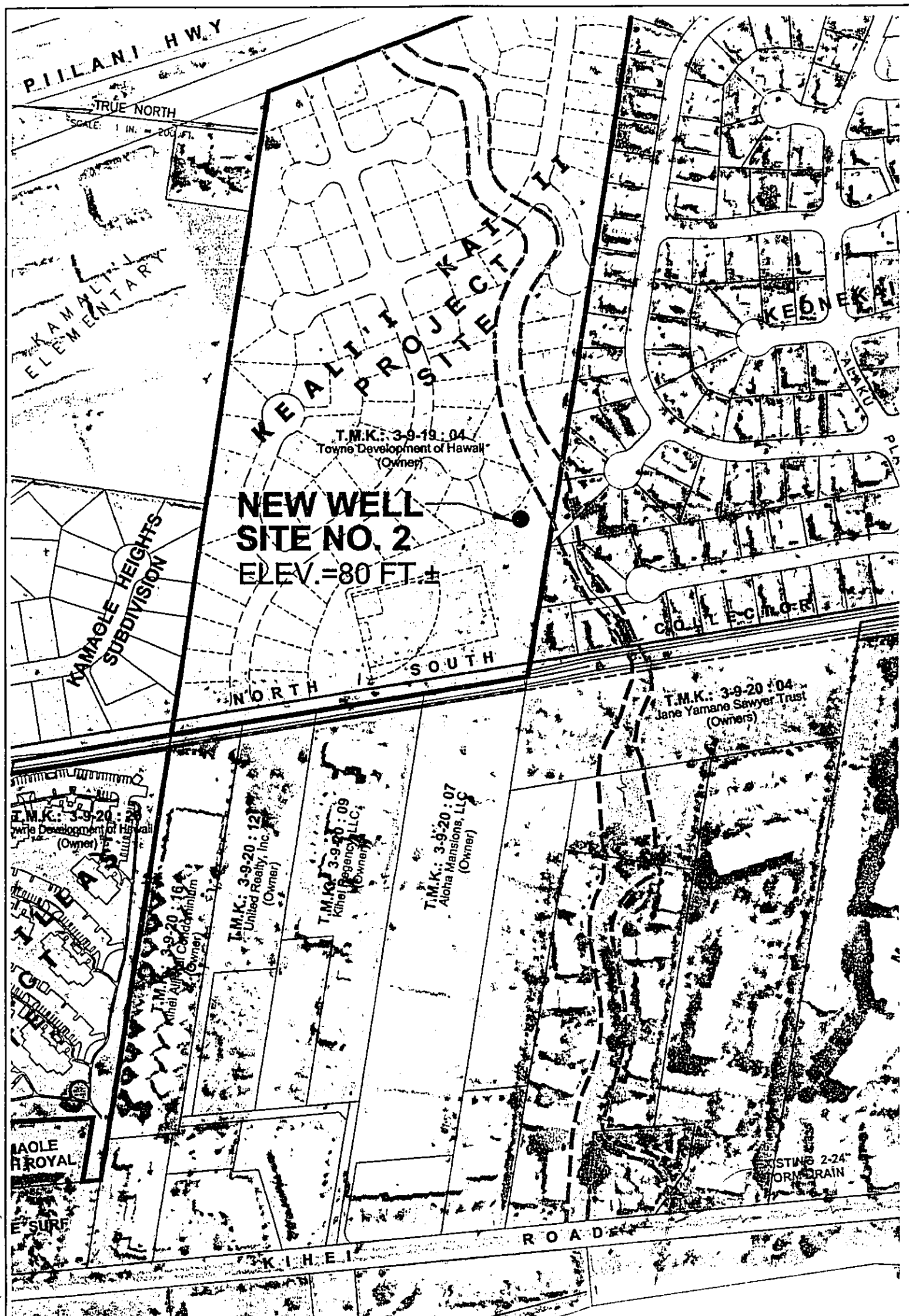
townedev/kealii2/planning.deares



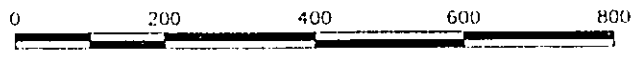
KIHEI
 DRAINAGE MASTER PLAN
 KAMAOLE DISTRICT
 FIGURE 4-24

100 yds to Kamaole

RECEIVED AS FOLLOWS

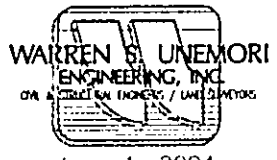


MAP OF EXISTING DRAINAGE WAY FOR OFFSITE RUN-OFF



SCALE: 1 IN. = 200 FT.

EXHIBIT B



June 1, 2004

02proj\02066\exhibits\exh-photo-11x17.dwg

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SOIL SURVEY OF
**Islands of Kauai, Oahu, Maui,
Molokai, and Lanai,
State of Hawaii**



Handwritten text, possibly a date or signature, is visible in the bottom left corner of the page.



United States Department of Agriculture
Soil Conservation Service
in cooperation with
The University of Hawaii
Agricultural Experiment Station

Issued August 1972

EXHIBIT C

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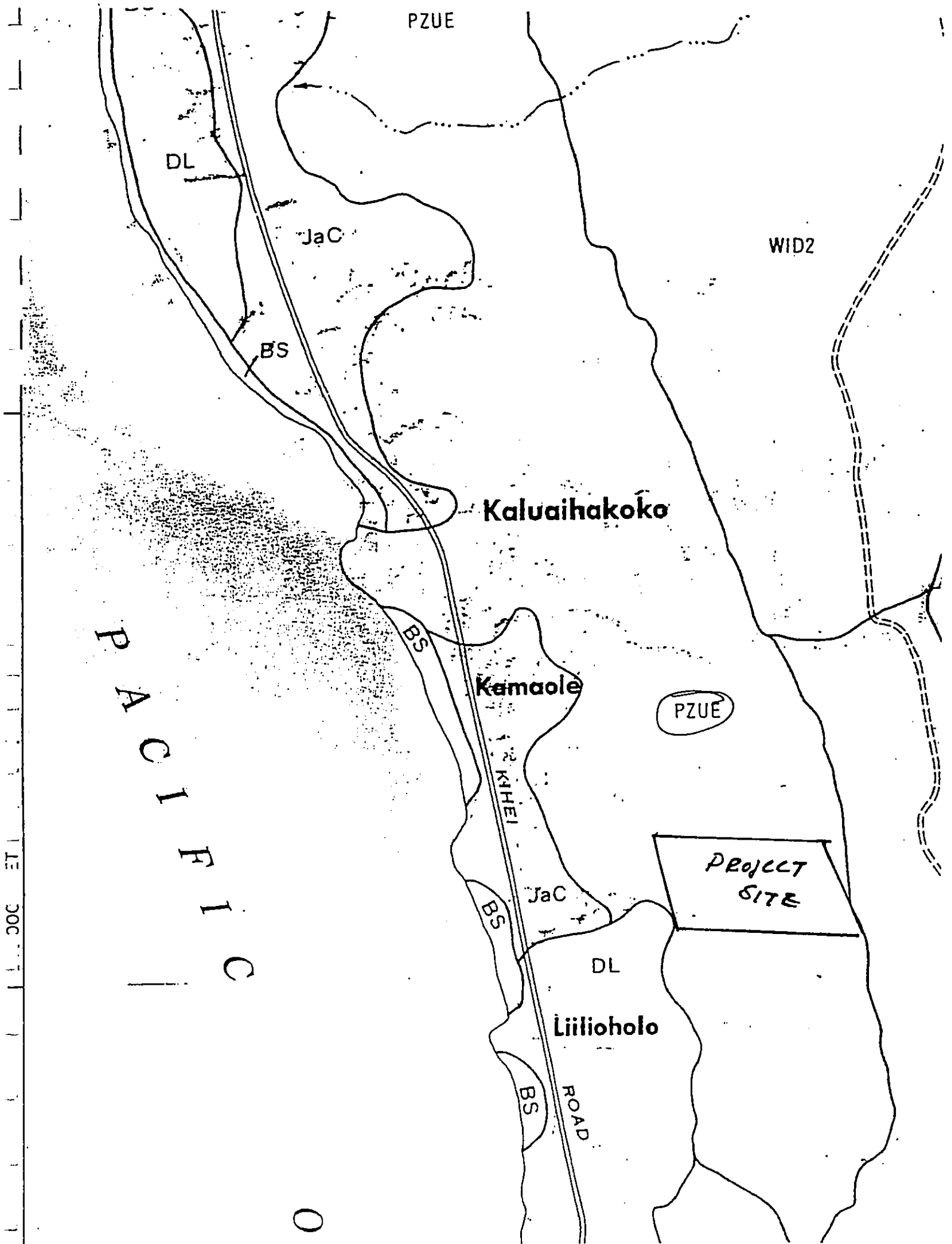


TABLE 2.—Estimated

Soil series and map symbols	Depth to—		Classification
	Bedrock	Seasonal high water table	
Nohili: Nh	P ₁₀ > 5	P ₁₀ 1½-3	Clay
Nonopahu: NnC, NoC	> 5	> 5	Clay and silty clay
Oanapuka: OAD, OED	3½-5	> 5	Very stony silt loam and loam As lava
Olalo: OFC	> 5	> 5	Silty clay
Oli: OI, OMB, OME, OMF	2-4	> 5	Saprolite
Oliha: OHC, ORD, ONE	3-5	> 5	Silt loam Bedrock
Olokui: OO E	> 5	(¹)	Silty clay loam Bedrock
Opihikao: OPD	< 1	> 5	Organic matter Silty clay loam Ironstone sheet Saprolite
Paaliki: PGE, PGF	3-5	> 5	Muck Bedrock
Paaloo: PaC, PnC	> 5	> 5	Silty clay loam and silty clay Saprolite
Pala: PeB, PeC, PeC2	> 5	> 5	Silty clay and clay
Pakala: PkA, PkC, PHXC	> 5	> 5	Silty clay and clay
Pamoa: PID, PID2, PJD2	> 5	> 5	Stratified clay loam, very fine sandy loam, silt loam, and silty clay loam; extremely stony in places
Pane: PXD	> 5	> 5	Silty clay and clay
Papas: PYD, PYE, PYF	3½-5	> 5	Silt loam and loam Gravelly loam
Paumalu: PeB, PeC, PeD, PeE, PeF, PZ	> 5	> 5	Clay Silty clay loam Basalt
Pauwala: PwB, PwC, PwD	> 5	> 5	Silty clay Gravelly silty clay
Pearl Harbor: Ph	> 5	1-4	Clay and silty clay
Pohakupu: PkB, PkC	> 5	> 5	Clay Muck
Pooku: PwB, PwC, PwD, PwE, PwF, PwG	> 5	> 5	Silty clay loam
Puhi: PnA, PnB, PnC, PnD, PnE	> 5	> 5	Silty clay and silty clay loam
Pulehu: PoB, PoaB, PpA, PpB, PpC, PpD, PpE, PpF, PpG, PpH, PpI, PpJ, PpK, PpL, PpM, PpN, PpO, PpP, PpQ, PpR, PpS, PpT, PpU, PpV, PpW, PpX, PpY, PpZ	> 5	> 5	Silty clay loam and silty clay
Puuono: PZUE	1½-3½	> 5	Stratified clay loam, loam, loamy sand, fine sandy loam, and silt loam; cobbly or stony in places

See footnotes at end of table

properties—Continued

Classification—Con.	Permeability	Available water capacity	Reaction	Shrink-swell potential	Corrosivity	
					Uncoated steel	Concrete
Unified						
CH	Inches per hour 0.20-0.63	Inches per inch of soil 0.12-0.14	pH value 4.5-7.8	High	High	Moderate
CH	0.20-0.63	0.10-0.12	7.4-7.8	High	Moderate	Low
ML	2.0-6.3	0.08-0.10	6.6-7.8	Low	Low	Low
MH	2.0-6.3	0.10-0.12	4.5-5.0	Moderate	High	High
MH	2.0-6.3	0.12-0.14	4.5-6.5	Low	High	High
MH-ML	2.0-6.3	0.13-0.15	6.1-6.5	(¹)	High	Low
MH-OH	2.0-6.3	0.20-0.30	4.0-4.5	(¹)	High	High
MH-OH	2.0-6.3	0.12-0.14	4.0-5.0	Moderate	High	High
MH	0.63-2.0	0.09-0.14	5.1-6.5	Low	High	High
MH	0.63-2.0	0.20-0.30	4.5-7.3	High	High	Moderate
MH	2.0-6.3	0.17-0.19	4.5-6.0	Moderate	High	Moderate
MH	2.0-6.3	0.10-0.12	4.5-5.5	Low	High	High
MH	0.63-2.0	0.13-0.15	7.4-7.8	Low	Low	Low
CL and ML	0.63-2.0	0.09-0.14	4.5-6.0	Low	Low	Moderate
CL	0.20-0.63	0.09-0.11	4.5-7.3	High	Low to moderate	Low to moderate
MH	2.0-6.3	0.14-0.16	6.1-7.3	Moderate	Moderate	Low
SM or GM	2.0-6.3	0.08-0.10	6.6-7.3	Low	Low	Low
CH	0.08-0.20	0.10-0.12	6.1-6.5	High	Moderate	Low
C ₁	0.20-0.63	0.11-0.13	6.1-6.5	Moderate	Moderate	Low
MH	2.0-6.3	0.10-0.12	4.5-6.0	Moderate	High	High
CL	2.0-6.3	0.07-0.09	5.5-6.0	Low	High	Moderate
MH	2.0-6.3	0.10-0.12	4.0-5.0	Low	High	High
CH	< 0.06	0.10-0.12	6.5-8.4	High	High	High
Pt	< 0.06	0.16-0.18	7.4-7.8	High	High	High
MH	2.0-6.3	0.12-0.14	6.1-6.5	Moderate	Moderate	Low
MH	2.0-6.3	0.10-0.12	4.0-6.0	Low	High	High
MH	2.0-6.3	0.10-0.12	4.5-6.5	Moderate to low	High	Moderate
MH	0.63-2.0	0.09-0.13	6.6-7.8	Moderate to low	Low	Low
CL, SM or ML	0.63-2.0	0.06-0.08	7.9-8.4	Low	Low	Low

0.3-20.0
< 0.06

except that the texture is sandy loam. Runoff is slow, and the erosion hazard is slight.

This soil is used for pasture and wildlife habitat. (Capability classification IIIe if irrigated, VIi if non-irrigated; sugarcane group 1; pasture group 2)

Pulehu stony sandy loam, 0 to 7 percent slopes (PooB).—This soil is similar to Pulehu clay loam, 0 to 3 percent slopes, except that the texture is sandy loam. There are sufficient stones to hinder tillage but not enough to make intertilled crops impractical.

This soil is used for pasture and wildlife habitat. (Capability classification IIIe if irrigated, VIi if non-irrigated; sugarcane group 1; pasture group 2)

Puuone Series

This series consists of somewhat excessively drained soils on low uplands on the island of Maui. These soils developed in material derived from coral and seashells. They are moderately sloping to moderately steep. Elevations range from 50 to 350 feet. The annual rainfall amounts to 20 to 30 inches, most of which occurs in winter. The mean annual soil temperature is 75° F. Puuone soils are geographically associated with Iao and Jaucas soils.

These soils are used for pasture and homesites. The natural vegetation consists of bermudagrass, kiawe, and lantana.

Puuone sand, 7 to 30 percent slopes (PZUE).—This soil is on sandhills near the ocean. Included in mapping were small areas of Iao and Jaucas soils. Also included were small areas where the cemented layer is less than 20 inches below the surface.

In a representative profile the surface layer is grayish-brown, calcareous sand about 20 inches thick. This is underlain by grayish-brown, cemented sand. The soil is moderately alkaline in the surface layer.

Permeability is rapid above the cemented layer. Runoff is slow, and the hazard of wind erosion is moderate to severe. The available water capacity is about 0.7 inches per foot in the surface layer and subsoil. In places roots penetrate to the cemented layer.

Representative profile: Island of Maui, lat. 20°54'40" N. and long. 156°29'30" W.

C1—0 to 20 inches, grayish-brown (10YR 5/2) sand, light brownish gray (10YR 6/2) when dry; single grain; loose, nonsticky and nonplastic; abundant fine roots; porous; violent effervescence with hydrochloric acid; moderately alkaline; abrupt, wavy boundary. 20 to 40 inches thick.

C2cam—20 to 40 inches, grayish-brown (10YR 5/2), strongly cemented sand, light brownish gray (10YR 6/2) when dry; massive; very hard, very firm, nonsticky and nonplastic; few fine roots in cracks; breaks down under treatment with dilute hydrochloric acid, but not with water; violent effervescence with hydrochloric acid; strongly alkaline.

The depth to the lime hardpan ranges from 20 to 40 inches. It is common to find old root channels filled with a hard, white material that effervesces violently with hydrochloric acid.

The soil is used for pasture and homesites. (Capability classification VIIe, nonirrigated; pasture group 1)

Puu Opae Series

This series consists of well-drained soils on uplands on the island of Kauai. These soils developed in material weathered from basic igneous rock. They are moderately sloping to steep. Elevations range from 500 to 2,500 feet. The annual rainfall amounts to 30 to 50 inches. The mean annual soil temperature is 70° F. Puu Opae soils are geographically associated with Mahana soils.

These soils are used for pasture, woodland, and wildlife habitat. A small acreage is in sugarcane. The natural vegetation consists of molassesgrass, silver oak, passion flower, punkeawe, yellow foxtail, lantana, uluhe, ti, and aalii.

Puu Opae silty clay loam, 8 to 15 percent slopes (PwC).—This soil is on the tops of ridges in the uplands.

In a representative profile the surface layer, about 10 inches thick, is dusky-red silty clay loam that has subangular blocky structure. The subsoil, more than 41 inches thick, is reddish-brown and dark reddish-brown silty clay that has subangular blocky structure. The substratum is soft, weathered rock. The surface layer is medium acid to strongly acid. The subsoil is strongly acid to very strongly acid.

Permeability is moderately rapid. Runoff is slow to medium, and the erosion hazard is slight to moderate. The available water capacity is about 1.4 inches per foot of soil. In places roots penetrate to a depth of 5 feet or more.

Representative profile: Island of Kauai, lat. 22°02'16.6" N. and long. 159°41'52" W.

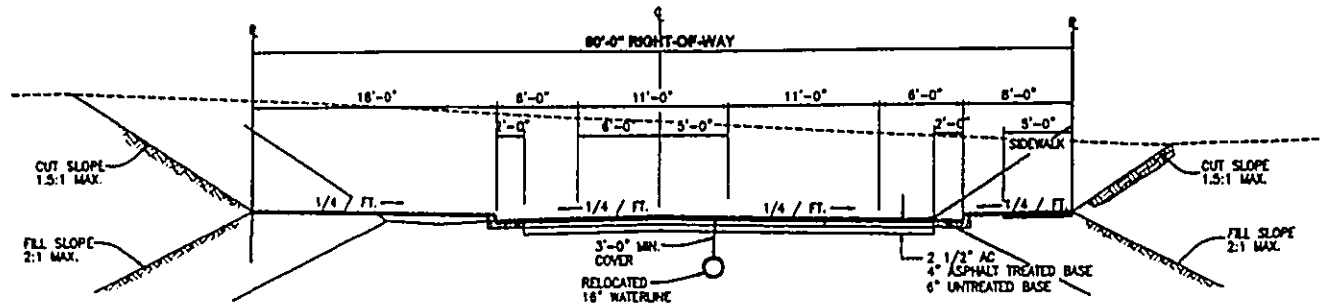
A11—0 to 7 inches, dusky-red (2.5YR 3/2) silty clay loam, weak red (2.5YR 4/2) when dry; moderate, fine and very fine, subangular blocky structure; slightly hard, friable, sticky and plastic; abundant roots; many fine pores; strong effervescence with hydrogen peroxide; strongly acid; clear, smooth boundary. 6 to 8 inches thick.

A12—7 to 10 inches, dusky-red (2.5YR 3/2) loam, dark reddish brown (2.5YR 3/3) when dry; weak, fine, subangular blocky structure; weakly coherent, very friable, slightly sticky and slightly plastic; abundant roots; many fine pores; strong effervescence with hydrogen peroxide; medium acid; clear, smooth boundary. 3 to 5 inches thick.

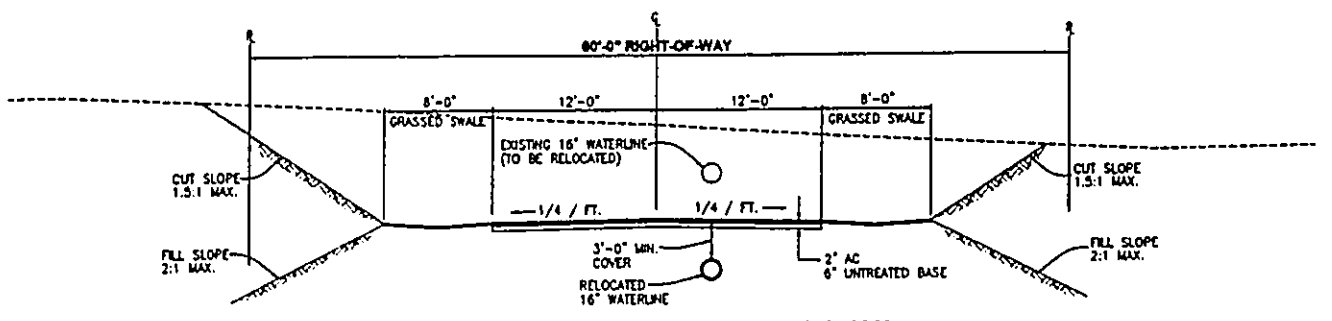
B1—10 to 14 inches, dark reddish-brown (2.5YR 3/3) light silty clay, reddish brown (2.5YR 4/3) when dry; moderate, fine and very fine, subangular blocky structure; hard, friable, sticky and plastic; abundant roots; many fine pores; very few, thin clay films on ped faces; moderate effervescence with hydrogen peroxide; strongly acid; clear, smooth boundary. 3 to 5 inches thick.

B2t—14 to 29 inches, reddish-brown (2.5YR 4/4) silty clay, reddish brown (2.5YR 4/4) when dry; weak, fine and very fine, subangular blocky structure; hard, firm, very sticky and plastic; plentiful roots; common fine and very fine pores; thin, patchy clay films on ped faces; no effervescence with hydrogen peroxide; strongly acid; gradual, smooth boundary. 12 to 18 inches thick.

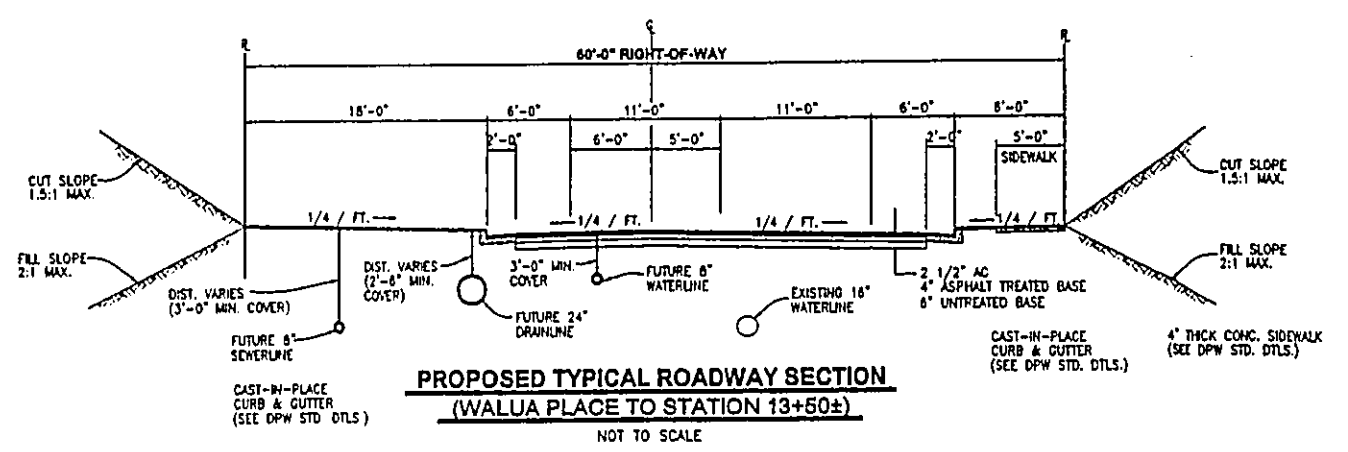
B22t—29 to 61 inches, reddish-brown (2.5YR 4/3) silty clay, reddish brown (2.5YR 4/3) when dry; moderate, fine and very fine, angular blocky structure; hard, firm, very sticky and plastic; few roots; few fine and very fine pores; nearly continuous, moderately thick clay films on ped faces; sugarlike coatings of higher chroma in pores; strongly acid; gradual, smooth boundary. 26 to 38 inches thick.



**FUTURE ROADWAY SECTION
(BY OTHERS)**
(STATION 13+50± TO KEONEKAI ROAD)
NOT TO SCALE



PROPOSED TYPICAL ROADWAY SECTION
(STATION 13+50± TO KEONEKAI ROAD)
NOT TO SCALE

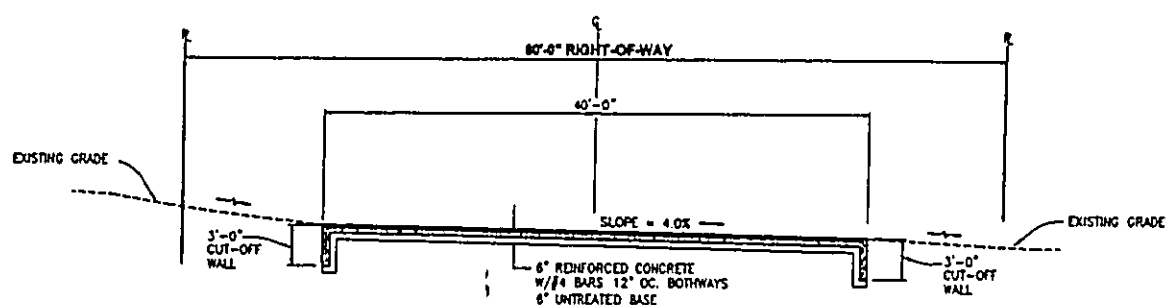


PROPOSED TYPICAL ROADWAY SECTION
(WALUA PLACE TO STATION 13+50±)
NOT TO SCALE

02.mxd / 12/28/04 / 11:53 / 11/11/04 / 11/11/04 / 11/11/04

CUT SLOPE
1.5:1 MAX.

FILL SLOPE
2:1 MAX.



**TYPICAL SECTION CONCRETE FORD
@ LILIOHOLO GULCH CROSSING**
NOT TO SCALE

CUT SLOPE
1.5:1 MAX.

FILL SLOPE
2:1 MAX.

100% CONC. SIDEWALK
(DPW STD. DTLS.)

EXHIBIT D

	WARREN S. UNEMORI ENGINEERING, INC. CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS WELLS STREET PROFESSIONAL CENTER, SUITE 403 7145 WELLS STREET, HAWAII, MAUI, HAWAII 96743		
	KE ALI'I KAI II N/S COLLECTOR ROAD EXTENSION KIHET, MAUI, HAWAII		
TITLE TYPICAL ROADWAY SECTIONS			
DESIGNED BY WSU	CHECKED BY RMA	JOB NUMBER 03050	6 SHEET
DRAWN BY WAN/WIS	APPROVED BY WSU	DATE June 17, 2003	

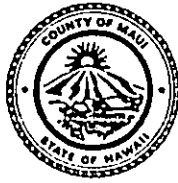
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MAY 25 2004

ALAN M. ARAKAWA
Mayor

MICHAEL W. FOLEY
Director

WAYNE A. BOTEILHO
Deputy Director



COUNTY OF MAUI
DEPARTMENT OF PLANNING

May 24, 2004

Mr. Takeshi Matsukawa
Towne Development
220 South King Street, Suite 2170
Honolulu, Hawaii 96813

Dear Mr. Matsukawa:

SUBJECT: KE ALII KAI II SUBDIVISION

This is a follow-up to the May 11, 2004 Maui Planning Commission meeting concerning the 90-lot Ke Alii Kai II Subdivision proposed in Kihei.

As stated at the aforementioned meeting, the cul-de-sacs identified as Road B and Road C should be connected. In addition to providing improved vehicular and pedestrian circulation, this revision will also allow the pavement width to be reduced from 32 feet to 28 feet. This reduction of pavement will create less impervious surface for storm drainage and will reduce construction costs.

Should you have any questions, please feel free to contact me at 270-7735.

Sincerely,

A handwritten signature in black ink, appearing to read "M. W. Foley", is written over a rectangular box.

MICHAEL W. FOLEY
Planning Director

MWF:atw

c: Michael Munekiyo, Munekiyo & Hiraga, Inc.
Warren Unemori, Unemori Engineering
Captain Val Martin, Fire Prevention
Colleen Suyama, Staff Planner
Kivette Caigoy, Staff Planner
Project File
General File
P:\LETTER\Towne Development Ke Alii Kai II 05-24-04.wpd



June 29, 2004

Michael W. Foley, Director
Department of Planning
County of Maui
250 South High Street
Wailuku, Hawaii 96793

SUBJECT: Draft Environmental Assessment (EA) in Support of the SMA Use Permit Application for the Proposed Ke Ali'i Kai II Subdivision and Related Improvements
EA 2004/0001, SM1 2003/0013; TMK 3-9-19: 04

Dear Mr. Foley:

Thank you for your follow-up comments to the applicant pursuant to the Maui Planning Commission's May 11, 2004 meeting to review the above-referenced document. On behalf of the applicant, KAK II LLC, we are responding to your May 24, 2004 comment letter.

A discussion and an alternative site plan illustrating the through street formed by the connection of the north central cul-de-sacs (identified as Road B and Road C) will be included in the Final EA.

Thank you again for your providing your comments on the Draft EA. Please feel free to call me should you have any questions.

Very truly yours,

Glenn Tadaki, Planner

GT:yp

cc: Kivette Caigoy, Department of Planning
Takeshi Matsukata, KAK II LLC
Warren Unemori, Warren S. Unemori Engineering, Inc.

Towndev\keahi2\planning2.deares

References

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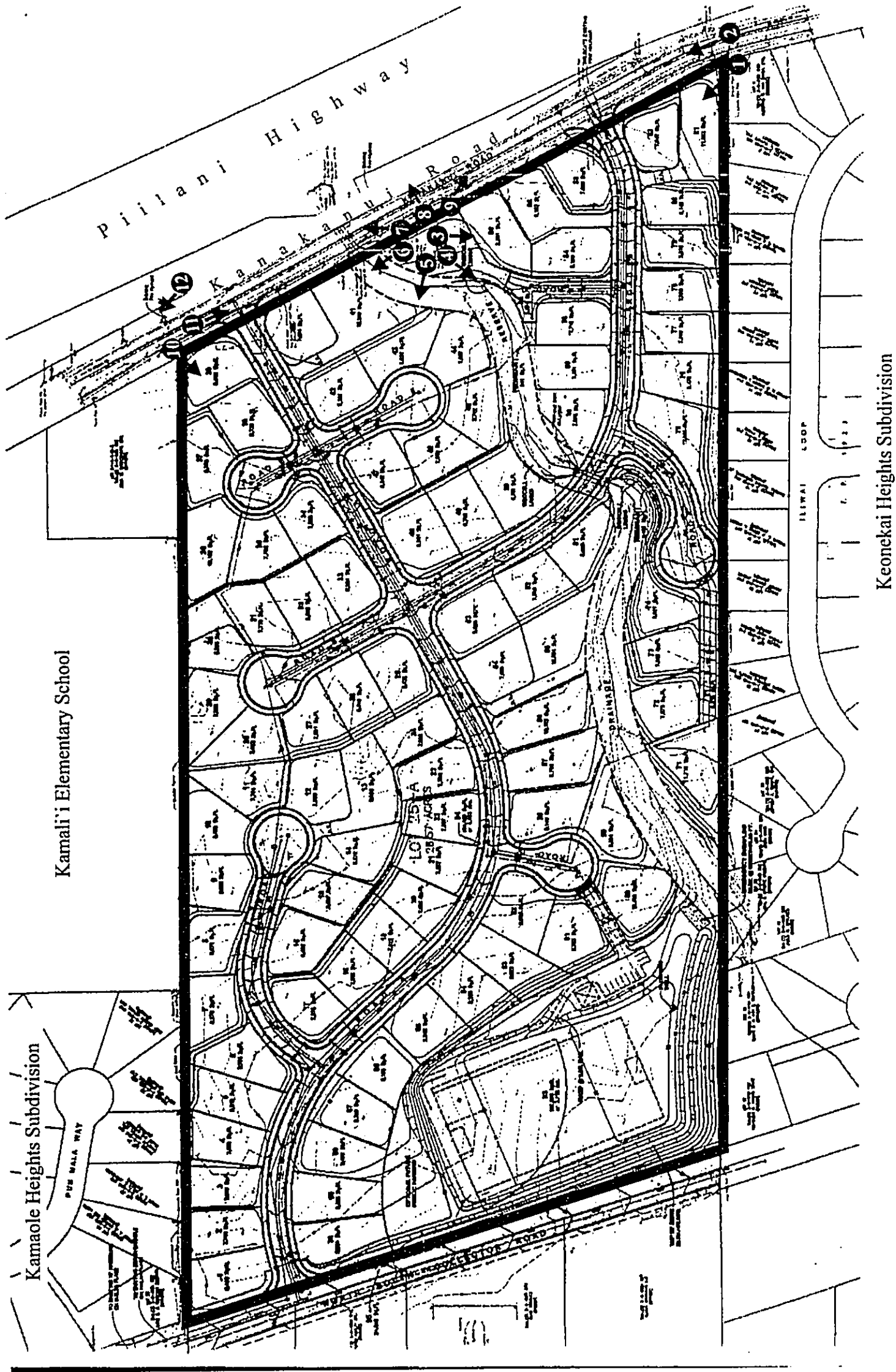
Xamanek Researches, Preservation Plan for Site 50-50-10-2637, Kama'ole Ahupua'a, prepared for Dowling Company, Inc., May 1995.

Appendices

Appendix A

Site Photographs

RECEIVED AS FOLLOWS



Kamali'i Elementary School

Keonekai Heights Subdivision

Kamaole Heights Subdivision

Source: Warren S. Unemori Engineering, Inc.

Proposed Ke Ali'i Kai II Subdivision
Photographic Reference Map

NOT TO SCALE



RECEIVED AS FOLLOWS



Photo No. 1

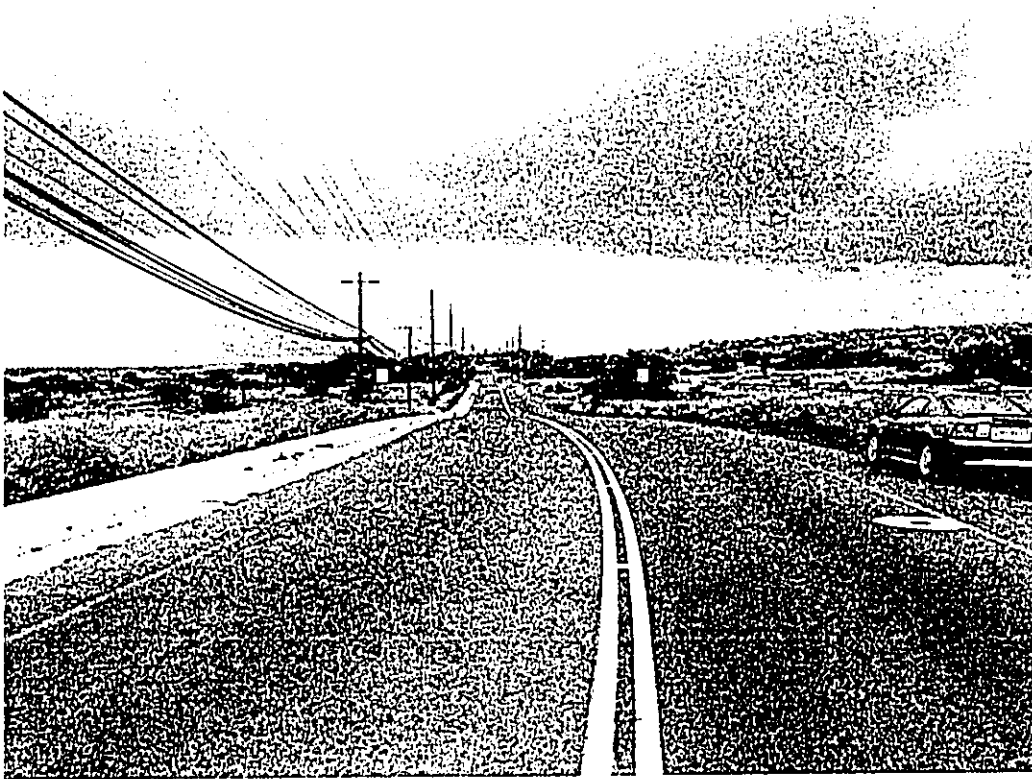


Photo No. 2

RECEIVED AS FOLLOWS

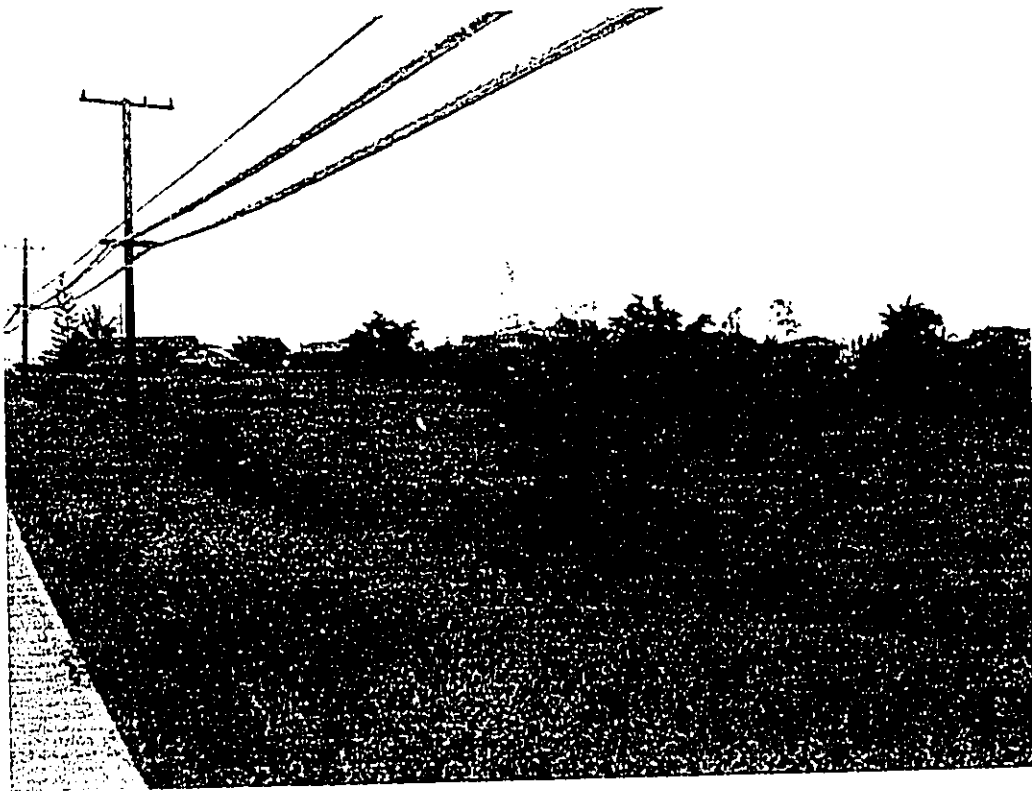


Photo No. 3

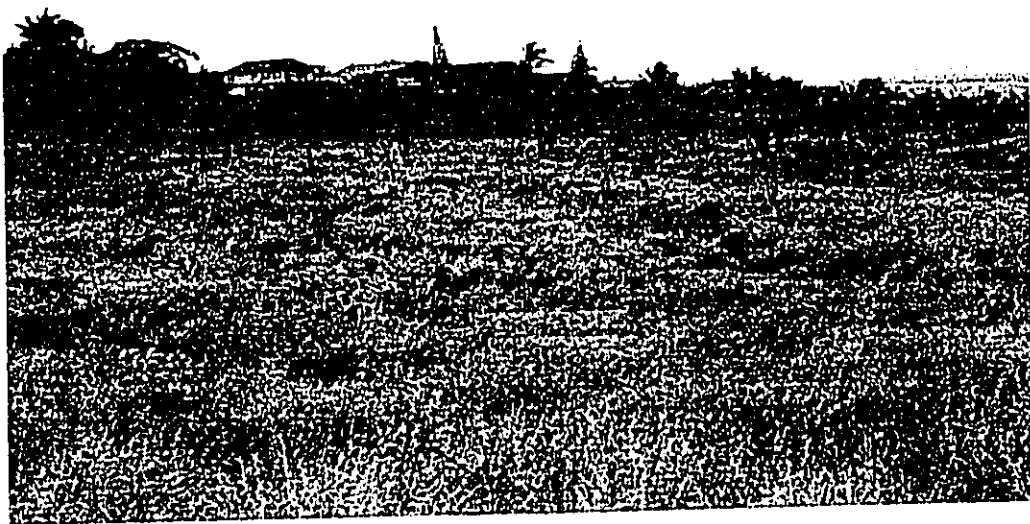


Photo No. 4

RECEIVED AS FOLLOWS



Photo No. 5



Photo No. 6

RECEIVED AS FOLLOWS



Photo No. 7



Photo No. 8

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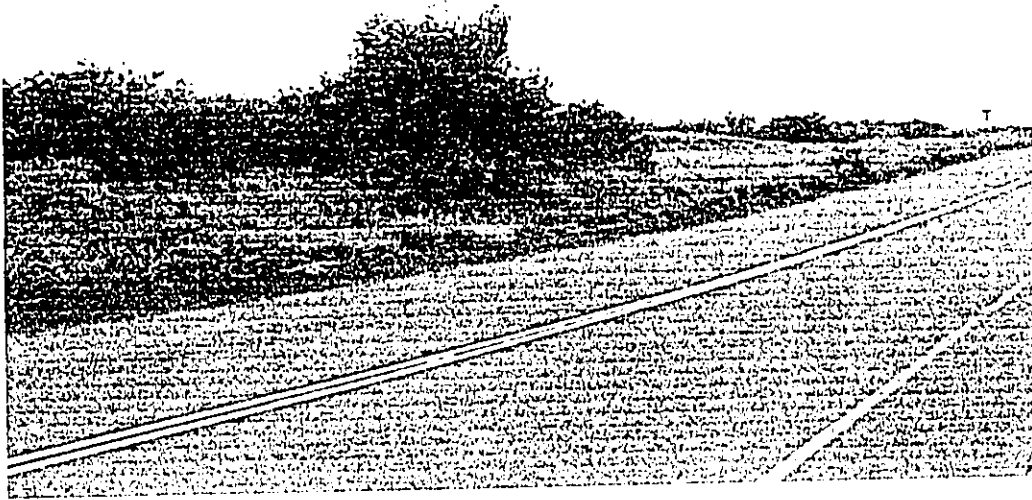


Photo No. 9



Photo No. 10

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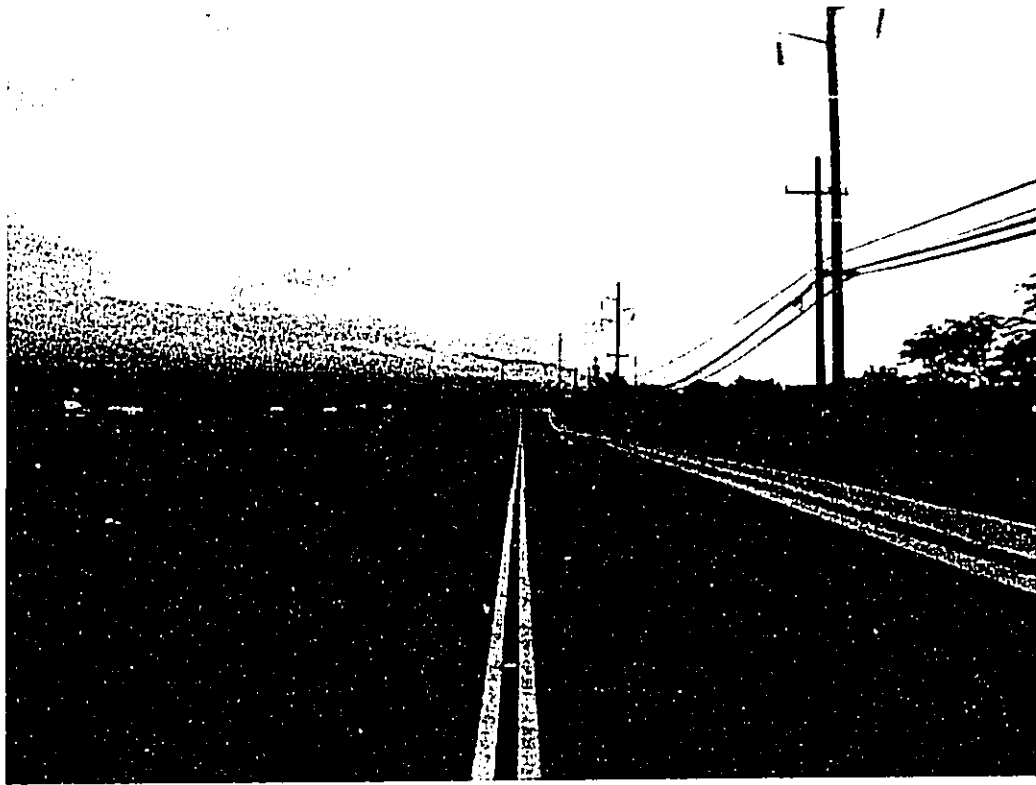


Photo No. 11

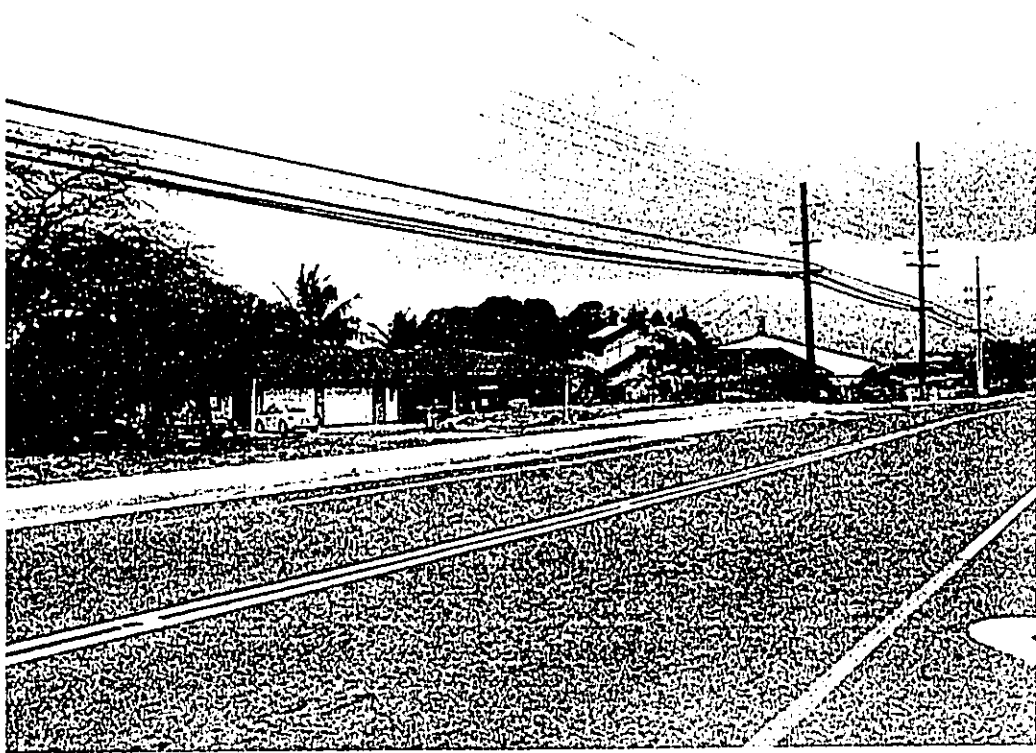


Photo No. 12

Appendix B

*Correspondence with Department
of Public Works and Environmental
Management and Department
of Water Supply Regarding
Chapter 343, HRS Applicability*



November 5, 2003

Milton Arakawa, AICP, Deputy Director
Department of Public Works
and Environmental Management
County of Maui
200 South High Street
Wailuku, Hawaii 96793

SUBJECT: Proposed Ke Aii Kai II Subdivision
IMK 3-9-19:04:SM1.2003/0013

Dear Mr. Arakawa:

We appreciate the time that you and Scott Rollins of your Wastewater Reclamation Division took to meet with us to discuss the installation of the new 8-inch sewer line for the proposed project.

As discussed during our October 30th meeting, the new sewer line will extend from the proposed subdivision's access road near the northwest corner of the subject parcel to an existing sewer manhole which is located at the intersection of Waiua Place and the existing improved section of the North-South Collector Road. Refer to the attached map. The new 8-inch sewer line will lie mostly within the existing undeveloped section of the 60-foot wide North-South Collector Road right-of-way. The new sewer line will be installed within the mauka adjoining half of the right-of-way that borders the subject parcel and the Kamaole Heights Subdivision (the 30-foot wide mauka portion of the right-of-way next to Kamaole Heights is dedicated to the County). The portion of the new sewer line that will lie within the existing improved section of the North-South Collector Road and the dedicated portion of the right-of-way adjacent to Kamaole Heights is approximately 525 feet.

As we discussed, the existing improved section of the North-South Collector Road and the dedicated portion of the right-of-way adjoining Kamaole Heights are under the jurisdiction of the County of Maui and are considered County lands.

As we also discussed, while the use of County lands can typically trigger the environmental review process, we feel that the installation of the new sewer line is an action that is exempt from the preparation of an environmental assessment on the following basis.

environment
planning
government

305 High Street, Suite 104 • Wailuku, Hawaii 96793 • P: (808) 244-2015 • Fax: (808) 244-4779 • Planning@hawaii.gov

Milton Arakawa, AICP, Deputy Director
November 5, 2003
Page 2

Pursuant to Section 11-200-8 (a), Hawaii Administrative Rules for the State Department of Health pertaining to environmental impact statement rules and the Exemption List for the County of Maui dated April 26, 1995, the installation of the new sewer line falls within Exemption Class 6 of the County's exemption list. Exemption Class 6 exempts actions for the construction or placement of minor structures accessory to existing facilities, while Item 5 of this exemption class specifically cites the installation of drains, sewers, and waterlines within streets and highways as an exempt action. Refer to the attached exemption list.

Your written concurrence that the installation of the new sewer line is an exempt action, will be appreciated. Please feel free to call me should you have any questions concerning this letter.

Very truly yours,

Giphon Tadaki, Planner

GT:yp
Enclosures

cc: Richard Lachmann, Towne Development of Hawaii, Inc. (w/out enclosures)
Warren Unemori, Warren S. Unemori Engineering, Inc. (w/out enclosures)

COPY

EXEMPTION LIST FOR THE
COUNTY OF MAUI
AS REVIEWED AND CONCURRED UPON BY THE ENVIRONMENTAL COUNCIL
(DOCKET 94-EX-02)
APRIL 26, 1995

Section 343-6(7), Hawaii Revised Statutes, authorized the Environmental Council to prescribe the procedures whereby specific types of actions, because they will probably have minimal or no significant effects on the environment, are declared exempt from the preparation of an environmental assessment. Pursuant to the administrative rules promulgated under authority of section 343-6(7), HRS, specifically section 11-200-8, the County of Maui has determined that the following types of actions, shall generally be exempt from the preparation of an environmental assessment.

EXEMPTION CLASS 1

Operations, repairs or maintenance of existing structures, facilities, equipment or topographical features, involving negligible or no expansion or change of use beyond that previously existing.

1. Fertilizing, sprinkling, moving, weeding, aerating, road clearing and patching, and sweeping of the following agency maintained lands and facilities:
 - a. Parks
 - b. Streets and highways, bikeways, pedestrian ways, parking lots and appurtenances
 - c. Landscaped areas
 - d. Beach accesses
 - e. Municipal golf courses

2. Overhauling, repairing, repainting, cleaning, polishing, greasing, oiling, and servicing of the following agency facilities, structures and equipment:

- a. Existing buildings
- b. Structures, including water and sewage handling and treatment systems and drainage systems
- c. Stationary and mobile motorized equipment
- d. Existing fences
- e. Existing recreational facilities such as baseball dugouts, backstops, scorekeeper's booths, playground equipment, scoreboards, outdoor lighting, bleachers, field lighting, zoological gardens, botanical gardens, swimming pools, and skateboard parks
- f. Existing maintenance structures including storage sheds, electrical sheds, electric panels, pumphouses, irrigation control panel sheds, garages, mechanic shops, and plant nursery sheds and boathouses

Exemption List for the County of Maui
April 26, 1995
Page 2

3. Resurfacing of existing streets and highways and parking areas with the same type of material as previously used
4. Repair and maintenance of existing sea/retaining walls, which involve no expansion
5. Operation, repairs and maintenance of existing cemeteries, including the digging and covering of new graves
6. Repair and maintenance of established footpaths to beaches and beach accesses

EXEMPTION CLASS 2

Replacement or reconstruction of existing structures and facilities where the new structure will be located generally on the same site and will have substantially the same purpose, capacity, density, height and dimensions as the structure replaced.

This exemption class includes agency actions intended to meet the agency's goals and objectives by replacement in whole or in part, the following, provided there is little or no increase in capacity.

1. Drainage facilities without historic value
2. Roadways and traffic control devices
3. Utility services, including sewer and water
4. Equipment
5. All Parks and Recreation buildings, structures, athletic fields, athletic courts, botanical gardens, plant nurseries, and skateboard parks

EXEMPTION CLASS 3

Construction and location of single, new small facilities or structures and the alteration and modification of same and installation of new, small, equipment and facilities and the alteration and modification of same including but not limited to:
(a) single family residences not in conjunction with the building of two or more such units; (b) multi-unit structures designed for not more than four dwelling units if not in conjunction with the building of two or more such structures; (c) stores, offices and restaurants designed for total occupant load of twenty persons or less, if not in conjunction with the building of two or more such structures; (d) water, sewage, electrical, gas, telephone, and other essential public utility services extensions to serve such structures or facilities; and (e) accessory or appurtenant structures including garages, carports, patios swimming pools, and fences.

1. Additions to buildings or structures not exceeding 500 square feet
2. Extension of or installation of additional water and sewer laterals for a single or several residential units or

Exemption List for the County of Maui
April 26, 1995
Page 3

3. Commercial establishments
Utility support systems for exempt landscaping projects

EXEMPTION CLASS 4

Minor alteration in the conditions of land, water, or vegetation.

1. Minor cut, fill and grading of County property of less than 50 cubic yards of rock and/or soil where the vertical height of cut or fill does not exceed three feet
2. Landscaping alongside roadways, around buildings, and within parks, and beach accesses

EXEMPTION CLASS 5

Basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource.

1. Planning data collection
2. Field surveying
3. Design alternative analysis
4. Communication/Media Surveys
5. Lyalmeters
6. Evapo-transpiration monitoring
7. Rain gauges
8. Non-intrusive archaeological survey work in accordance with procedures recommended by the State Historic Preservation Division
9. Sampling from existing monitoring wells

EXEMPTION CLASS 6

Construction or placement of minor structures accessory to existing facilities.

1. Construction of sidewalks and curbs and gutters
2. Installation of glare screens, safety barriers, energy attenuators, and other items to protect the rotating public
3. Construction of storage sheds, maintenance sheds, electrical sheds, pump houses, fences, outdoor lighting, athletic equipment storage, sheds, and athletic exercise and recreational equipment
4. Installation of street lights, directional, informational, and regulatory signs, pavement markings, traffic signals, and fire alarm systems
5. Installation of drains, sewers and waterlines within streets and highways

Exemption List for the County of Maui
April 26, 1995
Page 4

EXEMPTION CLASS 7

Interior alterations involving such things as partitions, plumbing, and electrical conveyances.

1. Interior alterations to building or structures that do not increase the floor area or change the occupancy

EXEMPTION CLASS 8

Demolition of structures, except those structures located on any historic site as designated in the National Register or Hawaii register as provided for in the Historic Preservation Act of 1966, Public Law 89-665, or Chapter 6, Hawaii Revised Statutes.

1. Demolition of buildings and structures prior to or concurrent with the construction of a new or replacement building or structure
2. The demolition of old, dilapidated, unsafe or dangerous buildings or structures required by building, housing or health codes and regulations

EXEMPTION CLASS 9

Zoning variances except: use, density, height, parking requirements and shoreline setback variances.

1. Agency actions requiring zoning variances involving structure setbacks from property lines

NOTE:

As stated in Section 11-200-8(b), Environmental Impact Statement Rules, all exemptions under this list are inapplicable when the cumulative impact of planned successive actions of the same type, in the same place, over time, is significant, or when an action that is normally insignificant in its impact on the environment may be significant in a particularly sensitive environment.

RAUPH MAGUIRE, L.S., P.E.
 Development Services Administration
 TRACY TAKAOKA, 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

NOV 18 19:46
 DEPT OF PLANNING
 COUNTY OF MAUI
 RECEIVED



COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
AND ENVIRONMENTAL MANAGEMENT
 200 SOUTH HIGH STREET
 WAILUKU, MAUI, HAWAII 96793

November 14, 2003

ALANIL ARAKAWA
 Mayor
 GILBERT B. COLOMA-ADARAU
 Director
 MILTON H. ARAKAWA, A.L.C.P.
 Deputy Director
 Telephone: (808) 270-7845
 Fax: (808) 270-7825

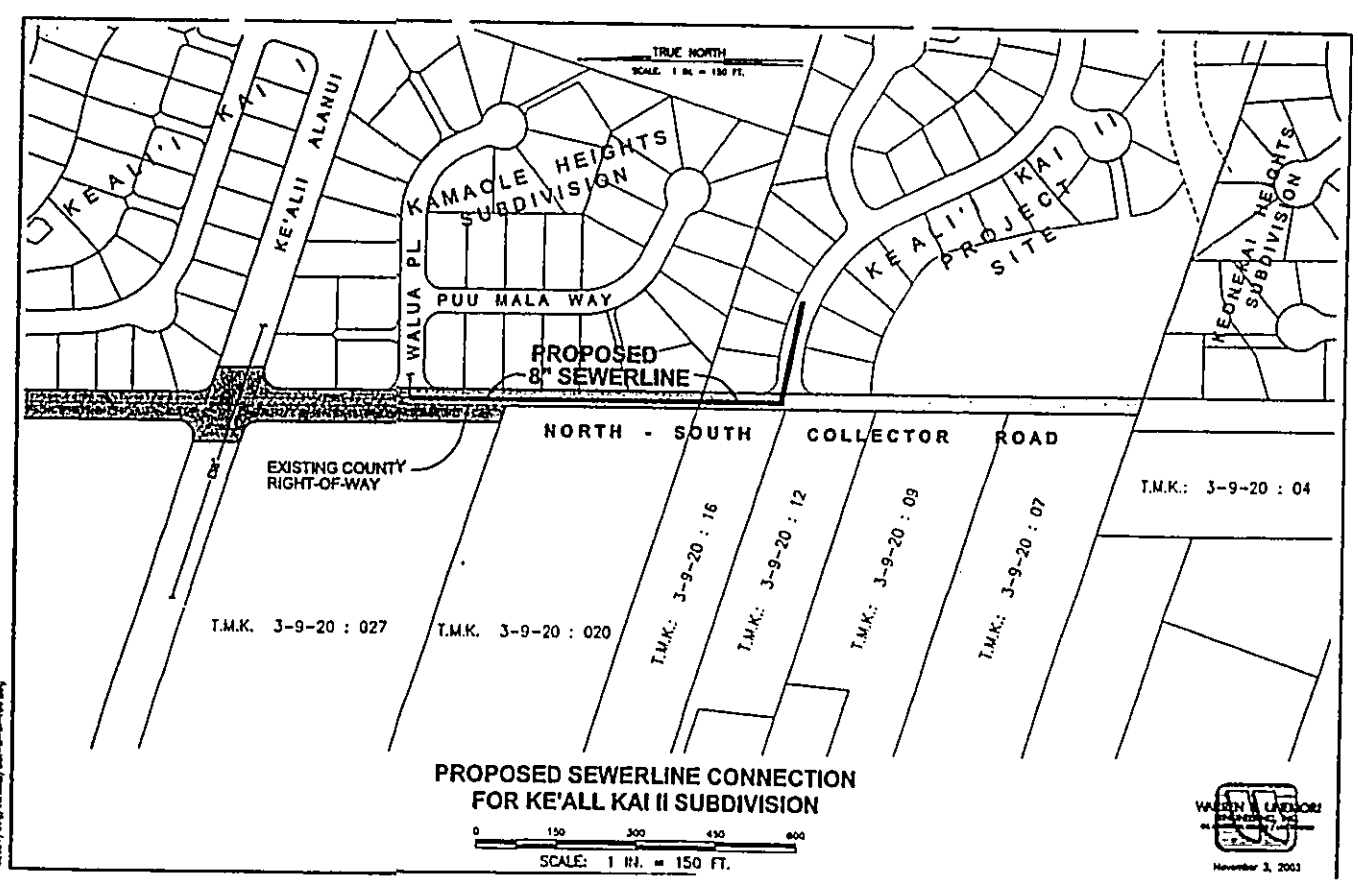
Mr. Glenn Tadaki
 Munekiyo & Hiraga, Inc.
 305 High Street, Suite 305
 Wailuku, Maui, Hawaii 96793

Dear Mr. Tadaki:

SUBJECT: KE'ALI'I KAI II SUBDIVISION
TMK: 3-9-19:04

We have received your letter of November 5, 2003 pertaining to a request for exemption from the preparation of an environmental assessment for a proposed sewerline servicing the proposed Ke Ali'i Kai II Subdivision. We understand that the new sewerline will extend from the vicinity of the Ke Ali'i Kai II Subdivision's access road within an unimproved and improved section of the County's North-South Collector Road right-of-way to an existing sewer manhole near Waiua Place for a distance of approximately 525 feet. Your letter notes that Exemption Class 6 of the County's exemption list exempts actions for the construction and placement of minor structures accessory to existing facilities and Item 5 of this exemption class specifically cites the installation of drains, sewers and waterlines within streets and highways as an exempt action.


In our review of your request, we believe that although the trigger for review is the use of County land, the "action" as defined by the Title 11, Chapter 200, Hawaii Administrative Rules (HAR), is broader. The definition of action is "any program or project to be initiated by an agency or applicant". Thus, we believe that the "action" in this case is comprised of the total proposed project including the proposed sewerline and the residential subdivision. Because of the scope of the action, we do not believe that it can be classified under the County of Maui exemption list.



Mr. Glenn Tadaki
November 14, 2003
Page 2

If you have any questions, please feel free to call me. Thank you for your
patience and understanding.

Very truly yours,


GILBERT S. COLOMA-AGARAN
Director

GSCA:MAJso
xc: Ralph Nagamine, Development Services Administrator
Tracy Takamine, Wastewater Reclamation Division Chief
Michael Foley, Planning Director
s.milton@ke.alfi.kai



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

SUBJECT: Proposed Ke Alii Kai II Subdivision
TMK 3-9-19:04: SM1 2003/0013

Dear Mr. Tengan:

We appreciate the time that you, Jeff Pearson, and Myles Fujinaka took to meet with us to discuss the installation of the new 8-inch water line for the proposed project, as well as the relocation of a portion of the existing 16-inch water line which lies within an easement in the North-South Collector Road right-of-way.

As discussed during our November 4th meeting, the new water line will extend from the proposed subdivision's access road near the northwest corner of the subject parcel to an existing 8-inch water line which ends at the intersection of Waiua Place and the existing improved section of the North-South Collector Road. Refer to the attached map.

The new 8-inch water line will lie mostly within the existing undeveloped section of the 60-foot wide North-South Collector Road right-of-way. The new water line will be installed within the mauka adjoining half of the right-of-way that borders the subject parcel and the Kamaole Heights Subdivision (the 30-foot wide mauka portion of the right-of-way next to Kamaole Heights is dedicated to the County). The portion of the new water line that will lie within the existing improved section of the North-South Collector Road and the dedicated portion of the right-of-way adjacent to Kamaole Heights is approximately 525 feet.

