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) 270-7805 • FAX (808) 270-7165

February 24, 2005

Genevieve K.Y. Salmonson, Director
Office of Environmental Quality Control
Department of Health
State of Hawaii
235 S. Beretania Street, Suite 702
Honolulu, Hawaii 96813

Dear Ms. Salmonson:

SUBJECT: FINDING OF NO SIGNIFICANT IMPACT (FONSI) FOR CENTRAL MAUI SENIOR HOUSING AND COUNTY OFFICE BUILDINGS PROJECT AT TMK 3-7-013: POR. 026, KAHULUI, MAUI, HAWAII

The Department of Housing and Human Concerns, County of Maui has reviewed the comments received during the 30-day public comment period which began on January 23, 2005. The agency has determined that his project will not have significant environmental effects and has issued a FONSI. Please publish this notice in the March 8, 2005 issue of The Environmental Notice.

Enclosed is a completed OEQC Bulletin Publication Form, four copies of the Final Environmental Assessment. Please call Edwin Okubo at (808) 270-7351 if you have any questions.

Thank you.

Very truly yours,

for ALICE L. LEE
Director

AL
Enclosures
cc: Daren Suzuki, Munekiyo & Hiraga, Inc.
Ed Okubo, Housing Administrator
com\dhhccmaui\oeqcltr.fea

2005-03-08 FONSI
CENTRAL MAUI SENIOR HOUSING & COUNTY OFFICE BUILDINGS PROJECT

MAR - 8 2005

Final
Environmental Assessment

CENTRAL MAUI SENIOR HOUSING AND COUNTY OFFICE BUILDINGS PROJECT

Prepared for:

County of Maui,
Department of Housing and Human Concerns

February 2005

MUNEKIYO & HIRAGA, INC.

Final
Environmental Assessment

CENTRAL MAUI SENIOR HOUSING AND COUNTY OFFICE BUILDINGS PROJECT

Prepared for:

County of Maui,
Department of Housing
and Human Concerns

February 2005

MUNEKIYO & HIRAGA, INC.

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LIST OF FIGURES

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Executive Summary

Project Name:	Central Maui Senior Housing and County Office Buildings Project
Type of Document:	Final Environmental Assessment
Legal Authority:	Chapter 343, Hawaii Revised Statutes
Agency Determination:	Finding Of No Significant Impact
Applicable Environmental Assessment Review "triggers":	Use of County and Federal Funds and Amendment to County General Plan
Location:	Island of Maui Kahului, Maui TMK 3-7-013: por. 026
Applicant:	Alice Lee, Director Department of Housing and Human Concerns County of Maui 200 South High Street Wailuku, Hawaii 96793
Owner:	A & B Properties, Inc. P.O. Box 156 Kahului, Hawaii 96733
Accepting Authority:	County of Maui Department of Housing and Human Concerns 200 South High Street Wailuku, Hawaii 96793 Contact: Edwin Okubo, Administrator, Housing Division Phone No.: (808) 270-7351
Agent:	Munekiyo & Hiraga, Inc. 305 High Street, Suite 104 Wailuku, Hawaii 96793 Contact: Daren Suzuki Phone No.: (808) 244-2015

Project Summary:

The Department of Housing and Human Concerns, County of Maui proposes the development of senior housing apartments and County of Maui office buildings on approximately 4.0 acres of land. The senior housing component will consist of 39 one-bedroom rental units, one (1) manager's unit, a community center building, and a maintenance building. The County of Maui office buildings component will consist of a 12,437 square foot two-story building and a 6,718 square foot one-story building. Each component will have associated parking and landscaping.

Chapter I

Project Overview

I. PROJECT OVERVIEW

A. PROPERTY LOCATION, EXISTING USE AND LAND OWNERSHIP

The applicant, the County of Maui, Department of Housing and Human Concerns, proposes the development of a Central Maui Senior Housing and County Office Buildings project on approximately 4.0 acres of land, TMK (2) 3-7-013: por. 026, Kahului, Maui. See Figure 1.

The project site is undeveloped and is used every Saturday and occasional Sundays for the Swap Meet operations. The site currently consists of a gravel parking area, grassed area and vacated tennis courts.

The subject property is located within the limits of the State Land Use "Urban" district. The Wailuku-Kahului Community Plan designates the subject property for "Park" use, while the underlying county zoning is "R-3, Residential District". The subject property is not located within the limits of Maui's Special Management Area.

The landowner for the property is A&B Properties, Inc. Maui Exposition, the Swap Meet operator, conducts business on the property under a revocable month-to-month lease.

B. PROPOSED ACTION

1. Senior Housing Component

The senior housing component of the project will consist of 39 one-bedroom rental units, one (1) two-bedroom resident manager's unit, a 2,945 square foot community center building, a maintenance building, and related site improvements. The 39 one-bedroom units will contain a bath, kitchen, living and dining area with a total gross floor area of approximately 665 square feet, and the two-bedroom resident manager's unit will contain a bath, kitchen, living and dining area with a total gross floor area of approximately 1,064

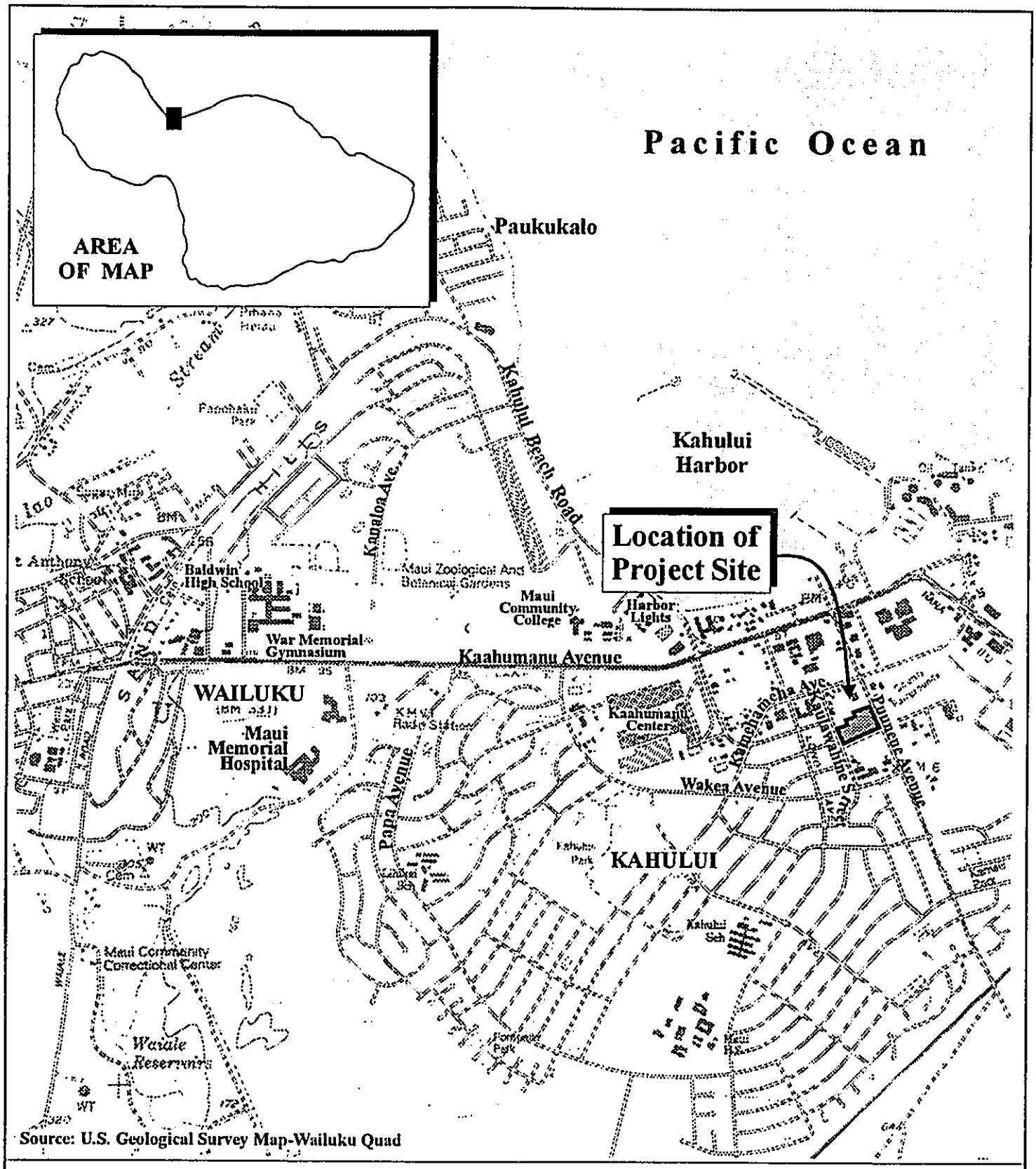

Figure 1 Central Maui Senior Housing and County Office Buildings Project

Regional Location Map

0 1000 Feet
500 2000

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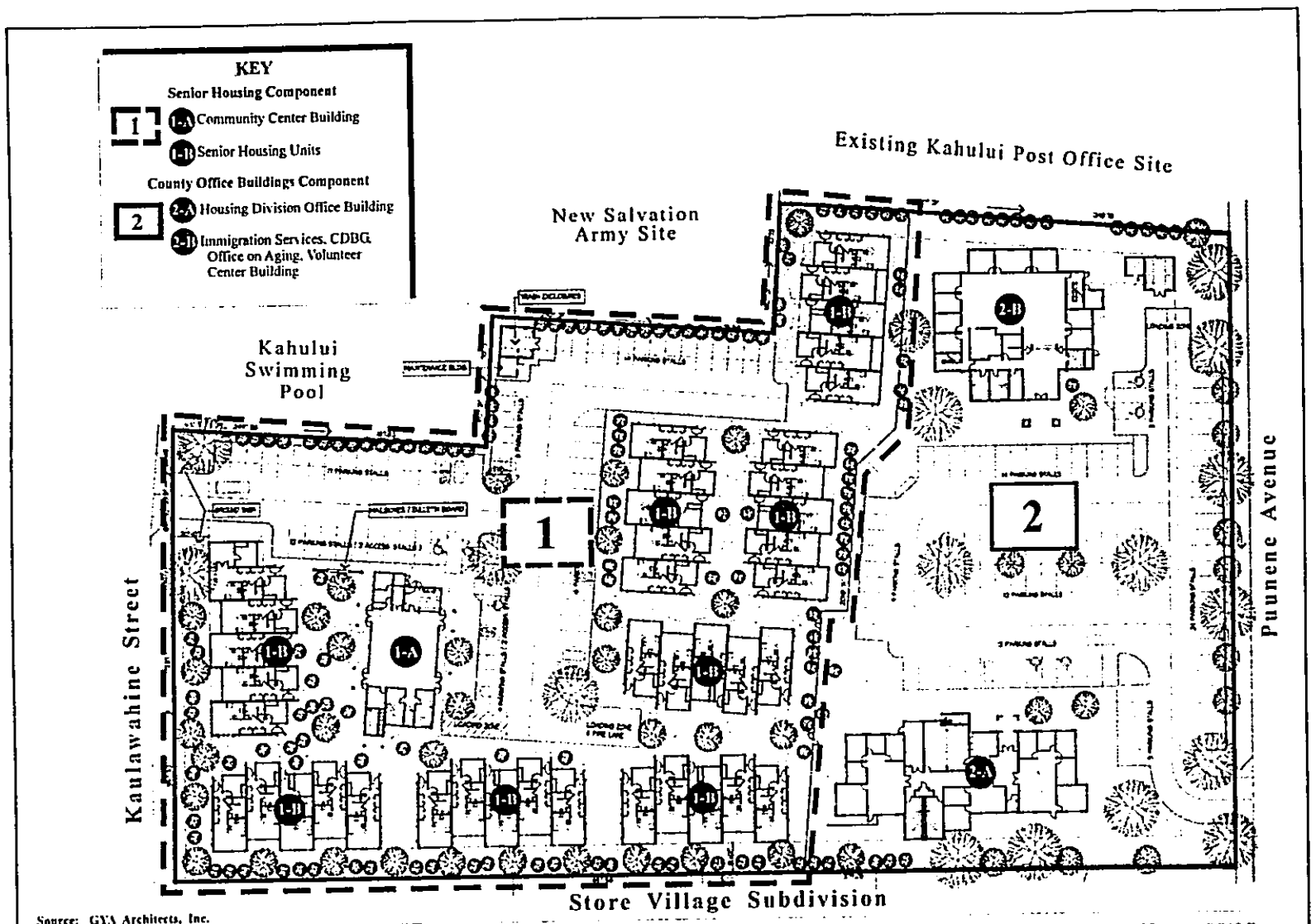
square feet. All individual units will be clustered in eight (8) one-story buildings containing five (5) units each. The community center building will contain an assembly area for approximately 80 people, a kitchen, offices, restrooms and a shared laundry facility for the project residents. The community center building may be used for various programs and activities, such as workshops, arts and crafts, lectures, etc., which provide lifestyle enhancements for the senior living community. Vehicular access to the senior housing units is proposed via Kaulawahine Street, which borders the property along its western boundary. Approximately 74 paved parking stalls will be provided for the senior housing component. See Figure 2, Figure 3 and Figure 4.

To qualify for residency, tenants must be at least 62 years of age and qualify financially by having a household income that does not exceed fifty percent (50%) of Maui County's median income, as established by the U.S. Department of Housing and Urban Development (HUD). According to HUD, Maui County's median income for 2004 is $60,700.00.

2. ***County Office Buildings Component***

The offices component of the project will consist of a 12,437 square foot, two-story building for the Housing Division; a 6,718 square foot, one-story building for the Immigrant Services Division, Community Development Block Grant Program (CDBG), Volunteer Center, Office on Aging reference library, and related site improvements. Access to the proposed offices would be via Puunene Avenue. Approximately 92 paved parking stalls are proposed for the offices. While pedestrian connections will be provided between the housing and office components, vehicular



Source: GYA Architects, Inc.

NOT TO SCALE

Figure 2 Central Maui Senior Housing and County Office Buildings Project
Overall Site Plan

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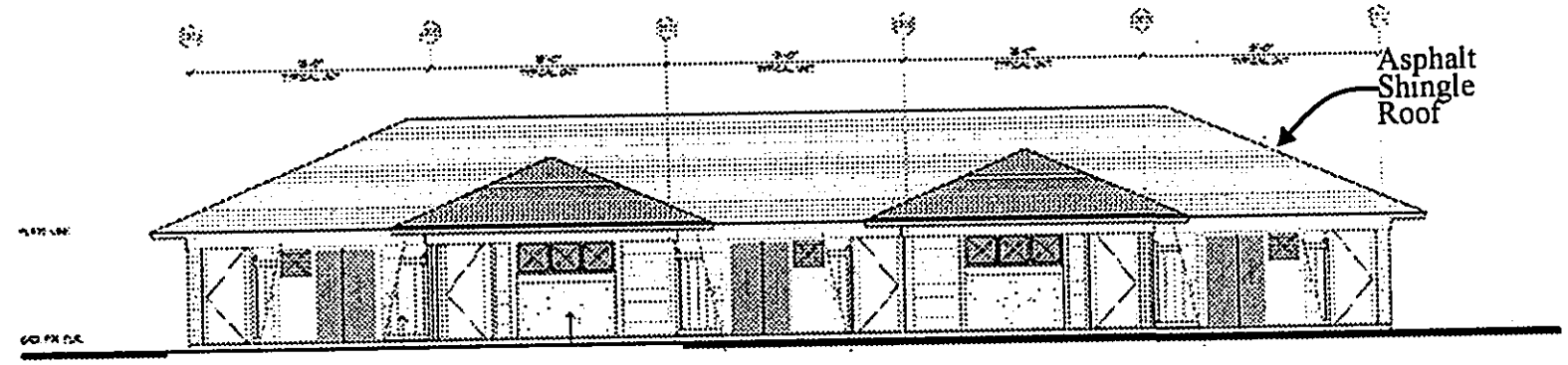
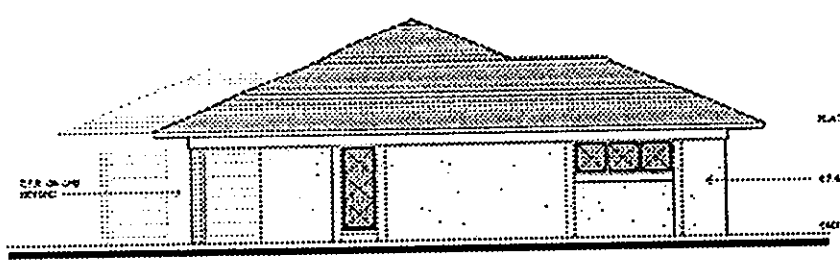
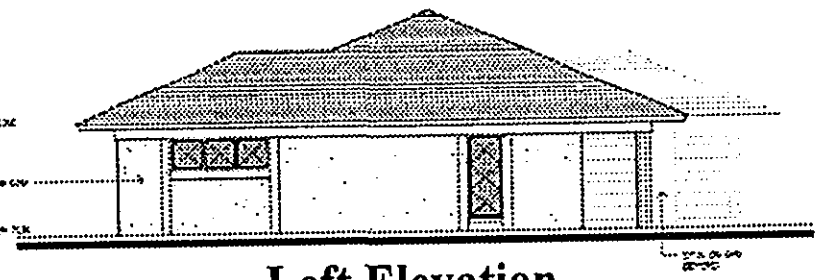


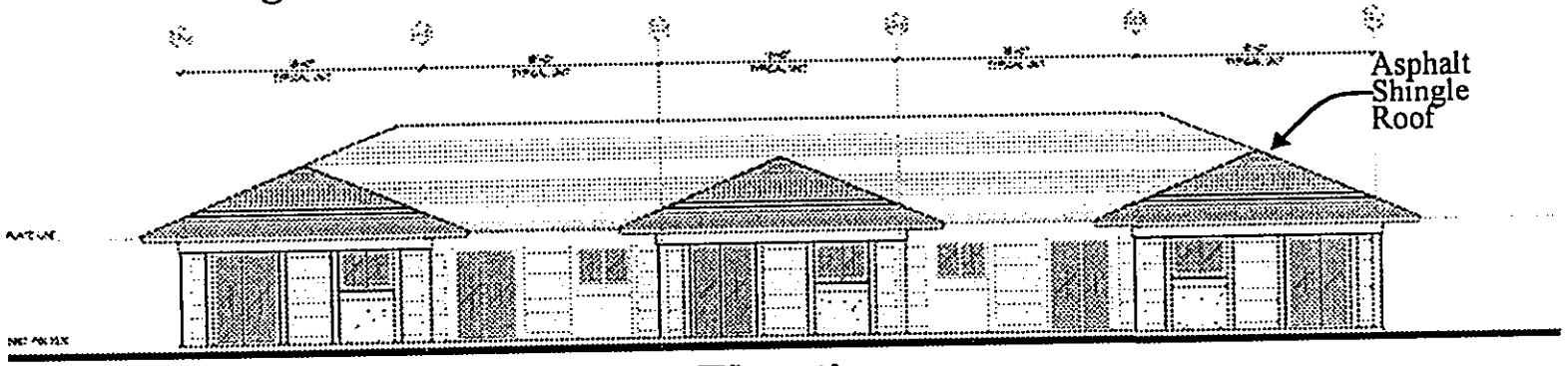
Front Elevation



Right Elevation



Left Elevation



Rear Elevation

Source: GYA Architects, Inc.

Figure 3

Central Maui Senior Housing and County Office Buildings Project

Exterior Elevations for Typical Cluster of 5 Units

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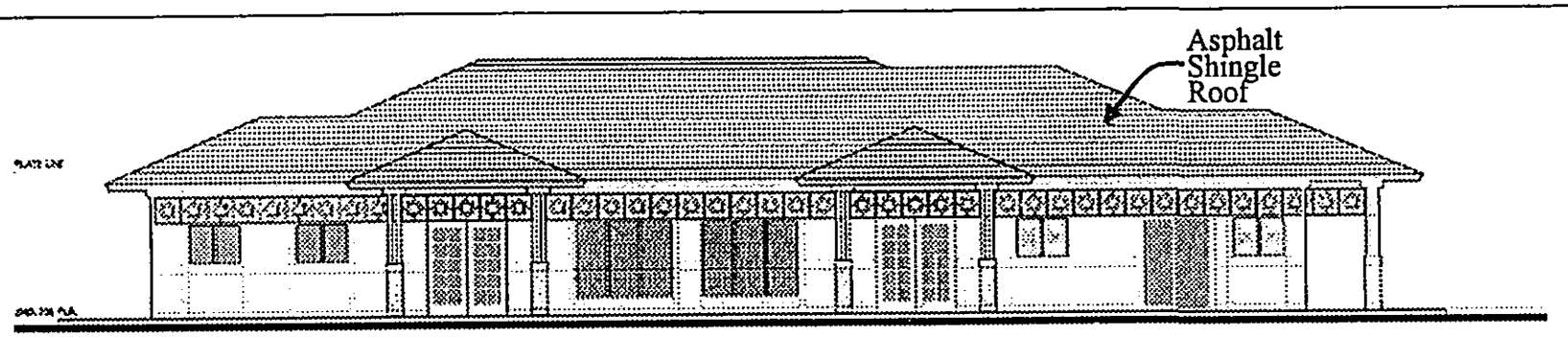
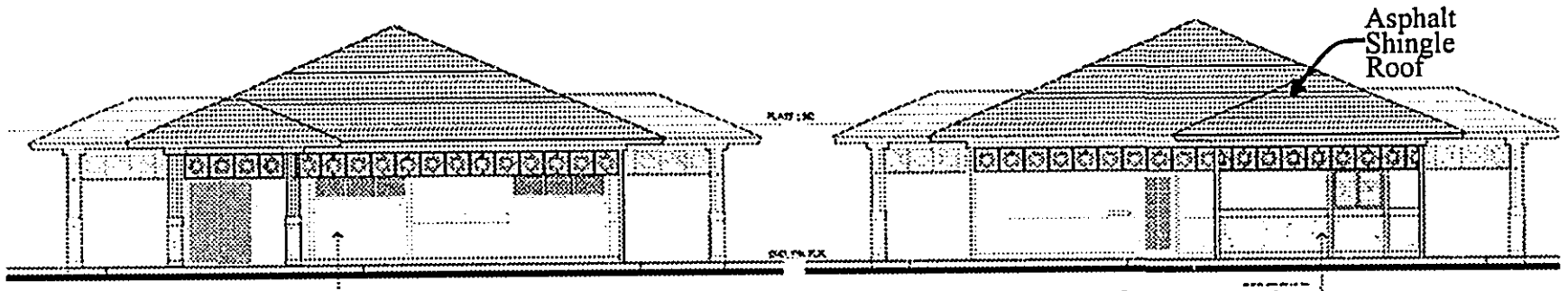
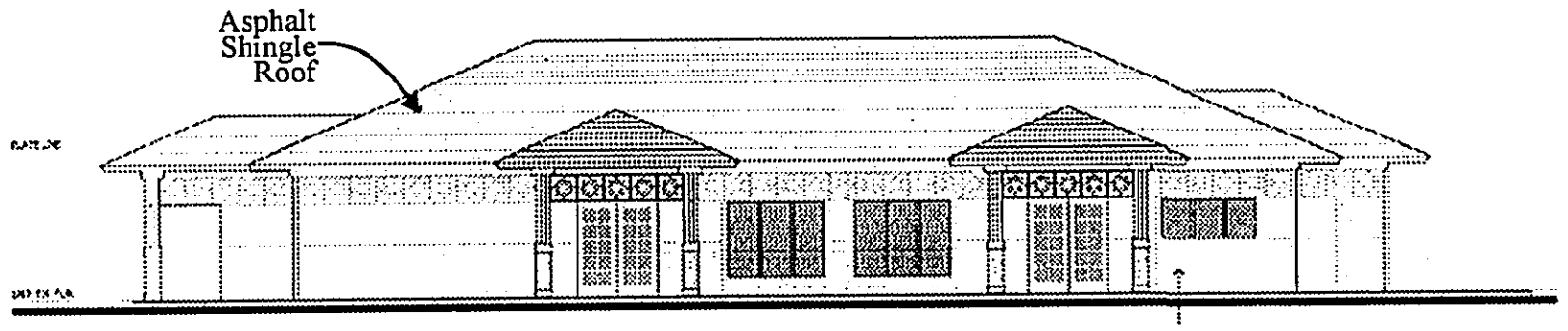


Front Elevation



Right Elevation

Left Elevation



Rear Elevation

Source: GYA Architects, Inc.

Figure 4

Central Maui Senior Housing and County Office Buildings Project

Exterior Elevations for Community Center

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access and circulation will be kept separate. Refer to Figure 2 and see Figure 5 and Figure 6.

Refer to Appendix "A" for Building Sections and Floor Plans for both the Senior housing and County office buildings.

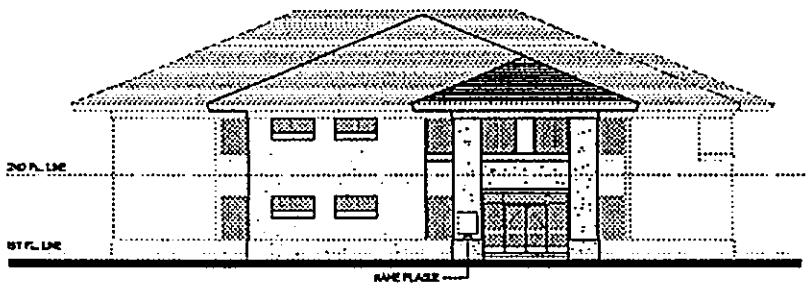
C. ***PROJECT NEED***

1. ***Senior Housing Component***

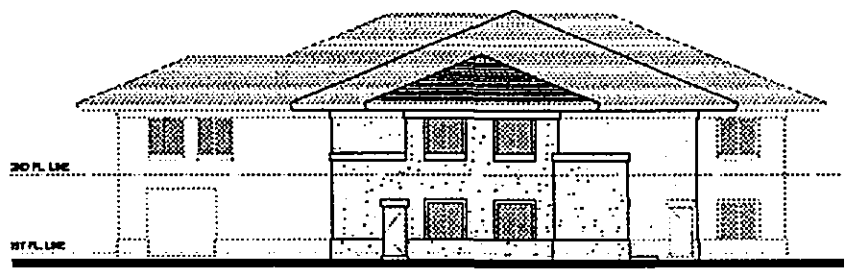
As of January 2004, there were approximately 499 affordable elderly housing units on the island of Maui. Hale Mahaolu operates 457 of the units, distributed among six (6) facilities, including three (3) in the Kahului area and one (1) each in Makawao, Lahaina and Waiehu. In addition, the State of Hawaii Housing and Community Development Corporation of Hawaii owns and manages the 42-unit Piilani Elderly Housing Project, which is located in Lahaina, Maui. The State of Hawaii facility and the Hale Mahaolu facilities are all operating at full capacity. As of January 2004, the Hale Mahaolu facilities combined had a waiting list of 610 households. Generally, the average length of time for a wait list candidate can range between 18 to 24 months, depending on the individual facility and the type of unit desired.

Other proposed senior housing projects on Maui include the Lokenani Hale project in Wailuku containing 62 units (ground breaking, September 2004) and the Hale Mahaolu Ehiku project in Kihei containing 112 units (pending the SMA and 201G review).

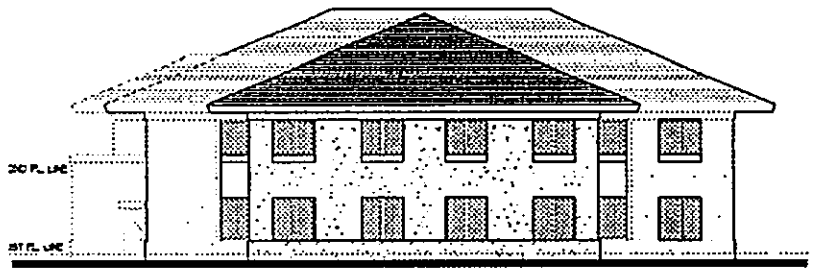
Available data from the United States Census 2000 and the County of Maui Office of Economic Development indicate that:



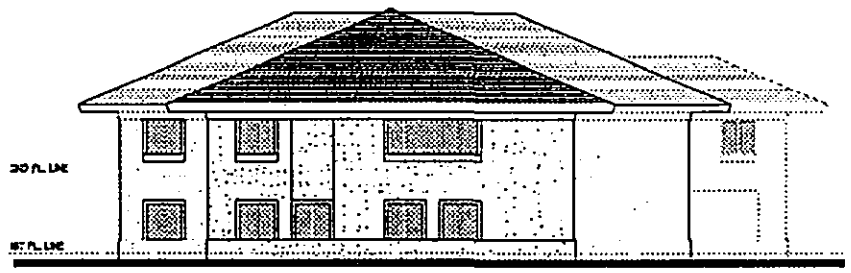
Front Elevation



Right Side Elevation



Rear Elevation



Left Side Elevation

Building Sections

Source: GYA Architects, Inc.

Figure 5

Central Maui Senior Housing and County Office Buildings Project

Housing Division Buildings

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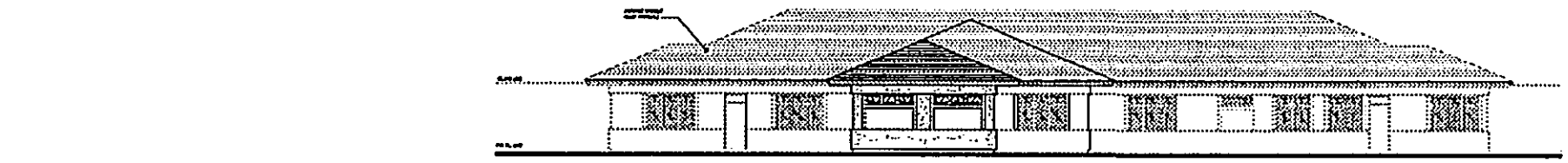

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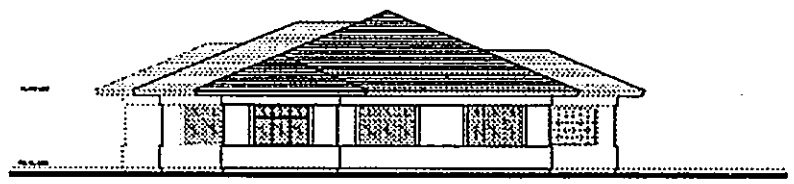
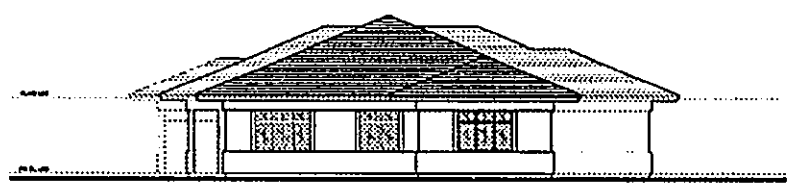
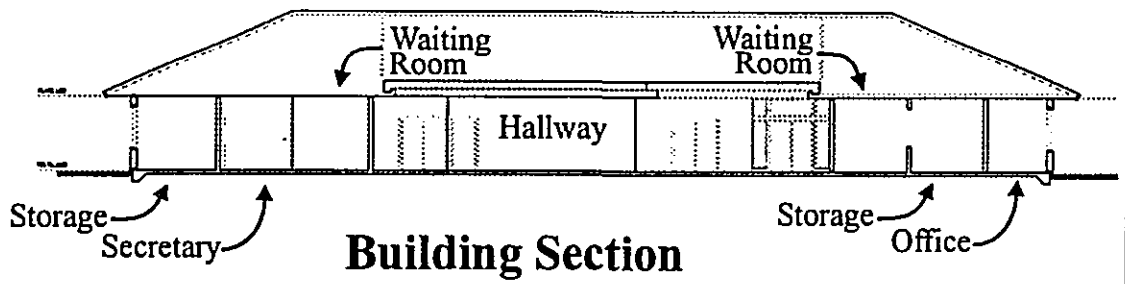


Right Elevation

Front Elevation



Left Elevation



Building Section

Source: GYA Architects, Inc.

Figure 6 Central Maui Senior Housing and County Office Buildings Project
Immigrant Services Division Office, Volunteer Center, CDBG Program and Office on Aging Reference Library Building

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- Maui's 2000 elderly population (residents age 65 years and older), numbered 13,185 residents, or approximately 11 percent of the island's total population;

- Maui's population between the ages of 60 to 64 years includes an additional 4,807 residents;

- In 2000, approximately 35 percent (2,790) of Maui's elderly households (65 years and older) earned less than $25,000.00 per year, well below the 50% of County median level of $30,350.00; and

- In 2000, for the age cohort 55 years and older, about 50 percent (1,740) of Maui's elderly households (65 years and older) were renting living units.

Given current demographics, the demand for elderly affordable units will continue to increase. The proposed Senior Housing component of this project is anticipated to help meet this demand.

2. *County Office Buildings Component*

As the population grows in Maui County, so does the need for human services. The proposed office buildings would better centralize the divisions within the Department of Housing and Human Concerns, to maintain efficient public services and meet long-term demands for human services for the people of Maui County.

D. *APPROVALS REQUIRED*

Inasmuch as County funds will be used for the proposed action, this environmental assessment will be prepared and processed in accordance with Chapter 343, Hawaii Revised Statutes (HRS). Similarly, since Federal funds under the Home Investment Partnerships Program and Economic Development Initiatives-Special Projects Program will also be used for the proposed action, a U.S. Department of Housing and Urban

Development (HUD) EA will be prepared and processed in accordance with the National Environmental Policy Act (NEPA).

It is anticipated that the Director of Planning will initiate a proposal to obtain land use consistency with the proposed Office Buildings use. An amendment to the Wailuku-Kahului Community Plan from "Park" to "Public/Quasi-Public" or "Single Family" will be sought. Either of these community plan land use designations would allow government buildings, such as the proposed County office buildings.

The Senior Housing component of the project will be processed in accordance with Section 201G-118 of the Hawaii Revised Statutes. The 201G-118 application will seek exemptions from certain regulatory and statutory requirements relating to land use, construction, subdivision, public services and infrastructure, and administrative procedures. The 201G application will be filed following completion of the Chapter 343 and HUD EA processes.

County zoning for the subject property is "R-3, Residential". This residential district zoning category permits buildings or premises used by county governments for public purposes. If a "Single Family" community plan land use designation is sought, no zoning change will therefore be required. On the other hand, if a "Public/Quasi-Public" community plan land use designation is sought, a change in zoning to the "P-1, Public/Quasi-Public" district will be required. This district also permits government building uses.

Either of the foregoing scenarios will assure conformance with comprehensive plans and zoning.

It is noted that the proposed amendment to the Wailuku-Kahului Community Plan is also a trigger for the preparation and processing of an environmental assessment in accordance with Chapter 343, Hawaii Revised Statutes. As there are multiple triggers for the Chapter 343, HRS EA, the County of Maui has determined that its Department of Housing and Human Concerns will be the EA accepting and determination agency.

Chapter II

Description of the Existing Environment

II. DESCRIPTION OF THE EXISTING ENVIRONMENT

A. PHYSICAL ENVIRONMENT

1. Land History

As mentioned previously, the subject property is currently used for a swap meet operation every Saturday and occassional Sundays. Previous to the swap meet operation which was established in 1994, the site was used as a baseball field and tennis courts. Currently, the project site is not in active park use.

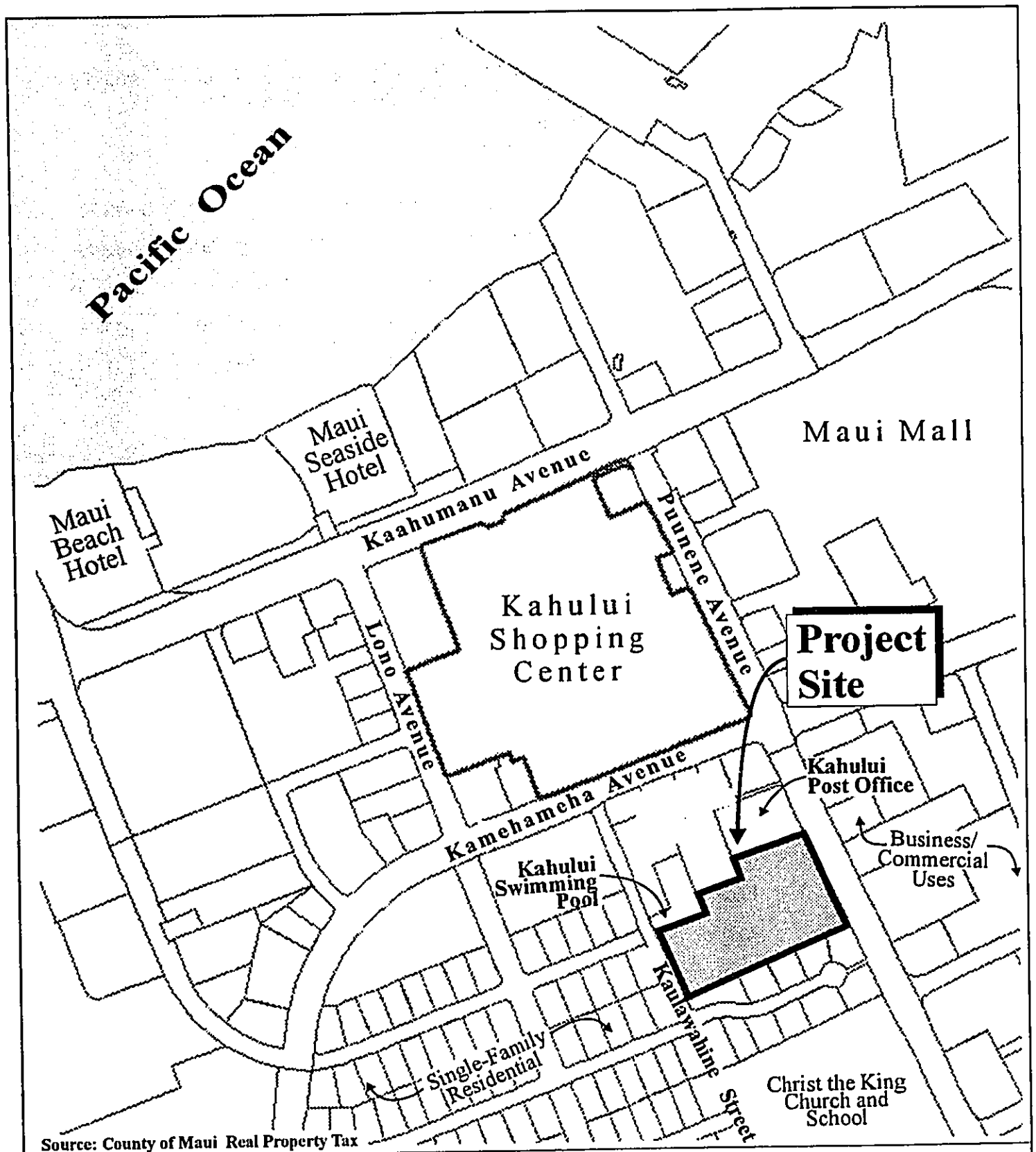
2. Surrounding Land Uses

The subject parcel is located along Puunene Avenue, to the immediate south of the Kahului Post Office. This undeveloped property is located in the midst of the Kahului urban fabric. Land uses in the project vicinity include fast food and retail outlets, and an automobile dealership. Apartment, single-family residential and public/quasi-public uses are also found in the project vicinity. The Christ the King Church and School is located approximately 0.2 mile to the south, while the County's Kahului Pool is located to the immediate northwest of the parcel. See Figure 7.

3. Climate

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

Average temperatures at the project site (based on temperatures recorded at Kahului Airport) range from lows in the 60's to highs in the 80's. August is historically the warmest month, while January and February are the coolest. Rainfall at the project site averages



Source: County of Maui Real Property Tax

Figure 7 Central Maui Senior Housing and County Office Buildings Project

NOT TO SCALE

Surrounding Land Uses

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approximately 20 inches per year. Winds in the Kahului region are predominantly out of the north-northeast and northeast.

4. ***Topography, Soil Characteristics and Soil Rating***

The site is located on Maui's flat central isthmus. The property ranges in elevations from 6 feet to 8 feet above mean sea level. The soil types specific to the project site are Fill land (Fd) and Puuone Sand (PZUE). See Figure 8 and Figure 9. Fill land contains material from dredging, excavation from adjacent uplands, or areas filled with bagasse and slurry from sugar mills. Generally, these materials are dumped and spread over marshes, low-lying areas along the coastal flats, coral sand, coral limestone, or areas shallow to bedrock (Soil Conservation Service, 1972). PZUE soils predominate in the Kahului region and are typified by a sandy surface layer underlain by cemented sand (Soil Conservation Service, 1972).

The Land Study Bureau's Detailed Land Classification Map and the State Agricultural Lands of Importance Map designate the subject property for "Urban" use.

5. ***Flood and Tsunami Hazard***

Lands underlying the subject property are located within Flood Zone C, areas of minimal flooding. See Figure 10.

6. ***Flora and Fauna***

The subject property is vegetated with various weeds and grasses. Surrounding the project site to the east, west and south are urbanized areas of Kahului. There are no known rare, endangered or threatened species of plants within the project sites.