The relocation and lowering of approximately 200 feet of existing 16-inch water line is necessary in order to extend the existing improved section of the North-South Collector Road to provide access to the proposed subdivision and provide adequate cover over the water line when the new roadway profile is established. An existing earth mound at the northwest corner of the proposed subdivision will need to be removed to provide the necessary grade and roadway prism for the North-South Collector Road extension. The water line relocation is also necessary for the proposed Ke Alii Villas Condominium Project since the mound will need

environment
planning
government

305 High Street, Suite 104 • Wailuku, Hawaii 96793 • Fax: (808) 244-2015 • Fax: (808) 244-4257 • Planning@ke.alfi.kai

George Tengan, Director
November 7, 2003
Page 2

to be excavated so that its developer (an affiliate of the applicant's parent company) can improve their adjoining half of the street frontage along the North-South Collector Road.

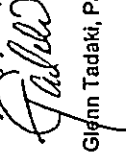
The existing improved section of the North-South Collector Road and the dedicated portion of the right-of-way adjoining Kamaole Heights, are under the jurisdiction of the County of Maui and are considered County lands. While the use of County lands can typically trigger the environmental review process, we feel that the installation of the new water line and the relocation of a section of the existing 16-inch waterline are actions that are exempt from the preparation of an environmental assessment on the following basis.

Pursuant to Section 11-200-8 (a), Hawaii Administrative Rules for the State Department of Health pertaining to environmental impact statement rules and the Exemption List for the County of Maui dated April 26, 1995, the installation of the new water line falls within Exemption Class 6 of the County's exemption list. Exemption Class 6 exempts actions for the construction or placement of minor structures accessory to existing facilities, while Item 5 of this exemption class specifically cites the installation of drains, sewers, and waterlines within streets and highways as an exempt action. Refer to the attached.

In addition, the relocation of a section of the existing 16-inch waterline falls within Exemption Class 2 of the County's exemption list. Exemption Class 2 exempts actions for the replacement or reconstruction of existing structures and facilities where the new structure will be located generally on the same site and will have substantially the same purpose, capacity, density, height, and dimensions as the structure replaced. Utility services, including sewer and water, are specifically identified by Item 3 of this exemption class as an exempt action.

Your written concurrence that the installation of the new water line and the relocation of a portion of the existing 16-inch waterline are exempt actions will be appreciated. Please feel free to call me should you have any questions concerning this letter.

Very truly yours,


Glenn Tadaki, Planner

GT:yp
Enclosures

cc: Richard Lachmann, Towne Development of Hawaii, Inc. (w/out enclosure)
Warren Unemori, Warren S. Unemori Engineering, Inc. (w/out enclosure)

COPY

EXEMPTION LIST FOR THE
COUNTY OF MAUI
AS REVIEWED AND CONCURRED UPON BY THE ENVIRONMENTAL COUNCIL
(DOCKET 94-EX-02)
APRIL 26, 1995

Section 343-6(7), Hawaii Revised Statutes, authorized the Environmental Council to prescribe the procedures whereby specific types of actions, because they will probably have minimal or no significant effects on the environment, are declared exempt from the preparation of an environmental assessment. Pursuant to the administrative rules promulgated under authority of section 343-6(7), HRS, specifically section 11-200-8, the County of Maui has determined that the following types of actions, shall generally be exempt from the preparation of an environmental assessment.

EXEMPTION CLASS 1

Operations, repairs or maintenance of existing structures, facilities, equipment or topographical features, involving negligible or no expansion or change of use beyond that previously existing.

1. Fertilizing, sprinkling, mowing, weeding, aerating, road clearing and patching, and sweeping of the following agency maintained lands and facilities:

- a. Parks
- b. Streets and highways, bikepaths, pedestrian ways, parking lots and appurtenances
- c. Landscaped areas
- d. Beach accesses
- e. Municipal golf courses

2. Overhauling, repairing, repainting, cleaning, polishing, greasing, oiling, and servicing of the following agency facilities, structures and equipment:

- a. Existing buildings
- b. Structures, including water and sewage handling and treatment systems and drainage systems
- c. Stationary and mobile motorized equipment
- d. Existing fences
- e. Existing recreational facilities such as baseball dugouts, backstops, scorekeeper's booths, playground equipment, scoreboards, outdoor lighting, bleachers, field lighting, zoological gardens, botanical gardens, swimming pools, and skateboard parks
- f. Existing maintenance structures including storage sheds, electrical sheds, electric panels, pumphouses, irrigation control panel sheds, garages, mechanic shops, and plant nursery sheds and nohouses

Exemption List for the County of Maui
April 26, 1995
Page 2

3. Resurfacing of existing streets and highways and parking areas with the same type of material as previously used
4. Repair and maintenance of existing sea/retaining walls, which involve no expansion
5. Operation, repairs and maintenance of existing cemeteries, including the digging and covering of new graves
6. Repair and maintenance of established footpaths to beaches and beach accesses

EXEMPTION CLASS 2

Replacement or reconstruction of existing structures and facilities where the new structure will be located generally on the same site and will have substantially the same purpose, capacity, density, height and dimensions as the structure replaced.

This exemption class includes agency actions intended to meet the agency's goals and objectives by replacement in whole or in part, the following, provided there is little or no increase in capacity.

1. Drainage facilities without historic value
2. Roadways and traffic control devices
3. Utility services, including sewer and water
4. Equipment
5. All Parks and Recreation buildings, structures, athletic fields, athletic courts, botanical gardens, plant nurseries, and skateboard parks

EXEMPTION CLASS 3

Construction and location of single, new small facilities or structures and the alteration and modification of same and installation of new, small, equipment and facilities and the alteration and modification of same including but not limited to:
(a) single family residences not in conjunction with the building of two or more such units; (b) multi-unit structures designed for not more than four dwelling units if not in conjunction with the building of two or more such structures; (c) stores, offices and restaurants designed for total occupant load of twenty persons or less, if not in conjunction with the building of two or more such structures; (d) water, sewage, electrical, gas, telephone, and other essential public utility services extensions to serve such structures or facilities; and (e) accessory or appurtenant structures including garages, carports, patios swimming pools, and fences.

1. Additions to buildings or structures not exceeding 500 square feet
2. Extension of or installation of additional water and sewer laterals for a single or several residential units or fences.

Exemption List for the County of Maui
April 26, 1995
Page 3

3. commercial establishments
Utility support systems for exempt landscaping projects

EXEMPTION CLASS 4

Minor alteration in the conditions of land, water, or vegetation.

1. Minor cut, fill and grading of County property of less than 50 cubic yards of rock and/or soil where the vertical height of cut or fill does not exceed three feet
2. Landscaping alongside roadways, around buildings, and within parks, and beach accesses

EXEMPTION CLASS 5

Basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource.

1. Planning data collection
2. Field surveying
3. Design alternative analysis
4. Communication/Media Surveys
5. Lyzimeters
6. Evapo-transpiration monitoring
7. Rain gauges
8. Non-intrusive archaeological survey work in accordance with procedures recommended by the State Historic Preservation Division
9. Sampling from existing monitoring wells

EXEMPTION CLASS 6

Construction or placement of minor structures accessory to existing facilities.

1. Construction of sidewalks and curbs and gutters
2. Installation of glare screens, safety barriers, energy attenuators, and other items to protect the motorist public
3. Construction of storage sheds, maintenance sheds, electrical sheds, pump houses, fences, outdoor lighting, athletic equipment storage sheds, and athletic exercise and recreational equipment
4. Installation of street lights, directional, informational, and regulatory signs, pavement markings, traffic signals, and fire alarm systems
5. Installation of drains, sewers and waterlines within streets and highways

Exemption List for the County of Maui
 April 26, 1995
 Page 4

EXEMPTION CLASS 7

Interior alterations involving such things as partitions, plumbing, and electrical conveyances.

1. Interior alterations to building or structures that do not increase the floor area or change the occupancy

EXEMPTION CLASS 8

Demolition of structures, except those structures located on any historic site as designated in the National Register or Hawaii Register as provided for in the Historic Preservation Act of 1966, Public Law 89-665, or Chapter 6, Hawaii Revised Statutes.

1. Demolition of buildings and structures prior to or concurrent with the construction of a new or replacement building or structure
2. The demolition of old, dilapidated, unsafe or dangerous buildings or structures required by building, housing or health codes and regulations

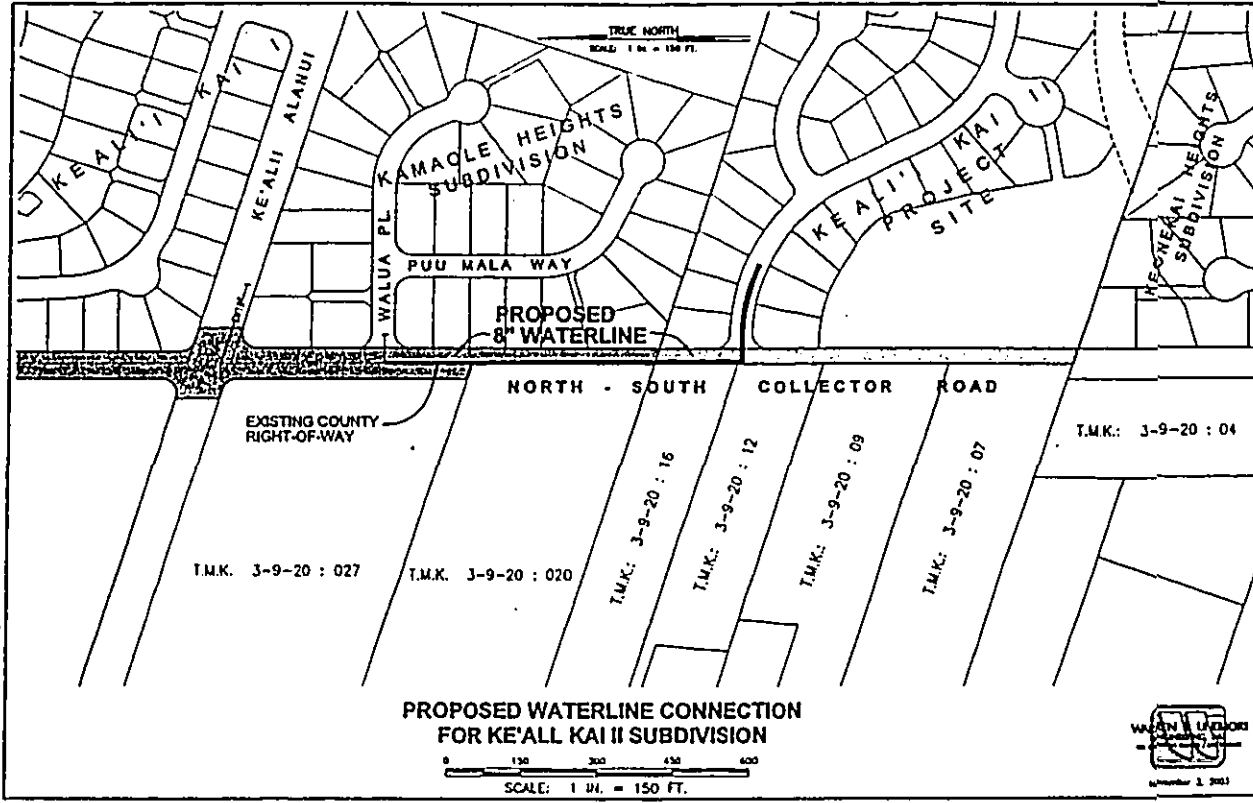
EXEMPTION CLASS 9

Zoning variances except: use, density, height, parking requirements and shoreline setback variances.

1. Agency actions requiring zoning variances involving structure set-backs from property lines

NOTE:

As stated in Section 11-200-9(b), Environmental Impact Statement Rules, all exemptions under this list are inapplicable when the cumulative impact of planned successive actions of the same type, in the same place, over time, is significant, or when an action that is normally insignificant in its impact on the environment may be significant in a particularly sensitive environment.



ALANI M. APARAKAWA
Mayor



DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793-2155
www.mauwater.org

NOV 26 2003

GEORGE Y. TENGAN
Director
JEFFREY T. PEARSON, P.E.
Deputy Director

November 19, 2003

Mr. Glen Tadaki
Munekyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Tadaki:

Subject: PROPOSED KE ALI'I KAI II SUBDIVISION
TMK: 213-9-019-004, SML 2003/0013

We are responding to your letter of November 7, 2003 concerning the installation of a new 8" waterline and relocation of the existing 16" waterline within the Kihai North-South Collector Road. We concur that these actions are exempt from the preparation of an environmental assessment.


If you should have any questions, please contact Myles Fujinaka of our Engineering Division at 270-7835.

Sincerely,


GEORGE Y. TENGAN
Director

MF:rk

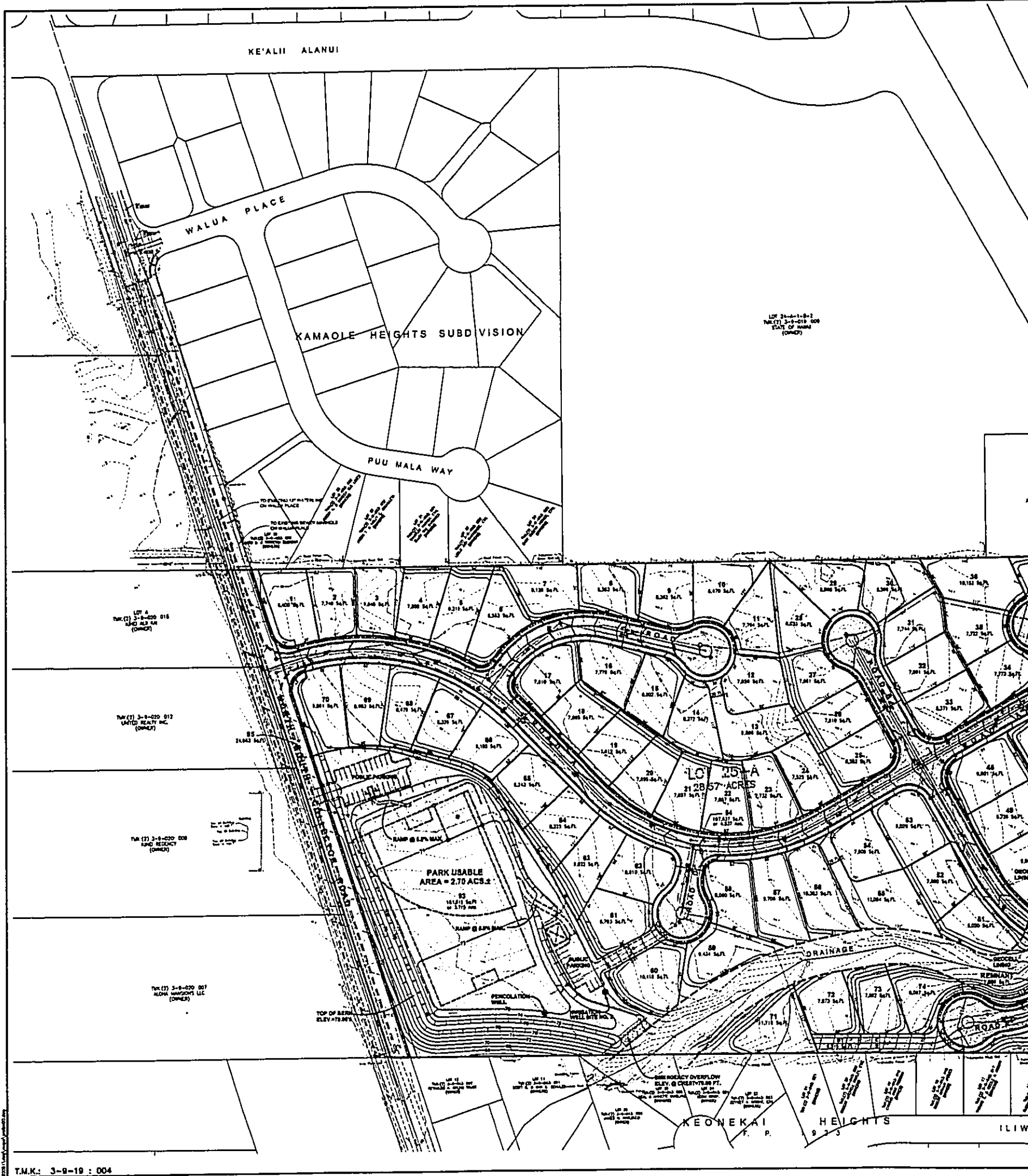
"By Water - All Things Find Life"

Printed on Recycled Paper 

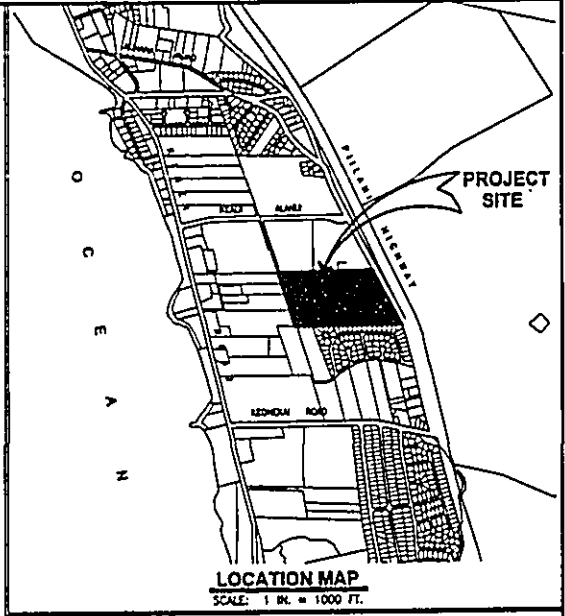
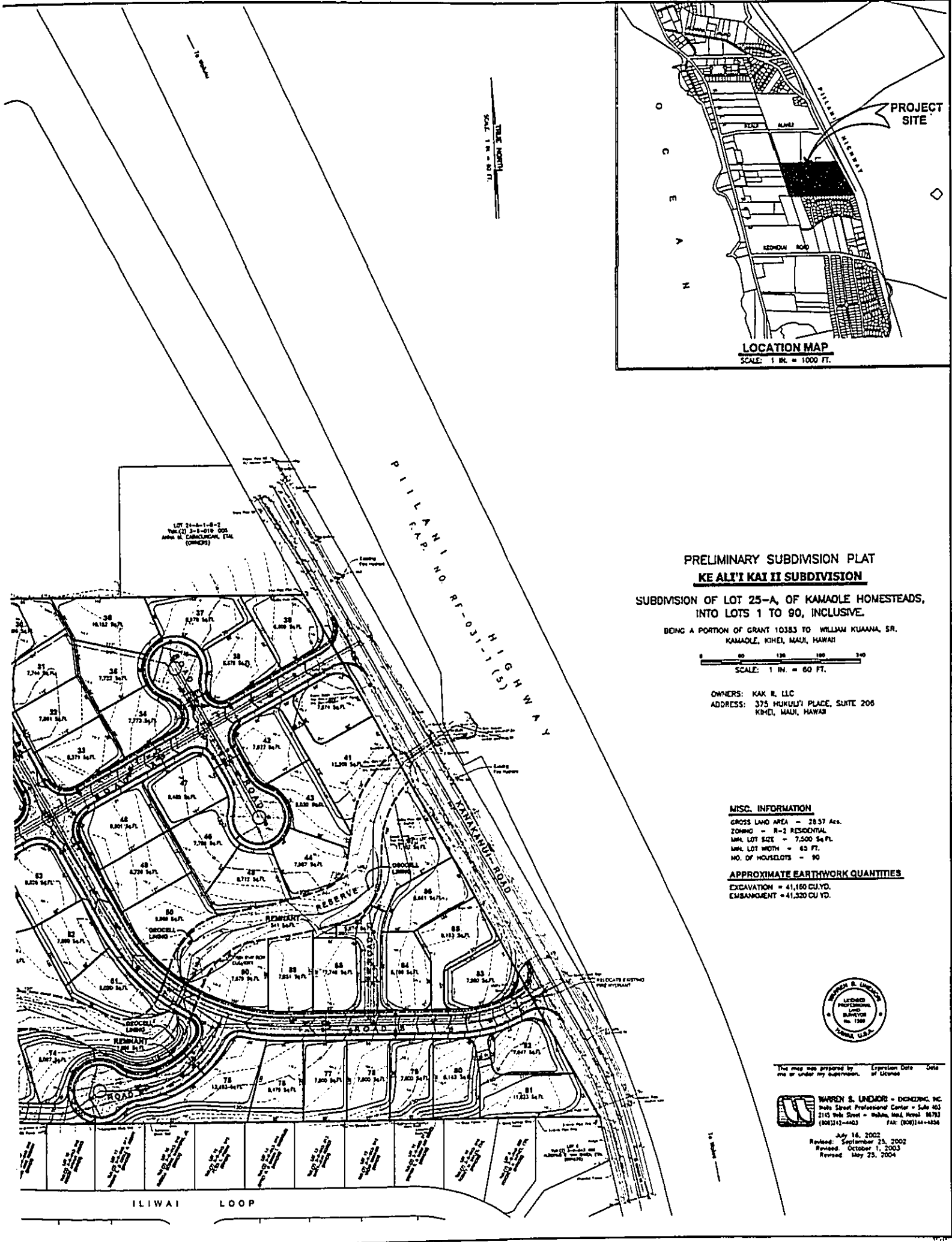
Appendix C

*Preliminary
Development Plans*

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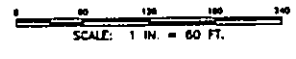


RECEIVED AS FOLLOWS



PRELIMINARY SUBDIVISION PLAT
KE ALI'I KAI II SUBDIVISION
 SUBDIVISION OF LOT 25-A, OF KAMAOLE HOMESTEADS,
 INTO LOTS 1 TO 90, INCLUSIVE.

BEING A PORTION OF GRANT 10383 TO WILLIAM KUANA, SR.
 KAMAOLE, KIHEI, MAUI, HAWAII



OWNERS: KAK R, LLC
 ADDRESS: 375 HUKULU'I PLACE, SUITE 206
 KIHEI, MAUI, HAWAII

MISC. INFORMATION

GROSS LAND AREA = 28.57 Acs.
 ZONING = R-2 RESIDENTIAL
 MIN. LOT SIZE = 7,500 Sq.Ft.
 MIN. LOT WIDTH = 65 FT.
 NO. OF HOUSELOTS = 90

APPROXIMATE EARTHWORK QUANTITIES

EXCAVATION = 41,150 CU.YD.
 EMBANKMENT = 41,520 CU.YD.

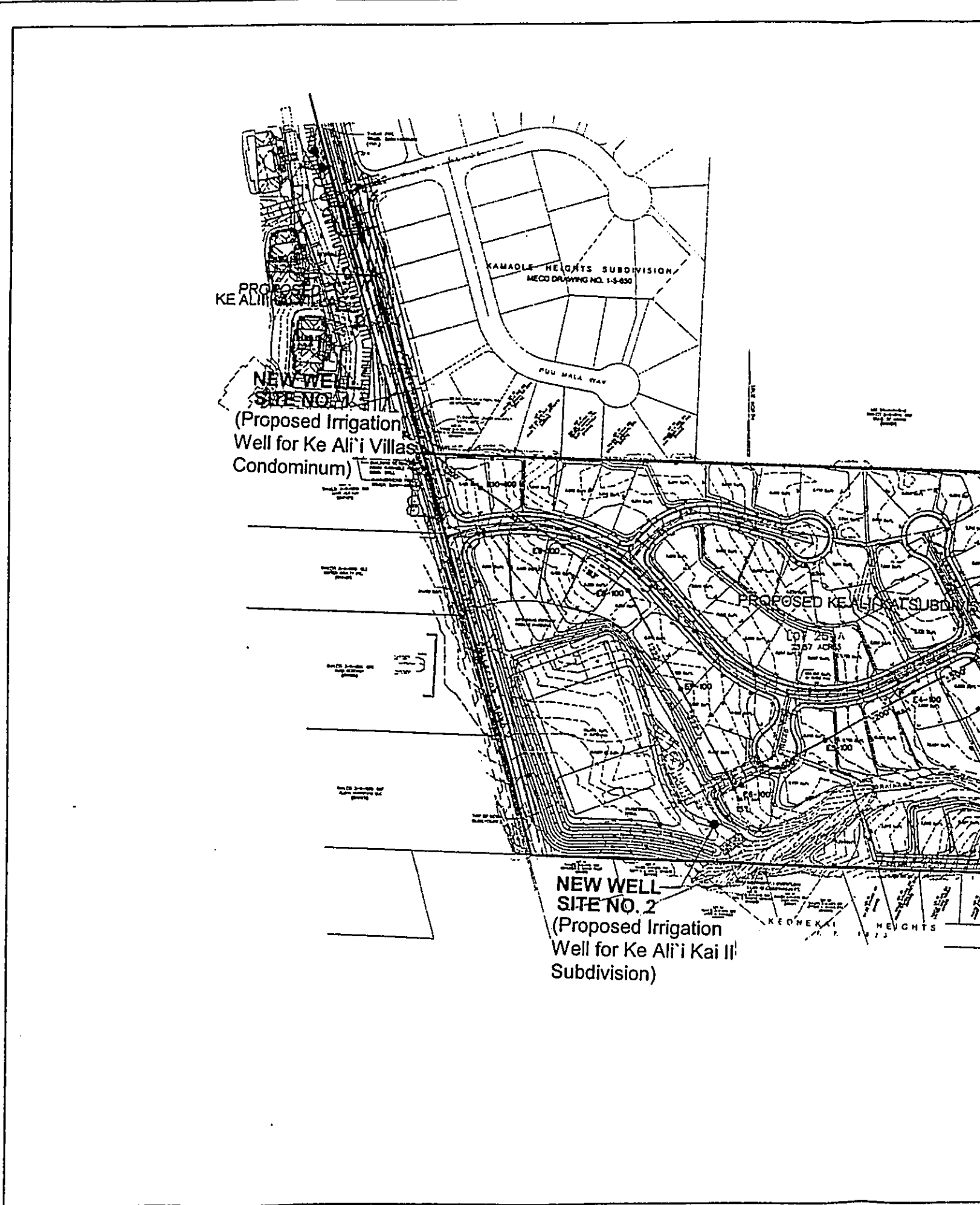


This map was prepared by Warren S. Unemori, License No. 1398, State of Hawaii. Elevation Note: Sea Level.

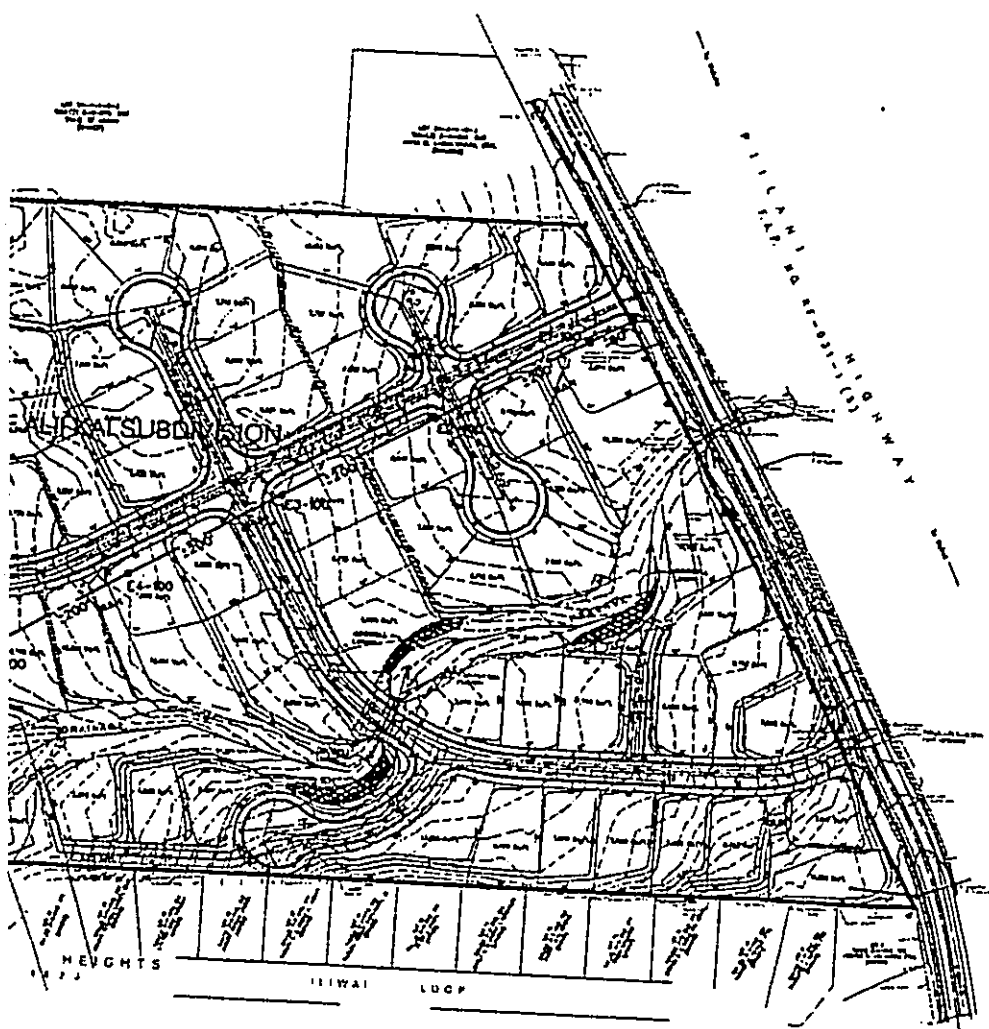
WARREN S. UNEMORI - DGHCHC, INC.
 2145 Kula Street - Kula, Maui, Hawaii 96793
 (808) 312-4403 FAX: (808) 312-4456

July 16, 2002
 Revised: September 25, 2002
 Revised: October 1, 2003
 Revised: May 25, 2004

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RECEIVED AS FOLLOWS



R10/10/03

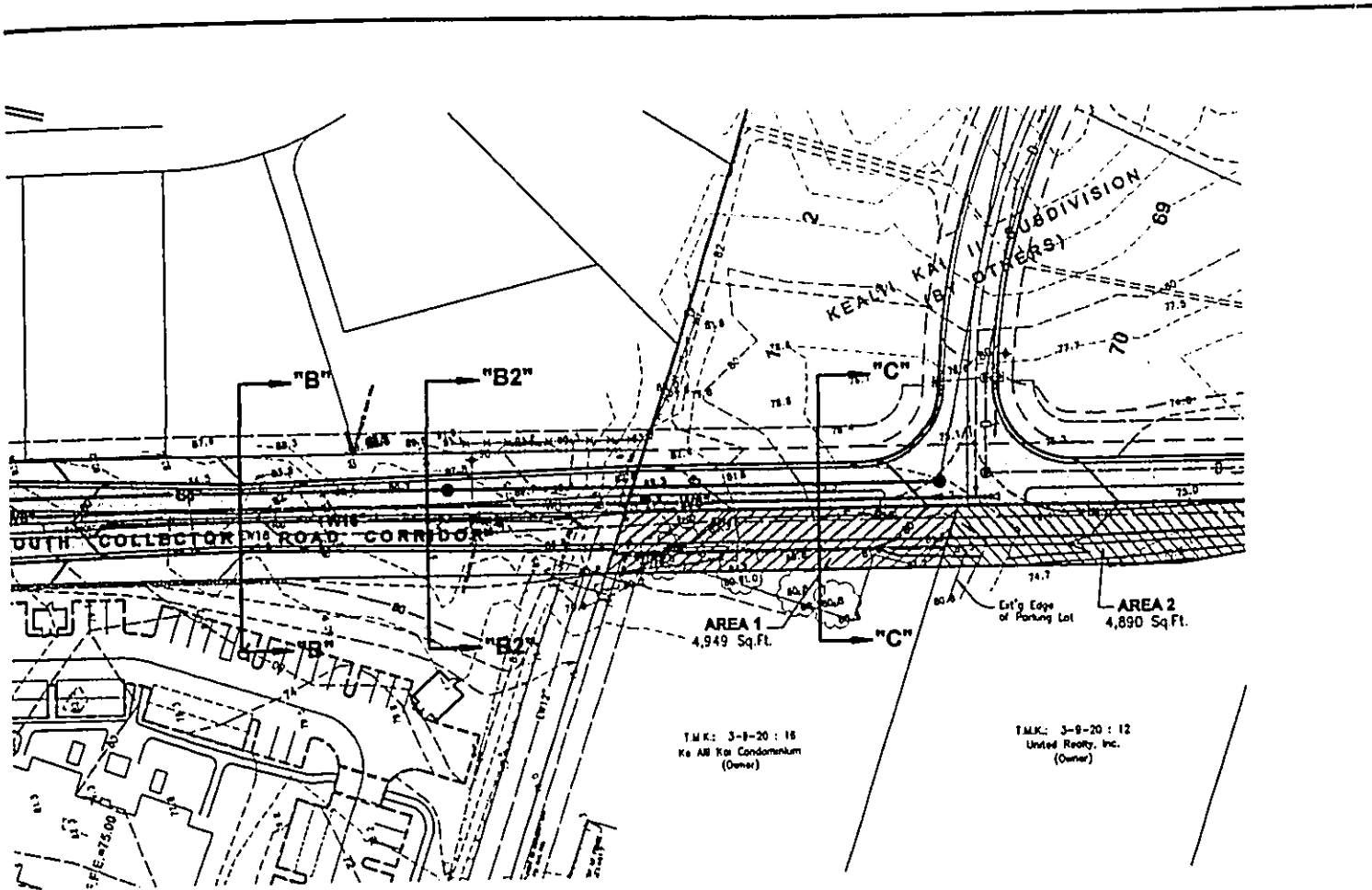
OCTOBER 8, 2003
PRELIMINARY
 NOT TO SCALE

NOT FOR USE FOR CONSTRUCTION
 DESIGN SUBJECT TO CHANGE.

EASEMENT DOCUMENT NO: _____
 SUBSTATION: _____
 CIRCUIT: _____
 ESTIMATED DEMAND: _____
 T&E MAP KEY: _____
 REFER TO MAPS: _____
 APPLICATION NO: _____
 JOINT POLE NO: _____

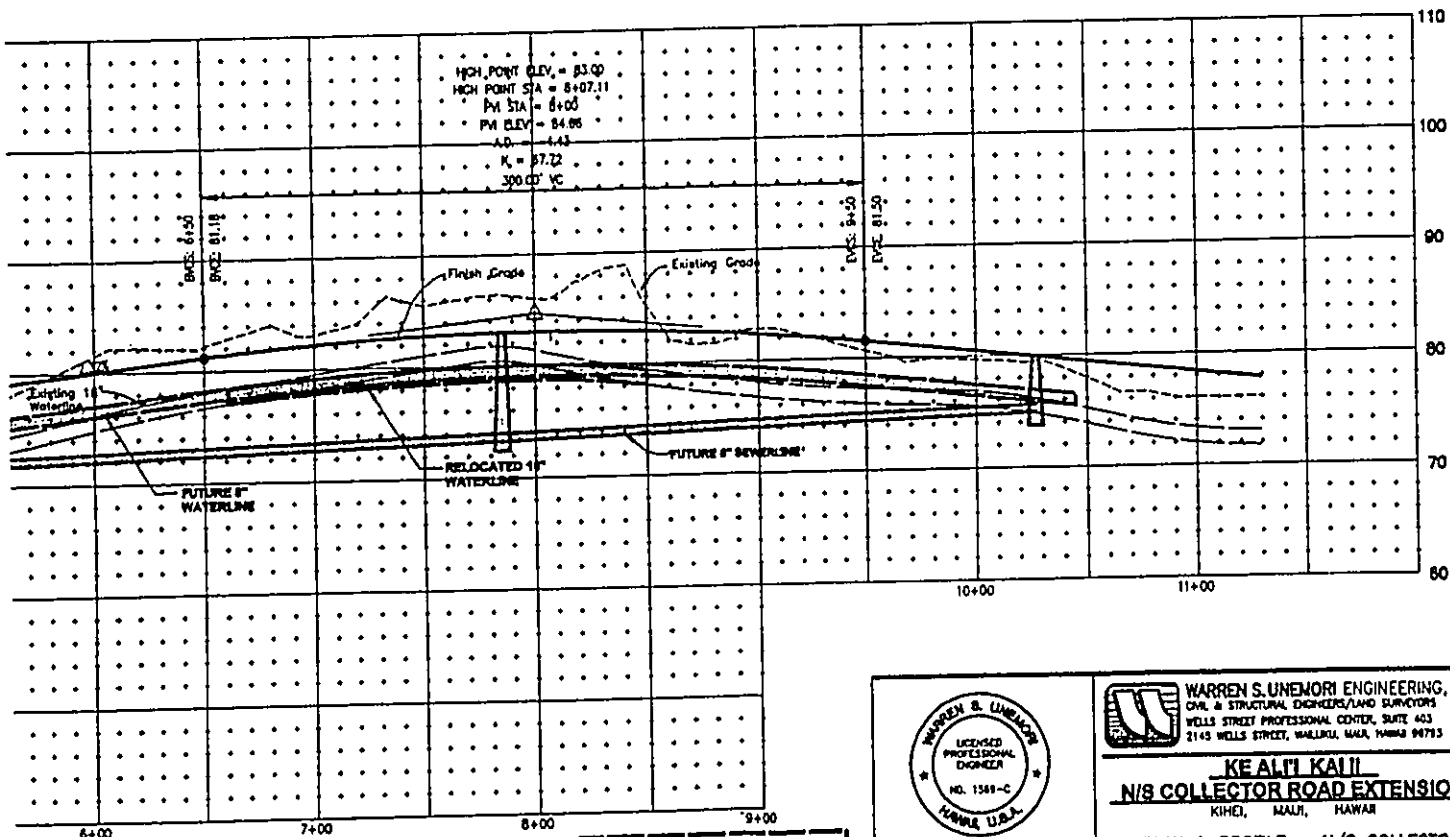
NO.		DATE		REVISIONS		BY		CHKD		APPD	
KE ALI KAI SUBDIVISION / VILLAS											
TEMPORARY LINE EXTENSION FOR											
WELL SITE NO.1 AND NO.2											
DESIGNED			DRAWN			DATE			SCALE		
CHECKED	LOW	ESTIMATED	MAUI ELECTRIC COMPANY, LIMITED						KAHULULU, MAUI, HAWAII 96732		
DESIGNED	DRAWN	DATE	DRAWING NUMBER						SHEET _____ of _____		
APPROVAL:											

RECEIVED AS FOLLOWS



APPROXIMATE EARTHWORK QUANTITIES
(FROM WALLUA PL. INTERSECTION TO STA. 32+50±)

EXCAVATION = 5,850 CU.YD.
EMBANKMENT = 5,750 CU.YD.



OFFSITE IMPROVEMENTS
(PLAN AND PROFILE)

REDUCED COPY
NOT TO SCALE

LETTER	DESCRIPTION	DATE

WARREN S. UNENORI ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
WELLS STREET PROFESSIONAL CENTER, SUITE 403
2145 WELLS STREET, HAILUO, MAUI, HAWAII 96753

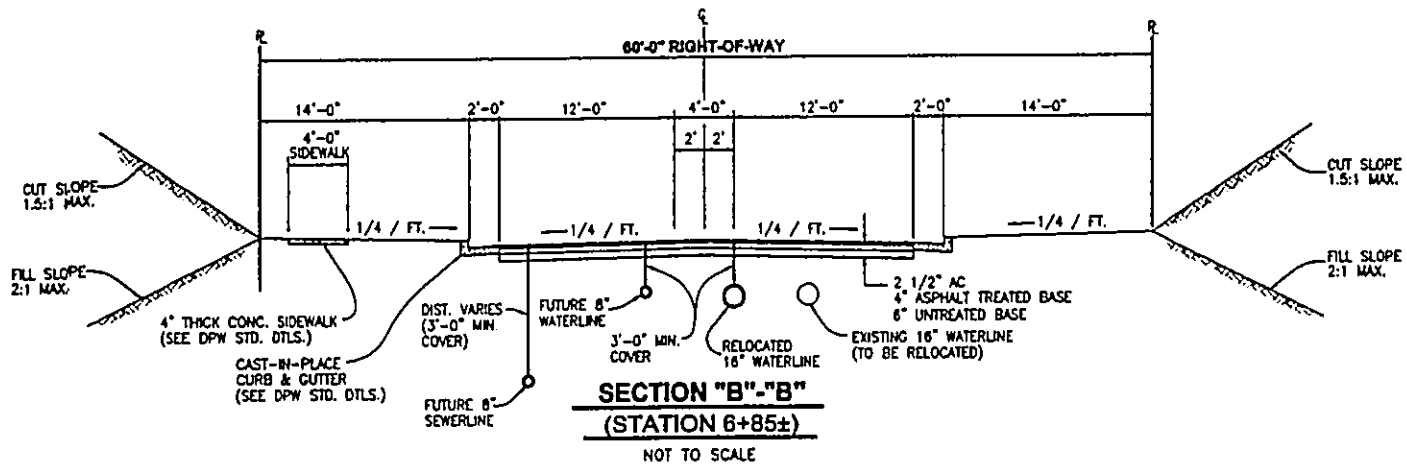
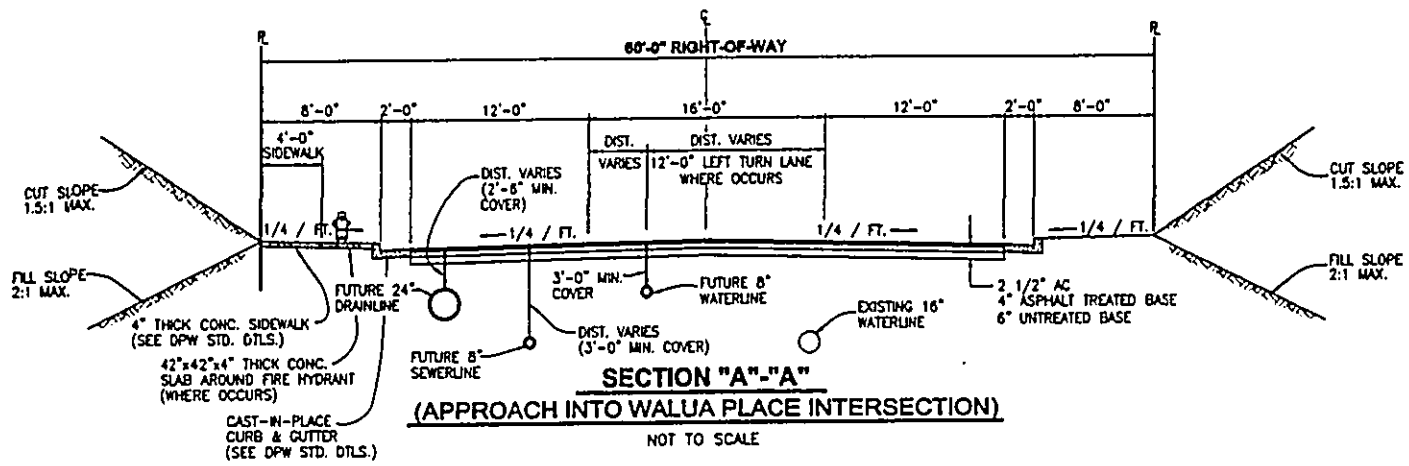
KEALTI KAILI
N/S COLLECTOR ROAD EXTENSION
KIHU, MAUI, HAWAII

TITLE **PLAN & PROFILE - N/S COLLECTOR**

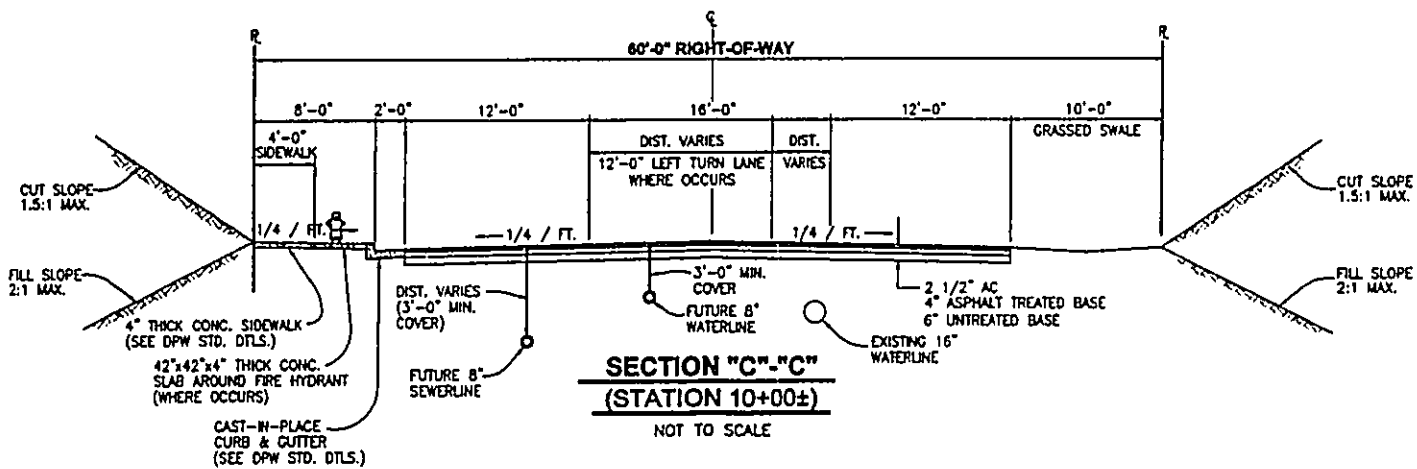
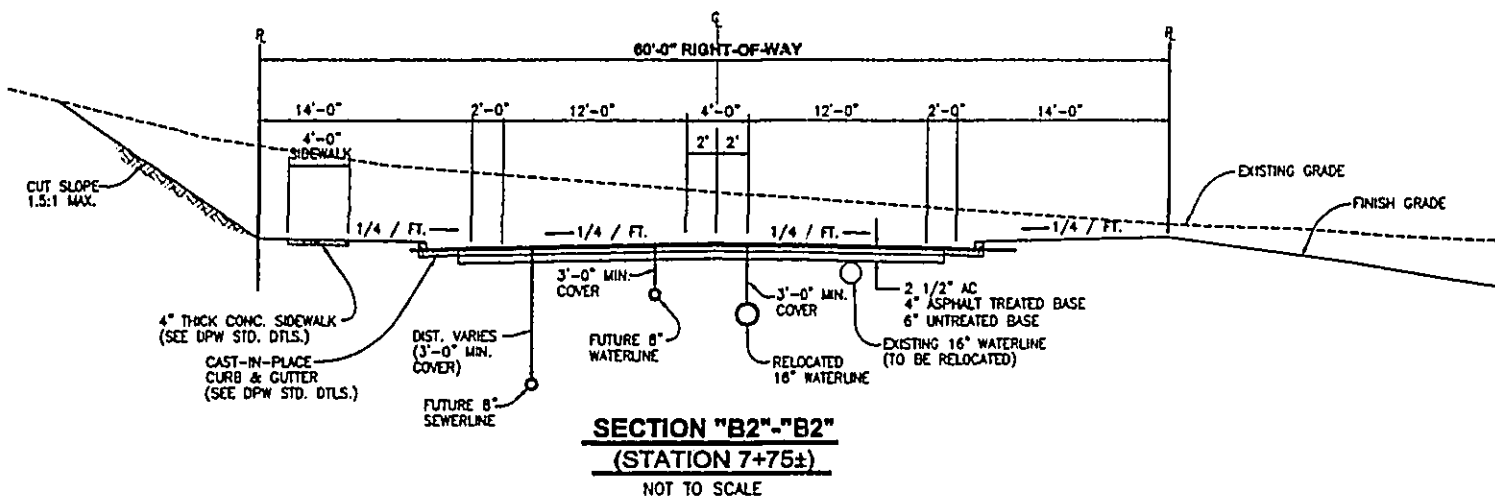
DESIGNED BY WSU	CHECKED BY WSU	JOB NUMBER 03050	XX SHEET
DRAWN BY WAH/WIS	APPROVED BY WSU	DATE 6-17-03	

SCALE 1"=40'

RECEIVED AS FOLLOWS

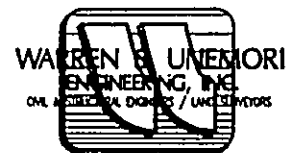


RECEIVED AS FOLLOWS



**OFFSITE IMPROVEMENTS
(UTILITY SECTIONS)***

*Roadway section for illustrative purposes only



December 26, 2003

RECEIVED AS FOLLOWS

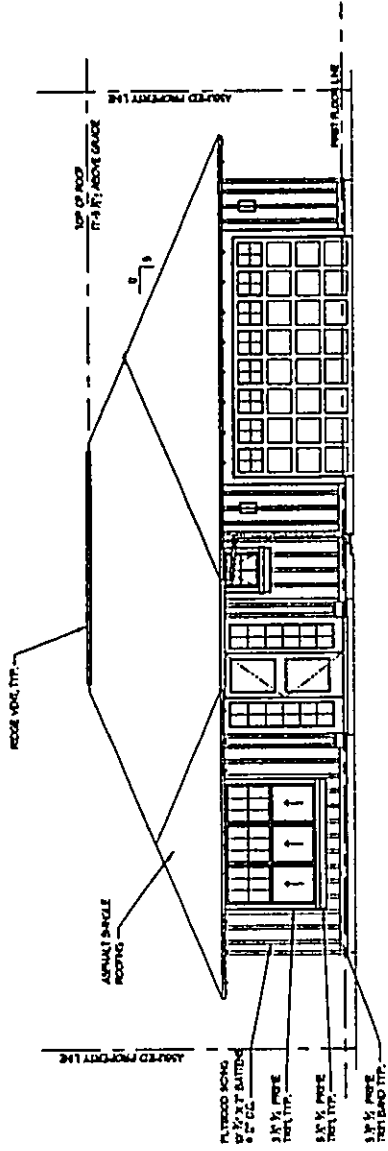


ARCHITECTURAL
FIRM

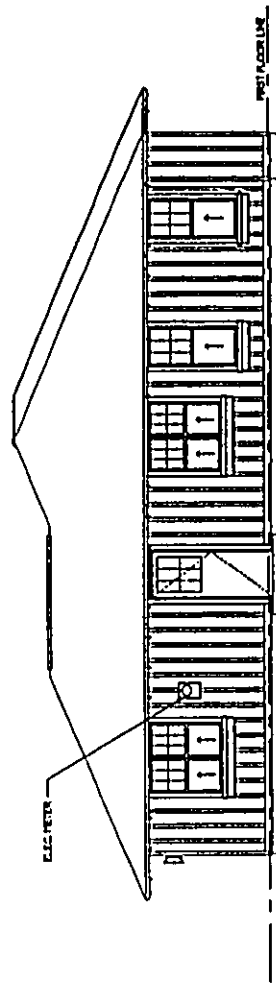
KE ALII KAI II - TYPICAL UNIT PLANS
T.M.K.: 3-9-19:004

B2

APRIL 2003



FRONT ELEVATION OPTION B (UNIT B)
N = 1/4"



RIGHT SIDE ELEVATION OPTION B (UNIT B)
N = 1/4"

RECEIVED AS FOLLOWS

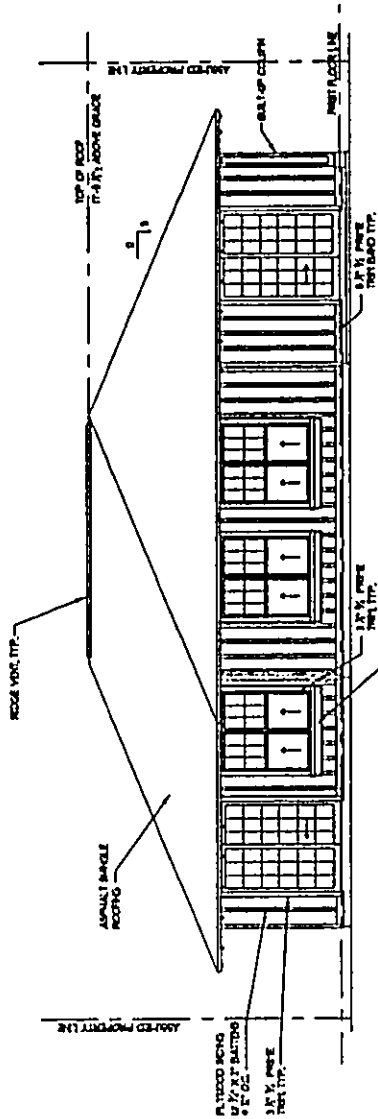


ARCHITECT
MAYHEW
MAYHEW
ARCHITECTS
P.C.
1000 W. BROADWAY
SUITE 1000
NEW YORK, N.Y. 10001
TEL: 212 512 1000
FAX: 212 512 1001
WWW.MAYHEWARCHITECTS.COM

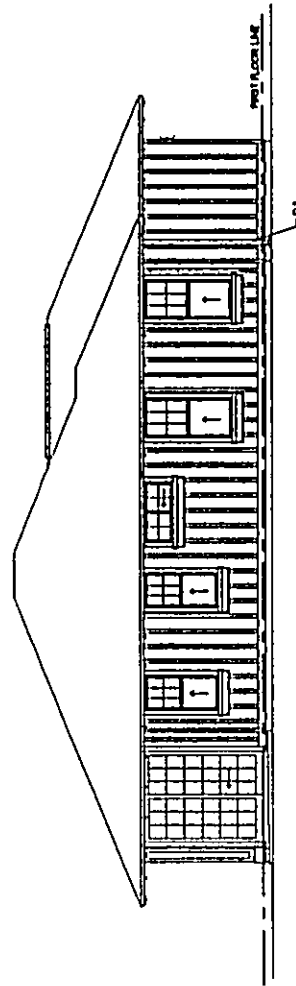
KE ALTI KAI II - TYPICAL UNIT PLANS
T.M.K.: 3-9-19:004

B3

APRIL 2003



BACK ELEVATION OPTION B (UNIT B)
N=11-0°



LEFT SIDE ELEVATION OPTION B (UNIT B)
N=11-0°

RECEIVED AS FOLLOWS



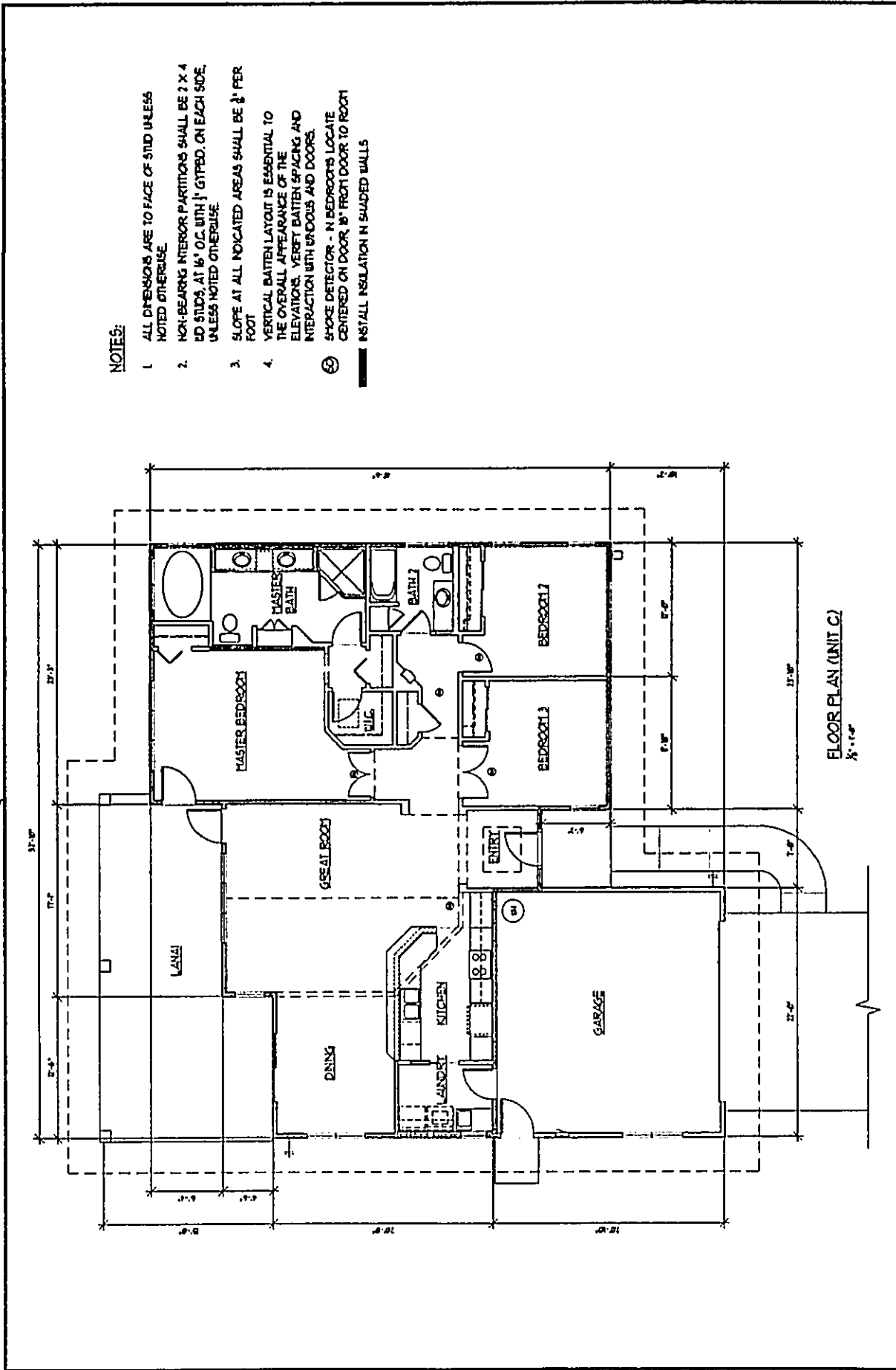
1000-61-19-004
T.M.K.C. 3-9-19-004

KE ALTH KAI II - TYPICAL UNIT PLANS

CI
APRIL 2003

NOTES:

1. ALL DIMENSIONS ARE TO FACE OF STUD UNLESS NOTED OTHERWISE.
 2. NON-BEARING INTERIOR PARTITIONS SHALL BE 2 X 4 UD STUDS AT 16" O.C. WITH 1/2" GYPSUM ON EACH SIDE, UNLESS NOTED OTHERWISE.
 3. SLOPE AT ALL INDICATED AREAS SHALL BE 1/4" PER FOOT.
 4. VERTICAL BATTEN LAYOUT IS ESSENTIAL TO THE OVERALL APPEARANCE OF THE ELEVATIONS. VERIFY BATTEN SPACING AND INTERACTION WITH WINDOWS AND DOORS.
- ⊙ SMOKE DETECTOR - IN BEDROOMS LOCATE CENTERED ON DOOR 8" FROM DOOR TO ROOM
- ▬ INSTALL INSULATION IN SHADED WALLS



RECEIVED AS FOLLOWS

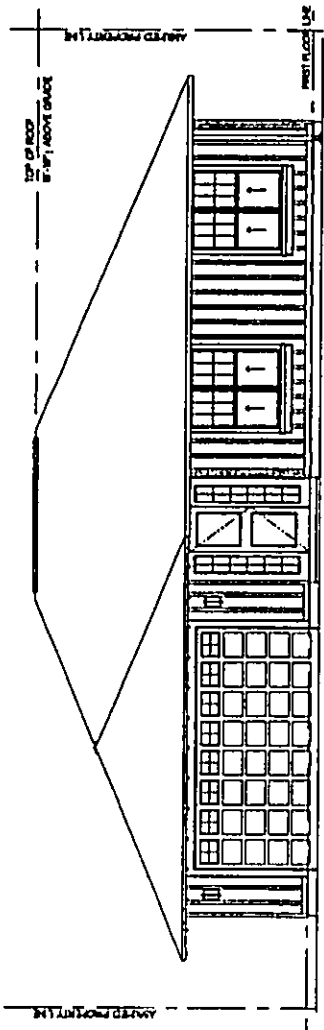


Architectural Firm Name
1234 Main Street
City, State, Zip

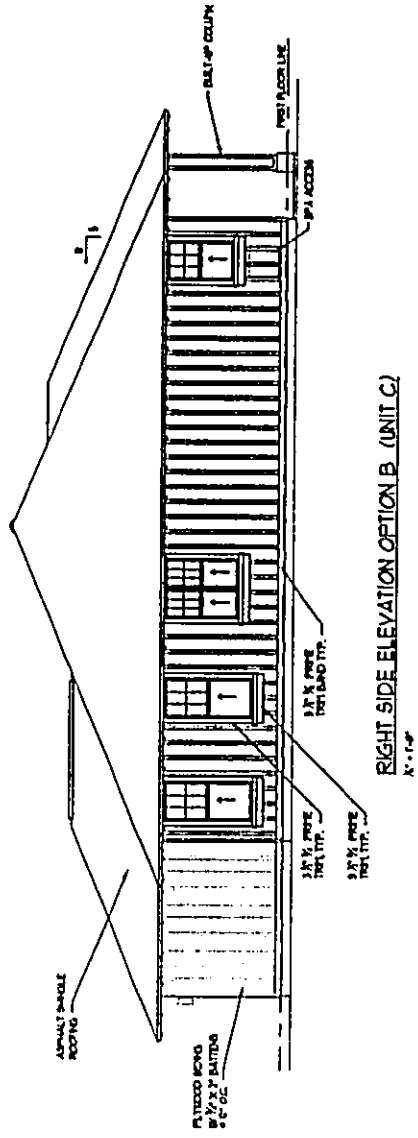
KE ALTI KAI II - TYPICAL UNIT PLANS
T.M.K.: 3-9-19:004

C2

APRIL 2003



FRONT ELEVATION OPTION B (UNIT C)
N = 1/4"



RIGHT SIDE ELEVATION OPTION B (UNIT C)
N = 1/4"

RECEIVED AS FOLLOWS

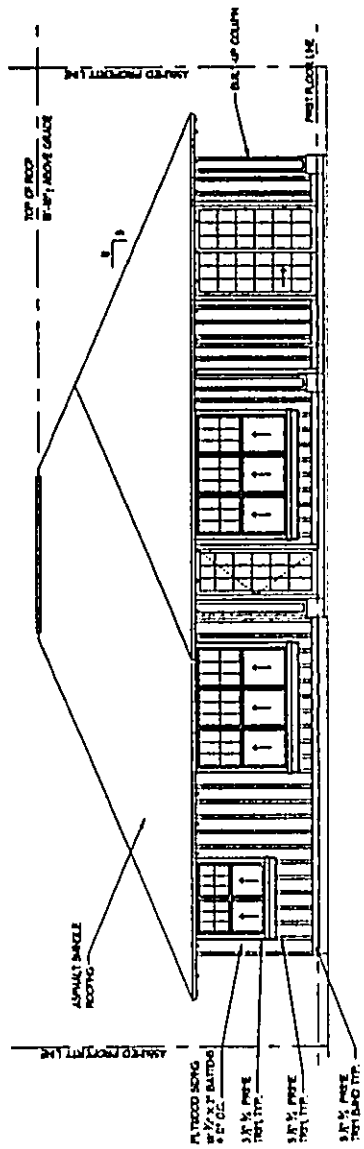


ARCHITECTURAL FIRM
1000 KALANIANA'OLE BLVD
SUITE 1000
HONOLULU, HI 96813
PHONE: 808-551-1111
FAX: 808-551-1112

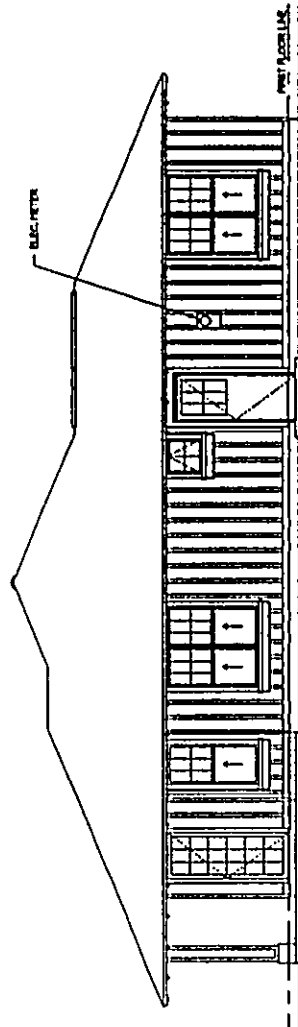
KE ALTIKAI II - TYPICAL UNIT PLANS
T.M.K.: 3-9-19:004