LEGEND

① Pulehu-Ewa-Jaucas association

② Waiakoa-Keahua-Molokai association

③ Honolua-Olelo association

④ Rock land-Rough mountainous land association

⑤ Puu Pa-Kula-Pane association

⑥ Hydrandepts-Tropaquods association

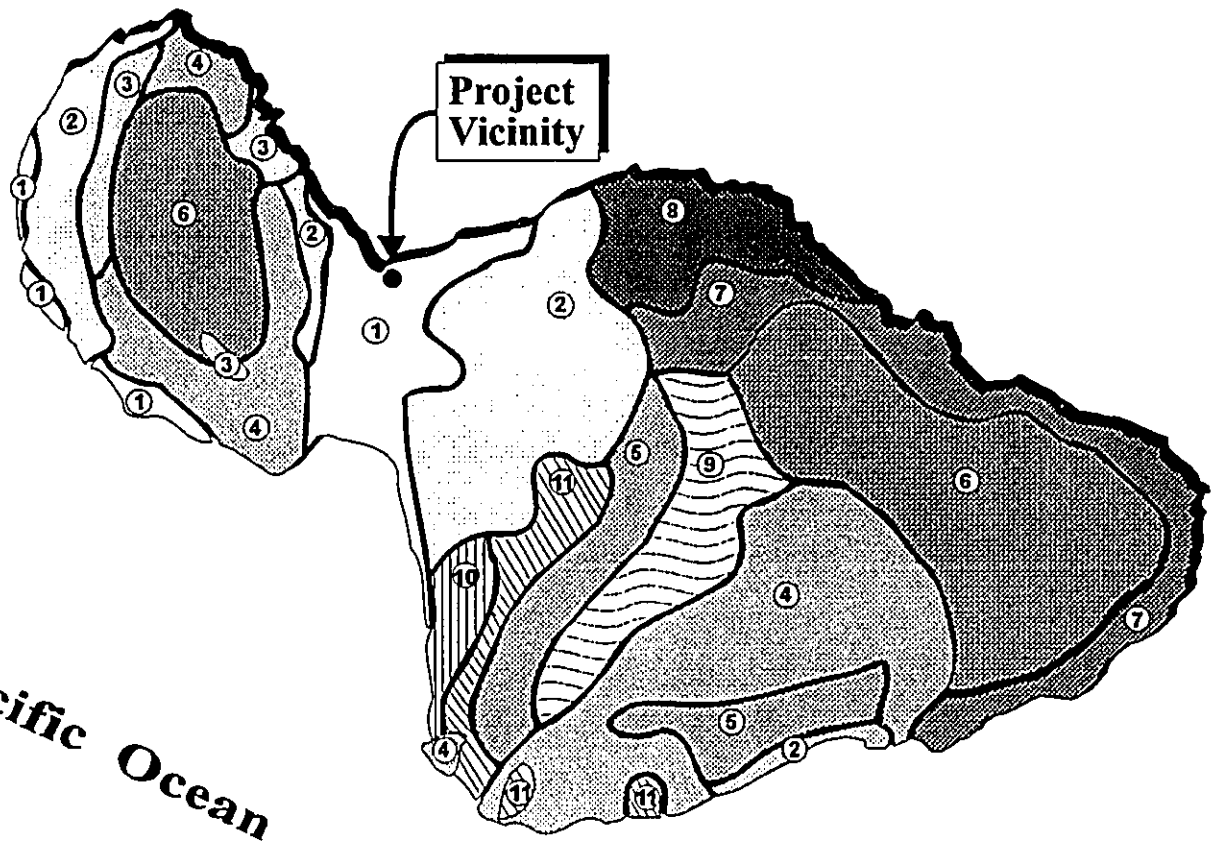
⑦ Hana-Makaalae-Kailua association

⑧ Pauwela-Haiku association

⑨ Laumaia-Kaipoipoi-Olinda association

⑩ Keawakapu-Makena association

⑪ Kamaole-Oanapuka association



Map Source: USDA Soil Conservation Service

Figure 8 Central Maui Senior Housing and County Office Buildings Project
Soil Association Map

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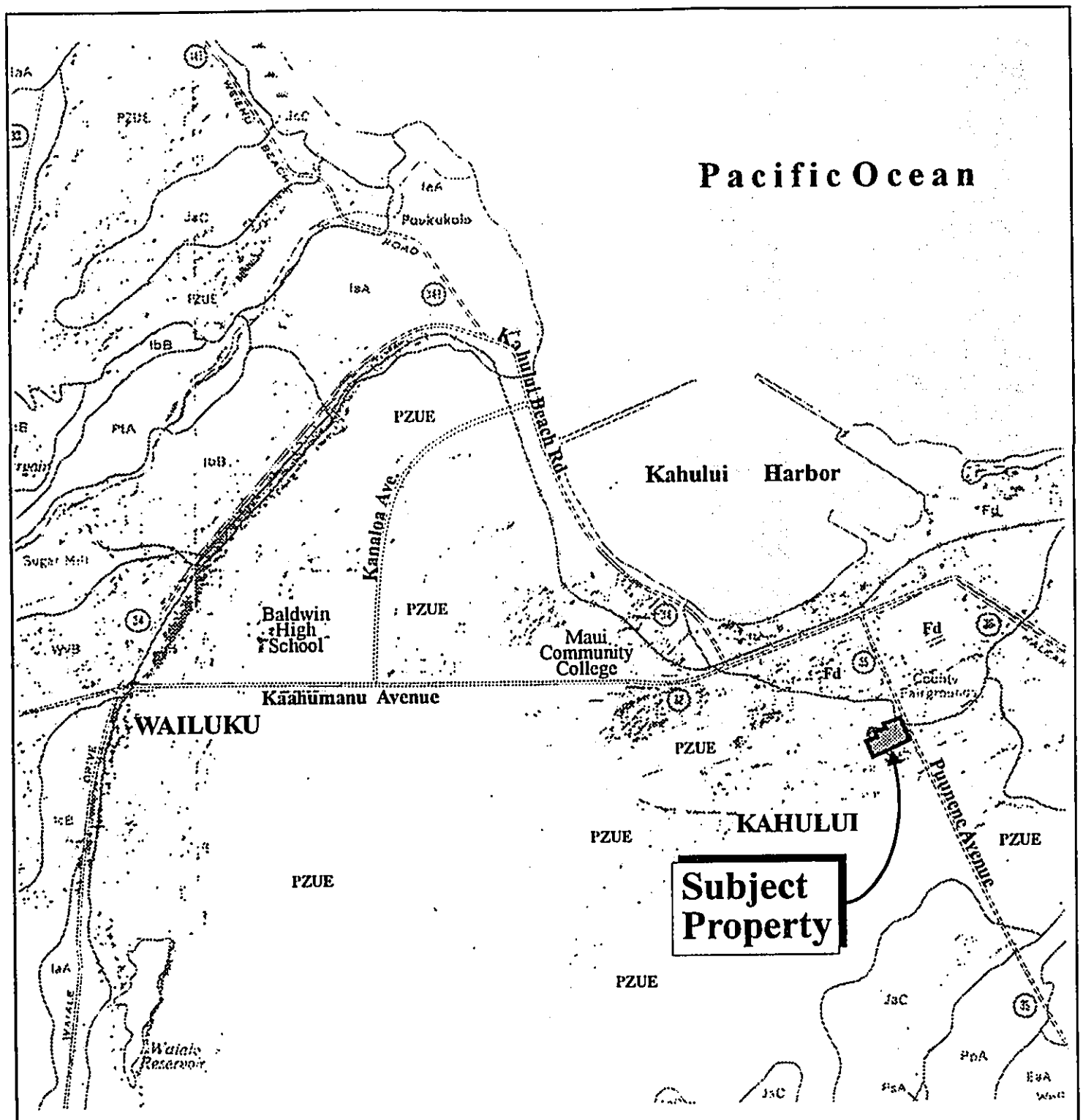

Source: U.S. Soil Conservation Service

Figure 9 Central Maui Senior Housing and County Office Buildings Project

Soils Classifications Map

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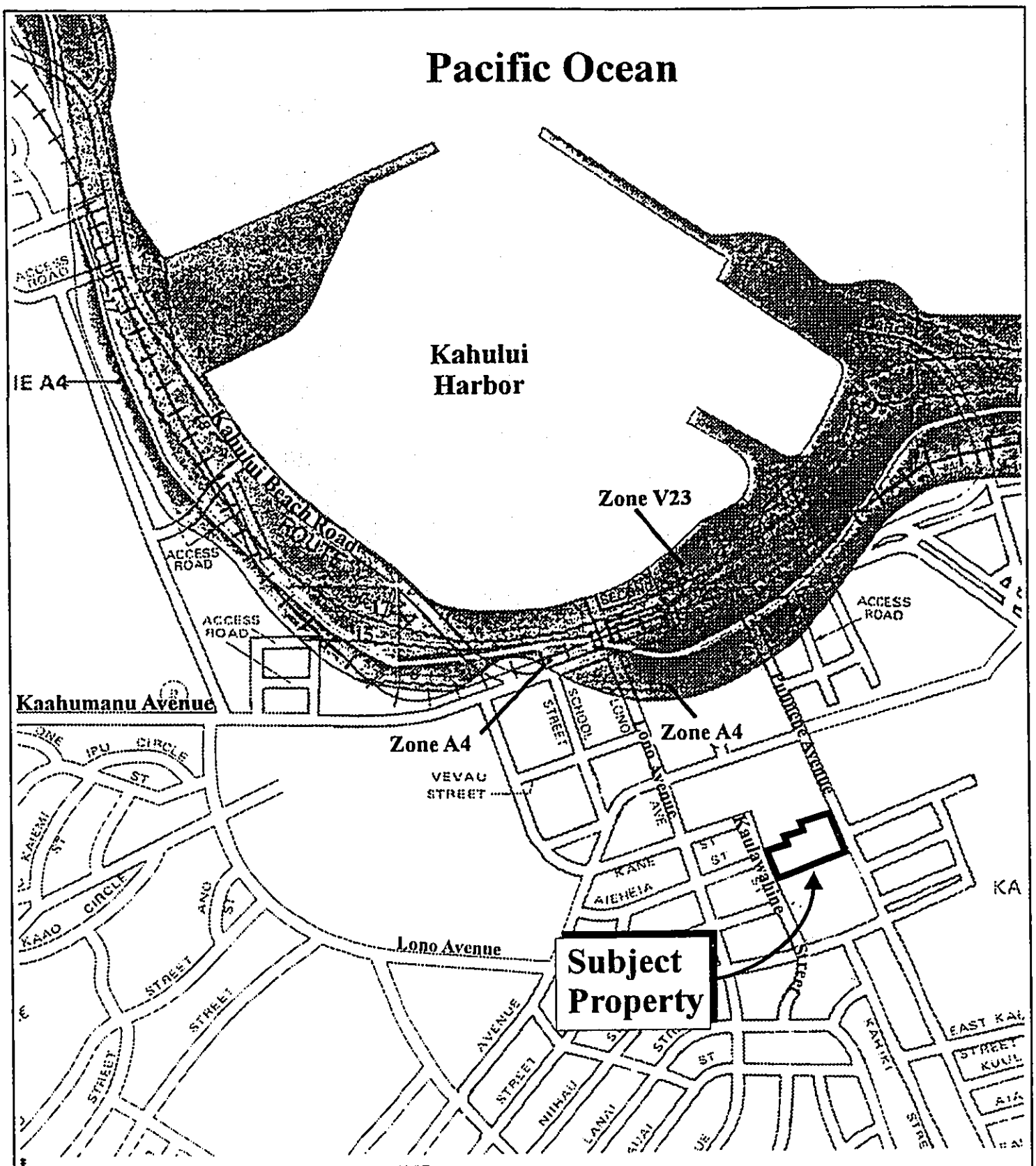

Figure 10 Central Maui Senior Housing and County Office Buildings Project

Flood Insurance Rate Map

0 250 500 1000 Feet

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Fauna and avifauna are also characteristic of urban areas. Fauna typically found in the vicinity include mongoose, rats, dogs and cats. Avifauna include the Common mynah, Spotted Dove, Barred Dove, Japanese white-eye Cardinal, Red-crested Cardinal, and House Sparrow. There are no known rare or endangered species of fauna or avifauna found at the project site.

7. ***Archaeological and Cultural Resources***

a. Archaeological Resources

An archaeological assessment report was prepared for the project by Xamanek Researches, October 2004. See Appendix "B".

The assessment survey of the study area was carried out in two (2) phases -- a pedestrian inspection was first conducted, followed by subsurface investigation. This latter phase consisted of ten (10) backhoe trenches that were placed in accessible portions of the study area. The walkover portion of the survey was undertaken using transect lines spaced approximately five (5) meters apart, and oriented roughly northwest/southeast. While it was not possible to test in the tennis court area, the grounds around it were inspected in order to assess the possible presence of significant material culture remains elsewhere on the parcel. In addition, the margins of the adjacent properties to the southwest were visually inspected from the border of the planned County facility.

As previously noted, a total of ten (10) backhoe trenches were utilized to sample the study area. These subsurface

tests were excavated in various locales, allowing for avoidance of underground utilities, tree roots, access roads, etc. There were no subsurface cultural layers encountered during the course of the subsurface testing. Refer to Appendix "B".

b. ***Cultural Resources***

The study area, in which the present survey and monitoring took place, lies behind the Pu'uone Dune Foundation, and is a part of the island that has been adversely affected by the presence of the military during World War II. A large Marine base existed in the area that is now Keopuolani Park. Before the construction of the base, a sizable plantation community, Raw Fish Camp, occupied the area. Prior to that, it was used as pasturage. As a consequence of the considerable amount of land alteration associated with these events, most traces of precontact activity, if it existed, has been most likely destroyed. At the northeast section (makai) of the Kanaloa Avenue corridor, remnants of habitation sites with associated burials have been found, and there is a possibility that similar subsurface features are present on the remaining remnants of the sand dune formation.

Interviews with knowledgeable informants were conducted during the preparation of the Draft EA to obtain a broader range of cultural resource perspectives in and around the proposed project area.

An interview was conducted at 15 East Kauai Street with

Mrs. Mabel Ito. The following is a summary of the interview:

Mabel Ito

Mrs. Ito was born in Kahului in 1919. She is the second generation on Maui and is of Japanese ancestry. Mrs. Ito and her family resided near the project site along Main Street, now Kaahumanu Avenue. Her father was a merchant tailor and owned a small shop on the Kahului Shopping Center site called *"Inada Tailor Shop"*. Mrs. Ito, and her husband George moved to their East Kauai Street residence in 1950.

Mrs. Ito recalled several uses within the vicinity of and on the project site. Use included a tennis court, the Kahului Athletic Club building, the Salvation Army Thrift Shop, and a bowling alley. She further recalled that the project site was over grown with kiawe trees, until Kahului Railroad Company cleared the lot for a ballfield. In the 1940's, Mrs. Ito volunteered at the Athletic Club, before working at the bowling alley. Working at the bowling alley and helping with the summer fun program at the Athletic Club were fond memories of Mrs. Ito and was saddened when the structures were burned down. Mrs. Ito then worked for the University of Hawaii Cooperative Extension Service for 30 years.

Mrs. Ito was not aware of any cultural practices associated with the project site. The project site was historically used as a ballfield and may have been used for overflow parking for the fairgrounds site. She did mention that there were several camps in the project vicinity. The Hawaiian camp was called, "raw fish" camp and was located near the shoreline.

Irene Lum Ho

An interview was conducted at 515 Waikala Street, Kahului Maui with Mrs. Irene W. Lum Ho. Also present was Mrs. Lum Ho's daughter, Kehau. The following is a summary of the interview:

Mrs. Lum Ho was born in Honolulu and has lived on Maui since 1946 (58 years). She lived in Haiku for 10 years before moving to Kahului on the corner of Puunene Avenue

and Wakea Avenue in 1956. In 1972, she moved to her Waikala Street residence where she currently resides. Mrs. Lum Ho has been working for the Department of Education, Hawaiian Studies program for the past 16 years. She is a member of Kahului Union Church located across Kaulawahine Street near the subject property. She is also a member of the County of Maui, Kupuna Council, a group who advised the Mayor on cultural issues of the County.

Mrs. Lum Ho is of Hawaiian-Chinese ancestry. Her parents were from the Big Island. Her dad was hundred percent (100%) Hawaiian and mom was fifty percent (50%) Chinese and fifty percent (50%) Hawaiian. Her dad worked as a molder at Honolulu Iron Works and her mom was a housewife.

Mrs. Lum Ho always recalled the subject property being used as a ballfield. Other uses mentioned included overflow parking for the fair grounds and a bowling alley. Uses within the vicinity of the project site included the Kahului Theater (current Burger King site) and Kahului Union Chuch (current Bank of Hawaii site). She mentioned that there were houses along the shoreline area and recalls a Hawaiian camp called *"cod-fish"* camp located in the vicinity of Harbor Lights along Kahului Beach Road.

Mrs. Lum Ho was not aware of any cultural practices that have been carried out on or near the proposed project site. She mentioned that this area was always a low lying area and subject to flooding during heavy rains. She also recalls the tidal wave in the late 1950's where the ocean water flowed to her residence along Wakea Avenue. She also remembered seeing fish on the street. She noted that the tidal wave runup may have been prior to the Kahului breakwall construction.

Fond memories of Mrs. Lum Ho included watching her son play little league baseball on the subject property. She also used to chaperone teen age dances at the old Territorial Building on the fair grounds site and sometimes at the Armory. These dances were called *"Teen-o-Rama"*. Mrs. Lum Ho considered traffic and parking at the post office to be existing problems in the area of the proposed project. Mrs. Lum Ho was happy to see housing for seniors being constructed on the property as this is a needed type of

facility for seniors.

8. *Air Quality*

The Wailuku-Kahului region is not exposed to adverse air quality conditions. Point sources such as the Maui Electric Power Plant and Hawaiian Commercial and Sugar Company's Puunene Mill and non-point sources such as automobile emissions are not significant to generate high concentrations of pollutants. The relatively high quality of air can also be attributed to the region's exposure to tradewinds which quickly disperse concentrations of emissions. This rapid dispersion is evident during burning of sugar cane in fields located to the southeast of the Kahului residential core.

9. *Noise*

Traffic noise is the predominant source of background noise in the vicinity of the projects. To the north and east, activity of the Kahului Airport adds to the background noise levels in the surrounding region.

10. *Visual Resources*

The subject property is located in the midst of Kahului's commercial core. Beyond the surrounding developed lands are the West Maui Mountains and Haleakala. There are no significant view corridors in the vicinity of the subject property.

B. *SOCIO-ECONOMIC ENVIRONMENT*

1. *Population*

The population in the County of Maui has exhibited relatively steady growth over the last decade. The 1990 population was estimated at 100,504. The year 2000 population was estimated at

128,241, which is a 28 percent increase over 1990 (DBEDT, Hawaii Census 2000). The resident population for the year 2010 is projected to be 151,269 (SMS, June 2002).

The estimated 1990 population of the Wailuku-Kahului region is 32,816. The region's population shows an increase to 41,503 in the year 2000 (Maui County Data Book, June 2001). By the year 2010, population is anticipated to increase to 48,397 (SMS, June 2002).

2. *Economy*

The Kahului region is the Island's center of commerce. Combined with neighboring Wailuku, the region's economic character encompasses a broad range of commercial, service, and governmental activities. In addition, the region is surrounded by significant agricultural acreages primarily in sugar cane and pineapple cultivation. The vast expanse of agricultural land, managed by Hawaiian Commercial & Sugar (HC&S), is considered a key component of the local economy.

C. *PUBLIC SERVICES*

1. *Recreational Facilities*

The Wailuku-Kahului region encompasses a full range of recreational opportunities, including shoreline and boating activities at the Kahului Harbor and adjoining beach parks, and individual and organized athletic activities offered at numerous County parks and the War Memorial Complex. The subject property is in close proximity to Keopuolani Park, Kanaha Beach Park, Kahului Community Center, Wailuku Community Center and Iao Valley State Park.

2. ***Police and Fire Protection***

Police protection for the Wailuku-Kahului region is provided by the County Police Department headquartered at the Wailuku Station, approximately a mile west of the subject property. The region is served by the Department's Central Maui patrol.

Fire prevention, suppression, and protection services for the Wailuku-Kahului region is provided by the County Department of Fire and Public Safety's Kahului Station which is located approximately one (1) mile south of the subject site. The Wailuku Station, located in Wailuku Town, is approximately 1.5 miles west of the site.

3. ***Solid Waste***

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

4. ***Health Care***

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

5. *Schools*

The Wailuku-Kahului region is served by the State Department of Education's public school system as well as several privately operated schools accommodating elementary, intermediate and high school students. Department of Education facilities in the Kahului area include Lihikai and Kahului Schools (Grades K-5), Maui Waena Intermediate School (Grades 6-8), and Maui High School (Grades 9-12). Existing facilities in the Wailuku area include Wailuku Elementary School (Grades K-5), Iao Intermediate School (Grades 6-8), and Baldwin High School (Grades 9-12). Maui Community College, a branch of the University of Hawaii, serves as the Island's only Community College.

D. *INFRASTRUCTURE*

1. *Roadways*

The project site is located along Puunene Avenue between Kamehameha Avenue and Wakea Avenue. Access to the proposed project will be via two (2) new driveways; one off of Puunene Avenue and one off of Kaulawahine Street.

Puunene Avenue is predominantly a five-lane, two-way State of Hawaii roadway in the vicinity of the project. Approximately, 0.2 mile north of the project site, Puunene Avenue intersects with Kamehameha Avenue, a predominantly two-lane, two-way County of Maui roadway, generally oriented in the east-west direction that serves as one of the major collector roadways through Kahului between Kaahumanu Avenue and West Papa Avenue. At this signalized intersection, all approaches to the intersection have three (3) lanes that serve left-turn, through, and right-turn movements.

Approximately 0.3 mile southeast of the intersection with Kamehameha Avenue, Puunene Avenue intersects Wakea Avenue, a predominantly two-lane, two-way County of Maui roadway, generally oriented in the east-west direction that also serves as a major collector roadway through Kahului. At this signalized intersection, the northbound approach of Puunene Avenue has four (4) lanes that serve all traffic movements, while the southbound approach has three (3) lanes that serve all traffic movements. The Wakea Avenue approaches to the intersection have three (3) lanes that serve left-turn, through, and right-turn traffic movements.

Approximately 0.2 mile southwest of the intersection with Puunene Avenue, Wakea Avenue intersects Lono Avenue, a predominantly two-lane, two-way County of Maui roadway, generally oriented in the north-south direction. At this signalized intersection, the Wakea Avenue approaches have two (2) lanes that serve left-turn, through, and right-turn traffic movements, while the Lono Avenue approaches have three (3) lanes that serve all traffic movements.

Approximately 0.3 mile northwest of the intersection with Wakea Avenue, Lono Avenue intersects Kamehameha Avenue. At this signalized intersection the northbound approach of Lono Avenue has three (3) lanes that serve all traffic movements, while the southbound approach has two (2) lanes that serve all traffic movements. The Kamehameha Avenue approaches to this intersection have three (3) lanes that serve left-turn, through, and right-turn traffic movements.

2. ***Wastewater***

The County of Maui provides a wastewater collection system for the area. The collection system carries wastewater to the Wailuku-Kahului Wastewater Reclamation Facility located to the north of the project site on Amala Place. The wastewater collection system in the vicinity of the project includes a 10-inch gravity sewer along Puunene Avenue.

3. ***Water***

The County of Maui, Department of Water Supply provides water service for the Kahului Town area. The water system includes reservoirs and a network of distribution lines. The main source of water for this system are the Iao and Waihee Aquifers, the Iao tunnel, and the Iao Waikapu ditch. Existing distribution lines adjoining the site include a 12-inch main along Puunene Avenue and a 6-inch main along Kaulawahine Street. Existing fire hydrants along both streets provide fire protection for the area.

4. ***Drainage***

The project site is flat with elevations that range from about 6 feet to 8 feet above mean sea level. The site is open and flat with no existing drainage improvements. Runoff from the site flows toward Puunene Avenue and Kaulawahine Street.

Existing storm drainage facilities are located directly off-site on both Kaulawahine Street and Puunene Avenue. A 29-inch x 18-inch corrugated metal arch pipe carries storm runoff from the storm drain manhole located approximately 130 feet south of the southeast property corner, under Puunene Avenue and then south to an open ditch which flows northeasterly toward Kanaha Pond.

Storm drainage from the Store Village Subdivision, directly south of the site, is carried by this system. Calculations indicate this system is at capacity and will not accommodate additional flow from this site.

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

Maui Electric Company, Verizon Hawaii, and Oceanic Time Warner Cable provide electrical, telephone, and cable television services for the area. These utility companies confirmed that services are available for the project site.

Preliminary energy conservation measures may include solar water heating and energy efficient lighting for the Senior Housing components; and energy efficient lighting and air conditioning systems for the County Office Buildings.

These measures will be further considered during the final design of the project.

Chapter III

Potential Impacts and Mitigation Measures

III. POTENTIAL IMPACTS AND MITIGATION MEASURES

A. PHYSICAL ENVIRONMENT

1. Surrounding Land Uses

The proposed action will increase affordable senior housing opportunities in the Central Maui area. The project is compatible with existing land uses in the area, including commercial and public/quasi-public uses. No adverse impacts to surrounding land uses are anticipated as a result of project implementation. It is noted that the Swap Meet operator, Maui Exposition, will be seeking an alternative location for the weekend swap meets in coordination with landowner A&B Properties, Inc.

2. Flood and Tsunami Hazard

All of the proposed construction is designated for lands located within Flood Zone C, areas of minimal flooding. All proposed improvements will be designed and constructed in compliance with Chapter 19.62 of the Maui County Code, relating to Flood Hazard Areas.

3. Flora and Fauna

There are no known significant habitats or rare, endangered or threatened species of flora and fauna located within the project site. The proposed action is not anticipated to result in adverse impacts to these environmental parameters.

4. Archaeological and Cultural Resources

a. Archaeological Resources

An Archaeological Inventory Report was prepared for the project by Xamenek Researches, October 2004. Refer to Appendix "B". A total of ten (10) backhoe trenches were

utilized to assess subsurface conditions on the project site during the course of the archaeological inventory survey. As a result of this subsurface investigation, no evidence of an intact cultural layer or any significant material culture remains were encountered. However, given the presence of sand deposits throughout the project area, precautionary archaeological monitoring is recommended during construction.

b. ***Cultural Resources***

Based on the background research and findings of the archaeological assessment report, along with the interviews with knowledgeable informants, it is anticipated that the proposed project will not have an impact on cultural resources.

In order to mitigate any unforeseen impacts on cultural resources, it is recommended that precautionary monitoring be required during any ground altering activities, similar to the recommendations of the archaeological assessment report.

5. ***Air Quality***

Air quality impacts attributed to the project will include dust generated by short-term, construction related activities. Site work such as grading, utility installation, and parking lot construction, for example, will generate airborne particulates. However, appropriate Best Management Practices (BMPs) to control dust will be implemented as needed to minimize potential adverse air quality impacts.

The use of the subject property for affordable housing will involve an incremental increase in the volume of traffic flowing in and out of the site. However, this volume represents a relatively small portion of overall traffic activity in the Kahului region. Thus, the proposed project is not anticipated to be detrimental to local air quality.

6. ***Noise***

As with air quality, ambient noise conditions will be impacted by construction activities. Heavy construction equipment, such as bulldozers, front end loaders, and trucks and trailers carrying material, would be the dominant source of noise during the site construction period. To mitigate construction noise impacts upon surrounding properties, appropriate BMPs will be utilized. Work will be conducted during daytime working hours.

On a long-term basis, the project is not anticipated to generate adverse noise conditions.

7. ***Visual Resources***

The proposed senior housing and County office buildings project will integrate landscaping and open space areas with architecturally designed structures designed to provide a facility which is not only compatible with its surrounding environment, but satisfies spatial, aesthetic, and functional requirements as well. The proposed development is also compatible in scale with existing development in the area which includes the Kahului Shopping Center, Queen Kaahumanu Center, and the Maui Beach Hotel across Kaahumanu Avenue.

The proposed project is not anticipated to have an adverse impact upon the scenic and visual character of the surrounding area.

B. SOCIO-ECONOMIC ENVIRONMENT

1. Population and Economy

On a short-term basis, the project will support construction employment which will support the construction industry. Employment provided through the construction phase of the project will also help to support surrounding businesses in the project vicinity.

On a long-term basis, the project will have a positive effect on the housing market with the addition of 39 affordable rental units for seniors. The project is not anticipated to significantly impact local population levels, nor will the project result in a significant level of in-migration.

C. PUBLIC SERVICES

1. Recreational Facilities

Construction of the proposed project is not anticipated to adversely impact existing recreational resources in the Wailuku-Kahului region.

An exemption from the Title 18 parks and playground assessment requirements will be sought as part of the project's Section 201G-118 application. As a senior living project, this proposed exemption is not anticipated to have an adverse effect upon local recreational resources.

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

Medical, police and fire protection services are not expected to be adversely impacted by the proposed project. The project will not extend existing service area limits for emergency services.

3. ***Solid Waste***

As appropriate, construction waste material will be disposed at approved construction disposal sites. Once the project is completed, solid waste will be handled by a private refuse collection company. The proposed action is not anticipated to adversely impact the County of Maui's solid waste collection system and landfill capacity.

4. ***Schools***

The proposed 39 units will provide affordable rentals for Maui's senior population. As such the proposed project is not anticipated to generate an impact on existing educational facilities in the region.

D. *INFRASTRUCTURE*

1. ***Roadways***

According to the Traffic Impact Report, prepared by Wilson Okamoto Corporation, a field investigation was conducted on February 24 to 26, 2004 and consisted of manual turning movement count and 24-hour mechanical count surveys along Lono Avenue. The manual turning movement count surveys were conducted between the morning peak hours of 7:00 a.m. and 9:00 a.m., and the afternoon peak hours of 3:00 p.m. and 5:00 p.m. at the following intersections:

- Puunene Avenue and Kamehameha Avenue
- Puunene Avenue and Wakea Avenue
- Lono Avenue and Wakea Avenue
- Lono Avenue and Kamehameha Avenue

See Appendix "C".

Site Generated Traffic

The project site trip generation characteristics were applied to the AM, PM peak hours of traffic to measure the impacts of the project. Table 1 summarized these characteristics:

Table 1

PEAK HOUR TRIP GENERATION		
Senior Housing Project *Independent Variable: Dwelling Units = 40*		
		Projected Trip Ends
AM Peak	Enter	1
	Exit	2
	TOTAL	**3**
PM Peak	Enter	3
	Exit	1
	TOTAL	**4**
County Office Buildings *Independent Variable: 1,000 Square Feet Floor Area = 19.155*		
		Projected Trip Ends
AM Peak	Enter	38
	Exit	5
	TOTAL	**43**
PM Peak	Enter	17
	Exit	38
	TOTAL	**55**
Senior Housing and County Office Buildings		
Totals		*Projected Trip Ends*
AM Peak	Enter	39
	Exit	7
	TOTAL	**46**
PM Peak	Enter	20
	Exit	39
	TOTAL	**59**

Traffic Impact Analysis

The Year 2007 cumulative AM and PM peak hour traffic conditions with the development of the proposed Central Maui Senior Housing and County Offices project are summarized in Table 2.

Table 2

EXISTING AND PROJECTED (WITHOUT AND WITH PROJECT) TRAFFIC OPERATING CONDITIONS

Intersection	*Critical Movement*	*AM*			*PM*		
		Exist	*Year 2007*		*Exist*	*Year 2007*	
			w/out Proj	*w/Proj*		*w/out Proj*	*w/Proj*
Puunene Avenue/ Kamehameha Avenue	Westbound (LT)	C	C	C	D	D	D
	Northbound (TH-RT)	C	C	C	D	D	D
	Southbound (LT)	C	C	C	D	D	D
Puunene Avenue/ Wakea Avenue	Westbound (LT)	C	C	C	D	D	D
	Northbound (LT)	D	D	D	D	D	D
	Southbound (TH-RT)	D	D	D	D	D	D
Lono Avenue/ Wakea Avenue	Westbound (LT)	B	B	B	B	B	B
	Northbound (LT)	B	B	B	B	B	B
Lono Avenue/ Kamehameha Avenue	Eastbound (TH)	B	B	B	B	B	B
	Southbound (LT)	B	B	B	B	B	B

The existing and projected Year 2007 (Without Project) operating conditions are provided for comparison purposes. Refer to Appendix "C" for traffic count data and LOS calculations.

Despite the addition of site-generated vehicles to the surrounding roadways, traffic operations within the project vicinity are expected to remain similar to existing and Year 2007 (Without Project) conditions. The critical movements at the intersection of Puunene Avenue with Kamehameha Avenue are anticipated to be at LOS "C" and LOS "D" during the AM and PM peak periods, respectively, while those at the intersections of Lono Avenue with Wakea Avenue and Kamehameha Avenue are expected to remain at LOS "B" during both peak periods. Similarly, the critical movements at the intersection of Puunene Avenue with Wakea Avenue remain at LOS "C" and LOS "D" during the AM peak hour of traffic and at LOS "D" during the PM peak hour of traffic.

The senior housing component of the project is not anticipated to significantly increase the traffic volumes along Kaulawahine Street since there are a total of three (3) site-generated vehicles anticipated during the AM peak hour and four (4) site-generated vehicles during the PM peak hour.

Recommendations

Based on the analysis of the traffic data, the following are the recommendations of the Traffic Impact Report:

1. Provide sufficient driveway width to accommodate safe vehicle ingress and egress.

2. Provide adequate turning radii at all project driveways to avoid or minimize vehicle enroachments to oncoming traffic lanes.

3. Maintain adequate sight distances for motorists to safely enter and exit all project driveways.

4. Provide adequate turn-around area for service, delivery, and

refuse collection vehicles to maneuver on the project property. Avoid vehicle-reversing maneuvers onto bordering streets.

5. Provide adequate onsite loading and off-loading service areas and prohibit offsite loading operations.

6. Provide an exclusive left-turn and right-turn exit lanes for the driveway along Puunene Avenue to facilitate the movement of site-generated vehicles.

7. Provide an exclusive right-turn bay along southbound Puunene Avenue at the project driveway to minimize the impact of site-generated vehicles on the through traffic along Puunene Avenue. The length and layout of the bay will be determined during the design phase of the project.

8. Provide an exclusive left-turn bay along northbound Puunene Avenue at the project driveway to minimize the impact of site-generated vehicles on the through traffic along Puunene Avenue. The length and layout of the bay will be determined during the design phase of the project.

Conclusion

The Traffic Impact Report concludes that the proposed Central Maui Senior Housing and County Offices project is not expected to have a significant impact on traffic operations in the project vicinity. The critical traffic movements at all four (4) study intersections are expected to operate at acceptable levels of service during both peak hours of traffic. In addition, with the development of the proposed project, the total traffic volumes entering the intersections of Puunene Avenue and Lono Avenue with Kamehameha Avenue and Wakea Avenue are expected to increase by one percent (1%) or less during both peak hours of traffic. These increases in the total traffic volumes along those roadways are in the range of daily volume fluctuations and represent a minimal increase in the overall traffic volumes.

All recommended roadway improvements will be provided in coordination with the State Department of Transportation, as appropriate.

2. ***Wastewater***

Preliminary data indicate that the existing collection system and treatment facility can handle the wastewater flows produced by the project. According to the Preliminary Engineering Report prepared by Ronald M. Fukumoto Engineering, Inc., the project's anticipated average wastewater flow is about 13,100 gallons per day based on the wastewater flow standards of the County Wastewater Reclamation Division. See Appendix "D".

Onsite wastewater improvements for this project consist of 8-inch sewer laterals, and sewer manholes. These lines will connect to the existing 10-inch gravity sewer on Puunene Avenue.

3. ***Water***

According to the Preliminary Engineering Report, the average daily demand for the housing component of the project is 23,600 gallons per day and 2,700 gallons per day for the office building. Refer to Appendix "D" for preliminary water computations.

The water system for this project consists of separate fire protection system and domestic system improvements. These systems will tap into the existing 12-inch water main along Puunene Avenue. The preliminary sizes and components of both systems are as follows: the fire protection system consists of a 10-inch double check detector assembly and manhole, 12-inch water lines, and fire hydrants spaced at a maximum of 250 feet apart.

The domestic system consists of two (2) 1½-inch water meters, 4-inch distribution lines, and 2-inch laterals to each building.

4. *Drainage*

The County drainage standards require the use of a 50-year, 1-hour rainfall for computing volumes and rates of flow. Drainage design will be based on the Rational Method.

Drainage improvements that involve transmission of storm flows will conform to the "Rules for the Design of Storm Drainage Facilities in the County of Maui." The rules will be applied to the sizing and spacing of inlets and manholes, and sizing of drain lines, channels and culverts. Based on the County rules, the drainage system will be designed to handle a storm with a recurrence interval of 50 years since the onsite drainage area is less than 100 acres.

Table 3 below is a summary of the hydrologic design data. See Preliminary Drainage information in Appendix "D".

Table 3

HYDROLOGIC DESIGN DATA		
Item	***Existing***	***Developed***
Drainage Area	4.0 acres	4.0 acres
50-year, 1-hour Rainfall	2.4 inches	2.4 inches
50-year, 1-hour Runoff Volume	0.77 inches	1.37 inches
50-year, 1-hour Peak Flow Rate	9.9 cfs	14.9 cfs

Drainage improvements include two (2) separate collection systems

consisting of grated drain inlets within the parking lots, grated area drains within the landscaped areas, drain pipes, cleanouts, and manholes. Since there are no existing storm drainage systems in the area with sufficient capacity to carry additional runoff from the developed site, the collection systems will direct storm water to onsite drainage basins on the easterly and westerly sides of the site. The drainage basins will mitigate the increases in the rate of runoff and volume of runoff by collecting the runoff, retaining a portion of the collected runoff, and allowing portions of the runoff to be released. The amount of runoff released will be limited to the amounts which currently flow onto the adjoining streets. Refer to Appendix "D".

The drainage basins or detention/retention (D/R) basins will be located under the parking lots on each side of the site. Each basin consists of 24-inch diameter corrugated perforated high density polyethylene pipe in a gravel bed of filter rock. Each basin will be designed to keep peak flow rates due to a 50-year, 1-hour storm at pre-development levels and to keep runoff volumes due to a 50-year, 1-hour storm at pre-development levels.

There will be no adverse effects on the adjacent or downstream properties due to this project. This conclusion is based on maintaining storm drainage peak flow rates and runoff volumes at pre-development levels.

It is noted that BMPs will be utilized, as appropriate, to ensure that drainage and erosion related impacts are mitigated to the extent practicable during construction. Such measures may include ongoing maintenance of temporary erosion control measures,

conducting site clearing and grading operations during times of minimum erosion potential, regular sprinkling, and construction of dust fencing.

5. ***Electrical, Telephone and CATV Systems***

Underground distribution systems for electricity, telephone and cable television will be extended into the project from existing overhead lines along Puunene Avenue in accordance with applicable standards.

Chapter IV

Relationship to Governmental Plans, Policies and Controls

IV. RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES AND CONTROLS

A. STATE LAND USE DISTRICTS

Chapter 205, Hawaii Revised Statutes, relating to the Land Use Commission, establishes the four (4) major land use districts in which all lands in the State are placed. These districts are designated "Urban", "Rural", "Agricultural", and "Conservation". The subject property is located within the "Urban" district. See Figure 11. The proposed use of the property is consistent with "Urban" district provisions.

B. MAUI COUNTY GENERAL PLAN

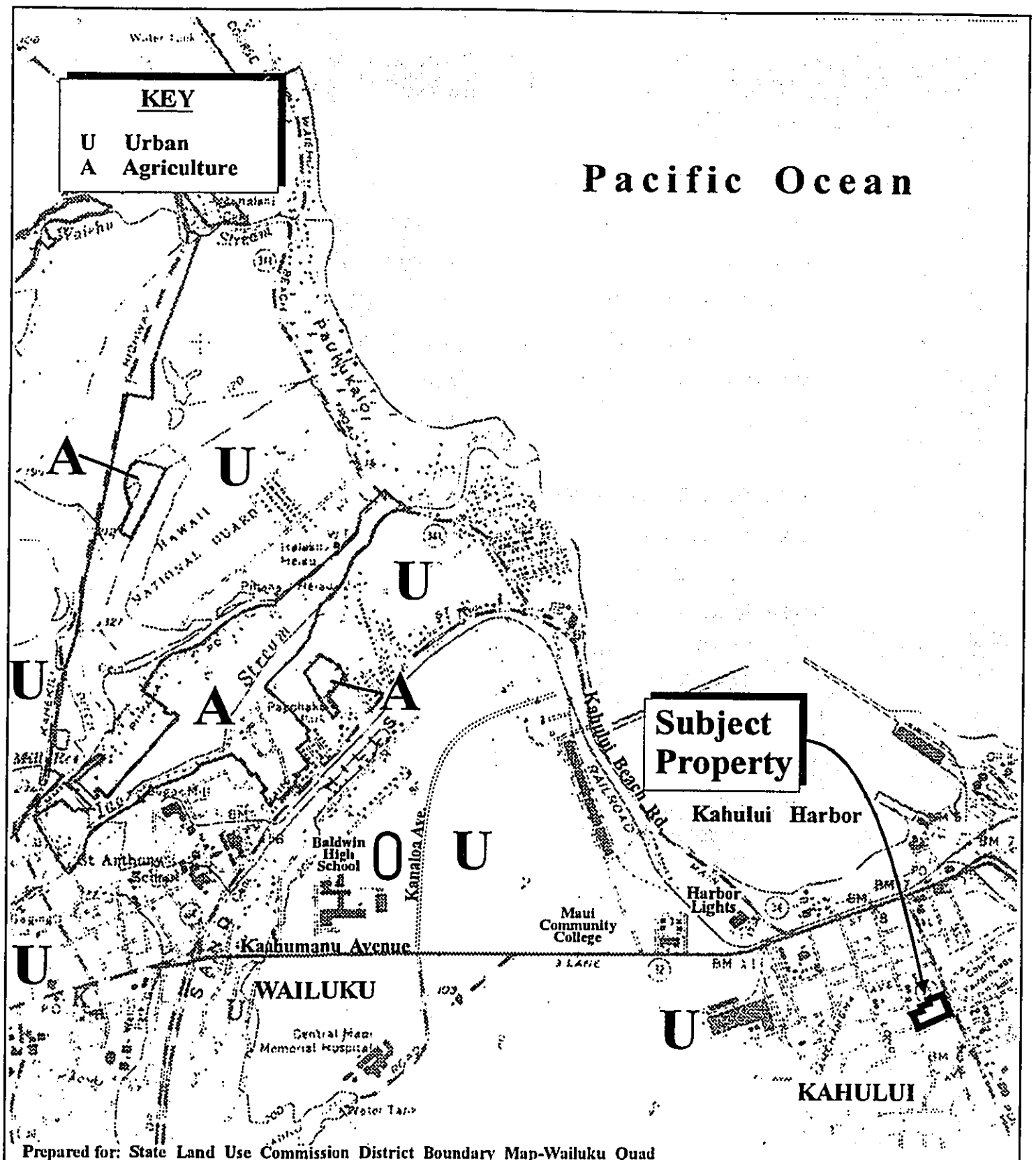
The Maui County General Plan (1990 Update) sets forth broad objectives and policies to help guide the long-range development of the County. As stated in the Maui County Charter,

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

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

Objective:

To provide a choice of attractive, sanitary and affordable homes for



Prepared for: State Land Use Commission District Boundary Map-Wailuku Quad

Figure 11 Central Maui Senior Housing and County Office Buildings Project

State Land Use District Designations

0 1000 Feet
500 2000

Prepared for: County of Maui, Dept. Of Housing and Human Concerns

MUNEKIYO & HIRAGA, INC.

all our residents.

Policies:

a. Provide or require adequate physical infrastructure to meet the demands of present and planned future affordable housing needs.

b. Streamline or "fast-track" the governmental review process for affordable single-family and multi-family housing projects.

c. Ensure that each community plan region contains its fairshare of affordable housing.

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

Objective:

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

Policy:

Encourage the establishment of additional senior citizen housing in various locations.

Access to Human Service

Objective:

To coordinate through the Maui County Department of Human Concerns the establishment of quick and reliable access to human services.

Policy:

Coordinate the services of government (Federal, State and County) and private non-profit agencies, in order to insure the quickest and most reliable access to needed services.

Government

Objective:

Improve the delivery of services by government agencies to all community plan areas.

Policy:

Support programs that will increase the overall effectiveness of government so as to provide greater responsiveness to the needs of our people.

C. *WAILUKU-KAHULUI COMMUNITY PLAN*

The subject parcel is located in the Wailuku-Kahului Community Plan region which is one (1) of nine (9) Community Plan regions established in the County of Maui. Planning for each region is guided by the respective Community Plans, which are 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.

The Wailuku-Kahului Community Plan was adopted by the County of Maui through Ordinance No. 3061 which took effect on May 30, 2002.

Land use guidelines are set forth by the Wailuku-Kahului Community Plan Land Use Map. See Figure 12. The subject property is designated "Park" by the Community Plan.

It is anticipated that the Director of Planning will initiate a proposal to obtain land use consistency with the proposed Office Buildings use. An amendment to the Wailuku-Kahului Community Plan from "Park" to "Public/Quasi-Public" or "Single Family" will be sought. Either of these community plan land use designations would allow government buildings,

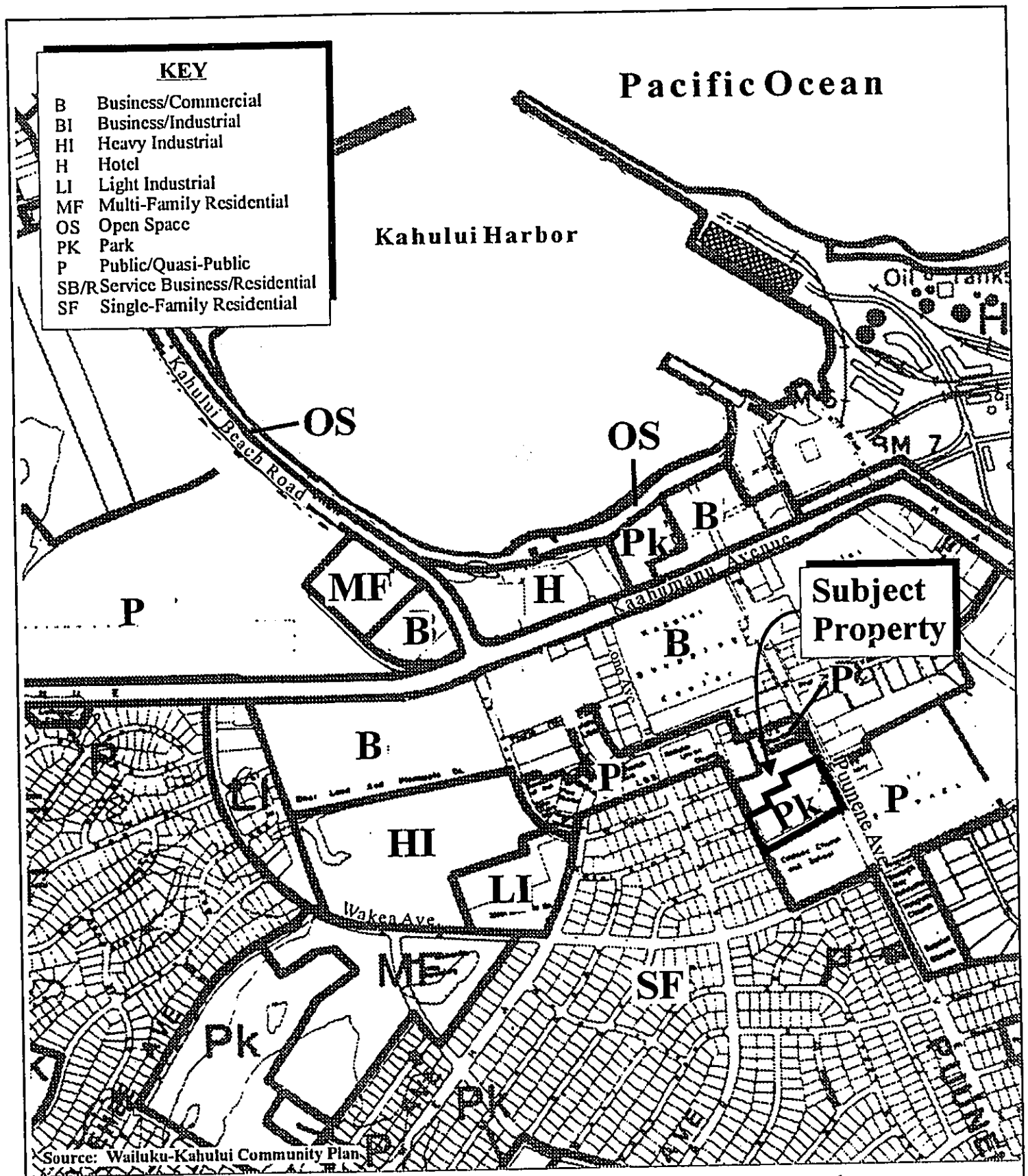


Figure 12 Central Maui Senior Housing and County Office Buildings Project

Community Plan Land Use Designations

0 500 Feet
250 1000

Prepared for: County of Maui, Dept. Of Housing and Human Concerns

MUNEKIYO & HIRAGA, INC.

such as the proposed County office buildings.

The Senior Housing component of the project will be processed in accordance with Section 201G-118 of the Hawaii Revised Statutes. The 201G-118 application will seek exemptions from certain regulatory and statutory requirements relating to land use, construction, subdivision, public services and infrastructure, and administrative procedures.

The proposed project is also consistent with the following policy recommendations in the Wailuku-Kahului Community Plan.

(1) Housing

Goal:

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

Objectives and Policies:

1. Seek alternative residential growth areas within the planning region, with high priority given to the Wailuku and Kahului areas. This action should recognize crucial issues of maintaining important agricultural lands, achieving efficient patterns of growth, and providing adequate housing supply and choice of price and location must be addressed and resolved.

2. Encourage the creation of elderly housing communities in various parts of the region that address the range of specialized needs for this population group.

Implementing Actions:

(A) Develop a comprehensive housing strategy for low and moderate income groups involving government and private industry cooperation that provides an adequate supply of housing for the various strata of income. This approach would combine the resources of the Federal, State, County

and private enterprise to improve the availability of rental and ownership housing targeted to various need groups. Anti-speculation and specification of a percentage of low and moderate income units in major projects are tools which should be considered as part of an overall housing program.

(2) Social Infrastructure

Goal:

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

(3) Social Services/Health

Objectives and Policies:

1. Expand social services for young and elderly persons.

2. Continue to assess the social needs in the community and facilitate a coordinated response in the delivery of social services and programs for young, elderly, disabled and disadvantaged persons.

D. ZONING

County zoning for the subject property is "R-3, Residential". This residential district zoning category permits buildings or premises used by county governments for public purposes. If a "Single Family" community plan land use designation is sought, no zoning change will therefore be required. On the other hand, if a "Public/Quasi-Public" community plan land use designation is sought, a change in zoning to the "P-1, Public/Quasi-Public" district will be required. This district also permits government building uses.

Either of the foregoing scenarios will assure conformance with comprehensive plans and zoning.

As previously mentioned, the Senior Housing component will be processed in accordance with Section 201G-118 of the Hawaii Revised Statutes.

E. COASTAL ZONE MANAGEMENT OBJECTIVES AND POLICIES

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

(1) Recreational Resources

Objective:

Provide coastal recreational opportunities accessible to the public.s

Policies:

(A) Improve coordination and funding of coastal recreational planning and management; and

(B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:

  (i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;

  (ii) Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the state for recreation when replacement is not feasible or desirable;

  (iii) Providing and managing adequate public access,

consistent with conservation of natural resources, to and along shorelines with recreational value;

(iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;

(v) Ensuring public recreational use of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;

(vi) Adopting water quality standards and regulating point and non-point sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;

(vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and

(viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, county planning commissions; and crediting such dedication against the requirements of Section 46-6, HRS.

Response: The proposed project is not anticipated to adversely impact existing coastal recreational resources, located to the north of the project site, in the vicinity of the Kahului Harbor.

(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: An Archaeological Inventory Report was prepared for the project by Xamenek Researches, October 2004. Refer to Appendix "B". A total of ten (10) backhoe trenches were utilized to assess subsurface conditions on the project site during the course of the archaeological inventory survey. As a result of this subsurface investigation, no evidence of an intact cultural layer or any significant material culture remains were encountered. However, given the presence of sand deposits throughout the project area, precautionary archaeological monitoring is recommended during construction.

(3) ***Scenic and Open Space Resources***

Objective:

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

Policies:

(A) Identify valued scenic resources in the coastal zone management area;

(B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;

(C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and

(D) Encourage those developments which are not coastal dependent to locate in inland areas.

Response: The proposed project will not adversely impact the region's scenic or open space resources. Proposed architectural and landscape design parameters for the senior housing and County offices components of the project will be compatible with the surrounding architecture and character of the Kahului region.

(4) ***Coastal Ecosystems***

Objective:

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

Policies:

(A) Improve the technical basis for natural resource management;

(B) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;

(C) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and

(D) Promote water quantity and quality planning and management practices which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses which violate state water quality standards.

Response: Appropriate soil erosion control measures will be implemented during the construction of the proposed project to minimize disruption of coastal water ecosystems. The incremental increase of runoff resulting from the project will be mitigated through onsite drainage improvements. The completion of the proposed project will not significantly disrupt or impact coastal ecosystems.

(5) ***Economic Uses***

Objective:

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

Policies:

(A) Concentrate coastal dependent development in appropriate areas;

(B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor

facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and

(C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:
  (i) Use of presently designated locations is not feasible;
  (ii) Adverse environmental effects are minimized; and
  (iii) The development is important to the State's economy.

Response: The proposed project is designed to provide additional affordable housing facilities for seniors and consolidated offices for the County's human services-related functions. The proposed project is not anticipated to generate adverse economic impacts. The project is not coastal dependent and is located approximately one-half (1/2) mile from Kahului Harbor.

(6) Coastal Hazards

Objective:

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

Policies:

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

Response: The proposed project will be implemented in compliance with applicable provisions of the Federal Flood Insurance Program and County flood hazard district regulations. Adverse impacts to hazard-sensitive areas are not anticipated as the project site is not located within a flood hazard district and not located near the shoreline.

(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: Applicable State and County requirements will be adhered to during the design and construction of the proposed project. Communication and public participation will be promoted through the Section 201G-118 application, as well as through the County's land use initiative and Chapter 343, HRS processes.

(8) ***Public Participation***

Objective:

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

Policies:

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

Response: Opportunities for agency and public review of the proposed action are provided through the notification, review and comment processes of the Environmental Assessment requirements, Chapter 343, HRS. A neighborhood meeting was conducted with the surrounding residential neighborhood along Kaulawahine Street on September 22, 2004. Meeting invitation and summary are attached as Appendix "E".

(9) ***Beach Protection***

Objective:

Protect beaches for public use and recreation.

Policies:

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

(C) Minimize the construction of public erosion-protection structures seaward of the shoreline.

Response: The proposed project will not involve construction in the vicinity of shoreline areas. The proposed project is not anticipated to have an adverse effect on local beach environments.

(10) Marine Resources

Objective:

Implement the State's ocean resources management plan.

Policies:

(A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;

(B) Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;

(C) Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency;

(D) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;

(E) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and

(F) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Response: The proposed project is not anticipated to have adverse effects upon marine and coastal resources in the project vicinity.

Chapter V

Summary of Adverse Environmental Effects Which Cannot Be Avoided

V. SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

The proposed senior housing and County office buildings project will result in some construction-related impacts as described in Chapter III, Potential Impacts and Mitigation Measures. Potential effects include noise generated impacts occurring from construction activities. In addition, there may be temporary air quality impacts associated with dust generated from construction activities, and exhaust emissions discharged by construction equipment. However, these impacts are anticipated to be temporary and will be mitigated through the use of appropriate BMPs. Construction of the proposed project is not anticipated to create long-term adverse environmental effects.

Chapter VI

Alternatives to the Proposed Action

VI. ALTERNATIVES TO THE PROPOSED ACTION

A. NO ACTION/DEFERRED ACTION ALTERNATIVE

The no action/deferred action alternative would keep this area undeveloped. It is likely that the area will continue to be used as the site for the Maui Swap Meet, which operates every Saturday and occasional Sundays. The property is not used as an active park during the rest of the week. As previously noted, the current landowner, A&B Properties, Inc., is currently working with Maui Exposition (swap meet operator) to find a more suitable site to relocate this operation.

Although it is acknowledged that the existing Swap Meet use is a very popular event for both local residents and visitors and also provides economic opportunity for vendors, this intermittent use does not fully recognize the underlying "Urban" State land use designation and "R-3, Residential" County zoning of the project site, particularly in the context of significant social needs facing the island's residents.

B. DEVELOPMENT UNDER EXISTING CONDITIONS ALTERNATIVE

Under the current "R-3, Residential" district County zoning, the subject property can possibly be subdivided into 10 to 15 single-family lots, consisting of a minimum lot size of 10,000 square feet. It is noted that an amendment to the Wailuku-Kahului Community Plan from the "Park" designation to "Single-Family" designation would be required for this subdivision action in accordance with Title 18, Subdivisions of the Maui County Code, as amended.

Up to three (3) single-family dwelling units may be constructed on the property under existing conditions as it would not trigger compliance with the Title 18, Requirements/Improvements.

C. *DESIGN ALTERNATIVES*

1. The original layout for the County Office Buildings component of the project was designed to have the parking lot fronting Puunene Avenue, with the office buildings located between the parking lot and the Senior Housing component of the project. However, the police department was concerned that this project layout did not provide for a through access between both project components for emergency access purposes. Also, this design did not account for the use of the Office Buildings parking lot for guests/visitors to the Senior Housing project during non-working hours.

2. Positioning the Office Buildings along Puunene Avenue with the parking lot located behind was also considered. This alternative was not viewed as a desirable design as the massing of these structures close to and along Puunene Avenue may be rather imposing, compared to the surrounding uses/structures (i.e., Post Office, Christ the King Church).

3. Locating pocket parking lots for the Senior Housing project fronting each building cluster was considered. Although this alternative would provide for better accessability for the seniors who occupy these units, multiple pocket parking lots within this property configuration would require more access lanes and land area than a large contiguous parking lot. Therefore, this alternative was not selected as more land area used for parking would result in fewer units being constructed.

4. The proposed action represents the preferred alternative. The parking area is situated between the two (2) Office Buildings structures, providing a shared parking area for the Senior Housing

project during non-working hours and accommodating an unobstructed access which links the two (2) project components for emergency/safety issues. Buildings are setback from Puunene Avenue to provide visual relief along this major transportation corridor and to facilitate smooth and safe traffic operations. The Senior Housing project was designed to maximize the number of affordable housing units for the County's senior population.

Chapter VII

Irreversible and Irretrievable Commitments of Resources

VII. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The proposed action would involve a commitment of fuel, labor, funding and material resources.

Development of the proposed project will involve a commitment of land for the senior housing and County office buildings project. This commitment of land resources, however, is consistent with existing and future land uses in and around the project area.

Chapter VIII

Findings and Conclusions

VIII. FINDINGS AND CONCLUSIONS

The significance criteria of Section 12, of the Administrative Rules of Title 11, Chapter 200, "Environmental Impact Statement Rules", were reviewed and analyzed to determine whether the completed action will have a significant adverse impact to the environment.

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

The 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 Inventory Report was prepared for the project by Xamenek Researches, October 2004. Refer to Appendix "B". A total of ten (10) backhoe trenches were utilized to assess subsurface conditions on the project site during the course of the archaeological inventory survey. As a result of this subsurface investigation, no evidence of an intact cultural layer or any significant material culture remains were encountered. However, given the presence of sand deposits throughout the project area, precautionary archaeological monitoring is recommended during construction.

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

The proposed project and the commitment of land resources is not anticipated to curtail the range of beneficial uses of the environment. The proposed use of the site for senior housing and human services-related office functions is compatible with surrounding urbanized uses. Environmental impacts associated with the proposed action are not deemed adverse.

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 does not contravene provisions of Chapter 344, Hawaii Revised Statutes.

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

The proposed project will have a beneficial impact on the local economy during construction. In the long term, the proposed project will support the local economy through the contribution of taxes, salaries, wages, and benefits. The primary social welfare benefit, however, is the addition of affordable senior housing and facilities in the Central Maui area, and enhancement of County office facilities to support human service needs.

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

No adverse impacts to the public's health and welfare are anticipated as a result of the proposed project. The proposed action will benefit public welfare by providing new senior housing units and County offices for human services. The proposed 201G exemptions will not compromise public health or safety.

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

No significant population changes are anticipated as a result of the proposed project.

From a land use standpoint, the proposed project is in keeping with the objectives, policies, and implementing actions of the Wailuku-Kahului Community Plan. The proposed project complements and is compatible

with surrounding land uses.

No adverse impacts to water and wastewater capacities and facilities are anticipated.

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 action does not represent a commitment to larger actions. In addition, the proposed action is not expected to result in cumulative impacts that would adversely affect the environment.

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

There are no rare, threatened or endangered species of flora, fauna or avifauna that will be adversely affected by the proposed action.

10. ***Air Quality, Water Quality or Ambient Noise Levels Would Not Be Detrimentally Affected by the Action***

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.

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 according to the Flood Insurance Rate Maps. Soils underlying the project site are not considered to be 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 Views and Viewplanes Identified in County 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 project will involve the short-term commitment of fuel for equipment, vehicles, and machinery during construction activities. However, this use is not anticipated to result in a substantial consumption of energy resources. In the long term, the project will create an additional demand for electricity. However, this demand is not deemed substantial

or excessive within the context of the region's overall energy consumption.

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

State of Hawaii

1. NPDES permit (for stormwater discharge associated with construction activities)

County of Maui

1. Community plan amendment and possible change in zoning initiated by the Director of Planning
2. County Council approval of the senior housing component pursuant to Section 201G-118, HRS
3. Subdivision approval
4. Grading permit
5. Building permit
6. Finding of No Significant Impact (FONSI) Determination pursuant to Chapter 343, HRS.

Federal

1. U.S. Department of Housing and Urban Development (HUD) Environmental Assessment

Chapter X

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

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

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

1. Ranae Ganske-Cerizo, Acting Soil Conservationist
Natural Resources Conservation Service
U.S. Department of Agriculture
210 Imi Kala Street, Suite 209
Wailuku, Hawaii 96793-2100

2. George Young, P.E.
U.S. Department of the Army
U.S. Army Engineer District, Honolulu
Attn: Operations Division
Building 230
Fort Shafter, Hawaii 96858-5440

3. Robert P. Smith
Pacific Islands Manager
U. S. Fish and Wildlife Service
P.O. Box 50167
Honolulu, Hawaii 96813

4. Chiyome L. Fukino, M.D., Director
State of Hawaii
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801

5. Peter Young
State of Hawaii
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

6. P. Holly McEldowney, Administrator
State of Hawaii
Department of Land and Natural Resources
State Historic Preservation Division
601 Kamokila Blvd., Room 555
Kapolei, Hawaii 96707

7. Fred Cajigal, Maui District Engineer
State of Hawaii
Department of Transportation
Highways Division
650 Palapala Drive
Kahului, Hawaii 96732

8. Clyde Namu'o, Administrator
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813

9. Carl Kaupalolo, Chief
County of Maui
Department of Fire and Public Safety
200 Dairy Road
Kahului, Hawaii 96732

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

11. Glenn Correa, Director
County of Maui
Department of Parks and Recreation
700 Hali'a Nakoa Street, Unit 2
Wailuku, Hawaii 96793

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

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

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

15. Kyle Ginoza, Director
County of Maui
Department of Transportation
200 South High Street
Wailuku, Hawaii 96793

16. Jimmy Lawrence
Kahului Town Association
117 West Papa Avenue
Kahului, Hawaii 96732

19. **Maui Electric Company, Ltd.**
P. O. Box 398
Kahului, Hawaii 96732

MAY 19 2004

United States Department of Agriculture

USDA

NRCS Natural Resources Conservation Service

Our People...Our Islands...In Harmony

210 Imi Kala Street, Suite #209, Wailuku, HI 96793-2100

Mr. Daren Suzuki, Project Planner
Munekiyo & Hiraga, Inc.
305 High Street Suite 104
Wailuku, Hawaii 96793

Dear Mr. Suzuki,

SUBJECT: Pre-Assessment Consultation for the Central Maui Senior Housing and County Office Buildings Project, TMK (2) 3-7-013:por., 026, Kahului, Maui

To minimize drainage, grading and construction impacts the following needs are to be considered:

1) Schedule site cleaning and grading to be carried out during times of minimum erosion potential
2) Maintenance of temporary erosion control measures should be maintained during construction and after storm events
3) Grubbing material needs to be discarded correctly.
4) Regular sprinkling of the construction site and a dust fence is needed during the construction phase,
5) Landscaping should be incorporated and coordinated with construction activities so that vegetated areas will be planted and irrigated as soon as possible.
6) Native plants, specifically ground covers are highly recommended for this area to reduce water usage.
7) Consider businesses, residents, etc. in the immediate area not to be inconvenienced during phase of construction.

Thank you for the opportunity to comment.

Sincerely,

Ranae F. Ganske-Cerizo
Acting District Conservationist

MUNEKIYO & HIRAGA, INC.

January 3, 2005

Ms. Ranae F. Ganske-Cerizo
Acting District Conservationist
Natural Resources Conservation Service
210 Imi Kala Street, Suite 209
Wailuku, Hawaii 96793

SUBJECT : Central Maui Senior Housing and County Office Building Project, TMK 3-7-013:026, Kahului, Maui

Dear Ms. Ganske-Cerizo:

Thank you for your letter dated May 19, 2004 providing preliminary comments on the subject project.

We acknowledge your recommendations to minimize drainage, grading and construction impacts of the project. These impacts can be minimized through implementation of Best Management Practices (BMP's) and standard construction practices. Specific recommendations will be incorporated into the Draft Environmental Assessment (DEA).

A copy of the DEA will be circulated to your office for further review and comment upon completion.

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

Very truly yours,

Daren Suzuki, Planner

DS:yp
cc: Edwin Okubo, Department of Housing and Human Concerns
com\dhhcomau\nrcs.res

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

LINDA LINGLE
GOVERNOR OF HAWAII

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

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

YVONNE Y. IZU
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

JUN 23 2004

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

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

June 18, 2004

Darren Suzuki
Munekiyo & Hiraga, Inc.
305 South High Street, Suite 104
Wailuku, Hawaii 96793

LOG NO: 2004.1832
DOC NO: 0406CD33

Dear Mr. Suzuki,

SUBJECT: Chapter 6E-42 Historic Preservation Review – Pre–Assessment Consultation for the Central Maui Senior Housing and County Office Buildings Project
Wailuku Ahupua`a, Wailuku District, Island of Maui
TMK: (2) 3-7-013: por. of 026

Thank you for the opportunity to provide comments for the Pre – Assessment Consultation for the Central Maui Senior Housing and County Office Buildings Project, which was received by our staff May 10, 2004. Our review is based on reports, maps, and aerial photographs maintained at the State Historic Preservation Division; no field inspection was conducted of the subject property.

Based on the submitted information request, we understand the Department of Housing and Human Concerns, County of Maui, plans to construct an undetermined number of apartment on approximately 4.0 acres of vacant land. The proposed project site is currently used as a "Swap Meet" site. An Environmental Assessment will be prepared in accordance with Chapter 343, Hawaii Revised Statutes, as proposed undertaking involves the use of County Lands or County Funds. Federal funds will also be used for the proposed development.

A search of our records indicates an archaeological inventory survey has not been conducted of the subject property. This area in general is likely to have once been the location of pre-Contact farming, perhaps with scattered houses. The northern portion of the subject property is located within the boundaries of the Kahului Historic District (State Site 50-50-04-1607). The USDA Soil Survey indicates the proposed project area is located in the Pu`uone Sand Dune, which is known to contain both isolated and clustered human burials. In addition, gley deposits and pond deposits have been identified in recent archaeological investigations to the south. (The extent of the pond boundaries has not been determined, to date). Thus, we believe it is likely that historic sites and or site remnants may be present in the subsurface deposits.

Therefore, in order to determine the effect of the proposed undertaking on historic sites, we recommend an archaeological inventory survey be conducted of the proposed project area, prior to the commencement of any ground alterations, to determine whether significant historic sites are present. An acceptable report documenting the findings of the survey will need to be submitted to this office for review. If significant historic sites are identified, a mitigation plan may need to be developed, in consultation with this office, and executed. In addition, as Federal funding is involved, Section 106 procedures will need to be followed.

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

Aloha,

P. Holly McEldowney

P. Holly McEldowney, Administrator
State Historic Preservation Division

CD:jen

c: Maui Cultural Resources Commission, Dept of Plng, 250 S. High St, Wailuku, HI 96793
Michael Foley, Director, Dept of Planning, 250 S. High Street, Wailuku, HI 96793
Chair, Maui/Lana`i Islands Burial Council
Kana`i Kapeliela, Burial Sites Program

MUNEKIYO & HIRAGA, INC.

January 3, 2005

Melanie Chinen, Administrator
Department of Land and Natural Resources
State Historic Preservation Division
Kakuhihewa Building, Room 555
601 Kamokila Boulevard
Kapolei, Hawaii 96707

SUBJECT : Central Maui Senior Housing and County Office Building Project, TMK 3-7-013:026, Kahului, Maui

Dear Ms.Chinen:

Thank you for your letter dated June 18, 2004 providing preliminary comments on the subject project.

The Draft Environmental Assessment (DEA) will include an archaeological inventory survey. A copy of the DEA will be circulated to your office for further review and comment upon completion.

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

Very truly yours,

Daren Suzuki, Planner

DS:yp
cc: Edwin Okubo, Department of Housing and Human Concerns
com\dhhccmaui\shpd.res

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

ALAN M. ARAKAWA
Mayor

MICHAEL W. FOLEY
Director

WAYNE A. BOTEILHO
Deputy Director

MAY 28 2004

COUNTY OF MAUI
DEPARTMENT OF PLANNING

May 27, 2004

Mr. Darren Suzuki
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96733

Dear Mr. Suzuki;

RE: Preliminary Consultation Comments for the preparation of a Draft Environmental Assessment for the Proposed Central Maui Senior Housing and County Office Buildings Project located at TMK: 3-7-013: 026 portion, Kahului, Island of Maui, Hawaii (LTR 2004/1626)

The Maui Planning Department (Department) is in receipt of your request for preliminary consultation comments pursuant to Title 11, Chapter 200, Section 9 of the Hawaii Administrative Rules (HAR) for the preparation of a Draft Environmental Assessment (DEA) for the Proposed Central Maui Senior Housing and County Office Buildings Project located in Kahului, Maui.

As indicated in your letter, the proposed action involves two (2) components: senior housing and office complex. The development of the senior housing component consists of 39 one-bedroom rental units, one (1) two-bedroom resident manager's unit, a 2,945 ft^2 community center, and related site improvements. The Department of Housing and Human Concerns (DHHC) proposes to process this component in accordance with Section 201G-118, HRS.

The office complex consists of a 12,437 ft^2 two-story building for DHHC's Housing Division; a 6,718 ft^2 one-story building for the Immigrant Services Division, Community Development Block Grant Program Office, and the Volunteer Center of Maui County; and related site improvements.

The Department provides the following comments:

1. Provide a description of energy conservation measures incorporated into both components.

2. Discuss potential impacts of displacing the existing Swap Meet.

3. Provide a Traffic Impact Analysis Report.

4. Discuss how the existing site plan addresses bus services for the housing component. The Department recommends providing adequate turnaround space within the Property boundaries or a storage turn out along Kaulawahine Street. The project should accommodate such services so as to prevent traffic congestion on Kaulawahine Street.

5. Consult with the residential community along Kaulawahine Street.

6. Three (3) handicap parking stalls are identified within the housing component of the project. Will this be sufficient given this is a housing project for seniors? Will handicap accessible rental units be located near these parking stalls?

7. Provide an analysis of an alternative site plan of repositioning the office buildings along Puunene Avenue and locating the parking lot behind the buildings. To achieve this site plan, it may be necessary to consider using one larger office building rather than two small buildings.

   This configuration may provide flexibility for designing the housing component of the project. The current site plan does not encourage continuity beneficial for an elderly population. Specifically, the northern most building is segregated from the other buildings and the large parking lot may require longer walking distances to the units. Consider relocating the buildings closer to one another and using pocket parking lots rather than one large parking lot.

8. A substantial landscape buffer should be considered to shield the housing component from the office building component. Provide a description of the buffer.

9. Provide conceptual plans for the building elevations.

Thank you for the opportunity to comment. Should you need additional clarification, please contact Ms. Kivette A. Caigoy, Environmental Planner, at 270-7735.

Sincerely,

Michael W. Foley
Planning Director

MWF:KAC:do
c: Wayne Boteilho, Deputy Planning Director
Clayton I. Yoshida, AICP, Planning Program Administrator
Kivette Caigoy, Environmental Planner
DHHC
General File
K:\WP_DOCS\PLANNING\EA\PreConComments\2004\1626_CentralHousing.wpd

MUNEKIYO & HIRAGA, INC.

January 3, 2005

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

SUBJECT: Central Maui Senior Housing and County Office Building Project, TMK 3-7-013:026, Kahului, Maui

Dear Mr. Foley:

Thank you for your letter dated May 27, 2004 providing preliminary comments on the subject project. We would like to provide the following responses to your comments:

1. Energy conservation measures will be discussed in the Draft Environmental Assessment (DEA). Conservation measure may include solar water heating and energy efficient lighting and appliances.

2. The existing swap meet site is currently on a month-to-month lease with the property owners, Alexander & Baldwin, Inc. (A&B). The swap meet operators are aware of the proposed project and are currently seeking a more suitable location for the swap meet operation with the assistance of A&B. The development of the project will occur only after an alternative site is located for the swap meet operation.

3. A Traffic Impact Report will be provided in the DEA.

4. Bus pick-up and drop-off services will be provided on the project site in order to avoid any traffic delays along Kaulawahine Street. The internal roadways of the Senior Housing component can provide adequate turnaround space on the project site by utilizing the loading zones and fire lanes for the project.

5. Consultation with the residential community along Kaulawahine Street was conducted on September 22, 2004.

6. Handicap parking stalls will be provided for this project in accordance with applicable standards. The intent of providing handicap stalls is to provide accessability and

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

convenience in proximity to the desired destination of the user. Door-to-door bus services will also provide transportation for the residents of this project.

7. Design alternatives will be included in the DEA.

8. The project plans reflect a landscape buffer to shield the Senior Housing Component from the County Office Building Component. A more detailed description will be provided in the DEA.

9. Conceptual plans and building elevations will be provided in the DEA.

Thank you for your comments. A copy of the DEA will be circulated to your office for further review and comment upon completion.

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

Very truly yours,

Daren Suzuki, Planner

DS:yp
cc: Edwin Okubo, Department of Housing and Human Concerns
com\dh\hccmaui\planning.res

04/2350

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

June 28, 2004

MEMO TO: MICHAEL W. FOLEY, PLANNING DIRECTOR

FROM: for GILBERT S. COLOMA-AGARAN, DIRECTOR OF PUBLIC WORKS AND ENVIRONMENTAL MANAGEMENT

SUBJECT: PRE-ASSESSMENT CONSULTATION
CENTRAL MAUI SENIOR HOUSING & COUNTY OFFICE BUILDINGS PROJECT
TMK: (2) 3-7-013:026 (POR)

We reviewed the subject application and have the following comments:

1. Submit Solid Waste Management Plan for disposal/composting of cleared and grubbed material and construction waste disposal/recycling.

2. 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 issuance of grading permits. The drainage report shall include hydrologic and hydraulic calculations and the schemes for 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 adjacent and 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.

3. A detailed Traffic Master Plan for the entire development shall be submitted for our review and approval.

4. All existing features such as structures, driveways, drainage ways, edge of the pavement, etc. shall be shown on the project plat plan.

5. A site plan and a sight distance report to determine required sight distance and available sight distance at existing and proposed street intersections shall be provided for our review and approval.

6. Although wastewater system capacity is currently available as of June 4, 2004, the developer should be informed that wastewater system capacity cannot be ensured until the issuance of the building permit.

7. Wastewater contribution calculations are required before building permit is issued.

8. Developer shall pay assessment fees for treatment plant expansion costs in accordance with ordinance setting forth such fees.

9. Developer is required to fund any necessary off-site improvements to collection system and wastewater pump stations.

10. Plans should show the installation of a service manhole near the property line prior to connection to the County sewer.

11. Kitchen facilities within the proposed project shall comply with pre-treatment requirements (including grease interceptors, sample boxes, screens, etc.).

12. Non-contact cooling water, condensate, etc. should not drain to the wastewater system.

13. The property frontage along Kaulawahine Street shall be improved to County standards to include, but not limited to pavement widening, curb and gutter, and sidewalk.

14. The plans submitted for this project do not adequately show sufficient detail to determine whether the project is compliant with the building and housing codes. We will review the project for building and housing code requirements during the building permit application process.

15. Comply with Section 18.04.470 (Subdivision) of the Maui County Code (MCC), which states ". . . the construction of four or more dwelling units on a lot, parcel, or site shall be subject to the provisions of this title".

16. Comply with the requirements of Chapter 20.08 (Soil Erosion and Sedimentation Control) of the Maui County Code. Best Management Practices shall be implemented to the maximum extent practicable to prevent pollutants including dust and sediment from discharging off the project site.

17. The drainage system design shall comply with the provisions of the drainage rules and shall create no additional adverse impacts to adjacent and downstream properties.

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

GSCA:MA:sw
S:\LUCA\CZM\Draft Comments\37013026_Central_Maui_Senior_Housing_pac_bns.wpd

MUNEKIYO & HIRAGA, INC.

January 3, 2005

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

SUBJECT : Central Maui Senior Housing and County Office Building Project,
TMK 3-7-013:026, Kahului, Maui

Dear Mr. Coloma-Agaran:

Thank you for your letter dated June 28, 2004 providing preliminary comments on the subject project. Response to comments related to solid waste, traffic, roadway, drainage, Best Management Practices (BMP) and wastewater issues will be addressed in the Draft Environmental Assessment (DEA). Details relative to solid waste managment plan, sight distance requirements, assessment fee, off-site improvements, building code requirements will be addressed during the building permit application process.

The applicant acknowledge that wastewater system capacity cannot be ensured until the issuance of the building permit.

It is noted that the applicant will also be filing for a 201G-118, HRS, application for the Senior Housing component of the project. This application may request exemptions from certain provisions of Title 18, Subdivsions, and Title 19, Zoning.

The DEA will be transmitted to your office for further review and comment.

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

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

Very truly yours,

Daren Suzuki, Planner

DS:yp
cc: Edwin Okubo, Department of Housing and Human Concerns
com\dhhccmau\dpwem.res

JUN 09 2004

ALAN M. ARAKAWA
MAYOR

KYLE K. GINOZA
Director
DON A. MEDEIROS
Deputy Director
Telephone (808) 270-7511
Facsimile (808) 270-7505

DEPARTMENT OF TRANSPORTATION

COUNTY OF MAUI
200 South High Street
Wailuku, Hawaii, USA 96793-2155

June 4, 2004

Mr. Daren Suzuki
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI. 96793

SUBJECT: Central Maui Senior Housing and County Office Building Project,
TMK (2) 3-7-013: por., 026, Kahului, Maui

Dear Mr. Suzuki:

We have reviewed your project and strongly suggest that you construct an accessible bus shelter within your project, if one is not planned. The inclusion of a bus shelter at this stage of the process will significantly enhance this project and eliminate future issues with the project's residential target group. Senior citizens are one of the larger users of public transportation. The County of Maui provides substantial funding for public transportation for your target groups.

Additionally, the office building component of the project proposes to serve target groups that are significant users of public transportation as well.

We are willing to meet with you to assist you with this worthwhile endeavor. Please contact us for an appointment.

Sincerely,

Kyle K. Ginoza
Director

cc: Mercer Vicens, A&B Properties, Inc.
Edwin Okubo, Department of Housing and Human Concerns

MUNEKIYO & HIRAGA, INC.

January 3, 2005

Mr. Kyle Ginoza, Director
Department of Transportation
200 South High Street
Wailuku, Hawaii 96793

SUBJECT: Central Maui Senior Housing and County Office Building Project, TMK 3-7-013:026, Kahului, Maui

Dear Mr. Ginoza:

Thank you for your letter dated June 4, 2004 providing preliminary comments on the subject project.

Bus services will be provided for the senior housing component of the project. Although, the proposed bus pick-up usually provides door-to-door services, a central accessible bus shelter can be considered in the project design.

A copy of the Draft Environmental Assessment will be circulated to your office for further review and comment upon completion.

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

Very truly yours,

Daren Suzuki, Planner

DS:yp
cc: Edwin Okubo, Department of Housing and Human Concerns
com\dhhcomaui\countydot.res

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

COPY

POLICE DEPARTMENT
COUNTY OF MAUI

ALAN M. ARAKAWA
MAYOR

OUR REFERENCE
YOUR REFERENCE

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

THOMAS M. PHILLIPS
CHIEF OF POLICE

KEKUHAUPIO R. AKANA
DEPUTY CHIEF OF POLICE

June 1, 2004

Mr. Daren Suzuki
Project Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Dear Mr. Suzuki:

SUBJECT: Pre-Assessment Consultation for the Central Maui Senior Housing and County Office Buildings Project
TMK (2) 3-7-013: por., 026, Kahului, Maui

Thank you for your letter of May 7, 2004, requesting comments on the above subject.

We have reviewed the proposed summary and have enclosed our comments and recommendations. As always, thank you for giving us the opportunity to make comments on this project.

Very truly yours,

Assistant Chief Sydney Kikuchi
for: Thomas M. Phillips
Chief of Police

Enclosure

c: Michael W. Foley, Dept. of Planning

TO : **THOMAS PHILLIPS, CHIEF OF POLICE, MAUI POLICE DEPARTMENT**

VIA : **CHANNELS** 05/11/04

FROM : **JORGE MARZAN, CPO, KAHULUI, DISTRICT I**

SUBJECT : **PRE-ASSESSMENT CONSULTATION FOR THE CENTRAL MAUI SENIOR HOUSING AND COUNTY OFFICE BUILDINGS PROJECT (TMK (2) 3-7-013: por.,026, KAHULUI, MAUI**

This memorandum is in response to the above proposed project.

In reviewing the project summary of the proposed project, a Traffic Impact Analysis was not included in the proposed action. In addition, the Draft Environmental Assessment was not attached to the project proposal.

Initial review reveals that the proposed project will be constructed within the "Swap Meet" site long Puunene Avenue. Within the site, two components will be constructed, (1) Senior housing, consisting of 39 one bedroom rental units, and one two-bedroom resident manager's unit, a 2,945 square foot community center building, and related site improvements.

Vehicular access to the senior housing unit is via Kaulawahine Street, a secondary roadway, which runs parallel into Kamehameha Avenue and Wakea Avenue, both are collectors road.

Because Wakea Avenue and Kamehameha Avenue experience a lot of traffic volume, an increase in traffic delay coming out from Kaulawahine Street will be a factor. Traffic Impact Analysis and meditating factors should be considered within the collectors and secondary roadway.

The second proposal is the County Office Building component consisting of a 12, 437 square foot, two story building for Housing Division and a 6,718 square foot, one story building for the Immigrant Services Division, Community Development Block Grant Program Office, and the Volunteer Center of Maui, and related site improvements.

Vehicular access to the office building is via Puunene Avenue, a collectors roadway. Puunene Avenue is the main artery which feeds, Wakea Avenue, Kamehemeha Avenue, and Kaahumanu Avenue. With the construction of the County Office Building, a Traffic Impact Analysis should be considered to determine vehicular traffic delay and other traffic issues.

Respectfully submitted for your information.

Jorge MARZAN
CPO, Kahului
5/25/04 1000 hrs

THIS PROJECT WAS COMMENCED ON A 5 HOUSING MEETING THE DISCUSSION OF THE PARKING CONCERN IS POOR AND THE ISSUE OF STREET PARKING ON KAULAWAHINE ST. NEEDS TO BE ADDRESSED. NO ON SITE PARKING FOR VISITORS ETC. AS STATED

MUNEKIYO & HIRAGA, INC.

January 3, 2005

Thomas M. Philips, Chief
Maui Police Department
55 Mahalani Street
Wailuku, Hawaii 96793

SUBJECT: Central Maui Senior Housing and County Office Building Project,
TMK 3-7-013:026, Kahului, Maui

Dear Chief Philips:

Thank you for your letter dated June 1, 2004 providing preliminary comments on the subject project.

A Traffic Impact Report prepared by Wilson Okamoto & Associates will be provided in the Environmental Assessment (EA) document. A copy of the Draft EA will be transmitted to your office for further review and comment upon completion.

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

Very truly yours,

Daren Suzuki, Planner

DS:yp
cc: Edwin Okubo, Department of Housing and Human Concerns
com\dhhccmaui\mpd.res

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

JUN 07 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.mauiwater.org

June 1, 2004

Mr. Daren Suzuki, Planner
Munekiyo & Hiraga, Inc.
305 High Street Suite 104
Wailuku HI 96793

Subject: Early Consultation Request for the Preparation of an Environmental Assessment for the Central Maui Senior Housing and County Office Buildings Project, TMK: 3-7-13: por. 026

Dear Mr. Suzuki:

Thank you for the opportunity to provide comments on the preparation of this Environmental Assessment (EA). The Department of Water Supply provides the following information:

Source Availability and Consumption
The main sources of water for this system are the Iao and Waihee aquifers, the Iao tunnel and the Iao-Waikapu Ditch. As of July 21, 2003, the Commission on Water Resource Management (CWRM) has designated Iao aquifer as Groundwater Management Area. DWS will not issue reservations for future meters until new sources are brought on-line. The County will issue meters up to 800,000 gallons per day (gpd) to those ready to receive service from the service area. To date, the Department has issued meters equivalent to about 524,200 gpd. Demand for this project would be about 25,000 gpd based on system standards. Water for this project may not be available until new sources are on-line.

System Infrastructure
The subject property is served by a 12-inch water line along Puunene Avenue and a fire hydrant at 60 ft distance, a 6-inch water line and a fire hydrant fronting the property along Kaulawahine Street. System improvements will be determined in the building permit process. The applicant will be required to submit fire, domestic and irrigation calculations prepared, signed and stamped by a certified engineer or architect. The approved fire flow calculation methods for use include Guidance for Determination of Fire Flow- Insurance Service Office, 1974 and Fire Flow-Hawaii Insurance Bureau, 1991. Installation of a reduced pressure back-flow preventer approved by the Department is also required.

The project overlies the Kahului aquifer. The Department of Water Supply strives to protect the integrity of surface and groundwater resources by encouraging the applicant to adopt best management practices (BMPs) designed to minimize infiltration and runoff from all construction and vehicle operations. We have attached sample BMPs for principle operations for reference. Additional information can be obtained from the State Department of Health.

Conservation
We recommend that the following water conservation measures be included in the EA and implemented in project design and construction:
Eliminate Single-Pass Cooling: Single-pass, water-cooled system 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". The applicant should establish a regular maintenance program.
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 species. Please refer to the attached brochure: "Saving Water In The Yard - What and How to Plant In Your Area" for landscaping of the project site.
Prevent Over-Watering By Automated Systems: Provide rain-sensors on all automated irrigation controllers in common areas. Check and reset controllers at least once a month to reflect the monthly changes in evapo-transpiration rates at the site. As an alternative, provide the more automated, soil-moisture sensors on controllers.

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

Sincerely,

George Y. Tengan
Director
emb

c: engineering division

attachments:
The Costly Drip
Maui County Planting Plan-Plant Zone 3-Saving Water in the Yard-What and How to Plant in your Area
Ordinance No. 2108 - A Bill for an Ordinance Amending Chapter 16.20 of the Maui County Code, Pertaining to the Plumbing Code
A Checklist of Water Conservation Ideas For Commercial Buildings
Selected BMP's from "Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters"-EPA

C:\WPdocs\EAs EISs\Central Maui Senior Housing EA.wpd

MUNEKIYO & HIRAGA, INC.

January 3, 2005

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

SUBJECT: Central Maui Senior Housing and County Office Building Project,
TMK 3-7-013:026, Kahului, Maui

Dear Mr. Tengan:

Thank you for your letter dated June 1, 2004 providing preliminary comments on the subject project.

The applicant acknowledges that water for the project may not be available until new water sources are online. A preliminary engineering report to include water use calculations will be prepared by a certified engineer. Best management practices and water conservation measures will be incorporated in the project design and construction.

A copy of the Draft Environmental Assessment will be circulated to your office for further review and comment.

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

Very truly yours,

Daren Suzuki, Planner

DS:yp
cc: Edwin Okubo, Department of Housing and Human Concerns
com\dhhcc\mau\dws.res

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

LINDA LINGLE
GOVERNOR

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

RODNEY K. HARAGA
DIRECTOR

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

IN REPLY REFER TO:

STP 8.1264

August 24, 2004

Mr. Daren Suzuki
Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Suzuki:

Subject: Central Maui Senior Housing and County Office Buildings Project
Early Consultation Letter
TMK: (2) 3-7-013: por. 026

Thank you for your transmittal requesting our comments on the subject project.

Our comments are as follows:

1. A Traffic Impact Analysis Report (TIAR) should be prepared for our review and approval. The report should include but not limited to:

   a. An operational analysis of the impact the proposed action will have on the transportation facilities in the area and the identification of required mitigation measures. The existing "swap meet" driveway to Puunene Avenue is limited to right turns in and out and the same would be required for the continued project use. Consideration should be given to closing the "swap meet" driveway and extending the project's Puunene Avenue frontage road to connect the mauka Post Office driveway.

   b. An alternative driveway access analysis to the project site that addresses operational and safety concerns and also minimizes the impact on adjacent driveways (Post Office, McDonalds, Gas Station, National Guard, etc.). Consideration should be given to limiting project access to Kaulawahine Street.

   c. A review of pedestrian safety concerns for the senior citizens from the housing facilities crossing Puunene Highway to get to McDonalds, malls and/or grocery stores. A mitigative measure may be to install sidewalks along its property fronting Puunene Avenue. There is also an unsignalized mid-block crosswalk across Puunene Avenue a few hundred feet from the project site. The TIAR needs to evaluate the project environmental assessment needs to identify improvements planned by the

County to allow elderly project residents to safely use this crosswalk without adversely impacting traffic operations.

2. It is strongly recommended that in the preparation of the TIAR, the traffic consultant and applicant meet with our Highways Division, Maui District Office to discuss the operational and safety concerns.

3. Since the project plans will include elderly housing, the County needs to extend the sidewalk from the existing Post Office along the project's Puunene Avenue frontage to the nearest crosswalk across Puunene Avenue.

4. The applicant must prepare a drainage report for our review and approval.

5. Plans for construction work within/or adjoining the highway right-of-way must be submitted for review and approval to our Highways Division, Maui District Office. This shall also include obtaining required permits from our Highways Division and other appropriate government agencies.

We appreciate the opportunity to provide comments.

Very truly yours,

for RODNEY K. HARAGA
Director of Transportation

MUNEKIYO & HIRAGA, INC.

January 3, 2005

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

SUBJECT: Central Maui Senior Housing and County Office Building Project,
TMK 3-7-013:026, Kahului, Maui

Dear Mr. Haraga:

Thank you for your letter dated August 24, 2004 providing preliminary comments for the above mentioned project. We would like to provide the following responses to your comments:

1. A Traffic Impact Report was prepared by Wilson Okamoto Corporation, and will be appended to the Draft Environmental Assessment (EA) prepared for the project. A copy of this Draft EA will be circulated to your office for further review and comment.

2. The traffic consultant will work and meet with the Highways Division, Maui District Office to discuss operational/safety issues and address any traffic-related concerns.

3. Your comment on the County needing to extend the sidewalk from the existing Post Office along the project's Puunene Avenue frontage to the nearest crosswalk across Puunene Avenue will be reviewed.

4. A preliminary drainage report was prepared by Ronald M. Fukumoto Engineering, Inc. and will be appended to the Draft EA. A copy of this Draft EA will be circulated to your office for further review and comment.

5. Plans for construction work within/or adjoining the highway right-of-way will be submitted to the Highways Division, Maui District Office for review and approval.

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

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

Very truly yours,

Daren Suzuki, Planner

DS:yp
cc: Pete Pascua, Wilson Okamoto Corporation
Edwin Okubo, Department of Housing and Human Concerns
com\dhhcc\mau\sdot.res

MAY 14 2004

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

REPLY TO
ATTENTION OF

May 12, 2004

Regulatory Branch

Mr. Daren Suzuki
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Suzuki:

This letter responds to your request for comments on the environmental assessment (EA) preparation notice for the County of Maui's proposed construction of the Central Maui Senior Housing and County Office Buildings project at Kahului, Maui, Hawaii (TMK 2-3-7-13: por. 26). We have reviewed the project information you provided with respect to the Corps' authority to issue Department of the Army (DA) permits under Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) and Section 404 of the Clean Water Act (33 USC 1344).

Based on the information you provided, it appears that the project site does not include any waters of the United States, including wetlands. Based on this understanding, a DA permit will not be required for this project.

Should you have questions concerning this response, please contact Mr. Peter Galloway of my staff (telephone (808) 438-8416; fax (808) 438-4060). Written inquiries should cite File No. **200400310** and should be sent to: Regulatory Branch (CEPOH-EC-R/P. Galloway); U.S. Army Engineer District, Honolulu; Building 230; Fort Shafter, Hawaii 96858-5440.

Sincerely,

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

MAY 13 2004

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 11, 2004

Mr. Daren Suzuki, Project Planner
Munekiyo & Hiraga, Inc.
305 High Street
Wailuku, Hawaii 96793

Subject: Pre-Assessment Consultation for the Central Maui Senior Housing and County Office Buildings Project. TMK: (2)3-7-013:026

Dear Mr. Suzuki,

Thank you for the opportunity to comment on the above subject. When the permit and plans are submitted to our office, we will do a thorough review that will include but not limited to :

1. Road widths, fire apparatus turn around etc.
2. Fire hydrant locations and fire flow calculations to include fire sprinklers if applicable

If you have any questions, you may contact myself at 270-7568 or Lt. Scott English at 270-7123.

Sincerely,

Valeriano F. Martin
Captain
Fire Prevention Bureau

LINDA LINGLE
GOVERNOR OF HAWAII

RECEIVED
LAND DIVISION
2004 MAY 20 P 3:18
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

May 13, 2004

LD/NAV COMSENIORHOUSING.CMT
Suspense Date 5/20/04

MEMORANDUM:

TO:
- Division of Aquatic Resources
- XXX Division of Forestry & Wildlife
- Na Ala Hele Trails
- XXX Engineering Division
- 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
- XXX Land-Planning and Development

FROM: Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: Pre-Assessment Consultation for the Central Maui Senior Housing and County Office Building Project
Location: Kahului, Island of Maui, Hawaii
TMK: (2) 3-7-013: 026 (Por)
Consultant: Munekiyo & Hiraga, Inc.

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.

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.
(X) Comments attached.

Division: Engineering
Signed:

Date: 5/12/04
Print Name: ERIC T. HIRANO, CHIEF ENGINEER

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LA/NAV

Ref.: COMSENIORHOUSING.CMT

COMMENTS

( ) We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone ___.

(X) **Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Zone C. The National Flood Insurance Program (NFIP) does not have any regulations for development within this area.**

( ) 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 Tyau-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 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. 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.

( ) Additional Comments:_____

_____

( ) Other: _____

_____

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

Signed: _____
ERIC T. HIRANO, CHIEF ENGINEER

Date: 5/19/08

LINDA LINGLE
GOVERNOR OF HAWAII

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

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

YVONNE Y. IZU
DEPUTY DIRECTOR - WATER

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

May 25, 2004

LD-NAV
COMSENIORHOUSING.RCM

Munekiyo and Hiraga, Inc.
Daren Suzuki, Project Planner
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Suzuki:

SUBJECT: Pre-Assessment Consultation for the Central Maui Senior Housing and County Office Building Project, Kahului, Island of Maui, Hawaii
TMK: (2) 3-7-013: 026 (portion)

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

The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of the subject Draft Environmental Assessment 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
- Office of Conservation and Coastal Lands
- Land-Maui District Land Office
- Land-Planning and Development

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

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

May 13, 2004

LD/NAV COMSENIORHOUSING.CMT
Suspense Date 5/20/04

MEMORANDUM:

TO: Division of Aquatic Resources
XXX Division of Forestry & Wildlife
Na Ala Hele Trails
XXX Engineering Division
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
XXX Land-Planning and Development

FROM: Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: Pre-Assessment Consultation for the Central Maui Senior Housing and County Office Building Project
Location: Kahului, Island of Maui, Hawaii
TMK: (2) 3-7-013: 026 (Por)
Consultant: Munekiyo & Hiraga, Inc.