C3

APRIL 2003



BACK ELEVATION OPTION B (UNIT C)
1/4" = 1'-0"



LEFT SIDE ELEVATION OPTION B (UNIT C)
1/4" = 1'-0"

RECEIVED AS FOLLOWS

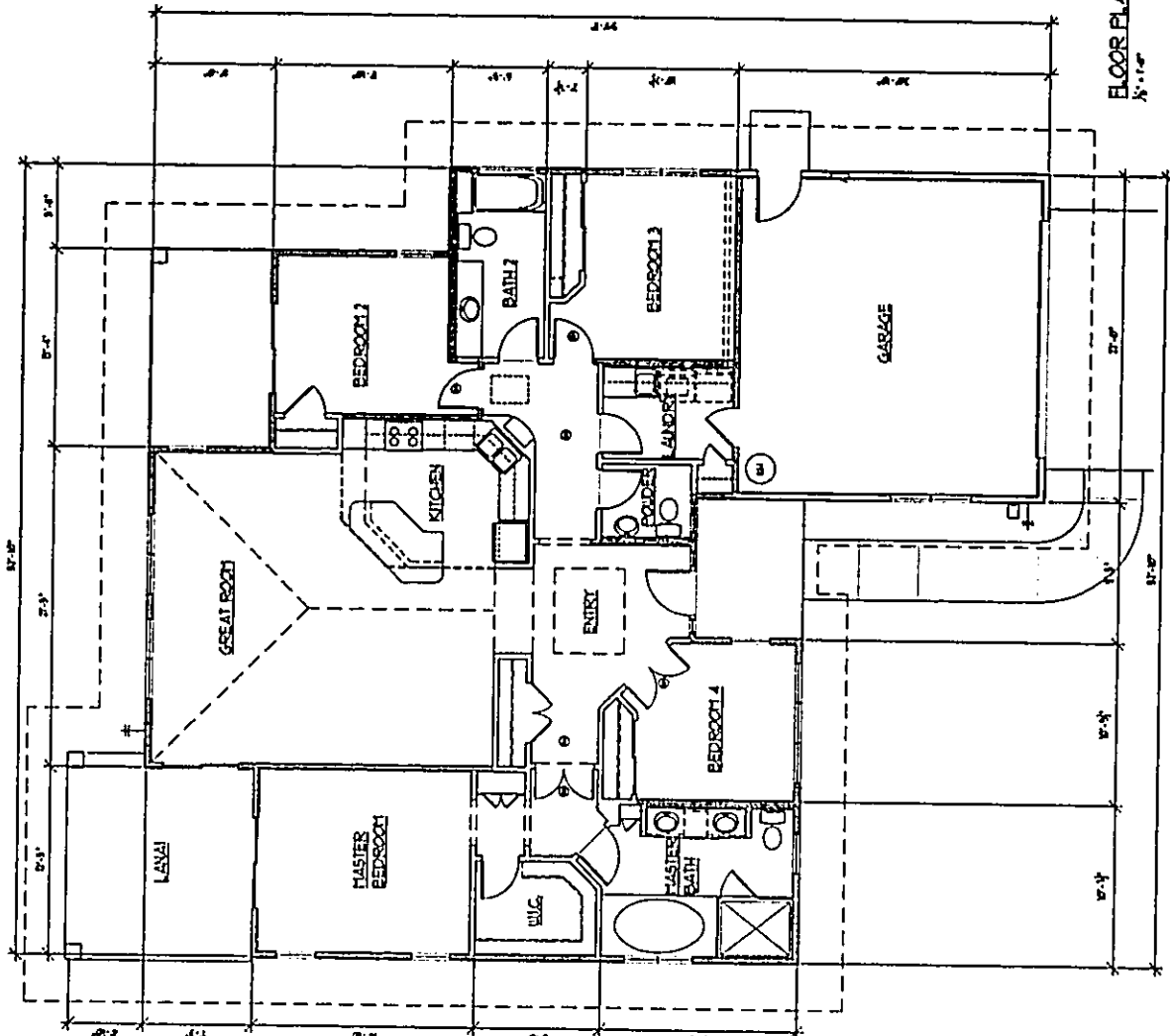


KE ALTI KAI II - TYPICAL UNIT PLANS
 T.M.K.: 3-9-19-004

D1
 APRIL 2003

NOTES:

1. ALL DIMENSIONS ARE TO FACE OF STUD UNLESS NOTED OTHERWISE
 2. NON-BEARING INTERIOR PARTITIONS SHALL BE 2 X 4 UD STUDS, AT 16" O.C. WITH 1/2" GYPSO. ON EACH SIDE, UNLESS NOTED OTHERWISE.
 3. SLOPE AT ALL INDICATED AREAS SHALL BE 1/4" PER FOOT
 4. VERTICAL BATTEN LAYOUT IS ESSENTIAL TO THE OVERALL APPEARANCE OF THE ELEVATIONS. VERIFY BATTEN SPACING AND INTERACTION WITH WINDOWS AND DOORS.
- ⊗ SMOKE DETECTOR - IN BEDROOMS LOCATE CENTERED ON DOOR 18" FROM DOOR TO ROOM
- ▨ INSTALL INSULATION IN SHADED WALLS



FLOOR PLAN (UNIT D)
 3/22/03

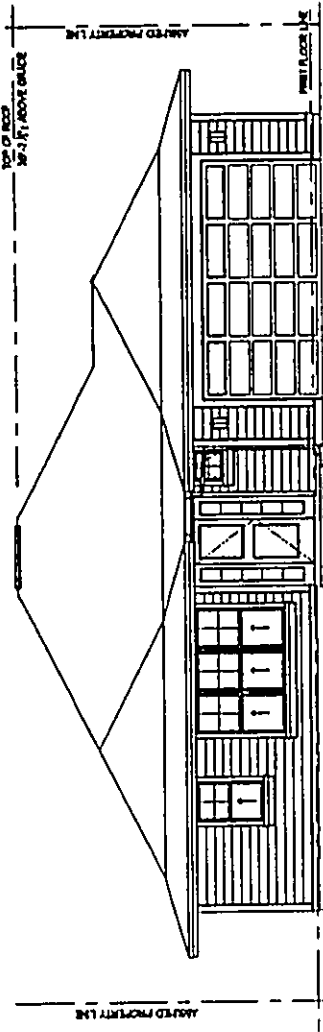
RECEIVED AS FOLLOWS



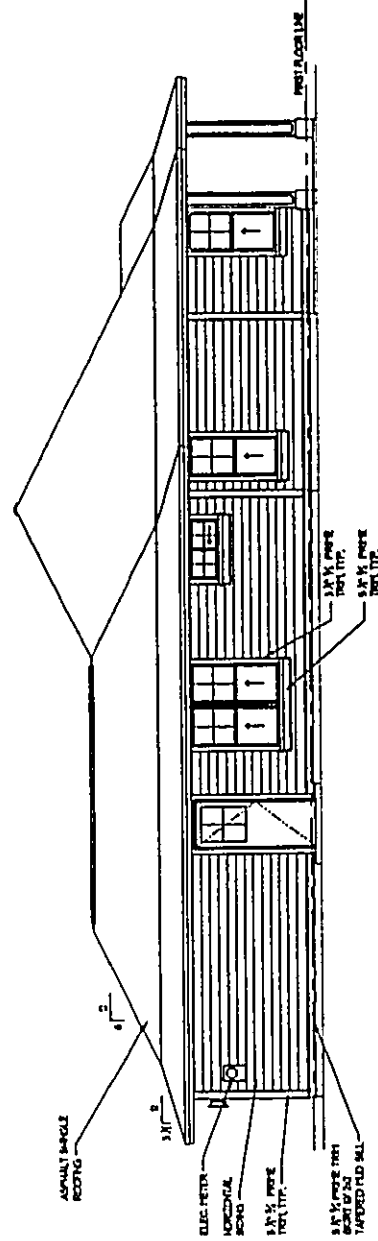
M. J. M. ARCHITECTS, INC.
 1000 N. 10TH AVE. SUITE 200
 DENVER, CO 80202
 TEL: (303) 733-1111
 FAX: (303) 733-1112

KE ALTI KAI II - TYPICAL UNIT PLANS
 T.M.K.: 3-9-19-004

D2
 APRIL 2003



FRONT ELEVATION OPTION A (UNIT D)
 1/4" = 1'-0"



RIGHT SIDE ELEVATION OPTION A (UNIT D)
 1/4" = 1'-0"

RECEIVED AS FOLLOWS

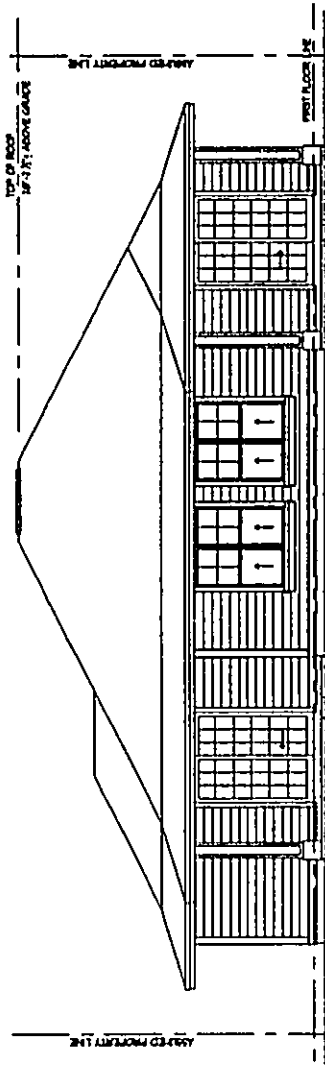


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T.M.K.: 3-9-19:004

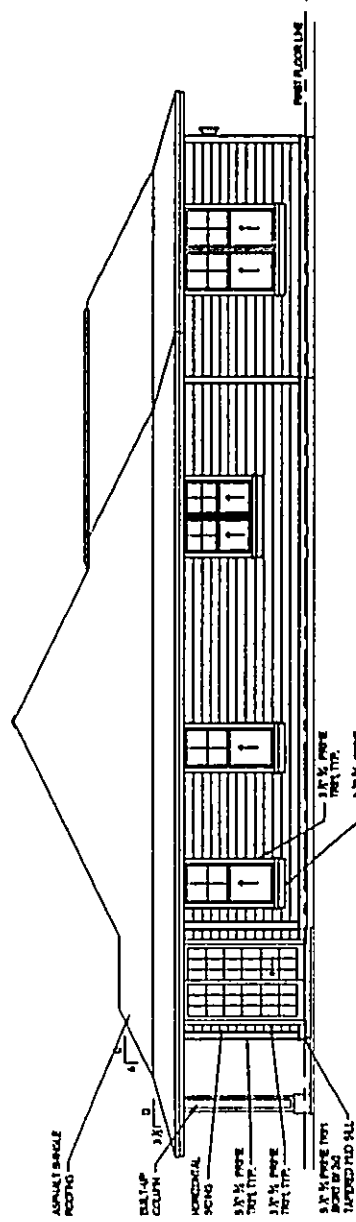
D3

APRIL 2003



BACK ELEVATION OPTION A (UNIT D)

N=14°E



LEFT SIDE ELEVATION OPTION A (UNIT D)

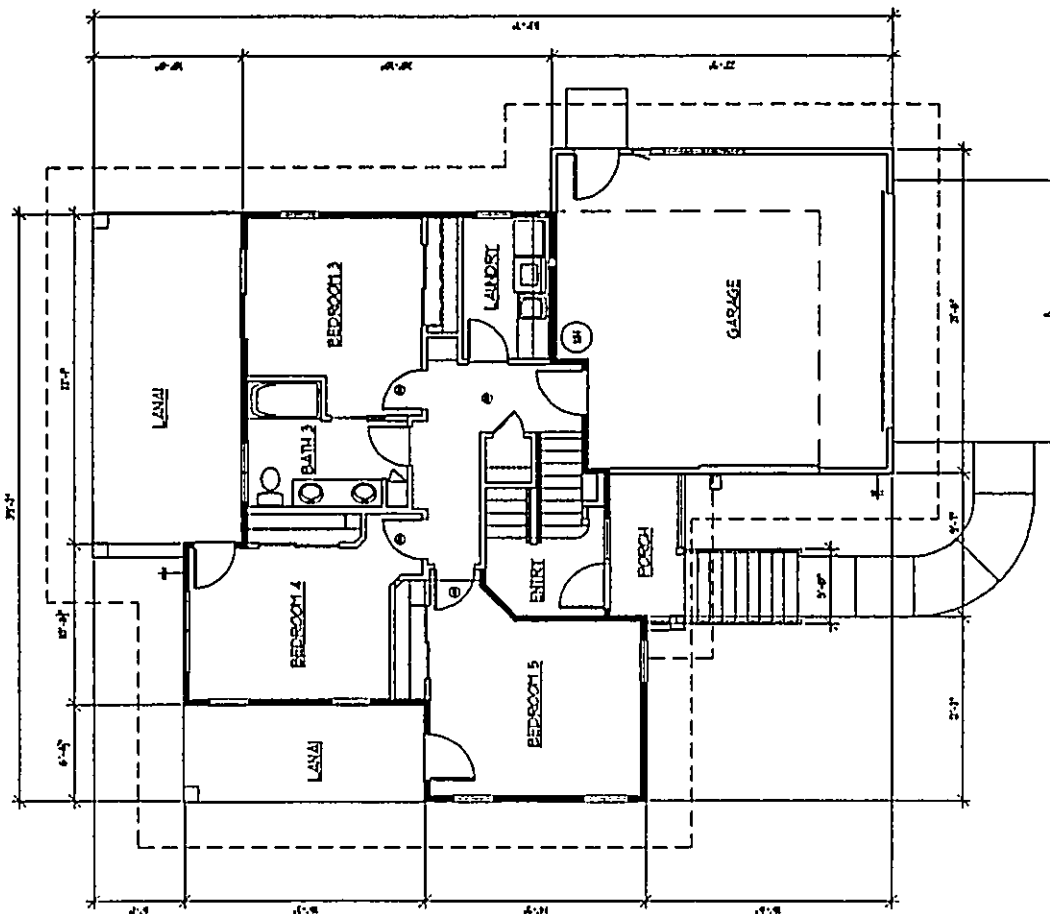
N=14°E

RECEIVED AS FOLLOWS

	<p>KE ALIY KAI II - TYPICAL UNIT PLANS T.M.K.: 3-9-19:004</p>	<p>GI APRIL 2003</p>
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NOTES:

1. ALL DIMENSIONS ARE TO FACE OF STUD UNLESS NOTED OTHERWISE.
 2. NON-BEARING INTERIOR PARTITIONS SHALL BE 2 X 4 W/ STUDS AT 16" O.C. WITH 1/2" GYPED. ON EACH SIDE, UNLESS NOTED OTHERWISE.
 3. SLOPE AT ALL INDICATED AREAS SHALL BE 1/4" PER FOOT.
 4. VERTICAL BATTEN LAYOUT IS ESSENTIAL TO THE OVERALL APPEARANCE OF THE ELEVATIONS. VERIFY BATTEN SPACING AND INTERACTION WITH WINDOWS AND DOORS.
- ⊙ SMOKE DETECTOR - IN BEDROOMS LOCATE CENTERED ON DOOR 18" FROM DOOR TO ROOM
- ▬ INSTALL INSULATION IN SHADED WALLS

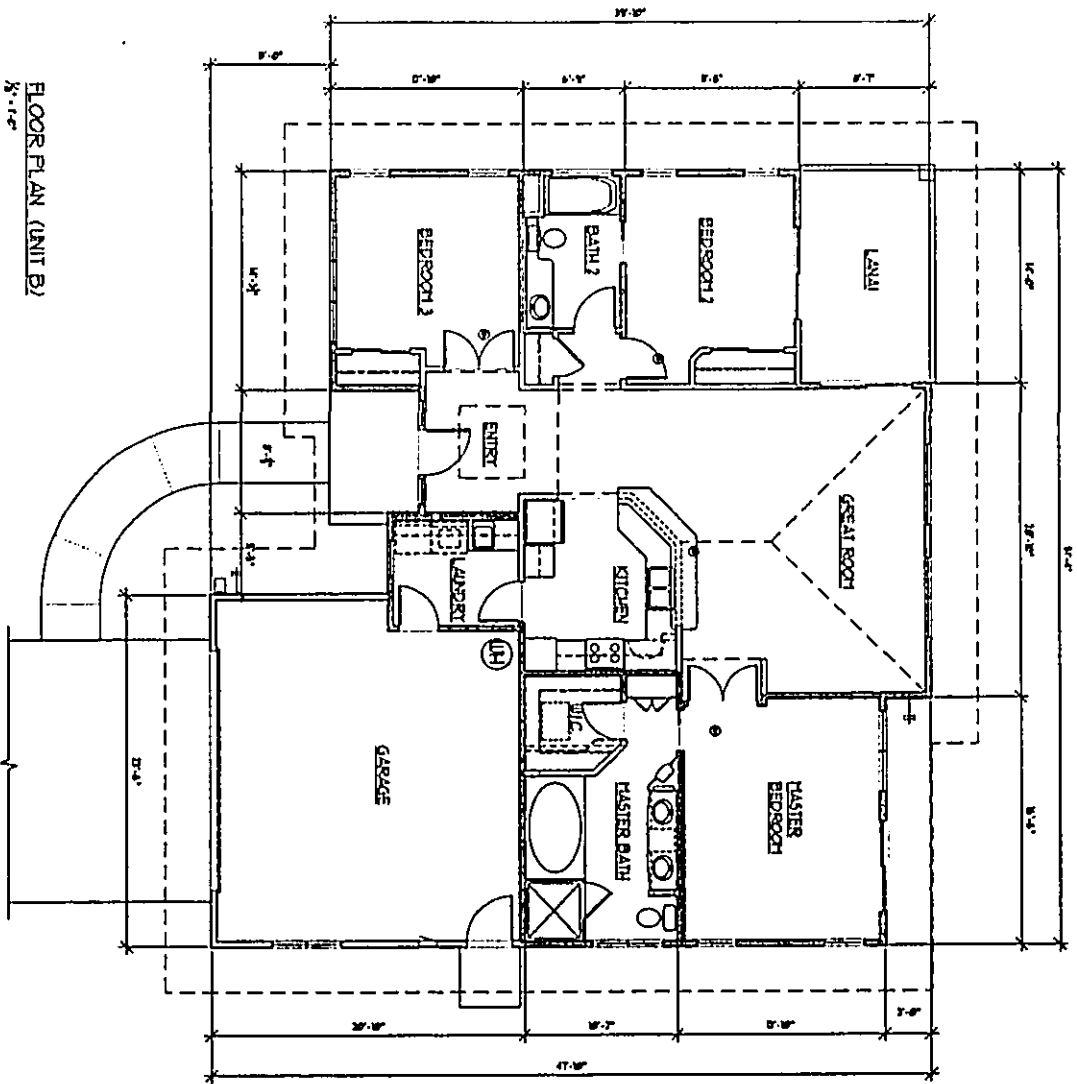


FIRST FLOOR PLAN (UNIT G)
1/8" = 1'-0"

CORRECTION

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

FLOOR PLAN (UNIT B)
1/2" = 1'-0"



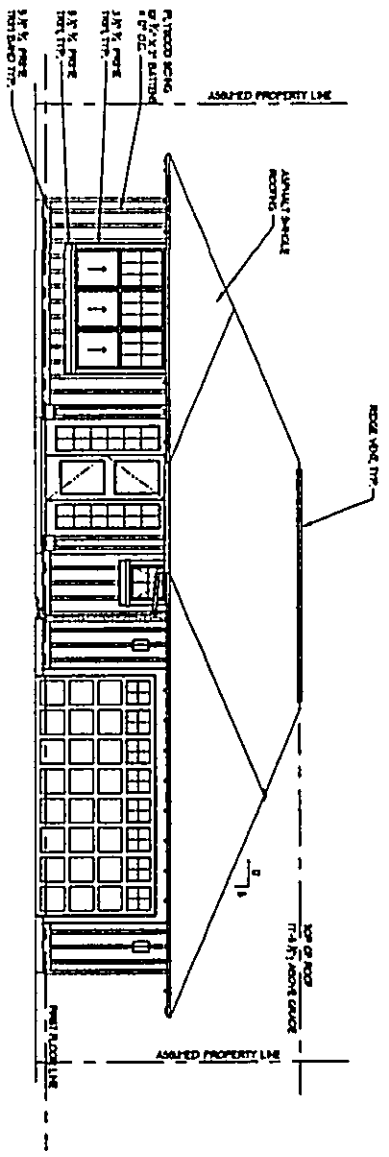
NOTES:

1. ALL DIMENSIONS ARE TO FACE OF STUD UNLESS NOTED OTHERWISE.
 2. NON-BEARING INTERIOR PARTITIONS SHALL BE 2 X 4 CD STUDS AT 16" O.C. WITH 1/2" GYPSO. ON EACH SIDE, UNLESS NOTED OTHERWISE.
 3. SLOPE AT ALL INDICATED AREAS SHALL BE 1/8" PER FOOT.
 4. VERTICAL BATTEN LAYOUT IS ESSENTIAL TO THE OVERALL APPEARANCE OF THE ELEVATIONS. VERIFY BATTEN SPACING AND INTERACTION WITH WINDOWS AND DOORS.
- ⊕ STROKE DETECTOR - IN BEDROOMS LOCATE CENTERED ON DOOR, 6" FROM DOOR TO ROOM INSTALL INSULATION IN SHAVED WALLS

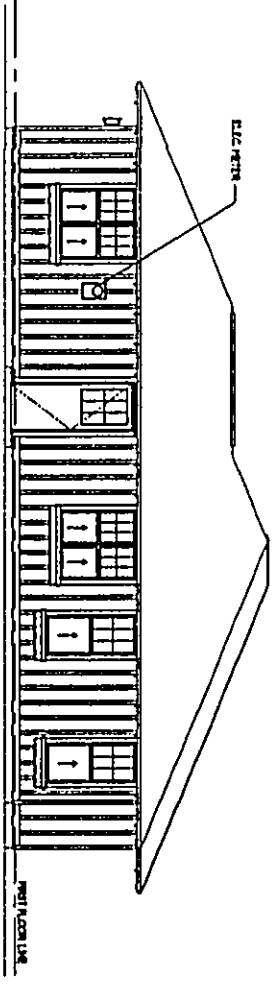
B1
APRIL 2003

KE ALPI KAI II - TYPICAL UNIT PLANS
T.M.K.: 3-9-19:004





FRONT ELEVATION OPTION B (UNIT B)
N-114



RIGHT SIDE ELEVATION OPTION B (UNIT B)
N-114

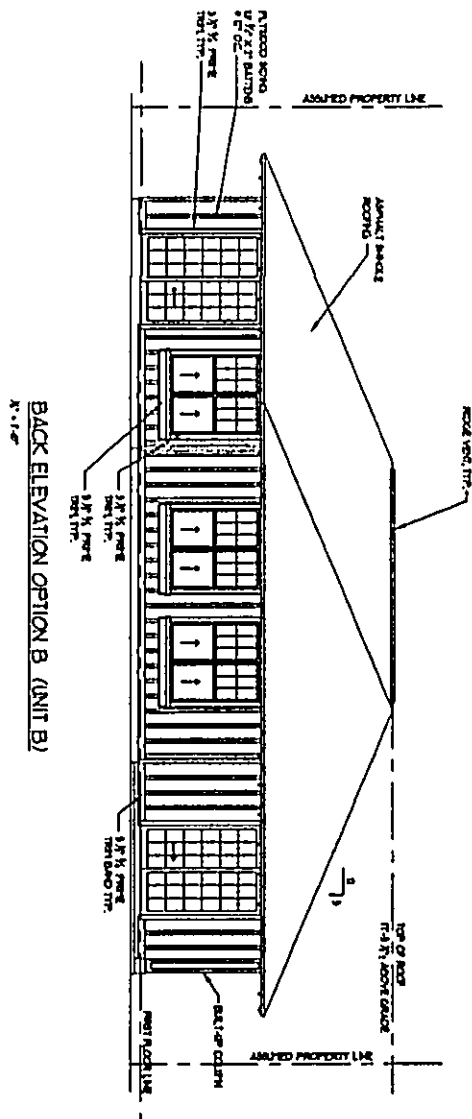


Architect
No. 10000
State of Hawaii

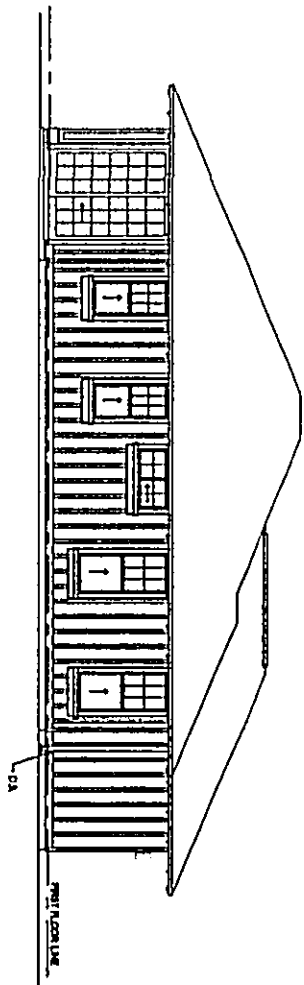
KE ALI'I KAI II - TYPICAL UNIT PLANS
T.M.K.: 3-9-19:004

B2

APRIL 2013



BACK ELEVATION OPTION B (UNIT B)
X-110



LEFT SIDE ELEVATION OPTION B (UNIT B)
X-110



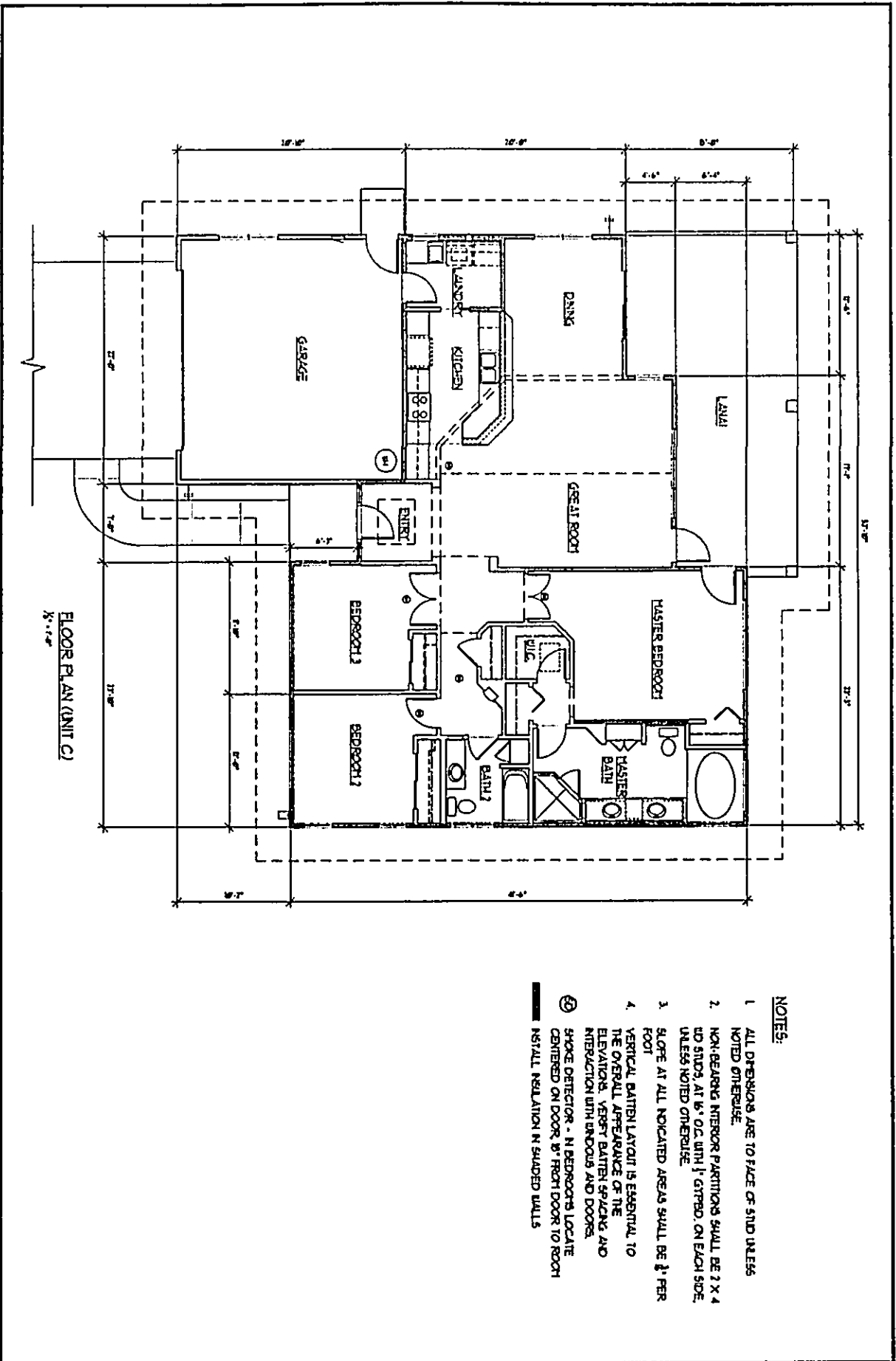
Architectural Department
The University of Hawaii
1550 East-West Road
Honolulu, HI 96822
Tel: 808-957-2100
Fax: 808-957-2101

1

KE ALPI KAI II - TYPICAL UNIT PLANS
T.M.K.: 3-9-19:004

B3

APRIL 2003



FLOOR PLAN (UNIT C)
37'-0"

NOTES:

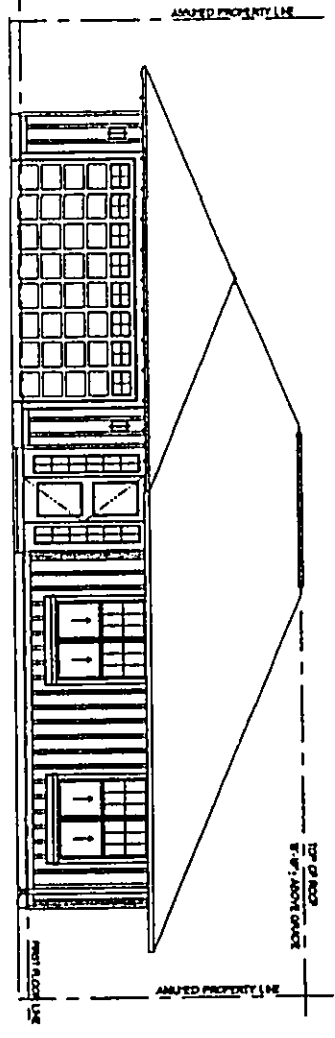
1. ALL OPENINGS ARE TO FACE OF STUD UNLESS NOTED OTHERWISE.
 2. NON-BEARING INTERIOR PARTITIONS SHALL BE 2 X 4 UD STUDS AT 6" O.C. WITH 1/2" GYPSO. ON EACH SIDE, UNLESS NOTED OTHERWISE.
 3. SLOPE AT ALL INDICATED AREAS SHALL BE 1/8" PER FOOT.
 4. VERTICAL BATTEN LAYOUT IS ESSENTIAL TO THE OVERALL APPEARANCE OF THE ELEVATION. VERIFY BATTEN SPACING AND INTERSECTION WITH WINDOWS AND DOORS.
- ⊕ SMOKE DETECTOR - IN BEDROOMS LOCATE CENTERED ON DOOR, 6" FROM DOOR TO ROOM
- ▬ INSTALL INSULATION IN SHADED WALLS



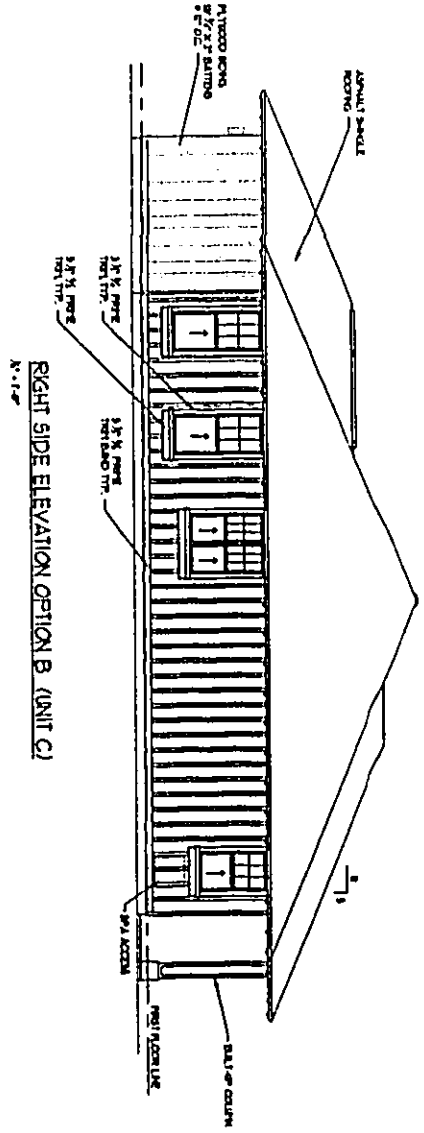
Architectural
Interior Design
1000 Kalia Road, Suite 100
Honolulu, HI 96813
Phone: 808-941-1111
Fax: 808-941-1112

KE ALPI KAI II - TYPICAL UNIT PLANS
T.M.K.: 3-9-19:004

C1
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FRONT ELEVATION OPTION B (UNIT C)
N.E.P.

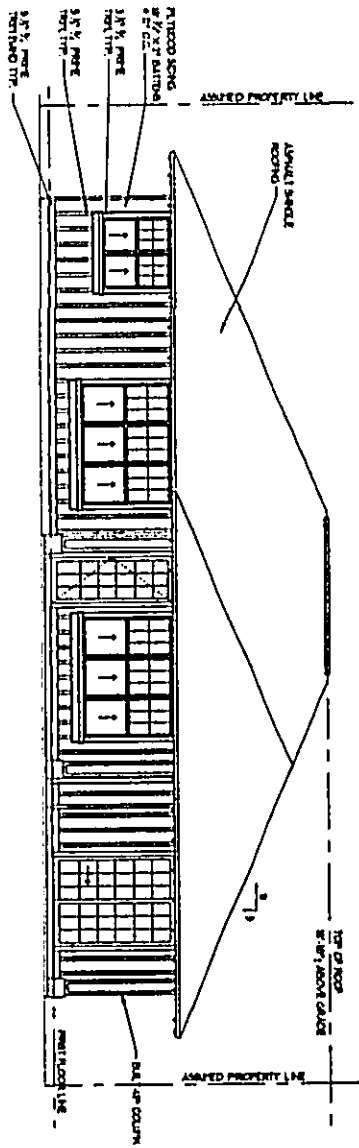


RIGHT SIDE ELEVATION OPTION B (UNIT C)
N.E.P.

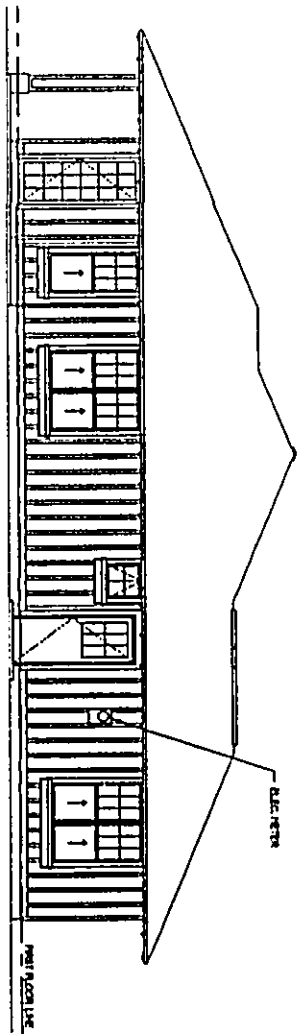
C2
APRIL 2003

KE ALI KAI II - TYPICAL UNIT PLANS
T.M.K.: 3-9-19:004

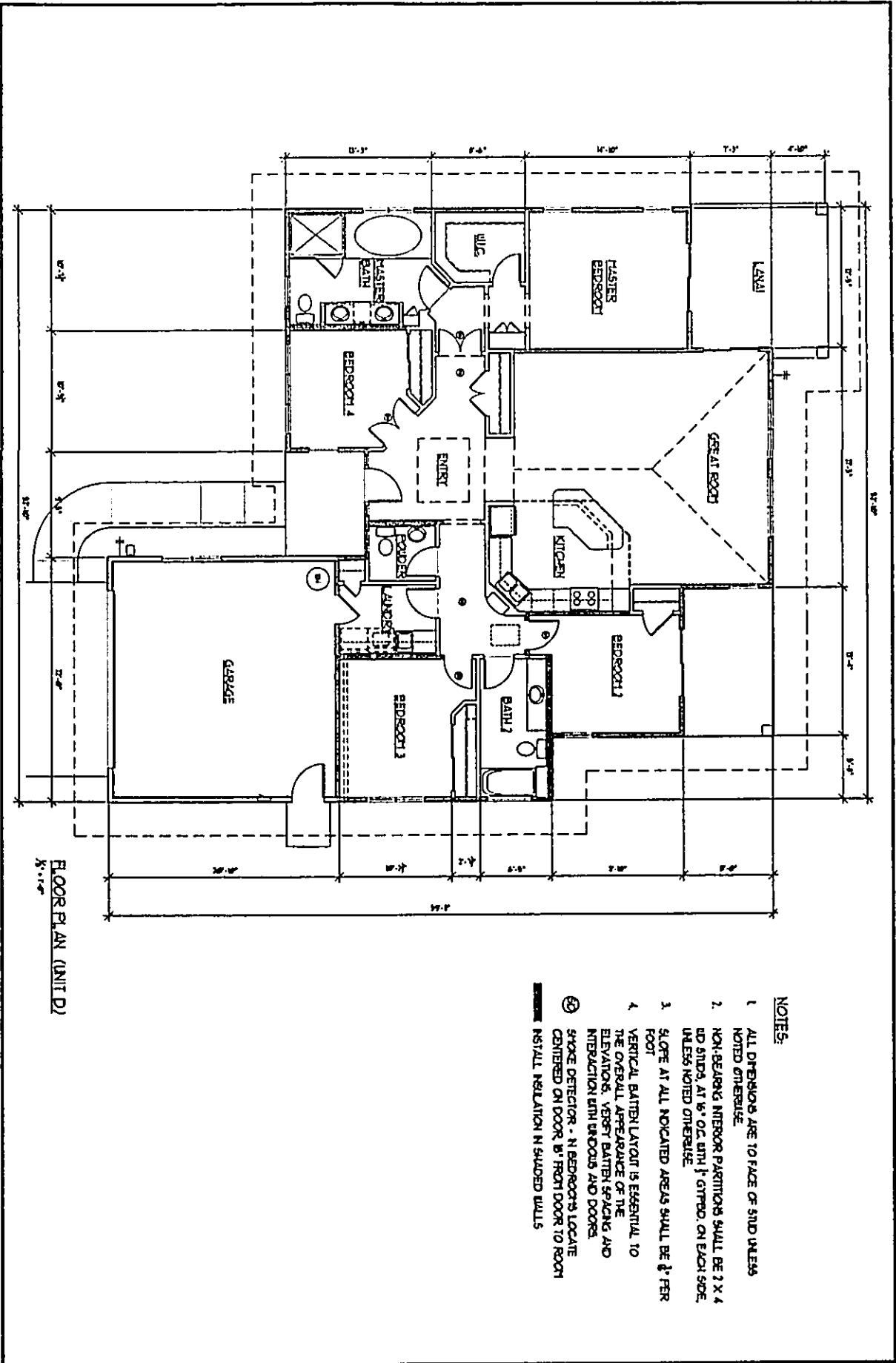




BACK ELEVATION OPTION B (UNIT C)
N.E.P.



LEFT SIDE ELEVATION OPTION B (UNIT C)
N.E.P.

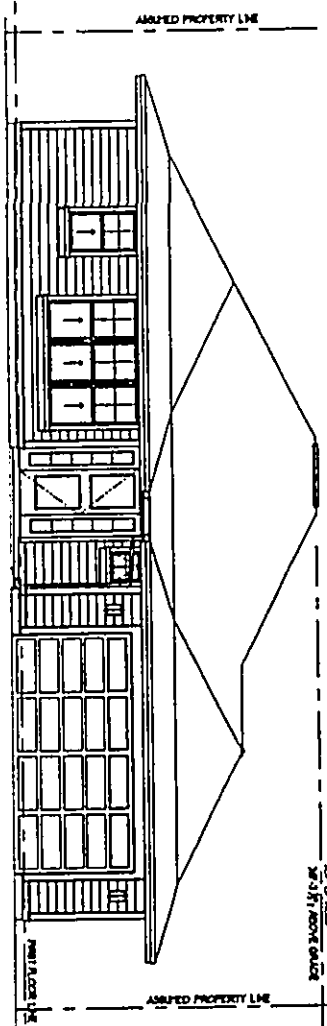


D1
APRIL 2003

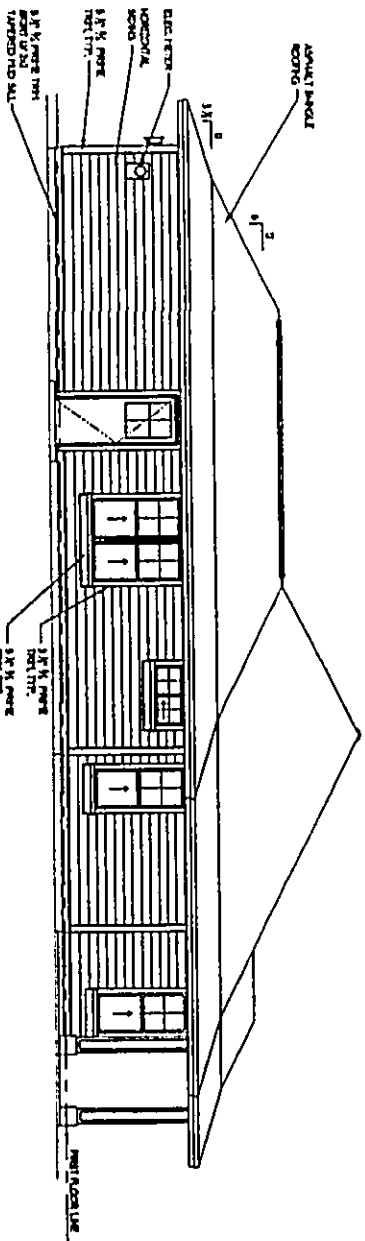
KE ALI' I KAI II - TYPICAL UNIT PLANS
T.M.K.: 3-9-19:004

Prepared by: [Signature]
Checked by: [Signature]
Date: [Date]





FRONT ELEVATION OPTION A (UNIT D)
N.T.S.



RIGHT SIDE ELEVATION OPTION A (UNIT D)
N.T.S.

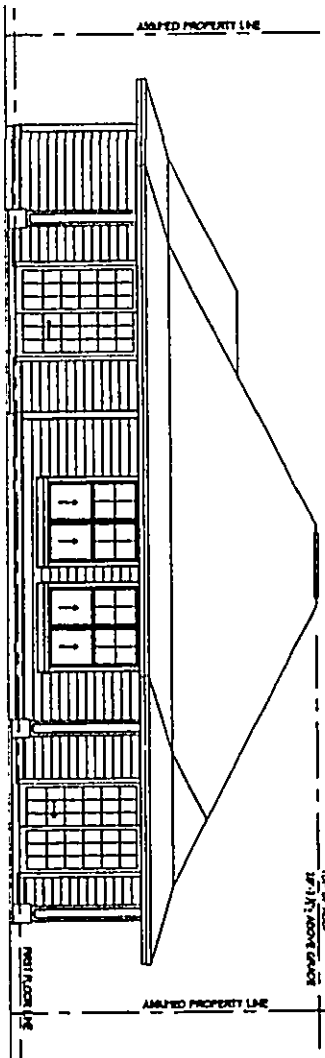


J.A. JONES & ASSOCIATES, INC.
ARCHITECTS
INTERIOR DESIGNERS
1000 KALANIANA'OLE BLVD., SUITE 1000
HONOLULU, HAWAII 96813
PHONE: (808) 943-1100
FAX: (808) 943-1101
WWW.JAJA.COM

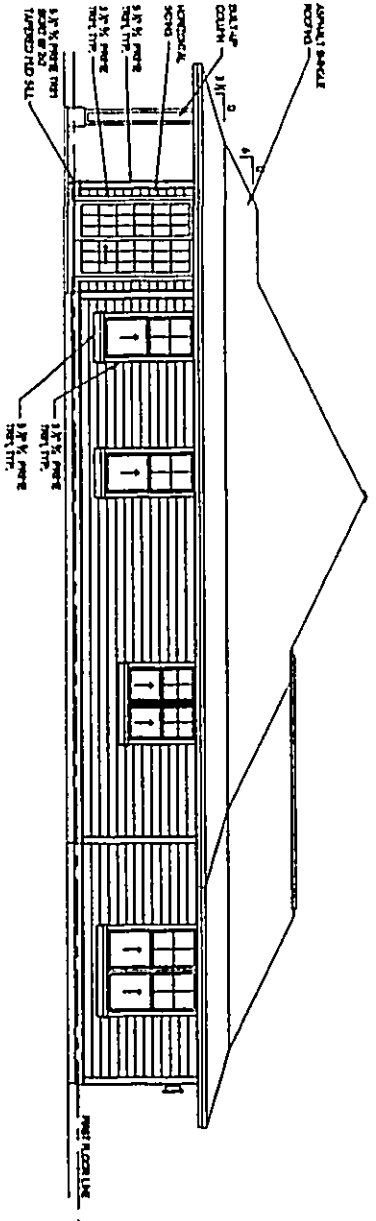
KE ALI'I KAI II - TYPICAL UNIT PLANS
T.M.K.: 3-9-19:004

D2

APRIL 2003



BACK ELEVATION OPTION A (UNIT D)
N.E.P.



LEFT SIDE ELEVATION OPTION A (UNIT D)
N.E.P.

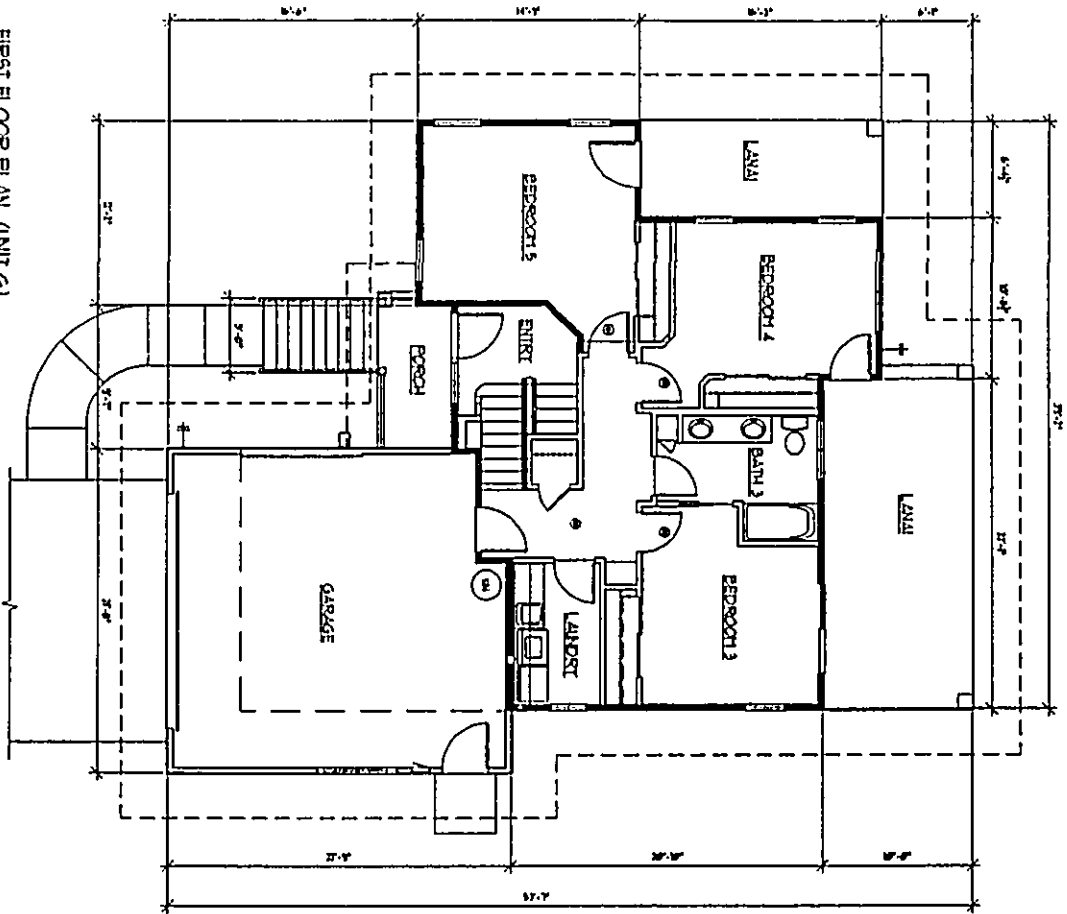
D3
APRIL 2003

KE ALI KAI II - TYPICAL UNIT PLANS
T.M.K.: 3-9-19:004

Architect
1111 Kalia Road, Suite 100
Honolulu, HI 96813
Phone: (808) 943-8888
Fax: (808) 943-8889
www.mahalo.com



FIRST FLOOR PLAN (UNIT G)
1/8" = 1'-0"



NOTES:

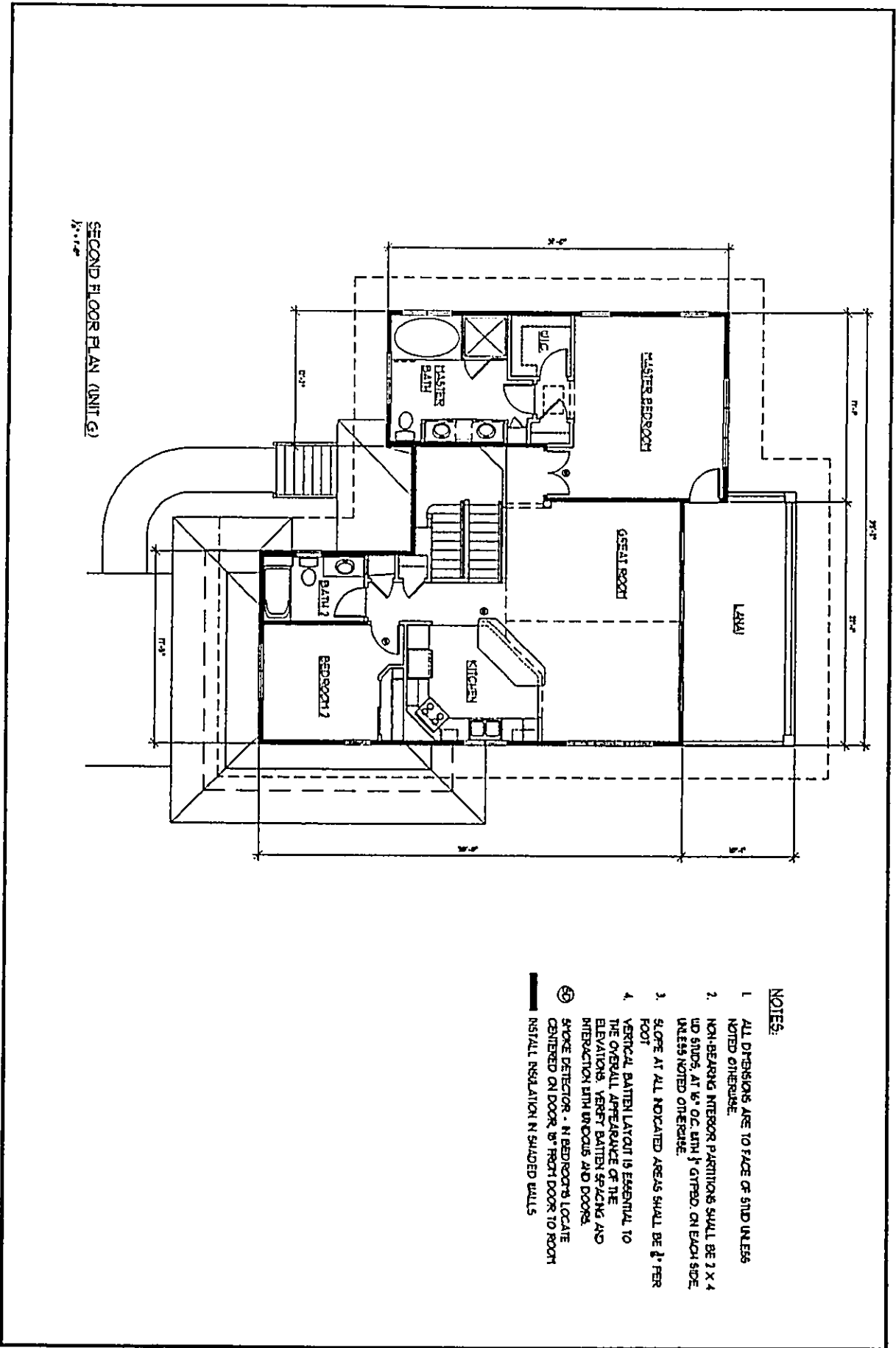
- 1 ALL DIMENSIONS ARE TO FACE OF STUD UNLESS NOTED OTHERWISE.
 - 2 NON-BEARING INTERIOR PARTITIONS SHALL BE 2 X 4 UD STUDS, AT 16" O.C. WITH 1" GYPSUM ON EACH SIDE, UNLESS NOTED OTHERWISE.
 - 3 SLOPE AT ALL INDICATED AREAS SHALL BE 1/4" PER FOOT.
 - 4 VERTICAL BATTEN LAYOUT IS ESSENTIAL TO THE OVERALL APPEARANCE OF THE ELEVATION. VERT BATTEN SPACING AND INTERSECTION WITH WINDOWS AND DOORS.
- ⊕ SMOKE DETECTOR - IN BEDROOM, LOCATE CENTERED ON DOOR, 18" FROM DOOR TO ROOM
- ▬ INSTALL INSULATION IN SHADED WALLS



KE ALI KAI II - TYPICAL UNIT PLANS
T.M.K.: 3-9-19:004

G1

APRIL 2003

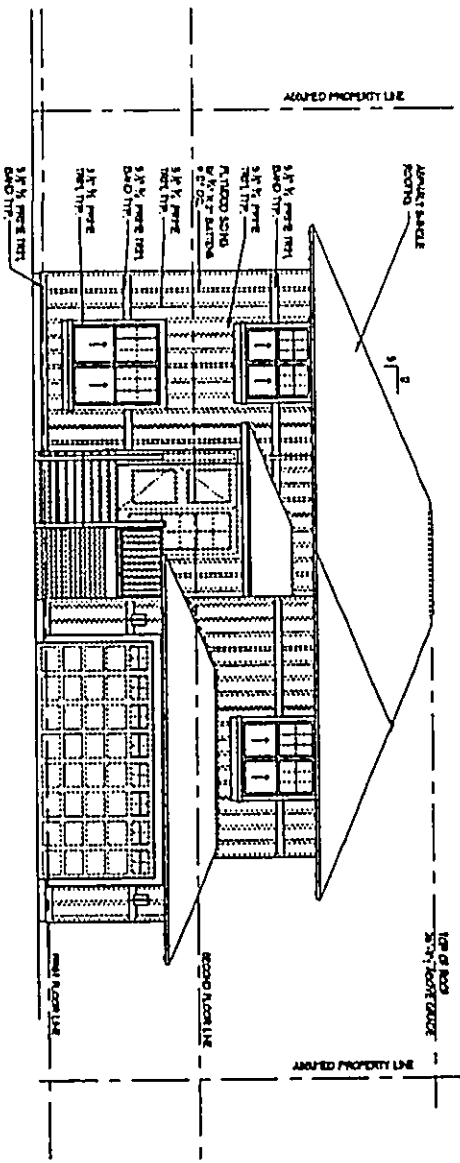


SECOND FLOOR PLAN (UNIT G)

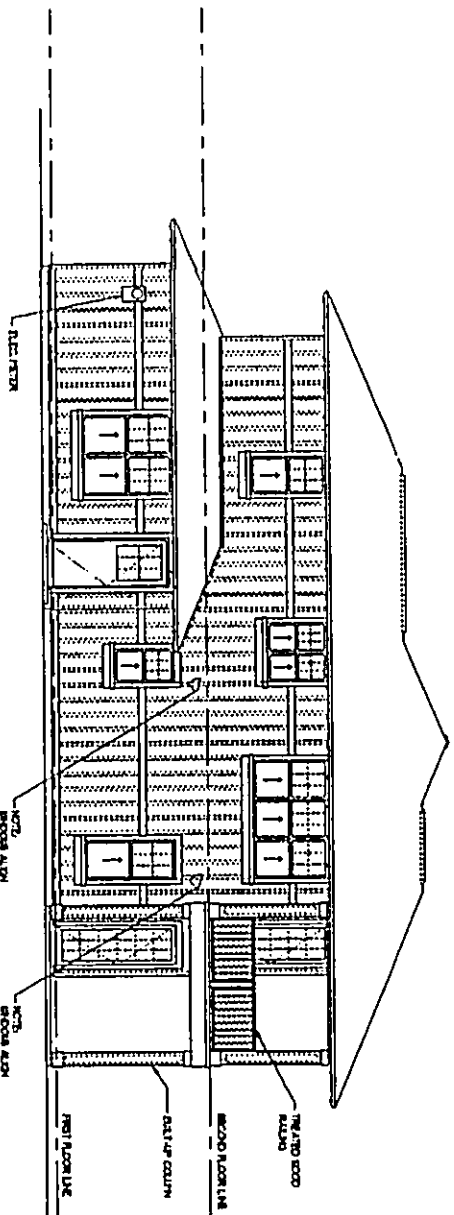
- NOTES:**
1. ALL DIMENSIONS ARE TO FACE OF STUD UNLESS NOTED OTHERWISE.
 2. NON-BEARING INTERIOR PARTITIONS SHALL BE 2 X 4 UD STUDS, AT 16" O.C. WITH 1/2" GYPSO. ON EACH SIDE, UNLESS NOTED OTHERWISE.
 3. SLOPE AT ALL INDICATED AREAS SHALL BE 1/8" PER FOOT.
 4. VERTICAL BATTEN LAYOUT IS ESSENTIAL TO THE OVERALL APPEARANCE OF THE ELEVATIONS. VERIFY BATTEN SPACING AND INTERSECTION WITH WINDOWS AND DOORS.
- ⊕ SMOKE DETECTOR - IN BEDROOMS LOCATE CENTERED ON DOOR, 8" FROM DOOR TO ROOM
- ▬ INSTALL INSULATION IN SLOPED WALLS

G2
APRIL 2003

KE ALI'I KAI II - TYPICAL UNIT PLANS
T.M.K.: 3-9-19:004



FRONT ELEVATION OPTION B (UNIT G)
N 1/2 P



RIGHT SIDE ELEVATION OPTION B (UNIT G)
N 1/2 P

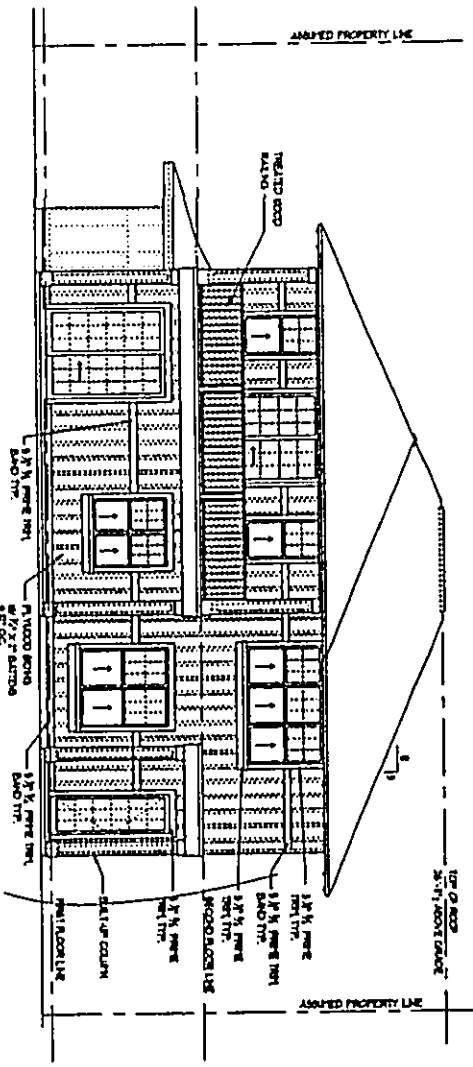


Architect
 JAMES A. JONES, ARCHITECT
 1000 KALANIANA'OLE BLVD., SUITE 1000
 HONOLULU, HAWAII 96813
 PH: (808) 551-1111
 FAX: (808) 551-1112
 WWW: www.jamesajones.com

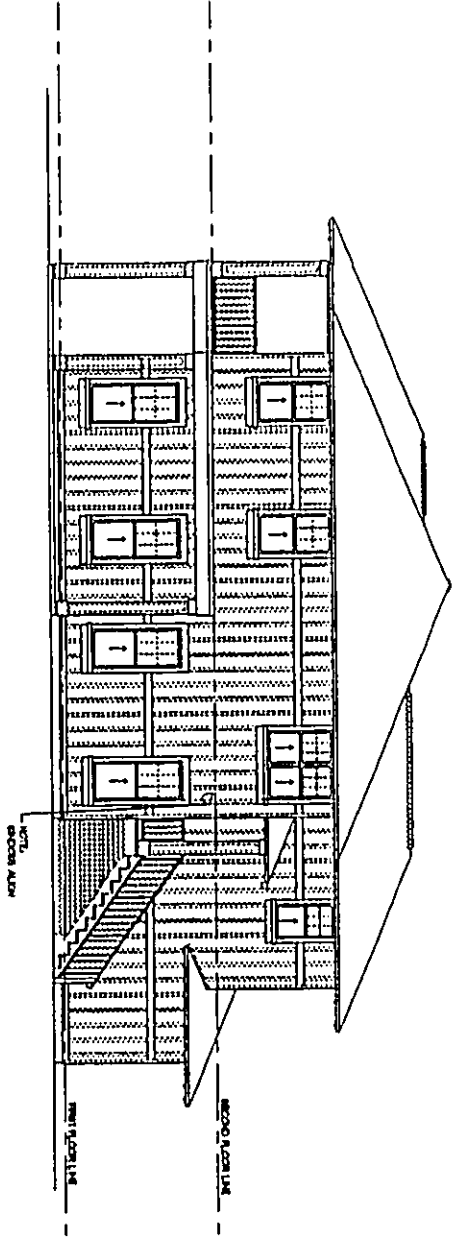
KE ALI KAI II - TYPICAL UNIT PLANS
 T.M.K.: 3-9-19:004

G3
 APRIL 2003

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100



BACK ELEVATION OPTION B (UNIT G)
 1/4" = 1'-0"



LEFT SIDE ELEVATION OPTION B (UNIT G)
 1/4" = 1'-0"