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.

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. Koga

Date: 5-21-04 Print Name: Jason K. Koga

LINDA LINGLE
GOVERNOR OF HAWAII

RECEIVED
2004 MAY 14 A11 : 38
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

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

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

May 13, 2004

LD/NAV
Suspense Date 5/20/04

COMSENIORHOUSING.CMT

MEMORANDUM:

TO: FROM

- Division of Aquatic Resources
- XXX Division of Forestry & Wildlife
- Na Ala Hele Trails
- XXX Engineering Division
- 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
- XXX Land-Planning and Development

FROM: TO
Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: Pre-Assessment Consultation for the Central Maui Senior Housing and County Office Building Project
Location: Kahului, Island of Maui, Hawaii
TMK: (2) 3-7-013: 026 (Por)
Consultant: Munekiyo & Hiraga, Inc.

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.

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: CWRM

Signed: Edwin T. Sakoda

Date: 5/14/04

Print Name: Edwin T. Sakoda

RECEIVED
2004 MAY 14 P 3:32
DEPT OF LAND & NATURAL RESOURCES
STATE OF HAWAII
LAND DIVISION

2776

LINDA LINGLE
GOVERNOR OF HAWAII

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2004 MAY 19 P 4:03
DEPT OF LAND & NATURAL RESOURCES
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DEPUTY DIRECTOR - LAND

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FORESTRY AND WILDLIFE
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KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

May 13, 2004

J:
COMSENIORHOUSING.CHA

- ADMINISTRATOR
- ASST ADMIN
- DEV BR
- PLAN BR
- RES MGT BR
- CLERICAL
- ADMIN ASST
- INTERP BR
- CIRC/POST/STAFF RM
- COMMENTS & REC
- DRAFT REPLY
- FILE
- FOLLOW UP
- INFO
- RUN COPIES
- PUSH DUE
- SEE ME
- FAX/SEND COPY TO

LD/NAV
Suspense Date 5/20/04

MEMORANDUM:

TO:
- Division of Aquatic Resources
- XXX Division of Forestry & Wildlife
- Na Ala Hele Trails
- XXX Engineering Division
- 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
- XXX Land-Planning and Development

FROM: Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: Pre-Assessment Consultation for the Central Maui Senior Housing and County Office Building Project
Location: Kahului, Island of Maui, Hawaii
TMK: (2) 3-7-013: 026 (Por)
Consultant: Munekiyo & Hiraga, Inc.

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.

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: State Parks Signed:

Date: 5/6/04 Print Name: Daniel S. Quinn

LINDA LINGLE
GOVERNOR 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

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HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

May 13, 2004

COMSENIORHOUSING.CMT

LD/NAV
Suspense Date 5/20/04

MEMORANDUM:

TO:
- Division of Aquatic Resources
- XXX Division of Forestry & Wildlife
- Na Ala Hele Trails
- XXX Engineering Division
- 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
- XXX Land-Planning and Development

FROM: Dierdre S. Mamiya, Administrator
Land Division

RECEIVED
LAND DIVISION
2004 MAY 20 A 9:59
DEPT OF LAND & NATURAL RESOURCES
STATE OF HAWAII

SUBJECT: Pre-Assessment Consultation for the Central Maui Senior Housing and County Office Building Project
Location: Kahului, Island of Maui, Hawaii
TMK: (2) 3-7-013: 026 (Por)
Consultant: Munekiyo & Hiraga, Inc.

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.

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: _____

Signed: _____

Date: MAY 17 2004

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

MAY 25 2004

LINDA LINGLE
GOVERNOR OF HAWAII

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

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

In reply, please refer to:

EPO-04-107

May 20, 2004

Mr. Daren Suzuki
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Suzuki:

SUBJECT: Pre-Assessment Consultation for the Central Maui Senior Housing and County Office Buildings Project, Kahului, Maui, TMK: 3-7-013: por., 026

Thank you for allowing us to review and comment on the subject document. We have the enclosed standard comments to offer. If there are any questions about these standard comments please contact Ryan Davenport with the Environmental Planning Office at 586-4346.

Sincerely,

June F. Harrigan-Lum

JUNE F. HARRIGAN-LUM, MANAGER
Environmental Planning Office

Enclosure

c. SDWB
EPO
SHWB
NRAIQ
CWB
WWB
CAB
HEER

Standard Comments

Environmental Planning Office Dated 3/2/04

The Environmental Planning Office (EPO) is responsible for several surface water quality management programs mandated by the federal Clean Water Act or dictated by State policy . (http://www.state.hi.us/doh/eh/epo/wqm/wqm.htm). Among these responsibilities, EPO:

- maintains the *List of Impaired Waters in Hawaii Prepared under Clean Water Act §303(d)* (http://www.state.hi.us/doh/eh/epo/wqm/303dpcfinal.pdf);
- develops and establishes Total Maximum Daily Loads (TMDLs) for listed waters (suggesting how much existing pollutant loads should be reduced in order to attain water quality standards, please see http://www.epa.gov/owow/tmdl/intro.html);
- writes TMDL Implementation Plans describing how suggested pollutant load reductions can be achieved; and
- conducts assessments of stream habitat quality and biological integrity.

To facilitate TMDL development and planning, and to assist our assessment of the potential impact of proposed actions upon water quality, pollutant loading, and biological resources in receiving waters, we suggest that environmental review documents, permit applications, and related submittals include the following standard information and analyses:

Waterbody type and class

1. Identify the waterbody type and class, as defined in Hawaii Administrative Rules Chapter 11-54 (http://www.state.hi.us/doh/rules/11-54.pdf), of all potentially affected water bodies[1].

Existing water quality management actions

2. Identify any existing National Pollutant Discharge Elimination System (NPDES) permits and related connection permits (issued by permittees) that will govern the management of water that runs off or is discharged from the proposed project site or facility. Please include NPDES and other permit numbers; names of permittees, permitted facilities, and receiving waters (including waterbody type and class as in 1. above); diagrams showing drainage/discharge pathways and outfall locations; and note any permit conditions that may specifically apply to the proposed project.

3. Identify any planning documents, groups, and projects that include specific prescriptions for water quality management at the proposed project site and in the potentially affected waterbodies. Please note those prescriptions that may specifically apply to the proposed project.

Pending water quality management actions

4. Identify all potentially affected water bodies that appear on the current *List of Impaired Waters in Hawaii Prepared under Clean Water Act §303(d)* including the listed waterbody, geographic scope of listing, and pollutant(s) (See Table 7 at http://www.state.hi.us/doh/eh/epo/wqm/303dpcfinal.pdf).

5. If the proposed project involves potentially affected water bodies that appear on the current *List of Impaired Waters in Hawaii Prepared under Clean Water Act §303(d)*, identify and quantify expected changes in the following site and watershed conditions and characteristics:
   - surface permeability
   - hydrologic response of surface (timing, magnitude, and pathways)
   - receiving water hydrology
   - runoff and discharge constituents
   - pollutant concentrations and loads in receiving waters
   - aquatic habitat quality and the integrity of aquatic biota

Where TMDLs are already established they include pollutant load allocations for the surrounding lands and point source discharges. In these cases, we suggest that the submittal specify how the proposed project would contribute to achieving the applicable load reductions.

Where TMDLs are yet to be established and implemented, a first step in achieving TMDL objectives is to prevent any project-related increases in pollutant loads. This is generally accomplished through the proper application of suitable best management practices in all phases of the project and adherence to any applicable ordinances, standards, and permit conditions. In these cases we suggest that the submittal specify how the proposed project would contribute to
reducing the polluted discharge and runoff entering the receiving waters, including plans for
additional pollutant load reduction practices in future management of the surrounding lands and drainage/discharge systems.

Proposed Action and Alternatives Considered

We suggest that each submittal identify and analyze potential project impacts at a watershed scale by considering consider the potential contribution of the proposed project to cumulative, multi-project watershed effects on hydrology, water quality, and aquatic and riparian ecosystems.

We also suggest that each submittal broadly evaluate project alternatives by identifying more than one engineering solution for proposed projects. In particular, we suggest the

consideration of "alternative," "soft," and "green" engineering solutions for channel modifications that would provide a more environmentally friendly and aesthetically pleasing channel environment and minimize the destruction of natural landscapes.

If you have any questions about these comments or EPO programs, please contact Ryan Davenport at 586-4346.

[1]"Potentially affected waterbodies" means those in which proposed project activity would take place and any that could receive water discharged by the proposed project activity or water flowing down from the proposed project site. These waterbodies can be presented as a chain of receiving waters whose top link is at the project site upslope and whose bottom link is in the Pacific Ocean, and can be named according to conventions established by Chapter 11-54 and the *List of Impaired Waters in Hawaii Prepared under Clean Water Act §303(d)*. For example, a recent project proposed for Nuhelewai Stream, Oahu might potentially affect Nuhelewai Stream, Kapalama Canal, and Honolulu Harbor and Shore Areas.
[OTHER EXAMPLES OR DIAGRAM??]

Solid and Hazardous Waste Branch Dated 3/2/04

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

Specific examples of elements that the plan should address include:

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

---

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

---

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

---

4)
The discussion of solid waste issues contained in the document is restricted to activities within the completed project. The OSWM recommends the development of a solid waste management plan that encompasses all project phases, from construction (and or demolition) to occupation of the project.

Specific examples of plan elements include: the recycling of green-waste during clear and grub activities; maximizing the recycling of construction and demolition wastes; the use of locally produced compost in the landscaping of the project; and the provision of recycling facilities in the design of the project.

---

5)
Hawaii Revised Statutes Chapter 103D-407 stipulates that all highway and road construction and improvement projects funded by the State or a county or roadways that are to be accepted by the State or a county as public roads shall utilize a minimum of ten per cent crushed glass aggregate as specified by the department of transportation in all base-course (treated or untreated) and sub-base when the glass is available to the quarry or contractor at a price no greater than that of the equivalent aggregate.

If you have any questions, please contact the Solid and Hazardous Waste Branch at (808) 586-4240.

Noise, Radiation & Indoor Air Quality Branch Dated 3/2/04

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

- Chapter 11-39 Air Conditioning and Ventilating.
- Chapter 11-45 Radiation Control.
- Chapter 11-46 Community Noise Control.
- Chapter 11-501 Asbestos Requirements.
- Chapter 11-502 Asbestos-Containing Materials in Schools.
- Chapter 11-503 Fees for Asbestos Removal and Certification
- Chapter 11-504 Asbestos Abatement Certification Program

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

Clean Water Branch Dated 3/2/04

1. The Army Corps of Engineers should be contacted at (808) 438-9258 to identify whether a Federal license or permit (including a Department of Army permit) is required for this project. Pursuant to Section 401(a)(1) of the Federal Water Pollution Act (commonly known as the "Clean Water Act"), a Section 401 Water Quality Certification is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters...."

2. A National Pollutant Discharge Elimination System (NPDES) general permit coverage is required for the following activities:

a. Storm water associated with industrial activities, as defined in Title 40, Code of Federal Regulations, Sections 122.26(b)(14)(i) through 122.26(b)(14)(ix) and 122.26(b)(14)(xi).

b. Construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. **An NPDES permit is required before the commencement of the construction activities.**

c. Discharges of treated effluent from leaking underground storage tank remedial activities.

d. Discharges of once through cooling water less than one (1) million gallons per day.

e. Discharges of hydrotesting water.

f. Discharges of construction dewatering effluent.

g. Discharges of treated effluent from petroleum bulk stations and terminals.

h. Discharges of treated effluent from well drilling activities.

i. Discharges of treated effluent from recycled water distribution systems.

j. Discharges of storm water from a small municipal separate storm sewer system.

k. Discharges of circulation water from decorative ponds or tanks.

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

3. The applicant may be required to apply for an individual NPDES permit if there is any type of activity in which wastewater is discharged from the project into State waters and/or coverage of the discharge(s) under the NPDES general permit(s) is not permissible (i.e. NPDES general permits do not cover discharges into Class 1 or Class AA receiving waters). An application for the NPDES permit is to be submitted at least 180 days before the commencement of the respective activities. The NPDES application forms may also be picked up at our office or downloaded from our website at http://www.state.hi.us/health/eh/cwb/forms/indiv-index.html.

4. Hawaii Administrative Rules, Section 11-55-38, also requires the owner to either submit a copy of the new NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the DOH that the project, activity, or site covered by the NOI or application has been or is being reviewed by SHPD.

Please submit a copy of the request for review by SHPD or SHPD's determination letter for the project.

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

Waste Water Branch Dated 3/2/04

All wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems". We do reserve the right to review the detailed wastewater plans for conformance to applicable rules.

Should you have any questions, please contact the Planning & Design Section of the Wastewater Branch at 586-4294.

Clean Air Branch Dated 3/2/04

Construction/Demolition Involving Asbestos:

Since the proposed project would entail renovation/demolition activities which may involve asbestos, the applicant should contact the Asbestos Abatement Office in the Noise, Radiation and Indoor Air Quality Branch at 586-5800.

Control of Fugitive Dust:

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

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

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

a) Plan the different phases of construction, focusing on minimizing the amount of dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;
b) Provide an adequate water source at the site prior to start-up of construction activities;
c) Landscape and provide rapid covering of bare areas, including slopes, starting from the initial grading phase;
d) Minimize dust from shoulders and access roads;

e) Provide adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and
f) Control dust from debris being hauled away from the project site.

Hazard Evaluation and Emergency Response Office(HEER) Dated 3/2/04

1. A phase I Environmental Site Assessment (ESA) should be conducted for developments or redevelopments. If the investigation shows that a release of petroleum, hazardous substance, pollutants or contaminants occurred at the site, the site should be properly characterized through an approved Hawaii State Department of Health (DOH)/Hazard Evaluation and Emergency Response Office (HEER) soil and or groundwater sampling plan. If the site is found to be contaminated, then all removal and remedial actions to clean up hazardous substance or oil releases by past and present owners/tenants must comply with chapter 128D, Environmental Response Law, HRS, and Title 11, Chapter 451, HAR, State Contingency Plan.

2. All lands formerly in the production of sugarcane should be characterized for arsenic contamination, If arsenic is detected above the US EPA Region (preliminary remediation goal (PRG) for non-cancer effects, then a removal and or remedial plan must be submitted to the Hazard Evaluation and Emergency Response (HEER) Office of the State Department of Health for approval. The plan must comply with Chapter 128D, Environmental Response Law, HRS, and Title 11, Chapter 451, HAR, State Contingency Plan.

3. If the land has a history of previous releases of petroleum, hazardous substances, pollutants, or contaminants, we recommend that the applicant request a "no further action" (NFA) letter from the Hawaii State Department of Health (DOH)/ Hazard Evaluation and Emergency Response (HEER) Office prior to the approval of the land use change or permit approval.

Safe Drinking Water Branch Dated 3/11/04

The Safe Drinking Water Branch administers programs in the areas of: 1) public water systems; 2) underground injection control; and 3) groundwater protection. Our general comments on projects are as follows.

Public Water Systems

- Federal and state regulations define a public water system as a system that serves 25 or more individuals at least 60 days per year or has at least 15 service connections. All public water system owners and operators are required to comply with Hawaii Administrative Rules, Title 11, Chapter 20, titled Rules Relating to Potable Water Systems.

- All new public water systems are required to demonstrate and meet minimum capacity requirements prior to their establishment. This requirement involves demonstration that the system will have satisfactory technical, managerial and financial capacity to enable the system to comply with safe drinking water standards and requirements.

- Projects that propose development of new sources of potable water serving or proposed to serve a public water system must comply with the terms of Section 11-20-29 of Chapter 20. This section requires that all new public water system sources be approved by the Director of Health prior to its use. Such approval is based primarily upon the submission of a satisfactory engineering report which addresses the requirements set in Section 11-20-29.

- The engineering report must identify all potential sources of contamination and evaluate alternative control measures which could be implemented to reduce or eliminate the potential for contamination, including treatment of the water source. In addition, water quality analyses for all regulated contaminants, performed by a laboratory certified by the State Laboratories Division of the state of Hawaii, must be submitted as part of the report to demonstrate compliance with all drinking water standards. Additional parameters may be required by the Director for this submittal or additional tests required upon his or her review of the information submitted.

- All sources of public water system sources must undergo a source water assessment which will delineate a source water protection area. This process is preliminary to the creation of a source water protection plan for that source and activities which will take place to protect the source of drinking water.

- Projects proposing to develop new public water systems or proposing substantial modifications to existing public water systems must receive approval by the Director of Health prior to construction of the proposed system or modification. These projects include treatment, storage and distribution systems of public water systems. The approval authority for projects owned and operated by a County Board or Department of Water or Water Supply has been delegated to them.

- All public water systems must be operated by certified distribution system and water treatment plant operators as defined by Hawaii Administrative Rules, Title 11, Chapter 11-25 titled; Rules Pertaining to Certification of Public Water System Operators.

- All projects which propose the use of dual water systems or the use of a non-potable water system in proximity to an existing potable water system to meet irrigation or other needs must be carefully design and operate these systems to prevent the cross-connection of these systems and prevent the possibility of backflow of water from the non-potable system to the potable system. The two systems must be clearly labeled and physically separated by air gaps or reduced pressure principle backflow prevention devices to avoid contaminating the potable water supply. In addition backflow devices must be tested periodically to assure their proper operation. Further, all non-potable spigots and irrigated areas

should be clearly labeled with warning signs to prevent the inadvertent consumption on non-potable water. Compliance with Hawaii Administrative Rules, Title 11, Chapter 11-21 titled; Cross-Connection and Backflow Control is also required.

- All projects which propose the establishment of a potentially contaminating activity (as identified in the Hawai`i Source Water Assessment Plan) within the source water protection area of an existing source of water for a public water supply should address this potential and activities that will be implemented to prevent or reduce the potential for contamination of the drinking water source.

- For further information concerning the application of capacity, new source approval, operator certification, source water assessment, backflow/cross-connection prevention or other public water system programs, please contact the Safe Drinking Water Branch at 586-4258.

Underground Injection Control (UIC)

- Injection wells used for the subsurface disposal of wastewater, sewage effluent, or surface runoff are subject to environmental regulation and permitting under Hawai`i Administrative Rules, Title 11, Chapter 11-23, titled Underground Injection Control (UIC). The Department of Health's approval must be first obtained before any injection well construction commences. A UIC permit must be issued before any injection well operation occurs.

- Authorization to use an injection well is granted when a UIC permit is issued to the injection well facility. The UIC permit contains discharge and operation limitations, monitoring and reporting requirements, and other facility management and operational conditions. A complete UIC permit application form is needed to apply for a UIC permit.
- A UIC permit can have a valid duration of up to five years. Permit renewal is needed to keep an expiring permit valid for another term.

For further information about the UIC permit and the Underground Injection Control Program, please contact the UIC staff of the Safe Drinking Water Branch at 586-4258.

Groundwater Protection Program

Projects that propose to develop a golf course are asked to use the Guidelines Applicable to Golf Courses in Hawai`i (Version 6) in order to address certain groundwater protection concerns, as well as other environmental concerns

MAY 20 2004

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 Nakoa Street, Unit 2 , Wailuku, Hawaii 96793

May 14, 2004

Mr. Daren Suzuki, Project Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Suzuki:

SUBJECT: CENTRAL MAUI SENIOR HOUSING AND COUNTY OFFICE BUILDINGS PROJECT, TMK (2) 3-7-013: por. 026

We have reviewed the Project Summary for the subject project and have no comments or objections to the proposed action.

Thank you for the opportunity to review and comment. Should there be any questions, please contact Mr. Patrick Matsui, Chief of Parks Planning and Development, at 270-7387.

Sincerely,

GLENN T. CORREA
Director

c: Patrick Matsui, Chief of Parks Planning and Development

PHONE (808) 594-1888

FAX (808) 594-1865

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

MAY 1 4 2004

HRD04-1386

May 13, 2004

Daren Suzuki
Project Planner
Munekiyo & Hiraga, Inc.
350 High Street, Suite 104
Wailuku, HI 96793

Subject: Pre-Assessment Consultation for the Central Maui Senior Housing and County Office Buildings Project, Kahului, Maui, TMK: (2) 3-7-13: Portion 26

Dear Mr. Suzuki:

Thank for your letter dated April 7, 2004 regarding the pre-assessment consultation for the Central Maui Senior Housing and County Office Buildings Project, Kahului, Maui, TMK: (2) 3-7-13: Portion 26. Your letter requests that the Office of Hawaiian Affairs (OHA) review and comment on the proposed project.

Senior Housing Component

Your preliminary consultation letter notes, "the senior housing component of the project will consist of 39 one-bedroom rental units, one (1) two-bedroom resident manager's unit, a 2,945 square foot community center building, and related site improvements. Vehicular access to the senior housing unit is proposed via Kaulawahine Street, which borders the property along its western extent." Additionally, approximately 74 paved parking stalls will be provided for the senior housing component.

Office Buildings Component

The office buildings component of the project will consist of a 12,437 square foot, two story building for the Department of Housing and Human Concerns' Housing Division and a 6,718 square foot, one-story building for the Immigration Services Division, Community Block Grant Program Office, the

Volunteer Center of Maui County and related site improvements. Approximately 92 paved parking stalls have been provided for the office buildings.

OHA looks forward to your Draft EA for the proposed project, which should clarify the project scope and define the project footprint more clearly.

If you have questions or concerns please contact Matthew Myers, Policy Advocate at 594-1945 or matthewm@oha.org.

'O wau iho nō,

Clyde W. Nāmu'o
Administrator

Chapter XI

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

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

A Draft Environmental Assessment for the subject project was filed and published in the Office of Environmental Quality Control's The Environmental Notice on January 23, 2005. During the 30-day public comment period, agencies were provided the opportunity to comment on the proposed action. This section incorporates the comments received during the 30-day comment period between January 23, 2005 and February 22, 2005. Responses to the substantive comments are also incorporated herein.

LINDA LINGLE
GOVERNOR OF HAWAII

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186
E-mail: oeqc@health.state.hi.us

January 27, 2005

Alice Lee
Department of Housing & Human Concerns
200 South High Street
Wailuku, HI 96793

Dear Ms. Lee:

Subject: Draft Environmental Assessment (EA), **Central Maui Senior Housing & County Office Buildings**

We have the following comments to offer:

Sustainable Building Design: Section III.D. *Infrastructure*, mentions the use of solar water heating, energy efficient lighting and air conditioning. What other sustainable building techniques will you include? Sustainable building techniques are presented in our office's "Guidelines for Sustainable Building Design in Hawaii." Contact us for a paper copy or go to our homepage at ***http://www.state.hi.us/health/oeqc/guidance/sustainable.htm.*** In the final EA include a description of any of the techniques you will implement.

Paving: Hawaii Revised Statutes 103D-407 requires the use of recycled glass in paving materials whenever possible. Please consider this for the paved areas.

Landscaping: HRS 103D-408 requires the use of native Hawaiian flora whenever and wherever possible.

Timeframe: What are the anticipated start and end dates of this project?

Funding: In the final EA give the percentages of county, state and federal funds.

If you have any questions call Nancy Heinrich at 586-4185.

Sincerely,

Genevieve Salmonson

GENEVIEVE SALMONSON
Director

c: Daren Suzuki, Munekiyo & Hiraga

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO

February 24, 2005

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

SUBJECT: Draft Environmental Assessment (EA) for the Central Maui Senior Housing and County Office Buildings Project, TMK 3-7-013:026, Kahului, Maui

Dear Ms. Salmonson:

Thank you for your letter to Alice Lee, dated January 27, 2005, providing comments on the Draft EA for the subject project. On behalf of the applicant, the following information is provided in response to your comments.

Sustainable Building Design

Preliminary sustainable building design considerations include solar water heating and energy efficient lighting for the Senior Housing component; and energy efficient lighting and air conditioning systems for the County Office Buildings component. Other sustainable building design considerations include water efficient landscaping and irrigation; and solid waste management, recycling and diversion. The sustainable building design guidelines will be forwarded to the project design team for consideration in the development of the detailed design and material specifications. Sustainable building design considerations will be incorporated, as appropriate.

Paving and Landscaping

Your comments regarding use of recycled glass in paving materials wherever possible and use of native Hawaiian flora wherever possible, will be forwarded to the project design team for consideration. A copy of the applicable Hawaii Revised Statutes (HRS) chapters pertaining to paving and landscaping will be forwarded to the project design team for their information.

environment planning

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

Timeframe

Depending on the funding and securing applicable permits and land use approvals, it is anticipated that construction will start sometime in the year 2006, and take approximately 8 to 12 months to complete.

Funding

Since some government funding sources are still pending, a specific funding percentage breakdown of county, state and federal funds is not available at this time.

Again, thank you for your review of the Draft EA and comments

Very truly yours,

Daren Suzuki, Planner

DS:yp
com\dhhccmaui\oeqc.deares

cc: Kivette Caigoy, Department of Planning (w/copy of Sustainable Building Design Guidelines, HRS, Chapters 103D-407 and 408, and letter from OEQC dated January 27, 2005)
Ed Okubo, Housing Division (w/copy of Sustainable Building Design Guidelines, HRS, Chapters 103D-407 and 408, and letter from OEQC dated January 27, 2005)
Alvin Yoshimori, GYA Architects, Inc. (w/copy of Sustainable Building Design Guidelines, HRS, Chapters 103D-407 and 408, and letter from OEQC dated January 27, 2005)

FEB 16 2005

LINDA LINGLE
GOVERNOR OF HAWAII

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

YVONNE Y. IZU
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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

February 14, 2005
LD-NAV

COMSENIORHOUSING.RCM

Munekiyo and Hiraga, Inc.
Daren Suzuki, Planner
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Suzuki:

Subject: Draft Environmental Assessment for Central Maui Senior Housing and County Office Building, Kahului, Island of Maui, Hawaii

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

The Department of Land and Natural Resources' (DLNR) Land Division distributed a copy of the Draft Environment Assessment pertaining to the subject matter to the following DLNR Divisions for their review and comment:

- Division of Forestry and Wildlife
- Engineering Division
- Commission on Water Resource Management
- Office of Conservation and Coastal Lands
- Land-Maui District Land Office

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

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

WARREN F. WEGESEND JR
Administrator

C: MDLO

LINDA LINGLE
GOVERNOR OF HAWAII

2005 FEB -1 P 3:32

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

YVONNE Y. IZU
DEPUTY DIRECTOR - WATER

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

January 25, 2005

COMSENIORHOUSING.CMT

LD/NAV
Suspense Date 2/2/05

MEMORANDUM:

TO: /XXX Division of Forestry & Wildlife
XXX Engineering Division
XXX Commission on Water Resource Management
XXX Office of Conservation and Coastal Lands
XXX Land-Maui District Land Office

FROM: Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: Central Maui Senior Housing and County Office Building
Project Draft Environmental Assessment
Location: Kahului, Island of Maui, Hawaii
TMK: (2) 3-7-013: 026 (Por)
Consultant: Munekiyo & Hiraga, Inc.

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.

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: _____

Signed: Paul J Conry

Date: JAN 27 2005

Print Name: PAUL J. CONRY, ADMINISTRATOR
DIVISION OF FORESTRY AND WILDLIFE

LINDA LINGLE
GOVERNOR 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

YVONNE Y. IZU
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

January 25, 2005

LD/NAV COMSENIORHOUSING.CMT
Suspense Date 2/2/05

MEMORANDUM:

TO: XXX Division of Forestry & Wildlife
XXX Engineering Division
XXX Commission on Water Resource Management
XXX Office of Conservation and Coastal Lands
✓XXX Land-Maui District Land Office

FROM: Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: Central Maui Senior Housing and County Office Building
Project Draft Environmental Assessment
Location: Kahului, Island of Maui, Hawaii
TMK: (2) 3-7-013: 026 (Por)
Consultant: Munekiyo & Hiraga, Inc.

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.

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.
Division: ODLO
Date: 1/27/05

( ) Comments attached.
Signed: Charlene E. Unoki
Print Name: Charlene E. Unoki

LINDA LINGLE
GOVERNOR 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

YVONNE Y. IZU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
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KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

January 25, 2005

LD/NAV
Suspense Date 2/2/05

COMSENIORHOUSING.CMT

RECEIVED
2005 JAN 28 A 9:35
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

'05 JAN 26 PM 03:29 ENGINEERING

MEMORANDUM:

TO: XXX Division of Forestry & Wildlife
✓ XXX Engineering Division
XXX Commission on Water Resource Management
XXX Office of Conservation and Coastal Lands
XXX Land-Maui District Land Office

FROM: Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: Central Maui Senior Housing and County Office Building
Project Draft Environmental Assessment
Location: Kahului, Island of Maui, Hawaii
TMK: (2) 3-7-013: 026 (Por)
Consultant: Munekiyo & Hiraga, Inc.

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.

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.

(X) Comments attached.

Division: Engineering

Signed: Andrew M. Monden

Date: 1/27/05

Print Name: for ERIC T. HIRANO, CHIEF ENGINEER

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

REF.: COMSENIORHOUSING.CMT
Maui. 392

COMMENTS

(X) **We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Zone C. The Flood Insurance Program does not have any regulations for development within Zone C**

( ) 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 Tyau-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 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. 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.

( ) Additional Comments: _____

_____

( ) 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: 1/27/05

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

January 31, 2005

TO: Ms. Dede Mamiya, Administrator
Land Division

FROM: Yvonne Y. Izu, Deputy Director
Commission on Water Resource Management (CWRM)

SUBJECT: Central Maui Senior Housing & County Office, Kahului, Draft EA

FILE NO.: COMSENIORHOUSING.CMT

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

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

[X] We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.

[ ] We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

[ ] We are concerned about the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

[ ] A Well Construction Permit and/or a Pump Installation Permit from the Commission would be required before ground water is developed as a source of supply for the project.

[ ] The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the Commission would be required prior to use of this source.

[ ] Groundwater withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

[ ] We are concerned about the potential for degradation of instream uses from development on highly erodible slopes adjacent to streams within or near the project. We recommend that approvals for this project be conditioned upon a review by the corresponding county's Building Department and the developer's acceptance of any resulting requirements related to erosion control.

[ ] If the proposed project includes construction of a stream diversion, the project may require a stream diversion works permit and amend the instream flow standard for the affected stream(s).

[ ] If the proposed project alters the bed and banks of a stream channel, the project may require a stream channel alteration permit.

[X] OTHER:

The project estimate water requirements at about 25,000 gallons per day. The primary water source for this project is now a ground-water management area under the State Commission on Water Resource Management (CWRM). Permits will initially be issued for uses existing as of July 21, 2003. New uses initiated after that 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. New uses within the Central Maui Service Area not relying on Iao sources may also be affected if Iao sources are restricted.

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

LINDA LINGLE
GOVERNOR OF HAWAII

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

YVONNE Y. IZU
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

RECEIVED
05 JAN 27 P12:57
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

January 25, 2005

LD/NAV COMSENIORHOUSING.CMT
Suspense Date 2/2/05

MEMORANDUM:

TO: XXX Division of Forestry & Wildlife
XXX Engineering Division
✓XXX Commission on Water Resource Management
XXX Office of Conservation and Coastal Lands
XXX Land-Maui District Land Office

FROM: Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: Central Maui Senior Housing and County Office Building Project Draft Environmental Assessment
Location: Kahului, Island of Maui, Hawaii
TMK: (2) 3-7-013: 026 (Por)
Consultant: Munekiyo & Hiraga, Inc.

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.

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: _____ Print Name: _____

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO

February 24, 2005

Mr. Warren F. Wegesend Jr., Administrator
Department of Land and Natural Resources
Commission on Water Resource Management
P. O. Box 621
Honolulu, Hawaii 96808

SUBJECT: Draft Environmental Assessment (EA) for the Central Maui Senior Housing and County Office Buildings Project, TMK 3-7-013:026, Kahului, Maui

Dear Mr. Wegesend:

Thank you for your letter dated February 14, 2005, providing comments on the Draft EA for the subject project. On behalf of the applicant, the following information is provided in response to the comments from the Commission of Water Resource Management.

Coordination will be carried out with the Department of Water Supply to incorporate the project into the County's Water Use and Development Plan.

We also understand that the primary water source for the project is now a groundwater management area, under the State Commission on Water Resource Management and if pumpage from the Iao Aquifer is restricted, it could result in restrictions of use within the service area. It is further understood that new uses within the Central Maui Service area, not relying on Iao sources, may also be affected if Iao sources are restricted.

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

Again, thank you for your comments

Very truly yours,

Daren Suzuki, Planner

DS:yp
cc: Kivette Caigoy, Department of Planning
Edwin Okubo, Housing Division
comdhhcemaui\dlnrcwrm.deares

LINDA LINGLE
GOVERNOR OF HAWAII

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

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

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

February 15, 2005

Mr. Michael Munekiyo
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai`i 96793

Dear Munekiyo:

Subject: **Central Maui Senior Housing and County Office Buildings**
Draft Environmental Assessment and Land Use Amendments
TMK: (2) 3-7-013: por. 26

Thank you for the opportunity to comment on the Draft Environmental Assessment and Land Use Amendments. The following comments are offered:

National Pollutant Discharge Elimination System (NPDES) permit coverage is required for this project. The Clean Water Branch should be contacted at 808 586-4309.

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.

HAR, Chapter 11-46, sets maximum allowable sound levels from stationary equipment such as compressors and HVAC equipment. The attenuation of noise from these sources may depend on the location and placement of these types of equipment. This should be taken into consideration during the planning, design, and construction of the building and installation of these types of equipment.

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.

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

Sincerely,

Herbert S. Matsubayashi
District Environmental Health Program Chief

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO

February 24, 2005

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

SUBJECT: Draft Environmental Assessment (EA) for the Central Maui Senior Housing and County Office Buildings Project, TMK 3-7-013:026, Kahului, Maui

Dear Mr. Matsubayashi:

Thank you for your letter dated February 15, 2005, providing comments on the Draft EA for the subject project. On behalf of the applicant, the following information is provided in response to your comments.

National Pollutant Discharge Elimination System (NPDES)

We acknowledge that a NPDES permit coverage is required for this project. The Clean Water Branch will be contacted prior to grading/construction activities to secure applicable permit as required.

Community Noise Control

We confirm that the proposed project will comply with Hawaii Administrative Rules (HAR) Chapter 11-46, *"Community Noise Control"* and a noise permit, if required, will be obtained prior to the commencement of work. We also acknowledge that Chapter 11-46 sets maximum sound levels from stationary equipment, such as compressors and HVAC equipment.. The placement of these types of equipment will be considered during the planning, design and construction of the building and installation of these types of equipment.

planning environment

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

Fugitive Dust

We acknowledge that there is a significant potential for fugitive dust emissions during site work preparations. A fugitive dust control management plan in the form of a Best Management Practice (BMP) plan will be developed by the contractor to mitigate impacts of fugitive dust emissions on surrounding areas. Minimum BMP's include placement of dust fences, watering with trucks or sprinklers, limiting the area of disturbance, and timely grassing of finished areas. We confirm that the work will also be in conformance with the air pollution control standards contained in the HAR, Chapter 11-60, *"Air Pollution Control"*.

Again, thank you for your comment and review of the Draft EA.

Very truly yours,

Daren Suzuki, Planner

DS:yp
cc: Kivette Caigoy, Department of Planning
Edwin Okubo, Housing Division
com\dhhccmaui\doh.deares

ALAN M. ARAKAWA
MAYOR

GEORGE Y. TENGAN
DIRECTOR
JEFFREY T. PEARSON,
P.E.

FEB 04 2005

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI

P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-7109
Telephone (808) 270-7816 • Fax (808) 270-7833

January 31, 2005

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

Subject: Draft Environmental Assessment and Planning Director initiated Land use Amendment Request for the Central Maui Senior Housing and County Office Buildings Project, TMK: 3-7-13: por. 026

Dear Mr. Munekiyo:

Thank you for the opportunity to comment on this Draft Environmental Assessment (EA). The Department of Water Supply comments to the early consultation request for this project are included in the EA.

There is currently no moratorium on issuance of water meters for Central Maui. DWS will not issue reservations for future meters until new sources are brought on-line. Although the Department continues to issue meters for those ready to receive service at this time, it may also become necessary to stop issuing new meters altogether. Water for this project may not be available until new sources are on-line.

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

Sincerely,

George Y. Tengan
Director
emb

c: engineering division
Kivette Caigoy, Department of Planning

C:\WPdocs\EAs EISs\Central Maui Senior Housing land use amendment EA.wpd

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO

February 24, 2005

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

SUBJECT: Draft Environmental Assessment (EA) for the Central Maui Senior Housing and County Office Buildings Project, TMK 3-7-013:026, Kahului, Maui

Dear Mr. Tengan:

Thank you for your letter dated January 31, 2005, providing comments on the above-mentioned Draft EA.

The applicant acknowledges that water for this project may not be available until new water sources are online.

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

Very truly yours,

Daren Suzuki, Planner

DS:yp
cc: Ed Okubo, Housing Division
com\dhhccmaui\dws.deares

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

planning environment

ALAN M. ARAKAWA
Mayor

GLENN T. CORREA
Director

JOHN L. BUCK III
Deputy Director

DEPARTMENT OF PARKS AND RECREATION
Planning & Development Division
700 Hali'a Nakoa Street, Unit 2, Wailuku, Hawaii 96793

(808) 270-7931
Fax (808) 270-7162

January 27, 2005

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

RE: Draft Environmental Assessment (EA) and Planning Director Initiated Land Use Amendment Request for the Central Maui Senior Housing and County Office Buildings Project
TMK: 3-7-013:por. 026

Dear Mr. Munekiyo:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment (EA) and Planning Director Initiated Land Use Amendment Request for the Central Maui Senior Housing and County Office Buildings Project.

After reviewing the submitted documents, we have no objection or additional comments to offer, at this time, regarding the referenced actions.

Should you have any questions or need of additional information, please call me or Patrick Matsui, Chief of Parks Planning & Development at 808-270-7931.

Sincerely,

Glenn Correa
Director

c: Patrick Matsui, Chief of Parks Planning & Development
Kivette Caigoy, Staff Planner, Planning Department

ALAN M. ARAKAWA
MAYOR

KYLE K. GINOZA
Director
DON A. MEDEIROS
Deputy Director
Telephone (808) 270-7511
Facsimile (808) 270-7505

FEB 22 [illegible]

DEPARTMENT OF TRANSPORTATION

COUNTY OF MAUI
200 South High Street
Wailuku, Hawaii, USA 96793-2155

February 15, 2005

Mr. Daren Suzuki
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

SUBJECT: Central Maui Senior Housing and County Office Building Project,
TMK (2) 3-7-013: por., 026, Kahului, Maui

Dear Mr. Suzuki:

We have reviewed the Draft Environmental Assessment (EA) and found that you still have not included an accessible bus shelter within your project. To reiterate, we strongly suggest that you construct one to serve the senior citizen residents of the project. Senior citizens are one of the larger users of public transportation, for which substantial funding is provided by the County of Maui.

The office building component of the project proposes to serve additional target groups that use public transit. Including an accessible bus shelter as part of the project will not pose a significant cost in the larger scheme of construction costs. Constructing it later at the insistence of the residents may pose to be a significant inconvenience once the project is operational and will surely be more costly.

We are willing to meet with you to assist you with this worthwhile endeavor. Please feel free to contact me at 270-7511. Thank you for the opportunity to comment.

Sincerely,

Kyle K. Ginoza
Director

cc: Edwin Okubo, Department of Housing and Human Concerns

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO

February 24, 2005

Mr. Kyle Ginoza, Director
Department of Transportation
200 South High Street
Wailuku, Hawaii 96793

SUBJECT : Draft Environmental Assessment (EA) for the Central Maui Senior Housing and County Office Building Project,
TMK 3-7-013:026, Kahului, Maui

Dear Mr. Ginoza:

Thank you for your letter dated February 15, 2005, providing comments on the Draft EA for the subject project.

On behalf of the applicant, we are transmitting herewith a copy of a letter from Edwin Okubo, Housing Administrator to Mr. Alvin Yoshimori, project architect regarding your suggestion on providing accessible bus shelters for the project.

Again, thank you for your review of the Draft EA and comments.

Very truly yours,

Daren Suzuki, Planner

DS:yp
Enclosure
cc: Edwin Okubo, Housing Division
com\dhhccmaui\dot.deares

planning environment

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

DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
HOUSING DIVISION
COUNTY OF MAUI

ALAN M. ARAKAWA
Mayor

ALICE L. LEE
Director

HERMAN T. ANDAYA
Deputy Director

86 W. KAMEHAMEHA AVENUE • KAHULUI, HAWAII 96732-2259 • PHONE (808) 270-7351 • FAX (808) 270-6284

February 22, 2005

Mr. Alvin Yoshimori
GYA Architects, Inc.
2145 Wells Street, Suite 303
Wailuku, Hawaii 96793

Dear Alvin

Subject: Central Maui Senior Housing and
County Office Buildings Project

Attached is Mr. Kyle K. Ginoza's February 15, 2005 letter to Daren Suzuki strongly suggesting that we provide accessible bus shelters for both the senior housing and office buildings components of the project.

I called Mr. Ginoza today to request clarification as to what he had in mind for the two accessible bus shelters, and asked if the loading zones at the two components of the project could be used for that purpose. He indicated that the two loading zones could be used for that purpose, but requested that we provide ramps for wheel chairs, benches for people waiting for the buses, and some type of shelter from the weather for the benches.

Please see what can be provided to accommodate Mr. Ginoza's suggestion. Thank you.

Very truly yours,

EDWIN T. OHIRA
Housing Administrator

ETO:hs

Attachment

Alice Lee w/attachment
Herman Andaya w/attachment
Daren Suzuki

FEB 24 2005

ALAN M. ARAKAWA
Mayor

MICHAEL W. FOLEY
Director

WAYNE A. BOTEILHO
Deputy Director

COUNTY OF MAUI
DEPARTMENT OF PLANNING

February 23, 2005

Mr. Daren Suzuki
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Suzuki:

RE: Draft Environmental Assessment fo the Proposed Central Maui Senior Housing and County Office Building Project located at TMK 3-7-013: 026 (portion), Kahului, Island of Maui, Hawaii (LTR 2005/0121) (CPA 2005/0001)

The Maui Planning Department (Department) has reviewed the above referenced document and provides the following comments:

1. As indicated in Section IV of the DEA, the subject property is designated in the Wailuku-Kahului Community Plan as "Park." In accordance with Section 2.80A.060, Maui County Code (MCC), the Director may initiate a Community Plan Amendment for a subject property. As such, please be advised that the Department will process a Community Plan Amendment for the entire property from "Park" to "Public/Quasi-Public" in order to maintain consistency with the proposed action.

   Further, the property is currently zoned "R-3, Residential" per Title 19, MCC. However, in order to maintain consistency with the proposed Community Plan Amendment, the Department will initiate and process a Change in Zoning for the entire property from "R-3, Residential" to "Public/Quasi-Public District" in accordance with Chapter 19.510, MCC.

2. The DEA indicates bus services (pick-up and drop-off) will be provided within the property boundaries. As a follow-up to comments from the County of Maui, Department of Transportation, please confirm whether the proposed action will include provisions for a bus shelter on the property.

3. The TIAR recommends providing exit lanes and exclusive turning bays along Puunene Avenue to mitigate impacts of site generated vehicles on through traffic along Puunene Avenue. However, the site plans do not include these mitigative measures. Please indicate how these mitigative measures will be addressed in the overall site plan, and discuss the effects on the proposed parking stalls along Puunene Avenue.

Thank you for the opportunity to comment. Should you require additional clarification, please contact Ms. Kivette Caigoy, Environmental Planner, at 270-7735.

Sincerely,

Clayton I. Yoshida

for MICHAEL W. FOLEY
Planning Director

MWF:KAC:lar
c: Wayne Boteilho, Deputy Planning Director
Clayton Yoshida, Planning Program Administrator
John Summers, Planning Program Administrator
Kivette Caigoy, Environmental Planner
DHHC
CPA Project File
General File
K:\WP_DOCS\PLANNING\EA\DEAComments\2005\121_CntrlMauiSenHousing.wpd

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO

February 25, 2005

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

SUBJECT : Draft Environmental Assessment (EA) for the Central Maui Senior Housing and County Office Building Project, TMK 3-7-013:026, Kahului, Maui

Dear Mr. Foley:

Thank you for your letter dated February 23, 2005, providing comments on the Draft EA for the subject project. On behalf of the applicant, the following information is provided in response to your comments.

1. We acknowledge the Department of Planning's position to initiate a request for a Community Plan Amendment from "Park" to "Public/Quasi-Public" and a Change in Zoning from "R-3, Residential" to "P-1, Public/Quasi-Public" for the entire property.
2. Enclosed is a letter from Edwin Okubo, Housing Administrator to Alvin Yoshimori, project architect on providing a bus shelter and related improvements in the final project design. Provisions of a bus shelter will be provided to the extent possible.

3. It is anticipated that exclusive turning bays along Puunene Avenue can be provided within the existing State right-of-way. Also, separate exit lanes can be accommodated by either widening the driveway entry or providing a right-turn only exit onto Puunene Avenue. Incorporating these mitigative measures should not significantly impact the overall site plan. We acknowledge that these traffic mitigative measures will also be considered by your department during the processing of the land use entitlements.

planning environment

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

Again, thank you for your review of the Draft EA and comments.

Very truly yours,

Daren Suzuki, Planner

DS:yp
Enclosure
cc: Edwin Okubo, Housing Division (w/enclosure)
com\dhhccmaui\planning.deares

DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
HOUSING DIVISION
COUNTY OF MAUI

ALAN M. ARAKAWA
Mayor
ALICE L. LEE
Director
HERMAN T. ANDAYA
Deputy Director

86 W. KAMEHAMEHA AVENUE • KAHULUI, HAWAII 96732-2259 • PHONE (808) 270-7351 • FAX (808) 270-6284

February 22, 2005

Mr. Alvin Yoshimori
GYA Architects, Inc.
2145 Wells Street, Suite 303
Wailuku, Hawaii 96793

Dear Alvin

Subject: Central Maui Senior Housing and
County Office Buildings Project

Attached is Mr. Kyle K. Ginoza's February 15, 2005 letter to Daren Suzuki strongly suggesting that we provide accessible bus shelters for both the senior housing and office buildings components of the project.

I called Mr. Ginoza today to request clarification as to what he had in mind for the two accessible bus shelters, and asked if the loading zones at the two components of the project could be used for that purpose. He indicated that the two loading zones could be used for that purpose; but requested that we provide ramps for wheel chairs, benches for people waiting for the buses, and some type of shelter from the weather for the benches.

Please see what can be provided to accommodate Mr. Ginoza's suggestion. Thank you.

Very truly yours,

ELLA T. ALEBO
Housing Administrator

ETO:hs

Attachment

Alice Lee w/attachment
Herman Andaya w/attachment
Daren Suzuki

Maui Electric Company, Ltd. • 210 West Kamehameha Avenue • PO Box 398 • Kahului, Maui, HI 96733-6898 • (808) 871-8461

JAN 31 2005

January 28, 2005

Mr. Michael Munekiyo
Munekiyo & Hiraga, Inc.
305 Hight Street, Suite 104
Wailuku, HI 96793

Dear Mr. Munekiyo,

Subject: Central Maui Senior Housing and County Office Buildings Project –
Draft Environmental Assessment (EA) and Land Use Amendment
Puunene Avenue, Kahului
TMK: (2) 3-7-031:026 (POR)

Thank you for allowing us to comment on the Draft Environmental Assessment for the subject project, which was received on January 24, 2005.

In reviewing our records and information received, Maui Electric Company (MECO) has no objections to the proposed project at this time.

If you have any questions or concerns, please call Ray Okazaki at 871-2340.

Sincerely,

Neal Shinyama
Manager, Engineering

NS/ro:lh

cc: Kivette Caigoy, COM-Department of Planning

References

References

County of Maui, Charter, 2003 Edition.

County of Maui, The General Plan of the County of Maui, September 1990 Update.

County of Maui, Wailuku-Kahului Community Plan, December 2002.

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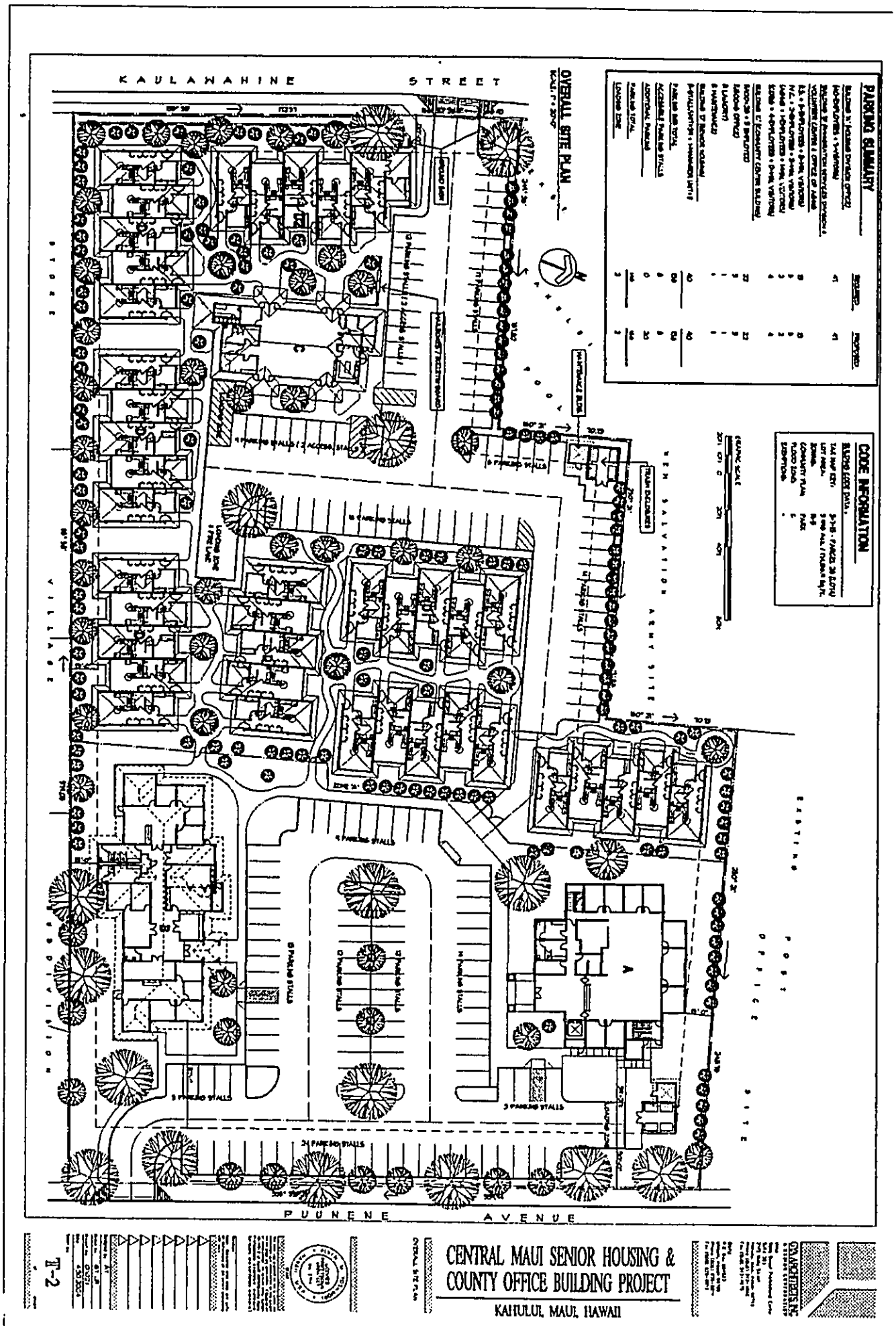
Appendices

Appendix A

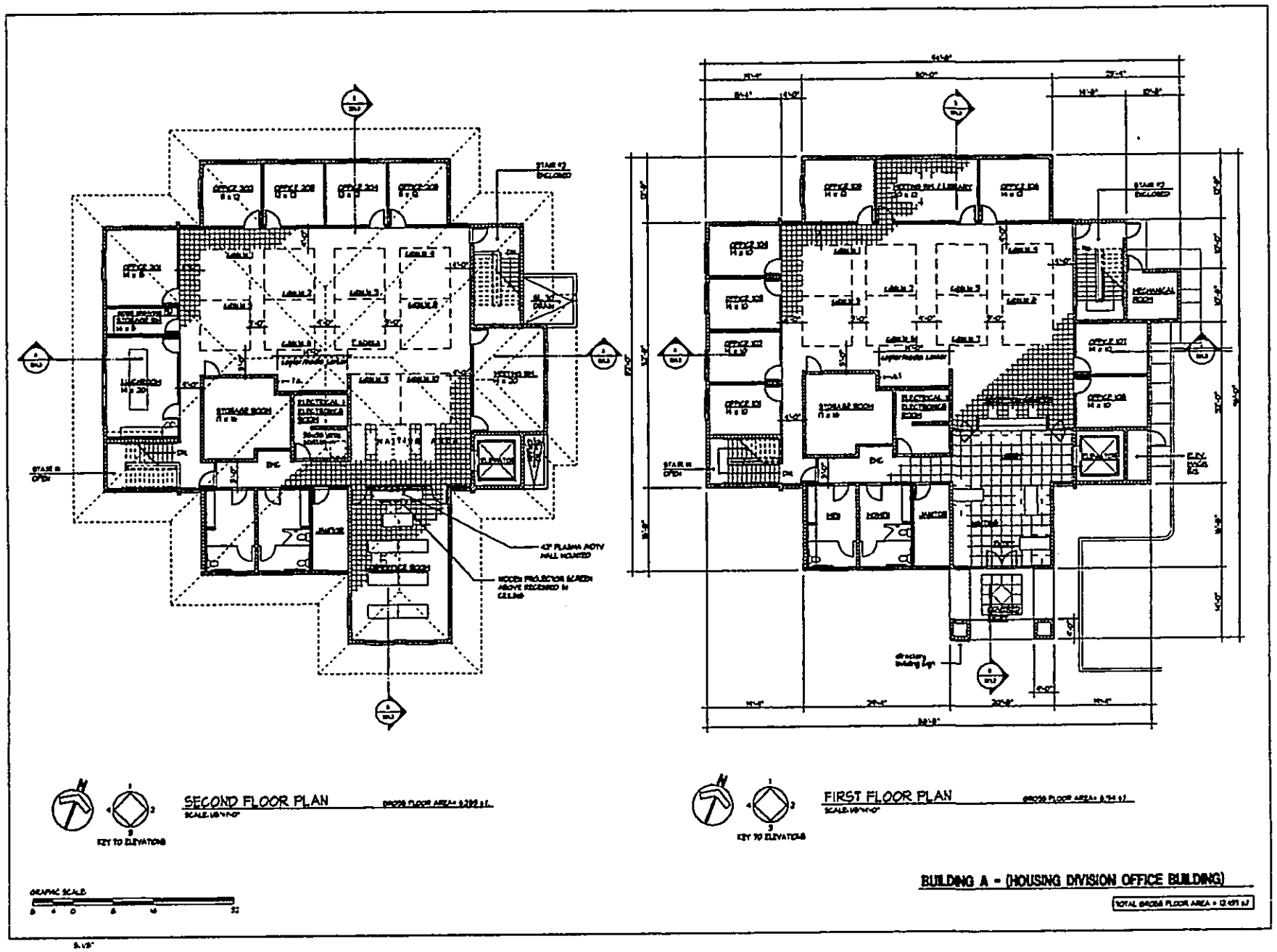
Building Sections and Floor Plans



T-2

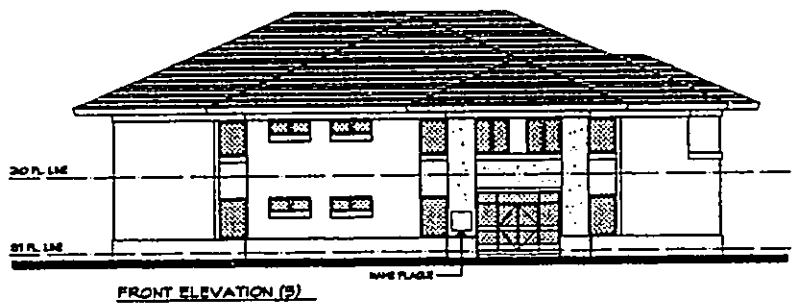
CENTRAL MAUI SENIOR HOUSING & COUNTY OFFICE BUILDING PROJECT

KAHULUI, MAUI, HAWAII

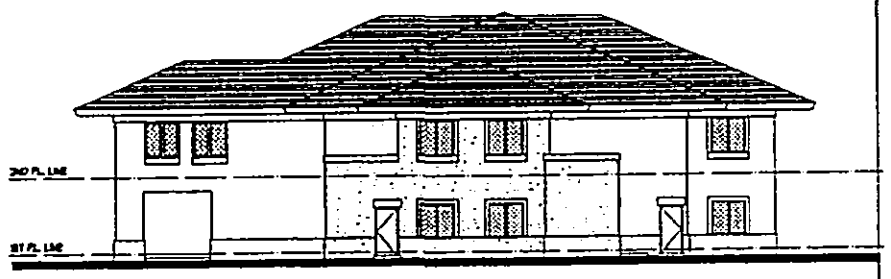


CENTRAL MAUI SENIOR HOUSING &
COUNTY OFFICE BUILDING PROJECT
KAHULUI, MAUI, HAWAII

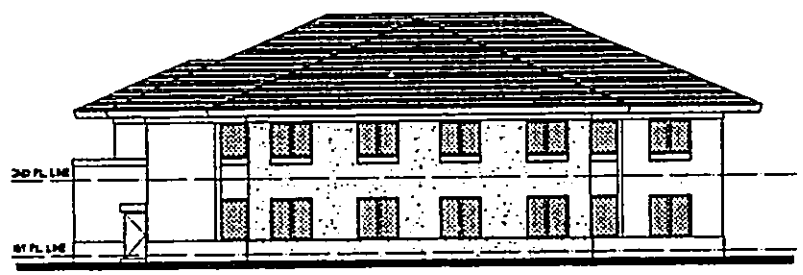
SK 1.1



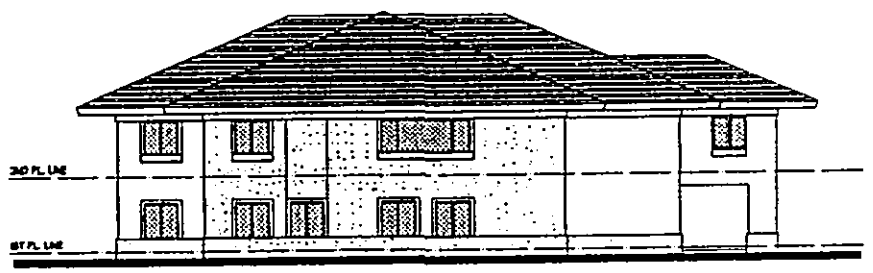
FRONT ELEVATION (5)



RIGHT SIDE ELEVATION (2)

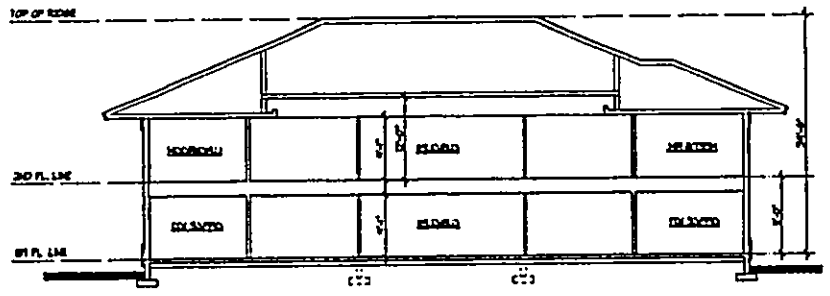


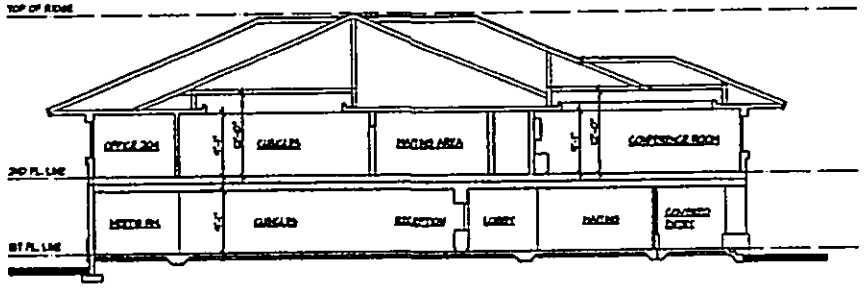
REAR ELEVATION (5)



LEFT SIDE ELEVATION (4)

EXTERIOR ELEVATIONS - BUILDING A (HOUSING DIVISION)



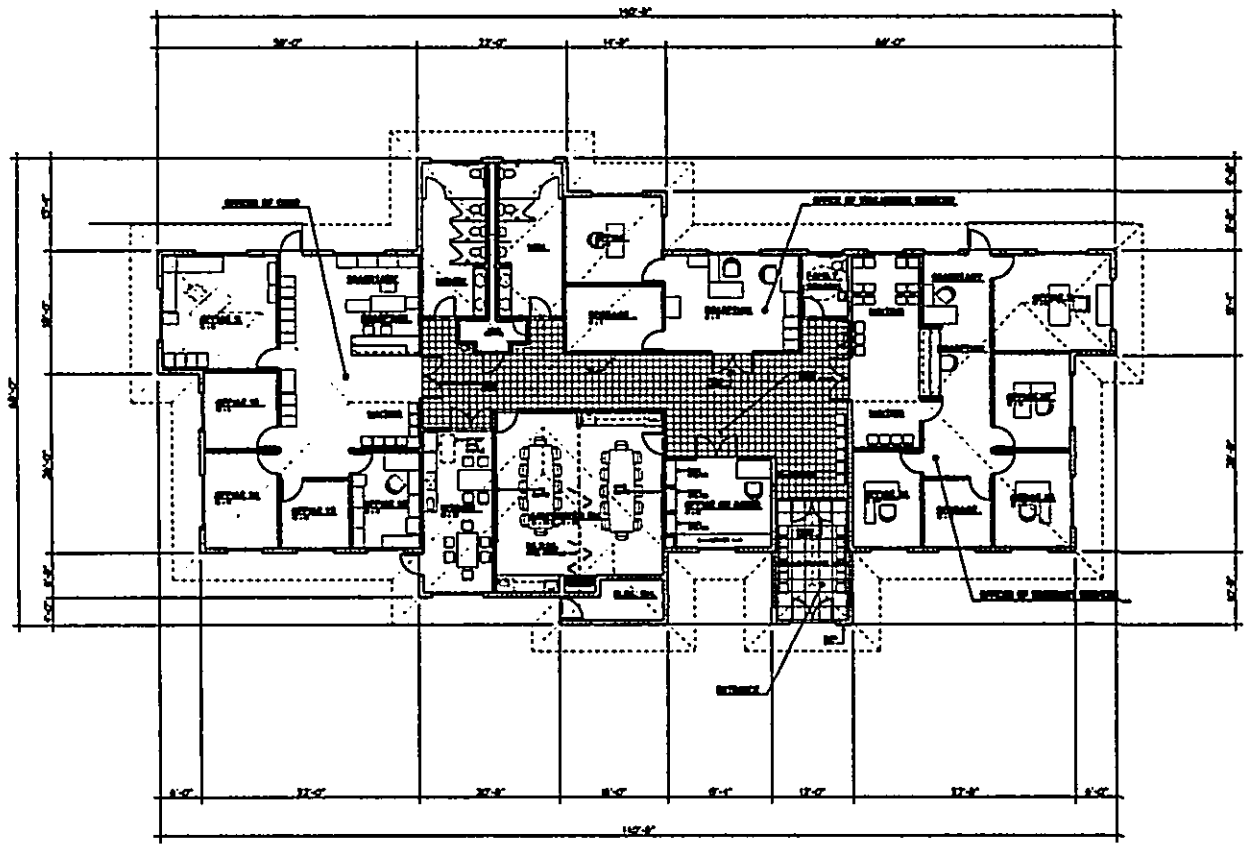


BUILDING SECTIONS - BUILDING A (HOUSING DIVISION)

CENTRAL MAUI SENIOR HOUSING & COUNTY OFFICE BUILDING PROJECT

KAHULUI, MAUI, HAWAII

SK 12



FLOOR PLAN

KEY TO ELEVATIONS

BUILDING B (IMMIGRANT SERVICES DIVISION, VOLUNTEER CENTER, CDBG PROGRAM, & OFFICE ON AGING REFERENCE LIBRARY)

GRAPHIC SCALE

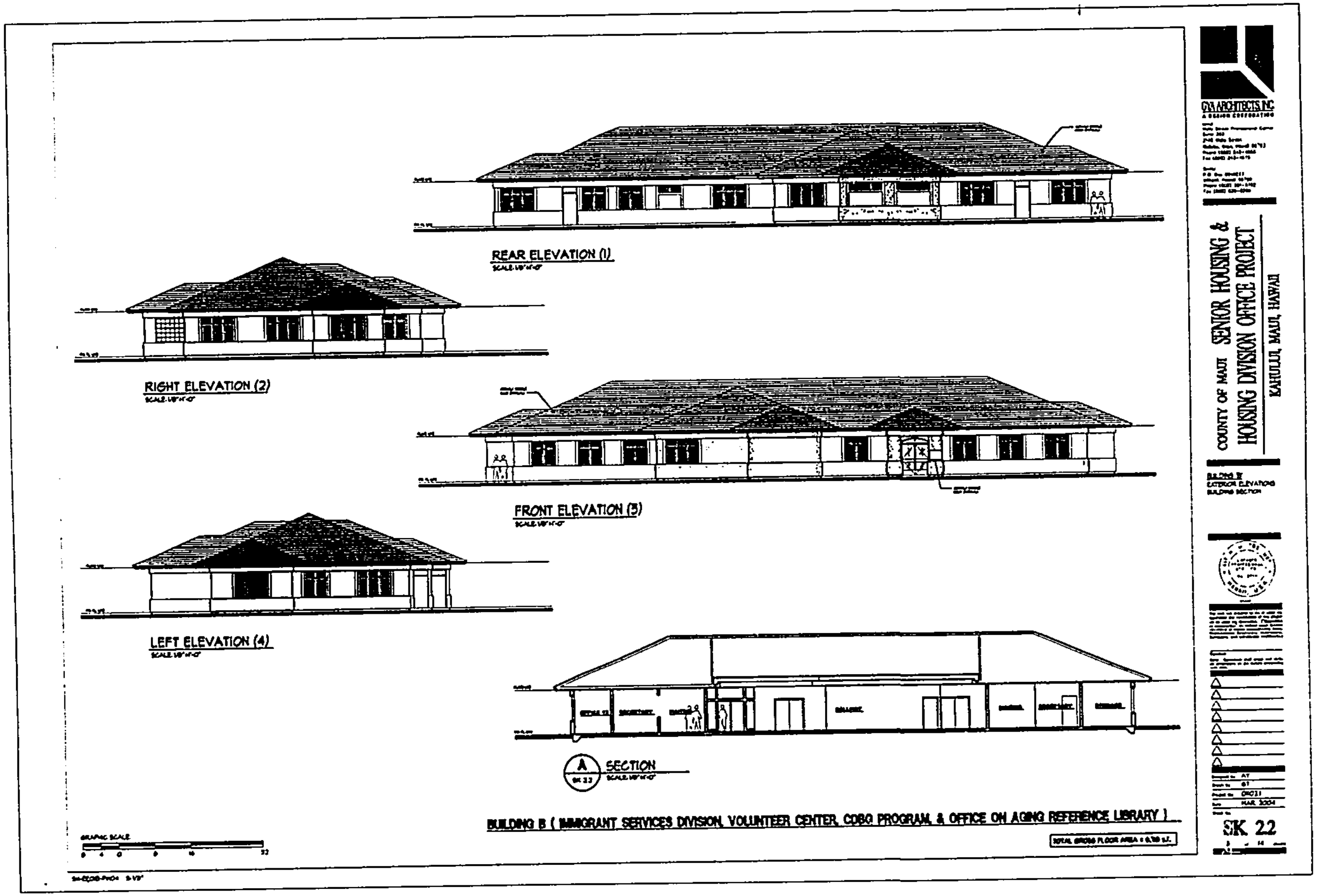
OA ARCHITECTS INC

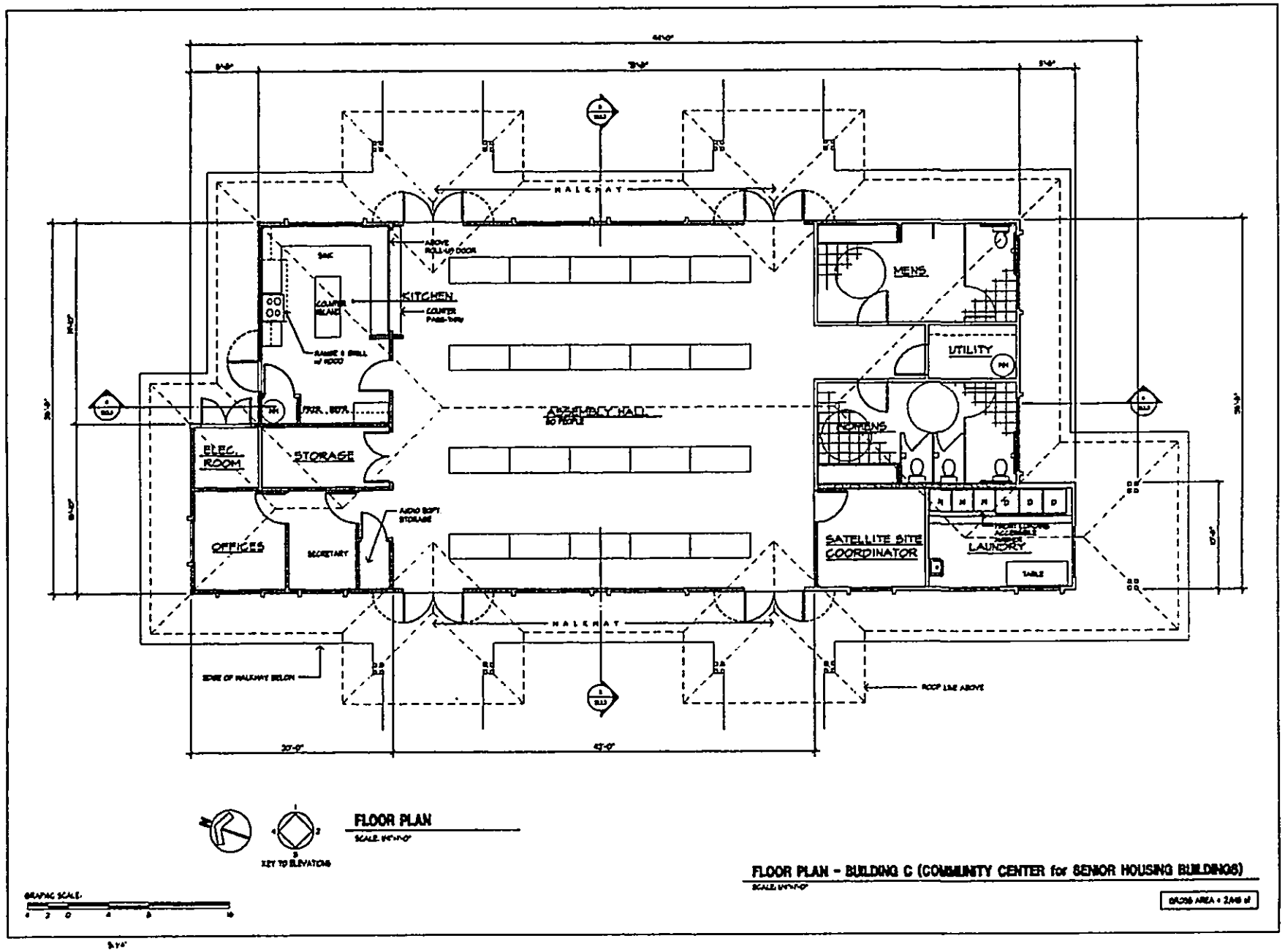
COUNTY OF MAUI SENIOR HOUSING & HOUSING DIVISION OFFICE PROJECT

KAHULUI, MAUI, HAWAII

BUILDING B FLOOR PLAN

SK 21


REAR ELEVATION (1)
RIGHT ELEVATION (2)
FRONT ELEVATION (3)
LEFT ELEVATION (4)
SECTION
BUILDING B (IMMIGRANT SERVICES DIVISION, VOLUNTEER CENTER, CDBG PROGRAM, & OFFICE ON AGING REFERENCE LIBRARY)
GYA ARCHITECTS, INC.
COUNTY OF MAUI SENIOR HOUSING &
HOUSING DIVISION OFFICE PROJECT
KAHULUI, MAUI, HAWAII
SK 22



FLOOR PLAN

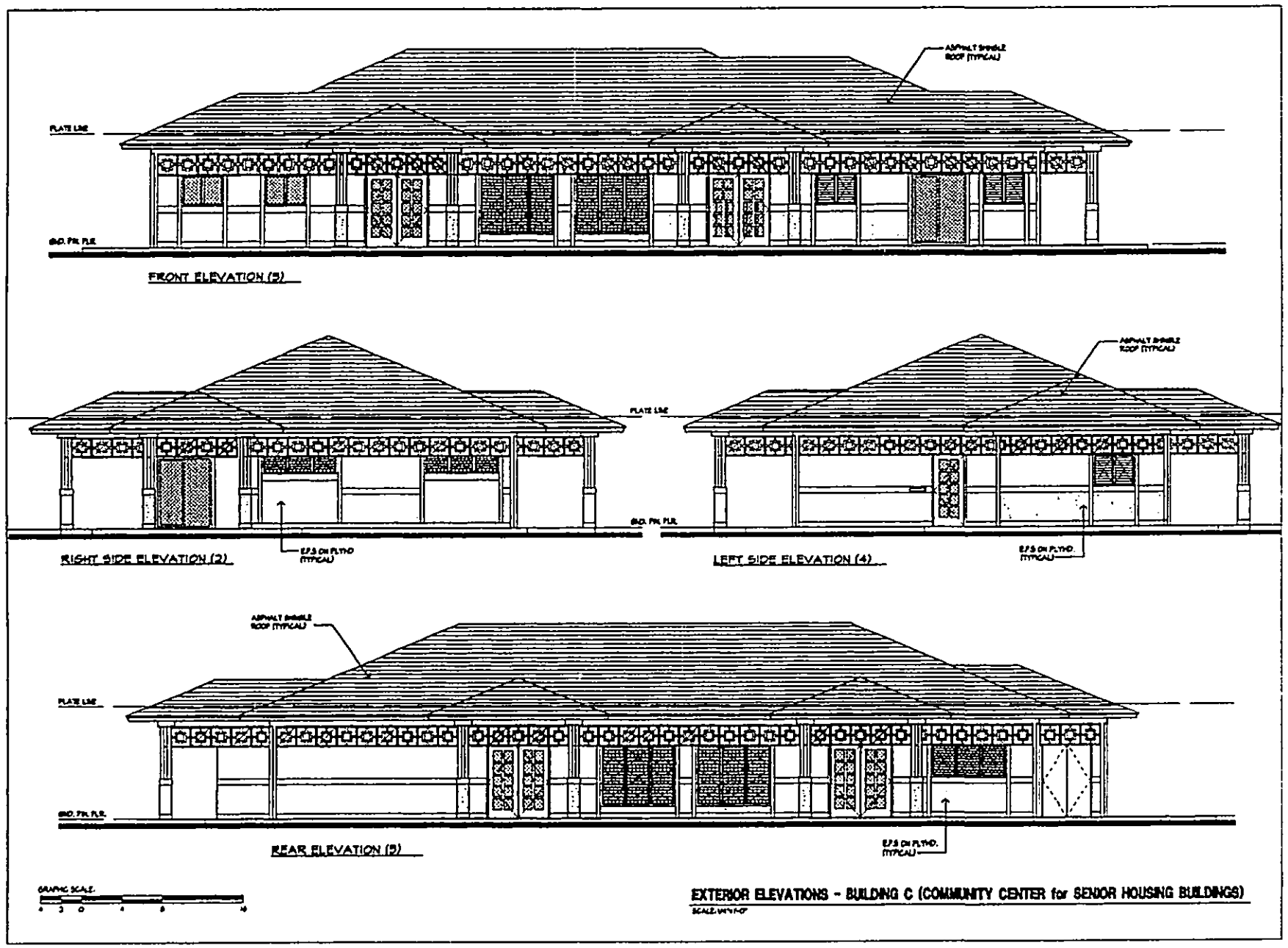
FLOOR PLAN - BUILDING C (COMMUNITY CENTER for SENIOR HOUSING BUILDINGS)

CENTRAL MAUI SENIOR HOUSING & COUNTY OFFICE BUILDING PROJECT

KAHULUI, MAUI, HAWAII

GYA ARCHITECTS INC

SK 3.1

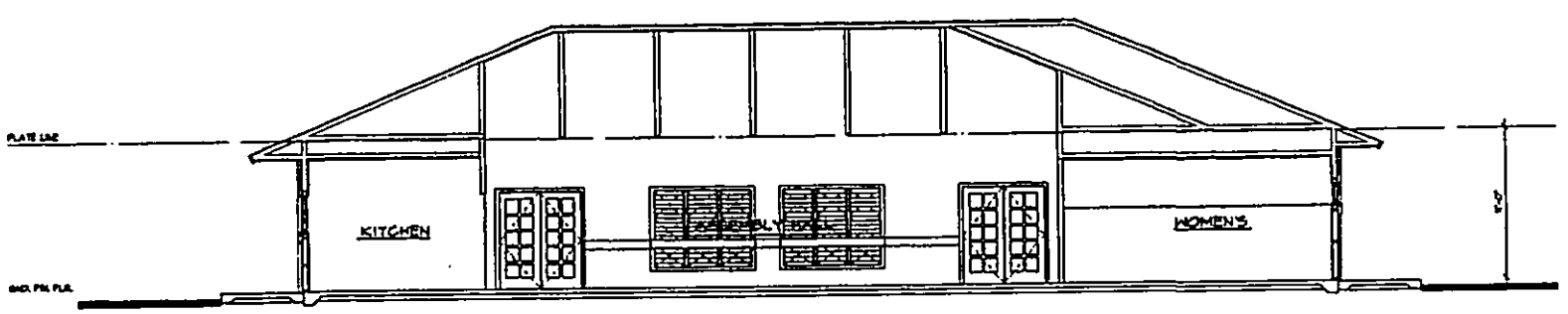


EXTERIOR ELEVATIONS - BUILDING C (COMMUNITY CENTER for SENIOR HOUSING BUILDINGS)

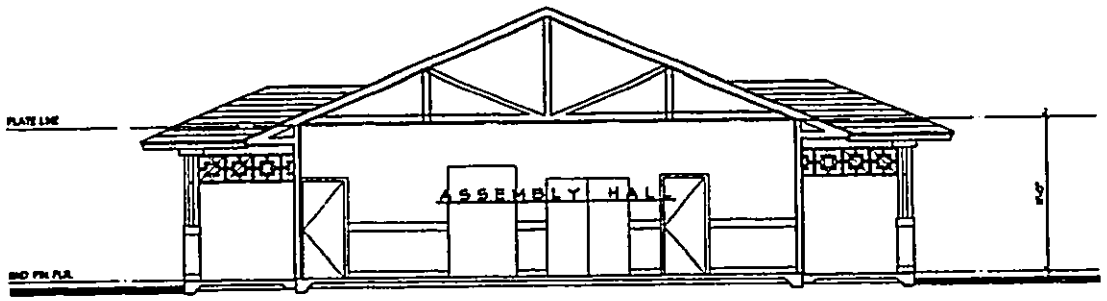
CENTRAL MAUI SENIOR HOUSING & COUNTY OFFICE BUILDING PROJECT

KAHULUI, MAUI, HAWAII

SK 3.2



A SECTION



B SECTION

BUILDING SECTIONS - BUILDING C (COMMUNITY CENTER for SENIOR HOUSING BUILDINGS)

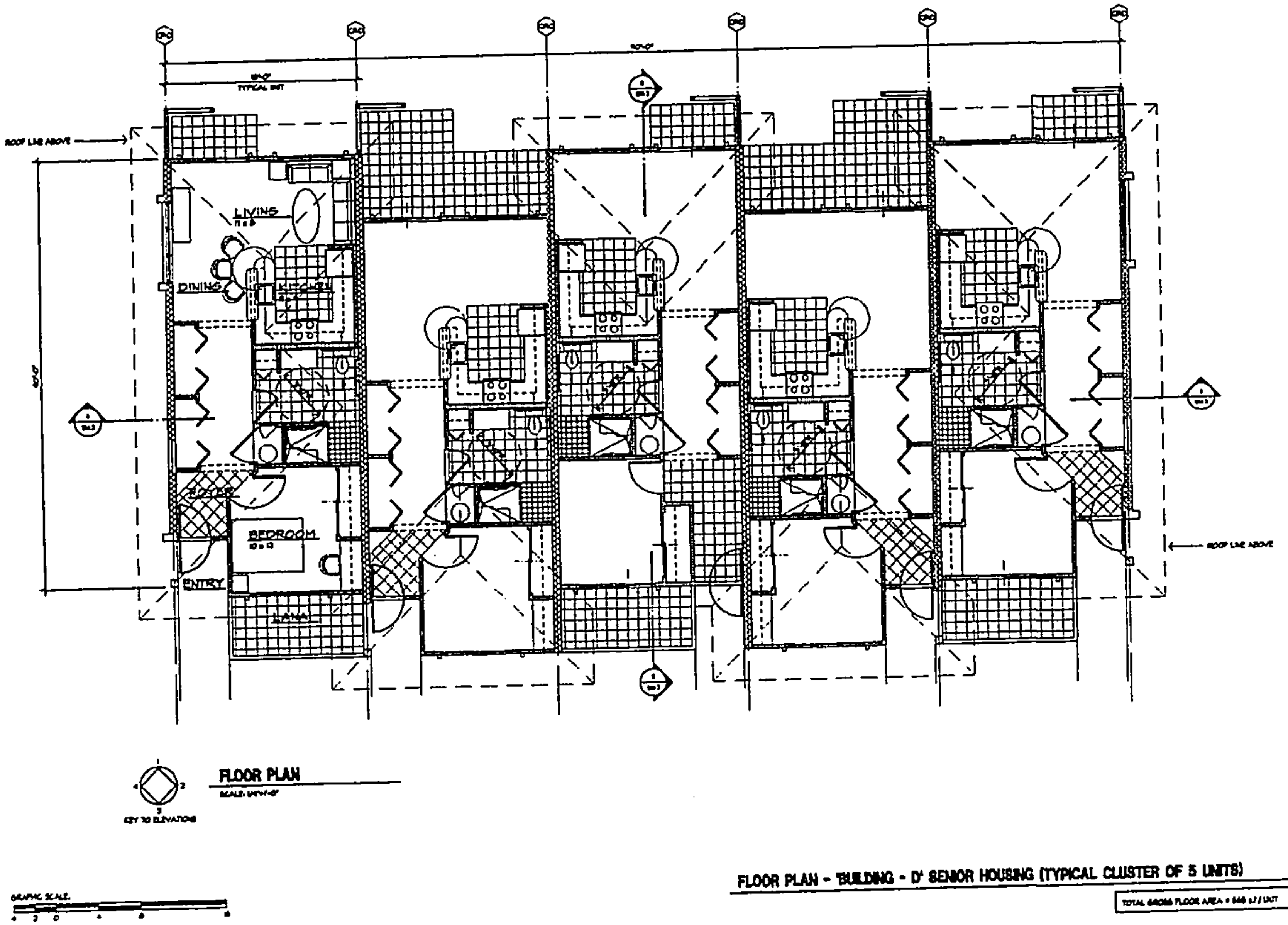
GRAPHIC SCALE

GM ARCHITECTS INC

CENTRAL MAUI SENIOR HOUSING & COUNTY OFFICE BUILDING PROJECT

KAHULUI, MAUI, HAWAII

SK 3.3



FLOOR PLAN - 'BUILDING - D' SENIOR HOUSING (TYPICAL CLUSTER OF 5 UNITS)

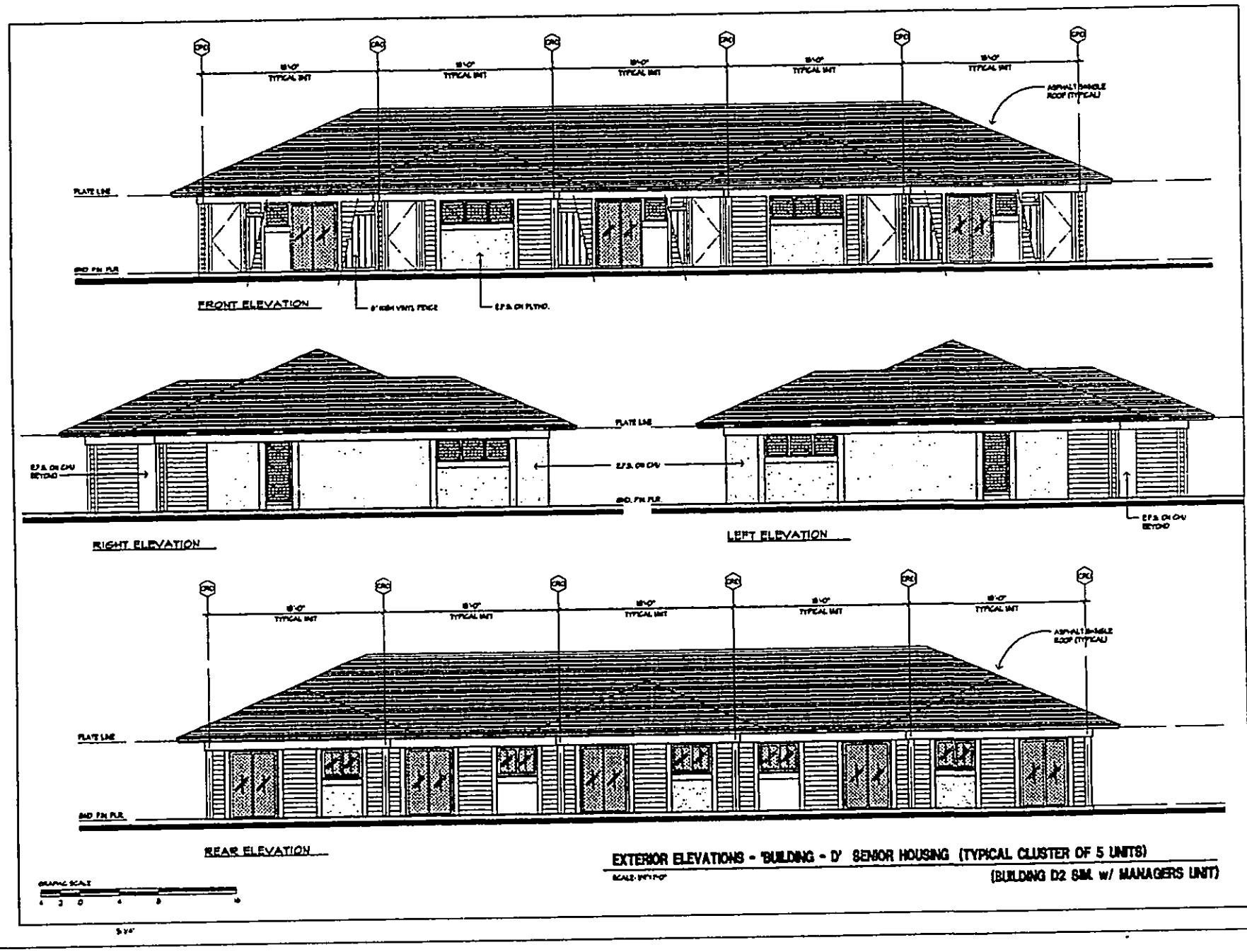
GYA ARCHITECTS, INC.

CENTRAL MAUI SENIOR HOUSING & COUNTY OFFICE BUILDING PROJECT

KAHULUI, MAUI, HAWAII

FLOOR PLAN

SK 41



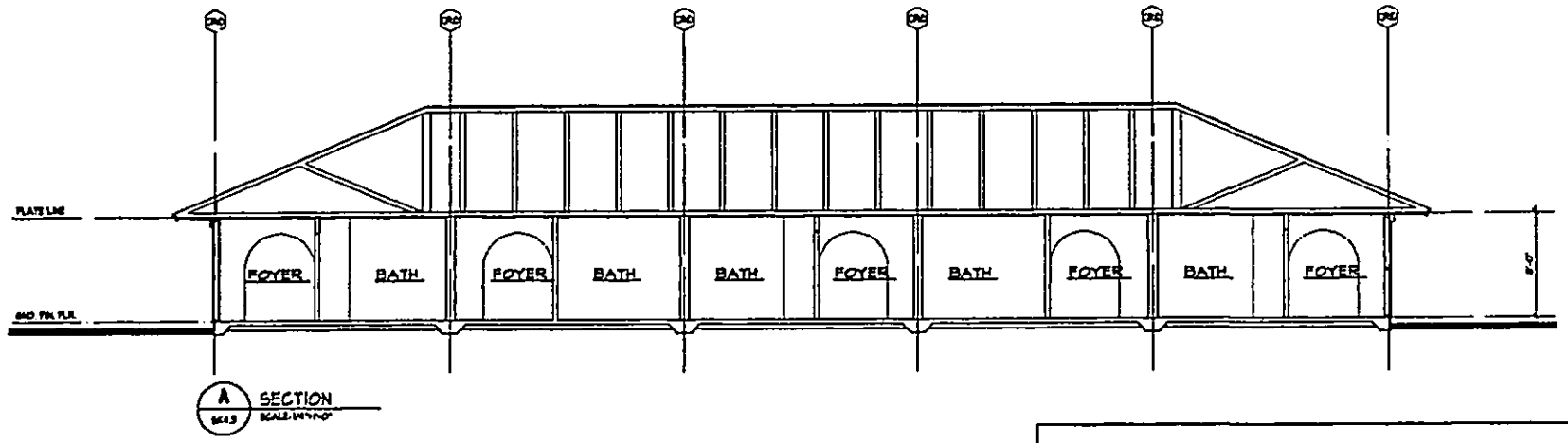
EXTERIOR ELEVATIONS - 'BUILDING - D' SENIOR HOUSING (TYPICAL CLUSTER OF 5 UNITS)

(BUILDING D2 SIM. w/ MANAGERS UNIT)

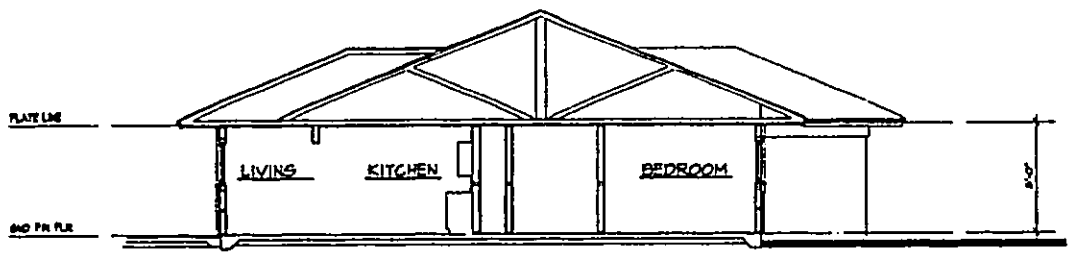
CENTRAL MAUI SENIOR HOUSING & COUNTY OFFICE BUILDING PROJECT

KAHULUI, MAUI, HAWAII

SK 4.2



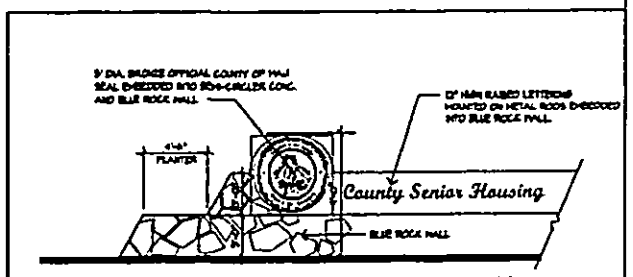
A SECTION



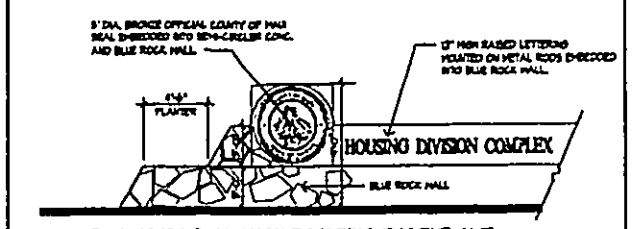
B SECTION

BUILDING SECTIONS - 'BUILDING - D' SENIOR HOUSING (TYPICAL CLUSTER OF 5 UNITS)

SCALE: AS NOTED



SIGN FOR SENIOR HOUSING FRONTING KAULAWAHINE ST.