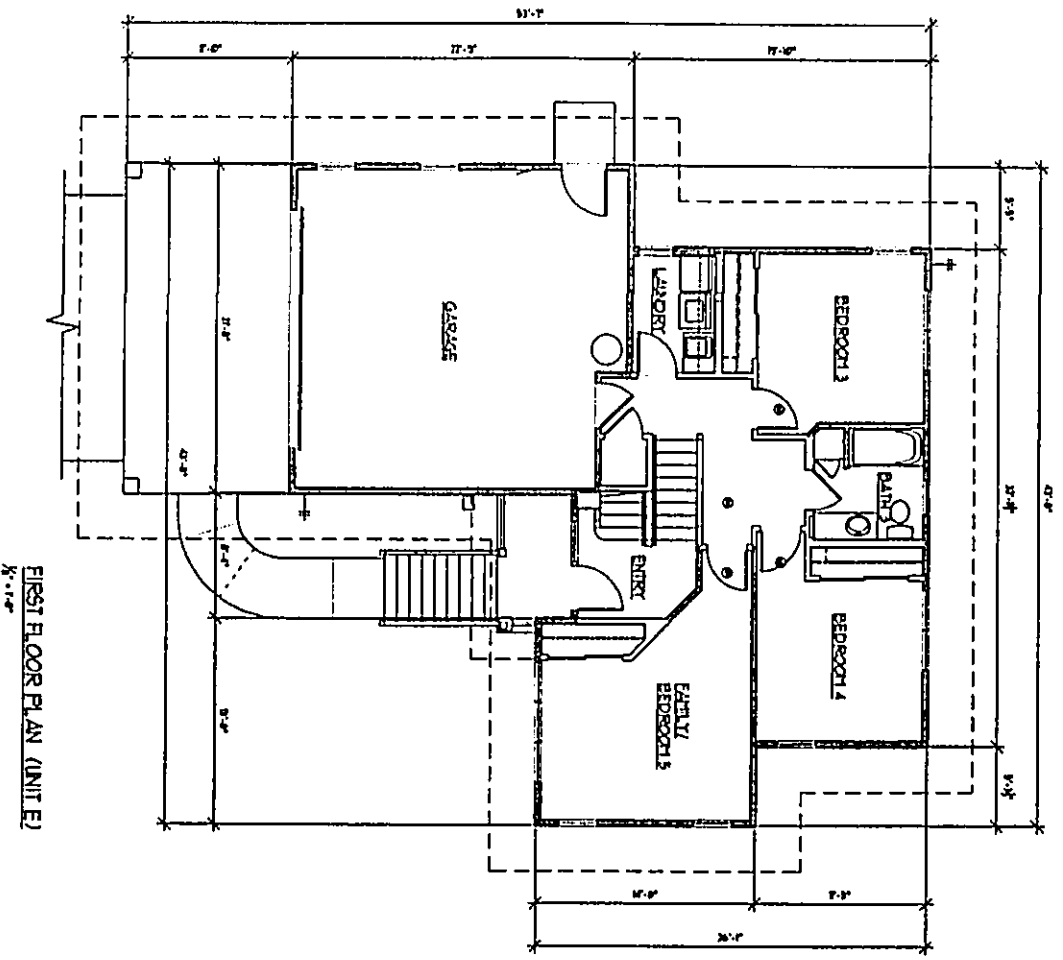


James Associates
 Architects
 Planners

Scale: 1/4" = 1'-0"

ΚΕ ΑΛΦΙ ΚΑΙ Π - TYPICAL UNIT PLANS
 T.M.K.: 3-9-19:004

G4
 APRIL 2003



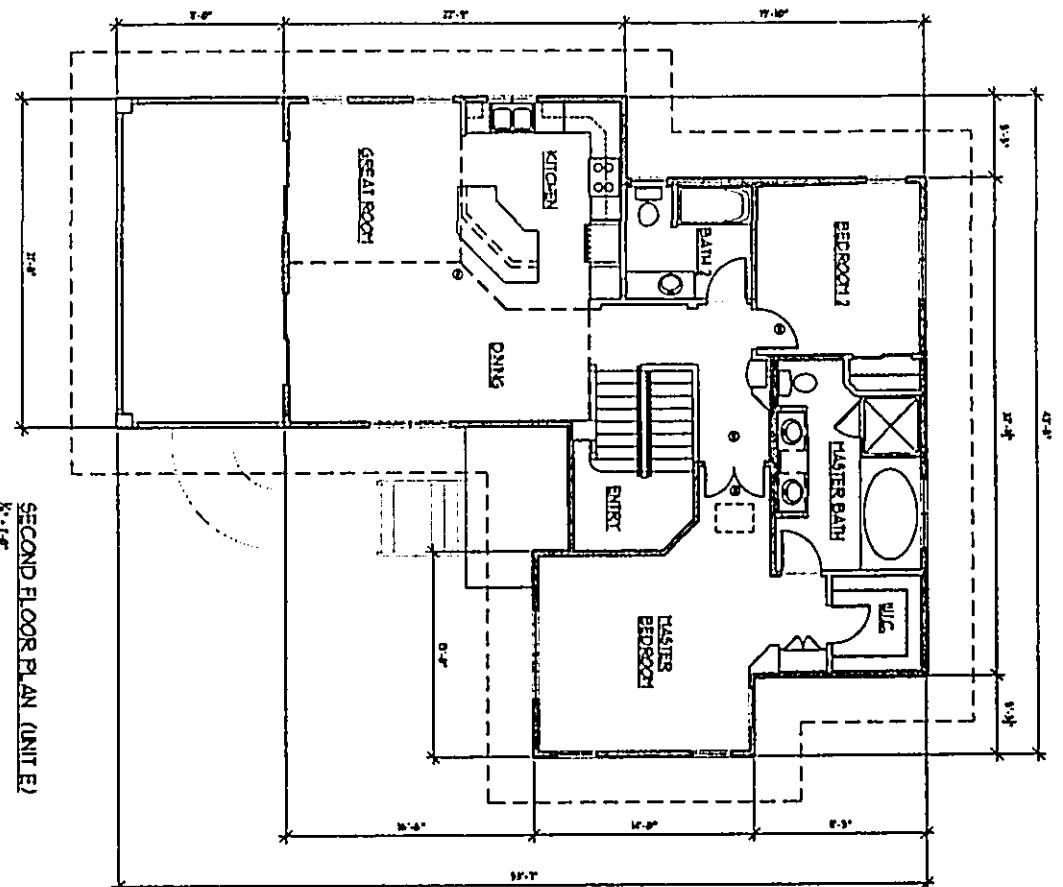
FIRST FLOOR PLAN (UNIT E)
K-11-04

- NOTES:**
1. ALL DIMENSIONS ARE TO FACE OF STUD UNLESS NOTED OTHERWISE.
 2. NON-BEARING INTERIOR PARTITIONS SHALL BE 2 X 4 UD STUDS, AT 16" O.C. WITH 1/2" GYPSUM ON EACH SIDE, UNLESS NOTED OTHERWISE.
 3. SLOPE AT ALL INDICATED AREAS SHALL BE 1/4" PER FOOT.
 4. VERTICAL BATTEN LAYOUT IS ESSENTIAL TO THE OVERALL APPEARANCE OF THE ELEVATIONS. VERIFY BATTEN SPACING AND INTERACTION WITH WINDOWS AND DOORS.
- ⊕ SPACE DETECTOR - IN BEDROOMS LOCATE CENTERED ON DOOR, 16" FROM DOOR TO ROOM
- INSTALL INSULATION IN SHOWN WALLS



KE ALI KAI II - TYPICAL UNIT PLANS
T.M.K.: 3-9-19:004

E1
APRIL 2003



SECOND FLOOR PLAN (UNIT E)
1/8" = 1'-0"

- NOTES:**
1. ALL OPENINGS ARE TO FACE OF STUD UNLESS NOTED OTHERWISE.
 2. NON-BEARING INTERIOR PARTITIONS SHALL BE 2 X 4 CD STUDS, AT 16" O.C. WITH 1/2" GYPSO. ON EACH SIDE UNLESS NOTED OTHERWISE.
 3. SLOPE AT ALL INDICATED AREAS SHALL BE 1/4" PER FOOT.
 4. VERTICAL BATTEN LAYOUT IS ESSENTIAL TO THE OVERALL APPEARANCE OF THE ELEVATION. VERIFY BATTEN SPACING AND INTERSECTION WITH WINDOWS AND DOORS.
- ⊗ SHOCK DETECTOR - N BEDROOM'S LOCATE CENTERED ON DOOR. W. FRONT DOOR TO ROOM
- INSTALL INSULATION IN SHADDED WALLS



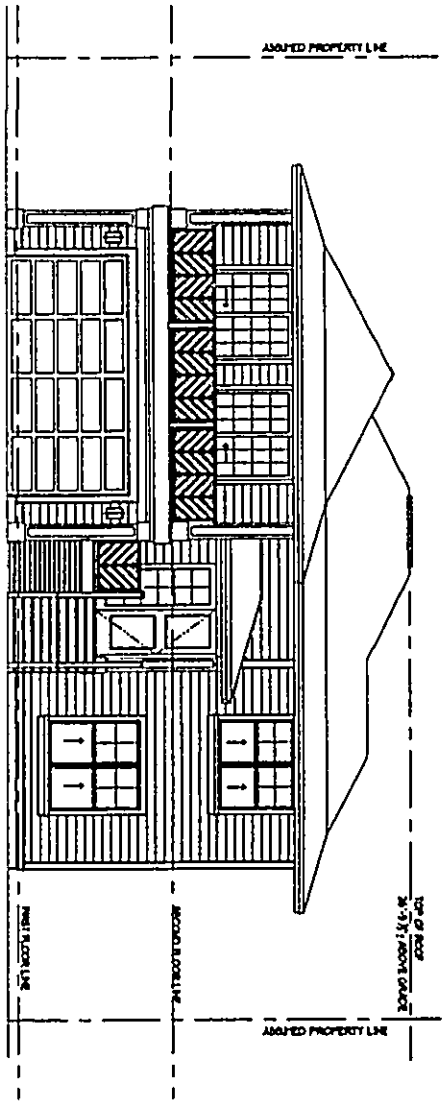
Architectural Firm Name

Architect

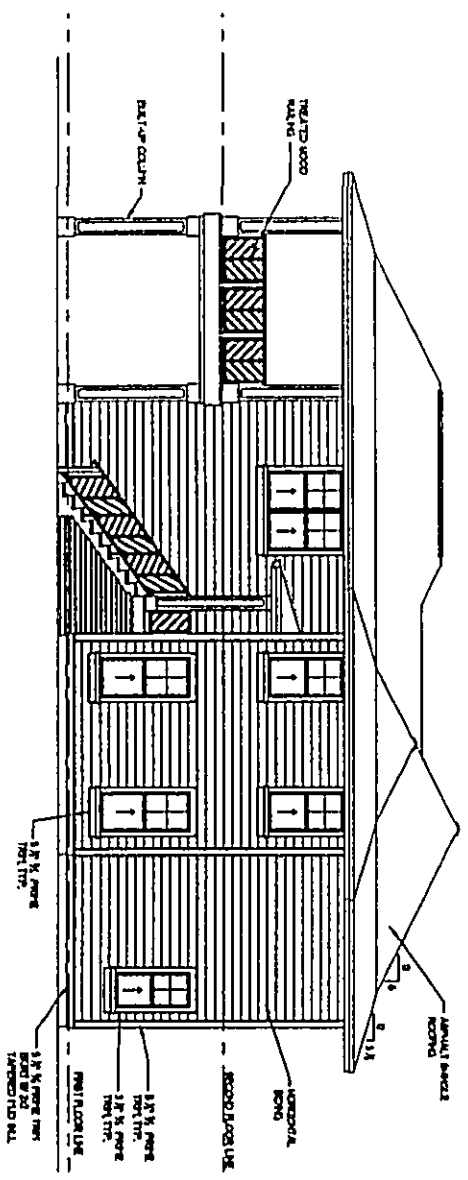
KE ALI'I KAI II - TYPICAL UNIT PLANS
T.M.K.: 3-9-19:004

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APRIL 2003



FRONT ELEVATION OPTION A (UNIT E)
N.T.S.



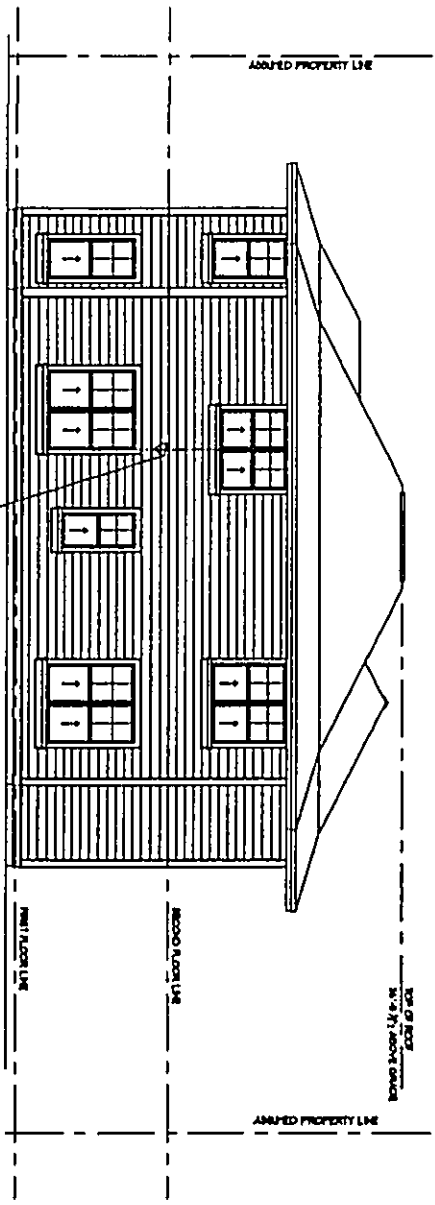
RIGHT SIDE ELEVATION OPTION A (UNIT E)
N.T.S.

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APRIL 2003

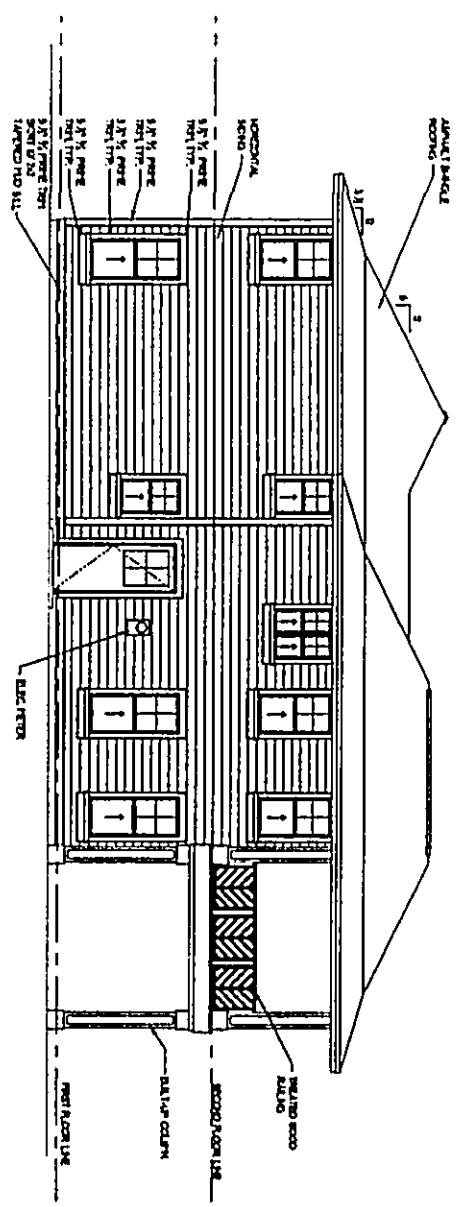
KE ALI'I KAI II - TYPICAL UNIT PLANS
T.M.K.: 3-9-19:004



JAI
Architecture & Planning, Inc.
1000 Kalia Road, Suite 300
Honolulu, HI 96813
Tel: 808-941-9999
Fax: 808-941-9998
www.jai-hawaii.com



BACK ELEVATION OPTION A (UNIT E)
N.T.P.



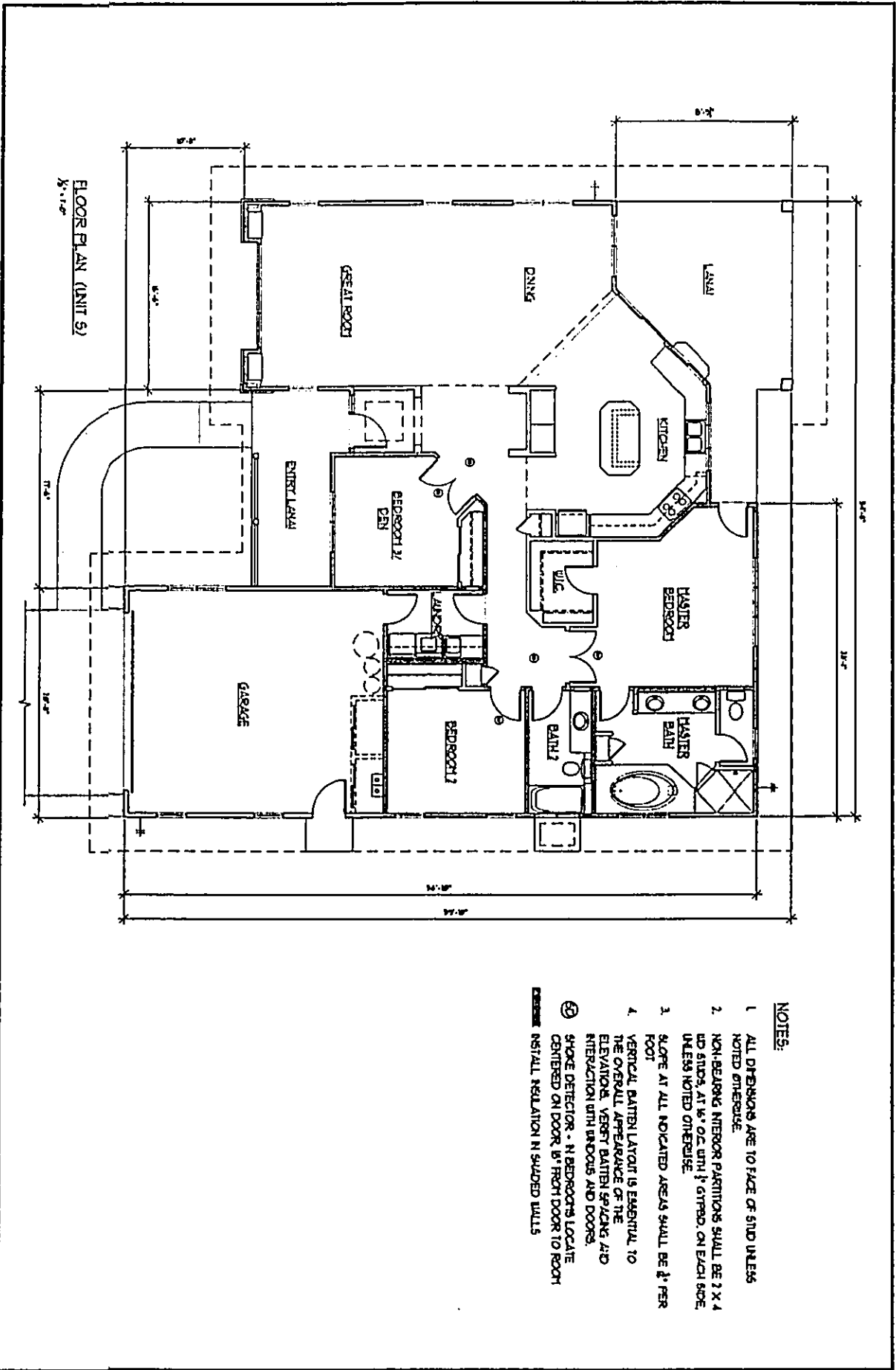
LEFT SIDE ELEVATION OPTION A (UNIT E)
N.T.P.



Merrill Lynch, Pierce, Fenner & Smith Inc.
120 Wall Street
New York, NY 10038
Tel: 212 865 2000
Fax: 212 865 2000

KE ALI KAI II - TYPICAL UNIT PLANS
T.M.K.: 3-9-19:004

E4
APRIL 2003

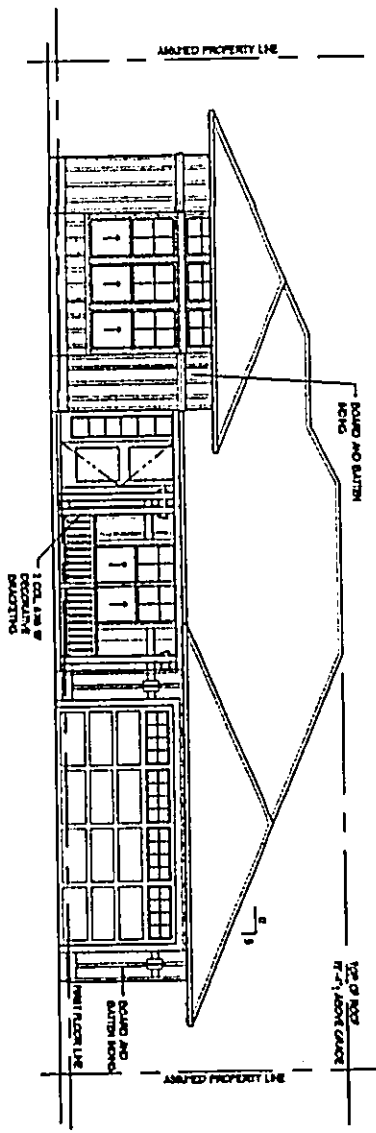


- NOTES:**
- 1 ALL DIMENSIONS ARE TO FACE OF STUD UNLESS NOTED OTHERWISE.
 - 2 NON-BEARING INTERIOR PARTITIONS SHALL BE 2 X 4 UD STUDS, AT 16" O.C. WITH 1/2" GYPSO. ON EACH SIDE UNLESS NOTED OTHERWISE.
 - 3 SLOPE AT ALL INDICATED AREAS SHALL BE 1/8" PER FOOT.
 - 4 VERTICAL BATTEN LAYOUT IS ESSENTIAL TO THE OVERALL APPEARANCE OF THE ELEVATION. VERT BATTEN SPACING AND INTERACTION WITH WINDOWS AND DOORS.
- ⊗ SMOKE DETECTOR - IN BEDROOMS LOCATE CENTERED ON DOOR 18" FROM DOOR TO ROOM
- ⊞ INSTALL INSULATION IN SLOPED WALLS

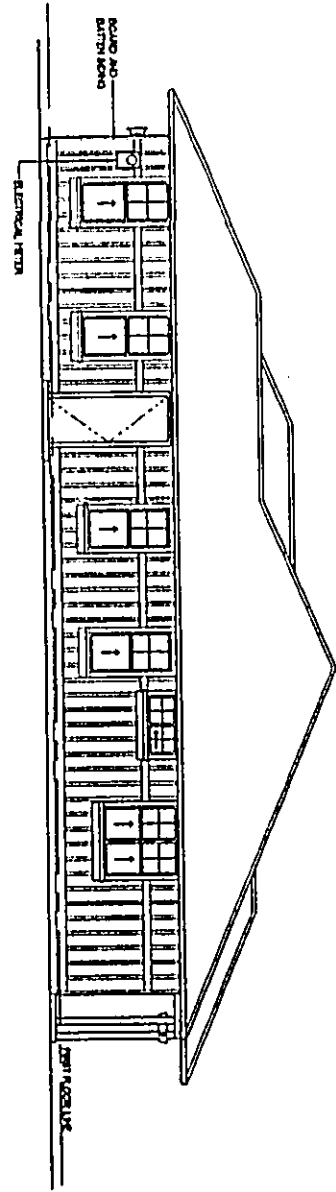
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KE ALPI KAI II - TYPICAL UNIT PLANS
T.M.K.: 3-9-19:004





FRONT ELEVATION OPTION 'B' (UNIT 5)
N = 1/4"



RIGHT SIDE ELEVATION OPTION 'B' (UNIT 5)
N = 1/4"

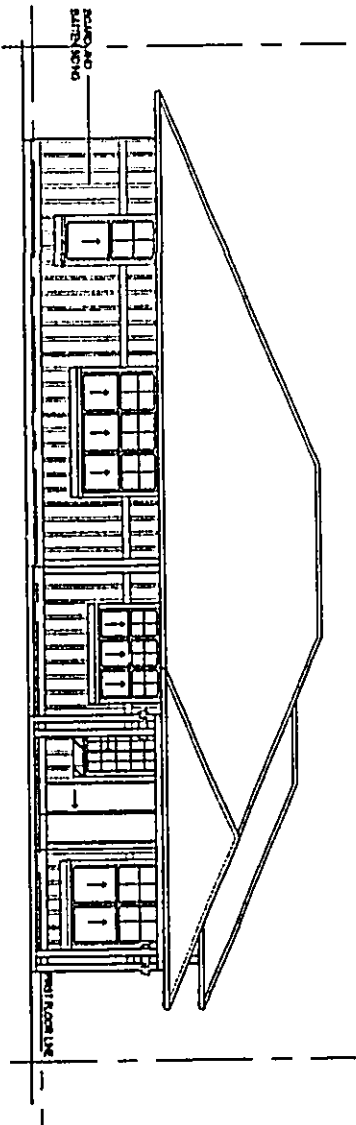


Architect
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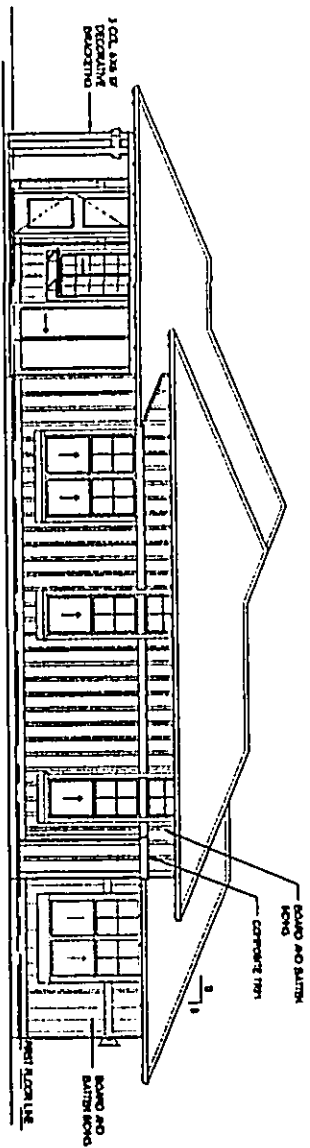
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T.M.K.: 3-9-19:004

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REAR ELEVATION OPTION 'B' (UNIT 5)
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LEFT SIDE ELEVATION OPTION 'B' (UNIT 5)
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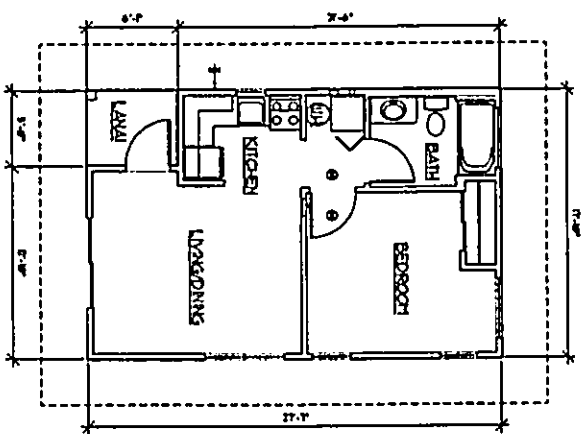
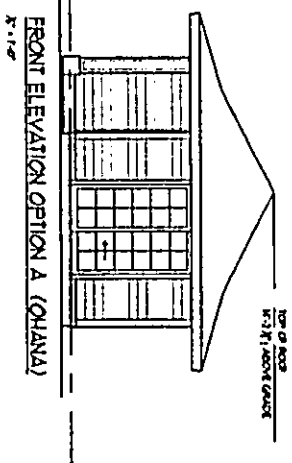
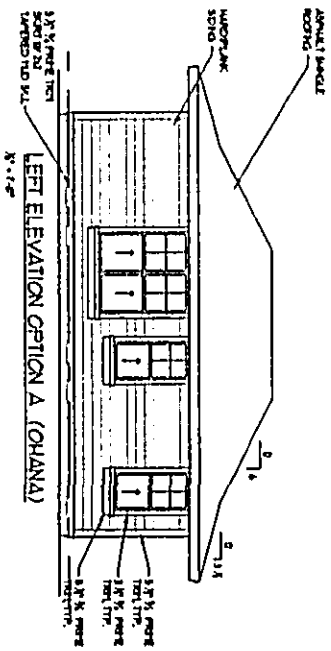
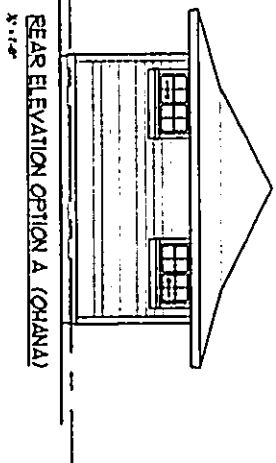
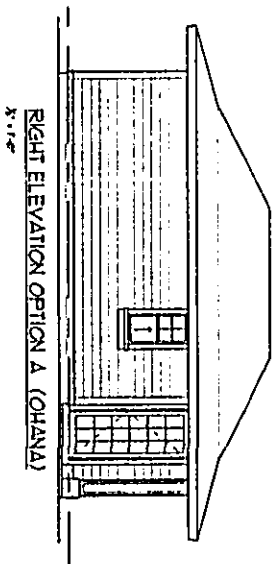
APRIL 2003

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KE ALI'I KAI II - TYPICAL UNIT PLANS
T.M.K.: 3-9-19:004

Revised





NOTES:

1. ALL OPENINGS ARE TO FACE OF STUD UNLESS NOTED OTHERWISE.
 2. NON-BEARING INTERIOR PARTITIONS SHALL BE 2 X 4 LD STUDS, AT 6" O.C. WITH 1" GYPSO. ON EACH SIDE, UNLESS NOTED OTHERWISE.
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- ⊕ SMOKE DETECTOR - IN BEDROOMS LOCATE CENTERED ON DOOR, 8" FROM DOOR TO ROOM
- INSTALL INSULATION IN SHADDED WALLS

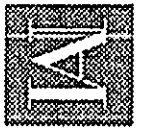


MOORE & ASSOCIATES
ARCHITECTS
1000 W. 10TH AVENUE
DENVER, CO 80202

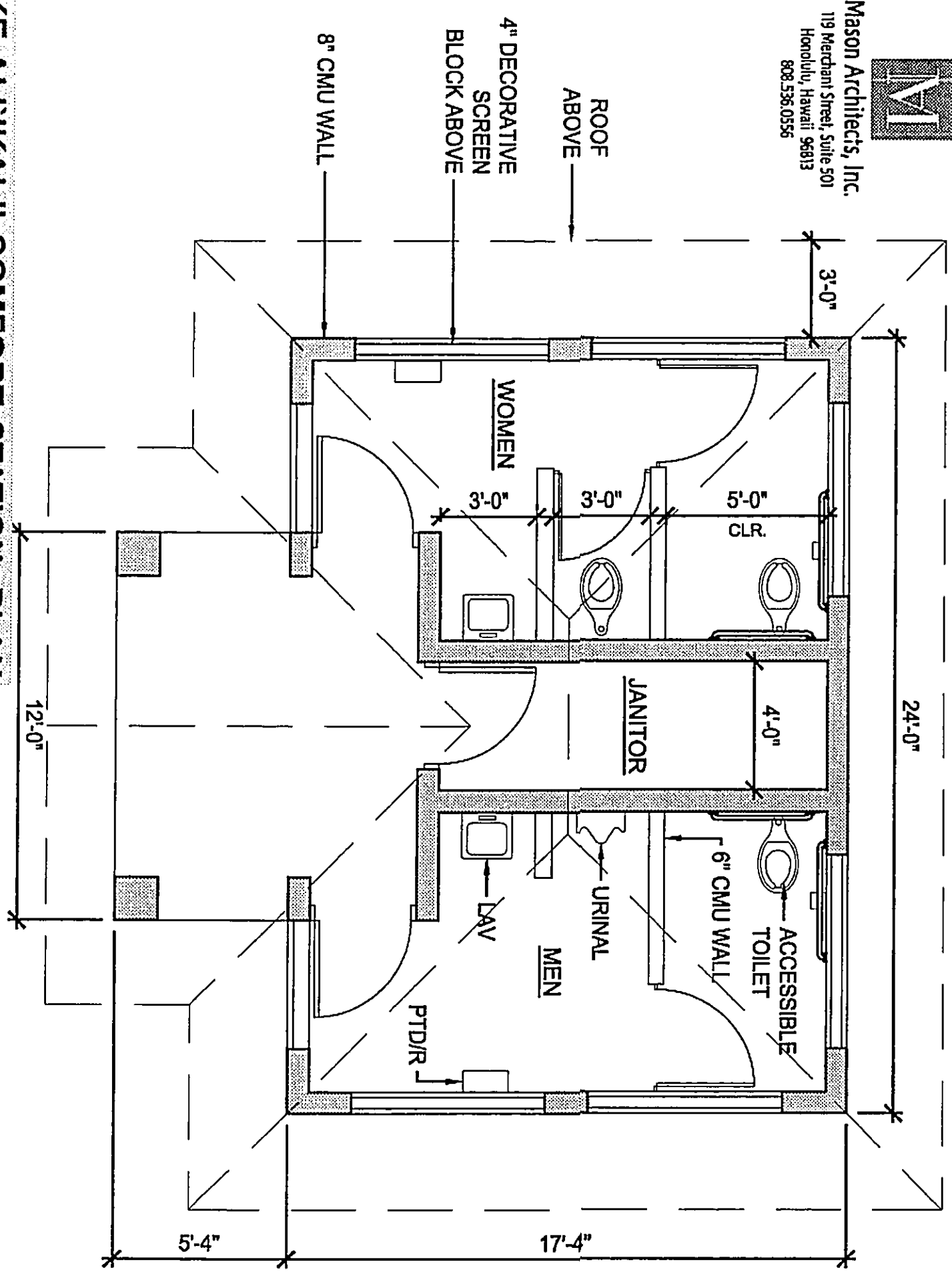
DATE: 3-9-04

KE ALFI KAI II - TYPICAL UNIT PLANS
T.M.K.: 3-9-19:004

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APRIL 2003



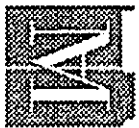
Mason Architects, Inc.
119 Merchant Street, Suite 501
Honolulu, Hawaii 96813
808.536.0556



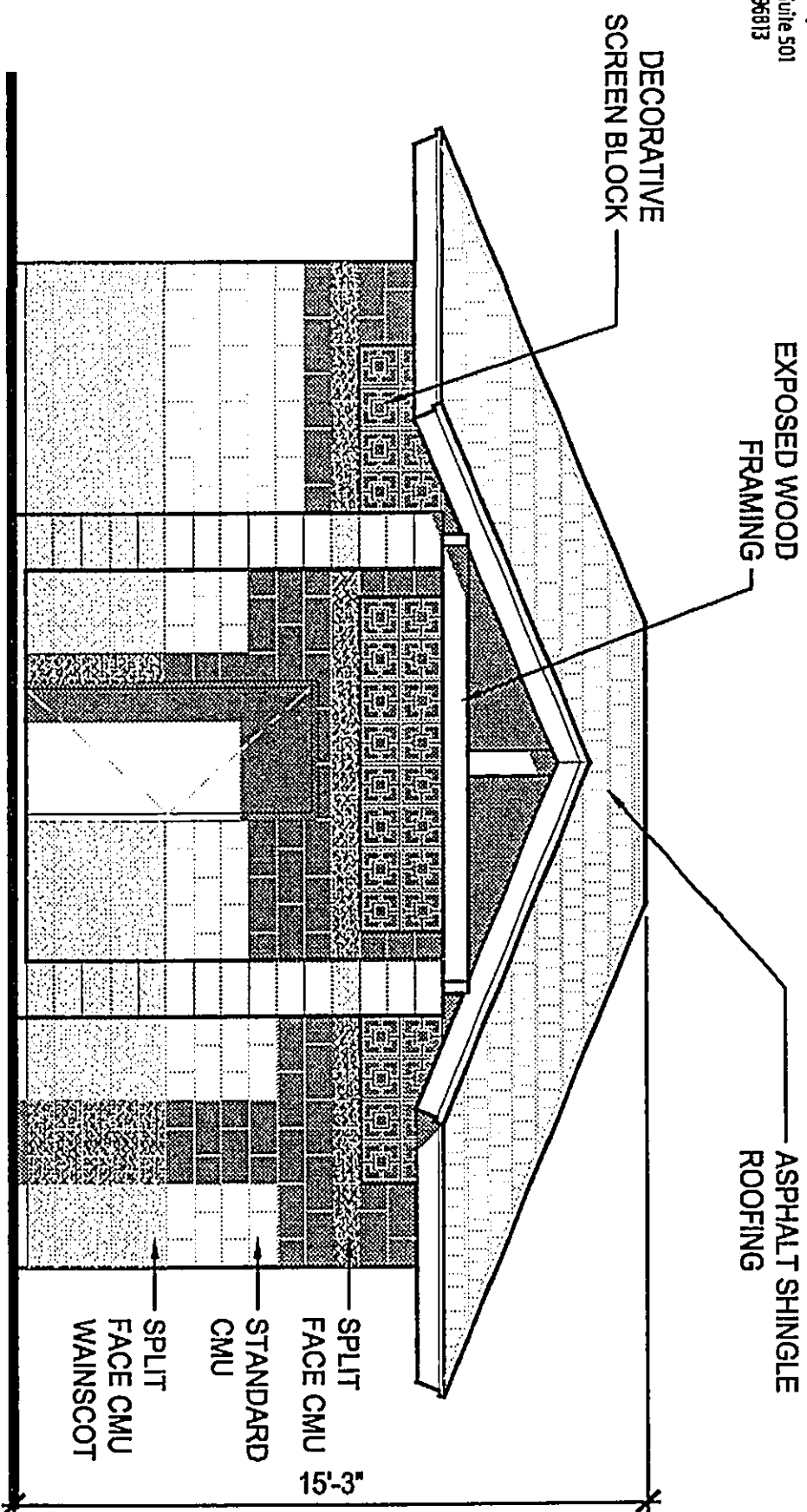
KE ALI'IKAI II COMFORT STATION, PLAN



Prepared by: [Signature]



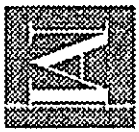
Mason Architects, Inc.
119 Merchant Street, Suite 501
Honolulu, Hawaii 96813
808.535.0555



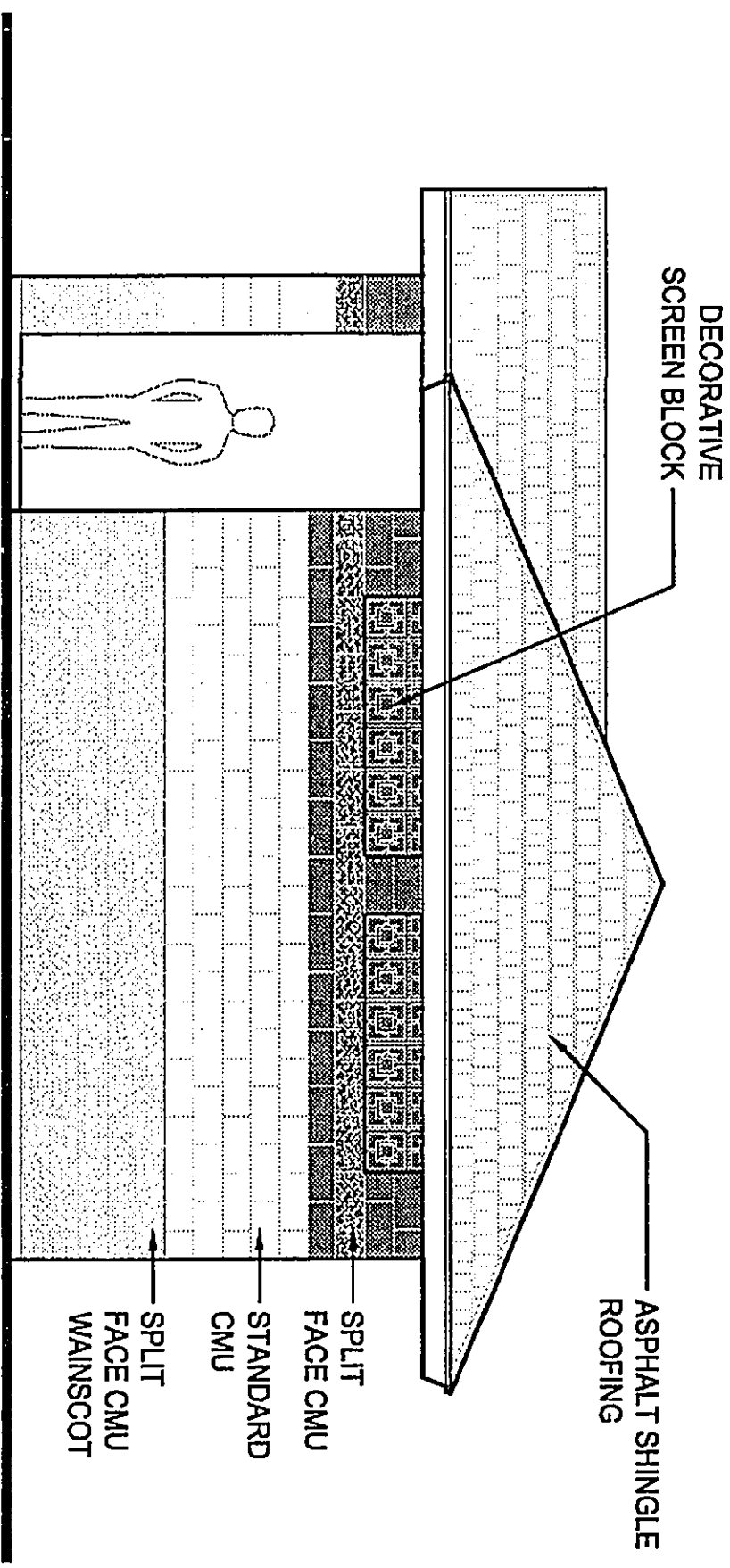
KE ALI'IKAI II COMFORT STATION, FRONT ELEVATION



Revised: Jun 16, 2014 - 0000001



Mason Architects, Inc.
119 Merchant Street, Suite 501
Honolulu, Hawaii 96813
808.536.0556



KE ALIPIKAI II COMFORT STATION, SIDE ELEVATION



Prepared June 14, 2004

Appendix D

***Archaeological
Summary Report***

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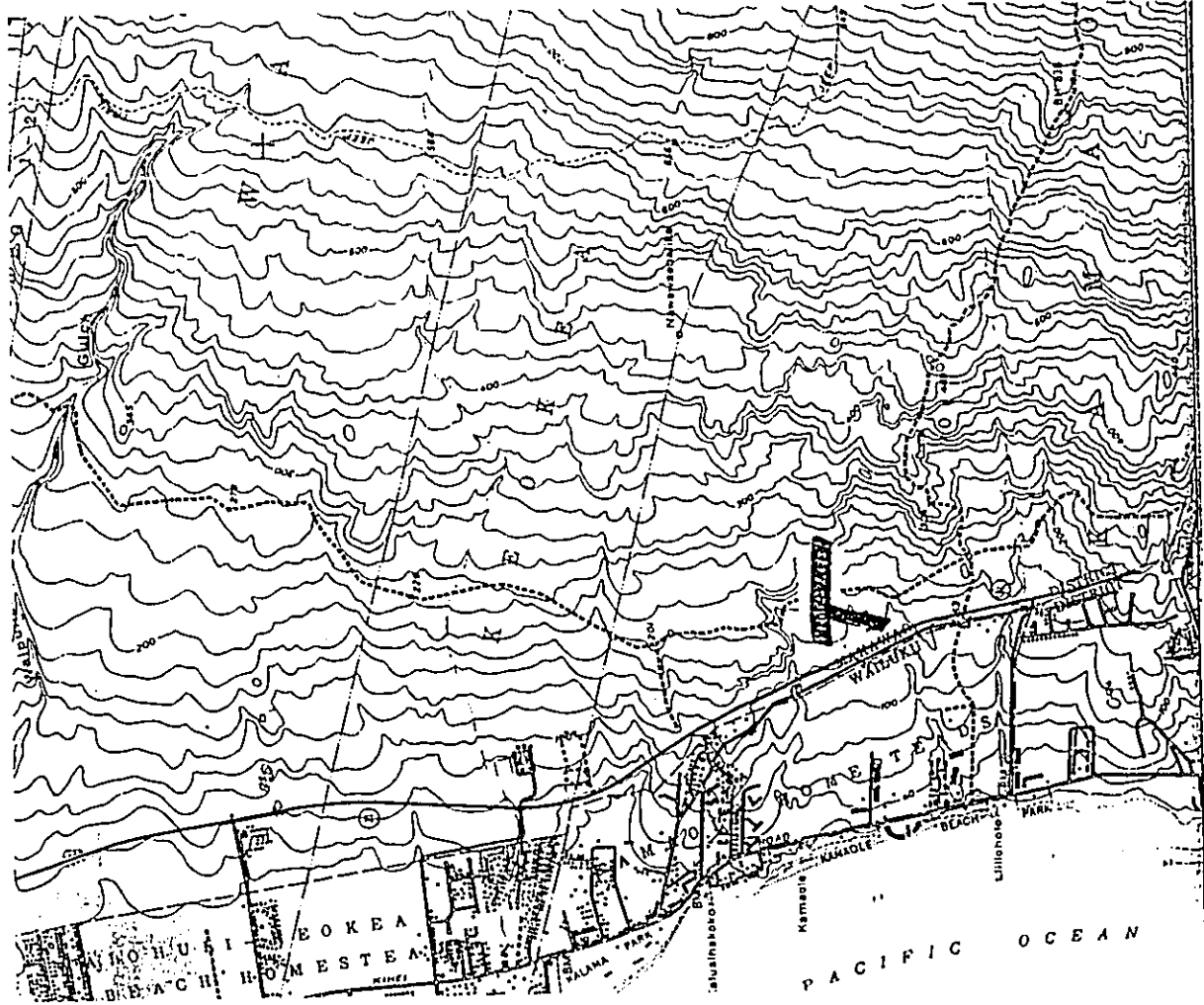


Figure 1. Location of Project Area on USGS Map

MAY 21 2003

ARCHAEOLOGICAL SERVICES HAWAII, LLC.,
16 S. MARKET ST. STE. G, WAILUKU, HI; 96793

10 May 03

Mr. Glenn Tadaki
Munekyo & Hiraga, Inc.,
305 High Street Ste. 104
Wailuku, HI 96793

Subject: Archaeological Summary for the Proposed Ke Alii II Project (TMK 3-9-19-4)

At the request of Mr. Glenn Tadaki, this letter report was prepared for Towne Realty to summarize previous archaeological work or issues for the above referenced project area (Figs. 1 & 2). In 1990 & 1991, the Bishop Museum surveyed the project area (Lot 1), for the proposed Kiheti Elementary School (Appendix A). The purpose of the survey was to identify any extant surface archaeological sites within two adjoining parcels (Lots 1 & 2), and determine the significance and effects the sites could have on development.

And initial surface assessment of the parcels was conducted in 1990 where nine surface features were identified and assessed as significant under Criterion D of the National Register for Significant Criteria. Sites 50-50-14-2840-2844 were identified within Lot 1, and Sites 2837-2838 were within Lot 2-the current Kamalii School Site (Fig. 3). The sites consisted primarily of rock mounds (2840-2842), historic remnants (2837 & 2844), a Shrine (2839) and L-shape (2838), and a rock facing (Site 2843). Phase I testing was conducted on these sites and included mapping eight features, as well as the excavation of two shovel test probes, and two test units. Unfortunately the results section of the report (See Appendix A) is missing so a detailed account of the test results is not possible. However, the recommendation section states "in the sites studied, because of the lack of midden or artifacts, the potential for new or unique data is insignificant. Since the significance of the sites have been realized, further intensive data recovery is not recommended." One site shall be preserved, Site 2839-the shrine, and it is recommended that an archaeological monitor be present during any construction related activities.

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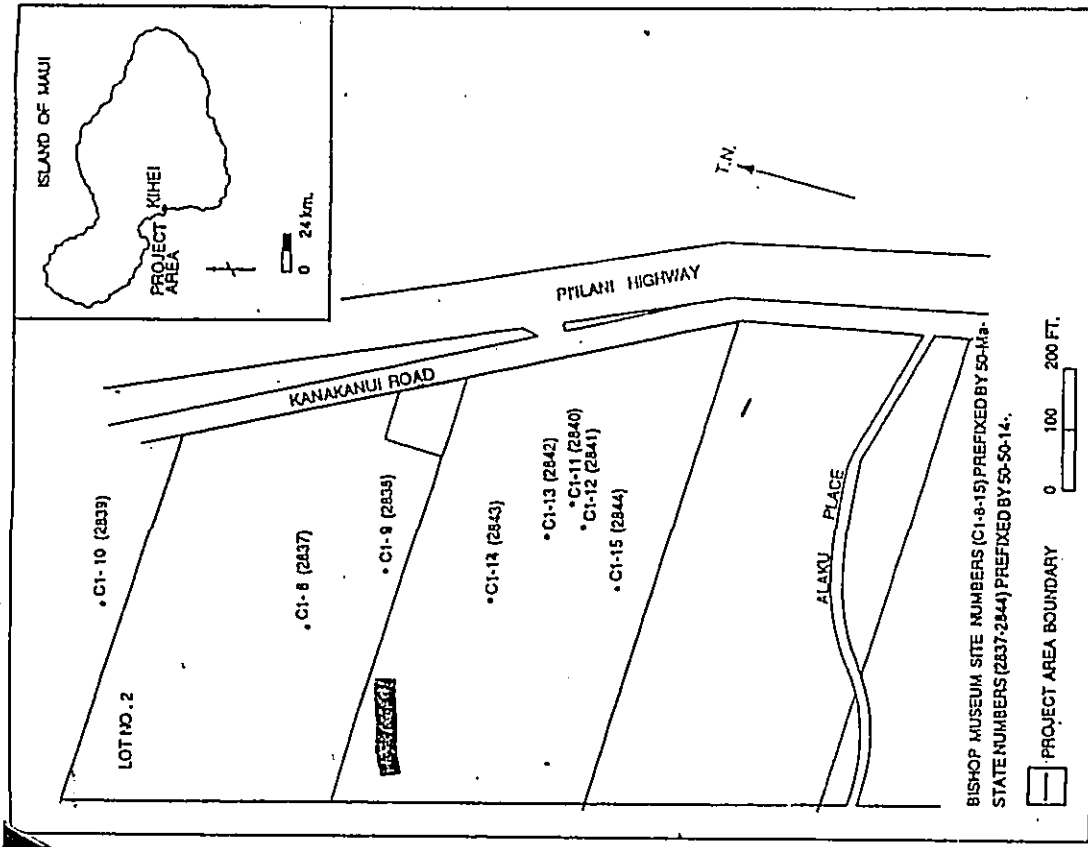


Figure 3. Location of Archaeological Sites (From DPBM Report)

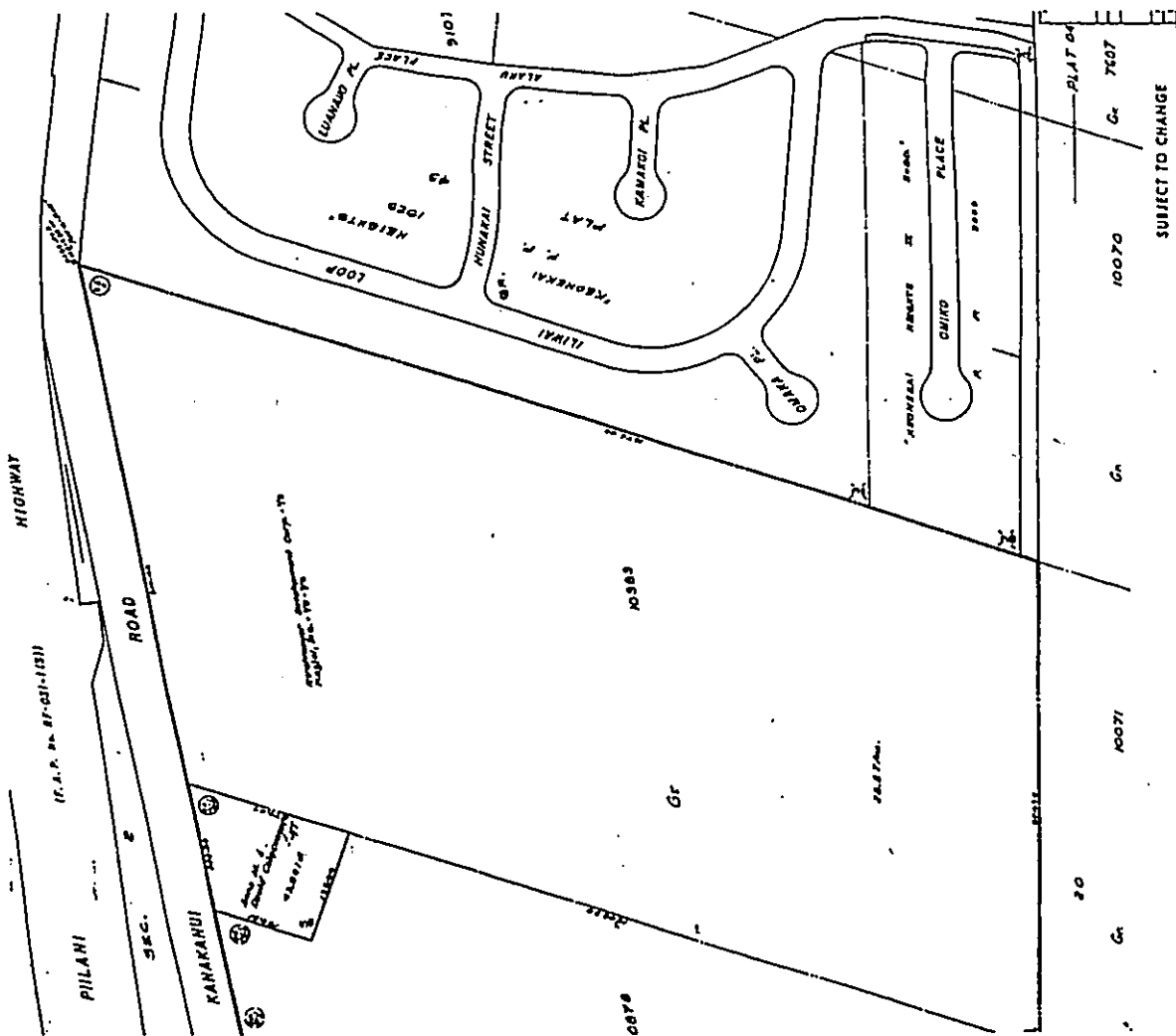


Figure 2. Location of Project Area on TMK 3-9-19 Map

Archaeological monitoring has been the protocol at other projects (Kamalii School Site, Kamalii Subdivision, World Mark Apartments and Ke Alii I Subdivision) within the vicinity. These parcels either contained surface sites that were tested and no longer significant, or they had sites in permanent preservation. During monitoring procedures at Ke Alii I Subdivision, unrecorded petroglyph sites (although some of the petroglyph sites may not be authentic) were identified in the gulch. This project area had undergone inventory level testing, yet these sites had not been identified.

Due to the potential for missed subsurface sites within the proposed project area, and due to the presence of extant surface features and that subsurface backhoe trenching was not conducted, archaeological monitoring is recommended during all construction related activities.

Currently there is no correspondence from the State Historic Preservation Division (SHPD) to determine if they concur that the eight surface sites are no longer significant and that archaeological monitoring will be required. Further consultation will be conducted to inquire what SHPD will recommend for this project.

APPENDIX A

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MS. 073091

ARCHAEOLOGICAL INVENTORY SURVEY OF
PROPOSED KIHEI ELEMENTARY SCHOOL SITE
LOTS 1 AND 2
KAHA'OLE, WAILUKU, MAUI ISLAND

PART I
HISTORICAL BACKGROUND

by
Gwen Hurst

PART II
ARCHAEOLOGY

by
E. Dow Davidson, Jr.
Project Director

Jeffrey Pantaleo, M.A.
Supervising Archaeologist

for

Comprehensive Consulting
Services of Hawaii
348 Dune Circle
Kailua, Hawaii

July 1991

Public Archeology Section
Applied Research Group
Bishop Museum
Honolulu, Hawaii

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INTRODUCTION

Under contract to Comprehensive Consulting Services of Hawaii, the Applied Research Group (ARG), Bishop Museum, conducted a Phase I archaeological inventory survey (Bishop Museum Project 473) on Lots 1 and 2 in Kama'ole, Wailuku District, Maui Island (Fig. 1). This survey was performed in conjunction with site selection for the new Kihai Elementary School. Lot 1 (28.6 acres) and Lot 2 (28.5 acres) are adjacent parcels, located west of Kanakanui Road, north of Iliwai Loop, south of Flat 18, and east of Flat 20. Of the six alternative parcels, the subject parcel held the most potential for significant archaeological remains.

An initial surface assessment was conducted by Jeffrey Pantaleo, Bruce Longton, and Andree Conley in November 1990 and resulted in the identification of nine structural features, each of which was assessed as significant in meeting Criterion D of the National Register Significance Criteria that states "that the site has yielded or has the potential to yield information significant for our understanding of traditional culture, history, and prehistory of the region." Subsequent Phase I inventory survey work was conducted between 15 May and 22 May 1991 by E. Dow Davidson, Jr., Andree Conley, Heather Caldwell, and Tina Mangiori, all of the Public Archaeology Section, Applied Research Group, Bishop Museum. This Phase I work entailed the detailed plan mapping of eight features, the excavation of two subsurface test units, and two shovel tests.

ENVIRONMENTAL SETTING

The project area is located on the leeward slope of the Haleakalā Volcano, ranging from c. 0.7 to 0.9 km (0.4 to 0.6 mi.) inland from the coast. Elevations range from c. 18 m (60 ft) to 33 m (110 ft) above mean sea level, placing the project area within vegetation zone "A" (Ripperton and Hosaka 1942:22), primarily consisting of xerophytic lowland shrub. Rainfall averages between c. 250 and 500 mm (10 and 20 in) per year, the majority falling during the winter season. Topography consists of gentle slopes with low knolls and shallow gullies. Soils in this region are of the Keawakapu-Hakana association, which are gently sloping to moderately steep, well-drained soils that have a fine- to medium-textured subsoil and are shallow to deep over fragmental lava on low uplands (Foote et al. 1972)

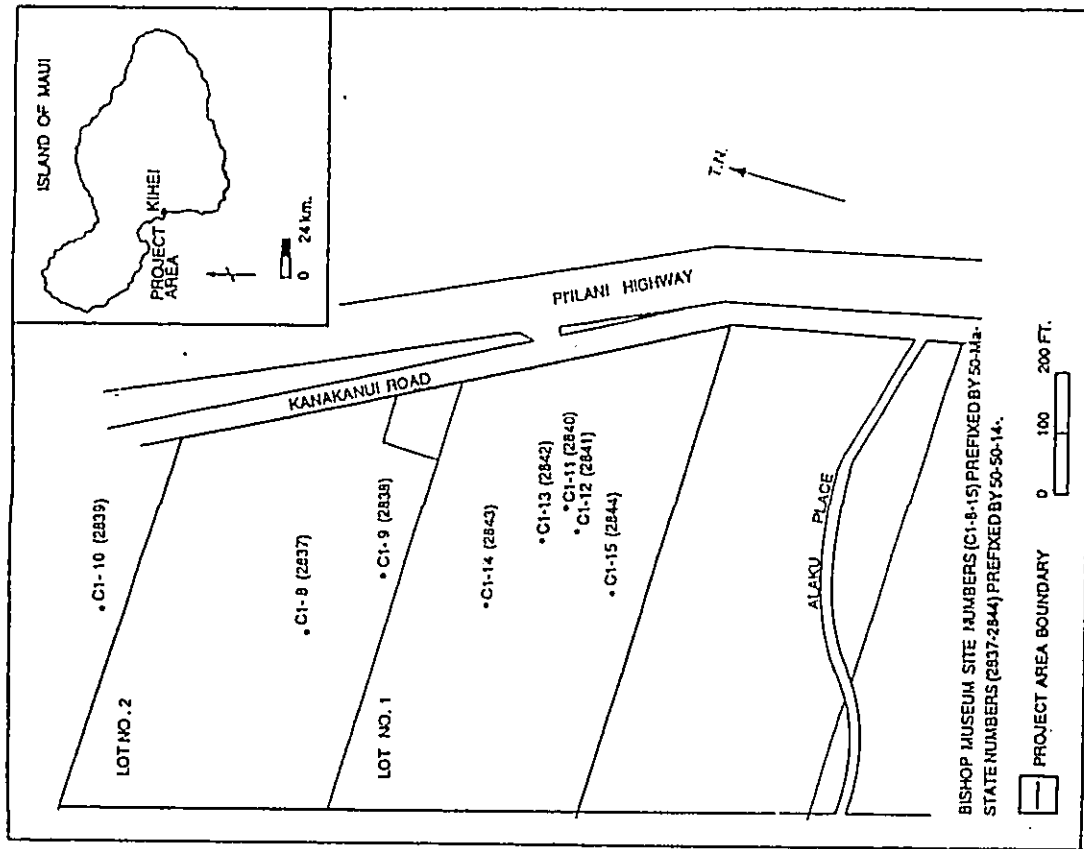


Fig. 1. Kihai Schools Project Area Showing Archaeological Site Locations.



The ancient Hawaiians planted potatoes in mounds (pu'e). Where soil is powdery and dry, as in 'Ulupalakua and Hakana on Maui, the earth is heaped carelessly into low mounds spaced with no particular precision or care. The slips are planted two or three in a mound, being placed vertically in holes made with the digging stick...Where potatoes are planted in crumbling lava combined with humus, as on eastern Maui and in Kona, Hawaii...the crumbling porous lava gives ample aeration with out much mounding [1972].

It seems that these mounds are characteristic of the type chronicled by Handy and Handy and that they were built for the traditional Hawaiian cultivation of 'uala.

RECOMMENDATIONS

A Phase I Survey, such as the current project, normally provides data to evaluate site significance and determine the appropriate final disposition of sites through detailed mapping and limited test excavations. In the sites studied, because of the lack of midden or artifacts, the potential for new or unique data is insignificant. Since the significance of the sites have been realized, the archaeological procedures performed to data can be considered adequate data recovery. Thus, further intensive data recovery is not recommended. An archaeological monitor is recommended to be present during any construction-related clearing and grading activities to ensure the protection of any sites located near impact areas and to examine potential archaeological features that may be exposed during such ground-altering activities.

ARCHAEOLOGICAL SITE SUMMARY

BPM Site (50-Ha-)	State Site (50-50-14-)	Description	Condition	Recommendation
CI-8	2837	Historical Platform	Good	No Further Work
CI-9	2838	L-Shape	Good	No Further Work
CI-10	2839	Shrine	Fair	Preservation
CI-11	2840	Mound	Good	No Further Work ✓
CI-12	2841	Mound	Good	No Further Work
CI-13	2842	Mound Group	Good	No Further Work
CI-14	2843	Rock Facing	Good	No Further Work
CI-15	2844	Historical Building	Poor	No further Work

0 - 52 - 3

Appendix D-1

Archaeological Inspection Report

ARCHAEOLOGICAL SERVICES HAWAII, LLC.

16 S. MARRET ST. STE. G, HAILUKU, HI 96793
Ph. 808 244-2012; Fax 808 244-9592

8 October 2003

Ms. Cathy Dagher
State Historic Preservation Division
Kakuhikawa Building
601 Kamohala Blvd. #555
Kapolei, HI. 96707

Subject: Archaeological Investigations at Ke Aii II (TMK 3-9-19-04)

Dear Cathy:

Per your request (0309CD)14-See Exhibit 1) a field inspection was conducted for the above referenced project area on September 29, 2003, by Ms. Jenny Pickett and Ms. Lisa Rotunno-Hazuka of Archaeological Services Hawaii, LLC. The purpose of the inspection was to determine if Sites 2840-2844 (previously recorded by the Bishop Museum in 1991) were still present in the current parcel, and disposition of Site 2839, located outside to the north of the current project area (Exhibit 2).

The survey was conducted by walking systematic transects spaced approximately 5-15 m apart throughout the project area. The parcel was fairly level sloping *mauka* to *makai*, with an intermittent gulch along the northeastern boundary. This gulch is shallow near Kananui Road and becomes broader and deeper towards the center of the parcel. No overhang shelters, petroglyphs, or any other significant cultural remains were observed within the parcel such as those at identified in Kamaole Gulch (Ke Aii I). The project area contained pockets of sand and silt interspersed among rock outcrops and mounds. No evidence of Sites 2840-2844 was observed in the project area, and Site 2839 (shrine) was also not relocated. Sites 2840-2844 may have been impacted or removed within the last 10 years, and Site 2839 appears to have been destroyed during construction of Alanui Ke Aii Drive and/or Kamajii Elementary (See Exhibits 1-4). A brief explanation of Site 2839 is presented below.

Ms. Cathy Dagher
8 October 2003
Page 2

In 1992, Cultural Surveys Hawaii identified Sites 2631-2638; however, Site 2839 was not relocated (Exhibit 3-4). Sites 2633 and 2637, shrines, are currently preserved within the Kamajii Residential Subdivision (2633) and the World Mark/Trend West Development (2637). In a memorandum from Xamanek Researches, Mr. Erik Fredericksen references only Site 2636 being destroyed during construction of Alanui Ke Aii Drive (Exhibit 5).

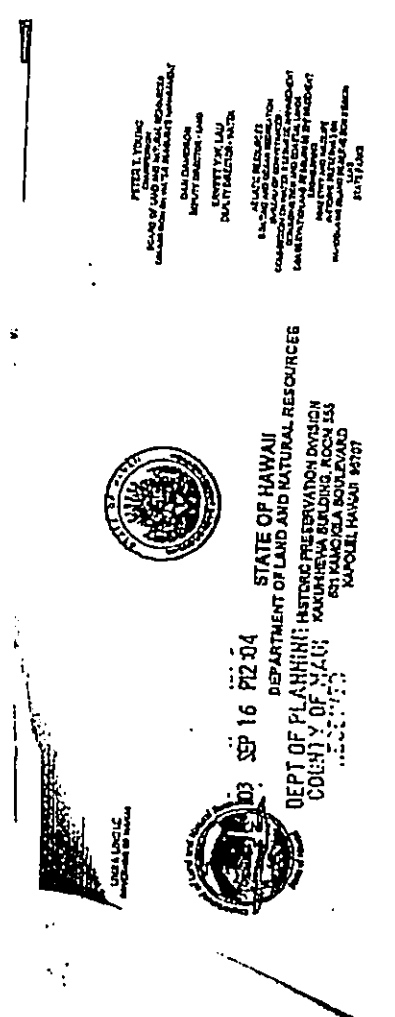
Thus, it appears that Site 2839-2845, previously identified by the Bishop Museum (1991), are no longer extant. Site 2839 was probably destroyed during the construction of Kamajii Elementary and Alanui Ke Aii. Because Sites 2840-2845 are located within an undeveloped area, they were probably destroyed by past grading and dumping activities.

Thank you very much for your attention to this matter, and if you should require additional information, please do not hesitate to call me at the above number.

Respectfully,



Lisa Rotunno-Hazuka, B.A.
Jeffrey Pantaleo, M.A.



PISTELI THONG
SPECIAL AGENT IN CHARGE
PLANNING DIVISION
STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
155 KANEHEHEA BUILDING, ROOM 133
HONOLULU, HAWAII 96813

September 8, 2003

Mr. Michael Foley, Planning Director
County of Maui
Department of Planning
250 South High Street
Wailuku, Hawaii 96793

LOG NO: 2003.1705
DOC NO: 0309CD14

Dear Mr. Foley,

SUBJECT: Chapter 6E-42 Historic Preservation Review - Application for Special Management Area Use Permit the Proposed Ke Aii Kai II Subdivision (Subject I.D.: SM1 2003/0013) (County/Planning) Kame'ele Ahupua'a, Wailuku District, Island of Maui
TRMS: 03-019-004

Thank you for the opportunity to review and comment on the Application for Special Management Area Use Permit (SMA) the proposed Ke Aii Kai II Subdivision, which was received by our staff August 5, 2003. Based on the submitted SMA, we understand the proposed undertaking consists of the development of a 90-lot subdivision on a 28.67 acre (Kame'ele) vacant lot in Kihai. Based on the description of the vegetation present on the lot (Kame'ele trees and scrub vegetation), it appears that the subject property has been subject to previous grading and grubbing activities.

In 1991 the Bishop Museum conducted an archaeological inventory survey of the subject property (Archaeological Inventory Survey of Proposed Kihai Elementary School Site Lots 1 and 2, Kame'ele, Wailuku, Maui Island, Hursi et al. 1991). During the survey nine historic sites were identified including a platform, L-shaped shelter, modified outcrop, rock mound, terrace, an historic wooden structure, rock walls, and a shrine. While all sites were deemed significant, the shrine (SIHP No. 60-50-14-2889) was recommended for preservation, and the report further recommended archaeological monitoring during any construction activities. To date, we have not received any preservation or monitoring plans pertaining to this property.

In any case, the 1991 report documenting the findings does not meet our current inventory survey standards. Due to the extensive development in the area over the past decade, including the apparent grading/grubbing of the subject property, we do not know the condition of the sites or if they are still present on the subject parcel. Therefore, in order to determine the effect of the proposed undertaking on historic sites, we recommend that no action be taken on the subject SMA application until an archaeological inspection has been conducted of the proposed project area to determine whether the previously identified significant historic sites are

EXHIBIT 1

Pg. 1 of 2

Mr. Michael Foley, Planning Director
Page 2

still present and, if so, what their condition is. An acceptable report documenting the findings of the inspection will need to be submitted to this office for review. If the previously identified significant historic sites are present, their condition and integrity should be evaluated, and recommendations for any needed mitigation - particularly preservation of the sites - should be included in this report. Any mitigation plan - preservation or monitoring - will need to be prepared and approved by our office, prior to any construction taking place.

If you have any questions, please call Camilleen A. Dagher at 682-6223.

Aloha,

P. Holly McEldowney
P. Holly McEldowney, Acting Administrator
State Historic Preservation Division

CD:jen

c: Cultural Resources Commission, Planning Dept, 250 S. High Street, Wailuku, HI 96793

Pg. 2 of 2

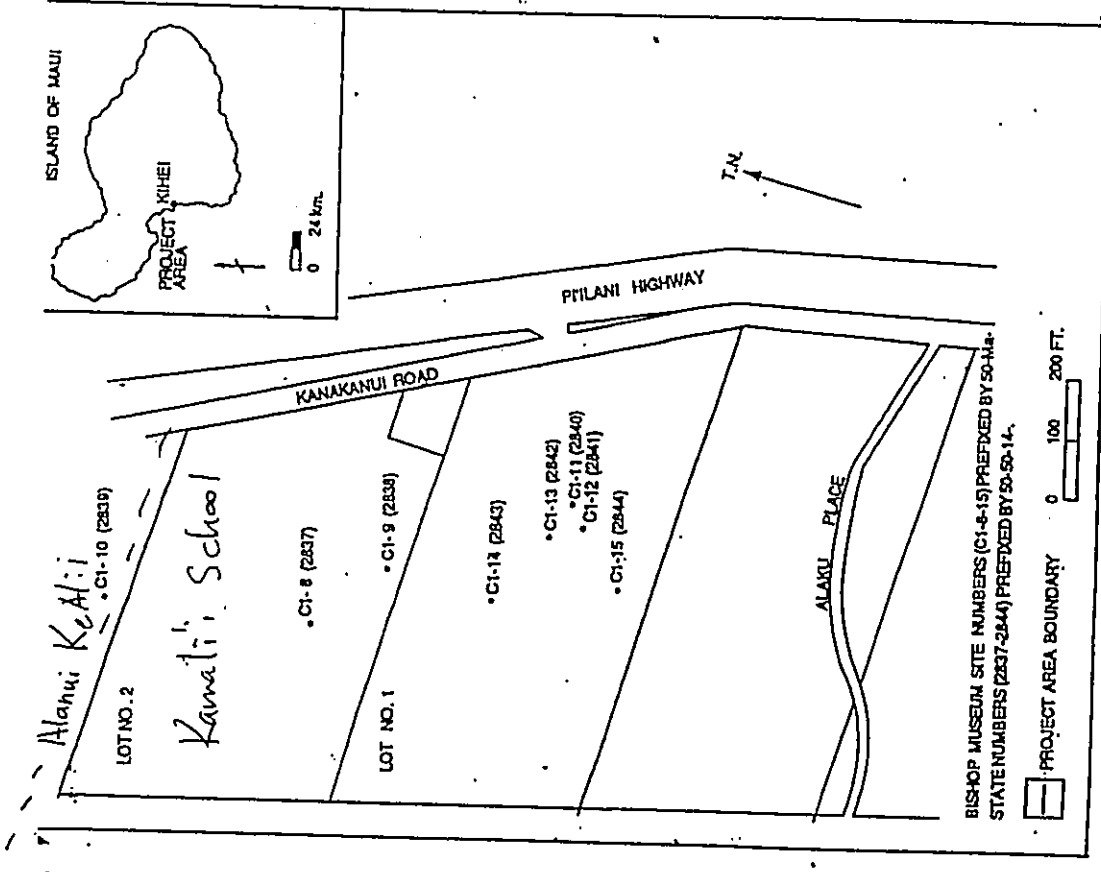


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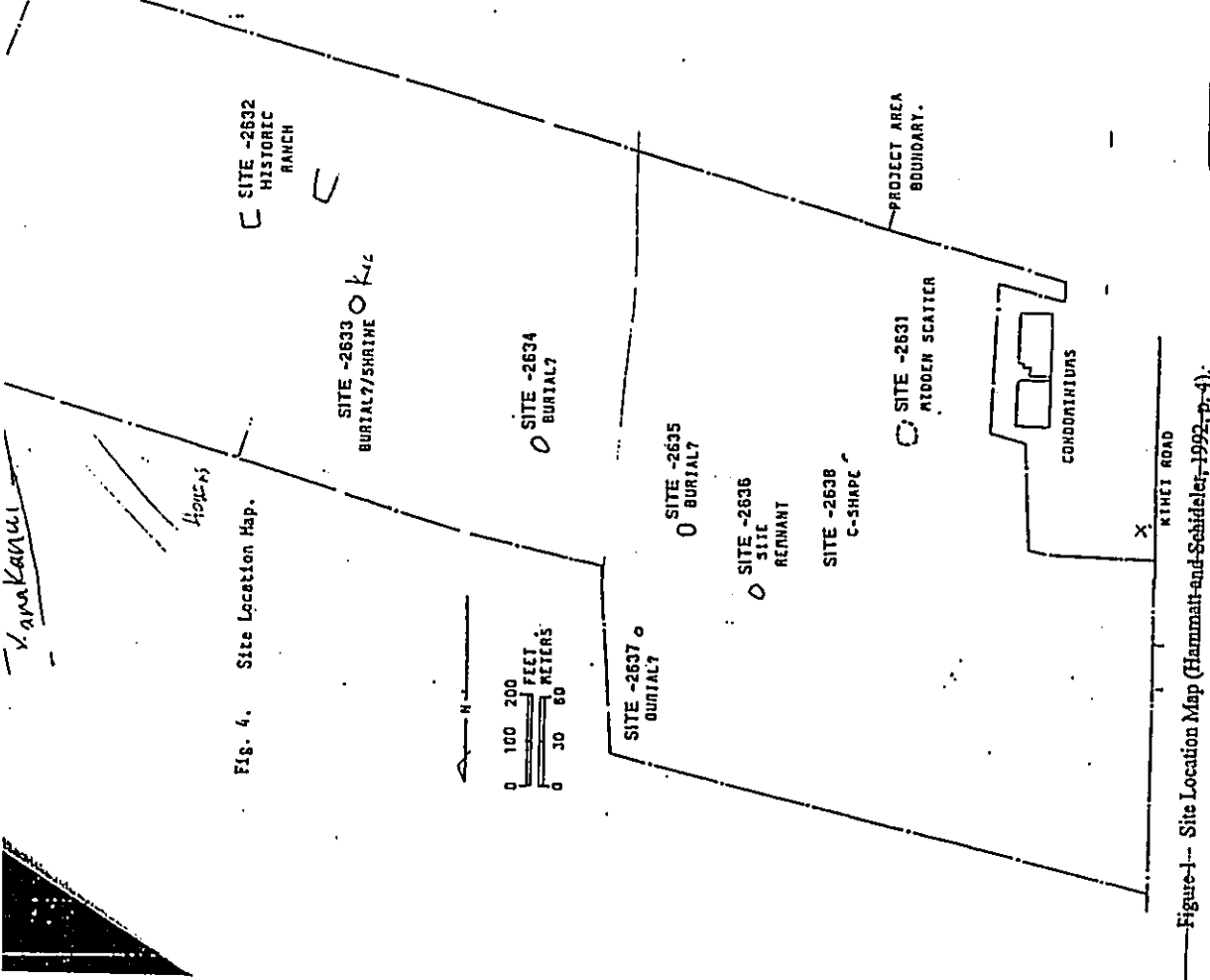


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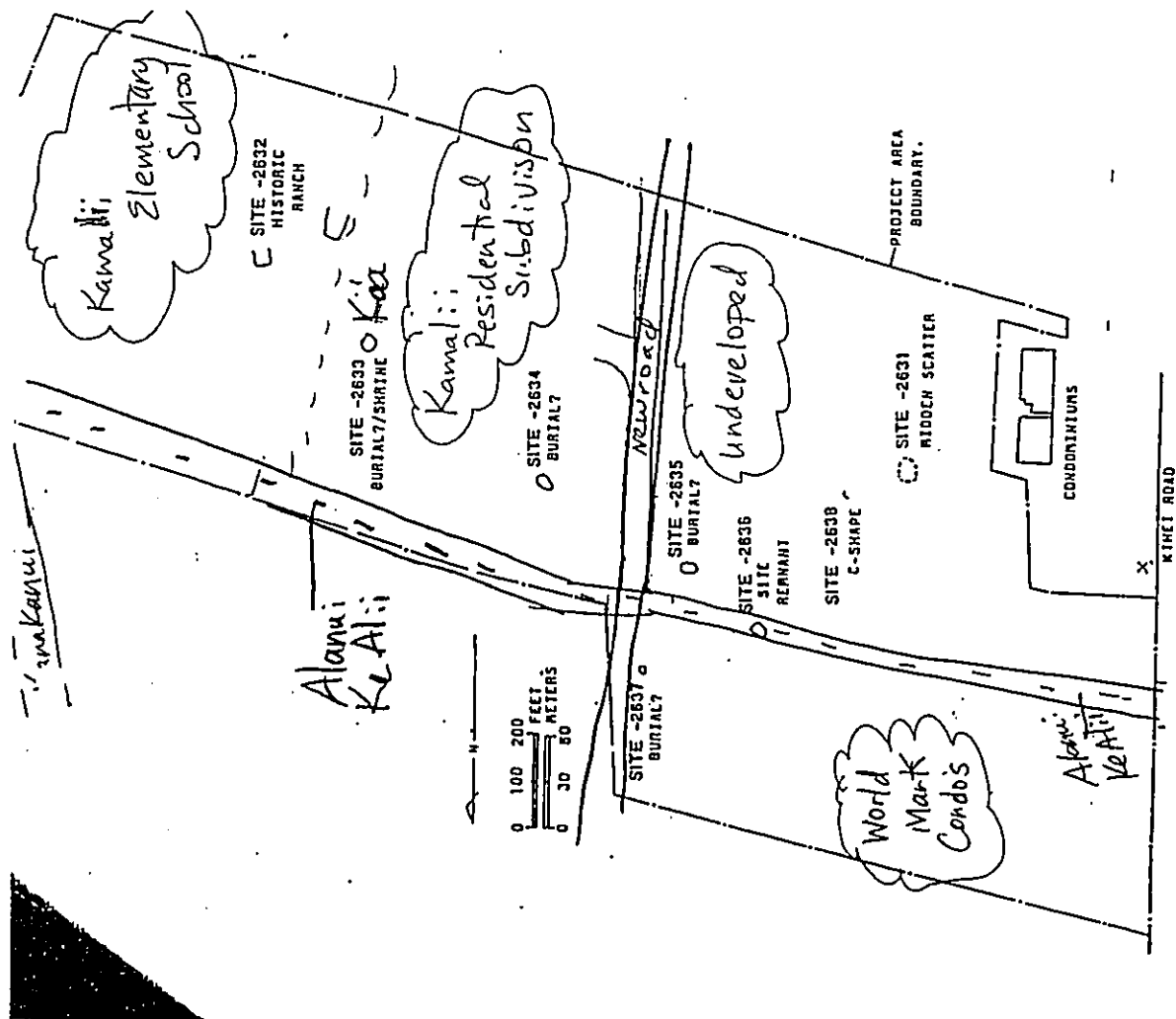


EXHIBIT 4

Sketch of Current Developments with Site Locations from Flamingo Cultural Surveys

XANANEK RESEARCHES
 P.O. BOX 58131
 FUKIALANI, MAUI, HAWAII 96788
 Phone/FAX: (808) 571-8948
 Phone/FAX: (808) 572-6118

Bruce Kinera
 CM&D
 Fax: (808) 545-2495

Attention: Bruce Kinera, Project Manager

Subject: Evaluations of potential archaeological work for the c. 15 acre Kinei project area (TMK: 3-9-20: 20 and 27).

08 February 2001

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The c. 15 acre project area under consideration consists of two parcels: TMK: 3-9-20: 27 (2.5 acres) and TMK: 3-9-20: 20 (6.0 acres). Based on discussions with the State Historic Preservation Division (SHIPD) Maui staff archaeologist Dr. Melissa Kihimohi, it has been determined that the project area was surveyed by an earlier (1992) study. This Cultural Surveys Hawaii archaeological survey covered a c. 54-acre parcel that was subsequently subdivided. This earlier survey located a total of eight historic sites (Sites 2631 through 2638). These sites included two *ho'ou* or resting shrines (Sites 2633 and 2637), two possible burials (Sites 2634 and 2635), a site remnant (Site 2636), a ridge scatter (Site 2631), a c-shape (Site 2631), and an historic ranch on the (Site 2632). An SHIPD review letter of the submitted report was issued on 14 December 1992 (DOC No.: 9212A033) (type should be 1992). This letter indicated that the two shrine sites (Sites 2633 and 2637) were to be placed in preservation. Plans of these sites are located off of the subject 15-acre project map. Sites 2635, 2638 and 2631 lie on this property. A January 2001 field inspection by Erik Fredericks revealed that site 2631 is on this property, apparently destroyed by the construction of a connector road (Ke'Alii Alani Drive) along the southern boundary of the project area.

At the time of the 1992 SHIPD review letter, Site 2636 was considered to be a larger site. However, XananeK Researches was subsequently contacted to carry out additional inventory survey work on this site by Dowling Company, Inc. in 1994. Site 2636 was going to be destroyed by the placement of the Road # connector road (renamed Ke'Alii Alani Drive), and it was determined at the time that additional work was needed on this site by then SHIPD staff archaeologist Theresa DeLamb. It was felt that insufficient information had been obtained during the original work conducted by XananeK Researches in 1992. Subsequent inventory level work conducted by XananeK Researches revealed that Site 2636 was a prehistoric habitation area dated to c. AD 1400. As noted above, a recent field inspection revealed that this site was destroyed by road construction.

At least one additional, unrecorded site was noted during the January field inspection, in addition to Sites 2635, 2638 and 2631. This unrecorded site consisted of a midden scatter, similar to Site 2631. It is also important to note that the c. 15-acre property includes a road debris deposit. I have spoken with Dr. Kiritzydell of the SHIPD Maui office, and she has indicated that SHIPD

Site 2636

Appendix D-2

***State Historic Preservation
Division Letter (April 30, 2004)***

LINDA LINGLE
GOVERNOR OF HAWAII



04 MAY -5 P1:07

DEPT OF PLANNING STATE OF HAWAII
COUNTY DEPARTMENT OF LAND AND NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

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

April 30, 2004

Mr. Michael Foley, Planning Director
County of Maui
Department of Planning
250 South High Street
Wailuku, Hawaii 96793

LOG NO: 2004.1358
DOC NO: 0404CD73

Dear Mr. Foley,

**SUBJECT: Chapter 6E-42 Historic Preservation Review – Draft Environmental Assessment Prepared in Support of the Special Management Area Use Permit the Proposed Ke Alii Kai II Subdivision (Subject I.D.: EA 2004/0001 and SM1 2003/0013) [County/Planning] Kama`ole Ahupua`a, Wailuku District, Island of Maui
TMK: (2) 3-9-019:004**

Thank you for the opportunity to review and comment on the Draft Environmental Assessment Prepared in Support of the Application for Special Management Area Use Permit (SMA) the proposed Ke Alii Kai II Subdivision, which was received by our staff March 22, 2004. Based on the submitted SMA, we understand the proposed undertaking consists of the development of a 90-lot subdivision on a 28.57-acre lot in Kihei which is currently vacant. Based on the description of the vegetation present on the lot (kiawe trees and scrub vegetation), it appears that the subject property has undergone previous grading and grubbing activities.

In 1991 the Bishop Museum conducted an archaeological inventory survey of the subject property (*Archaeological Inventory Survey of Proposed Kihei Elementary School Site Lots 1 and 2, Kama`ole, Wailuku, Maui Island*. Hurst et al. 1991). During the survey nine historic sites were identified including a platform, L-shape shelter, modified outcrop, rock mounds, terrace, an historic wooden structure, rock walls, and a shrine. While all sites were deemed significant, only the shrine (SIHP No. 50-50-14-2839) was recommended for preservation, and the report further recommended archaeological monitoring during any construction activities. To date, we have not received any preservation or monitoring plans pertaining to this property.

We have previously commented on the Special Management Area Use Permit for the proposed undertaking. At that time we recommend that no action be taken on the subject SMA application until an archaeological field inspection had been conducted of the proposed project area to determine whether the previously identified significant historic sites are still present and, if so, what their condition is (SHPD DOC NO.: 0309CD14/LOG NO.: 2003.1705).

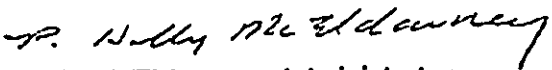
Mr. Michael Foley, Planning Director
Page 2

On September 29, 2003, Archaeological Services Hawaii conducted the requested field inspection. Based on the findings of the field inspection we now understand there was no evidence of SIHP - 2840 thru -2844 as these sites may have been impacted or removed within the last ten years. SIHP -2839, the shrine, appears to have been destroyed during the construction of Alanui Ke Aili Drive and/or Kamalii Elementary School. The remaining ground surface has been extensively disturbed.

Given the above information, we understand there are no historic sites currently located on the subject property nor is it likely that remnant historic sites are still present. Thus, we believe there will be "no historic properties affected" by the proposed undertaking.

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

Aloha,


P. Holly McEldowney, Administrator
State Historic Preservation Division

CD:jen

c: Cultural Resources Commission, Planning Dept, 250 S. High Street, Wailuku, HI 96793

Appendix E

*Traffic Impact
Analysis Report*

TRAFFIC IMPACT ANALYSIS REPORT FOR

KE ALII KAI II SUBDIVISION

TMK 3-9-19:4

IN KIHEI, MAUI, HAWAII

FINAL REPORT

Prepared For

KAK II, LLC

220 South King Street, Suite 2170
Honolulu, Hawaii 96813

Phillip Rowell and Associates

47-273 'D' Hui Iwa Street

Kaneohe, Hawaii 96744

Tel: 808-239-8206 Fax: 808-239-4175

Email: prowell@pta.net

June 26, 2003

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1. INTRODUCTION

Phillip Rowell and Associates has been retained by KAKJLLC to prepare a traffic impact analysis for a proposed residential subdivision in Kihai, Maui, Hawaii. The purpose of this study is to identify the traffic impacts of the proposed project. The report will be incorporated into the Special Management Area (SMA) permit application.

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 Kanakani Road south of Kamalii Elementary School. The approximate location of the project in the Kihai area is shown in Figure 1.
2. The project will consist of 90 single family detached residential units and 45 ohana units.
3. Access will be via three driveways. Two will be along the west side of Kanakani Road. The second will be along the proposed extension of the North-South Collector. As part of the project, the North-South Collector will be extended from the intersection with Waiua Place to the driveway into the proposed subdivision. A preliminary site plan indicating the locations of these driveways is shown as Figure 2.

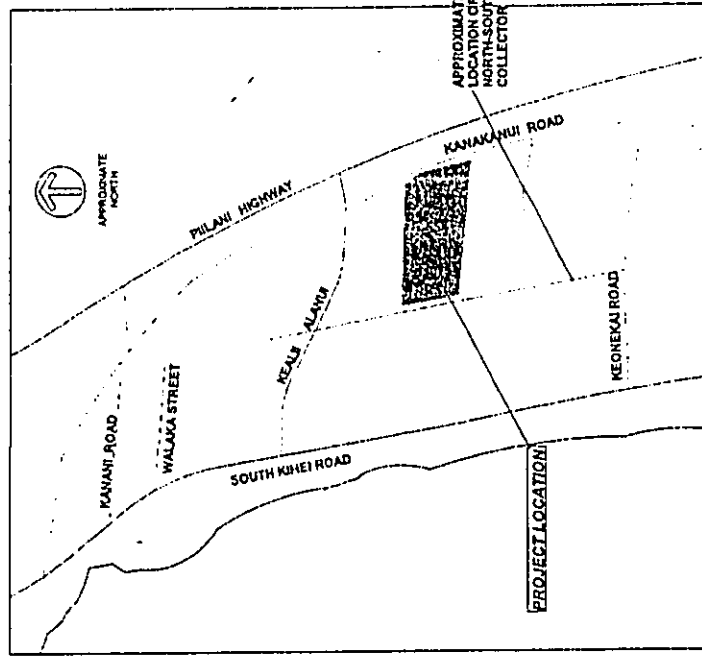


Figure 1
PROJECT LOCATION MAP

Study Methodology and Order of Presentation

1. Analysis of Existing Traffic Conditions

Existing traffic volumes at the study intersections were determined from traffic counts. Intersection configurations and traffic control information were also collected in the field at the time of the traffic counts. Other data collected included speed limits and right-of-way controls.

Using the data collected, existing traffic operating conditions in the vicinity of the project were determined. The methodology for signalized and unsignalized intersections described in the 2000 Highway Capacity Manual (HCM)¹ was 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 2005 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 2005 cumulative traffic volumes and the resulting cumulative traffic projections is presented in Chapter 3.

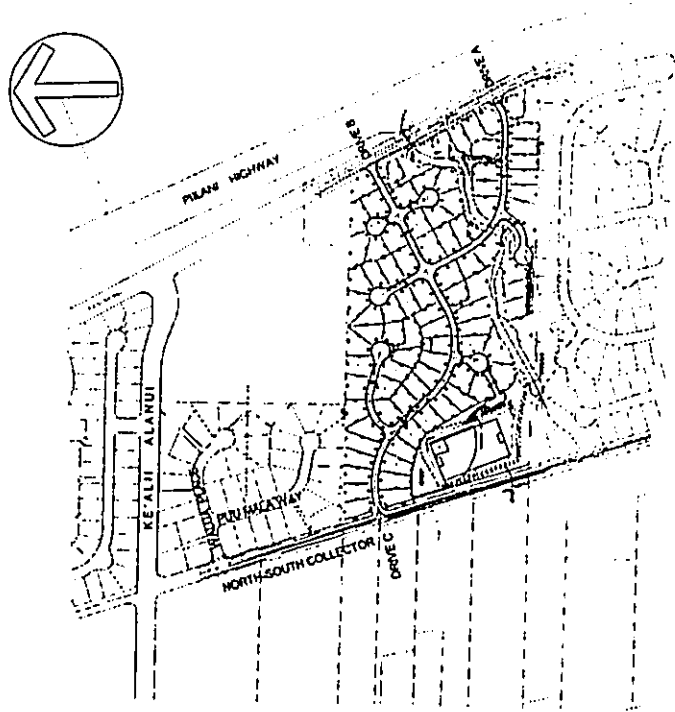
3. Analysis of Project-Related Traffic Impacts

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 outlined in the Trip Generation Handbook². The procedure is described in Chapter 4.

These trips were distributed based on the available approach and departure routes. The project-related traffic was then superimposed on 2005 cumulative traffic volumes at the study intersections. The HCM methodology was used again to conduct a LOS analysis for cumulative plus project conditions. The results of this analysis were compared to 2005 cumulative conditions to determine the incremental impacts of this project. 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



SOURCE: WARREN S. UREKORI

Figure 2
PRELIMINARY SITE PLAN

Philip Rowell and Associates

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:

Piilani Highway

Piilani Highway is a major State highway connecting Kihai and Wailea. 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 45 miles per hour (mph). The intersection of Piilani Highway at Kealii Alanui is signalized.

South Kihai Road

South Kihai Road is a two-lane, two-way north-south County road connecting Kihai with Wailea and Makana. The posted speed limit is 30 mph. There are separate turn lanes along South Kihai Road at the intersection with Kealii Alanui and Keonekai Road. The intersection with Kealii Alanui is signalized and the intersection with Keonekai Road is unsignalized.

Kealii Alanui

Kealii Alanui is a two-lane, two-way roadway between Piilani Highway and South Kihai Road. There is parking along both sides of the roadway along most of the length.

Kanakanaui Road

Kanakanaui Road is generally a two-lane, two-way roadway parallel to Piilani Highway. In the vicinity of Kamalii Elementary School and the intersection with Kealii Alanui, the intersection is configured to allow two approach lanes from each direction. The intersection of Kanakanaui Road at Kealii Alanui is STOP sign controlled.

North-South Collector

The North-South Collector has been constructed between Kealii Alanui and Waihua Place. There is one lane in each direction and separate left turn lanes at the intersections. The intersection of Kealii Alanui and the North-South Collector is STOP sign controlled with the STOP sign along the North-South Collector.

Existing Peak Hour Traffic Volumes

The existing morning and afternoon peak hour traffic volumes are shown in Figures 3 and 4, respectively. The peak hour volumes were determined from traffic counts of the study intersections. The counts for the intersections along Piilani Highway and Kanakanaui Road were performed after the recent changes along Piilani Highway were implemented. Therefore, the peak hour traffic volumes shown represent conditions with Piilani Highway as a four-lane facility, left turns are prohibited from Kanakanaui Road to northbound Piilani Highway and left turns are allowed from westbound Ke Alii Alanui to southbound Kanakanaui Road.

Kamalii Elementary School was in session during both counts.

The counts shown include buses, large vehicles and motorcycles. They do not include bicycles and mopeds. Also, the total approach and departure volumes may not match those of adjacent intersections because the peak hour of one intersection may be different from that of an adjacent intersection and because there are driveways and on-street parking between intersections.

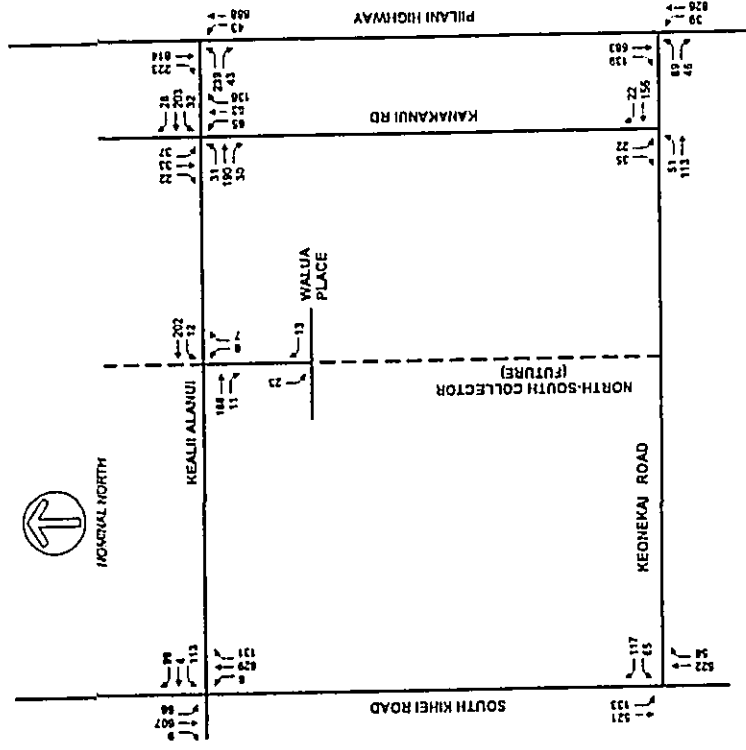


Figure 4
EXISTING PM PEAK HOUR TRAFFIC VOLUMES

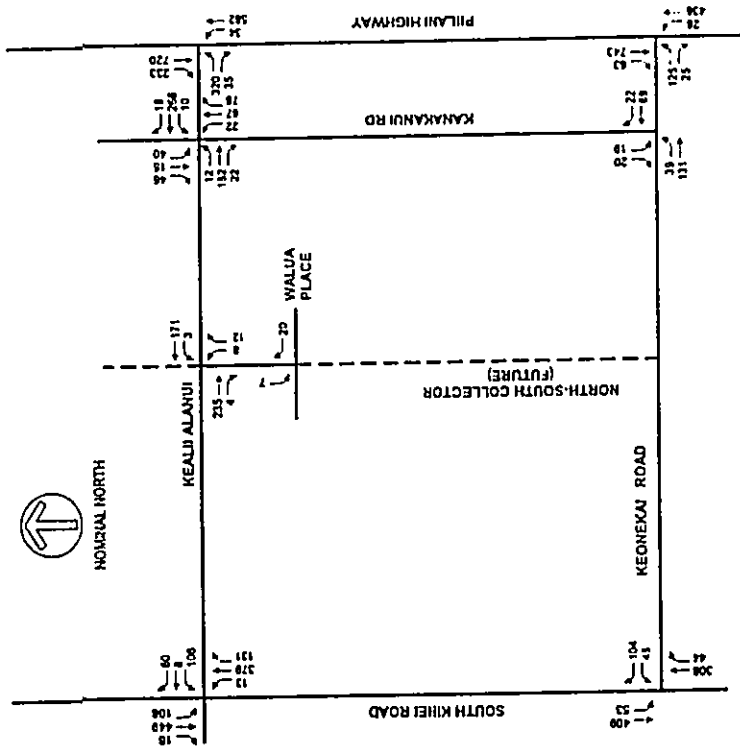


Figure 3
EXISTING AM PEAK HOUR TRAFFIC VOLUMES

Level-of-Service Concept

Signalized Intersections

The operations method described in the 2000 Highway Capacity Manual (HCM) was used to analyze the operating efficiency of the signalized intersections. This method involves the calculation of a volume-to-capacity (V/C) ratio which is related to a level-of-service.

"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 1. 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 1 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 2 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 2 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) This is the ratio of the calculated critical volume to Level-of-Service E Capacity. The condition usually warrants treatment of the intersection.

Level-of-Service Analysis of Existing Conditions

The results of the Level-of-Service analysis of the signalized intersections are shown in Table 3. Shown in the table are the volume-to-capacity ratio, the control delay and the Level-of-Service of each lane group.

At the intersection of Keahii Alanui at South Kihel Road during the morning peak hour, the southbound left turn will operate at Level-of-Service D based on delay. Based on the volume-to-capacity ratio, the Level-of-Service is A. This implies that the delay is a result of the traffic signal timing since vehicles in this movement must wait for the left turn signal. All other movements operate at Level-of-Service C or better during the morning peak hour.

During the afternoon peak hour, all movements operate at Level-of-Service C or better except the westbound left turn and through movement and the northbound left turn movement.

The westbound left and through movement operates at Level-of-Service D based on delay. However, the volume-to-capacity ratio is 0.58. This indicates that there is sufficient lane capacity but the timing of the traffic signal causes these vehicles to wait long enough for the delay to exceed 35 seconds and therefore have a Level-of-Service D.

The northbound left turn movement operates at Level-of-Service D based on delay and Level-of-Service A based on the volume-to-capacity ratio. The volume-to-capacity ratio is only 0.12 and this movement is only eight vehicles per hour. Since the volume-to-capacity ratio is so low, the Level-of-Service D is a result of the vehicles having to wait through the signal cycle rather than a capacity deficiency.

At the intersection of Keahii Alanui at Pitilani Highway, all movements operate at Level-of-Service C or better during both peak periods.

Table 3 Existing Levels-of-Service for Signalized Intersections

Intersection and Movement	AM Peak Hour			PM Peak Hour			
	V/C	Delay ¹	LOS ²	V/C	Delay ¹	LOS ²	
Keahii Alanui at South Kihel Road	Westbound Left & Thru	0.44	11.7	B	0.79	14.3	B
	Westbound Right	0.37	28.0	C	0.58	39.5	D
	Northbound Left	0.14	28.3	C	0.12	31.9	D
	Northbound Thru	0.35	8.0	A	0.79	14.8	B
	Southbound Left	0.09	6.1	A	0.10	5.1	A
Keahii Alanui at Pitilani Highway	Southbound Left	0.52	36.5	D	0.37	33.4	C
	Southbound Thru & Right	0.45	9.0	A	0.52	5.7	A
	Eastbound Left	0.22	12.0	B	0.50	10.8	B
Keahii Alanui at Keonekahi Road	Eastbound Left	0.54	14.4	B	0.51	19.5	B
	Eastbound Right	0.07	9.4	A	0.10	14.4	B
	Northbound Left	0.21	21.8	C	0.32	29.0	C
	Northbound Thru	0.39	8.2	A	0.49	7.5	B
	Southbound Thru	0.61	13.7	B	0.53	10.7	B
Southbound Right	0.34	11.8	B	0.12	8.7	A	

NOTE:
(1) Delay in seconds per vehicle.
(2) LOS denotes Level-of-Service calculated using the equations provided described in Highway Capacity Manual. Level-of-Service is based on delay.

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. As shown all movements operate at Level-of-Service C or better during both peak periods.

Table 4 Existing Levels-of-Service for Unsignalized Intersections

Intersection and Movement	AM Peak Hour		PM Peak Hour		
	Delay ¹	LOS ²	Delay ¹	LOS ²	
Keahii Alanui at Keonekahi Road	Eastbound Left & Thru	7.9	A	7.8	A
	Westbound Left & Thru	7.6	A	7.4	A
	Northbound Left	12.5	B	15.9	C
	Northbound Thru & Right	12.8	B	13.6	B
	Southbound Left	15.9	C	18.5	C
Keahii Alanui at North-South Collector	Southbound Thru & Right	10.7	B	13.2	B
	Westbound Left	7.8	A	7.7	A
Pitilani Highway at Keonekahi Road	Northbound Left	12.0	B	12.0	B
	Northbound Right	9.9	A	9.5	A
	Eastbound Left	10.4	B	10.5	B
Keonekahi Road at Keonekahi Road	Eastbound Left	27.3	D	23.2	C
	Eastbound Right	11.9	B	11.7	B
S. Kihel Road at Keonekahi Road	Eastbound Left & Thru	7.5	A	7.8	A
	Southbound Left & Right	10.1	B	10.9	B
North-South Collector at Waialeale	Southbound Left	8.4	A	10.0	A
	Westbound Left	12.4	B	20.1	C
North-South Collector at Waialeale	Westbound Right	9.6	A	10.4	B
	Northbound Left	7.2	A	7.2	A
	Southbound Left	7.2	A	7.2	A
	Westbound Left	8.9	A	8.9	A
	Westbound Left & Thru	8.2	A	8.3	A
Keonekahi Road at Keonekahi Road	Eastbound Left	9.1	A	9.0	A
	Eastbound Left & Thru	8.3	A	8.3	A

NOTE:
(1) Delay in seconds per vehicle.
(2) LOS denotes Level-of-Service calculated using the equations provided described in Highway Capacity Manual. Level-of-Service is based on delay.

The conclusions of the Level-of-Service analysis are:

1. There is sufficient capacity for all movements and levels-of-service are acceptable.
2. All movements operate at Level-of-Service C or better during both peak periods except for the following movements at the intersection of Keahii Alanui at South Kihai Road, which operate at Level-of-Service D.
 - southbound left during the morning peak hour
 - westbound left and through during the afternoon peak hour.
 - northbound left turn movement during the afternoon peak hour
3. The Level-of-Service of the movements listed above are based on delay. The volume-to-capacity ratio implies a higher level-of-service. This implies that the delay for these movements is caused by the wait for the traffic signal to go through the cycle.

The Level-of-Service calculations are provided as Appendix A.

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 Plan² 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 2002 and 2005, which is the design year for this project. The growth factor was calculated to be 1.05 using the following formula:

$$F = (1 + i)^n$$

where F = Growth Factor

i = Average annual growth rate, or 0.016

n = Growth period, or 3 years

This growth factor was applied to all traffic movements at the study intersections.

² 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 approved for construction 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 approximate locations of these projects is shown in Figure 5.

Table 5 Trip Generation Summary of Related Projects

Related Project	Description	Total		All Peak Hour		PM Peak Hour	
		In	Out	In	Out	In	Out
A Keala Village	49 Single Family Units	38	10	48	50	32	62
B Cove Beach Condos	32 Multi-Family Units	21	5	26	27	15	42
C Ke Ahi Villas	160 Multi-Family Units	96	26	124	108	60	163
D Kulaama Heights	40 Senior Units	23	12	35	27	15	42
E Hale Kani	72 Multi-Family Units	48	12	60	60	34	94
F Kamehale Hotel	250 Units	115	72	187	143	72	215
G Kamaole Condos	65 Condo Units	29	5	34	35	23	56
H Aloha Village	78 Single Family Units	60	13	73	80	51	131
TOTALS		432	157	589	530	302	832

2005 Cumulative Traffic Projections

2005 cumulative traffic projections were calculated by expanding existing traffic volumes by the appropriate growth rates and then superimposing traffic generated by related projects. The resulting 2005 cumulative peak hour traffic volumes are shown in Figures 6 and 7.

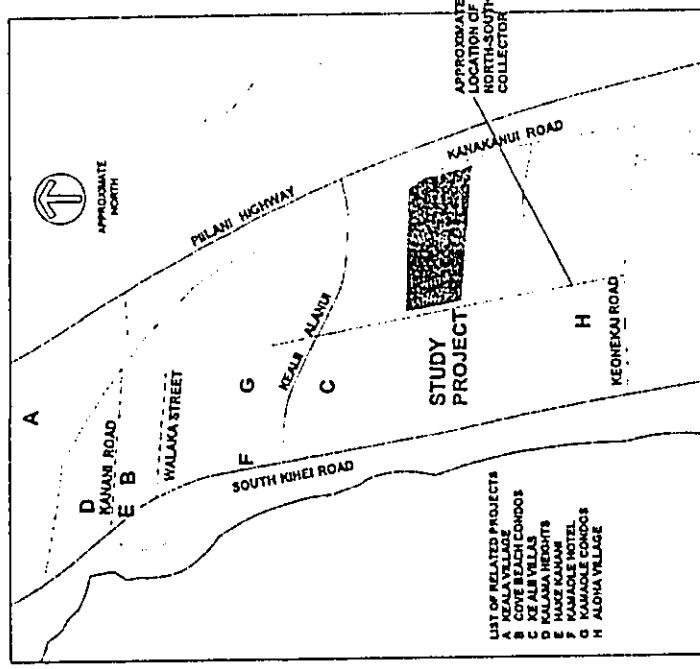


Figure 5 LOCATIONS OF RELATED PROJECTS

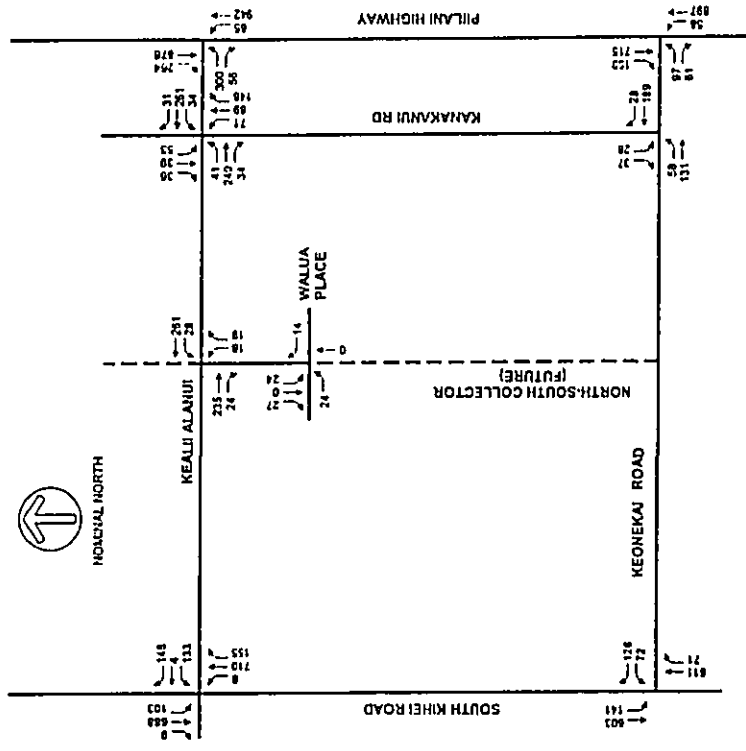


Figure 6
2005 CUMULATIVE AM PEAK HOUR TRAFFIC PROJECTIONS

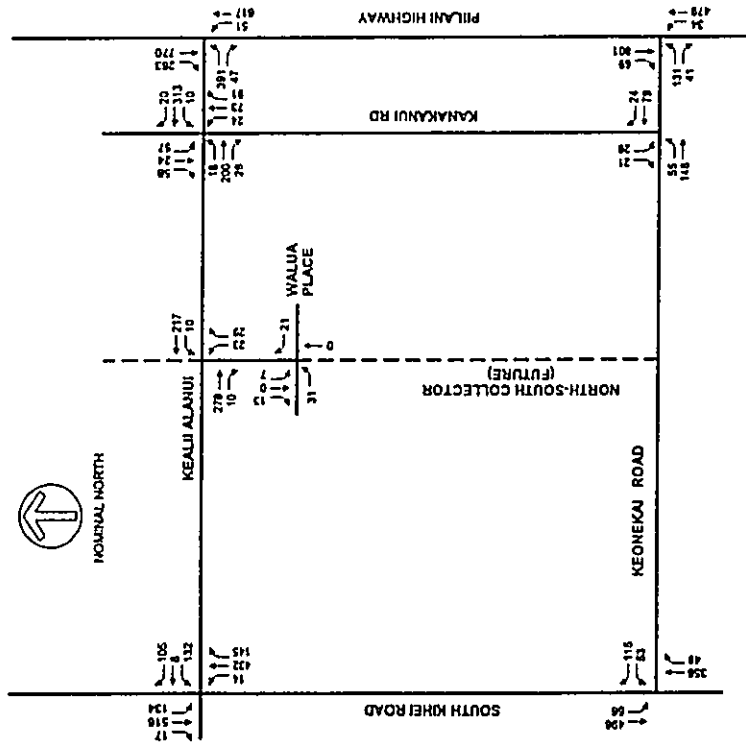


Figure 7
2005 CUMULATIVE PM PEAK HOUR TRAFFIC PROJECTIONS

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., 1993, p. 7-12

The single-family phase of the project will consist of 90 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

The trips generated by the ohana units were estimated using trip generation rates for condominium or townhomes. These rates most likely result in an overestimation of the traffic from these units as some may be used by family members and some may be rented as an apartment. Use of the trip rates for condominiums will 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 89 trips during the morning peak hour, 21 inbound and 68 outbound. During the afternoon peak hour, this phase will generate 75 inbound and 41 outbound trips for a total of 116 trips.

Table 6 Trip Generation Analysis

Period & Direction	Single Family Units		Ohana (Condominium) Units		Total Trips
	Trips per Unit or Percent	Units	Trips per Unit or Percent	Units	
AM Peak Hour					
Total	0.77	90	0.44	45	89
Inbound	25%	17	18%	4	21
Outbound	75%	73	82%	16	89
PM Peak Hour					
Total	1.02	92	0.54	24	116
Inbound	64%	59	65%	16	75
Outbound	35%	33	35%	8	41

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 Engineers, *Trip Generation Handbook*, Washington, D.C., 1993, p. 7-12

Trip Distribution and Assignments

The 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 Pilihi Highway and South Kihai Road.

Trips were assigned based on the following assumptions:

1. The only section of the North-South Collector that is open is the section between Kealii Alanui and the driveway into the project
 2. All traffic movements are allowed at the project driveway along Kanakanui Road.
- The project morning and afternoon peak hour trip assignments are shown in Figures 8 and 9, respectively.

2005 Cumulative Plus Project Projections

Cumulative plus project traffic conditions are defined as 2005 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.

2005 cumulative plus project traffic projections were estimated by superimposing the peak hourly traffic generated by the proposed project on the 2005 cumulative peak hour traffic volumes presented in Chapter 3. The traffic projections for 2005 cumulative plus project conditions are shown on Figures 10 and 11.

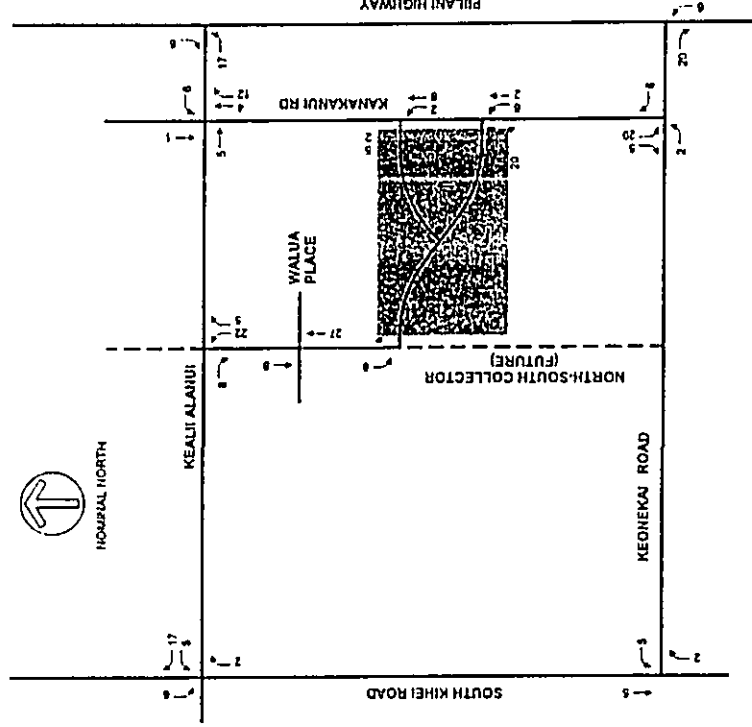


Figure 8
PROJECT TRIP ASSIGNMENTS AM PEAK HOUR

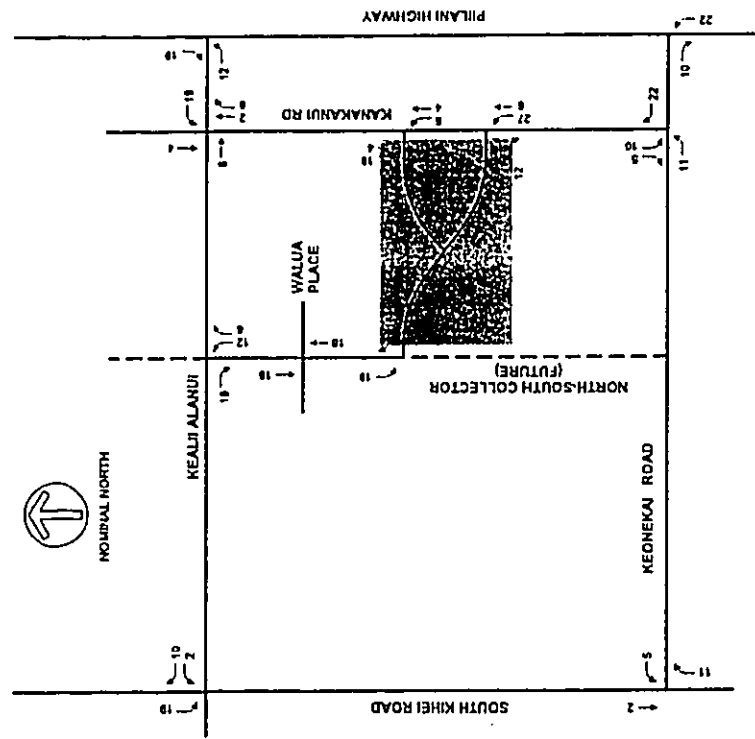


Figure 9
PROJECT TRIP ASSIGNMENTS PM PEAK HOUR

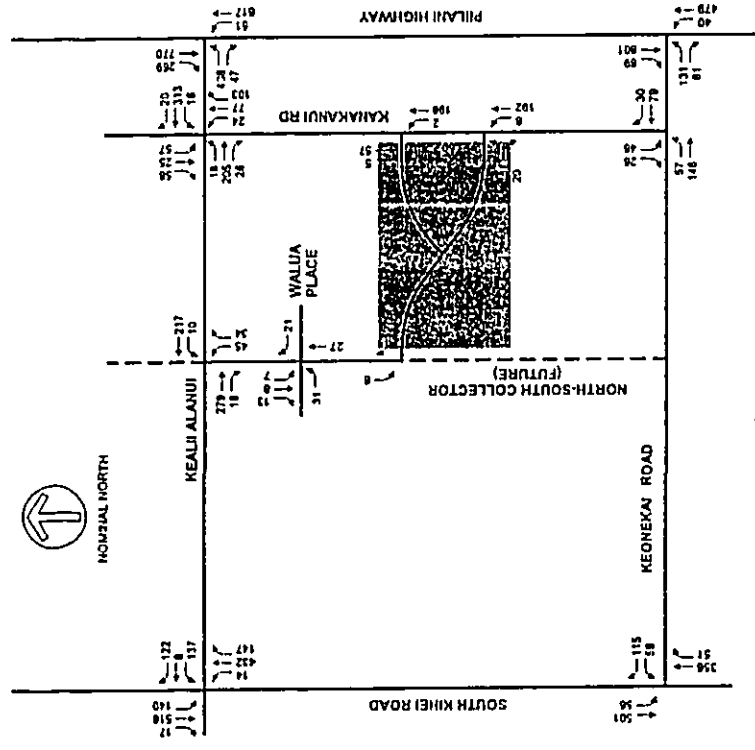


Figure 10
2005 CUMULATIVE PLUS PROJECT
AM PEAK HOUR TRAFFIC PROJECTIONS

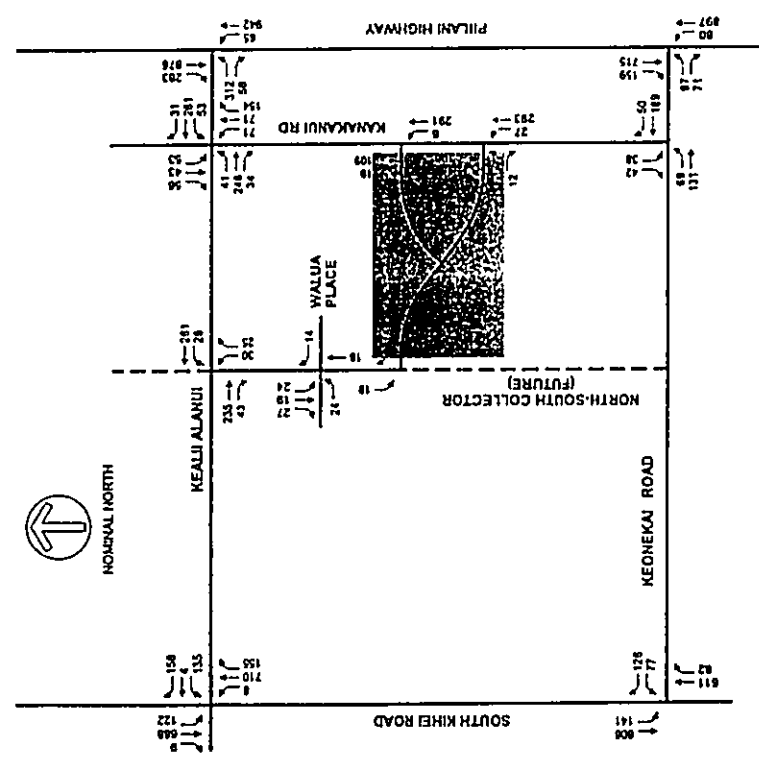


Figure 11
2005 CUMULATIVE PLUS PROJECT
PM PEAK HOUR TRAFFIC PROJECTIONS

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, criteria for determining if a project has a significant traffic impact for which mitigation measures must be identified 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:

Final V/C Ratio	Project Related Increase in V/C
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:

(1) Los Angeles Department of Transportation, Traffic Study Policies and Procedures, 1993, page 10

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 as well as the overall intersection.

Project Related Traffic Impacts

The level-of-service analysis was performed for cumulative and cumulative plus project conditions. The incremental difference between the two conditions is the impact of the project. The assumptions used for the level-of-service analysis are:

1. Pilliant Highway is two lanes northbound and two lanes southbound.
2. The North-South Collector is not open north of Kealii Alanui or south of the driveway for the proposed project.
3. The project driveway along Kanakani Road is a two-lane, two-way driveway. There is no separate left turn lane from Kanakani Road into the project.

The results of the level-of-service analysis is discussed separately for each study intersection and the project driveways. The Level-of-Service calculations for cumulative and cumulative plus project conditions are provided as Appendices B and C, respectively.

Kealii Alanui at South Kihai Road

The results of the level-of-service analysis of the intersection of Kealii Alanui at South Kihai Road is summarized in Table 8. Shown are the volume-to-capacity ratios, delays and levels-of-service of the overall intersection each movement for morning and afternoon peak periods, cumulative and cumulative plus project conditions.

During the morning peak hour, all movements will operate at Level-of-Service C or better except the southbound left, which will operate at Level-of-Service D without and with the project. However, the volume-to-capacity ratio is less than 0.70 without and with the project. This is below the threshold for which the significance criteria is applied.

During the afternoon peak hour, the northbound left, the southbound left and all the westbound movements will operate at Level-of-Service D without and with the project. The volume-to-capacity ratios are all less than 0.70, which is the threshold for significance.

Because the final volume-to-capacity ratios are all less than 0.700, there are no significant traffic impacts on this intersection and no mitigation measures are recommended.

Table 8 Level-of-Service Analysis - Kealii Alanui Road at South Kihai Road

Intersection and Movement	V/C		Cumulative		LOS		Cumulative Plus Project		Changes	
	Without	With	Delay	LOS	Without	With	Delay	LOS	V/C	Delay
All Peak Hour	0.52	17.5	B	0.53	15.9	B	0.01	-1.6		
Westbound Left & Thru	0.45	29.6	C	0.47	30.0	C	0.02	0.4		
Westbound Right	0.28	26.7	C	0.33	27.7	C	0.05	1.0		
Northbound Left	0.15	26.4	C	0.15	26.4	C	0.00	0.0		
Northbound Thru	0.40	8.4	A	0.40	8.4	A	0.00	0.0		
Northbound Right	0.11	6.2	A	0.11	6.2	A	0.00	0.0		
Southbound Left	0.64	41.9	D	0.67	43.3	D	0.03	1.4		
Southbound Thru & Right	0.52	9.8	A	0.52	9.8	A	0.00	0.0		
PM Peak Hour	0.82	19.1	B	0.83	20.0	B	0.01	0.9		
Westbound Left & Thru	0.67	44.1	D	0.68	44.8	D	0.01	0.7		
Westbound Right	0.55	39.4	D	0.60	41.8	D	0.05	2.4		
Northbound Left	0.12	35.9	D	0.12	35.9	D	0.00	0.0		
Northbound Thru	0.90	21.3	C	0.90	21.3	C	0.00	0.0		
Northbound Right	0.13	5.2	A	0.13	5.2	A	0.00	0.0		
Southbound Left	0.57	39.5	D	0.68	44.6	D	0.11	5.3		
Southbound Thru & Right	0.58	6.5	A	0.58	6.5	A	0.00	0.0		

NOTES:
1. Peak hour conditions analyzed are "worst-case" conditions, which is the hour 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 individual intersections.
3. LOS denotes Level-of-Service.
4. LOS (Northbound Southbound) calculated using the appropriate method described in Highway Capacity Manual. LOS is based on PMV.

Kealii Alanui at Piliwai Highway

The results of the Level-of-Service analysis for the intersection of Kealii Alanui at Piliwai Highway is summarized on Table 9. All movements will operate at Level-of-Service C or better during both peak periods. All the final volume-to-capacity ratios upon completion of both phases are less than 0.700. Therefore, no mitigation is required.

Table 9 Level-of-Service Analysis - Kealii Alanui Road at Piliwai Highway

Intersection and Movement	AM Peak Hour			PM Peak Hour		
	V/C	LOS	Changes	V/C	LOS	Changes
Eastbound Left	0.67	B	0.01	0.63	B	0.01
Eastbound Right	0.67	B	0.00	0.69	B	0.02
Northbound Left	0.06	A	0.00	0.09	A	0.00
Northbound Right	0.31	C	0.00	0.31	C	0.00
Southbound Thru	0.41	A	0.00	0.41	A	0.00
Southbound Left	0.66	B	0.00	0.66	B	0.00
Southbound Right	0.40	B	0.01	0.41	B	0.01
PM Peak Hour	0.59	A	0.00	0.59	B	0.02
Eastbound Left	0.64	C	0.03	0.67	C	0.03
Eastbound Right	0.13	B	0.00	0.13	B	0.00
Northbound Left	0.47	C	0.00	0.47	C	0.00
Northbound Right	0.52	A	0.00	0.52	A	0.00
Southbound Thru	0.57	B	0.00	0.57	B	0.00
Southbound Left	0.15	A	0.00	0.17	A	0.02
Southbound Right	0.15	A	0.00	0.17	A	0.02

NOTE: 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.
 1. V/C ratios are based on capacity.
 2. LOS is based on delay.
 3. LOS is based on delay.
 4. LOS is based on delay.

Kealii Alanui at Kanakanui Road

The results of the Level-of-Service analysis of the intersection of Kealii Alanui at Kanakanui Road is summarized in Table 10. Since this intersection is unsignalized, only the delay and Level-of-Service is shown. Upon completion of the project, all movements will operate at Level-of-Service C or better except the southbound left. This movement will operate at Level-of-Service D without and with the project during the afternoon peak hour.

It should be noted that a traffic signal warrant analysis is being performed for this intersection as a requirement for the Ke Aii Kai Subdivision project.

Table 10 Level-of-Service Analysis - Kealii Alanui at Kanakanui Road

Intersection and Movement	AM Peak Hour			PM Peak Hour		
	Cumulative Delay	LOS	Project	Cumulative Delay	LOS	Project
Eastbound Left	8.0	A	A	8.0	A	A
Westbound Left	7.7	A	A	7.9	A	A
Northbound Left	14.5	B	B	23.9	C	C
Northbound Thru & Right	14.6	B	B	15.1	C	C
Southbound Left	20.4	C	C	29.3	D	D
Southbound Thru & Right	11.9	B	B	14.9	B	C

NOTE: 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.
 1. LOS is based on delay.
 2. LOS is based on delay.

Kealii Alanui at North-South Collector

The results of the Level-of-Service analysis of the intersection of Kealii Alanui at the North-South Collector is summarized in Table 11. All movements are expected to operate at Level-of-Service B or better upon completion of the project. No mitigation measures are recommended.

Table 11 Level-of-Service Analysis - Kealii Alanui at North-South Collector

Intersection and Movement	AM Peak Hour LOS			PM Peak Hour LOS		
	Cumulative Delay	LOS	Project	Cumulative Delay	LOS	Project
Westbound Left	8.0	A	A	7.9	A	A
Northbound Left	13.6	B	B	14.0	B	B
Northbound Right	10.4	B	B	9.9	A	A

NOTE: 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.
 1. LOS is based on delay.
 2. LOS is based on delay.

South Kihei Road at Keonekai Road

The results of the Level-of-Service analysis for the intersection of South Kihei Road at Keonekai Road is summarized in Table 14. All movements will operate at Level-of-Service B or better. The impacts of project generated traffic at this intersection is insignificant.

Table 14 Level-of-Service Analysis - South Kihei Road at Keonekai Road

Intersection and Movement	All Peak Hour			PM Peak Hour		
	Cumulative Delay	LOS	Cumulative Plus Project Delay	Cumulative Delay	LOS	Cumulative Plus Project Delay
Southbound L&R	8.6	A	8.6	10.9	B	10.9
Westbound L&R	13.7	B	13.8	25.9	D	26.9
Westbound Right	9.8	A	9.8	10.9	B	10.9

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. LOS denotes Level-of-Service determined using the operational method described in Highway Capacity Manual. LOS is based on delay.