SIGN FOR HOUSING DIVISION FRONTING PUUNENE AVE.

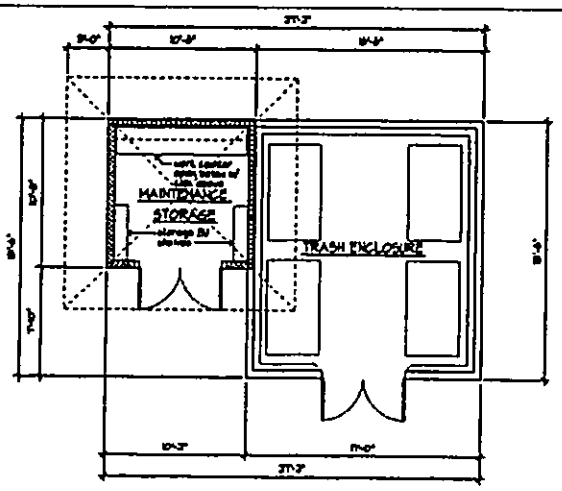
GROUND SIGNS

SCALE: AS NOTED

CENTRAL MAUI SENIOR HOUSING & COUNTY OFFICE BUILDING PROJECT

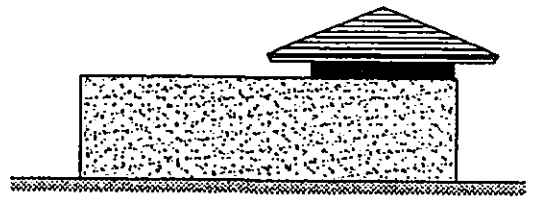
KAHULUI, MAUI, HAWAII

SK 4.3

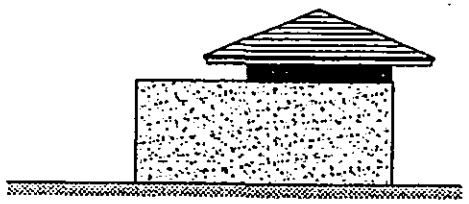


MAINTENANCE BLDG / TRASH ENCLOSURE PLAN

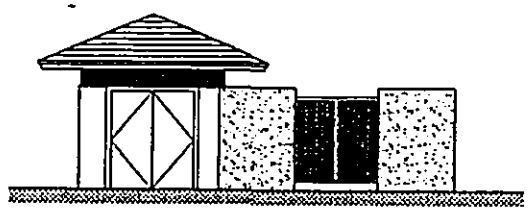
KEY TO ELEVATIONS



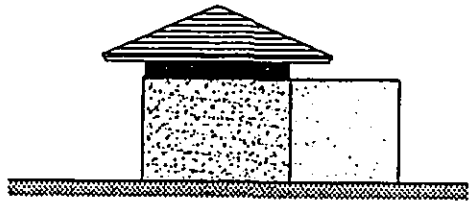
EXTERIOR ELEVATION '1'



EXTERIOR ELEVATION '2'



EXTERIOR ELEVATION '3'



EXTERIOR ELEVATION '4'

GYA ARCHITECTS INC

CENTRAL MAUI SENIOR HOUSING & COUNTY OFFICE BUILDING PROJECT

KAHULUI, MAUI, HAWAII

SHEET

FLOOR PLAN
EXTERIOR ELEVATIONS

SK 5.1

Appendix B

Archaeological Inventory Survey

AN ARCHAEOLOGICAL ASSESSMENT REPORT FOR THE PROPOSED CENTRAL MAUI SENIOR HOUSING PROJECT, WAILUKU *AHUPUA'A*, WAILUKU DISTRICT, MAUI ISLAND

(TMK: (2) 3-7-13: Portion of Parcel 26)

Prepared on behalf of:

County of Maui
Department of Housing & Human Concerns
Wailuku, Maui

Prepared by:

Xamanek Researches
P.O. Box 880131
Pukalani, Maui

Erik Fredericksen
Demaris Fredericksen

25 October 2004

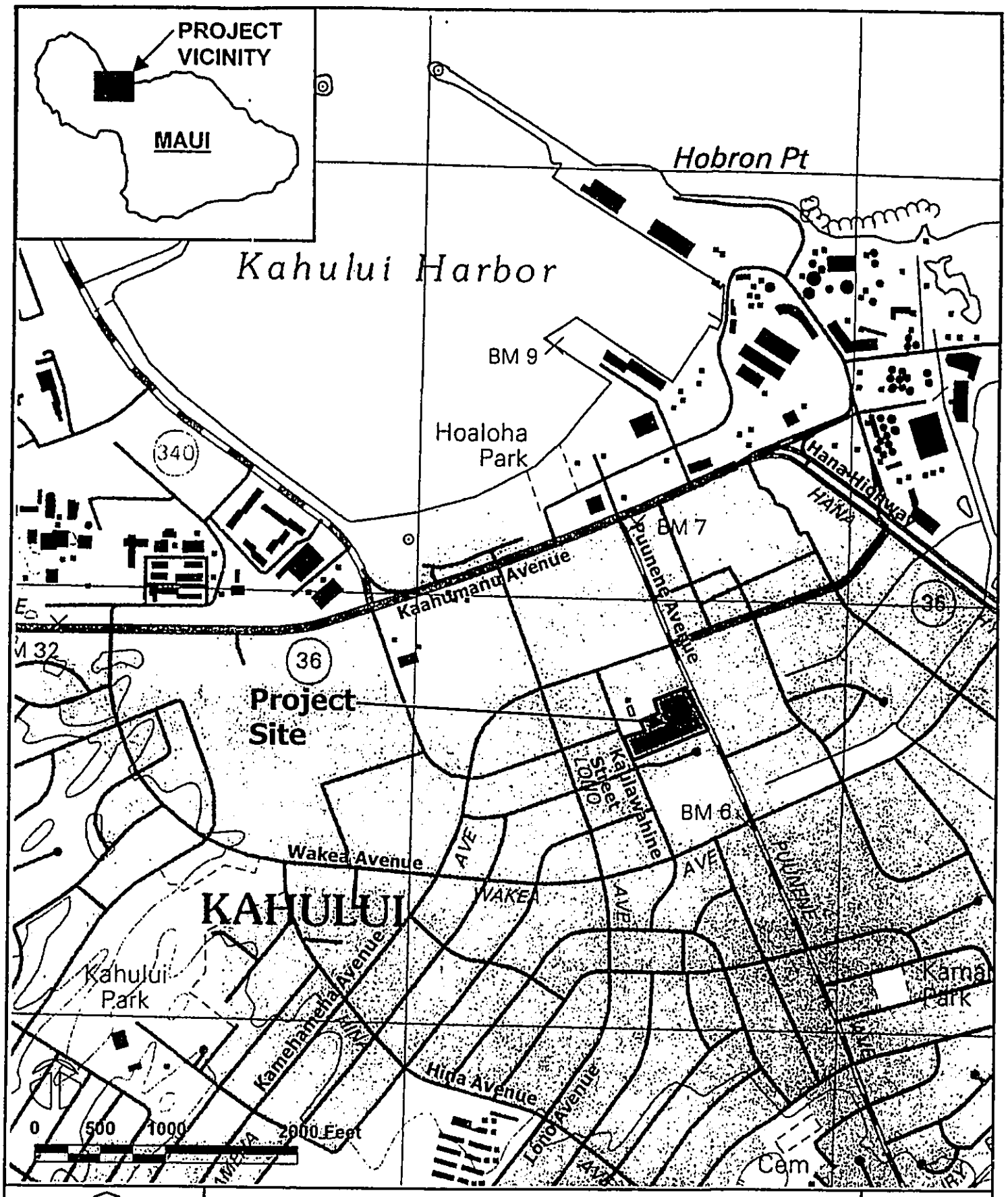
ABSTRACT

Xamanek Researches conducted an archaeological inventory/assessment survey during the summer of 2004 on a portion of land in Kahului, Wailuku *ahupua`a*, Wailuku District, Island of Maui (TMK: 3-7-13: portion of parcel 26). The inventory/assessment survey was carried out per previous discussions with Dr. Melissa Kirkendall, SHPD Maui staff archaeologist. The archaeological survey was conducted on behalf of the County of Maui Department of Housing and Human Concerns, Wailuku, Maui.

There were no significant material culture remains located during this archaeological survey of the proposed Central Maui Senior Housing project area. Landscaping soil with modern materials (Layer I) was found to cover tested portions of the study area to an average depth of about 40 cm. Layer II, which was composed of intact sand dune deposits, was located throughout the tested portions of the project area. The groundwater table was located in all test trenches between c. 90-120 cmbs.

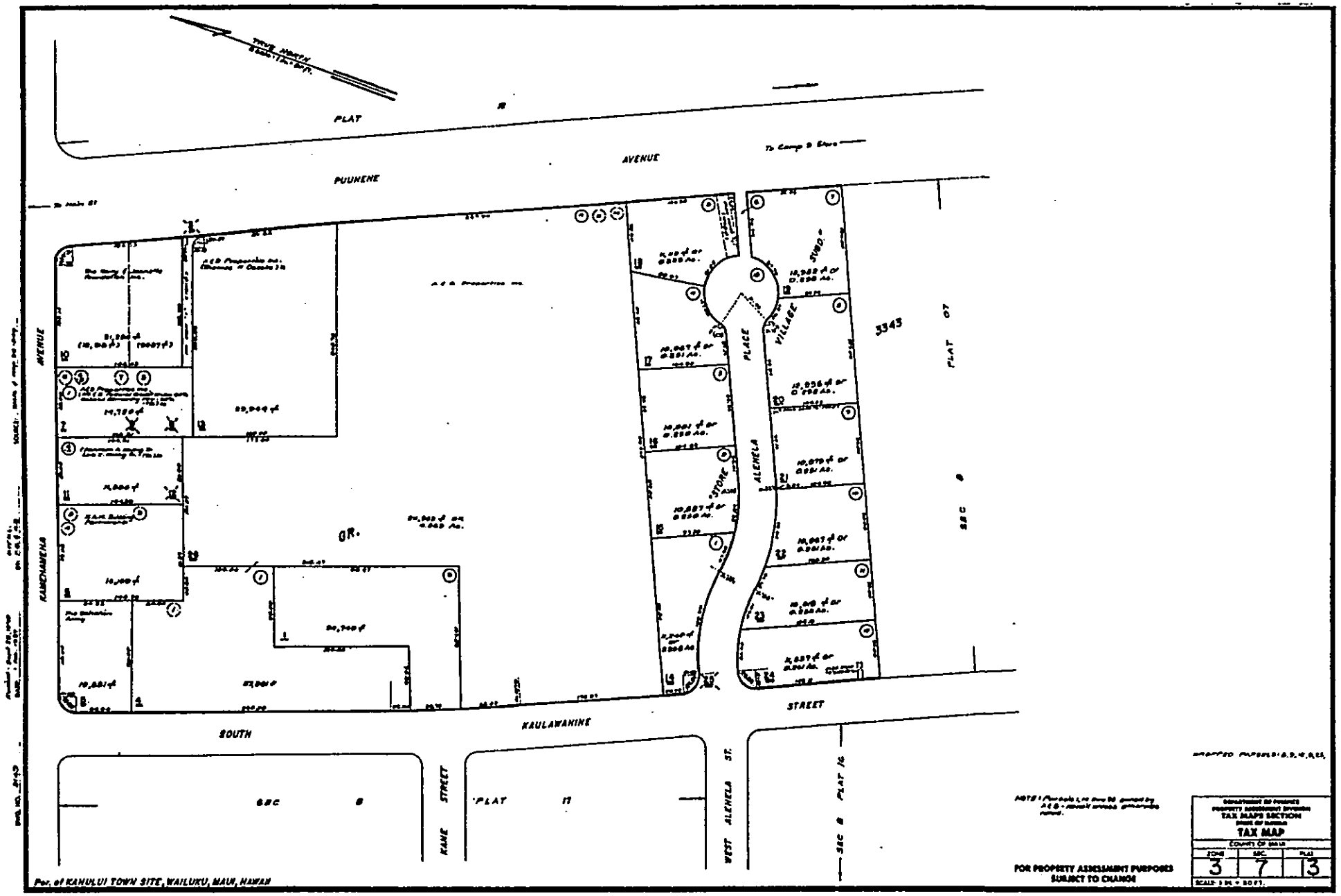
Given the presence of sand deposits throughout the project area, precautionary monitoring is recommended. This action is recommended because isolated human burials have been located in the central Maui area in the past. It is further recommended that future construction/development plans for the Central Maui Senior Housing project be reviewed by the State Historic Preservation Division Maui office.

Table of Contents

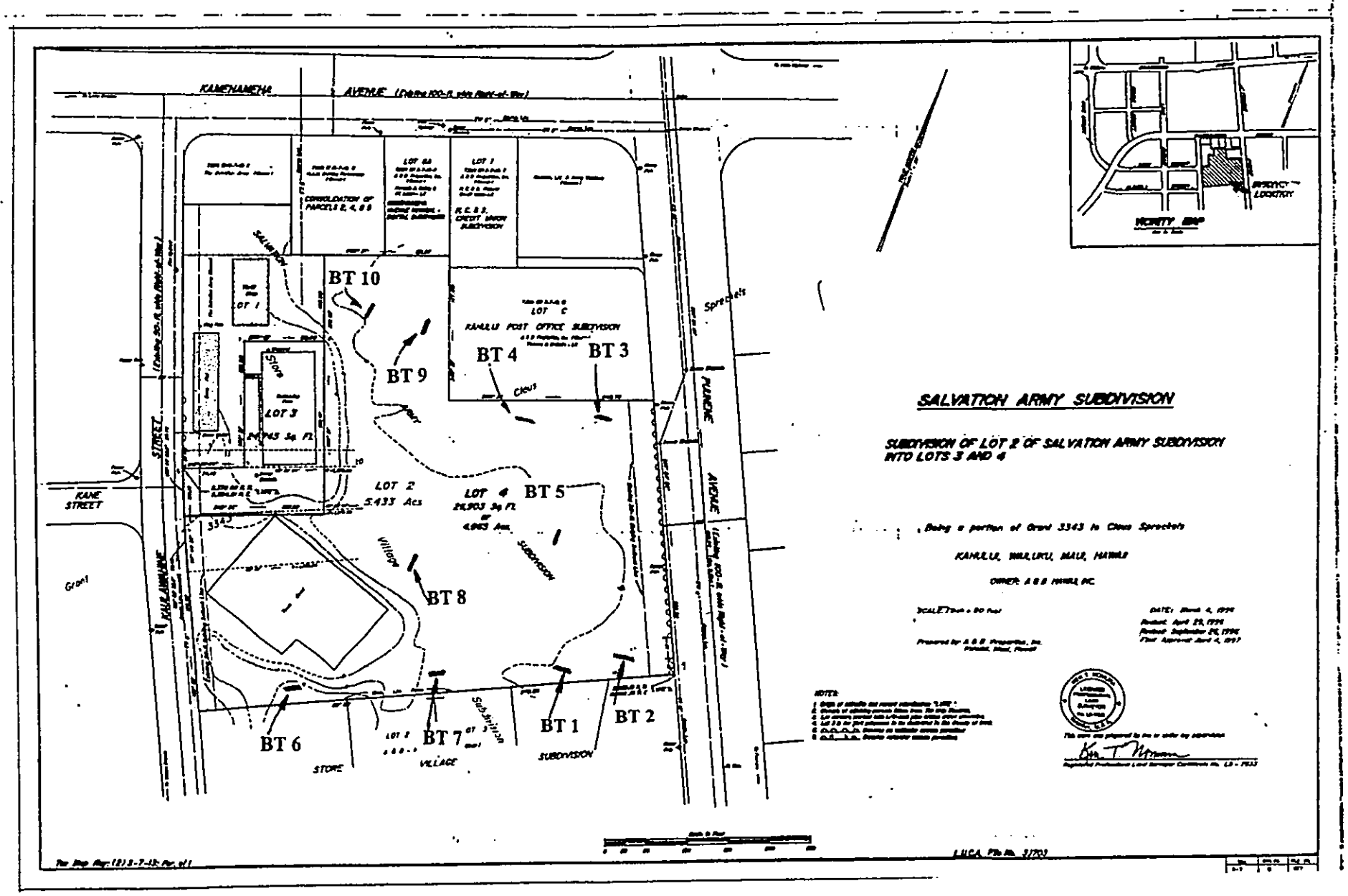


WILSON OKAMOTO CORPORATION ENGINEERS - PLANNERS	CENTRAL MAUI SENIOR HOUSING AND COUNTY OFFICES PROJECT LOCATION MAP AND VICINITY MAP	FIGURE 1

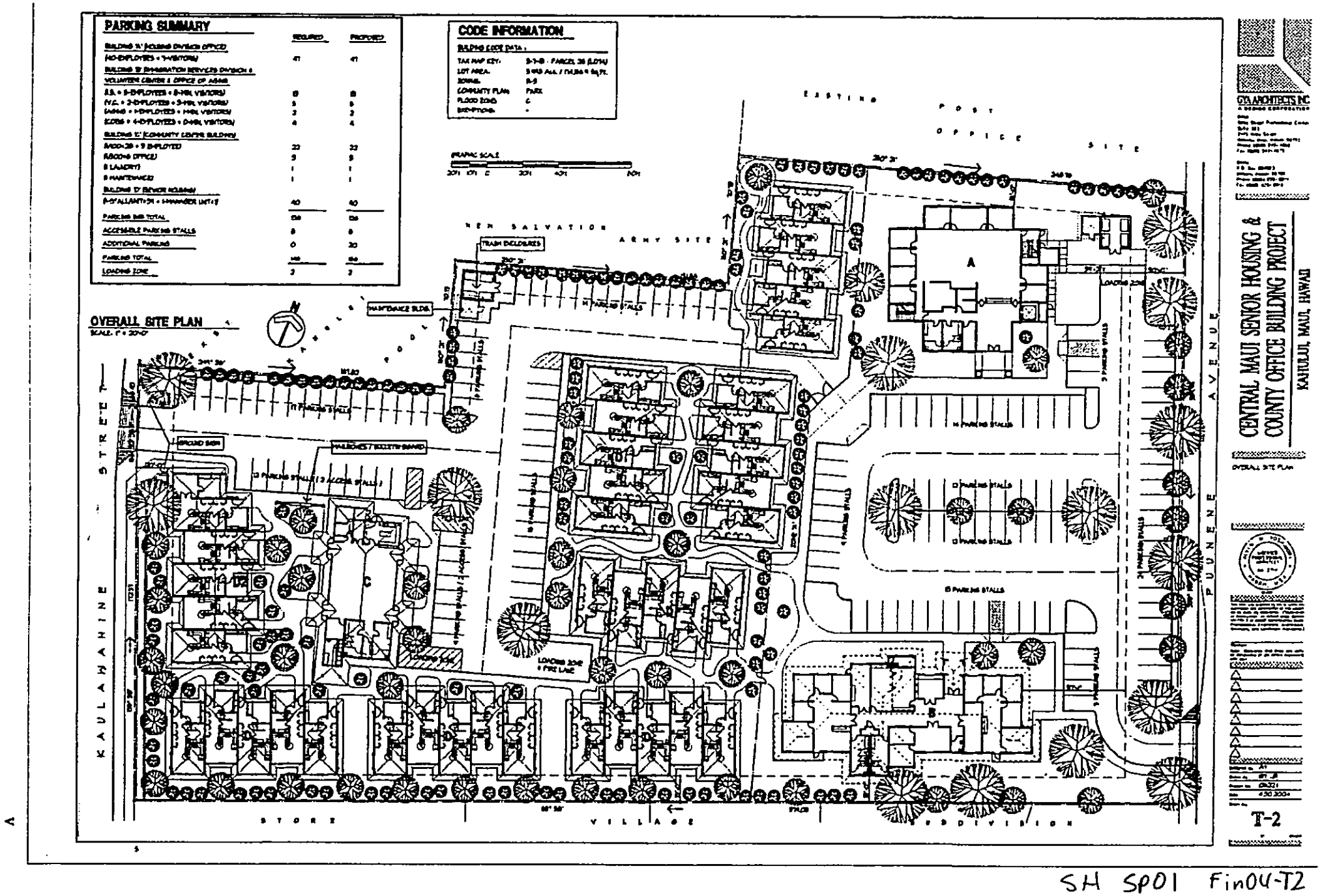
Map 1 – Topographic map



Map 2 – State Tax Map



Map 3 – Site map showing locations of Backhoe Trenches 1-10.



SH SP01 Fin04-T2

Map 4 – Schematic map of planned development.

INTRODUCTION

Mr. Michael Munekiyo of Munekiyo & Hiraga, Inc. contacted Xamanek Researches on behalf of the County of Maui Department of Housing and Human Concerns regarding the necessary archaeological work for a planned senior housing facility to be located on the grounds of the Kahului Swap Meet site in Kahului during the late fall of 2003. The 4.865 acre parcel was adjacent to and southwest of Pu`unene Avenue in Kahului, Maui (Maps 1, 2 and 3). Project plans called for the development of a housing complex along with support buildings, parking and other infrastructure. Mr. Munekiyo requested that we submit a proposal for the necessary archaeological work. Following discussions with Dr. Melissa Kirkendall, State Historic Preservation Division (SHPD) staff archaeologist for Maui, it was determined that an archaeological inventory/assessment survey was needed, because the project area lies in an area that contains sand deposits.

The SHPD had previously indicated in an 18 June 2004 review letter that an archaeological inventory/assessment survey was required for this project, because there had been no previous work undertaken on this parcel (SHPD DOC NO: 0406CD33). In addition, Jaucus Sand deposits and previously identified subsurface sites had been located in the general vicinity of the study area.

Following consultation with Dr. Melissa Kirkendall of the SHPD Maui office, we prepared a proposal for the necessary scope of work for this archaeological project. We submitted our proposal to Mr. Munekiyo and were subsequently contracted to undertake the necessary study. The following report presents the results of this archaeological survey on TMK: 3-7-13: portion of parcel 26. This report has been prepared at the direction of Mr. Daren Suzuki of Munekiyo & Hiraga, Inc. on behalf of the County of Maui Department of Housing and Human Concerns. Under the new SHPD rules and guidelines, this report will be hereafter referred to as an archaeological assessment, because there were no cultural resources located during the testing portion of the survey.

STUDY AREA

The proposed Central Maui Senior Housing project lies in Wailuku *ahupua`a*, Wailuku District, on the isthmus of Maui (TMK: (2) 3-7-13: portion of parcel 26). This c. 4-acre parcel has been impacted by previous activities, and is largely grassed over (Photographs 1-4). The study area lies adjacent to and southwest of Pu`unene Avenue, while, a portion of the study area is bounded by South Kaulawahine Street. The U. S. Post Office, various support buildings for the Salvation Army, and private residences also border portions of the project area. Much of the parcel has been utilized for the Maui Swap Meet for a number of years. The parcel is largely grassed over, and contains several gravel access roads and gravel set up areas for swap meet vendors. In addition, water and underground electrical lines were installed sometime in the past several years. The southwestern portion of the study area contains blacktop, which represents the remains of former tennis courts that were first used in the 1960s. The Kahului shoreline is located an estimated 1 km to the northwest of the project area.

Natural History

The soil types present in the vicinity of the Central Maui Senior Housing project area include Jaucus Sand deposits, as well as the reddish brown (7.5 YR 4/3) silty clay common to this part of central Maui.

The study area lies an estimated 5 feet to 7 feet AMSL. Annual rainfall on this part of Maui is about 20-30 inches, and the rains typically occur during the winter months. The average temperature ranges from the mid-seventies to the mid-eighties, and is relatively constant throughout much of the year.

Vegetation noted in the project area at the time of our survey was dominated by non-native plant species. Common vegetation noted in the study area included monkeypod (Albizia saman) trees, ironwood (Casuarina equisetifolia) trees, landscaping shrubs, alien grasses, and annual weeds.

BACKGROUND RESEARCH

Precontact Period

The *ahupua`a* of Wailuku is a large land unit stretching around Kahului Bay from Paukukalo to Kapukaulua. It includes Iao Valley and the northern half of the Kahului Isthmus. This single land division comprises nearly half of the District of Wailuku, and is noted as a place where chiefs were buried and wars were fought. The word itself can be translated as "water of destruction" (Pukui, et. al., 1974, p. 225), and this name is in reference to the battles that took place in the area.

Iao Valley and the two associated dune formations on the north and south sides of the river, constituted the core area of Wailuku. This was the religious and political center of Maui, which culminated during the time of Pi`ilani (c. 1600 AD). In the late precontact period, warfare increased as the chiefs from Maui, Oahu and Hawaii struggled for political and military dominance. High Chief Pi`ilani succeeded in unifying the districts of Maui by warfare, but after his death, his sons fought with one another--each hoping to succeed their father as high chief. Eventually Kiha-a-Pi`ilani became victorious, but each following generation of chiefs had to struggle through warfare to secure their positions of political domination (Speakman, 1978, pp. 9-13).

During the reign of the last powerful paramount chief or king, Kahekili (who ruled from 1765 to 1790), Wailuku again became the site of intense warfare. Wailuku was considered to be the capital of Maui, as Kahekili's royal residence, Kalanihale, was located in there, surrounded by his retinue.[1] In the mid-1770s, Kalanihale was marched upon by a Big Island chief named Kalani`opu`u and his *alapa*.[2] News of his coming preceded him, and Kahekili hid his warriors in the sand dunes above Haleki`i *heiau* to surprise the invading troops. A fierce battle ensued, and Kalani`opu`u's army was pushed to the sea and slaughtered (Speakman, pp. 16-17).

By 1786, Kahekili controlled Maui as well as Molokai, Lanai, and Oahu. This undisputed political control lasted for only 4 years, however. In 1790, Kamehameha the First invaded Kahekili's territory—an action that ended in the battle of Kepaniwai[3] and the defeat of the Maui ruler. The word Kahului can be translated as "the winning", and the Bay takes this name because Kamehameha gathered his warriors there prior to fighting the battle in Iao Valley (Pukui, et. al., 1974).

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[1] The location is said to be located just north of the intersection of High Street and Main Street leading into Iao Valley in Wailuku town.

[2] *Alapa* is the name given to the warriors of Kalani`opu`u.

[3] Kepaniwai means literally "water dam" in reference to Iao Stream, because the stream was choked with human bodies after the slaughter there (Pukui, et. al., 1974, p. 109).

Early Post-Contact Period

The reign of Kamehameha was intertwined with the increasing presence of foreigners (*haoles*) in the islands. The arrival of Captain Cook offshore at Kahului Bay in 1778 began the steady flow of outside influences that would forever alter the indigenous population and environment. One of the first of these influences came with missionaries, whose charge it was to save "heathen" souls. The first missionaries arrived in Wailuku in 1832, and the traditional religion began to wane under their influence. Rev. Jonathan Green established a girls' seminary (Central Female Boarding School) in 1836, where young Hawaiian women were taught the language, customs, and religion of the foreigners.

Another influence to bring change to the Hawaiians was foreign commercialism, and it came initially in the form of sugar production. The first sugarcane crop grown in the *ahupua`a* were harvested and processed in 1828. Kamehameha III, with the help of two Chinese technicians, established a water-powered mill in Wailuku. This was known as the Hungtai Sugar Works, and its location was fairly close to the later location of the Wailuku Sugar Mill, which was established in 1862. Hungtai Sugar Works continued to operate until the opening of the new sugar mill.

The population of the *ahupua`a* of Wailuku was listed in the 1831-32 census as 2,256, with most of it being in the northern portion, presumably in Iao Valley (Cordy, 1978, p. 59).

In Central Maui, on the southern and eastern side of the Iao Valley dunes (Pu`uone Dunes), an early commercial activity took the form of cattle ranching. This sizable area was used for pasturage. By as early as 1845, large herds of cattle were roaming the Kahului Isthmus (cattle had been introduced on the Big Island by Vancouver in 1793). The Maui cattle were under royal *kapu*, so were not to be molested. They were so destructive to the environment that Native Hawaiian landowners protested, but to no avail (Barrere, 1975, p. 52). In addition to the commercial raising of cattle, there were also other commercial efforts, one being a brief attempt at the production of cotton in the 1830s. This endeavor met with little commercial success however[4], and further adversely impacted the landscape.

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[4]The Anglican Church felt that "the Hawaiian people, freed from their service to and dependence on the chiefs should be self-supporting and thought that the encouragement of the manufacture of cloth from the superior cotton which grew luxuriantly in the islands would be a means to that end. They therefore suggested that a manufacturer be sent with sufficient machinery to get the project started. They felt that the people would continue to work with the encouragement and cooperation of the chiefs." (Lemmon et. al., 1973, p. 2.B.3). To this end they sent Miss Lydia Brown in 1835 with " 'a quantity of domestic spinning apparatus' (presumably spinning wheels and a loom)" (Ibid.), and "charged with the responsibility of teaching the Hawaiian girls the arts of carding, spinning, weaving and knitting locally grown cotton and wool." (Ibid.) As each class grew proficient enough to teach others, a new class was formed (Ibid., 2.B.4).

Post-1850s Period

After the Mahele in 1848, much of Wailuku *ahupua`a* was designated as Crown Land, to be used in support of the royal "state and dignity". In 1872, Kamehameha V died, and his sister Princess Ruth Ke`elikolani inherited this land. She was designated as the owner of the *Ka`a* lands of Wailuku, the southern portion of the *ahupua`a*. The *ili* of *Owa* comprised of 743.40 acres, (LCA 420) was granted to Kuihelani, a steward to Kamehameha I. The smaller northern section (the *ili* of *Kalua*-LCA 7713, Apana 23--391 acres) was awarded to Princess Ruth's half-sister, Victoria Kamamalu. In 1882, Princess Ruth sold one-half of the Crown Lands of Hawaii to sugar producer, Claus Spreckels, in order to settle her debts with him. Spreckels already held a lease for 16,000 acres of Wailuku *ahupua`a*, dating from 1878. Worried about what Spreckels might do with half of the Crown Lands, King Kalakaua gave him Land Grant 3343, a 24,000 acre portion of the southeastern section of Wailuku ahupua`*a*, in return for the surrender of his claim (Adler, 1966, pp. 262-263). The Central Maui Senior Housing Project area is part of the large Land Grant 3343.

The Reciprocity Treaty of 1876 with the United States gave a boost to the sugar industry by increasing the prices of sugar. The dry eastern part of the *ahupua`a* became attractive as potential sugar land—if only water could be brought to it. In 1880, Spreckels began construction of what was called "Spreckels' Ditch", located *makai* of the Hamakua Ditch, which had been built earlier by Alexander and Baldwin to water their Maui Agricultural Company's fields in and around Pa`ia. The "Spreckels' Ditch" brought Haleakala water farther west onto the arid Kahului isthmus. The ditch was 30 miles long, delivered about 60 million gallons of water a day, and cost $500,000 to construct.

Spreckels also built another ditch, the Waihe`e ditch in 1882, which tapped the water resources from the West Maui Mountains, thus bringing water to both sides of the Wailuku Commons isthmus area (Adler, 1966, pp. 48-49). These endeavors enabled him, in 1882, to found Hawaiian Commercial and Sugar Company. He continued involvement in that company until 1898, when control was wrested from his hands. The parent company still bears the name of Alexander and Baldwin, the principal participants in the transfer of corporate control. The production of sugar cane continues to be an activity in the isthmus area to this day, although some portions operated by C. Brewer and Company have shifted to pineapple production.

The environmental conditions in the lower Iao Valley, which in precontact times were ideal for agricultural necessary to support a large population, were a wide valley floor, rich alluvial soils, and a constant water supply from Iao Stream. These combined with the access to Kahului Harbor, rich in marine resources, made this area the prime precontact location on West Maui for a political and religious center. The lower portion of Iao Valley contained some of the most productive taro land on the island, and the abundance of Land Commission Awards in the lower valley attest to this. There are 66 LCA's, primarily taro patch *kuleana*, and 39 *po`alima* located between the old Wailuku Mill site and Paukukalo, on the southern side of Iao stream. In addition, 13 awards were

made directly to individual chiefs by Kamehameha IV.[5] The study area lies to the southeast of this rich and productive area in the more arid portion of Wailuku *ahupua`a.*

Lower Main Street was built along the route of an old government road, which very likely followed the course of existing transportation routes from the ocean to the inland portions of Iao Valley. Many of the LCAs in this area have borders aligned with the road, indicating it was an important transportation corridor at the time the *kuleana* were granted. This corridor follows the natural boundary between the sand dune and the alluvial deposits of the valley. The Kahului Railroad paralleled Lower Main Street, and was one of the earliest known commercial projects that impacted the dunes along Lower Main Street and Kahului Beach Road (Photograph 5).

The route of the railroad ran from Kahului Harbor to Wailuku Sugar Mill. The remnants of this old railroad bed can still be noted in a few places along Lower Main Street, and along Kahului Beach Road. The most striking architectural remnants of the railway system located along Kahului Beach Road are the five concrete pillars and arches, the most visible *makai* one impressed with the date "1921". In the past, a large wooden frame building rested on these pillars, serving as the housing for the Makaweli Rock Crusher apparatus. It was constructed so the train carrying rock from the quarry could off-load from the track-bed into the crusher. The concrete pilings elevated the crusher adequately above ground so trucks could be driven in and filled with crushed rock (Photograph 6). This series of pillars (that was the footings for the Makaweli Rock Crusher Mill) still stands near the intersection of Kanaloa Avenue and Kahului Beach Road.

Railroad construction was begun in the late 1870s (Photo 1)[6] and continued for nearly 2 decades, as routes were added and service expanded. The Maui News contains articles dealing with activities in the general vicinity of the project area. One dated February 8, 1902, describes a problem and potential solution resulting from the railroad:

"Superintendent R.W. Fuller of the Kahului Railroad Company is preparing to make some important changes in the line of railroad track between Kahului and Wailuku. At present the sharp turn and the railroad crossing at the beach is extremely dangerous on account of the sand dunes that shut out the approaching trains from the view of those approaching the crossing with teams, especially the wind is blowing a gale.

The track will be moved some hundreds of feet south of its present location, so that the point where it crosses the road as well as the approaching trains themselves can be seen for quite a distance. On crossing the road, the track will skirt the pasture at greater distance from the public road."

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[5] This is in contrast to the area south and east of Lower Iao Valley. Here there were two LCAs awarded—one to Victoria Kamamalu (7713), and one to Kuihelani (420). The largest land partition of Central Maui is Grant 3343 to Claus Spreckels.

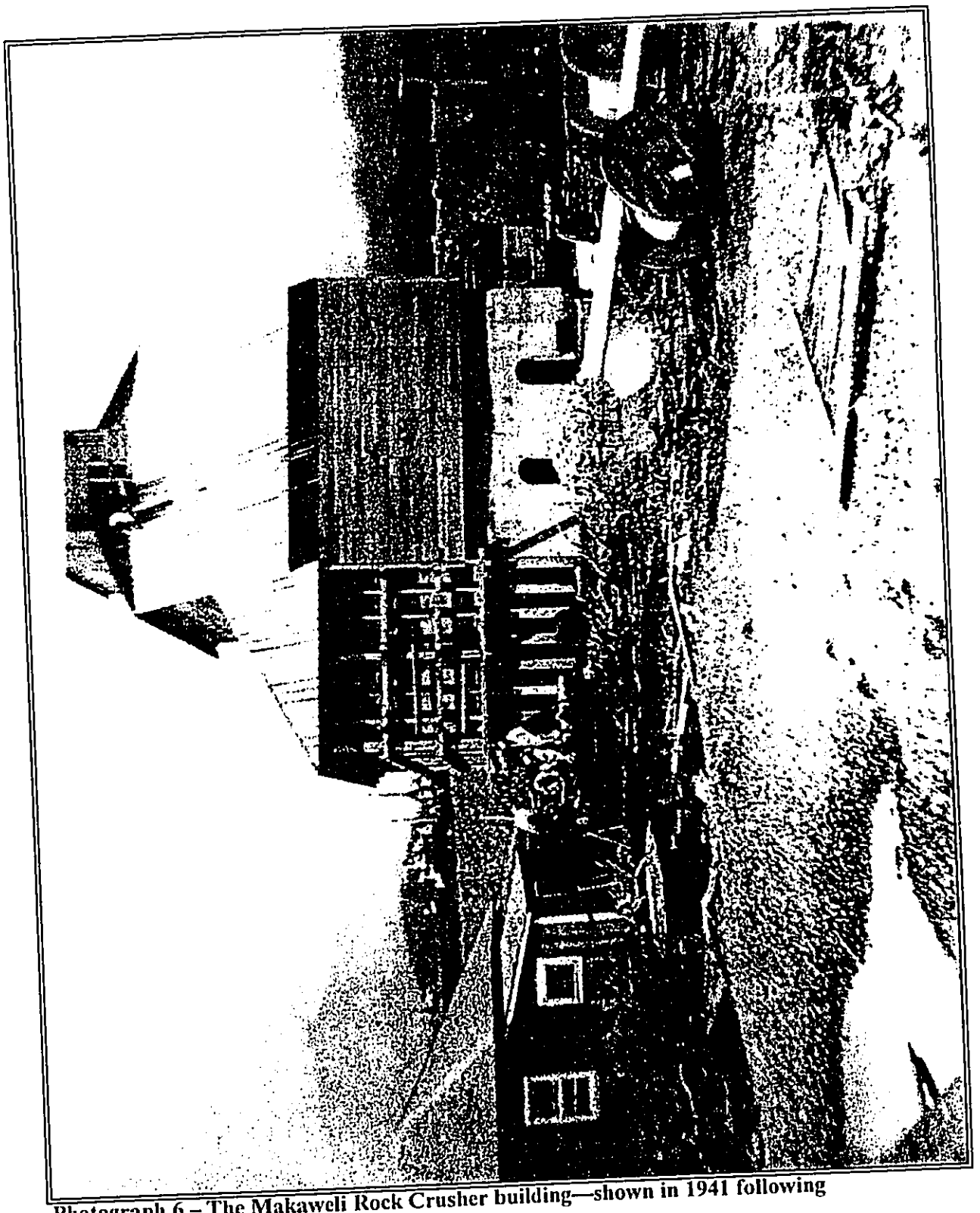
[6] This painting by Rev. Bailey shows several structures, which may be houses that were associated with LCAs.

On June 8, 1907, another reference describes plans improving the land for further residential use in the future:

"The Kahului Railroad Company is filling in the lowlands, in and about Kahului and will in time raise the level of the entire town site, when the work is completed and proper drains provided, the town should be free of mosquitos and the place a most desirable locality in which to live."

The railroad continued operations until after World War II. Then slowly, demands began to change, and segments of the system were phased out. An article in **The Maui News** of October 15, 1957 bore the headline "Iron Horses Bow Out As Wailuku Sugar Company Discontinues Use of Railroad". The railroad continued to serve other areas until 1966, when it ceased operation.

Photograph 5 – A painting of Kahului Harbor that shows the construction of the Kahului Railroad with houses that may be associated with Land Commission Awards.



Photograph 6 – The Makaweli Rock Crusher building—shown in 1941 following the April 1 tsunami.

PREVIOUS ARCHAEOLOGICAL WORK

Iao Valley/Pu`uone Dunes Area

The earliest archaeological work in the Wailuku area was part of the island-wide survey done by Winslow Walker in 1931. He reported that there were a number of *heiau* in the general area of Wailuku. Two lie on the northern side of Iao Stream atop the large dune formation there--Pihana and Haleki'i. Both have been restored and are designated as the Halekii-Pihana Heiau State Monument, under the supervision of the Division of State Parks (DLNR). Walker also reported that there were a number of other *heiau* in this area of Wailuku, which were said to have been consecrated by Liholiho during his visit to Maui for that purpose in 1801 (Walker, 1931, pp. 146-147). At the time of his survey, none of these reported *heiau* (named Keahuku, Olokua, Olopio, Malena, Pohakuokahi, Lelemako, Kawelowelo, Kaulupala, Palamaihiki, and Oloolokalani) could be found (Ibid., p. 148).

A personal communication (1992) from Mr. Charles Keau, a well-respected authority on history and prehistory of Maui, provided more information about some of these *heiau*, which Walker could not find. By Mr. Keau's account, there were 3 *heiau* located in the Lower Main Street corridor from Kahului Harbor to the intersection of Lower Main and Mill Streets. One was situated across the street from the Maui Soda Company. Another was located on parcel 83 (TMK: 3-4-39) between the Maui Electric Power Station and the County of Maui Wailuku Government cemetery. A third may have been located near the Home Maid Bakery. During the construction of the parking lot next to the bakery, Mr. Keau reported that Wesley Wong, a well-known local antiquity collector, found 5 adzes of "Tahitian" style. He did not specify when this was, but thought there might still be portions of the *heiau* there as well as some burials. Recent archaeological work has corroborated at least the latter part of this prediction.

Nisei Veterans Memorial Center

This extensive sand dune habitation area is located near the corner of Lower Main Street and Wai`ehu Beach road—the site of the future Nisei Veterans Memorial Center. The Nisei Memorial project has been underway for more than 12 years, as the site has proven to be one of the more significant sites studied on the northern Maui coastline.

In February of 1992, the present authors began with an inventory survey on the 2-acre parcel of land at the intersection of Lower Main and Wai`ehu Beach Road (Fredericksen and Fredericksen, December 1992). The most notable feature surface feature was the railroad bed that ran the length of the property (Site 3112). Another

historic site (Site 3119A) was a refuse disposal area about 20 cm. below the surface. The predominant historic items were bottles and ceramics dating from the late 1800s, about the time the railroad was built and in use. A subsurface excavation that cut through the historic site, located a subsurface precontact site designated as Site 3119B. Later data recovery work at this site caused a revision in the site numbering system. All precontact components of the site are designated as Site 3120, while the historic components bear the Site 3119 designation.

Site 3120 became extremely interesting when a very early radiocarbon date of AD 233-410 was obtained. However, later data recovery work did not produce material of a comparable date. The deposits from which it came, turned out to have been previously disturbed by excavations done during the construction of the railroad bed, and the original source was not located.

In another area of Site 3120, test excavations produced a number of artifacts, including coral files, bone picks, an unfinished fishhook, and worked bone, along with large quantities of food midden. Data recovery research has shown Site 3120 to be a large habitation site, which contains a cluster of burials. The latter remain *in situ* and will be preserved as a permanent burial/grave site. Several fire pit features were recovered and a series of 12 radiocarbon dates were obtained. They range from the very early date mentioned above (AD 233-410) to AD 1200-1740, with the majority of the precontact dates falling in a range between AD 1400 to 1700 (Fredericksen, et al., 1998).

Archaeological monitoring followed the completion of data recovery, and a total of 38 additional burials (Site 4668) were located in the southwestern corner of the 2-acre parcel near the crest of the dune. A radiocarbon date from carbon recovered in a large double posthole beneath one of the burials returned a conventional radiocarbon age of 620 +/- 50, and a calibrated date range of AD 1285-1420. The monitoring program is still in process.

The adjacent property to the south (TMK: 3-8-07: 38) was surveyed by Xamanek Researches in November of 1992. Fourteen backhoe test trenches were excavated, along with 3 manual test units, in the dune areas, and relatively undisturbed portions of the parcel. The *makai* portion of the property has been impacted by a sewer line, and the mid-portion by the railroad bed (Site 3112) and rock crusher mill construction (Site 3145) [see Photograph 6]. The only cultural materials recovered were historic items, most likely associated with the railroad construction (Fredericksen and Fredericksen, November 1992).

Kanaloa Avenue

Xamanek Researches carried out an inventory survey and archaeological monitoring for the Kanaloa Avenue improvement project between 2002 and the early spring of 2004 (report in preparation). Initially, a previously unidentified habitation area site remnant was located within the road corridor (Site 4899). While it was not possible to recover a radiometric date for this site, it was interpreted as a possible precontact site,

based on the lack of any recognizable trade goods within the recovered cultural materials. During the course of construction monitoring, a total of four burials and two finds of previously disturbed human remains were located—Sites 5171, 5172 and 5495. Finally, an extensive precontact habitation area (Site 5496) was located during work within Keopuolani Park. Two charcoal samples from excavations at this habitation site returned radiometric age ranges from the AD 1300s to the 1600s.

Central Maui Area

The central area of Maui, south of Ka`ahumanu Avenue, is noted for many burials in the Pu`uone Sand Dune formation, which stretches across the isthmus. There have been a number of studies documenting these finds (Fredericksen et al., 1997; 1998; Panteleo and Sinoto, 1996; Rotonno-Hadzuka, 1994).

However, in the central area to the north of Ka`ahumanu Avenue, very few sites other than scattered human burials have been found. The authors have conducted studies at Maui Community College, Maui Central Parkway (Fredericksen and Fredericksen, December 1992; Fredericksen, et. al., 1994), and at the Keiki Zoo Maui (Fredericksen and Fredericksen, September 1995)—all with negative results. Archaeological Consultants of Hawaii conducted a survey for the Maui Arts and Cultural Center, again without significant findings (Kennedy, 1990). An inventory survey for the 110-acre Maui Central Park area, in which a large intact dune is present, was conducted by Cultural Surveys of Hawaii. Here again, no indigenous cultural sites were found. However, scattered human remains (Site 50-50-04-4211) were located on the surface near the Maui Arts and Cultural Center, during a botanical survey conducted by Xamanek Researches. Subsequent archaeological work at the inventory level indicated that no additional human remains were present, and Site 4211 was evaluated as no longer significant (Heidel, Pyle and Hammatt, January 1997, p. 97). Other historic sites noted in the Maui Central Park inventory survey include Site 4232, a former WW II military facility, and Site 3112, the Kahului Railroad Berm. Both sites will be partially preserved by being incorporated into the landscaping of the Park (Ibid., p. 96).