North-South Collector at Waiua Place

The results of the Level-of-Service analysis for the intersection of the North-South Collector at Waiua Place is summarized in Table 15. All movements will operate at Level-of-Service A without and with the project. The traffic impact of project generated traffic is insignificant.

Table 15 Level-of-Service Analysis - North-South Collector at Waiua Place

Intersection and Movement	All Peak Hour			PM Peak Hour		
	Cumulative Delay	LOS	Cumulative Plus Project Delay	Cumulative Delay	LOS	Cumulative Plus Project Delay
Northbound L&R	7.2	A	7.2	7.3	A	7.3
Southbound L&R	7.2	A	7.3	7.2	A	7.3
Westbound L&R	8.8	A	8.9	9.0	A	9.2
Westbound Thru & Right	8.4	A	8.5	8.4	A	8.4
Eastbound L&R	9.0	A	9.2	9.2	A	9.5
Eastbound Thru & Right	9.3	A	8.4	8.4	A	8.5

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. LOS denotes Level-of-Service determined using the operational method described in Highway Capacity Manual. LOS is based on delay.

Pili'ani Highway at Keonekai Road

The results of the Level-of-Service analysis of the intersection of Pili'ani Highway at Keonekai Road is summarized in Table 12. The eastbound left turn will operate at Level-of-Service D without and with the project during both peak periods. Since there is no change in the level-of-service, the traffic impact of project generated traffic is insignificant.

Table 12 Level-of-Service Analysis - Pili'ani Highway at Keonekai Road

Intersection and Movement	All Peak Hour			PM Peak Hour		
	Cumulative Delay	LOS	Cumulative Plus Project Delay	Cumulative Delay	LOS	Cumulative Plus Project Delay
Northbound L&R	10.9	B	11.0	11.3	B	11.6
Eastbound L&R	32.8	D	33.2	28.6	D	31.2
Eastbound Right	12.6	B	13.1	12.4	B	12.5

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. LOS denotes Level-of-Service determined using the operational method described in Highway Capacity Manual. LOS is based on delay.

Keonekai Road at Kanakanui Road

The results of the Level-of-Service analysis for the intersection of Keonekai Road at Kanakanui Road is summarized in Table 13. All movements will operate at Level-of-Service B or better. The impacts of project generated traffic at this intersection is insignificant.

Table 13 Level-of-Service Analysis - Keonekai Road at Kanakanui Road

Intersection and Movement	All Peak Hour			PM Peak Hour		
	Cumulative Delay	LOS	Cumulative Plus Project Delay	Cumulative Delay	LOS	Cumulative Plus Project Delay
Eastbound L&R & Right	7.8	A	7.8	7.9	A	8.0
Southbound L&R & Right	10.7	B	11.2	11.9	B	12.7

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. LOS denotes Level-of-Service determined using the operational method described in Highway Capacity Manual. LOS is based on delay.

Project Driveways

The results of the Level-of-Service analysis of the project driveways are summarized in Table 16. All traffic movements at the driveways along Kanakana Road will operate at Level-of-Service B or better. A left turn storage lane will not improve the level-of-service but is recommended to improve traffic flow. This is consistent with other driveways along Kanakana Road.

The driveway along the North-South Collector operate at Level-of-Service A during both peak periods.

Intersection and Movement	All Peak Hour LOS ^{1,2}	PH Peak Hour LOS
Keali Alanui at Project Driveway A	Northbound L/R Eastbound L/R & Right	A A
Keali Alanui at Project Driveway B	Northbound L/R Eastbound L/R & Right	A A
North-South Collector at Project Driveway C	Southbound Left Westbound Right	A A

NOTES: ¹ Peak hour periods analyzed are "worst-case" conditions, which is the hour of the peak hour of the adjacent street that the peak hour of the project. ² LOS denotes Level-of-Service, calculated using the operations manual distributed to agencies. Capacity Manual. LOS is based on heavy.

Traffic Calming

1. Kanakana Road between Keonekai Road and Piliwai Highway has residential development and an elementary school along the west side of the roadway. As traffic increases along Piliwai Highway, traffic along Kanakana Road can be expected to increase as traffic seeks a route with less delay. This will probably result in a request for some form of traffic calming along Keali Alanui. However, these measures have not been recommended because these traffic control measures should be installed only after the County's petition requirements have been satisfied.

2. The internal street network within the proposed projects consists of a curvilinear roadway. This alignment will discourage use of the project's streets by through traffic. Therefore, no traffic calming measures for the internal streets have been recommended.

Conclusions

1. The total traffic generated by the projects will have an insignificant traffic impact on South Kihel Road, Piliwai Highway, Kanakana Road, Keali Alanui, North-South Collector and Keonekai Road. No mitigation measures are recommended.

2. The use of traffic calming devices along Keali Alanui should be investigated if requested by adjacent residents. Recommendations should be formulated based upon their input.

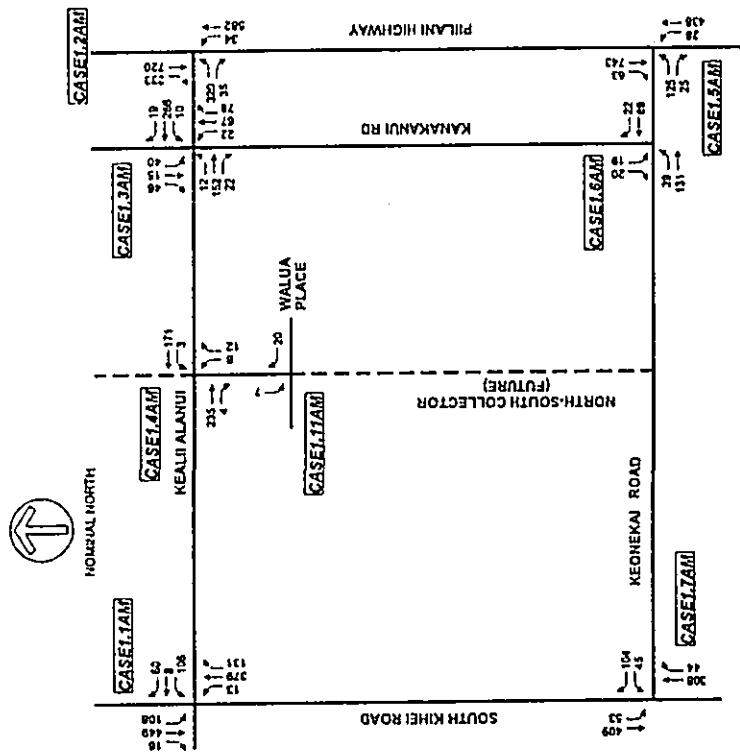


Figure 3
EXISTING AM PEAK HOUR TRAFFIC VOLUMES

APPENDIX A
LEVEL-OF-SERVICE CALCULATION WORKSHEETS
FOR EXISTING CONDITIONS

INPUT WORKSHEET

Project Information Analyst: PJR Agency or Co.: Philip Rowell and Associates Date Performed: 9/4/2002 Time Period: AM Peak Hour Project Description: Towne Development Kihel Parcels Case 1.1am		Site Information Intersection: Case 1.1am Area Type: All other areas Jurisdiction: Analysis Year:	
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Grade = 0

Slope North Arrow

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)		106	8	60	13	379	131	108	449	16		
% Heavy veh.		0	0	0	0	0	0	0	0	0	0	0
PHF		0.84	0.67	0.97	0.41	0.95	0.98	0.90	0.91	0.80		
Actual (P/A)		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		25	0		44	0		0		
Lane Width		N	N	N	N	N	N	N	N	N		
Parking (Y or N)		N	N	N	N	N	N	N	N	N		
Parking/hr												
Bus stops/hr												
WB Only		02		03		04		Excl. Left	Thru & RT		07	08
Timing		G = 13.0	G =	G = 9.0	G = 42.0	G =	G =	Y = 3	Y = 0	Y = 3	Y =	G =
Duration of Analysis (hrs)		0.23										

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CAPACITY AND LOS WORKSHEET

General Information Project Description: Towne Development Kihel Parcels Case 1.1am Capacity Analysis:												
	EB			WB			NB			SB		
Lane group				LT	R		L	T		R	L	TR
Adj. flow rate				124	36		32	401		89	120	514
Satflow rate				1818	1615		1905	1900		1615	1805	1889
Lost time				2.0	2.0		2.0	2.0		2.0	2.0	2.0
Green ratio				0.19	0.19		0.13	0.60		0.60	0.13	0.60
Lane group cap.				338	300		232	1140		969	232	1133
v/c ratio				0.37	0.12		0.14	0.35		0.09	0.52	0.45
Flow ratio				0.07	0.02		0.02	0.21		0.06	0.07	0.27
Crit. lane group				Y	N		N	N		N	Y	Y
Sum flow ratios				0.41								
Lost time/cycle				6.00								
Critical v/c ratio				0.44								
Capacity and LOS by Lane Group												
	EB			WB			NB			SB		
Lane group				LT	R		L	T		R	L	TR
Adj. flow rate				124	36		32	401		89	120	514
Lane group cap.				338	300		232	1140		969	232	1133
v/c ratio				0.37	0.12		0.14	0.35		0.09	0.52	0.45
Green ratio				0.19	0.19		0.13	0.60		0.60	0.13	0.60
Unif. delay d1				24.9	23.7		27.1	7.1		5.9	28.5	7.7
Delay factor k				0.50	0.50		0.50	0.50		0.50	0.50	0.50
Increment. delay d2				3.1	0.8		1.2	0.9		0.2	8.0	1.3
PF factor				1.000	1.000		1.000	1.000		1.000	1.000	1.000
Control delay				28.0	24.6		28.3	8.0		6.1	36.5	9.0
Lane group LOS				C	C		C	A		A	D	A
Approach delay				27.2								
Approach LOS				C								
Intersection LOS				A								
Intersec. delay				13.7								

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INPUT WORKSHEET

General Information Analyst: PJR Agency or Co.: Philip Rowell and Associates Date Performed: 9/4/2002 Time Period: AM Peak Hour Project Description: Towne Development Kibel Parcels Case 1.2am Jurisdiction: All other areas Analysis Year: 2005 Case 1.2am																																																																																																																																																																																
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2"></th> <th colspan="2">EB</th> <th colspan="2">WB</th> <th colspan="2">NB</th> <th colspan="2">SB</th> </tr> <tr> <th>LT</th> <th>RT</th> <th>LT</th> <th>RT</th> <th>LT</th> <th>RT</th> <th>LT</th> <th>RT</th> </tr> </thead> <tbody> <tr> <td>Volume (vph)</td> <td>320</td> <td>35</td> <td>34</td> <td>582</td> <td>720</td> <td>233</td> <td>0</td> <td>0</td> </tr> <tr> <td>% Heavy Veh</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>PHF</td> <td>0.85</td> <td>0.85</td> <td>0.85</td> <td>0.85</td> <td>0.85</td> <td>0.85</td> <td>0.85</td> <td>0.85</td> </tr> <tr> <td>Actuated (PIA)</td> <td>P</td> <td>P</td> <td>P</td> <td>P</td> <td>P</td> <td>P</td> <td>P</td> <td>P</td> </tr> <tr> <td>Startup lost time</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> </tr> <tr> <td>Ext. eff. green</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> </tr> <tr> <td>Arrival type</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> <tr> <td>Unit Extension</td> <td>3.0</td> <td>3.0</td> <td>3.0</td> <td>3.0</td> <td>3.0</td> <td>3.0</td> <td>3.0</td> <td>3.0</td> </tr> <tr> <td>Ped/Bike/RTOR Volume</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Lane Width</td> <td>12.0</td> <td>12.0</td> <td>12.0</td> <td>12.0</td> <td>12.0</td> <td>12.0</td> <td>12.0</td> <td>12.0</td> </tr> <tr> <td>Parking (Y or N)</td> <td>N</td> <td>N</td> <td>N</td> <td>N</td> <td>N</td> <td>N</td> <td>N</td> <td>N</td> </tr> <tr> <td>Parking/hr</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Bus stop/hr</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td colspan="2">EB Only</td> <td>02</td> <td>03</td> <td>04</td> <td>NB Only</td> <td>Thru & RT</td> <td>07</td> <td>08</td> </tr> <tr> <td>G =</td> <td>18.0</td> <td>G =</td> <td>5.0</td> <td>G =</td> <td>18.0</td> <td>G =</td> <td>5.0</td> </tr> <tr> <td>Y =</td> <td>3</td> <td>Y =</td> <td>0</td> <td>Y =</td> <td>3</td> <td>Y =</td> <td>0</td> </tr> <tr> <td colspan="2">Timing</td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <td colspan="2">Duration of Analysis (hrs) = 0.25</td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2">Cycle Length C = 47.0</td> </tr> </tbody> </table>			EB		WB		NB		SB		LT	RT	LT	RT	LT	RT	LT	RT	Volume (vph)	320	35	34	582	720	233	0	0	% Heavy Veh	0	0	0	0	0	0	0	0	PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	Actuated (PIA)	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	Ext. eff. green	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	Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	Lane Width	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	0	0	0	0	0	0	0	0	Bus stop/hr	0	0	0	0	0	0	0	0	EB Only		02	03	04	NB Only	Thru & RT	07	08	G =	18.0	G =	5.0	G =	18.0	G =	5.0	Y =	3	Y =	0	Y =	3	Y =	0	Timing								Duration of Analysis (hrs) = 0.25						Cycle Length C = 47.0	
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Arrival type	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																																																																																																																																																																								
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0																																																																																																																																																																								
Lane Width	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	0	0	0	0	0	0	0	0																																																																																																																																																																								
Bus stop/hr	0	0	0	0	0	0	0	0																																																																																																																																																																								
EB Only		02	03	04	NB Only	Thru & RT	07	08																																																																																																																																																																								
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CAPACITY AND LOS WORKSHEET

General Information Project Description: Towne Development Kibel Parcels Case 1.2am Capacity Analysis											
Lane Group Control Delay and LOS Determination											
Lane group	L	R	WB		NB		SB				
Adj. flow rate	376	41	40	685	40	685	40	685	847	209	209
Satflow rate	1805	1615	1805	3610	1805	3610	1805	3610	1615	1615	1615
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Green ratio	0.38	0.39	0.11	0.49	0.11	0.49	0.11	0.49	0.38	0.38	0.38
Lane group cap.	691	619	192	1767	192	1767	192	1767	1383	619	619
v/c ratio	0.54	0.07	0.21	0.39	0.21	0.39	0.21	0.39	0.61	0.34	0.34
Flow ratio	0.21	0.03	0.02	0.19	0.02	0.19	0.02	0.19	0.23	0.13	0.13
Crit. lane group	Y	N	N	H	N	H	N	H	Y	N	N
Sum flow ratios	0.47										
Lost time/cycle	6.00										
Critical v/c ratio	0.53										
Lane Group Capacity Control Delay and LOS Determination											
Lane group	L	R	WB		NB		SB				
Adj. flow rate	376	41	40	695	40	695	40	695	847	209	209
Lane group cap.	691	619	192	1767	192	1767	192	1767	1383	619	619
v/c ratio	0.54	0.07	0.21	0.39	0.21	0.39	0.21	0.39	0.61	0.34	0.34
Green ratio	0.38	0.38	0.11	0.49	0.11	0.49	0.11	0.49	0.38	0.38	0.38
Unit. delay d1	11.3	9.2	19.2	7.6	19.2	7.6	19.2	7.6	11.7	10.3	10.3
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Increment. delay d2	3.1	0.2	2.5	0.6	2.5	0.6	2.5	0.6	2.0	1.5	1.5
P.F. factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Control delay	14.4	9.4	21.6	8.2	21.6	8.2	21.6	8.2	13.7	11.8	11.8
Lane group LOS	B	A	C	A	C	A	C	A	B	B	B
Approach delay	13.9										
Approach LOS	B										
Intersection LOS	12.0										
Intersec. delay	Intersection LOS										

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TWO-WAY STOP CONTROL SUMMARY									
General Information					Site Information				
Analyst	PJR	Intersection	Case 1.3am						
Agency/Co.	Philip Rowell and Associates	Jurisdiction	2005						
Date Performed	9/5/2002	Analysis Year							
Analysis Time Period	AM Peak Hour								
Project Description: Towne Development									
East/West Street: Keali Alanui									
North/South Street: Kananani Road									
Intersection Orientation: East-West									
Study Period (hrs): 0.25									
Vehicle Volume and Adjustments									
Major Street		Eastbound			Westbound				
Movement		1	2	3	4	5	6		
		L	T	R	L	T	R		
Volume		12	152	22	10	268	19		
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR		13	168	24	11	295	21		
Percent Heavy Vehicles		0	--	--	0	--	--		
Median Type		Undivided							
RT Channelized		0							
Lanes		1	2	0	1	2	0		
Configuration		L	T	TR	L	T	TR		
Upstream Signal		0							
Minor Street		Northbound			Southbound				
Movement		7	8	9	10	11	12		
		L	T	R	L	T	R		
Volume		22	67	78	40	15	46		
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR		24	74	86	44	16	51		
Percent Heavy Vehicles		0	0	0	0	0	0		
Percent Grade (%)		0							
Flared Approach		N							
Storage		0							
RT Channelized		0							
Lanes		1	1	0	1	1	0		
Configuration		L	L	TR	L	L	TR		
Delay, Queue Length and Control Delay									
Approach		EB	WB	Northbound			Southbound		
Movement		1	4	7	8	9	10	11	12
Lane Configuration		L	L	L	L	TR	L	L	TR
v (vph)		13	11	24	160	44	67		
C (m) (vph)		1256	1394	501	619	373	703		
v/c		0.01	0.01	0.05	0.26	0.12	0.10		
95% queue length		0.03	0.02	0.15	1.03	0.40	0.31		
Control Delay		7.9	7.6	12.5	12.8	15.9	10.7		
LOS		A	A	B	B	C	B		
Approach Delay		--	--	12.8			12.8		
Approach LOS		--	--	B			B		

TWO-WAY STOP CONTROL SUMMARY									
General Information					Site Information				
Analyst	PJR	Intersection	Case 1.4am						
Agency/Co.	Philip Rowell and Associates	Jurisdiction	2005						
Date Performed	9/5/2002	Analysis Year							
Analysis Time Period	AM Peak Hour								
Project Description: Towne Development									
East/West Street: Keali Alanui Road									
North/South Street: North-South Collector									
Intersection Orientation: East-West									
Study Period (hrs): 0.25									
Vehicle Volume and Adjustments									
Major Street		Eastbound			Westbound				
Movement		1	2	3	4	5	6		
		L	T	R	L	T	R		
Volume		0	235	4	3	171	0		
Peak-Hour Factor, PHF		0.80	0.80	0.80	0.80	0.80	0.80		
Hourly Flow Rate, HFR		0	293	4	3	213	0		
Percent Heavy Vehicles		0	--	--	0	--	--		
Median Type		Undivided							
RT Channelized		0							
Lanes		0	1	1	1	1	0		
Configuration		L	T	R	L	T	T		
Upstream Signal		0							
Minor Street		Northbound			Southbound				
Movement		7	8	9	10	11	12		
		L	T	R	L	T	R		
Volume		8	0	12	0	0	0		
Peak-Hour Factor, PHF		0.80	0.80	0.80	0.80	0.80	0.80		
Hourly Flow Rate, HFR		9	0	14	0	0	0		
Percent Heavy Vehicles		0	0	0	0	0	0		
Percent Grade (%)		0							
Flared Approach		N							
Storage		0							
RT Channelized		0							
Lanes		1	0	1	0	0	0		
Configuration		L		R					
Delay, Queue Length and Control Delay									
Approach		EB	WB	Northbound			Southbound		
Movement		1	4	7	8	9	10	11	12
Lane Configuration		L	L	L	L	R	L	L	R
v (vph)		3	1276	524	751				
C (m) (vph)		0.00	0.01	0.02	0.05	0.06			
v/c		0.00	0.01	0.05	0.05	0.06			
95% queue length		0.01	7.8	12.0	9.9				
Control Delay		A	A	B	B	A			
LOS		--	--	10.7			B		
Approach Delay		--	--	10.7			B		
Approach LOS		--	--	B			B		

TWO-WAY STOP CONTROL SUMMARY										
General Information			Site Information							
Analyst	PJR	Intersection	Casef.5am							
Agency/Co.	Philip Rowell and Associates	Jurisdiction	2005							
Date Performed	9/3/2002	Analysis Year								
Analysis Time Period	AM Peak Hour									
Project Description	Towne Development									
East/West Street	Keonakal Road	North/South Street	Pillani Highway							
Intersection Orientation	North-South	Study Period (hrs)	0.25							
Major Street			Northbound				Southbound			
Movement	1	2	3	4	5	6				
	L	T	R	L	T	R				
Volume	28	435	0	0	743	63				
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80				
Hourly Flow Rate, HFR	34	544	0	0	928	78				
Percent Heavy Vehicles	0	--	--	0	--	--				
Median Type	Raised curb									
RT Channelized	0									
Lanes	1	2	0	0	2	1				
Configuration	L	T			T	R				
Upstream Signal	0									
Minor Street			Westbound				Eastbound			
Movement	7	8	9	10	11	12				
	L	T	R	L	T	R				
Volume	0	0	0	125	0	25				
Peak-Hour Factor, PHF	0.25	0.80	0.80	0.80	0.80	0.80				
Hourly Flow Rate, HFR	0	0	0	156	0	31				
Percent Heavy Vehicles	0	0	0	0	0	0				
Percent Grade (%)	0									
Flared Approach	N									
Storage	0									
RT Channelized	0									
Lanes	0	0	0	1	0	1				
Configuration	L									
Approach			Westbound				Eastbound			
Movement	NB	SB	4	7	8	9	10	11	12	
	L	L				L	L	L	R	
v (vph)	34	31				156	156	31	31	
C (m) (vph)	697	314				0.50	0.50	0.06	0.06	
v/c	0.05	0.15				2.62	2.62	0.18	0.18	
95% queue length	10.4	10.4				27.3	27.3	11.9	11.9	
Control Delay	B	B				D	D	B	B	
LOS										
Approach Delay	--	--						24.7		
Approach LOS								C		

TWO-WAY STOP CONTROL SUMMARY										
General Information			Site Information							
Analyst	PJR	Intersection	Casef.6am							
Agency/Co.	Philip Rowell and Associates	Jurisdiction	2005							
Date Performed	9/3/2002	Analysis Year								
Analysis Time Period	AM Peak Hour									
Project Description	Towne Development									
East/West Street	Keonakal Road	North/South Street	Kanakanul Road							
Intersection Orientation	East-West	Study Period (hrs)	0.25							
Major Street			Eastbound				Westbound			
Movement	1	2	3	4	5	6				
	L	T	R	L	T	R				
Volume	39	131	0	0	69	22				
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.25	0.80	0.80				
Hourly Flow Rate, HFR	48	163	0	0	86	27				
Percent Heavy Vehicles	0	--	--	0	--	--				
Median Type	Undivided									
RT Channelized	0									
Lanes	0	1	0	0	1	0				
Configuration	LT					TR				
Upstream Signal	0									
Minor Street			Northbound				Southbound			
Movement	7	8	9	10	11	12				
	L	T	R	L	T	R				
Volume	0	0	0	19	0	20				
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80				
Hourly Flow Rate, HFR	0	0	0	23	0	24				
Percent Heavy Vehicles	0	0	0	0	0	0				
Percent Grade (%)	0									
Flared Approach	N									
Storage	0									
RT Channelized	0									
Lanes	0	0	0	0	0	0				
Configuration	LR									
Approach			Westbound				Southbound			
Movement	EB	WB	4	7	8	9	10	11	12	
	L	LT						LR		
v (vph)	48	1489						47		
C (m) (vph)	0.03	0.03						759		
v/c	0.10	0.10						0.06		
95% queue length	7.5	7.5						10.1		
Control Delay	A	A						10.1		
LOS								B		
Approach Delay	--	--						10.1		
Approach LOS								B		

TWO-WAY STOP CONTROL SUMMARY												
General Information						Site Information						
Analyst	Agency/Co.	Date Performed	Analysis Time Period	Project Description	East/West Street	North/South Street	North/South Street	Study Period (hrs)	Case#	Year	Intersection Jurisdiction	Analysis Year
PJR	Philip Rowell and Associates	9/12/2002	AM Peak Hour	Towne Development	Keonatal Road	S. Kihal Road	0:25	2005	Case# 7.7m	2005	Case# 7.7m	2005
Intersection Orientation: North-South												
Major Street												
Movement	1	2	3	4	5	6						
	L	T	R	L	T	R						
Volume	0	309	44	53	409	0						
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80						
Hourly Flow Rate, HFR	0	384	54	66	511	0						
Percent Heavy Vehicles	0											
Median Type	Undivided											
RT Channelized	0											
Lanes	0	1	0	1	1	0						
Configuration	TR											
Upstream Signal	0											
Minor Street												
Movement	7	8	9	10	11	12						
	L	T	R	L	T	R						
Volume	45	0	104	0	0	0						
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80						
Hourly Flow Rate, HFR	56	0	129	0	0	0						
Percent Heavy Vehicles	0	0	0	0	0	0						
Percent Grade (%)	0											
Flared Approach	N											
Storage	0											
RT Channelized	0											
Lanes	1	0	1	0	0	0						
Configuration	L											
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	L	L	R	R	L	TR				
v (vph)	66	56	56	56	129							
C (m) (vph)	1133	540	540	540	919							
v/c	0.06	0.10	0.10	0.10	0.14							
95% queue length	0.19	0.35	0.35	0.35	0.49							
Control Delay	8.4	12.4	12.4	12.4	9.6							
LOS	A	A	B	B	A							
Approach Delay	10.4											
Approach LOS	B											

TWO-WAY STOP CONTROL SUMMARY												
General Information						Site Information						
Analyst	Agency/Co.	Date Performed	Analysis Time Period	Project Description	East/West Street	North/South Street	North/South Street	Study Period (hrs)	Case#	Year	Intersection Jurisdiction	Analysis Year
PJR	Philip Rowell and Associates	9/12/2002	AM Peak Hour	Towne Development	Walua Place	North-South Street	0:25	2005	Case# 1.11am	2005	Case# 1.11am	2005
Intersection Orientation: North-South												
Major Street												
Movement	1	2	3	4	5	6						
	L	T	R	L	T	R						
Volume	0	0	0	23	0	0						
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80						
Hourly Flow Rate, HFR	0	0	0	28	0	0						
Percent Heavy Vehicles	0											
Median Type	Unchidbed											
RT Channelized	0											
Lanes	1	1	0	1	1	0						
Configuration	L											
Upstream Signal	0											
Minor Street												
Movement	7	8	9	10	11	12						
	L	T	R	L	T	R						
Volume	0	0	13	31	0	0						
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80						
Hourly Flow Rate, HFR	0	0	16	38	0	0						
Percent Heavy Vehicles	0	0	0	0	0	0						
Percent Grade (%)	0											
Flared Approach	N											
Storage	0											
RT Channelized	0											
Lanes	1	1	0	1	1	0						
Configuration	L											
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	L	L	TR	L	TR	L				
v (vph)	0	28	0	0	16	38						
C (m) (vph)	1636	1636	933	933	1091	909						
v/c	0.00	0.02	0.00	0.00	0.04	0.13						
95% queue length	0.00	0.05	0.00	0.00	0.04	0.13						
Control Delay	7.2	7.2	8.9	8.3	9.1	8.3						
LOS	A	A	A	A	A	A						
Approach Delay	8.3											
Approach LOS	A											

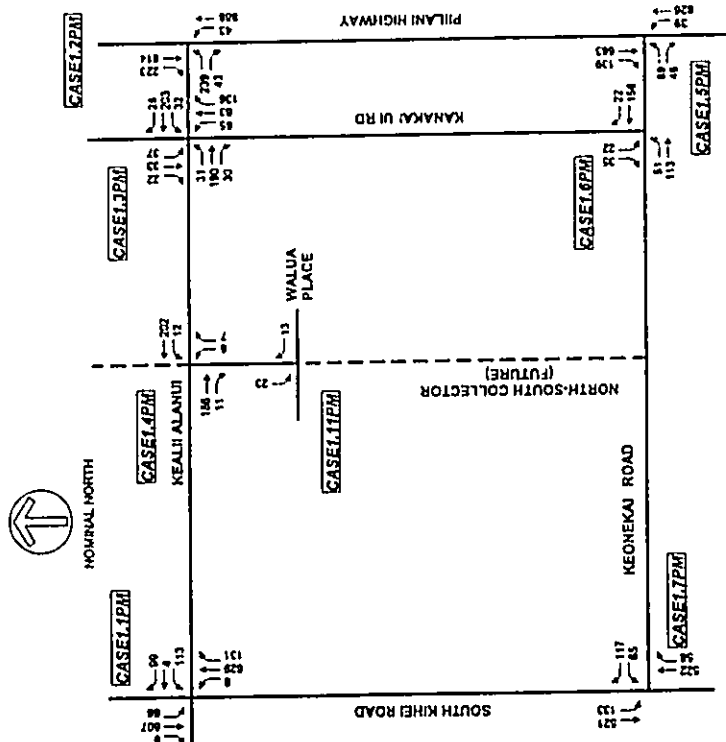
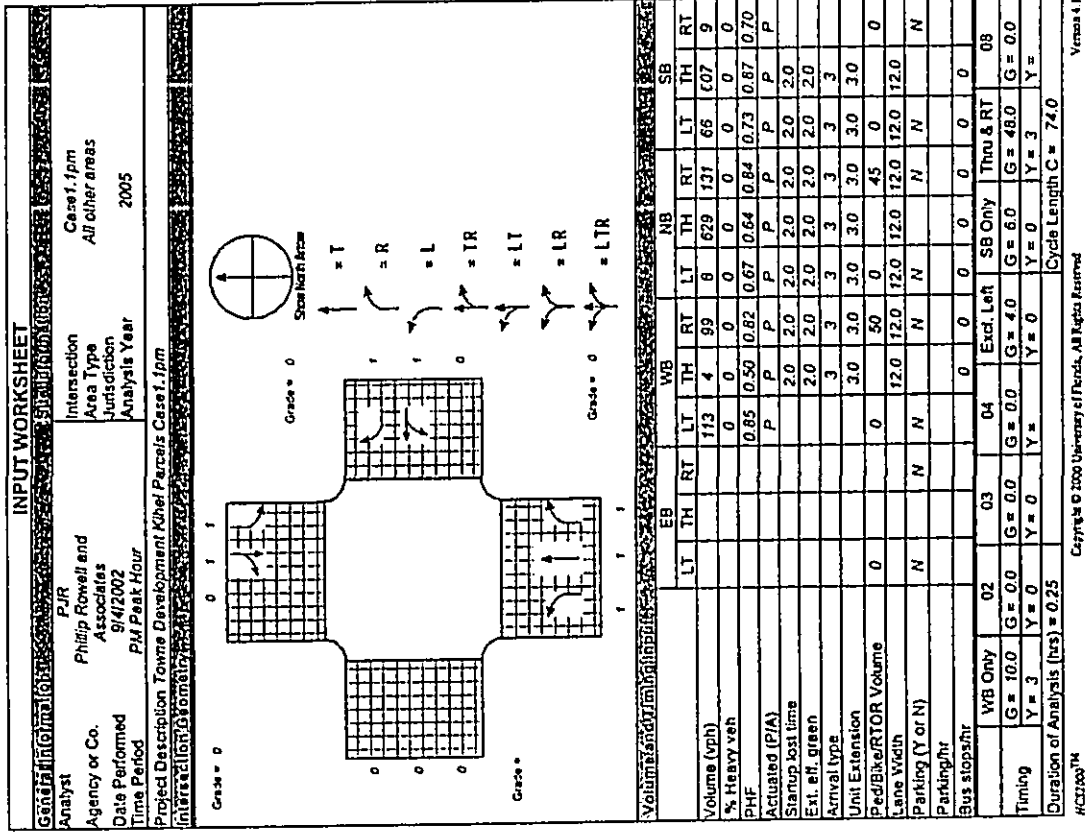


Figure 4
EXISTING PM PEAK HOUR TRAFFIC VOLUMES



CAPACITY AND LOS WORKSHEET

Project Description: Towne Development Khel Parcels Case 1.2pm

	EB			WB			NB			SB		
	LT	R	L	LT	R	L	T	R	L	T	R	L
Lane group												
Adj. flow rate	141	60	12	141	60	12	979	102	90	713	90	713
Satflow rate	1814	1615	1805	1805	1615	1805	1805	1615	1805	1615	1805	1805
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Green ratio	0.14	0.14	0.05	0.65	0.65	0.65	0.65	0.65	0.14	0.14	0.14	0.73
Lane group cap.	245	218	98	1232	1048	244	1383	1048	244	1383	244	1383
v/c ratio	0.58	0.28	0.12	0.79	0.79	0.10	0.37	0.52	0.37	0.52	0.37	0.52
Flow ratio	0.08	0.04	0.01	0.52	0.52	0.06	0.05	0.05	0.05	0.05	0.05	0.38
Crit. lane group	N	Y	N	Y	N	Y	Y	N	Y	N	Y	N
Sum flow ratios	0.64											
Lost time/cycle	6.00											
Critical v/c ratio	0.70											

	EB			WB			NB			SB		
	LT	R	L	LT	R	L	T	R	L	T	R	L
Lane group												
Adj. flow rate	141	60	12	141	60	12	979	102	90	713	90	713
Lane group cap.	245	218	98	1232	1048	244	1383	1048	244	1383	244	1383
v/c ratio	0.58	0.28	0.12	0.79	0.79	0.10	0.37	0.52	0.37	0.52	0.37	0.52
Green ratio	0.14	0.14	0.05	0.65	0.65	0.65	0.65	0.65	0.14	0.14	0.14	0.73
Unif. delay d1	30.0	28.7	33.3	9.4	4.9	29.1	4.3	4.9	29.1	4.3	4.3	4.3
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Increment. delay d2	9.5	3.1	2.5	5.3	0.2	4.2	1.4	0.2	4.2	1.4	1.4	1.4
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Control delay	39.5	31.9	35.9	14.8	5.1	33.4	5.7	5.1	33.4	5.7	5.7	5.7
Lane group LOS	D	C	D	B	A	C	A	A	C	A	C	A
Approach delay	37.2											
Approach LOS	D											
Intersection LOS	Intersection LOS											
Intersec. delay	14.3											

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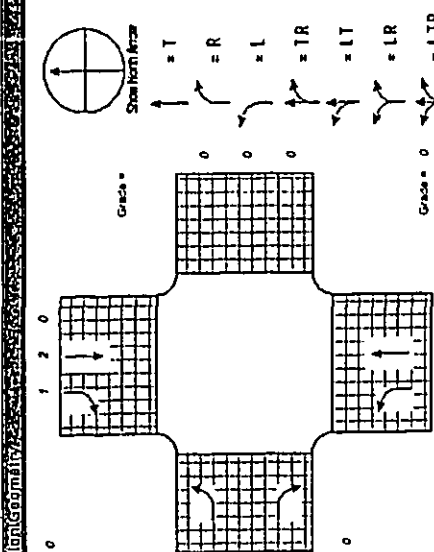
INPUT WORKSHEET

General Information: Project Description: Towne Development Khel Parcels Case 1.2pm

Analyst: Philip Rowell and Associates
 Date Performed: 9/4/2002
 Time Period: AM Peak Hour
 Analysis Year: 2005

Intersection: Case 1.2pm
 Area Type: All other areas
 Jurisdiction: 2005

Project Description: Towne Development Khel Parcels Case 1.2pm

Intersection Geometry: 

Grade = 0

Volume and Satflow Data:

	EB	WB	NB	SB
Volume (vph)	239	43	43	888
% Heavy Veh	0	0	0	0
PHF	0.85	0.85	0.85	0.85
Actuated (PIA)	P	P	P	P
Startup lost time	2.0	2.0	2.0	2.0
Est. eff. green	2.0	2.0	2.0	2.0
Arrival type	3	3	3	3
Unit Extension	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0	0	0	0
Lane Width	12.0	12.0	12.0	12.0
Parking (Y or N)	N	N	N	N
Bus stops/hr	0	0	0	0

Timing: EB Only G=17.0 Y=3; NB Only G=5.0 Y=0; Thru & RT G=28.0 Y=3; LT RT G=0 Y=0

Duration of Analysis (hrs) = 0.25
 Cycle Length C = 56.0

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CAPACITY AND LOS WORKSHEET

Project Description	EB		WB		NB		SB	
	L	R	L	R	L	T	T	R
Lane group	281	51	51	1045			958	198
Adj. flow rate	1805	1615	1805	3510			3510	1615
Satflow rate	2.0	2.0	2.0	2.0			2.0	2.0
Lost time	0.30	0.30	0.09	0.59			0.50	0.50
Green ratio	548	490	161	2127			1805	808
Lane group cap.	0.51	0.10	0.32	0.49			0.53	0.25
v/c ratio	0.16	0.03	0.03	0.29			0.27	0.12
Crit. lane group	Y	N	Y	N			Y	N
Sum flow ratios	0.45							
Lost time/cycle	6.00							
Critical v/c ratio	0.50							
Intersection Information								
Lane group	EB		WB		NB		SB	
	L	R	L	R	L	T	T	R
Adj. flow rate	281	51	51	1045			958	198
Lane group cap.	548	490	161	2127			1805	808
v/c ratio	0.51	0.10	0.32	0.49			0.53	0.25
Green ratio	0.30	0.30	0.09	0.59			0.50	0.50
Unit. delay d1	16.1	14.0	23.9	6.6			9.5	8.0
Delay factor k	0.50	0.50	0.50	0.50			0.50	0.50
Increment. delay d2	3.4	0.4	5.1	0.8			1.1	0.7
PF factor	1.000	1.000	1.000	1.000			1.000	1.000
Control delay	19.5	14.4	29.0	7.5			10.7	8.7
Lane group LOS	B	B	C	A			B	A
Approch. delay	18.7							
Approach LOS	B							
Intersec. delay	10.6							
Intersection LOS	B							

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	PJR	Intersection	Case 1.3pm
Agency/Co.	Philip Rowell and Associates	Jurisdiction	2005
Date Performed	9/5/2002	Analysis Year	
Analysis Time Period	PM Peak Hour		
Project Description	Towne Development		
East/West Street	Kearla Alajuli	North/South Street	Kannanul Road
Intersection Orientation	East-West	Study Period (hrs)	0.25
Vehicle Volume and Adjustments			
Major Street	Eastbound		Westbound
Movement	1	2	3
	L	T	R
Volume	31	190	30
Peak-Hour Factor, PHF	0.90	0.90	0.90
Hourly Flow Rate, HFR	34	211	33
Percent Heavy Vehicles	0	0	0
Median Type	Undivided		
RT Channelized	0		
Lanes	1	2	0
Configuration	L	T	TR
Upstream Signal	0		
Minor Street	Northbound		Southbound
Movement	7	8	9
	L	T	R
Volume	65	63	136
Peak-Hour Factor, PHF	0.90	0.90	0.90
Hourly Flow Rate, HFR	72	70	151
Percent Heavy Vehicles	0	0	0
Percent Grade (%)	0		
Flared Approach	N		
Storage	0		
RT Channelized	0		
Lanes	1	1	0
Configuration	L	T	TR
Delay Values			
Approach	EB	WB	Northbound
Movement	1	4	7
	L	L	L
Lane Configuration	34	35	72
C (m) (vph)	1321	1334	401
v/c	0.03	0.03	0.18
95% queue length	0.08	0.08	0.65
Control Delay	7.8	7.8	15.9
LOS	A	A	C
Approach Delay	14.2		
Approach LOS	B		

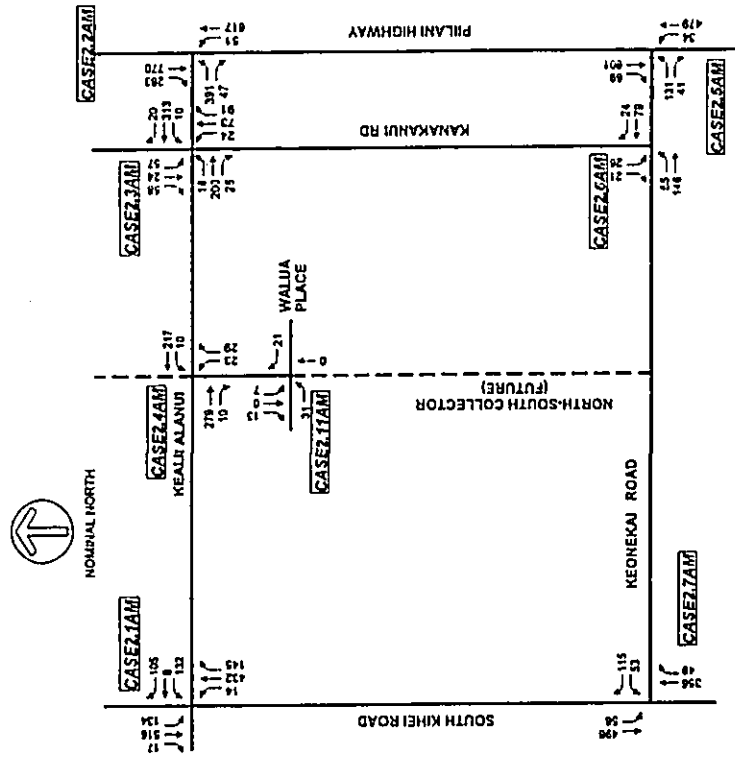
TWO-WAY STOP CONTROL SUMMARY											
General Information											
Analyst	PJR	Intersection	Case 1.5pm								
Agency/Co.	Philip Rowell and Associates	Jurisdiction	2005								
Date Performed	9/5/2002	Analysis Year									
Analysis Time Period	PM Peak Hour										
Project Description	Towne Development										
East/West Street	Keonaka Road	North/South Street	Pilihi Highway								
Intersection Orientation	North-South	Study Period (hrs)	0.25								
Vehicle Volume and Signal Timing											
Major Street	Northbound		Southbound								
Movement	1	2	3	4	5	6					
Volume	L	T	R	L	T	R					
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80					
Hourly Flow Rate, HFR	48	1032	0	0	828	173					
Percent Heavy Vehicles	0	--	--	0	--	--					
Median Type	Raised curb										
RT Channelized	1	2	0	0	2	1					
Lanes	L	T	T	T	T	R					
Configuration											
Upstream Signal	0										
Minor Street											
Movement	Westbound		Eastbound								
Volume	7	8	9	10	11	12					
Peak-Hour Factor, PHF	0.25	0.80	0.80	0.80	0.80	0.80					
Hourly Flow Rate, HFR	0	0	0	111	0	57					
Percent Heavy Vehicles	0	0	0	0	0	0					
Percent Grade (%)	0										
Flared Approach	N										
Storage	0										
RT Channelized	0										
Lanes	0										
Configuration											
Delay and LOS											
Approach	NB		SB		Westbound		Eastbound				
Movement	1	4	7	8	9	10	11	12			
Lane Configuration	L	L	L	L	L	L	L	R			
v (vph)	48	700	307	307	307	307	307	593			
C (m) (vph)	0.07	0.22	1.60	1.60	1.60	1.60	1.60	0.32			
95% queue length	10.5	10.5	23.2	23.2	23.2	23.2	23.2	11.7			
Control Delay	B	B	C	C	C	C	C	B			
LOS	--	--	--	--	--	--	--	19.3			
Approach Delay											
Approach LOS	C										

TWO-WAY STOP CONTROL SUMMARY											
General Information											
Analyst	PJR	Intersection	Case 1.4pm								
Agency/Co.	Philip Rowell and Associates	Jurisdiction	2005								
Date Performed	9/5/2002	Analysis Year									
Analysis Time Period	PM Peak Hour										
Project Description	Towne Development										
East/West Street	Keali Alanui Road	North/South Street	North-South Collector								
Intersection Orientation	East-West	Study Period (hrs)	0.25								
Vehicle Volume and Signal Timing											
Major Street	Eastbound		Westbound								
Movement	1	2	3	4	5	6					
Volume	L	T	R	L	T	R					
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80					
Hourly Flow Rate, HFR	0	186	11	12	202	0					
Percent Heavy Vehicles	0	232	13	14	252	0					
Median Type	Undivided										
RT Channelized	0	1	1	1	1	0					
Lanes	T	T	R	L	T	T					
Configuration											
Upstream Signal	0										
Minor Street											
Movement	Northbound		Southbound								
Volume	7	8	9	10	11	12					
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80					
Hourly Flow Rate, HFR	0	0	0	0	0	0					
Percent Heavy Vehicles	0	0	0	0	0	0					
Percent Grade (%)	0										
Flared Approach	N										
Storage	0										
RT Channelized	0										
Lanes	0										
Configuration											
Delay and LOS											
Approach	EB		WB		Northbound		Southbound				
Movement	1	4	7	8	9	10	11	12			
Lane Configuration	L	L	L	L	R	R					
v (vph)	1333	519	812	812	812	812					
C (m) (vph)	0.01	0.01	0.01	0.01	0.01	0.01					
95% queue length	0.03	0.04	0.03	0.03	0.03	0.03					
Control Delay	7.7	12.0	9.5	9.5	9.5	9.5					
LOS	A	B	A	A	A	A					
Approach Delay	10.7										
Approach LOS	B										

TWO-WAY STOP CONTROL SUMMARY											
Site Information											
Analyst	PJR		Intersection	Case 1.6pm							
Agency/Co.	Phillip Rowell and Associates		Jurisdiction	2005							
Date Performed	9/3/2002		Analysis Year								
Analysis Time Period	PM Peak Hour										
Project Description: Towne Development											
East/West Street: Keonikel Road											
North/South Street: Kanakul Road											
Intersection Orientation: East-West											
Study Period (hrs): 0.25											
Major Street											
Eastbound			Westbound			Southbound					
Movement	1	2	3	4	5	6					
	L	T	R	L	T	R					
Volume	51	113	0	0	156	22					
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.25	0.80	0.80					
Hourly Flow Rate, HFR	63	141	0	0	194	27					
Percent Heavy Vehicles	0	-	-	0	-	-					
Median Type	Unchoked										
RT Channelized	0										
Lanes	0	1	0	0	0	1	0	0	0	0	TR
Configuration	LT										
Upstream Signal	0										
Minor Street											
Northbound			Southbound								
Movement	7	8	9	10	11	12					
	L	T	R	L	T	R					
Volume	0	0	0	22	0	35					
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80					
Hourly Flow Rate, HFR	0	0	0	27	0	43					
Percent Heavy Vehicles	0	0	0	0	0	0					
Percent Grade (%)	0										
Flared Approach	N										
Storage	0										
RT Channelized	0										
Lanes	0	0	0	0	0	0	0	0	0	0	0
Configuration	LR										
Delay/Queue/Control Delay/LOS											
Approach	EB	WB	Northbound		Southbound						
Movement	1	4	7	8	9	10	11	12			
Lane Configuration	LT						LR				
v (vph)	63						70				
C (m) (vph)	1360						682				
v/c	0.05						0.10				
95% queue length	0.15						0.34				
Control Delay	7.8						10.9				
LOS	A						B				
Approach Delay	-	-	-	-	-	-	10.9				
Approach LOS	-	-	-	-	-	-	B				

TWO-WAY STOP CONTROL SUMMARY											
Site Information											
Analyst	PJR		Intersection	Case 1.7pm							
Agency/Co.	Phillip Rowell and Associates		Jurisdiction	2005							
Date Performed	9/3/2002		Analysis Year								
Analysis Time Period	PM Peak Hour										
Project Description: Towne Development											
East/West Street: Keonikel Road											
North/South Street: S. Kihel Road											
Intersection Orientation: North-South											
Study Period (hrs): 0.25											
Major Street											
Northbound			Southbound								
Movement	1	2	3	4	5	6					
	L	T	R	L	T	R					
Volume	0	522	58	133	521	0					
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80					
Hourly Flow Rate, HFR	0	652	72	166	651	0					
Percent Heavy Vehicles	0	-	-	0	-	-					
Median Type	Unchoked										
RT Channelized	0										
Lanes	0	1	0	1	1	0					
Configuration	TR										
Upstream Signal	0										
Minor Street											
Westbound			Eastbound								
Movement	7	8	9	10	11	12					
	L	T	R	L	T	R					
Volume	65	0	117	0	0	0					
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80					
Hourly Flow Rate, HFR	81	0	148	0	0	0					
Percent Heavy Vehicles	0	0	0	0	0	0					
Percent Grade (%)	0										
Flared Approach	N										
Storage	0										
RT Channelized	0										
Lanes	1	0	1	0	0	0	0	0	0	0	0
Configuration	LR										
Delay/Queue/Control Delay/LOS											
Approach	MB	SB	Westbound		Eastbound						
Movement	1	4	7	8	9	10	11	12			
Lane Configuration			L	L	R	R					
v (vph)		166	81		146						
C (m) (vph)		888	318		813						
v/c		0.19	0.25		0.18						
95% queue length		0.68	0.99		0.65						
Control Delay		10.0	20.1		10.4						
LOS		A	C		B						
Approach Delay	-	-	-	-	13.9	-	-	-			
Approach LOS	-	-	-	-	B	-	-	-			

TWO-WAY STOP CONTROL SUMMARY											
Project Information						Site Information					
Analyst	PJR Philip Rowell and Associates					Intersection	Case 1.11pm				
Agency/Co.	Philip Rowell and Associates					Jurisdiction	2005				
Date Performed	9/3/2002					Analysis Year					
Analysis Time Period	PM Peak Hour										
Project Description	Towna Development										
East/West Street	Wawa Place					North/South Street	North-South Collector				
Intersection Orientation	North-South					Study Period (hrs)	0.25				
Major Street	Northbound			Southbound							
Movement	1	2	3	4	5	6					
	L	T	R	L	T	R					
Volume	0	0	0	23	0	0					
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80					
Hourly Flow Rate, HFR	0	0	0	28	0	0					
Percent Heavy Vehicles	0	0	0	0	0	0					
Median Type	Undivided										
RT Channelized	0	0	0	0	0	0					
Lanes	1	1	0	1	1	0					
Configuration	L	L	TR	L	L	TR					
Upstream Signal	0										
Minor Street	Westbound			Eastbound							
Movement	7	8	9	10	11	12					
	L	T	R	L	T	R					
Volume	0	0	0	0	0	0					
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80					
Hourly Flow Rate, HFR	0	0	0	0	0	0					
Percent Heavy Vehicles	0	0	0	0	0	0					
Percent Grade (%)	0										
Flared Approach	N										
Storage	0										
RT Channelized	0										
Lanes	1	1	0	1	1	0					
Configuration	L	L	TR	L	L	TR					
Approach											
Approach	NB		SB			Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12			
Lane Configuration	L	L	L	L	TR	L	L	TR			
v (vph)	0	28	0	0	16	0	0	1			
C (m) (vph)	1636	1636	933	1091	905	1091	905	1691			
v/c	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.00			
95% queue length	0.00	0.05	0.00	0.04	0.04	0.00	0.00	0.00			
Control Delay	7.2	7.2	8.9	8.3	8.3	9.0	8.3	8.3			
LOS	A	A	A	A	A	A	A	A			
Approach Delay	-		-			8.3			8.3		
Approach LOS	-		-			A			A		



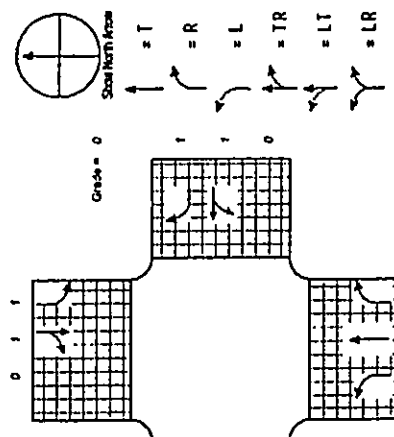
APPENDIX B
LEVEL-OF-SERVICE CALCULATION WORKSHEETS
FOR CUMULATIVE CONDITIONS

Figure 6
2005 CUMULATIVE AM PEAK HOUR TRAFFIC PROJECTIONS

INPUT WORKSHEET

Analyst PJR	Intersection Case 2.1am	All other areas	
Agency or Co. Phillip Rowell and Associates	Area Type 9/4/2002	All other areas	
Date Performed AM Peak Hour	Jurisdiction Analysis Year		
Time Period AM Peak Hour	Analysis Year		

Project Description: **Towne Development Kihal Parcels Case 2.1am**

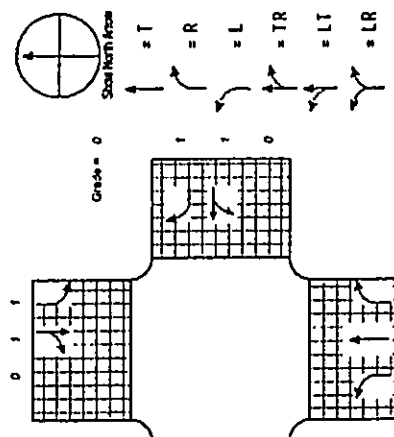


Grade = 0

Grade = 0

Grade = 0

Grade = 0



z T = R
R = L
L = TR
TR = LT
LT = LR
LR = LTR

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	132	8	105	14	432	145	134	516	17			
% Heavy veh	0	0	0	0	0	0	0	0	0			
PHF	0.94	0.67	0.97	0.47	0.95	0.98	0.90	0.91	0.80			
Actuated (P/A)	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/TOR Volume	0	0	25	0	44	0	0	0	0			
Lane Width	N	N	N	N	N	N	N	N	N			
Parking (Y or N)	N	N	N	N	N	N	N	N	N			
Parking/hr												
Bus stops/hr												
WB Only	02	03	04	Excl. Left	Thru & RT	07	08					
G = 13.0	G =	G =	G =	G = 9.0	G = 42.0	G =	G =					
Y = 3	Y =	Y =	Y =	Y = 0	Y = 3	Y =	Y =					
Duration of Analysis (hrs) = 0.25												

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CAPACITY AND LOS WORKSHEET

General Information												
Project Description: Towne Development Kihal Parcels Case 2.1am												
Capacity Analysis												
Lane group	EB			WB			NB			SB		
	LT	R	T	LT	R	T	LT	R	T	LT	R	T
Adj. flow rate	152	83	34	457	103	149	589					
Satflow rate	1816	1615	1805	1900	1615	1805	1890					
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0					
Green ratio	0.19	0.19	0.13	0.60	0.60	0.13	0.60					
Lane group cap.	337	300	232	1140	959	232	1134					
v/c ratio	0.45	0.28	0.15	0.40	0.11	0.64	0.52					
Flow ratio	0.08	0.05	0.02	0.24	0.06	0.08	0.31					
Crit. lane group	N	Y	N	N	N	N	Y					
Sum flow ratios	0.48											
Lost time/cycle	6.00											
Critical v/c ratio	0.52											
Lane Group Capacity and LOS Determination												
Lane group	EB			WB			NB			SB		
	LT	R	T	LT	R	T	LT	R	T	LT	R	T
Adj. flow rate	152	83	34	457	103	149	589					
Lane group cap.	337	300	232	1140	959	232	1134					
v/c ratio	0.45	0.28	0.15	0.40	0.11	0.64	0.52					
Green ratio	0.19	0.19	0.13	0.60	0.60	0.13	0.60					
Unif. delay d1	25.3	24.5	27.1	7.4	6.0	29.0	8.1					
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50					
Increment. delay d2	4.3	2.3	1.3	1.1	0.2	12.9	1.7					
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
Control delay	29.6	26.7	28.4	8.4	6.2	41.9	9.8					
Lane group LOS	C	C	C	A	A	D	A					
Approch. delay	28.6											
Approach LOS	C											
Intersection LOS	15.5											
Intersec. delay	Intersection LOS											

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INPUT WORKSHEET

Analyst: PJR		Intersection: Case 2.2am	
Agency or Co.: Phillip Rowell and Associates		Area Type: All other areas	
Date Performed: 9/4/2002		Jurisdiction: 2005	
Time Period: AM Peak Hour		Analysis Year: 2005	
Project Description: Towns Development Kihal Parcels Case 2.2am			

Grade = 0

Size North Arrow

Volume (vph)	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
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	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	2.0	2.0
Arrival type	3	3	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	3.0	3.0
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0	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	N	N	N	N
Parking/hr												
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	0

EB Only	02	03	04	NB Only	Thru & RT	07	08
G = 18.0	G =	G =	G =	G = 5.0	G = 18.0	G =	G =
Y = 3	Y =	Y =	Y =	Y = 0	Y = 3	Y =	Y =

Duration of Analysis (hrs) = 0.25 Cycle Length C = 47.0

CAPACITY AND LOS WORKSHEET

General Information												
Project Description: Towns Development Kihal Parcels Case 2.2am												
Capacity Analysis												
Lane group	L	R	WB	WB	L	T	NB	NB	L	T	R	SB
Adj. flow rate	460	55	60	725	60	725	60	725	60	725	60	725
Satflow rate	1805	1615	1805	3610	1805	3610	1805	3610	1805	3610	1805	3610
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Green ratio	0.38	0.38	0.11	0.49	0.38	0.38	0.11	0.49	0.38	0.38	0.11	0.49
Lane group cap.	691	619	192	1767	691	619	192	1767	691	619	192	1767
v/c ratio	0.67	0.09	0.31	0.41	0.67	0.09	0.31	0.41	0.67	0.09	0.31	0.41
Flow ratio	0.25	0.03	0.03	0.20	0.25	0.03	0.03	0.20	0.25	0.03	0.03	0.20
Crit. lane group	Y	N	N	N	Y	N	N	N	Y	N	N	Y
Sum flow ratios	0.54											
Lost time/cycle	6.00											
Critical v/c ratio	0.62											
Lane Group Capacity Control Parameters												
Lane group	L	R	WB	WB	L	T	NB	NB	L	T	R	SB
Adj. flow rate	460	55	60	725	60	725	60	725	60	725	60	725
Lane group cap.	691	619	192	1767	691	619	192	1767	691	619	192	1767
v/c ratio	0.67	0.09	0.31	0.41	0.67	0.09	0.31	0.41	0.67	0.09	0.31	0.41
Green ratio	0.38	0.38	0.11	0.49	0.38	0.38	0.11	0.49	0.38	0.38	0.11	0.49
Unit delay d1	12.0	9.3	19.4	7.7	12.0	9.3	19.4	7.7	12.0	9.3	19.4	7.7
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Incremental delay d2	5.0	0.3	4.2	0.7	5.0	0.3	4.2	0.7	5.0	0.3	4.2	0.7
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Control delay	17.0	9.5	23.6	8.4	17.0	9.5	23.6	8.4	17.0	9.5	23.6	8.4
Lane group LOS	B	A	C	A	B	A	C	A	B	A	C	B
Approach delay	16.2											
Approach LOS	B											
Intersection LOS	Intersection LOS											
Intersec. delay	13.0											

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TWO-WAY STOP CONTROL SUMMARY												
General Information												
Analyst	PJR Philip Rowell and Associates		Intersection	Case 2.3am								
Agency/Co.	Philip Rowell and Associates		Jurisdiction	2005								
Date Performed	9/15/2002		Analysis Year	2005								
Analysis Time Period	AM Peak Hour											
Project Description: Towne Development												
East/West Street: Keatli Alarud												
North/South Street: Kankakizul Road												
Intersection Orientation: East-West												
Study Period (hrs): 0.25												
Vehicle Volume and Adjustments												
Major Street	Eastbound			Westbound								
Movement	1	2	3	4	5	6						
	L	T	R	L	T	R						
Volume	18	200	26	10	313	20						
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90						
Hourly Flow Rate, HFR	20	222	29	11	347	22						
Percent Heavy Vehicles	0	--	--	0	--	--						
Median Type	Unfringed											
RT Channelized	0											
Lanes	1	2	0	1	2	0						
Configuration	L	T	TR	L	T	TR						
Upstream Signal	0											
Minor Street	Northbound			Southbound								
Movement	7	8	9	10	11	12						
	L	T	R	L	T	R						
Volume	24	73	91	57	24	58						
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90						
Hourly Flow Rate, HFR	26	81	101	63	26	64						
Percent Heavy Vehicles	0	0	0	0	0	0						
Percent Grade (%)	0											
Flared Approach	N											
Storage	0											
RT Channelized	0											
Lanes	1	1	0	1	1	0						
Configuration	L	L	TR	L	L	TR						
Delay, Queue Length and Control Delay												
Approach	EB	WB	Northbound			Southbound						
Movement	1	4	7	8	9	10	11	12				
Lane Configuration	L	L	L	L	TR	L	L	TR				
v (vph)	20	11	26	403	182	63	63	90				
C (m) (vph)	1201	1327	403	554	296	673	673	673				
v/c	0.02	0.01	0.06	0.33	0.21	0.15	0.15	0.15				
95% queue length	0.05	0.03	0.21	1.42	0.79	0.51	0.51	0.51				
Control Delay	8.0	7.7	14.5	14.6	20.4	11.9	11.9	11.9				
LOS	A	A	B	B	C	C	B	B				
Approach Delay	--	--	--	14.6	--	15.4	--	--				
Approach LOS	--	--	--	B	--	C	--	--				

TWO-WAY STOP CONTROL SUMMARY												
General Information												
Analyst	PJR Philip Rowell and Associates		Intersection	Case 2.4am								
Agency/Co.	Philip Rowell and Associates		Jurisdiction	2005								
Date Performed	9/15/2002		Analysis Year	2005								
Analysis Time Period	AM Peak Hour											
Project Description: Towne Development												
East/West Street: Keatli Alarud												
North/South Street: North-South Collector												
Intersection Orientation: East-West												
Study Period (hrs): 0.25												
Vehicle Volume and Adjustments												
Major Street	Eastbound			Westbound								
Movement	1	2	3	4	5	6						
	L	T	R	L	T	R						
Volume	0	279	10	10	217	0						
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80						
Hourly Flow Rate, HFR	0	348	12	12	271	0						
Percent Heavy Vehicles	0	--	--	0	--	--						
Median Type	Unfringed											
RT Channelized	0											
Lanes	0	1	1	1	1	0						
Configuration	L	T	R	L	T	R						
Upstream Signal	0											
Minor Street	Northbound			Southbound								
Movement	7	8	9	10	11	12						
	L	T	R	L	T	R						
Volume	23	0	29	0	0	0						
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80						
Hourly Flow Rate, HFR	28	0	36	0	0	0						
Percent Heavy Vehicles	0	0	0	0	0	0						
Percent Grade (%)	0											
Flared Approach	N											
Storage	0											
RT Channelized	0											
Lanes	1	0	1	0	0	0						
Configuration	L	L	R	L	L	R						
Delay, Queue Length and Control Delay												
Approach	EB	WB	Northbound			Southbound						
Movement	1	4	7	8	9	10	11	12				
Lane Configuration	L	L	L	L	R	L	L	R				
v (vph)	12	12	28	28	36	703	703	703				
C (m) (vph)	1210	1210	437	437	703	703	703	703				
v/c	0.01	0.01	0.06	0.06	0.05	0.16	0.16	0.16				
95% queue length	0.03	0.03	0.20	0.20	0.16	10.4	10.4	10.4				
Control Delay	8.0	8.0	13.8	13.8	10.4	11.9	11.9	11.9				
LOS	A	A	B	B	B	B	B	B				
Approach Delay	--	--	--	11.9	--	--	--	--				
Approach LOS	--	--	--	B	--	--	--	--				

TWO-WAY STOP CONTROL SUMMARY															
Site Information															
Analyst	PJR Philip Rowell and Associates			Intersection Jurisdiction			Case 2.5am								
Agency/Co.	Philip Rowell and Associates			Analysis Year			2005								
Date Performed	9/5/2002														
Analysis Time Period	AM Peak Hour														
Project Description	Towne Development														
East/West Street	Keonokai Road			North/South Street			Pilihil Highway								
Intersection Orientation	North-South			Study Period (hrs)			0.25								
Major Street															
Major Street Movement															
	1	2	3	4	5	6	Southbound								
	L	T	R	L	T	R									
Volume	34	479	0	0	801	69									
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80									
Hourly Flow Rate, HFR	43	598	0	0	1021	86									
Percent Heavy Vehicles	0	--	--	0	--	--	Raised curb								
Median Type	RT Channelized														
Lanes	1	2	0	0	2	1									
Configuration	L	T			T	R									
Upstream Signal	0														
Minor Street															
Minor Street Movement															
	7	8	9	10	11	12	Eastbound								
	L	T	R	L	T	R									
Volume	0	0	0	131	0	41									
Peak-Hour Factor, PHF	0.25	0.80	0.80	0.80	0.80	0.80									
Hourly Flow Rate, HFR	0	0	0	163	0	51									
Percent Heavy Vehicles	0	0	0	0	0	0									
Percent Grade (%)	0														
Flared Approach	N														
Storage	0														
RT Channelized	0														
Lanes	0	0	0	1	0	1									
Configuration	L														
Approach															
Approach Movement															
	NB	SB	Westbound			Eastbound									
	1	4	7	8	9	10	11	12							
	L					L		R							
Lane Configuration	L					163		51							
v (vph)	42	649				287		522							
C (m) (vph)	0.06	0.21				0.57		0.32							
95% queue length	10.9	32.8				32.8		12.6							
Control Delay	B	D				D		B							
LOS															
Approach Delay	--	--				28.0		D							
Approach LOS	--	--				D									

TWO-WAY STOP CONTROL SUMMARY														
Site Information														
Analyst	PJR Philip Rowell and Associates			Intersection Jurisdiction			Case 2.6am							
Agency/Co.	Philip Rowell and Associates			Analysis Year			2005							
Date Performed	9/5/2002													
Analysis Time Period	AM Peak Hour													
Project Description	Towne Development													
East/West Street	Keonokai Road			North/South Street			Kanakani Road							
Intersection Orientation	East-West			Study Period (hrs)			0.25							
Major Street														
Major Street Movement														
	1	2	3	4	5	6	Westbound							
	L	T	R	L	T	R								
Volume	55	145	0	0	79	24								
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.25	0.80	0.80								
Hourly Flow Rate, HFR	26	195	0	0	98	29								
Percent Heavy Vehicles	0	--	--	0	--	--	Undivided							
Median Type	RT Channelized													
Lanes	0	1	0	0	1	0								
Configuration	LT				T	TR								
Upstream Signal	0													
Minor Street														
Minor Street Movement														
	7	8	9	10	11	12	Southbound							
	L	T	R	L	T	R								
Volume	0	0	0	26	0	21								
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80								
Hourly Flow Rate, HFR	0	0	0	32	0	26								
Percent Heavy Vehicles	0	0	0	0	0	0								
Percent Grade (%)	0													
Flared Approach	N													
Storage	0													
RT Channelized	0													
Lanes	0	0	0	0	0	0								
Configuration	LR													
Approach														
Approach Movement														
	EB	WB	Northbound			Southbound								
	1	4	7	8	9	10	11	12						
	LT					LR								
Lane Configuration	LT					58		686						
v (vph)	68	1472				0.09		0.28						
C (m) (vph)	0.05	0.15				7.6		10.7						
95% queue length	7.6	A				10.7		B						
Control Delay	A													
LOS														
Approach Delay	--	--				10.7		B						
Approach LOS	--	--				B								

TWO-WAY STOP CONTROL SUMMARY											
General Information						Site Information					
Analyst	PJR	Intersection	Case: 2.7am								
Agency/Co.	Philip Rowell and Associates	Jurisdiction	2005								
Date Performed	9/5/2002	Analysis Year									
Analysis Time Period	AM Peak Hour										
Project Description	Towne Development										
East/West Street	Keonahal Road	North/South Street	St. Kihel Road								
Intersection Orientation	North-South	Study Period (hrs)	0.25								
Vehicle Approach and Movements											
Major Street	Northbound			Southbound							
Movement	1	2	3	4	5	6					
	L	T	R	L	T	R					
Volume	0	356	49	56	496	0					
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80					
Hourly Flow Rate, HFR	0	444	61	69	619	0					
Percent Heavy Vehicles	0	--	--	0	--	--					
Median Type	Undivided										
RT Channelized	0					0					
Lanes	1					1					
Configuration	TR					T					
Upstream Signal	0					0					
Minor Street	Westbound			Eastbound							
Movement	7	8	9	10	11	12					
	L	T	R	L	T	R					
Volume	53	0	115	0	0	0					
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80					
Hourly Flow Rate, HFR	66	0	143	0	0	0					
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	1					1					
Configuration	R					TR					
Delay/Queue Length/Control Delay/LOS											
Approach	NB	SB	Westbound			Eastbound					
Movement	1	4	7	8	9	10	11	12			
Lane Configuration	L	L	L	L	R	R	L	TR			
v (vph)	69	66	66	143							
C (m) (vph)	1070	482	482	894							
v/c	0.06	0.14	0.14	0.16							
95% queue length	0.21	0.47	0.47	0.57							
Control Delay	8.6	13.7	13.7	9.8							
LOS	A	B	B	A							
Approach Delay	--	--	11.0			B					
Approach LOS	--	--	B			A					

TWO-WAY STOP CONTROL SUMMARY											
General Information						Site Information					
Analyst	PJR	Intersection	Case: 2.11am								
Agency/Co.	Philip Rowell and Associates	Jurisdiction	2005								
Date Performed	9/3/2002	Analysis Year									
Analysis Time Period	AM Peak Hour										
Project Description	Towne Development										
East/West Street	Waina Place	North/South Street	North-South Collector								
Intersection Orientation	North-South	Study Period (hrs)	0.25								
Vehicle Approach and Movements											
Major Street	Northbound			Southbound							
Movement	1	2	3	4	5	6					
	L	T	R	L	T	R					
Volume	0	0	0	7	0	13					
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80					
Hourly Flow Rate, HFR	0	0	0	8	0	16					
Percent Heavy Vehicles	0	--	--	0	--	--					
Median Type	Undivided										
RT Channelized	0					0					
Lanes	1					1					
Configuration	L					TR					
Upstream Signal	0					0					
Minor Street	Westbound			Eastbound							
Movement	7	8	9	10	11	12					
	L	T	R	L	T	R					
Volume	0	0	21	31	0	1					
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80					
Hourly Flow Rate, HFR	0	0	26	38	0	1					
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	1					1					
Configuration	L					TR					
Delay/Queue Length/Control Delay/LOS											
Approach	NB	SB	Westbound			Eastbound					
Movement	1	4	7	8	9	10	11	12			
Lane Configuration	L	L	L	L	TR	L	L	TR			
v (vph)	0	8	0	0	26	38					
C (m) (vph)	1615	1636	988	1091	946						
v/c	0.00	0.00	0.00	0.00	0.04						
95% queue length	0.00	0.01	0.00	0.00	0.07						
Control Delay	7.2	7.2	8.6	8.4	9.0						
LOS	A	A	A	A	A						
Approach Delay	--	--	8.4			8.9					
Approach LOS	--	--	A			A					

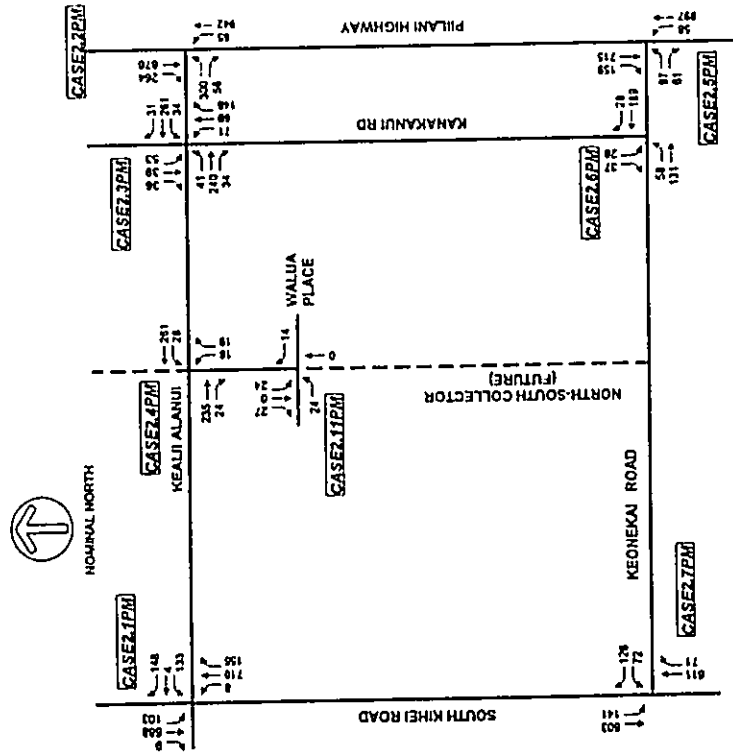


Figure 7
2005 CUMULATIVE PM PEAK HOUR TRAFFIC PROJECTIONS

INPUT WORKSHEET															
General Information		PUR		Intersection		Case2.1pm		Area Type		All other areas		Jurisdiction		2005	
Analyst		Philip Rowell and Associates		Date Performed		9/4/2002		Time Period		PM Peak Hour		Analysis Year		2005	
Project Description: Towne Development Kihel Parcels Case2.1pm															
Information for Input															
Grade = 0		Grade = 0		Grade = 0		Grade = 0		Grade = 0		Grade = 0		Grade = 0		Grade = 0	
Volume Input from Input															
Volume (vph)	133	4	148	8	710	155	103	688	9						
% Heavy veh	0	0	0	0	0	0	0	0	0						
PHF	0.85	0.50	0.82	0.67	0.64	0.84	0.73	0.87	0.70						
Actuated (PIA)	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						
Survival 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						
Peak/Bike/RTOR Volume	0	0	50	0	45	0	45	0	0						
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	N						
Parking/hr															
Bus stops/hr															
WB Only		02		03		04		Excl. Left		SB Only		Thru & RT		08	
G = 10.0		G = 0.0		G = 0.0		G = 4.0		G = 4.0		G = 6.0		G = 48.0		G = 0.0	
Y = 3		Y = 0		Y = 0		Y = 0		Y = 0		Y = 0		Y = 3		Y =	
Duration of Analysis (hrs) = 0.25															
Cycle Length C = 74.0															

CAPACITY AND LOS WORKSHEET

Description	WB				NB				SB			
	LT	R	L	T	LT	R	L	T	LT	R	L	T
Lane group												
Adj. flow rate	164	119	12	1105	131	140	807					
Satflow rate	1814	1615	1805	1900	1615	1805	1895					
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0					
Green ratio	0.14	0.14	0.05	0.65	0.65	0.14	0.73					
Lane group cap.	245	218	98	1232	1048	244	1383					
v/c ratio	0.67	0.55	0.12	0.90	0.13	0.57	0.58					
Flow ratio	0.09	0.07	0.01	0.58	0.08	0.08	0.43					
Crit. lane group	Y	N	N	Y	Y	N	Y	N	Y	Y	N	N
Sum flow ratios	0.75											
Lost time/cycle	6.00											
Critical v/c ratio	0.82											
Control delay	19.1											
Approach delay	11.4											
Approach LOS	B											
Interec. delay	19.1											
Interec. LOS	B											

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HCS2000™ DETAILED REPORT

General Information		Signal Control		Area Type		Jurisdiction		Analysis Year		Project ID	
Analyst	PJR	Intersection	Case 2.2pm	Area Type	All other areas	Jurisdiction		Analysis Year	2005	Project ID	
Agency or Co.	Philip Rowell and Associates	Area Type		Jurisdiction		Analysis Year		Project ID			
Date Performed	9/4/2002	Area Type		Jurisdiction		Analysis Year		Project ID			
Time Period	AM Peak Hour	Area Type		Jurisdiction		Analysis Year		Project ID			
Volume and Timing		Area Type		Jurisdiction		Analysis Year		Project ID			
Number of lanes, N _i	1	0	1	0	0	1	2	0	0	2	1
Lane group	L	R	L	T	L	T	R	L	T	R	
Volume, V (vph)	300	56	65	942	876	264	0	0	0	0	0
% Heavy vehicles, %HV	0	0	0	0	0	0	0	0	0	0	0
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Prelimed (P) or actuated (A)	P	P	P	P	P	P	P	P	P	P	P
Start-up lost time, l _s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of effective green, e	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type, AT	3	3	3	3	3	3	3	3	3	3	3
Unit extension, UE	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Filtrate/metering, I	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Initial unmet demand, O _b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR volumes	0	0	0	0	0	0	0	0	0	0	0
Lane width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking / Grade / Parking	N	0	N	N	N	0	N	0	N	0	N
Parking maneuvers, N _m											
Buses stopping, N _b											
Min. time for pedestrians, G _p	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Phasing	EB Only	02	03	04	NB Only	Thru & RT	07	08			
Timing	G = 17.0	G = 17.0	G = 17.0	G = 17.0	G = 17.0	G = 17.0	G = 17.0	G = 17.0	G = 17.0	G = 17.0	G = 17.0
Duration of Analysis, T = 0.25	Y = 3	Y = 3	Y = 3	Y = 3	Y = 3	Y = 3	Y = 3	Y = 3	Y = 3	Y = 3	Y = 3
Cycle Length, C = 56.0	Y = 3	Y = 3	Y = 3	Y = 3	Y = 3	Y = 3	Y = 3	Y = 3	Y = 3	Y = 3	Y = 3
Adjusted flow rate, v	353	66	76	1108	1031	246					
Lane group capacity, c	548	490	161	2127	1605	808					
v/c ratio, X	0.64	0.13	0.47	0.52	0.57	0.30					
Total green ratio, g/C	0.30	0.30	0.09	0.59	0.50	0.50					
Uniform delay, d ₁	16.9	14.2	24.2	6.8	9.8	8.3					

CAPACITY AND LOS WORKSHEET

Project Description	Towne Development Kihal Parcels Case2.2pm											
	EB			WB			NB			SB		
	L	R	T	L	R	T	L	R	T	L	R	T
Lane group	353	66	1031	76	1108	1031	246					
Adj. flow rate	1805	1615	3510	1805	3610	3510	1615					
Satflow rate	2.0	2.0	2.0	2.0	2.0	2.0	2.0					
Lost time	0.30	0.30	0.50	0.09	0.59	0.50	0.50					
Green ratio	0.64	0.13	0.47	0.47	0.52	0.57	0.30					
Lane group cap.	548	490	1805	161	2127	1805	808					
v/c ratio	0.20	0.04	0.04	0.04	0.31	0.29	0.15					
Flow ratio	Y	N	N	Y	N	Y	N					
Crit. lane group												
Sum flow ratios	0.52											
Lost time/cycle	6.00											
Critical v/c ratio	0.59											
Control delay	11.7											
Approach delay	21.4											
Approach LOS	C											
Intersec. delay	11.7											
Intersec. LOS	B											

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	PJR	Intersection	Case2.3pm
Agency/Co.	Phillip Rowell and Associates	Jurisdiction	2005
Date Performed	9/5/2002	Analysis Year	
Analysis Time Period	PM Peak Hour		
Project Description	Towne Development	North/South Street:	Kanakamal Road
East/West Street:	Kabil Alenu	Study Period (hrs):	0.25
Intersection Orientation:	East-West		
Vehicle Volume and LOS Information			
Major Street	Eastbound	Westbound	
Movement	L	T	R
Volume	41	246	34
Peak-Hour Factor, PHF	0.90	0.90	0.90
Hourly Flow Rate, HFR	45	273	37
Percent Heavy Vehicles	0		0
Median Type	Undivided		
RT Channelized	0		
Lanes	L	T	R
Configuration	L	T	R
Upstream Signal	L	T	R
Minor Street	Northbound	Southbound	
Movement	L	T	R
Volume	71	69	148
Peak-Hour Factor, PHF	0.90	0.90	0.90
Hourly Flow Rate, HFR	78	76	164
Percent Heavy Vehicles	0	0	0
Percent Grade (%)	0		
Flared Approach	N		
Storage	0		
RT Channelized	0		
Lanes	L	T	R
Configuration	L	T	R
Daily Queue and LOS Information			
Approach	EB	WB	Northbound
Movement	L	L	L
Lane Configuration	L	L	L
v (vph)	45	37	78
C (m) (vph)	1247	1262	304
v/c	0.04	0.03	0.25
95% queue length	0.11	0.09	1.00
Control Delay	8.0	7.9	20.9
LOS	A	A	C
Approach Delay			17.6
Approach LOS			C

TWO-WAY STOP CONTROL SUMMARY									
General Information					Site Information				
Analyst	PJR	Intersection	Case2.4pm						
Agency/Co.	Philip Rowell and Associates	Jurisdiction	2005						
Date Performed	9/5/2002	Analysis Year							
Analysis Time Period	PM Peak Hour								
Project Description	Towns Development								
East/West Street	Keelii Alanui Road	North/South Street	North-South Collector						
Intersection Orientation	East-West	Study Period (hrs)	0.25						
Vehicle Volumes and Adjustments									
Major Street	Eastbound		Westbound						
Movement	1	2	3	4	5	6			
	L	T	R	L	T	R			
Volume	0	235	24	19	261	0			
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80			
Hourly Flow Rate, HFR	0	293	29	23	326	0			
Percent Heavy Vehicles	0	--	--	0	--	--			
Median Type	Unshaded								
RT Channelized	0								
Lanes	0	1	1	1	1	1	0		
Configuration	T								
Upstream Signal	0								
Minor Street	Northbound		Southbound						
Movement	7	8	9	10	11	12			
	L	T	R	L	T	R			
Volume	18	0	19	0	0	0			
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80			
Hourly Flow Rate, HFR	22	0	23	0	0	0			
Percent Heavy Vehicles	0	0	0	0	0	0			
Percent Grade (%)	0								
Flared Approach	N								
Storage	0								
RT Channelized	0								
Lanes	1	0	1	0	0	0			
Configuration	L								
Delay Data									
Approach	WB		Northbound		Southbound				
Movement	1	4	7	8	9	10	11	12	
Lane Configuration	L	L	L	R	R	L	L	R	
v (vph)	23	1249	420	751					
C (m) (vph)	0.02	0.05	0.17	0.09					
95% queue length	0.06	0.17	14.0	9.9					
Control Delay	7.9	14.0	11.9	11.9					
LOS	A	B	B	A					
Approach Delay	--	--	--	--					
Approach LOS	--	--	--	B					

TWO-WAY STOP CONTROL SUMMARY									
General Information					Site Information				
Analyst	PJR	Intersection	Case2.5pm						
Agency/Co.	Philip Rowell and Associates	Jurisdiction	2005						
Date Performed	9/5/2002	Analysis Year							
Analysis Time Period	PM Peak Hour								
Project Description	Towns Development								
East/West Street	Keoneka Road	North/South Street	Punalu Highway						
Intersection Orientation	North-South	Study Period (hrs)	0.25						
Vehicle Volumes and Adjustments									
Major Street	Northbound		Westbound						
Movement	1	2	3	4	5	6			
	L	T	R	L	T	R			
Volume	58	897	0	0	715	159			
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80			
Hourly Flow Rate, HFR	72	1121	0	0	893	198			
Percent Heavy Vehicles	0	--	--	0	--	--			
Median Type	Raised curb								
RT Channelized	0								
Lanes	1	2	0	0	2	1			
Configuration	L								
Upstream Signal	0								
Minor Street	Westbound		Eastbound						
Movement	7	8	9	10	11	12			
	L	T	R	L	T	R			
Volume	0	0	0	97	0	61			
Peak-Hour Factor, PHF	0.25	0.80	0.80	0.80	0.80	0.80			
Hourly Flow Rate, HFR	0	0	0	121	0	76			
Percent Heavy Vehicles	0	0	0	0	0	0			
Percent Grade (%)	0								
Flared Approach	N								
Storage	0								
RT Channelized	0								
Lanes	0	0	0	1	0	1			
Configuration	L								
Delay Data									
Approach	SB		Westbound		Eastbound				
Movement	1	4	7	8	9	10	11	12	
Lane Configuration	L	L	L	R	L	L	L	R	
v (vph)	72	647							
C (m) (vph)	0.11	0.11							
95% queue length	0.37	0.37							
Control Delay	11.3	11.3							
LOS	B	B							
Approach Delay	--	--							
Approach LOS	--	--							

TWO-WAY STOP CONTROL SUMMARY									
General Information									
Analyst	PJR		Intersection		Case 2.6pm				
Agency/Co.	Philip Rowell and Associates		Jurisdiction		2005				
Date Performed	9/5/2002		Analysis Year						
Analysis Time Period	PM Peak Hour								
Project Description	Towne Development								
East/West Street	Keonekei Road		North/South Street		Kanakani Road				
Intersection Orientation	East-West		Study Period (hrs)		0.25				
Vehicle and Pedestrian Information									
Major Street	Eastbound		Westbound		Southbound				
Movement	1	2	3	4	5	6			
	L	T	R	L	T	R			
Volume	58	131	0	0	169	28			
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.25	0.80	0.80			
Hourly Flow Rate, HFR	72	163	0	0	235	34			
Percent Heavy Vehicles	0								
Median Type	Undivided								
RT Channelized	0								
Lanes	0	1	0	0	1	0			
Configuration	LT								
Upstream Signal	0								
Minor Street	Northbound		Southbound		Eastbound				
Movement	7	8	9	10	11	12			
	L	T	R	L	T	R			
Volume	0	0	0	28	0	37			
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80			
Hourly Flow Rate, HFR	0	0	0	34	0	46			
Percent Heavy Vehicles	0	0	0	0	0	0			
Percent Grade (%)	0								
Flared Approach	N								
Storage	0								
RT Channelized	0								
Lanes	0	0	0	0	0	0			
Configuration	LR								
Delay and LOS									
Approach	EB	WB	Northbound		Southbound				
Movement	1	4	7	8	9	10	11	12	
Lane Configuration	LT				LR				
v (vph)	72				80				
C (m) (vph)	1305				610				
v/c	0.06				0.13				
95% queue length	0.17				0.45				
Control Delay	7.9				11.8				
LOS	A				B				
Approach Delay									
Approach LOS									B

TWO-WAY STOP CONTROL SUMMARY									
General Information									
Analyst	PJR		Intersection		Case 2.7pm				
Agency/Co.	Philip Rowell and Associates		Jurisdiction		2005				
Date Performed	9/5/2002		Analysis Year						
Analysis Time Period	PM Peak Hour								
Project Description	Towne Development								
East/West Street	Keonekei Road		North/South Street		S. Kihel Road				
Intersection Orientation	North-South		Study Period (hrs)		0.25				
Vehicle and Pedestrian Information									
Major Street	Northbound		Southbound		Eastbound				
Movement	1	2	3	4	5	6			
	L	T	R	L	T	R			
Volume	0	611	71	141	603	0			
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80			
Hourly Flow Rate, HFR	0	763	88	176	753	0			
Percent Heavy Vehicles	0								
Median Type	Undivided								
RT Channelized	0								
Lanes	0	1	0	1	1	0			
Configuration	TR								
Upstream Signal	0								
Minor Street	Westbound		Eastbound		Westbound				
Movement	7	8	9	10	11	12			
	L	T	R	L	T	R			
Volume	72	0	126	0	0	0			
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80			
Hourly Flow Rate, HFR	89	0	157	0	0	0			
Percent Heavy Vehicles	0	0	0	0	0	0			
Percent Grade (%)	0								
Flared Approach	N								
Storage	0								
RT Channelized	0								
Lanes	1	0	1	0	0	0			
Configuration	LR								
Delay and LOS									
Approach	NB	SB	Westbound		Eastbound				
Movement	1	4	7	8	9	10	11	12	
Lane Configuration	L	L	L	R	R				
v (vph)	176	89	261	157	770				
C (m) (vph)	796	261	1305	770	1305				
v/c	0.22	0.34	0.13	0.20	0.13				
95% queue length	0.84	1.45	0.45	0.76	0.45				
Control Delay	10.8	25.8	11.8	10.9	11.8				
LOS	B	D	B	B	B				
Approach Delay				16.3					
Approach LOS				C					

TWO-WAY STOP CONTROL SUMMARY

Analyst: PJR Agency/Co.: Philip Rowell and Associates Date Performed: 9/5/2002 Analysis Time Period: PM Peak Hour Project Description: Towns Development East/West Street: Walrus Place Intersection Orientation: North-South Intersection: North-South Collector Study Period (hrs): 0.25 Case: 2.11pm Analysis Year: 2005						
Major Street: Northbound Southbound						
Movement	1 2 3 4 5 6					
	L T R L L T R					
Volume	0 0 0 24 0 27					
Peak-Hour Factor, PHF	0.80 0.80 0.80 0.80 0.80 0.80					
Hourly Flow Rate, HFR	0 0 0 29 0 33					
Percent Heavy Vehicles	0 0 0 0 0 0					
Median Type	Undivided					
RT Channelized	0 0 0 0 0 0					
Lanes	1 1 0 1 1 0					
Configuration	L TR L L TR					
Upstream Signal	0 0 0 0 0 0					
Minor Street	Westbound Eastbound					
Movement	7 8 9 10 11 12					
	L T R L L T R					
Volume	0 0 14 24 0 1					
Peak-Hour Factor, PHF	0.80 0.80 0.80 0.80 0.80 0.80					
Hourly Flow Rate, HFR	0 0 17 29 0 1					
Percent Heavy Vehicles	0 0 0 0 0 0					
Percent Grade (%)	0 0 0 0 0 0					
Flared Approach	N N N N N N					
Storage	0 0 0 0 0 0					
RT Channelized	0 0 0 0 0 0					
Lanes	1 1 0 1 1 0					
Configuration	L TR L L TR					
Approach: NB SB Westbound Eastbound						
Movement	1 4 7 8 9 10 11 12					
	L L L L TR L L TR					
Lane Configuration	0 29 0 17 29 0 1					
v (vph)	1592 1636 907 1091 884 1069					
C (m) (vph)	0.00 0.02 0.00 0.02 0.03 0.00					
v/c	0.00 0.05 0.00 0.05 0.10 0.00					
95% queue length	7.3 7.2 9.0 8.4 9.2 8.4					
Control Delay	A A A A A A					
LOS	A A A A A A					
Approach Delay	8.4 9.2					
Approach LOS	A A					

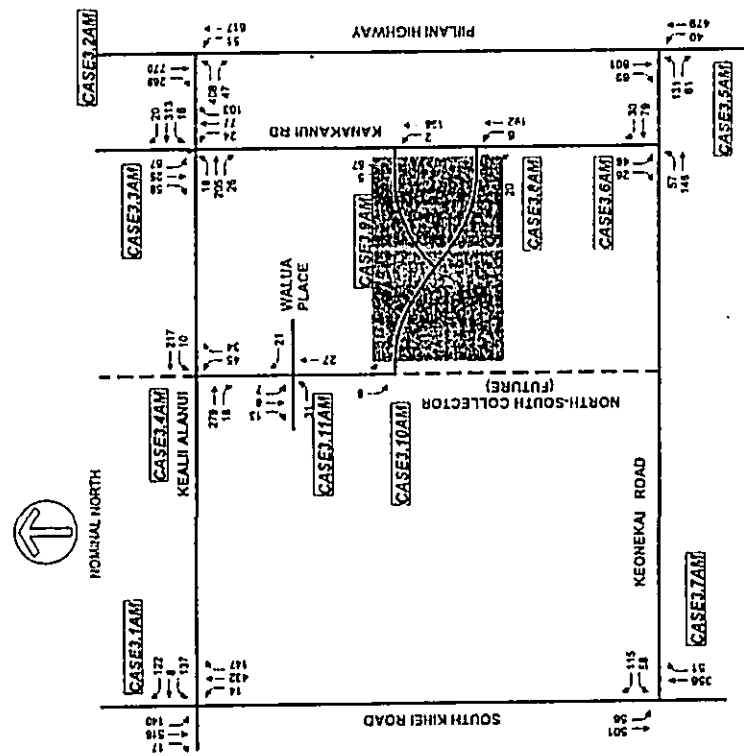


Figure 10
2005 CUMULATIVE PLUS PROJECT
AM PEAK HOUR TRAFFIC PROJECTIONS

APPENDIX C
LEVEL-OF-SERVICE CALCULATION WORKSHEETS
FOR CUMULATIVE PLUS PROJECT CONDITIONS

INPUT WORKSHEET

Analyst: PJR Agency or Co.: Philip Rowell and Associates Date Performed: 9/4/2002 Time Period: AM Peak Hour	Intersection: Case 3, 1am Area Type: All other areas Jurisdiction: 2005 Case 5 Analysis Year: 2005 Case 5	<p style="text-align: center;">Grade = 0 Shoe North Arrow</p>
Project Description: Towne Development Kihel Parcels Case 3, 1am		

Volume (vph)	EB	WB	NB	SB
% Heavy veh	137	8	122	14
PHF	0.94	0.97	0.97	0.95
Actuated (PIA)	P	P	P	P
Startup lost time	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0	2.0	2.0
Arrival type	3	3	3	3
Unit Extension	3.0	3.0	3.0	3.0
Pad/Bike/RTOR Volume	0	25	0	44
Lane Width	12.0	12.0	12.0	12.0
Parking (Y or N)	N	N	N	N
Bus stops/hr				
	0	0	0	0
WB Only	02	03	04	07
G = 13.0	G =	G = 9.0	G = 42.0	G =
Y = 3	Y =	Y = 0	Y = 3	Y =
Duration of Analysis (hrs) = 0.25				Cycle Length C = 70.0

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CAPACITY AND LOS WORKSHEET

Project Description: Towne Development Kihel Parcels Case 3, 1am Capacity Analysis							
Lane group: EB							
Adj. flow rate	157	100	34	457	105	155	589
Southflow rate	1816	1615	1805	1900	1615	1805	1890
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Green ratio	0.19	0.19	0.13	0.60	0.60	0.13	0.60
Lane group cap.	337	300	232	1140	989	232	1134
v/c ratio	0.47	0.33	0.15	0.40	0.11	0.67	0.52
Flow ratio	0.09	0.06	0.02	0.24	0.07	0.09	0.31
Crit. lane group	N	Y	N	N	N	Y	Y
Sum flow ratios	0.48						
Lost time/cycle	6.00						
Critical v/c ratio	0.53						
Lane Group Capacity Control Delay and LOS Determination							
EB							
Lane group	LT	R	L	T	R	L	TR
Adj. flow rate	157	100	34	457	105	155	589
Lane group cap.	337	300	232	1140	989	232	1134
v/c ratio	0.47	0.33	0.15	0.40	0.11	0.67	0.52
Green ratio	0.19	0.19	0.13	0.60	0.60	0.13	0.60
Unif. delay d1	25.4	24.7	27.1	7.4	6.0	28.1	8.1
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Incarn. delay d2	4.6	3.0	1.3	1.1	0.2	14.3	1.7
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Control delay	30.0	27.7	28.4	8.4	6.2	43.3	9.8
Lane group LOS	C	C	C	A	A	D	A
Approach delay	29.1						
Approach LOS	C						
Intersection LOS	A						
Intersec. delay	15.9						

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INPUT WORKSHEET

General Information		Site Information	
Analyst: PJR	Intersection: Case 3.2am	Area Type: All other areas	Justification: 2005
Agency or Co.: Philip Rowell and Associates	Date Performed: 9/4/2002	Analysis Year: 2005	
Time Period: AM Peak Hour	Project Description: Towne Development Kheel Parcels Case 3.2am		

Grids = 0

Grids = 0

Grids = 0

Grids = 0

Site Information		Site Information	
Volume (vph)	408	51	617
% Heavy Veh	0	0	0
PHF	0.85	0.85	0.85
Actuated (P/A)	P	P	P
Startup lost time	2.0	2.0	2.0
Ext. eff. green	2.0	2.0	2.0
Arrival type	3	3	3
Unit Extension	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0	0	0
Lane Width	12.0	12.0	12.0
Parking (Y or N)	N	N	N
Parking/hr	0	0	0
Bus stops/hr	0	0	0
EB Only 02 03 04 NB Only Thu & RT 07 08		G = 18.0 G = 5.0 G = 18.0 G =	
Y = 3 Y = Y = 0 Y = 3 Y =		Y = 3 Y = Y =	
Duration of Analysis (hrs) = 0.25 Cycle Length C = 47.0			

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CAPACITY AND LOS WORKSHEET

General Information		Site Information	
Project Description: Towne Development Kheel Parcels Case 3.2am			
Capacity Analysis			
Lane group	L	R	WB
Adj. flow rate	480	55	60
Satflow rate	1805	1615	1805
Lost time	2.0	2.0	2.0
Green ratio	0.38	0.38	0.49
Lane group cap.	691	619	192
v/c ratio	0.69	0.09	0.31
Flow ratio	0.27	0.03	0.03
Crit. lane group	Y	N	N
Sum flow ratios	0.55		
Lost time/cycle	6.00		
Critical v/c ratio	0.63		
Lane Group Capacity/Control Delay and LOS Determination			
Lane group	L	R	WB
Adj. flow rate	480	55	60
Lane group cap.	691	619	192
v/c ratio	0.69	0.09	0.31
Green ratio	0.38	0.38	0.49
Unit. delay d1	12.2	9.3	19.4
Delay factor k	0.50	0.50	0.50
Increment. delay d2	5.7	0.3	4.2
P.F. factor	1.000	1.000	1.000
Control delay	17.9	9.5	23.6
Lane group LOS	B	A	C
Approach delay	17.0		
Approach LOS	B		
Intersec. delay	13.2		
Intersection LOS			
B			

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TWO-WAY STOP CONTROL SUMMARY											
General Information			Site Information								
Analyst	PJR	Intersection	Case 03.3m								
Agency/Co.	Philip Rowell and Associates	Jurisdiction	2005								
Date Performed	8/5/2002	Analysis Year									
Analyst Time Period	AM Peak Hour										
Project Description	Towne Development										
East/West Street	Keali Alanui Road	North/South Street	Kanakani Road								
Intersection Orientation	East-West	Study Period (hrs)	0.25								
Vehicle Volume and Classification											
Major Street	Eastbound			Westbound							
Movement	1	2	3	4	5	6					
Volume	18	205	26	16	313	20					
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90					
Hourly Flow Rate, HFR	20	227	28	17	347	22					
Percent Heavy Vehicles	0	--	--	0	--	--					
Median Type	Undivided										
RT Channelized	0										
Lanes	1	2	0	1	2	0					
Configuration	L	T	TR	L	T	TR					
Upstream Signal	0										
Minor Street	Northbound			Southbound							
Movement	7	8	9	10	11	12					
Volume	24	77	103	57	25	58					
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90					
Hourly Flow Rate, HFR	26	85	114	63	27	64					
Percent Heavy Vehicles	0	0	0	0	0	0					
Percent Grade (%)	0										
Flared Approach	N										
Storage	0										
RT Channelized	0										
Lanes	1	1	0	1	1	0					
Configuration	L	L	TR	L	L	TR					
Delay and LOS											
Approach	EB	WB	Northbound			Southbound					
Movement	1	4	7	8	9	10	11	12			
Lane Configuration	L	L	L	L	TR	L	L	TR			
v (vph)	20	17	26	199	63	91					
C (m) (vph)	1201	1322	390	553	278	600					
v/c	0.02	0.01	0.07	0.36	0.23	0.15					
95% queue length	0.05	0.04	0.21	1.63	0.85	0.53					
Control Delay	8.0	7.8	14.9	15.1	21.7	12.1					
LOS	A	A	B	C	C	C					
Approach Delay	--	--	15.1			16.0					
Approach LOS	--	--	C			C					

TWO-WAY STOP CONTROL SUMMARY											
General Information			Site Information								
Analyst	PJR	Intersection	Case 03.4m								
Agency/Co.	Philip Rowell and Associates	Jurisdiction	2005								
Date Performed	9/5/2002	Analysis Year									
Analyst Time Period	AM Peak Hour										
Project Description	Towne Development										
East/West Street	Keali Alanui Road	North/South Street	North-South Collector								
Intersection Orientation	East-West	Study Period (hrs)	0.25								
Vehicle Volume and Classification											
Major Street	Eastbound			Westbound							
Movement	1	2	3	4	5	6					
Volume	0	279	18	10	217	0					
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80					
Hourly Flow Rate, HFR	0	348	22	12	271	0					
Percent Heavy Vehicles	0	--	--	0	--	--					
Median Type	Undivided										
RT Channelized	0										
Lanes	0	1	1	1	1	0					
Configuration	L	T	R	L	T	R					
Upstream Signal	0										
Minor Street	Northbound			Southbound							
Movement	7	8	9	10	11	12					
Volume	45	0	34	0	0	0					
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80					
Hourly Flow Rate, HFR	56	0	42	0	0	0					
Percent Heavy Vehicles	0	0	0	0	0	0					
Percent Grade (%)	0										
Flared Approach	N										
Storage	0										
RT Channelized	0										
Lanes	1	0	1	0	0	0					
Configuration	L	L	R	L	L	R					
Delay and LOS											
Approach	EB	WB	Northbound			Southbound					
Movement	1	4	7	8	9	10	11	12			
Lane Configuration	L	L	L	L	R	L	L	R			
v (vph)	1200	0.01	437	56	42	700					
C (m) (vph)	0.01	0.03	0.13	0.06	0.06	0.06					
95% queue length	0.03	0.03	0.44	0.19	0.19	0.19					
Control Delay	8.0	8.0	14.4	10.5	10.5	10.5					
LOS	A	A	B	B	B	B					
Approach Delay	--	--	12.7			B					
Approach LOS	--	--	B			B					

TWO-WAY STOP CONTROL SUMMARY												
General Information			Site Information									
Analyst	PJR	Philip Rowell and Associates	Case#	3.5m								
Agency/Co.	Philip Rowell and Associates		Intersection Jurisdiction									
Date Performed	9/5/2002		Analysis Year	2005								
Analysis Time Period	AM Peak Hour											
Project Description	Towne Development											
East/West Street	Keonokal Road		North/South Street	Pillar Highway								
Intersection Orientation	North-South		Study Period (hrs)	0.25								
Vehicle/Approach Information			Approach Information									
Major Street	Keonokal Road		Northbound					Westbound				
Movement	1	2	3	4	5	6	7	8	9	10	11	12
	L	T	R	L	T	R	L	T	L	T	R	R
Volume	40	479	0	0	801	69						
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80						
Hourly Flow Rate, HFR	49	598	0	0	1001	85						
Percent Heavy Vehicles	0											
Median Type	Raised curb											
RT Channelized	0											
Lanes	1	2	0	0	2	1						
Configuration	L	T	T		T	R						
Upstream Signal	0											
Minor Street			Westbound				Eastbound					
Movement	7	8	9	10	11	12						
	L	T	R	L	T	R						
Volume	0	0	0	131	0	61						
Peak-Hour Factor, PHF	0.25	0.80	0.80	0.80	0.80	0.80						
Hourly Flow Rate, HFR	0	0	0	163	0	76						
Percent Heavy Vehicles	0	0	0	0	0	0						
Percent Grade (%)	0											
Flared Approach	N											
Storage	0											
RT Channelized	0											
Lanes	0	0	0	1	0	1						
Configuration	L											
Approach			Westbound				Eastbound					
Movement	1	4	7	8	9	10	11	12				
	L	L	L	L	L	L	L	R				
v (vph)	49	76			163			76				
C (m) (vph)	649	285			285			522				
v/c	0.08	0.57			0.57			0.15				
95% queue length	0.24	3.30			3.30			0.51				
Control Delay	11.0	33.2			33.2			13.1				
LOS	B	D			D			B				
Approach Delay								26.8				
Approach LOS								D				

TWO-WAY STOP CONTROL SUMMARY												
General Information			Site Information									
Analyst	PJR	Philip Rowell and Associates	Case#	3.6m								
Agency/Co.	Philip Rowell and Associates		Intersection Jurisdiction									
Date Performed	9/5/2002		Analysis Year	2005								
Analysis Time Period	AM Peak Hour											
Project Description	Towne Development											
East/West Street	Keonokal Road		North/South Street	Kanakamal Road								
Intersection Orientation	East-West		Study Period (hrs)	0.25								
Vehicle/Approach Information			Approach Information									
Major Street	Keonokal Road		Northbound					Westbound				
Movement	1	2	3	4	5	6	7	8	9	10	11	12
	L	T	R	L	T	R	L	T	L	T	R	R
Volume	57	145	0	0	30	79						
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.25	0.80	0.80						
Hourly Flow Rate, HFR	71	181	0	0	37	98						
Percent Heavy Vehicles	0											
Median Type	Undivided											
RT Channelized	0											
Lanes	0	1	0	0	1	0						
Configuration	LT											TR
Upstream Signal	0											
Minor Street			Northbound				Southbound					
Movement	7	8	9	10	11	12						
	L	T	R	L	T	R						
Volume	0	0	0	46	0	26						
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80						
Hourly Flow Rate, HFR	0	0	0	57	0	32						
Percent Heavy Vehicles	0	0	0	0	0	0						
Percent Grade (%)	0											
Flared Approach	N											
Storage	0											
RT Channelized	0											
Lanes	0	0	0	0	0	0						
Configuration	LR											
Approach			Westbound				Southbound					
Movement	1	4	7	8	9	10	11	12				
	LT							LR				
v (vph)	71							89				
C (m) (vph)	1462							673				
v/c	0.05							0.13				
95% queue length	0.15							0.45				
Control Delay	7.6							11.2				
LOS	A							B				
Approach Delay								11.2				
Approach LOS								B				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	PJR	Intersection	Case 3.74m
Agency/Co.	Phillip Rowell and Associates	Jurisdiction	2005
Date Performed	9/5/2002	Analysis Year	
Analysis Time Period	AM Peak Hour		
Project Description	Towne Development		
East/West Street	Keonaka Road	North/South Street	S. Kihel Road
Intersection Orientation	North-South	Study Period (hrs)	0.25
Vehicle Volume and Assignment			
Major Street	Northbound		Southbound
Movement	1	2	3
	L	T	R
Volume	0	356	51
Peak-Hour Factor, PHF	0.80	0.80	0.80
Hourly Flow Rate, HFR	0	444	63
Percent Heavy Vehicles	0	--	--
Median Type	Undivided		
RT Channelized	0	1	0
Lanes	0	1	1
Configuration		TR	T
Upstream Signal	0		0
Minor Street			
	Westbound		Eastbound
Movement	7	8	9
	L	T	R
Volume	58	0	115
Peak-Hour Factor, PHF	0.80	0.80	0.80
Hourly Flow Rate, HFR	72	0	143
Percent Heavy Vehicles	0	0	0
Percent Grade (%)	0	0	0
Flared Approach	N		N
Storage	0		0
RT Channelized	0	0	0
Lanes	1	0	0
Configuration	L		R
Delay, Control and Level of Service			
Approach	NB	SB	Westbound
Movement	1	4	7
Lane Configuration	L	L	L
v (vph)	69	1068	479
C (m) (vph)	0.06	0.21	0.53
v/c	0.21	0.57	0.16
95% queue length	8.6	13.8	9.8
Control Delay	A	B	A
LOS	--	--	B
Approach Delay			11.2
Approach LOS			B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	PJR	Intersection	Case 3.88m
Agency/Co.	Phillip Rowell and Associates	Jurisdiction	2005
Date Performed	9/5/2002	Analysis Year	
Analysis Time Period	AM Peak Hour		
Project Description	Towne Development		
East/West Street	Drive A	North/South Street	Kanakaui Road
Intersection Orientation	North-South	Study Period (hrs)	0.25
Vehicle Volume and Assignment			
Major Street	Northbound		Southbound
Movement	1	2	3
	L	T	R
Volume	6	192	0
Peak-Hour Factor, PHF	0.80	0.80	0.80
Hourly Flow Rate, HFR	7	239	0
Percent Heavy Vehicles	0	--	--
Median Type	Undivided		
RT Channelized	1	1	0
Lanes	L	T	0
Configuration			TR
Upstream Signal	0		0
Minor Street			
	Westbound		Eastbound
Movement	7	8	9
	L	T	R
Volume	0	0	0
Peak-Hour Factor, PHF	0.80	0.80	0.80
Hourly Flow Rate, HFR	0	0	0
Percent Heavy Vehicles	0	0	0
Percent Grade (%)	0	0	0
Flared Approach	N		N
Storage	0		0
RT Channelized	0	0	0
Lanes	0	0	0
Configuration			LR
Delay, Control and Level of Service			
Approach	NB	SB	Westbound
Movement	1	4	7
Lane Configuration	L	L	L
v (vph)	1536	0.00	0.04
C (m) (vph)	0.01	7.4	0.12
v/c	0.01	7.4	0.12
95% queue length	A	A	A
Control Delay	--	--	9.3
LOS	--	--	A
Approach Delay			9.3
Approach LOS			A

TWO-WAY STOP CONTROL SUMMARY											
Site Information		Site Information		Site Information		Site Information		Site Information		Site Information	
Analyst	PJR	Intersection	North/South Street: Kanakanui Road	Case	3.9am	Agency/Co.	Philip Rowell and Associates	Analysis Year	2005	Case	3.9am
Date Performed	9/5/2002	Jurisdiction		Analysis Year	2005						
Analysis Time Period	AM Peak Hour										
Project Description	Towne Development										
East/West Street	Drive B										
Intersection Orientation	North-South										
Study Period (hrs)	0.25										
Major Street											
Movement	1	2	3	4	5	6					
	L	T	R	L	T	R					
Volume	2	198	0	0	57	5					
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80					
Hourly Flow Rate, HFR	2	247	0	0	71	6					
Percent Heavy Vehicles	0	--	--	0	--	--					
Median Type	Undivided										
RT Channelized	0										
Lanes	1	1	0	0	1	0					
Configuration	L	T				TR					
Upstream Signal	0										
Minor Street											
Movement	7	8	9	10	11	12					
	L	T	R	L	T	R					
Volume	0	0	0	8	0	5					
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80					
Hourly Flow Rate, HFR	0	0	0	9	0	6					
Percent Heavy Vehicles	0	0	0	0	0	0					
Percent Grade (%)	0										
Flared Approach	N										
Storage	0										
RT Channelized	0										
Lanes	0	0	0	0	0	0					
Configuration	LR										
Approach											
Approach	NB	SB	Westbound	Eastbound							
Movement	1	4	7	8	9	10	11	12			
Lane Configuration	L				LR	LR					
v (vph)	2				15						
C (m) (vph)	1535				772						
v/c	0.00				0.02						
95% queue length	0.00				0.06						
Control Delay	7.3				9.8						
LOS	A				A						
Approach Delay	--	--	--	--	9.8						
Approach LOS	--	--	--	--	A						

TWO-WAY STOP CONTROL SUMMARY											
Site Information		Site Information		Site Information		Site Information		Site Information		Site Information	
Analyst	PJR	Intersection	North/South Street: North-South Collector	Case	3.10am	Agency/Co.	Philip Rowell and Associates	Analysis Year	2005	Case	3.10am
Date Performed	9/5/2002	Jurisdiction		Analysis Year	2005						
Analysis Time Period	AM Peak Hour										
Project Description	Towne Development										
East/West Street	Drive C										
Intersection Orientation	North-South										
Study Period (hrs)	0.25										
Major Street											
Movement	1	2	3	4	5	6					
	L	T	R	L	T	R					
Volume	0	0	0	8	0	0					
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80					
Hourly Flow Rate, HFR	0	0	0	9	0	0					
Percent Heavy Vehicles	0	--	--	0	--	--					
Median Type	Undivided										
RT Channelized	0										
Lanes	0	0	0	1	0	0					
Configuration	L			L							
Upstream Signal	0										
Minor Street											
Movement	7	8	9	10	11	12					
	L	T	R	L	T	R					
Volume	0	0	0	8	0	0					
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80					
Hourly Flow Rate, HFR	0	0	0	9	0	0					
Percent Heavy Vehicles	0	0	0	0	0	0					
Percent Grade (%)	0										
Flared Approach	N										
Storage	0										
RT Channelized	0										
Lanes	0	0	1	0	0	0					
Configuration	R										
Approach											
Approach	NB	SB	Westbound	Eastbound							
Movement	1	4	7	8	9	10	11	12			
Lane Configuration	L				R	R					
v (vph)	9				0						
C (m) (vph)	1636				1091						
v/c	0.01				0.00						
95% queue length	0.02				0.00						
Control Delay	7.2				8.3						
LOS	A				A						
Approach Delay	--	--	--	--							
Approach LOS	--	--	--	--							

TWO-WAY STOP CONTROL SUMMARY

Project Information		Case3.11em				
Analyst	PUR	Intersection	Jurisdiction			
Philip Rowell and Associates	Case3.11em		2005			
Date Performed	9/5/2002	Analysis Year				
Analysis Time Period	AM Peak Hour					
Project Description	Towne Development					
East/West Street	Waluia Place					
North/South Street	North-South Collector					
Intersection Orientation	North-South					
Study Period (hrs)	0.25					
Major Street						
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	27	0	7	8	13
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80
Hourly Flow Rate, HFR	0	33	0	8	9	16
Percent Heavy Vehicles	0			0		
Median Type	Unfolded					
RT Channelized	0					
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal	0					
Minor Street						
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	21	31	0	1
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80
Hourly Flow Rate, HFR	0	0	26	38	0	1
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0					
Flared Approach	N					
Storage	0					
RT Channelized	0					
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Approach						
Approach	NB	SB	Westbound	Eastbound		
Movement	1	4	7	10		
Lane Configuration	L	L	L	TR		
v (vph)	0	8	0	25		
C (m) (vph)	1603	1592	927	1046		
v/c	0.00	0.01	0.00	0.02		
95% queue length	0.00	0.02	0.00	0.08		
Control Delay	7.2	7.3	8.9	8.5		
LOS	A	A	A	A		
Approach Delay	-	-	8.5	9.2		
Approach LOS	-	-	A	A		

Traffic Impact Assessment Report for Ke Ahi Kai II Subdivision, Keolu, Maui

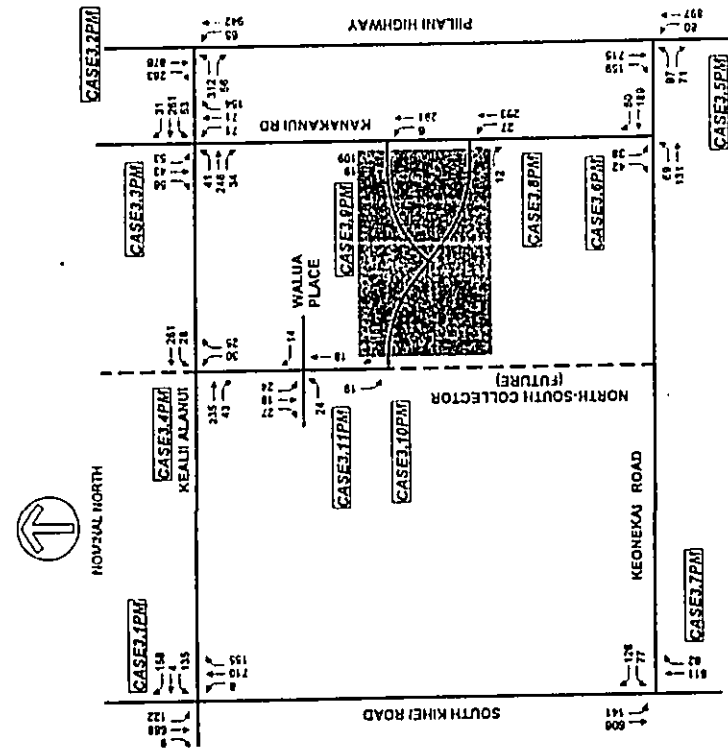


Figure 11
2005 CUMULATIVE PLUS PROJECT
PM PEAK HOUR TRAFFIC PROJECTIONS

INPUT WORKSHEET

Analyst PJR		Case 3.1pm	
Agency or Co. Philip Rowlett and Associates		Area Type All other areas	
Date Performed 8/4/2002		Jurisdiction 2005	
Time Period PM Peak Hour		Analysis Year 2005	
Project Description Towne Development Kihel Parcels Case 3.1pm			

Grade = 0

Grade = 0

Volume (vph)	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
135	4	158	8	710	155	122	688	9	0	0	0	0
% Heavy veh.	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.85	0.50	0.82	0.67	0.64	0.64	0.73	0.87	0.70	0.85	0.82	0.64
Actual (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	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	2.0	2.0
Arrival type	3	3	3	3	3	3	3	3	3	3	3	3
Unit Extension	0	0	0	0	0	0	0	0	0	0	0	0
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	N	N	N	N	N	N	N	N	N	N	N	N
Parking (Y or N)	N	N	N	N	N	N	N	N	N	N	N	N
Parking/ht												
Bus stops/ht												

WB Only	02	03	04	Excl. Left	SB Only	Thru & RT	08
G =	10.0	G = 0.0	G = 0.0	G = 4.0	G = 6.0	G = 48.0	G = 0.0
Y =	3	Y = 0	Y = 0	Y = 0	Y = 3	Y = 3	Y =

Duration of Analysis (hrs) = 0.25 Cycle Length C = 74.0

CAPACITY AND LOS WORKSHEET

General Information												
Project Description: Towne Development Kihel Parcels Case 3.1pm												
Capacity and LOS Data												
Lane group	EB	WB			NB			SB				
Adj. flow rate		LT	R	L	T	R	L	T	R	L	TR	
Satflow rate		167	131	12	1105	131	166	807				
Lost time		1814	1615	1805	1800	1615	1805	1895				
Green ratio		2.0	2.0	2.0	2.0	2.0	2.0	2.0				
Lane group cap.		0.14	0.14	0.05	0.65	0.65	0.14	0.73				
v/c ratio		245	218	98	1232	1048	244	1383				
Flow ratio		0.68	0.60	0.12	0.80	0.73	0.68	0.58				
Crit. lane group		0.09	0.08	0.01	0.58	0.08	0.09	0.43				
Sum flow ratios		Y	N	Y	Y	N	Y	N				
Lost time/cycle		0.77										
Critical v/c ratio		6.00										
Lane Group Capacity Control Delay Ratio		0.83										
Lane Group Capacity Control Delay Ratio Determination												
Lane group	EB	WB			NB			SB				
Adj. flow rate		LT	R	L	T	R	L	T	R	L	TR	
Lane group cap.		167	131	12	1105	131	166	807				
v/c ratio		245	218	98	1232	1048	244	1383				
Green ratio		0.68	0.60	0.12	0.90	0.13	0.68	0.58				
Unif. delay d1		0.14	0.14	0.05	0.65	0.65	0.14	0.73				
Delay factor k		30.5	30.1	33.3	10.9	5.0	30.5	4.7				
Unif. delay d2		0.50	0.50	0.50	0.50	0.50	0.50	0.50				
Incremental delay d2		14.3	11.7	2.5	10.4	0.2	14.3	1.8				
PF factor		1.000	1.000	1.000	1.000	1.000	1.000	1.000				
Control delay		44.8	41.8	35.9	21.3	5.2	44.8	6.5				
Lane group LOS		D	D	D	C	A	D	A				
Approach delay		43.5										
Approach LOS		D										
Intersection LOS		Intersection LOS										
Intersec. delay		20.0										

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INPUT WORKSHEET

General Information Agency of Co. Philipp Rowell and Associates Date Performed 9/4/2002 Time Period AM Peak Hour		Project Description Towne Development Kihel Parcels Case3.2pm Case3.2pm All other areas 2005	
Intersection Area Type All other areas Jurisdiction 2005 Analysis Year 2005		Grade 1 2 0 1 2 0 1 2 0 1 2 0	

Star North Arrow

Grade = 0

Grade = 0

Volume (vph)	LT	TH	RT	WB	TH	RT	LT	TH	RT	SB
% Heavy veh	0	0	0	65	942	0	0	0	0	876
PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Actuated (P/A)	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	0	0	0	0	0	0	0	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	N	N
Parkinghr										
Bus stops/hr	0	0	0	0	0	0	0	0	0	0

EB Only	02	03	04	MB Only	Thru & RT	07	08
G =	17.0	G =	5.0	G =	28.0	G =	0
Y =	3	Y =	0	Y =	3	Y =	0

Duration of Analysis (hrs) = 0.25 Cycle Length C = 56.0

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CAPACITY AND LOS WORKSHEET

General Information Project Description Towne Development Kihel Parcels Case3.2pm											
Capacity Analysis											
Lane group	EB		WB		NB		SB				
	L	R	L	R	L	R	L	R	T	R	
Adj. flow rate	367	66	76	1108	1805	1615	1031	268			
Satflow rate	1805	1615	1805	3610	1805	1615	3610	1615			
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0			
Green ratio	0.30	0.30	0.09	0.59	0.30	0.30	0.50	0.50			
Lane group cap.	548	490	161	2127	1805	808	1805	808			
v/c ratio	0.67	0.13	0.47	0.52	0.47	0.33	0.57	0.33			
Flow ratio	0.20	0.04	0.04	0.31	0.29	0.17	0.29	0.17			
Crit. lane group	Y	N	Y	N	Y	N	Y	N			
Sum flow ratios	0.53		0.59		0.59		0.59				
Lost time/cycle	6.00		6.00		6.00		6.00				
Critical v/c ratio	0.53		0.59		0.59		0.59				
Lane Group Capacity Control Delay and LOS Determination											
Lane group	EB		WB		NB		SB				
	L	R	L	R	L	R	L	R	T	R	
Adj. flow rate	367	66	76	1109	1805	1615	1031	268			
Lane group cap.	548	490	161	2127	1805	808	1805	808			
v/c ratio	0.67	0.13	0.47	0.52	0.47	0.33	0.57	0.33			
Green ratio	0.30	0.30	0.09	0.59	0.30	0.30	0.50	0.50			
Unif. delay d1	17.0	14.2	24.2	6.8	24.2	6.8	9.6	8.4			
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50			
Incram. delay d2	6.4	0.6	6.5	0.9	6.5	0.9	1.3	1.1			
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Control delay	23.4	14.7	33.9	7.7	33.9	7.7	11.1	9.5			
Lane group LOS	C	B	C	A	C	A	B	A			
Approch. delay	22.1		9.4		9.4		10.8				
Approach LOS	C		A		A		B				
Intersec. delay	11.9		Intersection LOS		Intersection LOS		B				

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TWO-WAY STOP CONTROL SUMMARY									
General Information					Site Information				
Analyst	PJR	Intersection	Case 3.3pm						
Agency/Co.	Phillip Rowell and Associates	Jurisdiction	2005						
Date Performed	9/5/2002	Analysis Year							
Analysis Time Period	PM Peak Hour								
Project Description: Towne Development									
East/West Street: Keali Alanui Road					North/South Street: Kananani Road				
Intersection Orientation: East-West					Study Period (hrs): 0.25				
Vehicle Volume and Assignment									
Major Street	Eastbound			Westbound					
Movement	1	2	3	4	5	6			
	L	T	R	L	T	R			
Volume	40	246	41	53	261	31			
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90			
Hourly Flow Rate, HFR	44	273	45	58	289	34			
Percent Heavy Vehicles	0								
Median Type	Undivided								
RT Channelized	0								
Lanes	1	2	0	1	2	0			
Configuration	L	T	TR	L	T	TR			
Upstream Signal	0								
Minor Street	Northbound			Southbound					
Movement	7	8	9	10	11	12			
	L	T	R	L	T	R			
Volume	71	71	154	53	43	36			
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90			
Hourly Flow Rate, HFR	78	78	171	58	47	40			
Percent Heavy Vehicles	0	0	0	0	0	0			
Percent Grade (%)	0								
Flared Approach	N								
Storage	0								
RT Channelized	0								
Lanes	1	1	0	1	1	0			
Configuration	L	L	TR	L	L	TR			
Delay Metrics and Performance									
Approach	EB	WB	Northbound			Southbound			
Movement	1	4	7	8	9	10	11	12	
Lane Configuration	L	L	L	L	TR	L	L	TR	
v (vph)	44	58	78	249	58	87	87	87	
C (m) (vph)	1247	1253	272	528	201	409	409	409	
v/c	0.04	0.05	0.29	0.47	0.29	0.21	0.21	0.21	
95% queue length	0.11	0.15	1.15	2.50	1.14	0.79	0.79	0.79	
Control Delay	8.0	8.0	23.5	17.8	30.0	16.2	16.2	16.2	
LOS	A	A	C	C	D	C	C	C	
Approach Delay	19.1								
Approach LOS	C								

TWO-WAY STOP CONTROL SUMMARY									
General Information					Site Information				
Analyst	PJR	Intersection	Case 3.4pm						
Agency/Co.	Phillip Rowell and Associates	Jurisdiction	2005						
Date Performed	9/5/2002	Analysis Year							
Analysis Time Period	PM Peak Hour								
Project Description: Towne Development									
East/West Street: Keali Alanui Road					North/South Street: North-South Collector				
Intersection Orientation: East-West					Study Period (hrs): 0.25				
Vehicle Volume and Assignment									
Major Street	Eastbound			Westbound					
Movement	1	2	3	4	5	6			
	L	T	R	L	T	R			
Volume	0	235	43	28	261	0			
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80			
Hourly Flow Rate, HFR	0	293	53	34	326	0			
Percent Heavy Vehicles	0								
Median Type	Undivided								
RT Channelized	0								
Lanes	0	1	1	1	1	0			
Configuration	L	T	R	L	T	R			
Upstream Signal	0								
Minor Street	Northbound			Southbound					
Movement	7	8	9	10	11	12			
	L	T	R	L	T	R			
Volume	30	0	25	0	0	0			
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80			
Hourly Flow Rate, HFR	37	0	31	0	0	0			
Percent Heavy Vehicles	0	0	0	0	0	0			
Percent Grade (%)	0								
Flared Approach	N								
Storage	0								
RT Channelized	0								
Lanes	1	0	1	0	0	0			
Configuration	L	L	R	L	L	R			
Delay Metrics and Performance									
Approach	EB	WB	Northbound			Southbound			
Movement	1	4	7	8	9	10	11	12	
Lane Configuration	L	L	L	L	R	L	L	R	
v (vph)	34	34	37	31	31	31	31	31	
C (m) (vph)	1224	1224	404	404	751	751	751	751	
v/c	0.03	0.03	0.09	0.09	0.04	0.04	0.04	0.04	
95% queue length	0.09	0.09	0.30	0.13	0.13	0.13	0.13	0.13	
Control Delay	8.0	8.0	14.8	10.0	10.0	10.0	10.0	10.0	
LOS	A	A	B	B	A	A	A	A	
Approach Delay	12.6								
Approach LOS	B								

TWO-WAY STOP CONTROL SUMMARY											
General Information						Site Information					
Analyst	PJR	Phillip Rowell and Associates	Case 2.5pm	2005							
Agency/Co.	Phillip Rowell and Associates	9/5/2002	Case 2.5pm	2005							
Date Performed	9/5/2002	PM Peak Hour									
Analysis Time Period	PM Peak Hour										
Project Description	Towne Development										
East/West Street	Keoneka Road	North/South Street	Puian 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					
Volume	L	T	R	L	T	R					
Peak-Hour Factor, PHF	80	897	0	0	715	159					
Hourly Flow Rate, HFR	0.80	0.80	0.80	0.80	0.80	0.80					
Percent Heavy Vehicles	99	1121	0	0	893	198					
Median Type	--						Raised curb				
RT Channelized	0						0				
Lanes	1	2	0	0	2	1					
Configuration	L	T	T	T	T	R					
Upstream Signal	0										
Minor Street	Westbound			Eastbound							
Movement	7	8	9	10	11	12					
Volume	L	T	R	L	T	R					
Peak-Hour Factor, PHF	0.25	0.80	0.80	0.80	0.80	0.80					
Hourly Flow Rate, HFR	0	0	0	121	0	88					
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	0	0	1	0	1					
Configuration	0						L				
Data Queue Lengths and Delays											
Approach	NB	SB	Westbound			Eastbound					
Movement	1	4	7	8	10	11	12				
Lane Configuration	L	L	L	L	L	L	R				
v (vph)	89	121	255	0.47	2.37	31.2	12.5				
C (m) (vph)	647	0.15	0.54	11.6	8	23.4	C				
v/c	0.15	0.54	11.6	8	23.4	C					
95% queue length	11.6	8	23.4	C							
Control Delay	11.6	8	23.4	C							
LOS	B	B	D	D	D	B					
Approach Delay	--	--	--	--	23.4	C					
Approach LOS	--	--	--	--	C						

TWO-WAY STOP CONTROL SUMMARY											
General Information						Site Information					
Analyst	PJR	Phillip Rowell and Associates	Case 3.6pm	2005							
Agency/Co.	Phillip Rowell and Associates	9/5/2002	Case 3.6pm	2005							
Date Performed	9/5/2002	PM Peak Hour									
Analysis Time Period	PM Peak Hour										
Project Description	Towne Development										
East/West Street	Keoneka Road	North/South Street	Kanakani Road								
Intersection Orientation	East-West	Study Period (hrs)	0.25								
Vehicle Volumes and Adjustments											
Major Street	Eastbound			Westbound							
Movement	1	2	3	4	5	6					
Volume	L	T	R	L	T	R					
Peak-Hour Factor, PHF	69	131	0	0	189	50					
Hourly Flow Rate, HFR	0.80	0.80	0.80	0.25	0.80	0.80					
Percent Heavy Vehicles	85	163	0	0	236	62					
Median Type	0						Undivided				
RT Channelized	0						0				
Lanes	0	1	0	0	1	0					
Configuration	LT	T	T	T	T	TR					
Upstream Signal	0										
Minor Street	Northbound			Southbound							
Movement	7	8	9	10	11	12					
Volume	L	T	R	L	T	R					
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80					
Hourly Flow Rate, HFR	0	0	0	47	0	52					
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	0	0	0	0	0					
Configuration	0						LR				
Data Queue Lengths and Delays											
Approach	EB	WB	Northbound			Southbound					
Movement	1	4	7	8	9	10	11	12			
Lane Configuration	LT	L	L	L	L	L	LR	LR			
v (vph)	86	1275	0.07	0.22	6.0	12.7	12.7	12.7			
C (m) (vph)	647	0.15	0.54	11.6	8	23.4	C				
v/c	0.15	0.54	11.6	8	23.4	C					
95% queue length	11.6	8	23.4	C							
Control Delay	11.6	8	23.4	C							
LOS	B	B	D	D	D	B					
Approach Delay	--	--	--	--	23.4	C					
Approach LOS	--	--	--	--	C						

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information		
Analyst	PJR	Intersection	Case 3.7pm	
Agency/Co.	Philip Rowell and Associates	Jurisdiction	2005	
Date Performed	9/5/2002	Analysis Year		
Analysis Time Period	PM Peak Hour			
Project Description: Towne Development				
East/West Street: Keonokea Road		North/South Street: S. Kihai Road		
Intersection Orientation: North-South		Study Period (hrs): 0.25		
Major Street				
	Northbound		Southbound	
Movement	1	2	3	4
	L	T	R	L
Volume	0	611	82	141
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80
Hourly Flow Rate, HFR	0	763	102	176
Percent Heavy Vehicles	0	-	-	0
Median Type	Undivided			
RT Channelized	0			
Lanes	0	1	0	1
Configuration	TR			
Upstream Signal	0			
Minor Street				
	Westbound		Eastbound	
Movement	7	8	9	10
	L	T	R	L
Volume	77	0	126	0
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80
Hourly Flow Rate, HFR	96	0	157	0
Percent Heavy Vehicles	0	0	0	0
Percent Grade (%)	0			
Flared Approach	N			
Storage	0			
RT Channelized	0			
Lanes	1	0	1	0
Configuration	R			
Daily Queue Length and Delay				
	Westbound		Eastbound	
Approach	NB	SB	WB	EB
Movement	1	4	7	8
Lane Configuration	L	L	L	R
v (vph)	176	96	157	768
C (m) (vph)	787	259	370	768
v/c	0.22	0.37	0.20	0.20
95% queue length	0.85	1.64	0.76	0.76
Control Delay	10.9	26.9	10.9	10.9
LOS	B	D	B	B
Approach Delay	16.9			
Approach LOS	C			

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information		
Analyst	PJR	Intersection	Case 3.6pm	
Agency/Co.	Philip Rowell and Associates	Jurisdiction	2005	
Date Performed	9/5/2002	Analysis Year		
Analysis Time Period	PM Peak Hour			
Project Description: Towne Development				
East/West Street: Drive A		North/South Street: Kanakanui Road		
Intersection Orientation: North-South		Study Period (hrs): 0.25		
Major Street				
	Northbound		Southbound	
Movement	1	2	3	4
	L	T	R	L
Volume	27	293	0	108
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80
Hourly Flow Rate, HFR	33	366	0	134
Percent Heavy Vehicles	0	-	-	-
Median Type	Undivided			
RT Channelized	0			
Lanes	1	1	0	1
Configuration	L			
Upstream Signal	0			
Minor Street				
	Westbound		Eastbound	
Movement	7	8	9	10
	L	T	R	L
Volume	0	0	0	0
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80
Hourly Flow Rate, HFR	0	0	0	0
Percent Heavy Vehicles	0	0	0	0
Percent Grade (%)	0			
Flared Approach	N			
Storage	0			
RT Channelized	0			
Lanes	0	0	0	0
Configuration	LR			
Daily Queue Length and Delay				
	Westbound		Eastbound	
Approach	NB	SB	WB	EB
Movement	1	4	7	8
Lane Configuration	L	L	L	LR
v (vph)	33	1458	782	762
C (m) (vph)	0.02	0.02	0.02	0.02
95% queue length	0.07	7.5	0.07	9.8
Control Delay	A	-	A	A
LOS	-	-	-	A
Approach Delay	9.8			
Approach LOS	A			

TWO-WAY STOP CONTROL SUMMARY									
Project Information					Site Information				
Analyst	PJR	Intersection	Case 3.11pm						
Agency/Co.	Phillip Rowell and Associates	Jurisdiction	2005						
Date Performed	9/5/2002	Analysis Year							
Analysis Time Period	PM Peak Hour	Study Period (hrs)	0.25						
Project Description	Towne Development	North/South Street	North-South Collector						
East/West Street	Walrus Place	Study Period (hrs)	0.25						
Intersection Orientation	North-South	Major Street							
Minor Street	Walrus Place	Minor Street							
Major Street		Major Street							
Movement	1	2	3	4	5	6	7	8	9
	L	T	R	L	T	R	L	T	R
Volume	0	18	0	24	19	27	0	0	0
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly Flow Rate, HFR	0	22	0	29	23	33	0	0	0
Percent Heavy Vehicles	0	-	-	0	-	-	0	-	-
Median Type	Undivided								
RT Channelized	0								
Lanes	1	0	0	1	1	0	1	1	0
Configuration	L		TR	L	L	TR	L	L	TR
Upstream Signal	0								
Minor Street									
Movement	7	8	9	10	11	12	13	14	15
	L	T	R	L	T	R	L	T	R
Volume	0	0	14	24	0	1	0	0	0
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly Flow Rate, HFR	0	0	17	29	0	1	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0	0	0	0
Percent Grade (%)	0								
Flared Approach	N								
Storage	0								
RT Channelized	0								
Lanes	1	1	0	1	1	0	1	1	0
Configuration	L	L	TR	L	L	TR	L	L	TR
Approach	NB	SB	Westbound	Eastbound					
Movement	1	4	7	8	9	10	11	12	13
Lane Configuration	L	L	L	L	TR	L	L	TR	TR
v (vph)	0	29	0	0	17	29	0	1	1
C (m) (vph)	1562	1607	647	1061	825	1037	0	0	0
v/c	0.00	0.02	0.00	0.02	0.04	0.00	0.00	0.00	0.00
95% queue length	0.00	0.08	0.00	0.05	0.11	0.00	0.00	0.00	0.00
Control Delay	7.3	7.3	9.3	8.4	9.5	8.5	8.5	8.5	8.5
LOS	A	A	A	A	A	A	A	A	A
Approach Delay	-	-	8.4	A	A	A	A	9.5	A
Approach LOS	-	-	A	A	A	A	A	A	A

Appendix F

***Preliminary
Engineering Report***

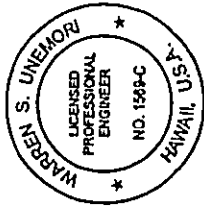
Preliminary Engineering Report

KE ALI'I KAI SUBDIVISION No. II

Kamaole, Kihei, Maui, Hawaii

Prepared For:

Towne Development of Hawaii, Inc.
95-1069 Wikao Street
Mililani, Oahu, Hawaii 96789



Warren S. Unemori

Warren S. Unemori Engineering, Inc.
Civil and Structural Engineers - Land Surveyors
2145 Wells Street, Suite 403
Waituku, Hawaii 96793

Date: March 2003

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1.0 INTRODUCTION	1
2.0 DESCRIPTION OF PROJECT SITE	1-2
3.0 EXISTING INFRASTRUCTURE	
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3.2 Sewer System	2-3
3.3 Drainage	3-4
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4.5 Electrical/Telephone/Cable Television	8
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EXHIBITS

Figure 1 - Location Map

Figure 2 - Conceptual Development Plan

APPENDIX

A Preliminary Drainage Report



**PRELIMINARY ENGINEERING REPORT
FOR
KE ALI'I KAI SUBDIVISION No. II**

1.0 INTRODUCTION

Towne Development recently purchased TMK (2) 3-9-19 Parcel 4 at Kamaole, Kihei, Maui.