The paucity of archaeological findings in this area suggests that the extensive military activity associated with World War II has altered the Central Maui landscape, thereby potentially obliterating possible archaeological sites.

Settlement Patterns and Expected Findings

The lower Iao Valley portion of Wailuku *ahupua'a* was a central political and religious area of West Maui, because of its fertile taro lands and close proximity to the sea. Given these conditions, a large population could be supported, and wherever large population clusters are found, the social framework of chiefly importance and religious expression is also present. This is attested to by the existence of the 2 *heiau* (Haleki'i and Pihana) atop the northern dune system, and others reported by Walker (1931) and Keau (1992, oral communication) within the Iao Stream corridor. The middle and upper reaches of Iao Valley were also rich in *lo'i* and *'auwai* which produced additional

foodstuffs to support political and religious activities. The Upper Iao Valley had been traditionally known as a very significant sacred place in the history of Maui (Donham, MCCRC minutes, June 1, 1995). Coastal sites, such as Site 3120, have been occupied since the 1200s (and possibly much earlier), and no doubt provided the complex with marine resources. There seems to be a pattern in Iao Valley, whereby sites closer to the ocean have earlier dates than the ones farther inland, suggesting that settlement occurred first along the sea shore and gradually moved inland as the population numbers increased.

An intensification of usage appears to have occurred during the 16th century, and seems to have peaked around the time of Pi`ilani, ca. 1600 AD (Ibid.). All radiocarbon dates, which have been recovered from the sites along this corridor fall into this temporal framework.

The study area, in which the present survey and monitoring took place, lies behind the Pu`uone Dune Foundation, and is a part of the island that has been adversely affected by the presence of the military during World War II. A large Maine base existed in the area that is now Keopuolani Park. Before the construction of the base, a sizable plantation community—Raw Fish Camp—occupied the area. Prior to that, it was used as pasturage. As a consequence of the considerable amount of land alteration associated with these events, most traces of precontact activity, if it existed, has been most likely destroyed. At the northeast section (*makai*) of the Kanaloa Avenue corridor, remnants of habitation sites with associated burials have been found, and there is a possibility that similar subsurface features are present on the remaining remnants of the sand dune formation.

TABLE 1

List of Archaeological Studies carried out in Lower Iao Valley, and Central Maui Area.

AUTHORS	LOCATION	FINDINGS
Burgett and Spear, 1995	TMK: 3-8-37: 48, Lower Main St., Home Maid Bakery. Sites 3924 and 3925	Habitation sites; human burials. Dated c. AD 1430 to 1671.
Connolly, 1973	TMK: 3-8-36: 94, Lower Main St., Site 1171	Habitation site; burials discovered 1994 eroding from dune face.
Donham, 1994	TMK: 3-8-37: 49, Lower Main St., , Home Maid Bakery, Site 3556	Inadvertent burial discovery, both historic and precontact burials
Fredericksen, W. and Fredericksen, D, December 1992a	TMK:3-8-07: 40 and 43; Maui Community College Parking Lot Extension.	Historic sites from WWII. No precontact cultural materials.

Table 1 continued

Ibid., September 1995	TMK: 3-8-07: por. 1; Keiki Zoo Maui.	No findings of significance.
Ibid., February 1996	TMK: 3-8-07: 104; Maui Scrap Metal Company, Waikapu. Borrow Site, Site 3525.	Remains of at least 22 individuals recovered from mined sand.
Fredericksen D. and Fredericksen, W. December 1992b Fredericksen, et. al., November 1998	Inventory Survey - TMK: 3-8-07: 123, at Lower Main and Waiehu Road, Nisei Veterans Memorial Center. Data Recovery Report	Historic site, Kahului Railroad (Site 3112); large precontact habitation site, with continuous occupation from c. 1200 AD to c. 1740 (Site 3120); numerous burials to be preserved *in situ*.
Fredericksen, et. al., July 1995; Fredericksen, E. and Fredericksen, D. September 1996	Inventory Survey and Data Recovery: TMK: 3-4-39: por. 81, 82, 83 at Lower Main and Mill Streets, Site 4127	Habitation site; dated c. AD 1450 to 1675.
Fredericksen, E., W., and D., September 1994	TMK: 3-8-07: por. 125; Maui Central Park, 10 acres along Kahului Beach Road	No significant findings.
Ibid., January 1997	TMK: 3-4-07: por. 121, Maui Lani Parkway corridor	No precontact finds in corridor—human remains (Site 4368) on Golf Course Hole #10—monitoring recommended.
Ibid., May 1997	TMK: 3-8-47: por. 1, 2, 3, 4, 17, 18, 30, and 32; 3-9-07: por 121 Mahalani Street Extension	No significant findings—limited monitoring recommended.
Fredericksen, E., February 1997 (post-field summary)	TMK: 3-4-07: por. 121, Lot 11-A, Maui Lani Project—20.7 acres	One indigenous *in situ* burial (Site50-50-04-4401)-Monitoring recommended.
Heidel, Pyle and Hammatt, 1997	TMK: 3-8-07: 1 and 3-7-01: 2; Maui Central Park	Historic sites: 4232-WW II military camp; 3112-Kahului Rail-road Berm; 4211-scattered human remains.
Kennedy, 1992	TMK: 3-8-07; Maui Arts and Cultural Center.	No findings.
Pantaleo, J. and A. Sinoto, January 1996	TMK: 3-8-07: 2, 110; Phase 1 and Phase 1A, Maui Lani Partners Development, Wailuku.	No habitation sites. Human burials in several locations. Monitoring recommended. Additional burials during monitoring.
Rotunno and Cleghorn, 1990 Rotunno-Hazuka, et. al. May 1994a	TMK: 3-8-07: 2, 110: Maui Lani Development Property.	No precontact sites other than burials (Site 2797).
Spear, 1995	TMK: 3-8-37: 48; Lower Main St., Site 4066.	Human burials and habitation layers.

Expected Findings

With the introduction of sugarcane cultivation in the 1850s, and the importation of foreign labor to work in the plantation, the character of much of the island of Maui changed. The sugar plantations acquired either by purchase or lease, large amounts of

land, further displacing the native Hawaiian people. The acquisition of stream water for sugarcane cultivation dried much of the remaining *kalo* fields by the end of the 19th century. Afterwards a pattern of dispersed villages and camps for plantation workers emerged. *Kuleana* land grants changed ownership as plantation workers became affluent enough to purchase land from Hawaiians who were willing to sell. Commercial development became a driving force that would continue and intensify through the 20th century.

Based on our background research, the location of the parcel, the expected findings were thought to include possible human burials, precontact subsurface habitation site remnants, possibly containing associated human burials, and post-contact site remnants possibly associated with the plantation era. Given that the proposed Central Maui Senior Housing project has already been disturbed, we did not anticipate any above ground pre- or post-contact features such as walls, roads, irrigation ditches, and building foundations associated with former plantation-era activities.

ARCHAEOLOGICAL METHODS

The fieldwork for testing phase of this archaeological survey was conducted during late July of 2004. The field team was made up of Jennifer Frey and Timothy Stewart. Erik Fredericksen and Hugh Coflin had previously conducted a surface inspection of the subject parcel and located underground water and electric lines. Erik Fredericksen was also the project director. Walter and Demaris Fredericksen were the senior advisors, and Demaris Fredericksen compiled a portion of this report.

The assessment survey of the study area was carried out in two phases—a pedestrian inspection was first conducted, followed by subsurface investigation. This latter phase consisted of ten backhoe trenches that were placed in accessible portions of the study area (Map 2). The walkover portion of the survey was undertaken using transect lines spaced c. 5 meters apart, and oriented roughly northwest/southeast. While it was not possible to test in the tennis court area, the grounds around it were inspected in order to assess the possible presence of significant material culture remains elsewhere on the parcel. In addition, the margins of the adjacent properties to the southwest were visually inspected from the border of the planned County facility.

As previously noted, a total of ten backhoe trenches were utilized to sample the study area. These subsurface tests were excavated in various locales, allowing for avoidance of underground utilities, tree roots, access roads, etc. Backhoe trench profiles were visually inspected, and recorded using metric survey tapes and hand-bearing compasses. In addition soil samples from each trench profile were spot checked with

1/8th inch screen, and the back dirt was raked over. Written notes were kept in the field, and photographs were taken in a digital format. No material culture remains were transported off-island and standard laboratory procedures and methods were utilized.

ARCHAEOLOGICAL RESULTS

A total of ten backhoe trenches were utilized to assess subsurface conditions in study area during the course of this small archaeological inventory survey. There were no subsurface cultural layers encountered during the course of our subsurface testing. The backhoe trenches were c. 5.5 meters in length by 0.7 meter in width by a maximum of 1.4 meters in depth. All trenches were excavated into the water table, which was located between 90 and 120 cmbs. Table 2 at the end of this section provides a summary of backhoe trench results for the project. Backhoe test results are briefly discussed below. Refer to Appendix A for photographs.

Backhoe Trenches 1, 2, 6 and 7 (Figures 1-4, Photographs 7, 8, 12 and 13)

These four backhoe trenches were located near the southwestern boundary of the proposed Central Maui Senior Housing project area. Trench orientations were roughly 70 degrees magnetic and the trenches were c. 5.5 meters in length by up to 1.3 meters in depth. The groundwater table was encountered between 90 and 120 cmbs.

Layer I was up to 40 cm in thickness, and was composed of pale brown (10 YR 6/3) to light yellowish brown (10 YR 6/4), silty sand and/or top soil (7.5 YR 4/4). In addition, gravel was present on the parking area that BTs 1 and 2 sampled. This relatively loose layer contained some sand banding, along with scattered modern materials such as aluminum foil, plastic and bottle glass. In addition, small pieces of cinder were also noted. This material is interpreted as landscaping fill.[7]

Layer II extended to the bottoms of all trenches. This semi-compact stratum was composed of moist, light gray (10 YR 7/1) medium-grained sand. There were no significant material culture remains noted in this layer.

The groundwater table was encountered between 90 and 120 cmbs in all four trenches of these trenches.

[7] An abandoned PVC irrigation line was noted c. 15 cmbs.

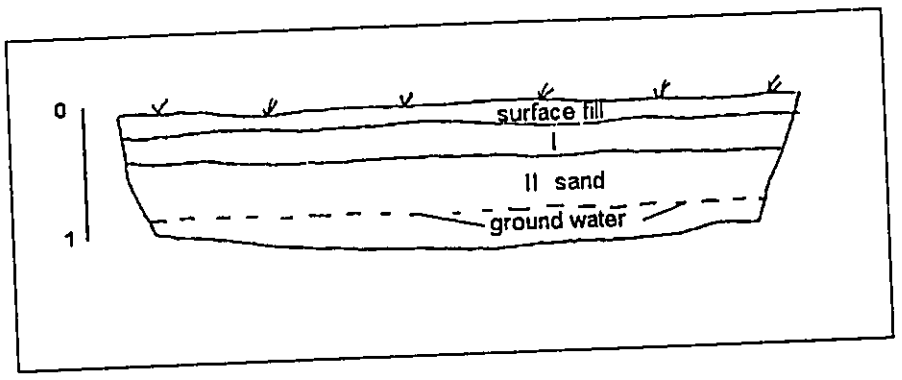


Figure 1–North face profile of BT 1.

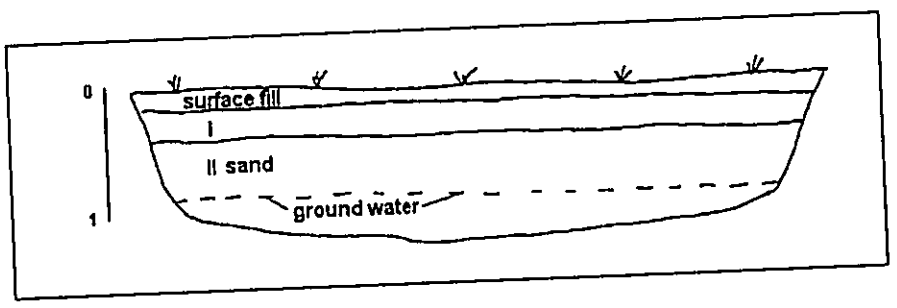


Figure 2–North face profile of BT 2.

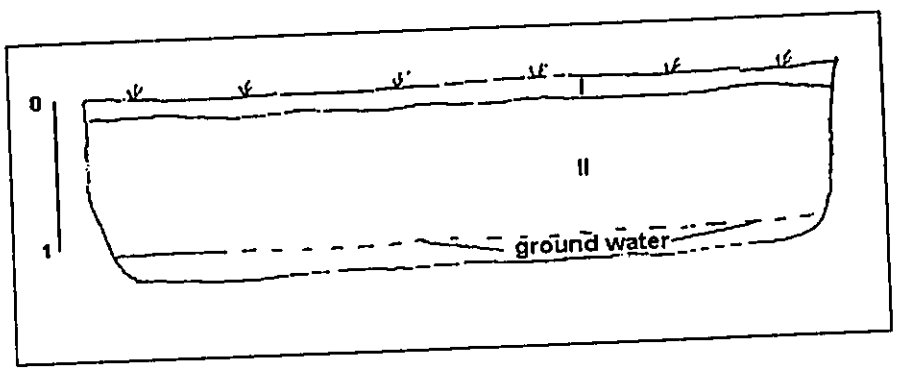


Figure 3–South face profile of BT 6.

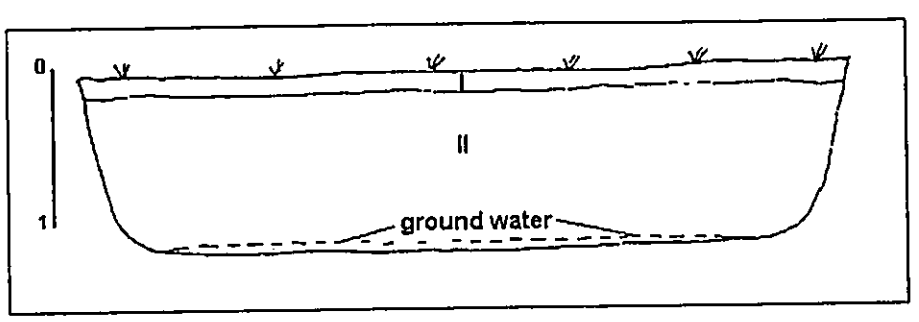


Figure 4–South face profile of BT 7.

Backhoe Trenches 3, 4, 5 and 8 (Figures 5-8, Photos 9-11 and 14)

This second group of trenches was placed in the central portion of the project area. Trench dimensions were c. 5.5 meters in length by up to 1.3 meters in depth. Stratigraphy was similar to the group of trenches discussed above.

Layer I was up to 45 cm in thickness, and was composed of pale brown (10 YR 6/3) to light yellowish brown (10 YR 6/4), silty sand and/or top soil (7.5 YR 4/4). In addition, gravel was present on the parking area that BTs 3 and 4 sampled. This relatively loose layer contained some sand banding, along with scattered modern materials such as paper, aluminum foil, plastic and bottle glass fragments. This material is interpreted as landscaping fill.

Layer II extended to the bottoms of all trenches. This semi-compact stratum was composed of moist, light gray (10 YR 7/1) medium-grained sand. There were no significant cultural materials noted in this stratum.

The groundwater table was located at about 90 cmbs in all four of these backhoe trenches.

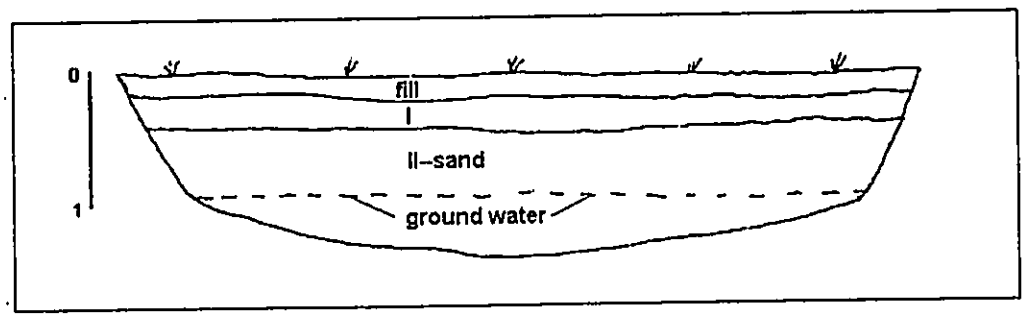


Figure 5–North face profile of BT 3.

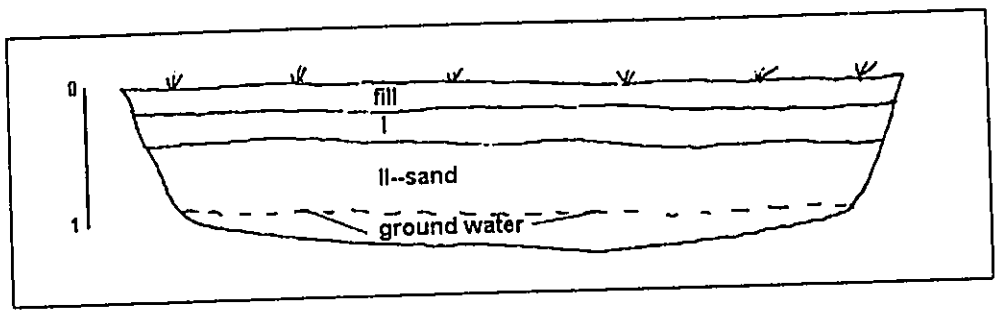


Figure 6–North face profile of BT 4.

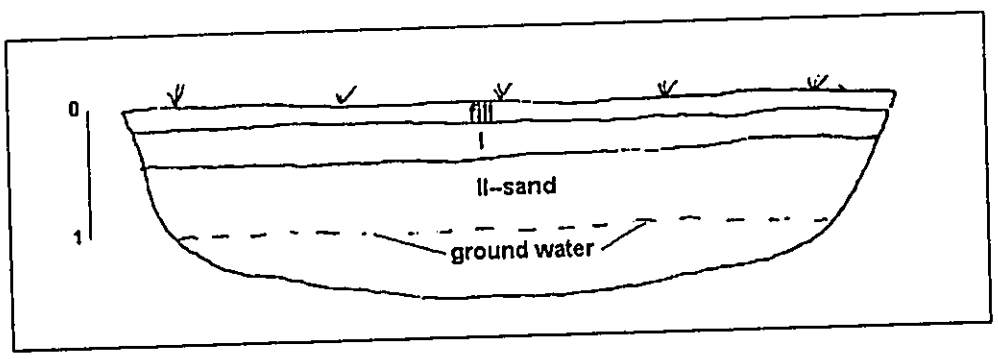


Figure 7–North face profile of BT 5.

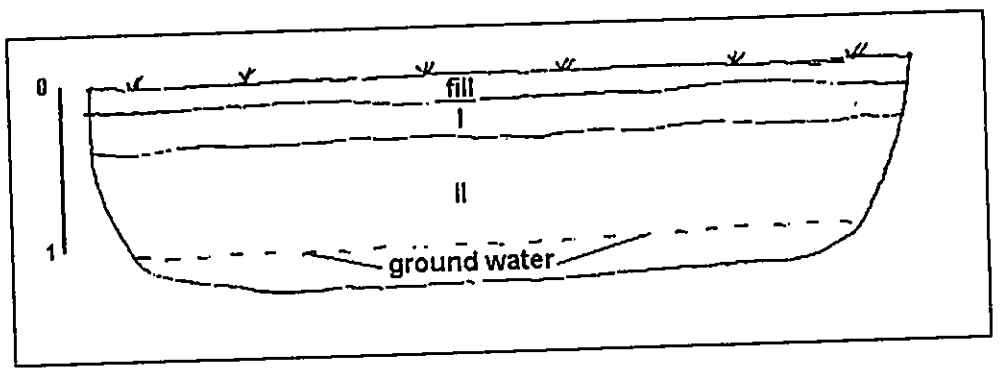


Figure 8–East face profile of BT 8.

Backhoe Trenches 9 and 10 (Figures 9 and 10, Photographs 15 and 16)

Theses two backhoe trenches sampled the northern portion of the study area. Trench orientation was approximately 345 degrees magnetic. The trenches were c. 5.5 meters in length, and a maximum of 1.3 meters in depth. Similar stratigraphy was present in these trenches.

Layer I was up to 45 cm in thickness, and was composed of pale brown (10 YR 6/3) to light yellowish brown (10 YR 6/4), silty sand and top soil (7.5 YR 4/4). This relatively loose layer contained some sand banding, along with scattered modern materials such as paper, aluminum foil, plastic and bottle glass fragments. This material is interpreted as landscaping fill.

Layer II extended to the bottoms of both trenches. This semi-compact stratum was composed of moist, light gray (10 YR 7/1) medium-grained sand. There were no significant cultural materials noted in this layer.

The groundwater table was located at about 90 cmbs in BT 9 and at about 110 cmbs in BT 10.

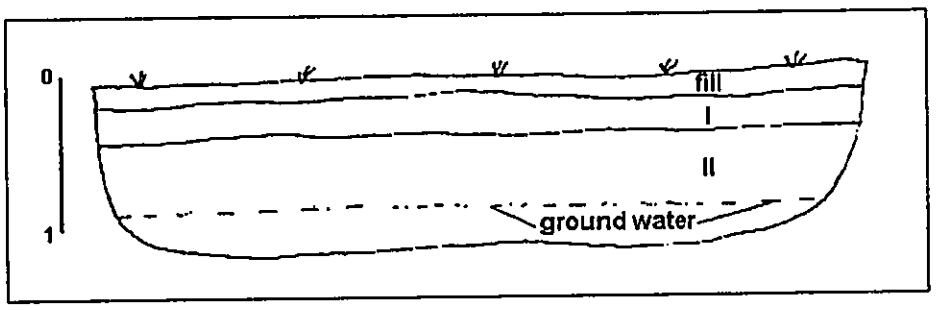


Figure 9– East face profile of BT 9.

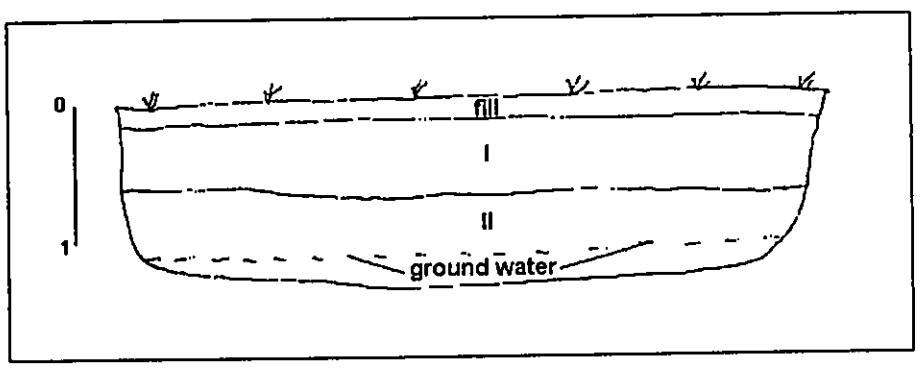


Figure 10–East face profile of BT 10.

Discussion of Backhoe Trench Results

There was no evidence of an intact cultural layer encountered during subsurface investigation in the proposed Central Maui Senior Housing project area. It appears that landscaping fill soil (Layer I) covers much of the study area to an average depth of about

40 cmbs. The presence of modern material culture remains indicates that this material was likely imported in relatively recent times.

There were intact cultural layers or significant material culture remains located in any of the trenches during the study. The ground water table was located in all ten test instances.

TABLE 2
SUMMARY OF BACKHOE TRENCH RESULTS
CENTRAL MAUI SENIOR HOUSING PROJECT

BT #	Depth[8]	Stratigraphy	cmbs[9]	Remarks
1	110	Layer I: light yellowish brown (10 YR 6/4), silty sand, gravel Layer II: moist, light gray (10 YR 7/1)	0-40 40-110	Layer I: modern materials-aluminum foil, plastic, bottle glass, gravel Layer II: compact, no cultural remains noted, appears to be intact Water table @ 90 cmbs.
2	110	Layer I: light yellowish brown (10 YR 6/4), silty sand, gravel Layer II: moist, light gray (10 YR 7/1)	0-38 38-110	Layer I: modern materials- plastic, bottle glass, gravel Layer II: compact, no cultural remains noted, appears to be intact Water table @ 90cmbs
3	110	Layer I: light yellowish brown (10 YR 6/4), silty sand, gravel Layer II: moist, light gray (10 YR 7/1)	0-42 42-110	Layer I: modern materials- plastic, bottle glass, gravel Layer II: compact, no cultural remains noted, appears to be intact Water table @ 90cmbs
4	110	Layer I: pale brown (10 YR 6/3), silty sand, blue rock and gravel Layer II: moist, light gray (10 YR 7/1)	0-45 45-110	Layer I: modern materials- plastic, bottle glass, gravel Layer II: compact, no cultural remains noted, appears to be intact Water table @ 90cmbs
5	110	Layer I: light yellowish brown (10 YR 6/4), silty sand, top soil (7.5 YR 4/4) Layer II: moist, light gray (10 YR 7/1)	0-38 38-110	Layer I: modern materials- plastic, bottle glass, metal Layer II: compact, no cultural remains noted, appears to be intact Water table @ 92cmbs

[8] Depths are in centimeters; all trenches c. 5.5 meters long by 0.8 meter wide.
[9] cmbs = centimeters below surface

Table 2 continued

BT #	Depth	Stratigraphy	cmbs	Remarks
6	130	Layer I: top soil (7.5 YR 4/4) Layer II: moist, light gray (10 YR 7/1)	0-12 12-130	Layer I: modern materials- bottle glass, paper Layer II: compact, no cultural remains noted, appears to be intact Water table @ 120 cmbs
7	120	Layer I: top soil (7.5 YR 4/4) Layer II: moist, light gray (10 YR 7/1)	0-12 12-120	Layer I: modern materials- bottle glass, paper Layer II: compact, no cultural remains noted, appears to be intact Water table @ 120 cmbs
8	130	Layer I: pale brown (10 YR 6/3), silty sand, top soil (7.5 YR 4/4) Layer II: moist, light gray (10 YR 7/1)	0-40 38-130	Layer I: modern materials- plastic, bottle glass, metal, paper Layer II: compact, no cultural remains noted, appears to be intact Water table @ 92cmbs
9	120	Layer I: light yellowish brown (10 YR 6/4), silty sand, top soil (7.5 YR 4/4) Layer II: moist, light gray (10 YR 7/1)	0-40 40-120	Layer I: modern materials- plastic, bottle glass, metal Layer II: compact, no cultural remains noted, appears to be intact Water table @ 90 cmbs
10	130	Layer I: light yellowish brown (10 YR 6/4), silty sand, top soil (7.5 YR 4/4) Layer II: moist, light gray (10 YR 7/1)	0-80 80-130	Layer I: modern materials- plastic, bottle glass, metal Layer II: compact, no cultural remains noted, appears to be intact Water table @ 110cmbs

SUMMARY AND CONCLUSIONS

There were no significant material culture remains located during this archaeological survey of the proposed Central Maui Senior Housing project. Landscaping soil (Layer I) was found to cover tested portions of the study area to an average depth of about 40 cmbs. The presence of modern material culture remains indicates that this fill material was likely imported in relatively recent times.

As was the case in Layer I, there were no significant cultural materials noted in Layer II, which was composed of intact sand dune deposit. This intact sand stratum was

encountered in all test instances. As previously noted, the groundwater table was located in all test trenches, typically at c. 1 mbs.

Site Significance Evaluations

The following significance evaluations are based on the Rules Governing Procedures for Historic Preservation Review (DLNR 1996; Chapter 275). According to these rules, a site must possess integrity of location, design, setting, materials, workmanship, feeling and association and shall meet one or more of the following criteria:

Criterion "a"—Be associated with events that have made an important contribution to the broad patterns of our history;

Criterion "b"—Be associated with the lives of persons important in our past;

Criterion "c"—Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value;

Criterion "d"—Have yielded, or is likely to yield, important information for research on prehistory or history;

Criterion "e"—Have an important traditional cultural value to the native Hawaiian people or to another ethnic group of the state due to associations with traditional cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts.

Sites can be considered no longer significant when they qualify only under Criterion "d" and sufficient information has been collected from them during inventory survey level investigation.

As previously mentioned, there were no significant material culture remains located during the archaeological survey for the proposed Central Maui Senior Housing project.

Mitigation Recommendations

While there was no evidence of an intact cultural layer or any significant material culture remains encountered during subsurface investigation in the project area, it is important to note that intact sand dune deposits were located in all test instances. Given

the presence of sand deposits throughout the project area, precautionary monitoring is recommended. Based on discussions with Dr. Melissa Kirkendall, SHPD Maui/Lana`i islands staff archaeologist, it is recommended that all future proposed construction/development plan changes for the Central Maui Senior Housing project be reviewed by the State Historic Preservation Division Maui office.

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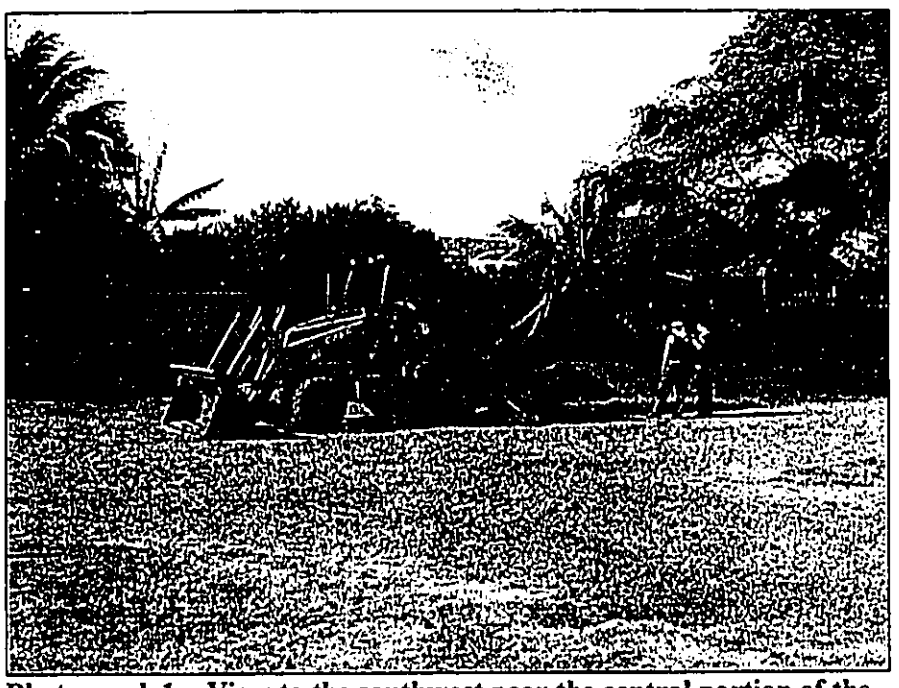
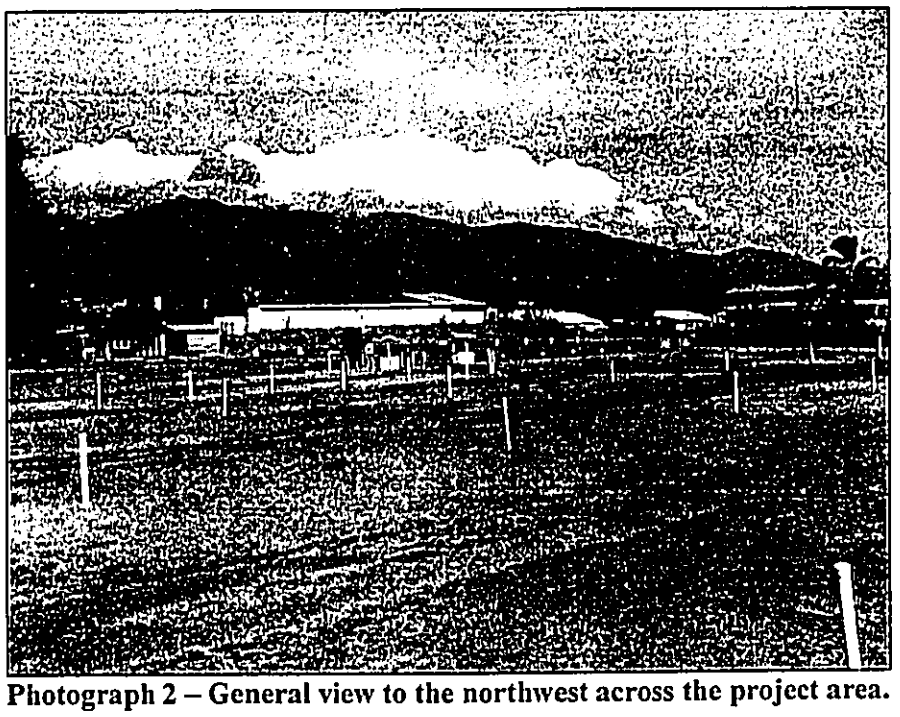
APPENDIX A
PHOTOGRAPHS 1-4 and 7-16



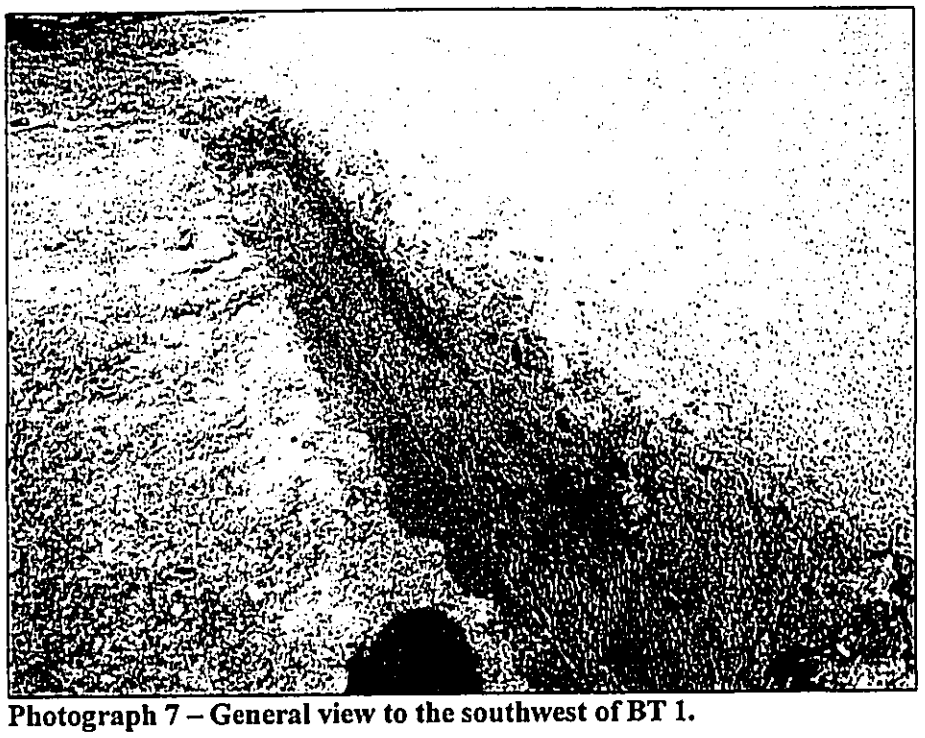
Photograph 1 – View to the southwest near the central portion of the southeastern border of the project area.



Photograph 2 – General view to the northwest across the project area.

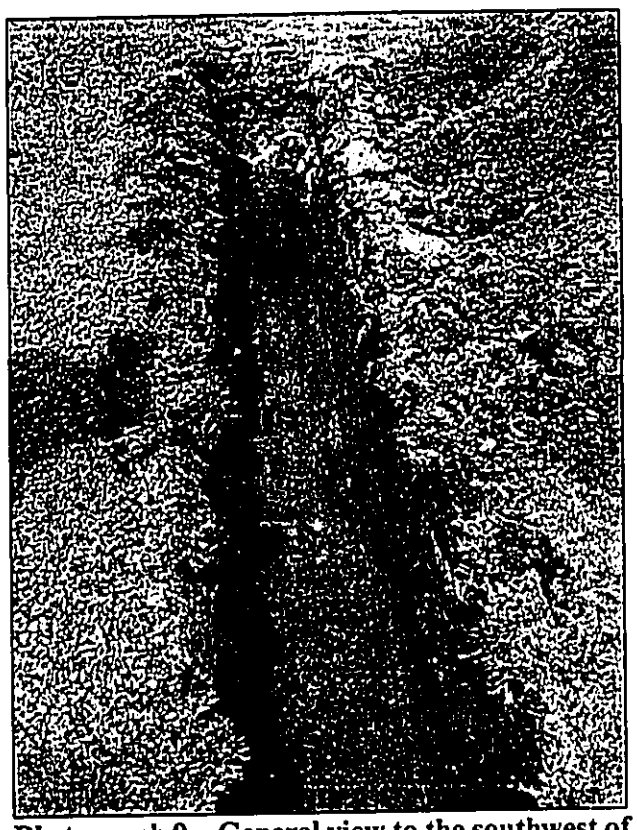
Photograph 3 –General view to the northeast near the boundary with Pu`unene Avenue.

Photograph 4 –General view to the southwest across the south central portion of the study area.



Photograph 7 – General view to the southwest of BT 1.

Photograph 8 – General view to the southwest of BT 2.



Photograph 9 – General view to the southwest of BT 3.

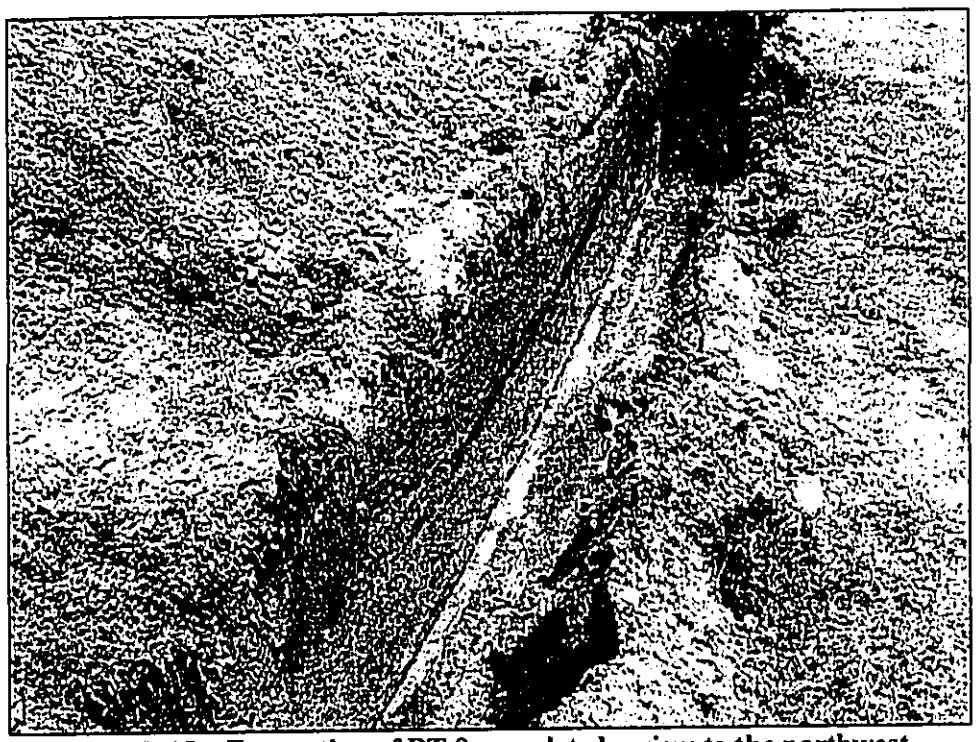
Photograph 10 – General view to the southwest of BT 4.

Photograph 11 – General view to the southeast of BT 5.

Photograph 12 – Excavation of BT 6 nearly complete—note groundwater seepage near bottom right. View to the southwest.

Photograph 13 – Excavation of BT 7 completed—view to the southwest.

Photograph 14 – Excavation of BT 8 completed—view to the northwest. Note groundwater in center of trench.



Photograph 15 – Excavation of BT 9 completed—view to the northwest. Note groundwater in center of trench.

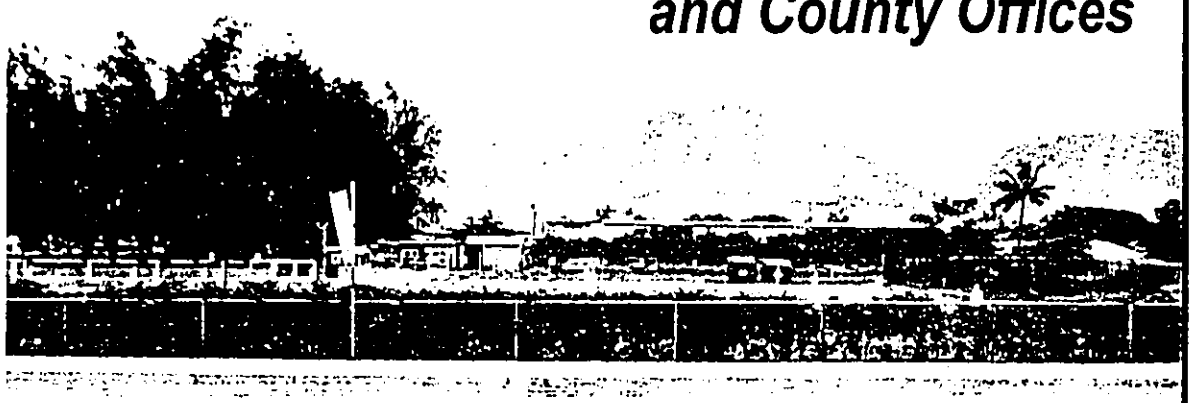
Photograph 16 – Excavation of BT 10 nearly completed—view to the northwest.

Appendix C

Traffic Impact Report

Traffic Impact Report

Central Maui Senior Housing and County Offices



Prepared for:
Munekiyo & Hiraga, Inc.

Prepared by:
Wilson Okamoto Corporation

June 2004

TRAFFIC IMPACT REPORT

FOR THE PROPOSED

CENTRAL MAUI SENIOR HOUSING

AND COUNTY OFFICES PROJECT

Prepared for:

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June 2004

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I. INTRODUCTION

A. Purpose of Study

The purpose of this study is to identify and assess the traffic impacts resulting from the proposed Central Maui Senior Housing and County Offices project in Kahului on the island of Maui. The proposed project is expected to include an apartment complex with one-bedroom rental units, as well as, two office buildings which will house a number of County of Maui offices. The project site is located south of the Kahului Post Office along Puunene Avenue between Kamehameha Avenue and Wakea Avenue.

B. Scope of Study

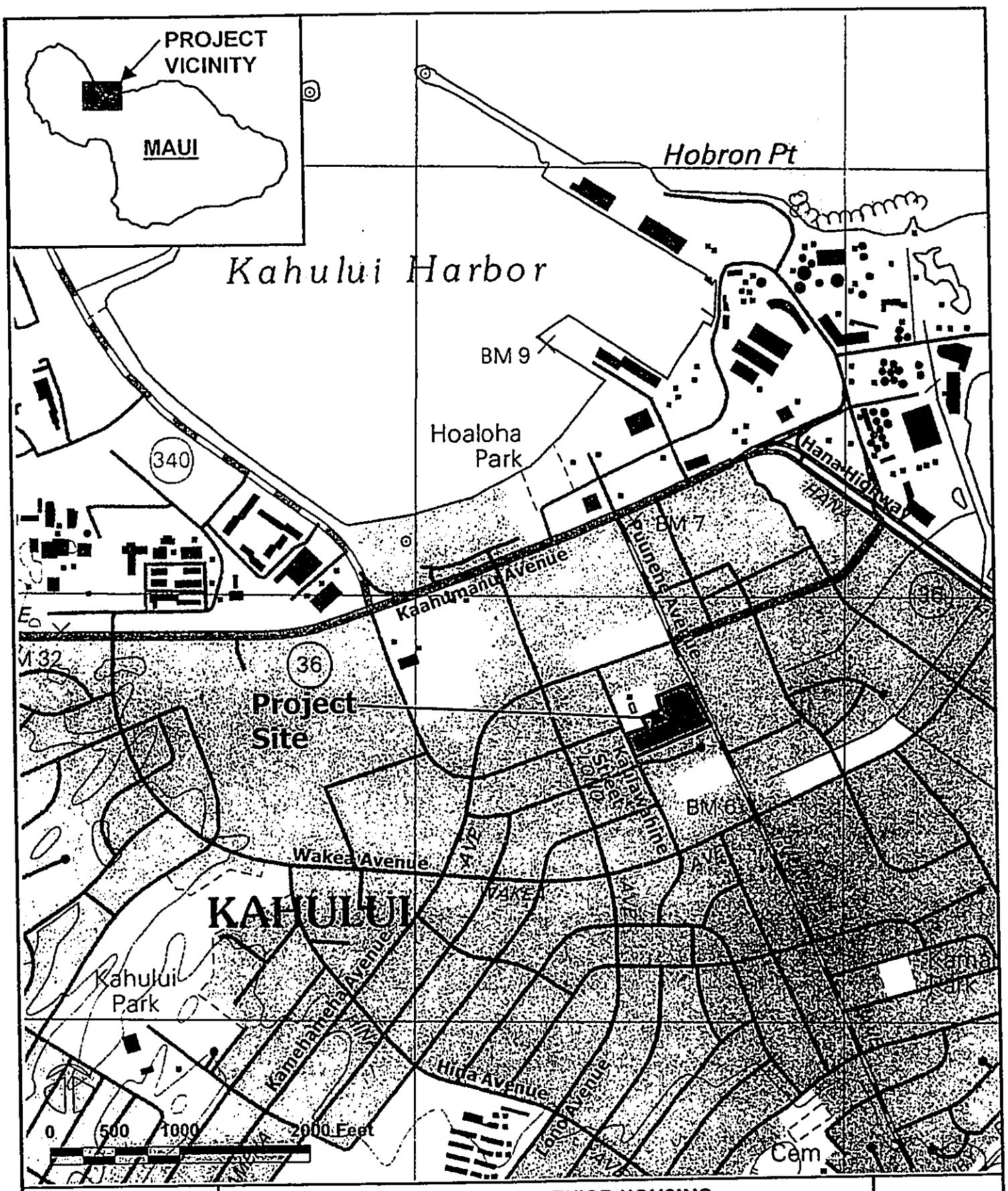
This report presents the findings and conclusions of the traffic study, the scope of which includes:

1. Description of the proposed project.
2. Evaluation of existing roadway and traffic operations in the vicinity.
3. Analysis of future roadway and traffic conditions without the proposed project.
4. Analysis and development of trip generation characteristics for the proposed project.
5. Superimposing site-generated traffic over future traffic conditions.
6. The identification and analysis of traffic impacts resulting from the proposed project.
7. Recommendations of improvements, if appropriate, that would mitigate the traffic impacts resulting from the proposed project.