Subject parcel, containing a gross area of 28.57 acres, is zoned residential R-2. The minimum lot size allowed in the R-2 zoned district is 7,500 square feet and the minimum average lot width is 65 feet.

2.0 DESCRIPTION OF PROJECT SITE

The project site is situated between Kanananui Road and the future North-South Collector Road corridor. It is bordered on the north by Kamaole Heights Residential Subdivision, Kamali'i Elementary School, and a residential lot. Keonekai Heights Subdivision abuts its south boundary. A fairly well defined but shallow drainage channel meanders across the southeastern quadrant of the project site. This drainage channel exits the project site approximately 400 feet east of its southwest corner. The elevation of the site drops from 142 feet at the southeast corner to around 64 feet at its southwest corner at an average slope of approximately 4.7%.

The soil survey for the Islands of Kauai, Oahu, Maui, Molokai, and Lanai prepared by the USDA Soil Conservation Service, now referred to as the Natural Resource Conservation Service or NRCS, shows the soil to be predominantly PZUE or Pu'uone Sand. However, when the adjoining properties were

developed, the contractors encountered many boulders especially in the deeper excavations. A geotechnical investigation should be undertaken to determine actual soil conditions.

3.0 EXISTING INFRASTRUCTURE

3.1 Water System

The project site between Kanananui Road and the North-South Collector Road corridor is situated in the Kihei mid-level service area. The source of water for the mid-level service area (MLS) are wells in upper Waiehu, often referred to as the Central Maui Joint Venture (CMJV) Wells. This well source draws water from the basal lens referred to as the Iao Aquifer.

The well source at upper Waiehu is supplemented by four recently developed wells in North Waiehu.

Water from the North Waiehu Wells is pumped to a 1.0 MG tank at the CMJV well site in upper Waiehu at elevation 485 feet. From this tank, water is transported to the 2.0 MG Kamaole tank above Pi'ilani Highway by a series of 42, 36, 30, and 16 inch transmission lines. A 12 inch line then conveys water from the Kamaole tank to consumers along Kanananui Road, Ke Ali'i Alanui, and the North-South Collector Road to Waiua Place in Kamaole Heights.

3.2 Sewer System

The closest County maintained sewer system is located at the intersection of Waiua Place and the North-South Collector Road

approximately 500 feet from the northwest corner of the project site. This line gravity feeds into the sewer line on Ke Ali'i Alanui and into a sewer pump station on the makai side of Kihei Road. A series of force mains, gravity lines, and other pump stations then convey the wastewater collected to the Kihei Wastewater Reclamation Facility above Piihoni Highway south of the Elleair Golf Course for treatment and disposal. In order to gravity-feed wastewater from the project site into the existing system, it appears that all lots in the project site must be kept above elevation 80 feet.

3.3

Drainage

Most of the offsite runoff from the contributory area mauka of Piihoni Highway, flows in a drainageway that cuts across the southeast quadrant of the project site. The present offsite runoff for a 100 year – 6 hour recurrence storm is estimated to be around 543 cfs. For a 100 year – 24 hour storm, the runoff is estimated to be 367 cfs. The higher of these two values will be used to design the drainage structure for the drainage channel.

Runoff from the northerly half of the project site appears to sheet flow in a northeasterly to southwesterly direction into the existing drainageway and towards the North-South Collector Road corridor and the parcels below. Runoff from the southerly half of the site seems to be sheet flowing into the existing drainage channel. The current runoff from

the 28.57 acre project site is estimated to be 27.0 cfs for a 50 year, 1 hour rainfall.

3.4

Roadway

Piihoni Highway is the main north-south arterial highway linking Kihei and Wailea to other urban areas of Maui. At present, it is a two-lane undivided highway owned and maintained by the State. Currently, the State and County are jointly widening this highway to four lanes by reconstructing most of the intersections and portions of the existing shoulders and re-striping the existing paved shoulder and travel way. Piihoni Highway begins at the south end of Mokulele Highway and ends at its intersection with Wailea Ike Drive.

The primary access to the project site from Piihoni Highway will be from its signalized intersection at Ke Ali'i Alanui 1,600 feet northeast of the project site. Left turns onto Kananui Road are allowed for westbound traffic on Ke Ali'i Alanui only during school drop-off and pick-up periods when Kamalii Elementary School is in session.

Ke Ali'i Alanui is a County owned four lane East West Collector Road that connects South Kihei Road with Piihoni Highway. Designed as a four (4) lane divided highway, this roadway is currently configured for two lanes.

Kananui Road is a two (2) lane frontage road that runs parallel to Piihoni Highway between Ke Ali'i Alanui and Keonekai Road. This road

was recently improved by the County with concrete curb, gutter, and sidewalk on the west side. Drainage improvements were also installed.

Approximately 300 feet of the North-South Collector Road between Ke Ali'i Alanui and Waiua Place was fully improved by the developer of Kamaole Heights Subdivision. Improvements consisted of concrete curb and gutter on both sides, sidewalk on the mauka side, and a paved travel way of around 40 feet.

3.5 Electrical and Telephone

There are overhead power and telephone distribution systems along Kananui Road. Underground power and telephone distribution systems are also available on the shoulders of the North-South Collector Road between Ke Ali'i Alanui and Waiua Place.

4.0 PROBABLE INFRASTRUCTURAL IMPROVEMENTS

4.1 Water System

Using the Department of Water Supply's consumption rate of 600 gpd, the average daily consumption for the 90 lot project (including the ohana dwellings) is expected to total around 81,000 gpd.

It is expected that a new 8 inch water line will have to be installed between the 12 inch line on Kananui Road and the line at the intersection of Waiua Place and the North-South Collector Road.

All lines in cul de sacs longer than 150 feet will have to be looped. Fire hydrants will have to be installed at intervals of 300 to 350 feet along

the subdivision streets throughout the project site as required by the Fire Department.

The developer will be paying the full comprehensive meter assessment to fulfill the source, storage, and transmission requirements for the project.

4.2 Sewer System

The proposed 90-lot subdivision (including the ohana dwellings) is expected to generate around 39,600 gpd of wastewater when fully built out.

According to the Division of Wastewater Reclamation (DWWWR) for the County of Maui, the capacity of the KWWWR facility was increased by 2.2 MGD in year 2000 to 8.0 MGD. The current average daily flow through the KWWWR facility is 5.9 MGD. Therefore it has ample reserve capacity to handle the additional wastewater generated by the proposed 90-lot subdivision project.

The gravity collection system for the project will be extended northward approximately 500 feet along the North-South Collector Road to Waiua Place and tied into the existing gravity system there. In order to do this, the elevation of the lowest lot in the subdivision must be no less than 80 feet above mean sea level.

The developer will be paying for his share of the transmission system upgrade and KWWWR expansion by contributing a one-time

assessment of around \$5.45 per gallon of additional wastewater generated by the project.

4.3 Drainage

The offsite runoff in the existing drainage channel will be allowed to flow across the southeast quadrant of the project site unimpeded as it is presently doing. This is in accordance with the provisions of the County's "Rules for the Design of Storm Drainage Facilities in the County of Maui". No additional onsite runoff from the project will be added to this offsite flow. Therefore, the impact to downstream properties will remain unchanged. Additional runoff generated as a result of the development will be intercepted by catch basins on the subdivision roads and conveyed by a storm drain system to a 5.0 Acre feet park/retention basin that will be created at the southwest corner of the site. The park/retention basin will be sized to store 100% of the post development runoff from the site. An injection well will be drilled at the lower end of the basin to drain the basin and mitigate any health hazard standing water may create. This dual-purpose basin will be designed to also accommodate a little league and soccer field for the use of the community.

4.4 Roadway

The primary access to the project site will be off of Kananakui Road. A second access will also be provided from the North-South Collector Road approximately 150 feet south of the northwest corner of the project site. Improvements on the North-South Collector Road will be

extended southward approximately 650 feet from Waiua Place to provide this access.

Approximately 30 feet of right-of-way will also be provided along the westerly boundary of the site for future extension of the North-South Collector Road in the accordance with the provisions of Title 18 of the Maui County Code. Until such time as the additional 30 feet of right-of-way becomes available from the adjoining lot owners below and across the project site, this section of the North-South Collector cannot be fully improved. However, the County may require the project-half of the right-of-way to be graded and improved.

All subdivision roads will be provided with a 44 right-of-way, a 24 foot wide paved travel way, two foot wide curb and gutter, on each side, and a sidewalk on one side.

4.5 Electrical/Telephone/Cable Television

Electrical, telephone, and cable television distribution systems will be extended underground from the overhead systems in Kananakui Road and connected to the underground distribution system on the North-South Collector Road at Waiua Place intersection. Streetlights will also be provided throughout the subdivision streets in accordance with the County's Street Lighting Standards.

5.0 CONCLUSION

It is our professional opinion that existing utilities serving the project site are adequate and that other project-related impacts can be readily mitigated with the implementation of the proposed improvements and development plan.

Preliminary Drainage Report

KE ALI'I KAI SUBDIVISION No. II

Kamale, Kihei, Maui, Hawaii

Prepared For:

Towne Development of Hawaii, Inc.
95-1069 Wikao Street
Miliama, Oahu, Hawaii 96789



Warren S. Unemori

Warren S. Unemori Engineering, Inc.
Civil and Structural Engineers - Land Surveyors
2145 Wells Street, Suite 403
Wailuku, Hawaii 96793

Date: March 2003

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1.0 PURPOSE	1
2.0 PROJECT LOCATION AND DESCRIPTION	1-2
3.0 EXISTING CONDITIONS	2
4.0 DRAINAGE PLAN	2-3
5.0 CONCLUSION	3-4

EXHIBITS

- FIGURE 1 - LOCATION MAP
- FIGURE 2 - CONCEPTUAL DEVELOPMENT PLAN
- FIGURE 3 - FLOOD INSURANCE MAP

APPENDIX

- A DRAINAGE CALCULATIONS



**PRELIMINARY DRAINAGE REPORT
for
KE ALI'I KAI SUBDIVISION No. II**

1.0 PURPOSE

This report discusses the existing drainage pattern and proposed drainage plan for the 90 lot single family residential project. It also evaluates the project's impact on existing local drainage conditions.

2.0 PROJECT LOCATION AND DESCRIPTION

The 28.57 Acre site is located between Kananui Road and the future North-South Road Corridor immediately south of Kamali'i Elementary School. A fairly well defined but shallow drainage channel meanders across the southeastern quadrant of the site. This channel exits the project site approximately 400 feet east of its southwestern corner. The elevation of the site drops from 142 feet at its southeast corner to 64 feet at the southwest corner. This translates to an average grade of 4.7% mauka makai. (See Figure 1)

According to the soil survey for the island prepared by the USDA Soil Conservation Survey, now referred to as the Natural Resource Conservation Service or NRCS; the predominant soil type at the site is PZUE or Puuone Sand. However, this soil type may be confined to the upper layer only because numerous boulders were encountered during the development of adjoining properties.

The R-2 zoned residential subdivision will consist of 90 single family residential lots, with the minimum lot size of 7,500 square feet and a minimum width of 65 feet. (See Figure 2)

Site improvements will consist of grading, installation of infrastructure, asphalt paving, concrete curb and sidewalk on one side of the street. A dual purpose retention basin will also be constructed on a 3.7 Acre portion at the southwest quadrant of the site. This will be designed to serve as an active community park with a soccer field, which also could be converted to a little league ball field. An injection well will also be installed to facilitate percolation of the impounded water into the substrata.

3.0 EXISTING CONDITIONS

The project site is located approximately 1,400 feet inland of Kamaole Beach Park No. 1. According to FEMA's Flood Insurance Map of September 6, 1989, the project site is situated within Flood Zone C, which indicates a very minimal exposure to flooding. (See Figure 3)

4.0 DRAINAGE PLAN

As stated in the PER, a fairly well defined but shallow drainage channel conveys offsite runoff across the southeast quadrant of the project site. The flow in this channel from the offsite contributory area is estimated to be around 367 cfs for a 100 year 24 hour recurrent storm and 543 cfs for a 100 year - 6 hour storm. This higher runoff value will be used to size the drainage system. This entire offsite runoff will be allowed to flow unimpeded across the southeast

quadrant of the project site as it is presently doing all in accordance with provisions of the County's "Rules for the Design of Storm Drainage Facilities". Based on the existing topography and present flow pattern, runoff from the northerly half of the project appears to be sheet flowing into the existing channel and also across the North-South Collector Road Corridor onto the parcels below. Runoff from the southerly half of the site seems to be sheet flowing into the existing drainageway. The current runoff from the 28.57 Acre project site is estimated to be 27.0 cfs for a 50 year 1 hour rainfall.

Additional runoff generated by the project that is presently draining into the drainage channel will be intercepted by catch basins on the subdivision roads and conveyed by a storm drain system to a 5.00 Acre-foot park/retention basin that will be constructed at the southwest quadrant of the project site. This park/retention basin will be sized to handle 100% of the post development runoff from the site. An injection well will be drilled at the lower end of the basin to drain impounded storm waters before it stagnates and become a health hazard. This dual purpose basin will be designed to accommodate a soccer field that can also be converted to a little league field for the use of the community.

5.0 CONCLUSION

The proposed drainage plan as described above has been prepared in accordance with the provisions of the "Rules for Design of Storm Drainage Facilities in the County of Maui". Therefore, it should be acceptable to the State and County review agencies. The installation of the injection well is not a requirement, but a desirable feature to induce more rapid percolation of the

impounded water into the substrata for health and safety reasons. A permit to drill an injection well must be approved by the State Commission on Water Resource Management of the State Department of Land and Natural Resources.

V:\PROJECTS\2025\2511\2511.dwg

05/07/04 FRI 09:03 FAX 808 244 4856 WARREN UMEMORI ENGR. INC *** KUMEKIYO@HIRARA @002

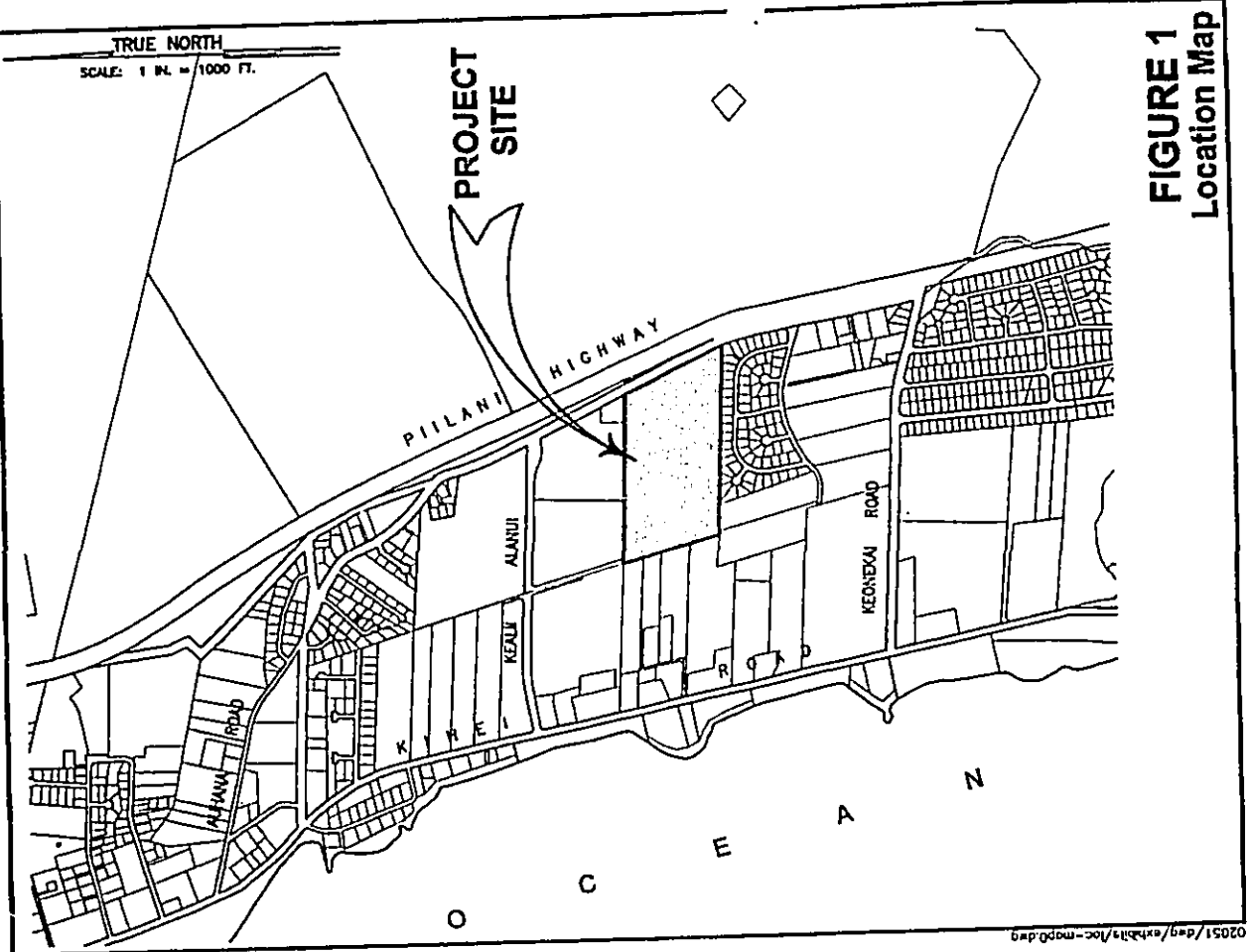


FIGURE 1
Location Map

EXHIBITS

- 1 - Location Map
- 2 - Conceptual Development Plan
- 3 - Flood Insurance Map

02051/dwg/exhibit/loc-map.dwg

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

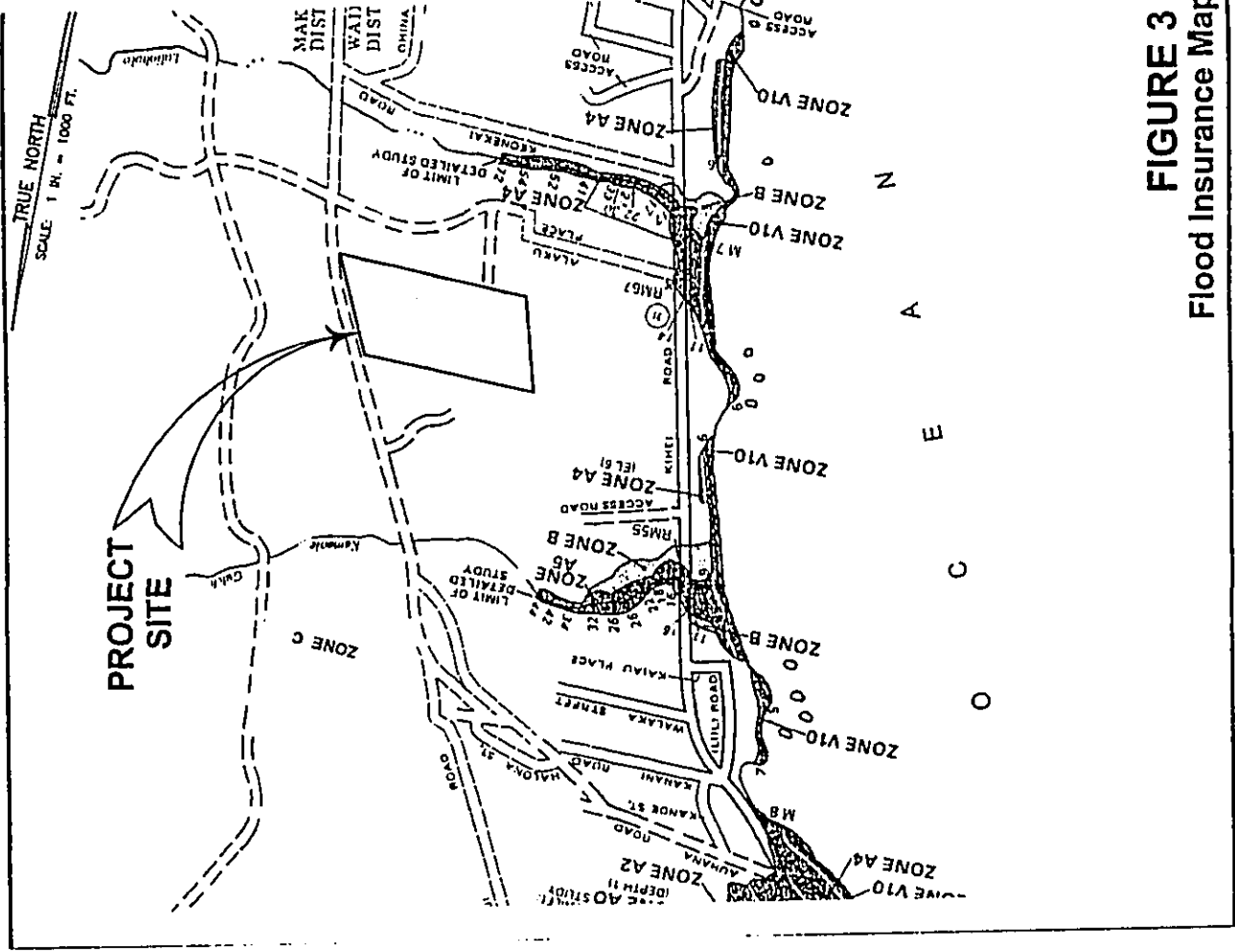


FIGURE 3
Flood Insurance Map

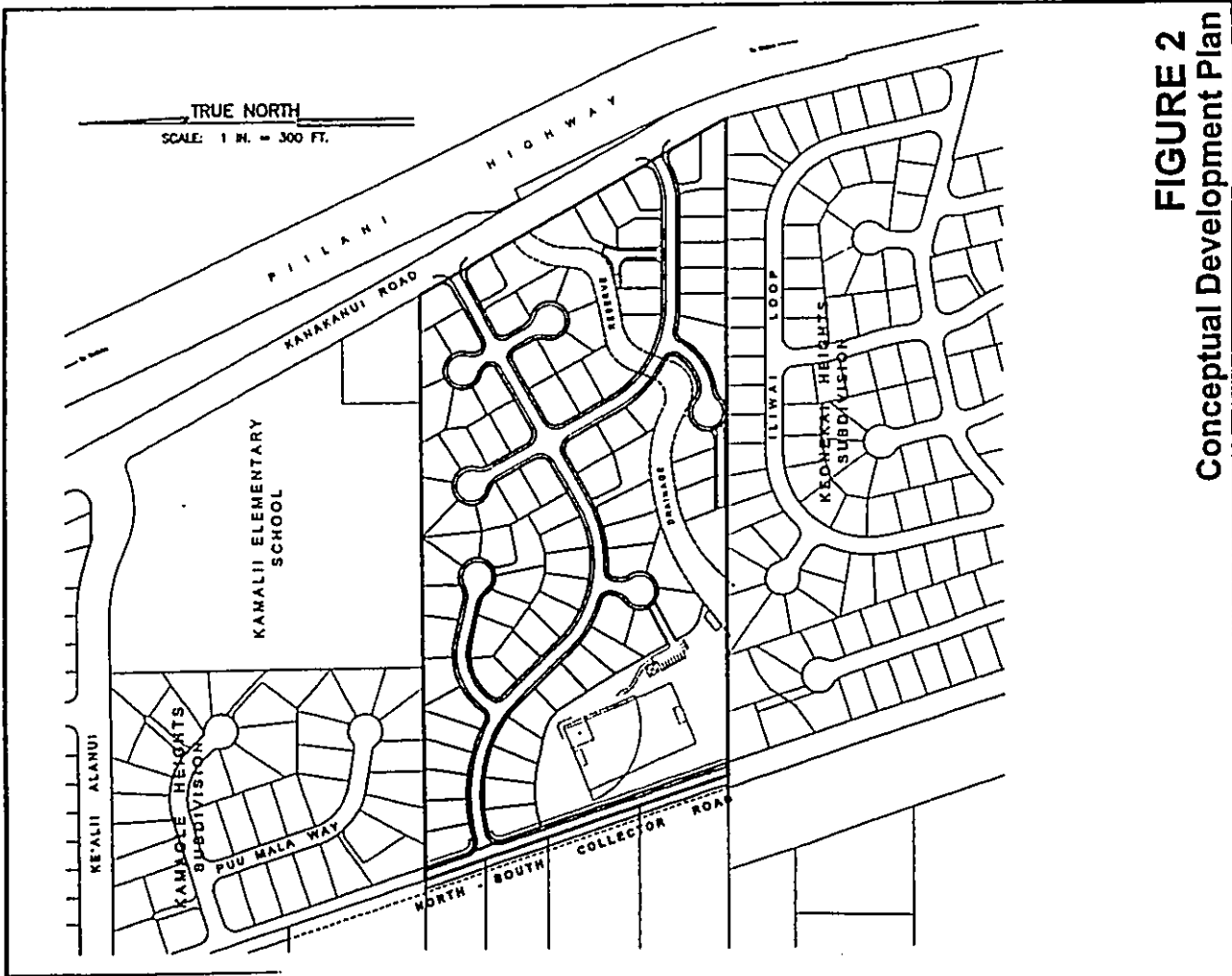
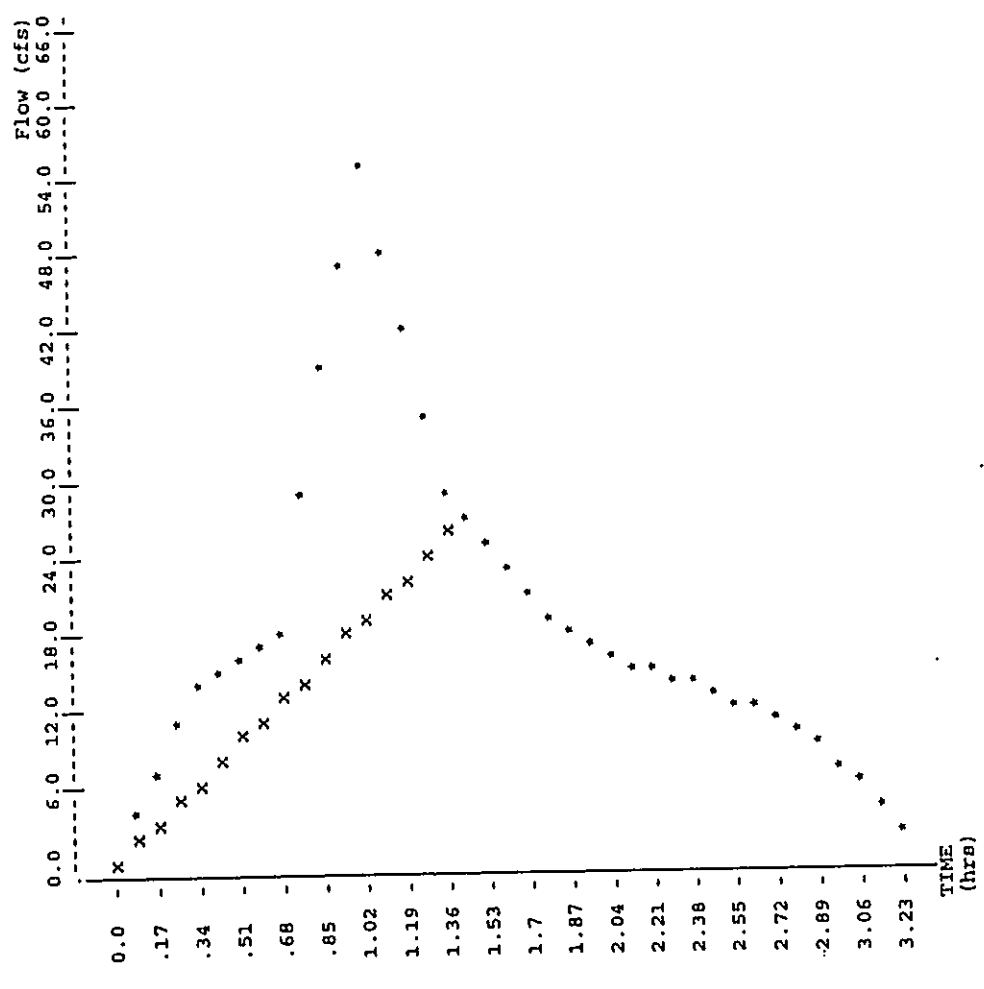


FIGURE 2
Conceptual Development Plan

POND-2 Version: 5.21 S/N:

POND-2 Version: 5.21 S/N:
 Plotted: 02-20-2002

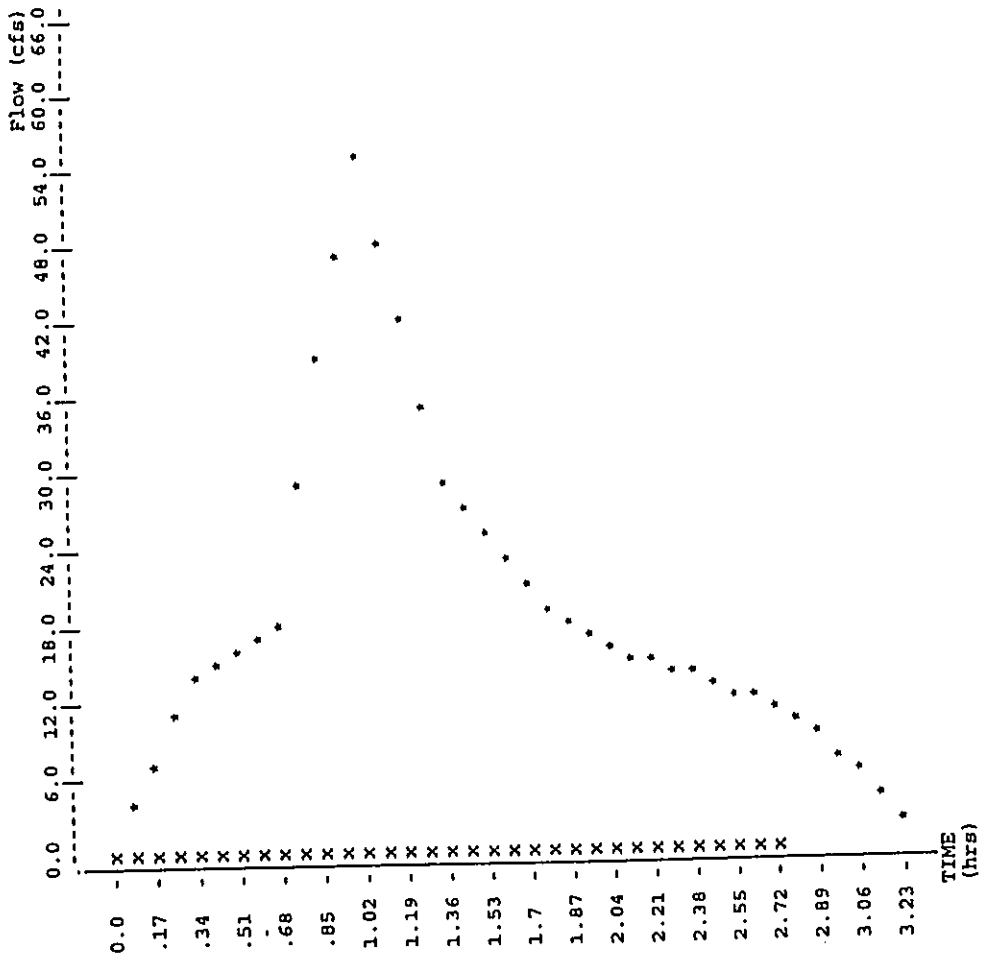


* File: KIHAI-SL.HYD Qmax = 55.0 cfs
 x File: ESTIMATE.EST Qmax = 27.0 cfs

>>>> OUTFLOW HYDROGRAPH ESTIMATOR <<<<<

Inflow Hydrograph: KIHAI-SL.HYD
 Qpeak = 55.0 cfs
 Estimated Outflow: ESTIMATE.EST
 Qpeak = 0.0 cfs
 Approximate Storage Volume
 (computed from t = 0.00 to 3.23 hrs)
 5.1 acre-ft

POND-2 Version: 5.21 S/N:
 Plotted: 02-20-2002



* File: KIHEI-SL-HYD Qmax = 55.0 cfs
 x File: ESTIMATE.EST Qmax = 0.0 cfs

PAGE
 W.S. Unimotor Engineering, Inc.
 Kailuku, Hawaii
 FEBRUARY 21, 2002

HYDROLOGIC REPORT FOR
 IRF SCHULER - KIHEI
 UNIVERSAL RATIONAL HYDROGRAPH

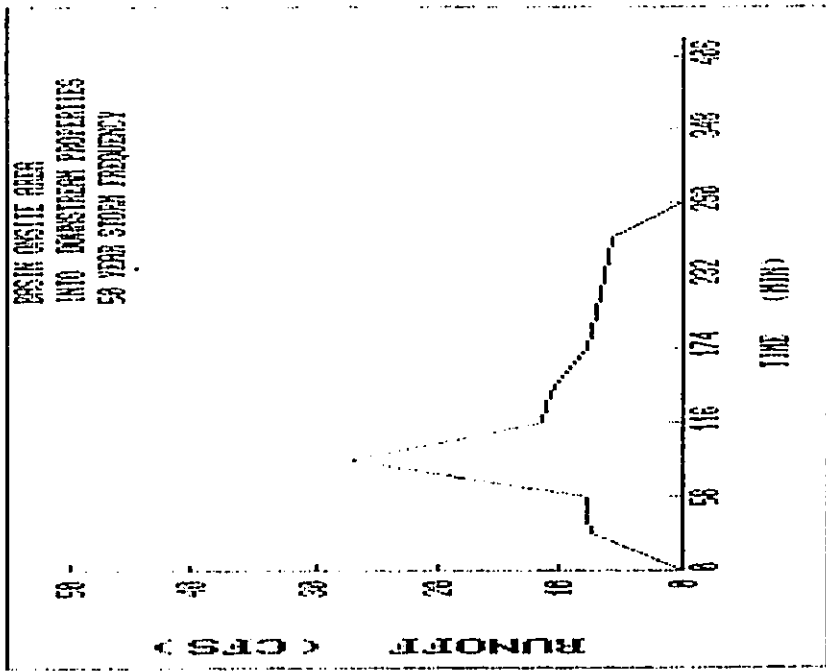
.RIFREQ = CTR1
 50 YEAR STORM FREQUENCY
 BASIN IDENTIFIED ONSITE AREA
 DISCHARGES INTO DOWNSLOPE PROPERTIES
 BASIN AREA = 28.57 ACRES
 RURROFF COEFF. = 0.20
 RAINFALL INT = 5.16 IN/HR
 TIME OF CONC = 29.50 MINUTES
 VOLUME = 158563.14 CUBIC FEET

TIME (MIN)	RURROFF (C.F.S.)
0.0	0.0
14.3	3.7
22.0	7.4
29.5	7.6
38.0	7.9
47.0	13.5
57.0	27.1
69.0	19.2
83.0	11.5
100.0	11.0
120.0	10.5
144.0	9.1
174.0	7.7
189.0	7.4
203.0	7.0
217.5	6.8
232.0	6.5
246.5	6.0
261.0	5.6
275.5	5.2
290.0	5.0
304.5	0.0
319.0	0.0
333.5	0.0
348.0	0.0
362.5	0.0
377.0	0.0
391.5	0.0
406.0	0.0
420.5	0.0

PAGE 1
 W.S. Unsmert Engineering Inc
 Honolulu, Hawaii
 FEBRUARY 21, 2002

HYDROLOGIC REPORT FOR
 RFP SCHULER - KIHEI
 UNIVERSAL RATIONAL HYDROGRAPH

Q1 PEAK = 0.176
 50 YEAR STORM FREQUENCY
 BASIN IDENTIFIER POST DEV. ONSITE AREA
 DISCHARGES INTD RETENTION BASIN
 BASIN AREA = 28.57 ACRES
 RUNOFF COEFF. = 0.55
 RAINFALL INT. = 3.00 IN/HR
 TIME UP LON. = 20.00 MINUTES
 VOLUME = 235708.73 CUBIC FEET

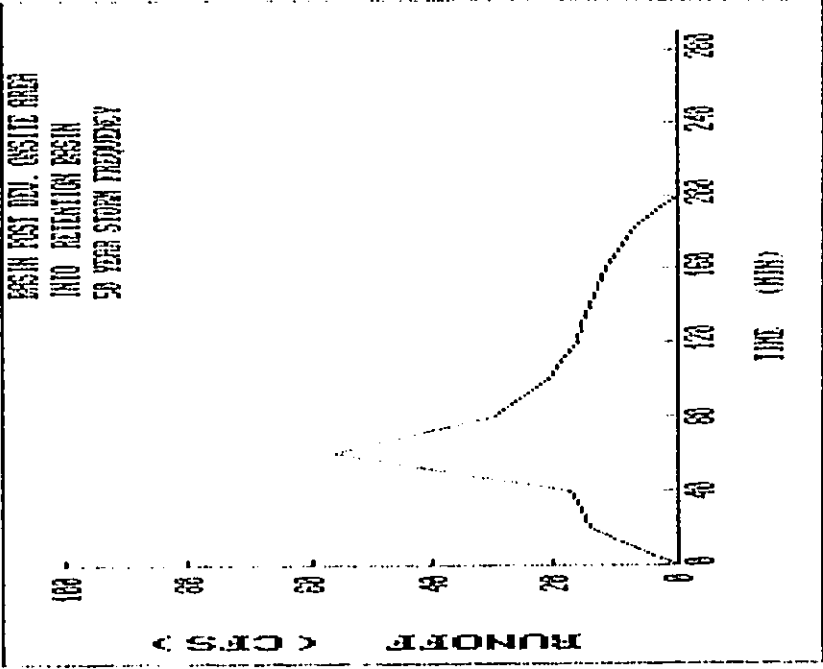


TIME (MIN)	RUNOFF (C.F.S.)
0.0	0.0
10.0	7.1
20.0	14.1
30.0	15.7
40.0	17.3
50.0	18.9
60.0	19.6
70.0	20.2
80.0	20.9
90.0	21.4
100.0	21.0
110.0	18.6
120.0	16.3
130.0	15.1
140.0	14.0
150.0	12.8
160.0	11.7
170.0	9.5
180.0	7.2
190.0	5.7
200.0	4.0
210.0	3.0
220.0	2.0
230.0	1.0
240.0	0.0
250.0	0.0
260.0	0.0
270.0	0.0
280.0	0.0
290.0	0.0
300.0	0.0



WARREN S. UNEMORI ENGINEERING, INC.
 CIVIL & STRUCTURAL ENGINEERS AND SURVEYORS
 WELLS STREET PROFESSIONAL CENTER, SUITE 402
 2135 WELLS STREET, HAWAII, MAUI, HAWAII 96703
 TELEPHONE 242-4403 FAX: (808) 242-4458

JOB: RFF - Stehly's Eriki
 CALCULATED BY: GSK DATE: 4/20/02
 CHECKED BY: DATE:



DESCRIPTION: pipe development site. R. for. (basin) 2-9-1-104

SOIL TYPE: Area = 71,57 sq ft. (basin = 2,20 sq ft)

LS = 14%

$Q_{100} = (1.13)(1.49) = 1.68$

$(1.13)(1.49) = 1.68$

$Q_{100} = 1.68$

Soil type: 10% clay content (10% sand, 70% silt, 20% clay)

runoff coeff. C = 0.75 (unimproved area)

$T_c = 0.2$ hr

$L = 2.15$ ft

$Q = 0.1$ cfs

$Q = 0.1(1.68)(0.75) = 0.126$ cfs

$Q = 0.126$ cfs

$Q = 0.126$ cfs

Warren S. Unemoor Engineering, Inc.
 Wells Street Professional Center
 2145 Wells Street, Suite 403
 Waiuku, Maui, Hawaii 96793
 Date: January 24, 2003

HYDROLOGIC CALCULATIONS: PRE-DEVELOPMENT

Objective: To determine the pre-development runoff for TMK: (2) 3-9-19: 004

1. 100-Yr. - 1 Hr. Rainfall:
 From "Rainfall Frequency Atlas of the Hawaiian Islands", for Kihei, Maui.
 $R(100 \text{ Yr.}-1\text{Hr.}) = 2.50$ inches

2. Total Area: Area (Ac.): 28.57

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 Coeff., C:		0.28

4. Time of Concentration:

Approx. Elev. Diff. (ft.):	60
Higher Elev. (ft.):	130
Lower Elev. (ft.):	70
Approx. Runoff Length (ft.):	1,250
Average Slope:	4.80%
Time of Concentration (min.):	30

5. Intensity: Intensity (in./hr.): 3.5

6. Total Runoff: $Q = C \times I \times A$ (cfs): 28.00

Warren S. Unemoor Engineering, Inc.
 Wells Street Professional Center
 2145 Wells Street, Suite 403
 Waiuku, Maui, Hawaii 96793
 Date: January 24, 2003

HYDROLOGIC CALCULATIONS: POST-DEVELOPMENT

Objective: To determine the post-development runoff for TMK: (2) 3-9-19: 004.

1. 100-Yr. - 1 Hr. Rainfall:
 From "Rainfall Frequency Atlas of the Hawaiian Islands", for Waiuku, Maui.
 $R(100 \text{ Yr.}-1\text{Hr.}) = 2.50$ inches

2. Total Area: Area (Ac.): 28.57

3. Weighted Runoff Coefficient:

Paved / Roof Area (Ac.):	10.70	
Runoff Coeff., C:	0.95	
Landscape Area (Ac.):	17.87	
Infiltration:	Medium	0.07
Relief:	Rolling (5-15%)	0.03
Vegetal Cover:	High (50-90%)	0.00
Development Type:	Agricultural	0.15
Runoff Coeff., C:		0.25
Weighted Runoff Coeff., C:		0.51

4. Time of Concentration:

Approx. Elev. Diff. (ft.):	68
Higher Elev. (ft.):	140
Lower Elev. (ft.):	72
Approx. Runoff Length (ft.):	1,570
Average Slope:	4.33%
Time of Concentration (min.):	21

5. Intensity: Intensity (in./hr.): 4

6. Total Runoff: $Q = C \times I \times A$ (cfs): 58.53

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 File.... V:\PROJDATA\02PROJ\02051\CALCS\POST-OFF-OH.PPW
 Storm... Type: 24hr Tag: 100-24

Type.... Master Network Summary Page 1.01
 Name.... Watershed
 File.... V:\PROJDATA\02PROJ\02051\CALCS\POST-OFF-OH.PPW

MASTER DESIGN STORM SUMMARY

Default Network Design Storm File: ID 100YR-24.RHQ KInet

Return Event	Total Depth in	Rainfall Type	RNF File	RNF ID
100-24	10.0000	Synthetic Curve	SCSTYPES	Type1 24hr

MASTER NETWORK SUMMARY

SCS Unit Hydrograph Method
 (*Node=Outfall: +Node=Diversion:)
 (Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Event	HYG Vol	Qpeak	Max WSEL	Pond	Max ac-ft
AREA 23 & ONSITE AREA	JCT	100	173.777	11.5000	366.73		
*OUTLET	JCT	100	173.777	11.5000	366.73		

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
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 Rain Dir = H:\HAESTAD\PPK\RAIN\FALL
 Rain File -ID = SCSTYPES.RNF - Type1 24hr
 Unit Hyd Type = Default Curvilinear
 HYG Dir = V:\PROJDATA\02PROJ\02051\CALCS\
 HYG File - ID = AREA 23 & ONSITE 100-24
 TC = 2.4500 hrs
 Drainage Area = 335.000 acres Runoff CH= 70
 Calc.Increment = .32800 hrs Out.Incr = .1000 hrs
 HYG Volume = 173.777 ac-ft

HYDROGRAPH ORDINATES (cfs)

Time hrs	Output Time Increment = 1000 hrs	Time on left represents time for first value in each row.
4.3000	.00	.03
4.8000	.04	.12
5.3000	.51	.66
5.8000	1.39	2.06
6.3000	3.37	4.44
6.8000	6.40	7.94
7.3000	10.63	12.67
7.8000	16.20	18.82
8.3000	23.14	26.30
8.8000	32.08	35.65
9.3000	46.22	53.73
9.8000	75.69	87.49
10.3000	156.90	179.68
10.8000	280.09	318.32
11.3000	355.60	366.73
11.8000	358.24	349.17
12.3000	305.89	293.34
12.8000	249.15	240.75
13.3000	209.97	196.79
13.8000	179.44	174.50
14.3000	155.99	151.68
14.8000	136.71	133.50
15.3000	121.74	119.04
15.8000	110.32	108.54
16.3000	102.20	100.77
16.8000	96.20	95.20
17.3000	91.43	90.53
17.8000	87.27	86.53
18.3000	83.83	83.21
18.8000	80.80	80.22
19.3000	77.90	77.33
19.8000	75.06	74.49

Type.... SCS Unit Hyd. (HYG output)
 Name.... AREA 23 & ONSITE Tag: 100-24
 File.... V:\PROJDATA\02PROJ\02051\CALCS\POST-OFF-ON.PPM
 Storm.... Type1 24hr Tag: 100-24

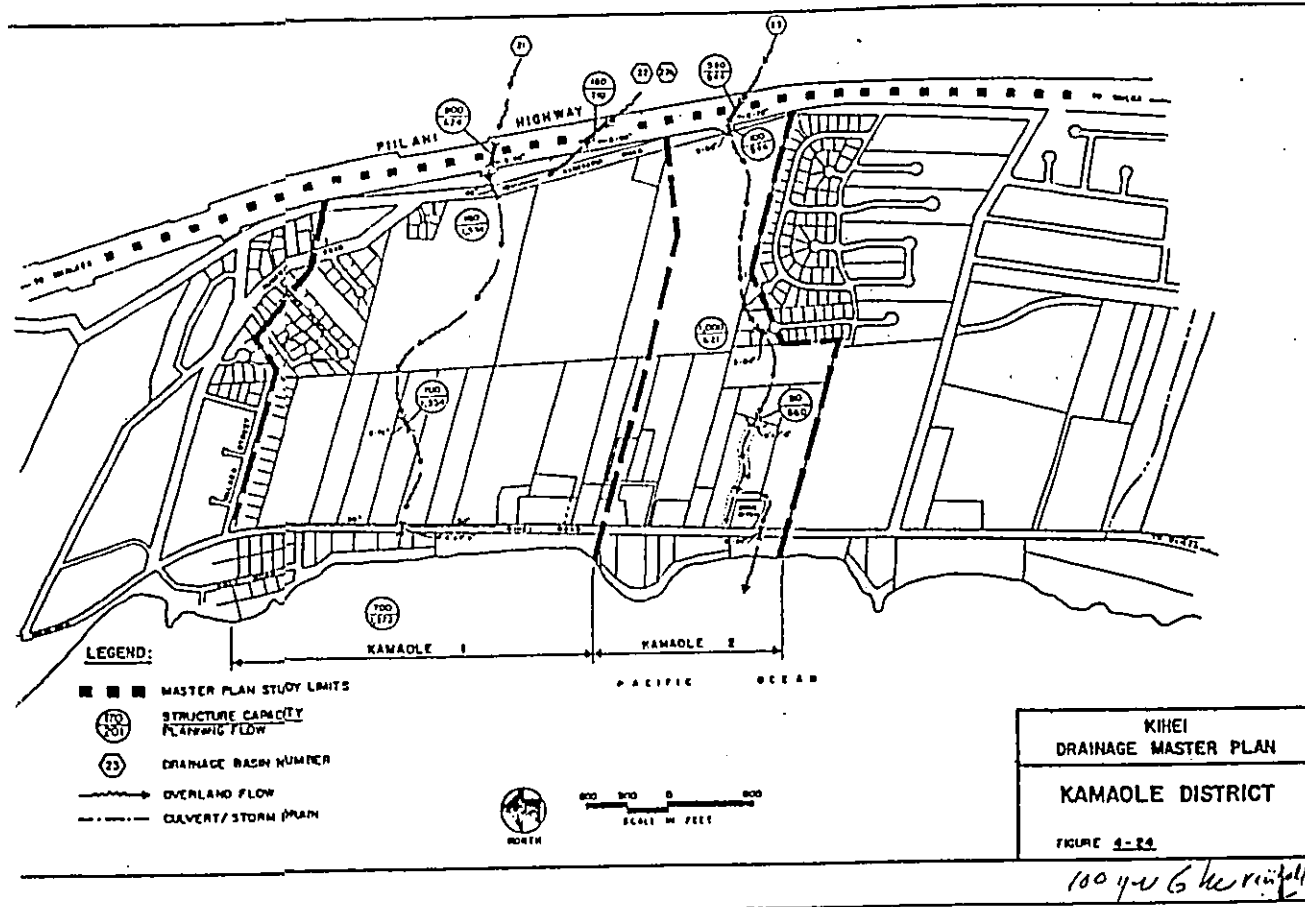
Page 6.05
 Event: 100 yr

Time hrs	HYDROGRAPH ORDINATES (cfs)	
	Time on left represents time for first value	Time on right represents time for first value in each row.
20.3000	72.23	71.10
20.8000	69.41	68.28
21.3000	66.58	65.44
21.8000	63.73	62.59
22.3000	60.87	59.72
22.8000	57.99	56.85
23.3000	55.08	53.91
23.8000	52.16	50.91
24.3000	48.61	46.48
24.8000	42.18	38.62
25.3000	32.39	28.05
25.8000	21.92	19.92
26.3000	13.45	12.22
26.8000	8.12	7.27
27.3000	4.91	4.46
27.8000	2.96	2.65
28.3000	1.77	1.60
28.8000	1.05	.94
29.3000	.61	.55
29.8000	.35	.27
30.3000	.19	.14
30.8000	.09	.06
31.3000	.03	.02
31.8000	.00	.00

S/N: 92130280648E
 PondPack Ver. 7.5 (765)

Compute Time: 10:20:12

Date: 01/24/2003





TRANS-MERIDIAN ENGINEERS & SURVEYORS, INC.
700 BROAD STREET • SUITE 777
HONOLULU, HAWAII 96813 • TELEPHONE 531-8871

SCS STORM DRAINAGE COMPUTATION

PILIHANI HIGHWAY HYDROLOGY 2/18/76

WATERSHED 22 (100 YR. STORM)
DRAINAGE AREA 0.4792 SQ MILES
TIME OF CONCENTRATION 6.525 HRS
RUNOFF CURVE NO. 69
HYDROGRAPH FAMILY 3
STORM DURATION 6.0 HRS
6 HR DESIGN STORM RAINFALL 7.000 INCHES
AREAL RAINFALL 7.000 INCHES
ADJUSTED RAINFALL 7.000 INCHES
STORM RUNOFF 3.513 INCHES
COMPUTED TIME TO PEAK(CTU DESIGN HYDROGRAPHS)
DURATION OF EXCESS RAINFALL 4.541 HRS
T(C)/T(P) 11.079
REV RATIO 10.000
REV TIME TO PEAK 0.454 HRS
HYDROGRAPH PEAK RATE 510.69 CFS
RATE (Q= 3.51 INCHES) 1,794.54 CFS

T(C)	Q(C)	TIME(HRS)	Q(CFS)
1	0.000	0.00	0.0
2	0.540	0.24	1.7
3	1.080	0.49	14.3
4	1.620	0.73	123.6
5	2.160	0.98	414.5
6	2.700	1.22	1543.7
7	3.240	1.47	482.7
8	3.780	1.71	400.1
9	4.320	1.96	337.3
10	4.860	2.20	285.3
11	5.400	2.45	249.4
12	5.940	2.69	218.9
13	6.480	2.94	193.8
14	7.020	3.18	174.0
15	7.560	3.43	159.7
16	8.100	3.67	145.3
17	8.640	3.92	139.9
18	9.180	4.16	128.1
19	9.720	4.41	120.1
20	10.260	4.65	134.5
21	10.800	4.90	98.7
22	11.340	5.15	53.8
23	11.880	5.39	21.5
24	12.420	5.64	10.7
25	12.960	5.88	7.1
26	13.500	6.13	3.5
27	14.040	6.37	1.7
28	14.580	6.62	0.0
29	15.120	6.86	0.0
30	15.660	7.11	0.0

V-106

Type.... Master Network Summary
Name..... Watershed
File..... V:\PROJDATA\02PROJ\02051\CALCS\PRE-OFF-ON.PPW

MASTER DESIGN STORM SUMMARY

Default Network Design Storm File, ID 100YR-24.R1Q Kihel

Total Depth in Rainfall Type RNF File RNF ID
Return Event Synthetic Curve SCSTYPES Type1 24hr

100-24 10.0000 Synthetic Curve ----- -----

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method
(*Node=Outfall; +Node=Diverision;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Right; LR=Left&Right)

Storage Node ID	Type	Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
AREA 23 & ONSITE AREA	100	JCT	170.109	11.5000	357.53			
*OUTLET	100	JCT	170.109	11.5000	357.53			

S/N: 921302B06ABE Compute Time: 09:42:59 Date: 01/24/2003
PondPack Ver. 7.5 (765)

Type.... SCS Unit Hyd. (HYG output)
 Name.... AREA 23 & ONSITE Tag: 100-24
 File.... V:\PROJDATA\02PROJ\02051\CALCS\PRE-OFF-OH.PPH
 Storm... TypeI 24hr Tag: 100-24

Type.... SCS Unit Hyd. (HYG output)
 Name.... AREA 23 & ONSITE Tag: 100-24
 File.... V:\PROJDATA\02PROJ\02051\CALCS\PRE-OFF-OH.PPH
 Storm... TypeI 24hr Tag: 100-24

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
 Duration = 24.0000 hrs Rain Depth = 10.0000 in
 Rain Dir = H:\HAESTAD\PPK\WAINFALL\
 Rain File -ID = SCTYPE5.RMF - TypeI 24hr
 Unit Hyd Type = Default Curvilinear
 HYG Dir = V:\PROJDATA\02PROJ\02051\CALCS\
 HYG File - ID = - AREA 23 & ONSITE 100-24
 Tc = 2.4600 hrs
 Drainage Area = 335.000 acres Runoff C/I= 69
 Calc.Increment= .32800 hrs Out.Incr.= .1000 hrs
 HYG Volume = 170.109 ac-ft

HYDROGRAPH ORDINATES (cfs)

Time hrs	Output Time Increment = .1000 hrs	Time on left represents time for first value in each row.
20.6000	69.87	68.19
21.1000	67.08	65.40
21.6000	64.28	62.59
22.1000	61.46	59.75
22.6000	58.61	56.90
23.1000	55.75	54.02
23.6000	52.87	51.13
24.1000	49.74	47.14
24.6000	45.03	40.22
25.1000	36.25	29.97
25.6000	25.70	19.75
26.1000	16.40	12.11
26.6000	9.78	8.06
27.1000	5.97	4.87
27.6000	3.58	2.93
28.1000	2.16	1.75
28.6000	1.28	1.04
29.1000	.76	.61
29.6000	.43	.34
30.1000	.24	.21
30.6000	.12	.11
31.1000	.05	.04
31.6000	.01	.01

HYDROGRAPH ORDINATES (cfs)

Time hrs	Output Time Increment = .1000 hrs	Time on left represents time for first value in each row.
4.6000	.00	.01
5.1000	.08	.19
5.6000	.50	.70
6.1000	1.76	2.08
6.6000	3.95	4.57
7.1000	7.37	8.15
7.6000	12.07	13.21
8.1000	18.16	19.46
8.6000	25.81	27.71
9.1000	36.90	39.63
9.6000	57.34	64.59
10.1000	111.94	128.79
10.6000	221.01	246.34
11.1000	327.28	339.74
11.6000	354.94	352.36
12.1000	322.57	311.46
12.6000	265.09	254.59
13.1000	219.82	212.86
13.6000	187.68	181.97
14.1000	162.05	157.82
14.6000	141.89	138.22
15.1000	125.39	122.75
15.6000	113.03	110.86
16.1000	103.76	102.36
16.6000	97.26	96.11
17.1000	92.18	91.29
17.6000	87.89	87.07
18.1000	84.21	83.58
18.6000	81.15	80.55
19.1000	78.25	77.69
19.6000	75.44	74.88
20.1000	72.65	72.09