II. PROJECT DESCRIPTION

A. Location

The project site is located along Puunene Avenue between Kamehameha Avenue and Wakea Avenue in Kahului on the island of Maui (see Figure 1). The project site is further identified as Tax Map Key (2) 3-7-013: por. 026. Access to the proposed project will be via two new driveways, one off of Puunene Avenue and one



WILSON OKAMOTO CORPORATION ENGINEERS - PLANNERS	CENTRAL MAUI SENIOR HOUSING AND COUNTY OFFICES PROJECT LOCATION MAP AND VICINITY MAP	FIGURE 1

off of Kaulawahine Street which intersects with Kamehameha Avenue between Puunene Avenue and Lono Avenue.

B. Project Characteristics

The proposed Central Maui Senior Housing and County Offices project will be located on an approximately 4.0 acre site and will consist of two main components which will have independent vehicular access and circulation. The proposed senior housing component will include approximately 39 one-bedroom rental units, one two-bedroom resident manager's unit, an approximately 2,945 square foot community center building, and approximately 74 paved parking stalls. Access to the senior housing component of the project will be via a new driveway off of Kaulawahine Street. The proposed office building component will include an approximately 12,437 square foot, two-story building for the County of Maui's Department of Housing and Human Concerns's (DHHC) Housing Division, an approximately 6,718 square foot one-story building for the Immigrant Services Division, Community Development Block Grant Program, and the Volunteer Center of Maui County, and approximately 92 paved parking stalls. Access to the office building component of the project will be via a new driveway off of Puunene Avenue. Both components of the project are expected to be completed and occupied by the Year 2007. Figure 2 shows the proposed project site plan.

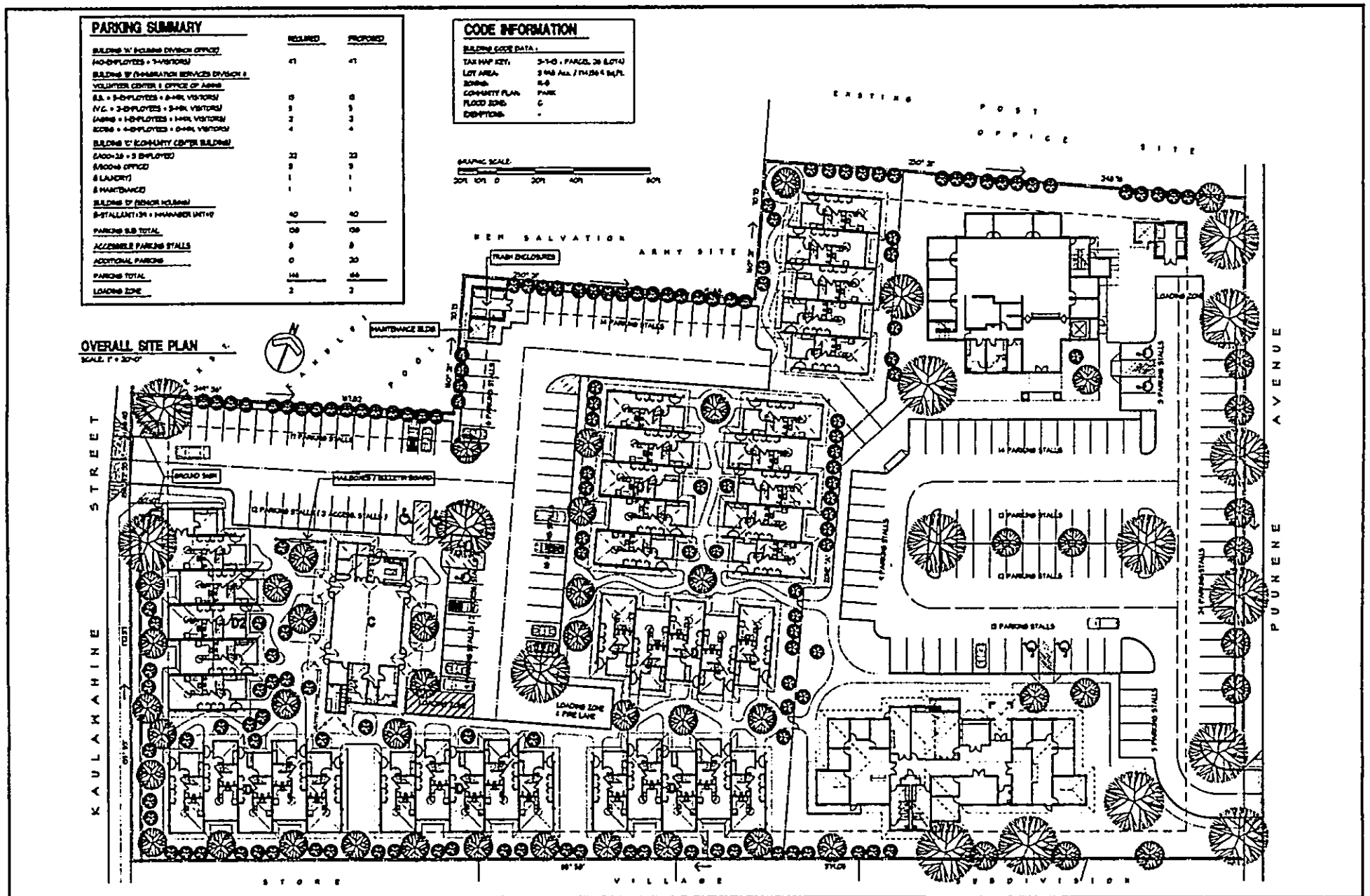
III. EXISTING TRAFFIC CONDITIONS

A. General

The project site is located adjacent to Puunene Avenue between Kamehameha Avenue and Wakea Avenue. Puunene Avenue serves as one of the main north-south arterials through Kahului between Queen Kaahumanu Highway and Kuihelani Highway. In recent years, development in Kahului has been fairly minimal. As such, traffic volumes along Puunene Avenue and in the project's vicinity have remained relatively stable.

B. Area Roadway System

Puunene Avenue is a predominantly a five-lane, two-way State of Hawaii roadway in the vicinity of the project. Approximately 0.2 miles north of the project



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CENTRAL MAUI SENIOR HOUSING AND COUNTY OFFICES PROJECT

PROJECT SITE PLAN

FIGURE 2

site, Puunene Avenue intersects with Kamehameha Avenue, a predominantly two-lane, two-way County of Maui roadway generally oriented in the east-west direction that serves as one of the major collector roadways through Kahului between Kaahumanu Avenue and West Papa Avenue. At this signalized intersection, all approaches to the intersection have three lanes that serve left-turn, through, and right-turn traffic movements.

Approximately 0.3 miles southeast of the intersection with Kamehameha Avenue, Puunene Avenue intersects Wakea Avenue, a predominantly two-lane, two-way County of Maui roadway generally oriented in the east-west direction that serves as one of the major collector roadways though Kahului between Kaahumanu Avenue and Hana Highway. At this signalized intersection, the northbound approach of Puunene Avenue has four lanes that serve all traffic movements while the southbound approach has three lanes that serve all traffic movements. The Wakea Avenue approaches to the intersection have three lanes that serve left-turn, through, and right-turn traffic movements.

Approximately 0.2 miles southwest of the intersection with Puunene Avenue, Wakea Avenue intersects Lono Avenue, a predominantly two-lane, two-way County of Maui roadway generally oriented in the north-south direction. At this signalized intersection, the Wakea Avenue approaches have two lanes that serve left-turn, through, and right-turn traffic movements while the Lono Avenue approaches have three lanes that serve all traffic movements.

Approximately 0.3 miles northwest of the intersection with Wakea Avenue, Lono Avenue intersects Kamehameha Avenue. At this signalized intersection the northbound approach of Lono Avenue has three lanes that serve all traffic movements while the southbound approach has two lane that serve all traffic movements. The Kamehameha Avenue approaches to this intersection have three lanes that serve left-turn, through, and right-turn traffic movements.

C. Traffic Volumes and Conditions

1. General

a. Field Investigation

A field investigation was conducted on February 24-26, 2004 and consisted of manual turning movement count and 24-hour mechanical count surveys along Lono Avenue. The manual turning movement count surveys were conducted between the morning peak hours of 7:00 AM and 9:00 AM, and the afternoon peak hours of 3:00 PM and 5:00 PM at the following intersections:

- Puunene Avenue and Kamehameha Avenue
- Puunene Avenue and Wakea Avenue
- Lono Avenue and Wakea Avenue
- Lono Avenue and Kamehameha Avenue

Appendix A includes the existing traffic count data.

b. Capacity Analysis Methodology

The highway capacity analysis performed in this study is based upon procedures presented in the "Highway Capacity Manual", Transportation Research Board, 2000, and the "Highway Capacity Software", developed by the Federal Highway Administration. The analysis is based on the concept of Level of Service (LOS).

LOS is a quantitative and qualitative assessment of traffic operations. Levels of Service are defined by LOS "A" through "F"; LOS "A" representing ideal or free-flow traffic operating conditions and LOS "F" unacceptable or potentially congested traffic operating conditions.

"Volume-to-Capacity" (v/c) ratio is another measure indicating the relative traffic demand to the road carrying capacity. A v/c ratio of one (1.00) indicates that the roadway is operating at or near capacity. A v/c ratio of greater than 1.00 indicates that the traffic demand

exceeds the road's carrying capacity. The LOS definitions are included in Appendix B.

2. Existing Peak Hour Traffic

a. General

Figures 3 and 4 show the existing AM and PM peak hour traffic volumes and operating traffic conditions. The AM peak hour of traffic generally occurs between 7:15 AM and 8:15 AM in the vicinity of the proposed project. In the afternoon, the PM peak hour of traffic generally occurs between the hours of 3:45 PM and 4:45 PM. Although the peak hours of traffic generally occurs around the same time periods at each of the study intersections, the absolute commuter peak hour time periods for each intersection may differ slightly as shown in Table 1.

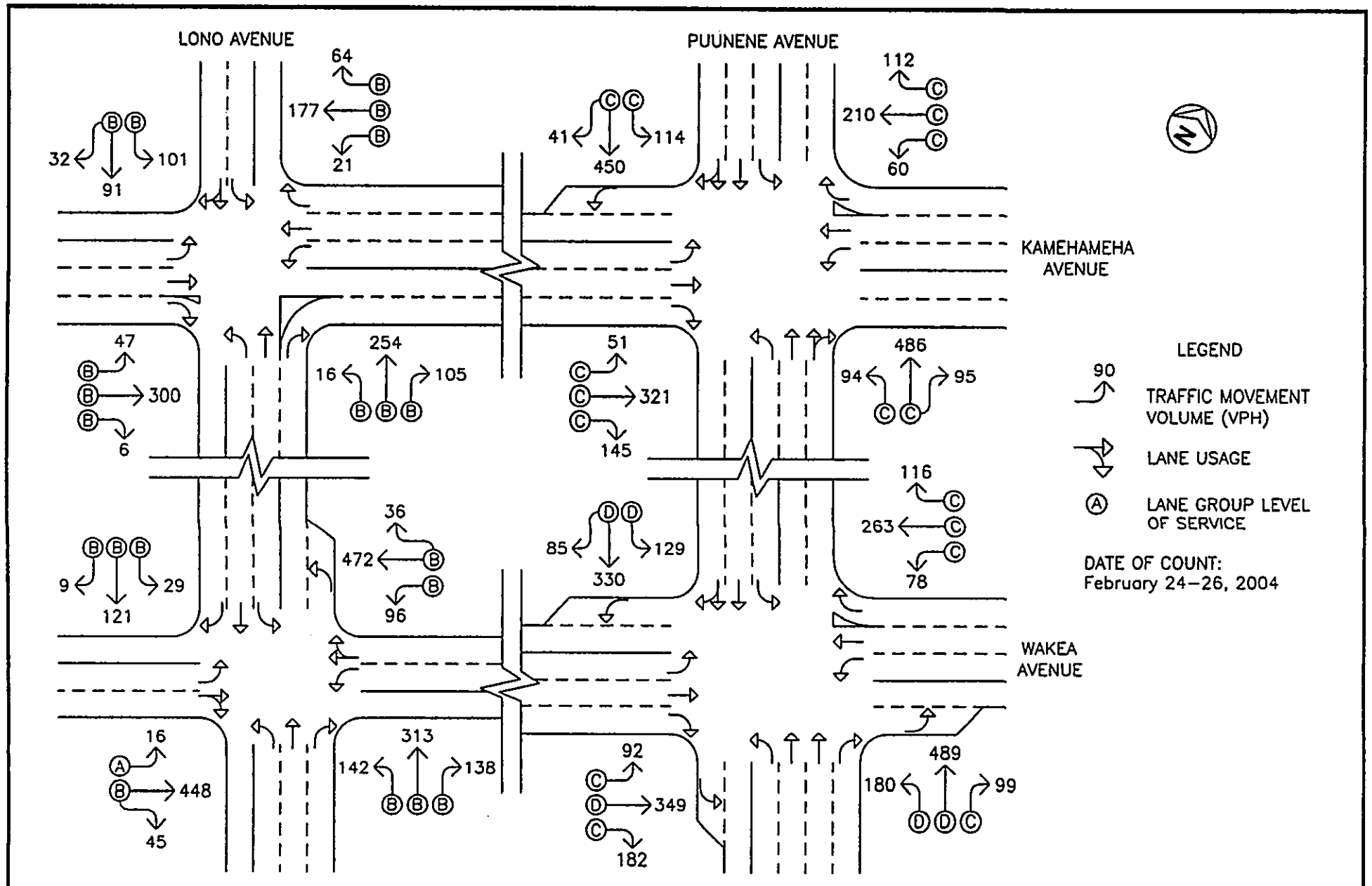
Table 1: Peak Hours of Traffic

Intersection	AM Peak	PM Peak
Puunene Ave/ Kamehameha Ave	7:30 AM-8:30 AM	3:45 PM-4:45 PM
Puunene Ave/Wakea Ave	7:15 AM-8:15 AM	3:45 PM-4:45 PM
Lono Ave/Wakea Ave	7:15 AM-8:15 AM	4:00 PM-5:00 PM
Lono Ave/ Kamehameha Ave	7:15 AM-8:15 AM	4:00 PM-5:00 PM

The analysis is based on these absolute commuter peak hour time periods for each intersection to identify the traffic impacts resulting from the proposed project. LOS calculations are included in Appendix C.

b. Puunene Avenue and Kamehameha Avenue

At the intersection with Kamehameha Avenue, Puunene Avenue carries 675 vehicles northbound and 605 vehicles southbound during the AM peak hour of traffic. During the PM peak hour, traffic volumes are heavier with 806 vehicles traveling northbound and 692



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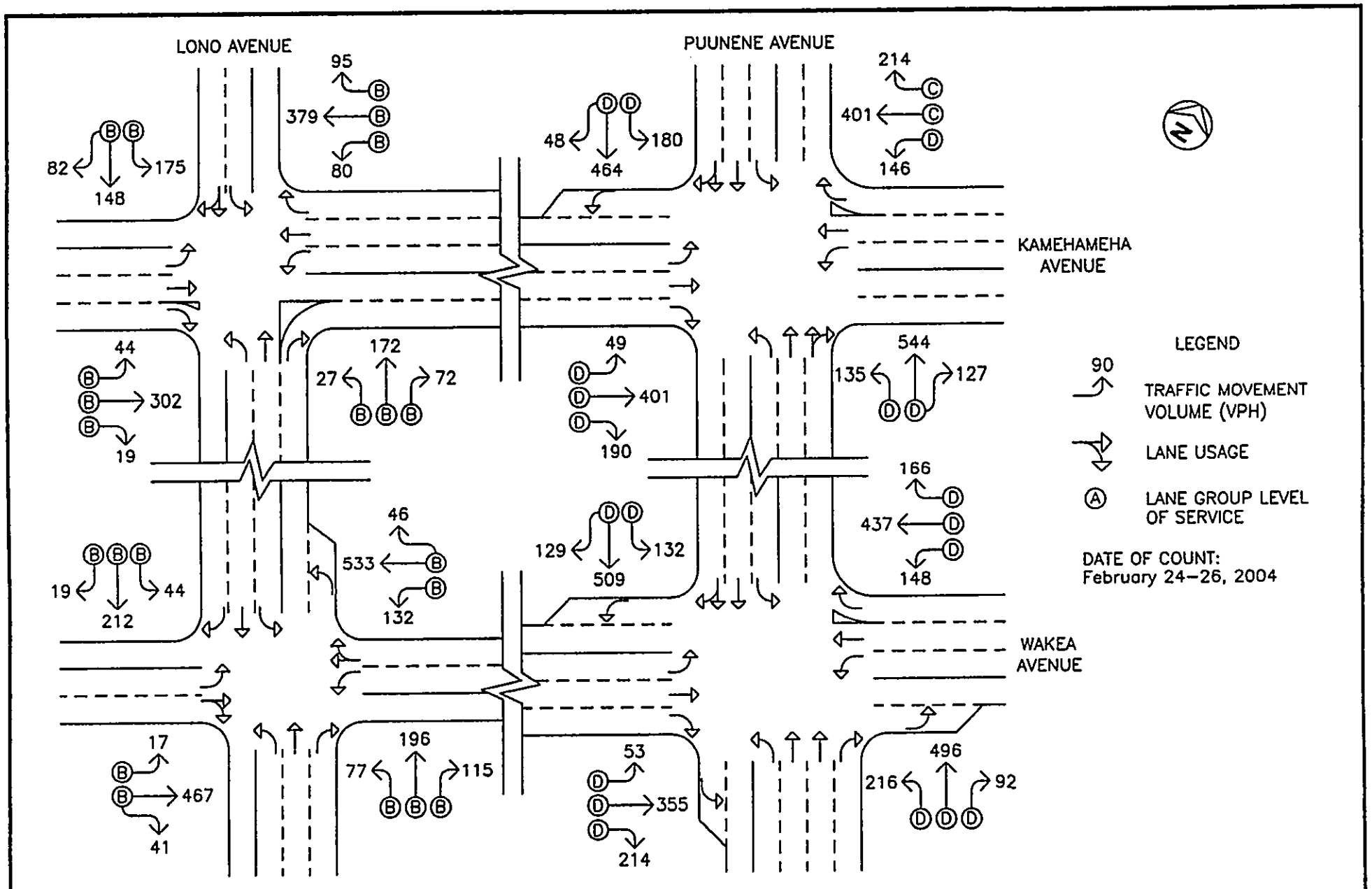
EXISTING AM PEAK HOUR OF TRAFFIC

FIGURE 3



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EXISTING PM PEAK HOUR OF TRAFFIC

FIGURE 4

vehicles traveling southbound. The critical movements on the Puunene Avenue approaches are the northbound through and right-turn traffic movement and the southbound left-turn traffic movement which operate at LOS "D" during both peak hours of traffic.

The Kamehameha Avenue approaches of this intersection carry 517 vehicles eastbound and 382 vehicles westbound during the AM peak period. During the PM peak period, traffic volumes are heavier with 640 vehicles traveling eastbound and 761 vehicles traveling westbound. The critical movement on the Kamehameha Avenue approaches is the westbound left-turn traffic movement which operates at LOS "C" and LOS "D" during the AM and PM peak hours of traffic, respectively.

Overall, the intersection of Puunene Avenue and Kamehameha Avenue operates at LOS "C" and LOS "D" during the AM and PM peak periods, respectively. These levels of service are consistent with field observations at the intersection which indicate that traffic operates adequately during both peak hours of traffic. Traffic queues would periodically form on the approaches to the intersection, but most of these queues would clear the intersection after each traffic signal cycle change.

c. Puunene Avenue and Wakea Avenue

At the intersection with Wakea Avenue, Puunene Avenue carries 765 vehicles northbound and 544 vehicles southbound at the intersection with Wakea Avenue during the AM peak hour of traffic. During the PM peak hour, traffic volumes are heavier with 804 vehicles traveling northbound and 770 vehicles traveling southbound. The critical movements on the Puunene Avenue approaches are the northbound left-turn traffic movement and the southbound through and right-turn traffic movement which operate at LOS "D" during both peak hours of traffic.

The Wakea Avenue approaches of this intersection carry 623 vehicles eastbound and 457 vehicles westbound during the AM peak period. During the PM peak period, the overall traffic volume is heavier with 622 vehicles traveling eastbound and 751 vehicles traveling westbound. The critical movement on the Wakea Avenue approaches is the westbound left-turn traffic movement which operates at LOS "C" and LOS "D" during the AM and PM peak hours of traffic, respectively.

Overall, the intersection of Puunene Avenue and Kamehameha Avenue operates at LOS "C" and LOS "D" during the AM and PM peak periods, respectively. These levels of service are consistent with field observations at the intersection which indicate that traffic operates adequately during both peak hours of traffic. Traffic queues would periodically form on the approaches to the intersection, but most of these queues would clear the intersection after each traffic signal cycle change.

d. Lono Avenue and Wakea Avenue

At the intersection with Wakea Avenue, Lono Avenue carries 593 vehicles northbound and 159 vehicles southbound at the intersection with Wakea Avenue during the AM peak hour of traffic. During the PM peak hour, the overall traffic volume is slightly less with 388 vehicles traveling northbound and 275 vehicles traveling southbound. The critical movement on the Lono Avenue approaches is the northbound through traffic movement which operates at LOS "B" during both peak hours of traffic.

The Wakea Avenue approaches of this intersection carry 509 vehicles eastbound and 604 vehicles westbound during the AM peak period. During the PM peak period, traffic volumes are heavier with 525 vehicles traveling eastbound and 711 vehicles traveling westbound. The critical movement on the Wakea Avenue approaches

is the westbound left-turn traffic movement which operates at LOS "B" during the both peak hours of traffic.

Overall, the intersection of Lono Avenue and Wakea Avenue operates at LOS "B" during both peak hours of traffic. These levels of service are consistent with field observations at the intersection which indicate that traffic operates smoothly during both peak hours of traffic. Traffic queues would occasionally form on the approaches to the intersection, but these queues would clear the intersection after each traffic signal cycle change.

e. Lono Avenue and Kamehameha Avenue

At the intersection with Kamehameha Avenue, Lono Avenue carries 375 vehicles northbound and 224 vehicles southbound at the intersection with Wakea Avenue during the AM peak hour of traffic. During the PM peak hour, the overall traffic volume is heavier with 271 vehicles traveling northbound and 405 vehicles traveling southbound. The critical movement on the Lono Avenue approaches is the southbound left-turn traffic movement which operates at LOS "B" during both peak hours of traffic.

The Kamehameha Avenue approaches of this intersection carry 353 vehicles eastbound and 262 vehicles westbound during the AM peak period. During the PM peak period, the traffic volumes are heavier with 365 vehicles traveling eastbound and 554 vehicles traveling westbound. The critical movement on the Wakea Avenue approaches is the eastbound through traffic movement which operate at LOS "B" during the both peak hours of traffic.

Overall, the intersection of Lono Avenue and Wakea Avenue operates at LOS "B" during both peak hours of traffic. These levels of service are consistent with field observations at the intersection which indicate that traffic operates smoothly during both peak hours of traffic. Traffic queues would occasionally form on the approaches to

the intersection, but these queues would clear the intersection after each traffic signal cycle change.

IV. PROJECTED TRAFFIC CONDITIONS

A. Site-Generated Traffic

1. Trip Generation Methodology

The trip generation methodology used in this study is based upon generally accepted techniques developed by the Institute of Transportation Engineers (ITE) and published in "Trip Generation, 7th Edition," 2003. The ITE trip generation rates are developed empirically by correlating the vehicle trip generation data with various land use characteristics such as the number of vehicle trips generated per dwelling unit or 1,000 square feet of development. Table 2 summarizes the project site trip generation characteristics applied to the AM and PM peak hours of traffic to measure the impact resulting from the proposed Central Maui Senior Housing and County Offices project.

Table 2: Peak Hour Trip Generation

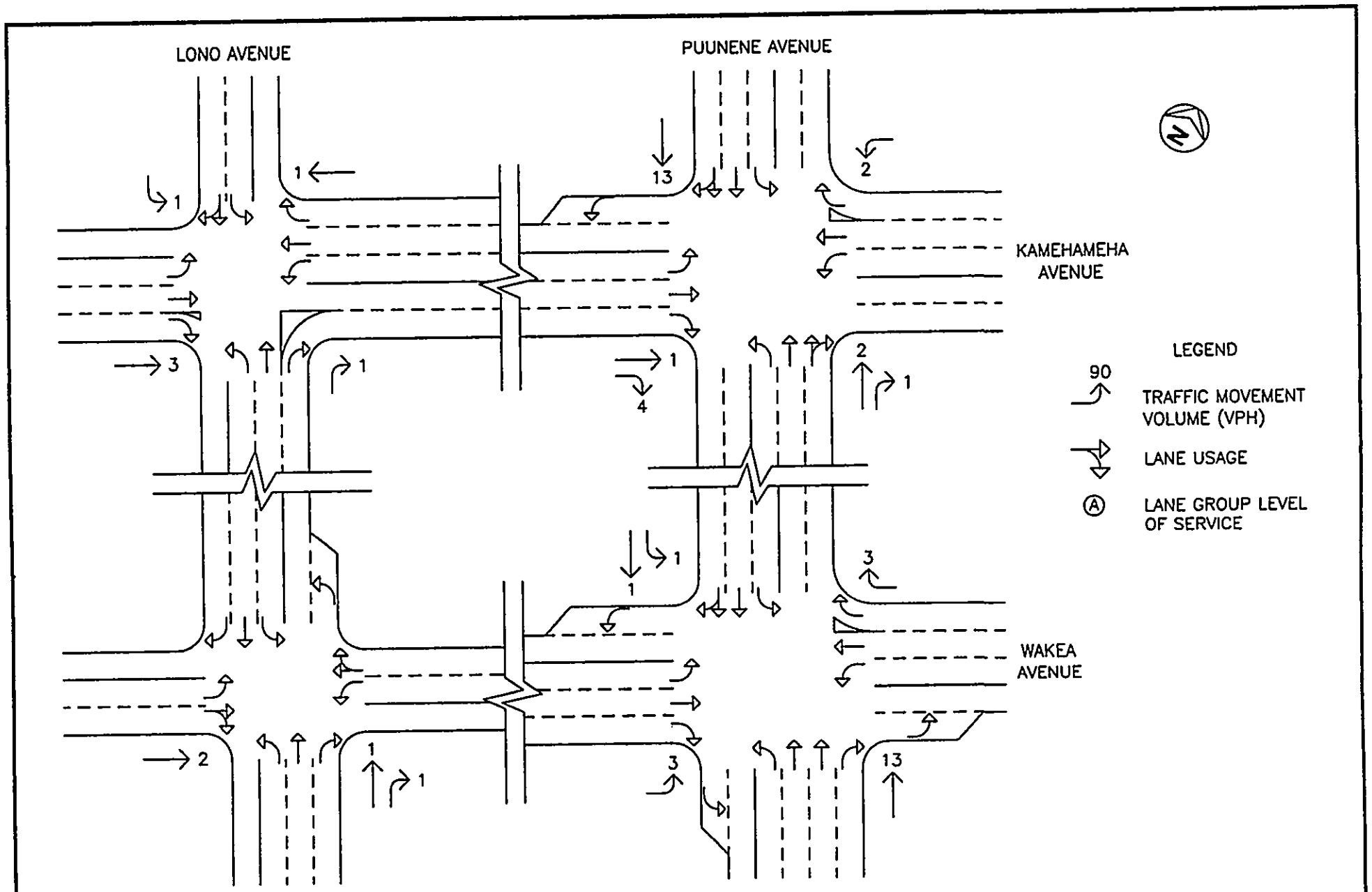
SENIOR ADULT HOUSING - ATTACHED		
INDEPENDENT VARIABLE:	Dwelling Units = 40	
		PROJECTED TRIP ENDS
AM PEAK	ENTER	1
	EXIT	2
	TOTAL	3
PM PEAK	ENTER	3
	EXIT	1
	TOTAL	4
GOVERNMENT OFFICE COMPLEX		
INDEPENDENT VARIABLE:	1,000 Sq. Ft. Floor Area = 19.155	
		PROJECTED TRIP ENDS
AM PEAK	ENTER	38
	EXIT	5
	TOTAL	43
PM PEAK	ENTER	17
	EXIT	38
	TOTAL	55

Table 2: Peak Hour Trip Generation (Cont'd)

TOTALS		
		PROJECTED TRIP ENDS
AM PEAK	ENTER	39
	EXIT	7
	TOTAL	46
PM PEAK	ENTER	20
	EXIT	39
	TOTAL	59

2. Trip Distribution

Figures 5 and 6 show the distribution of site-generated vehicular trips at the study intersections during the AM and PM peak hours. Access to the senior housing component of the proposed Central Maui Senior Housing and County Offices project would be via new driveway off of Kaulawahine Street while access to the office building component of the project would be via a new driveway off of Puunene Avenue. Vehicles accessing the project site via the Kaulawahine Street driveway were assumed to be traveling to and from Kamehameha Avenue. The directional distribution of site-generated vehicles at the intersection of Kaulawahine Street and Kamehameha Avenue and at the driveway along Puunene Avenue was based upon the prevailing directional distribution of traffic along those streets. As such, 65.9% of the vehicles utilizing the Kaulawahine Street driveway were assumed to be traveling eastbound during the AM peak period while 34.1% were assumed to be traveling westbound. During the PM peak period, 49.8% were assumed to be traveling eastbound while 50.2% were assumed to be traveling southbound. Similarly, 50.8% of the vehicles utilizing the Puunene Avenue driveway were assumed to be traveling northbound during the AM peak period while 49.2% were assumed to be traveling southbound. During the PM peak period, 50.2% were assumed to be traveling northbound while 49.8% were assumed to be traveling southbound. The distribution of traffic at the study intersections was based upon the existing distribution of traffic at those intersections.



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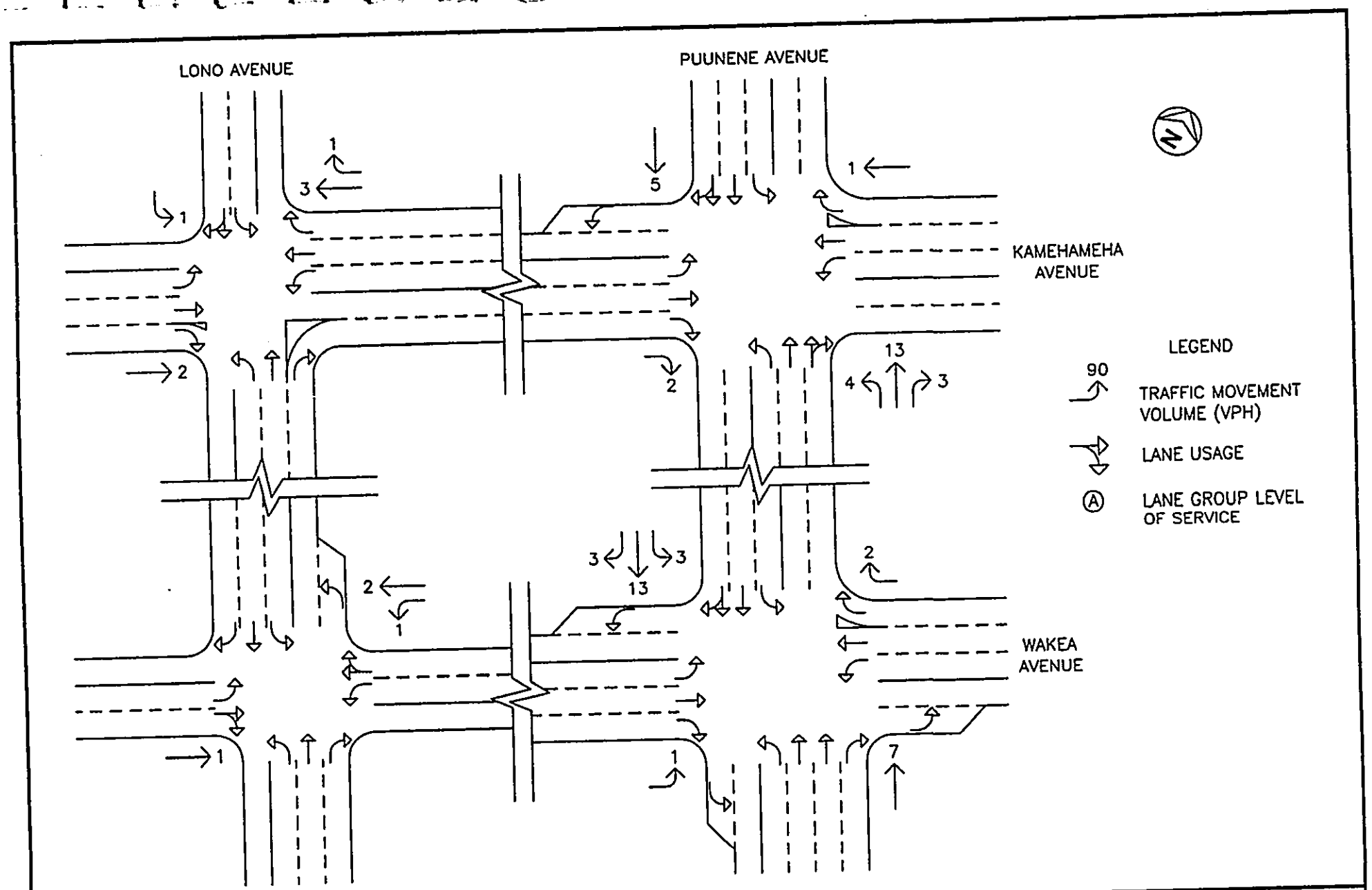
DISTRIBUTION OF SITE-GENERATED TRAFFIC AM PEAK HOUR OF TRAFFIC

FIGURE 5



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CENTRAL MAUI SENIOR HOUSING AND COUNTY OFFICES PROJECT

DISTRIBUTION OF SITE-GENERATED TRAFFIC
PM PEAK HOUR OF TRAFFIC

FIGURE 6

B. Through Traffic Forecasting Methodology

The travel forecast is based upon the average annual traffic growth rate as described in the Maui Long-Range Land Transportation Plan (MLRLTP). The MLRLTP, prepared for the State of Hawaii Department of Transportation in cooperation with the County of Maui Department of Public Works and the County of Maui Planning Department, serves as a guide for the development of the major surface transportation facilities and programs to be implemented within the County of Maui. The Plan identifies strategies and actions that will lead to the development of an integrated intermodal transportation system that facilitates the efficient movement of people and goods. Use of the MLRLTP more accurately reflects the anticipated impacts of traffic growth in the region than the use of historical traffic count data. Based upon statewide population, employment, and visitor forecasts to the Year 2020, the MLRLTP estimates that the average daily traffic in the project vicinity would increase at an average rate of 0.7% and 0.5% per year during the AM and PM peak hours of traffic, respectively. Using 2004 as the Base Year, growth factors of 1.021 and 1.015 were applied to the AM and PM existing traffic demands, respectively, to achieve the projected Year 2007 traffic demands.

C. Other Considerations

Approximately 1.3 miles southwest of the project site, a new master planned community is being developed. The Maui Lani development will include residential, commercial, recreational, and public uses. In addition, the project intest to construct schools to accommodate anticipated student enrollment increases, as well as, implement roadway improvements to increase traffic circulation in the region. The first phase of this project is scheduled to be completed in 2008 which is beyond the horizon year for this project. As such, this project is not incorporated into this study. However, once the development is complete it is expected to influence traffic growth and circulation within the project vicinity.

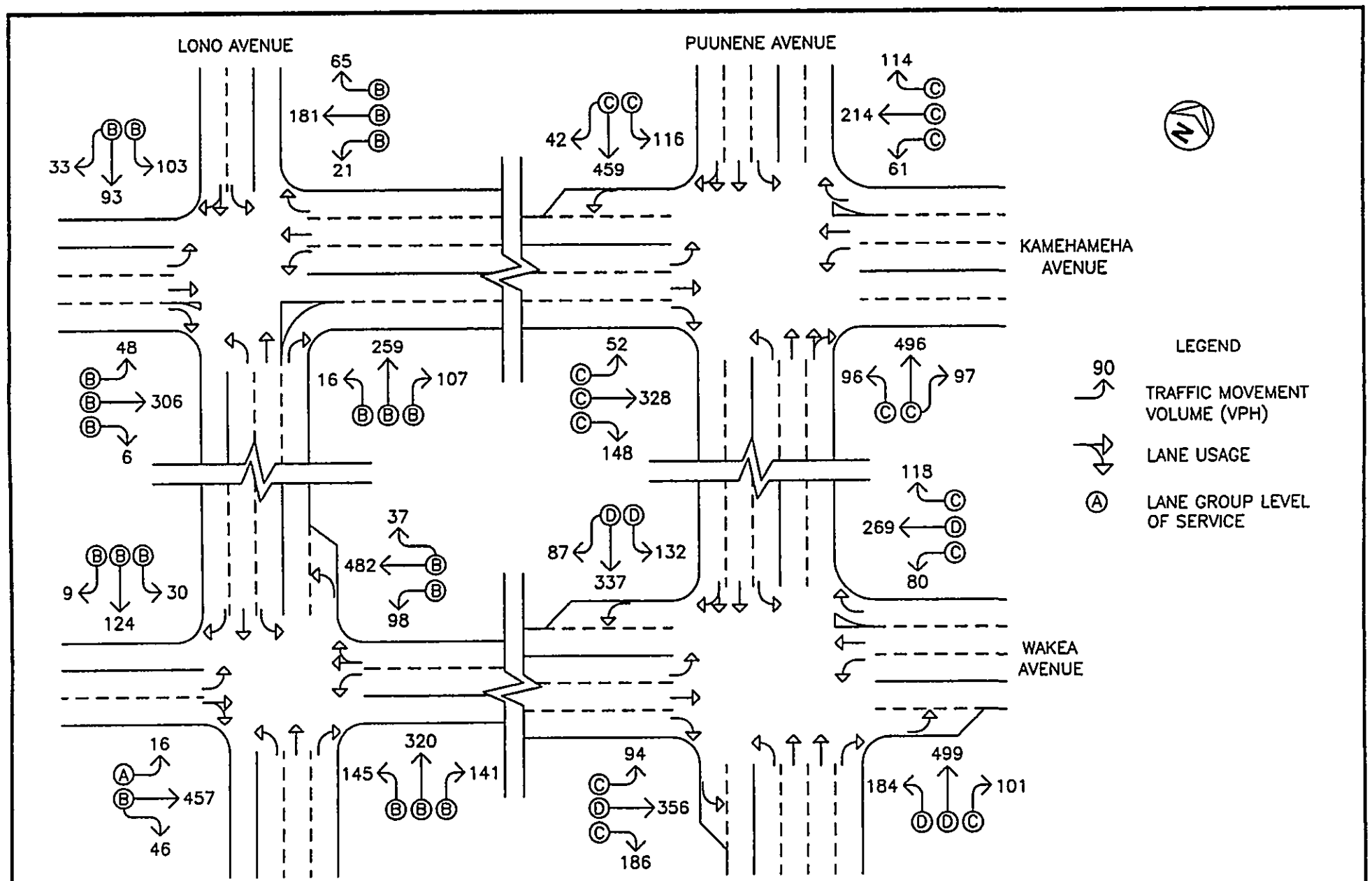
D. Total Traffic Volumes Without Project

The projected Year 2007 AM and PM peak hour traffic volumes and operating conditions without the development of the proposed Central Maui Senior Housing and County Offices project are shown on Figures 7 and 8, and summarized in Table 3. The existing levels of service are provided for comparison purposes. LOS calculations are included in Appendix D.

Table 3: Existing and Projected (Without Project) LOS Traffic Operating Conditions

Intersection	Critical Movement	AM		PM	
		Exist	Year 2007 w/out Proj	Exist	Year 2007 w/out Proj
Puunene Ave/ Kamehameha Ave	Westbound (LT)	C	C	D	D
	Northbound (TH-RT)	C	C	D	D
	Southbound (LT)	C	C	D	D
Puunene Ave/ Wakea Ave	Westbound (LT)	C	C	D	D
	Northbound (LT)	D	D	D	D
	Southbound (TH-RT)	D	D	D	D
Lono Ave/Wakea Ave	Westbound (LT)	B	B	B	B
	Northbound (LT)	B	B	B	B
Lono Ave/ Kamehameha Ave	Eastbound (TH)	B	B	B	B
	Southbound (LT)	B	B	B	B

Traffic operations within the project vicinity are expected to remain similar to existing conditions during both peak hours of traffic despite the anticipated increases in traffic along Puunene Avenue, Lono Avenue, Kamehameha Avenue, and Wakea Avenue. The critical movements at all of the study intersections are expected to operate at levels of service similar to existing traffic conditions during both peak hours of traffic.



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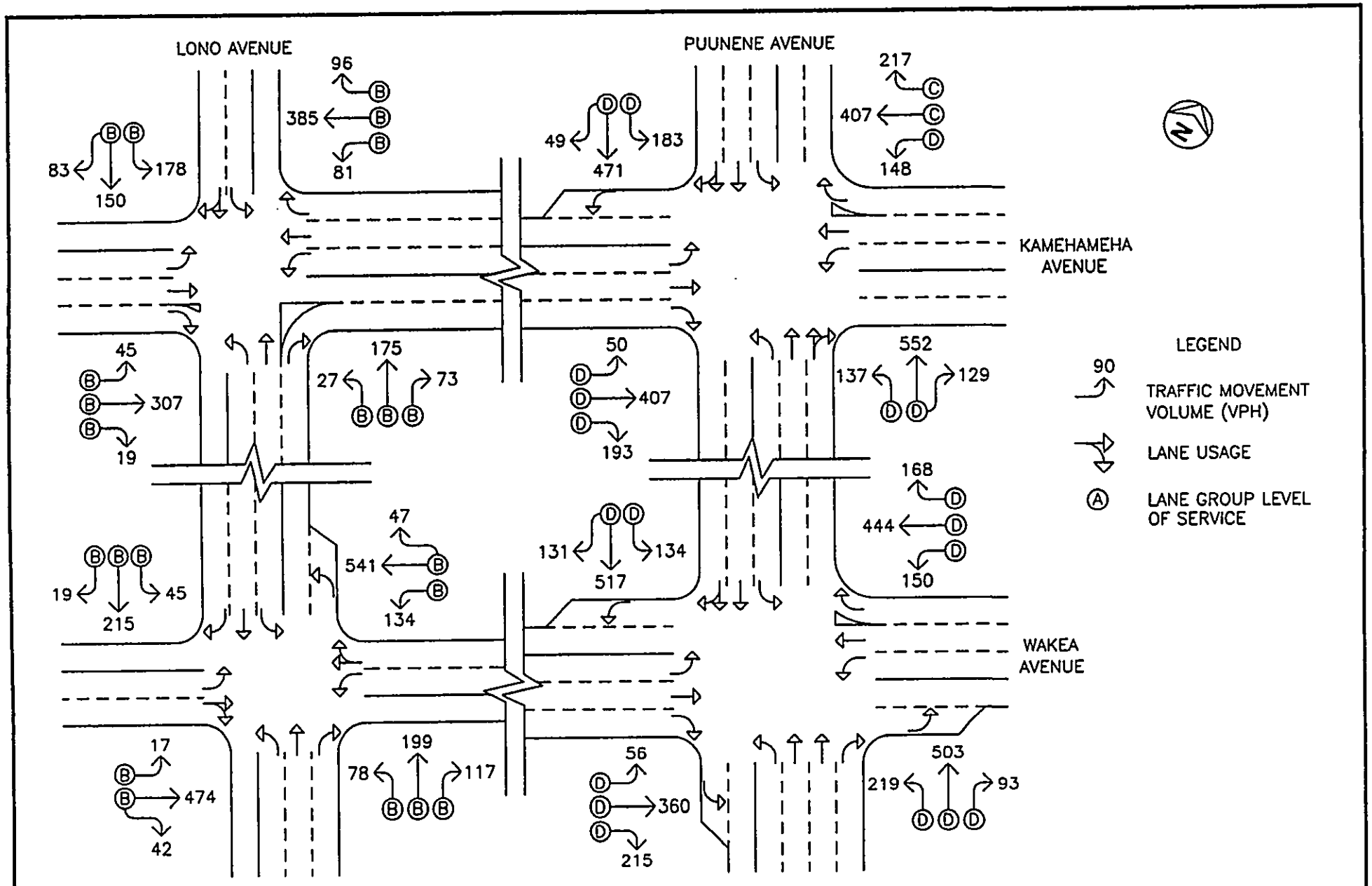
YEAR 2007 AM PEAK HOUR OF TRAFFIC WITHOUT PROJECT

FIGURE 7



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YEAR 2007 PM PEAK HOUR OF TRAFFIC WITHOUT PROJECT

FIGURE 8

E. Total Traffic Volumes With Project

Figures 9 and 10 show the Year 2007 cumulative AM and PM peak hour traffic conditions resulting from the projected external traffic and the development of the proposed Central Maui Senior Housing and County Offices project. The cumulative volumes consist of site-generated traffic superimposed over Year 2007 projected traffic demands. The traffic impacts resulting from the proposed project are addressed in the following section.

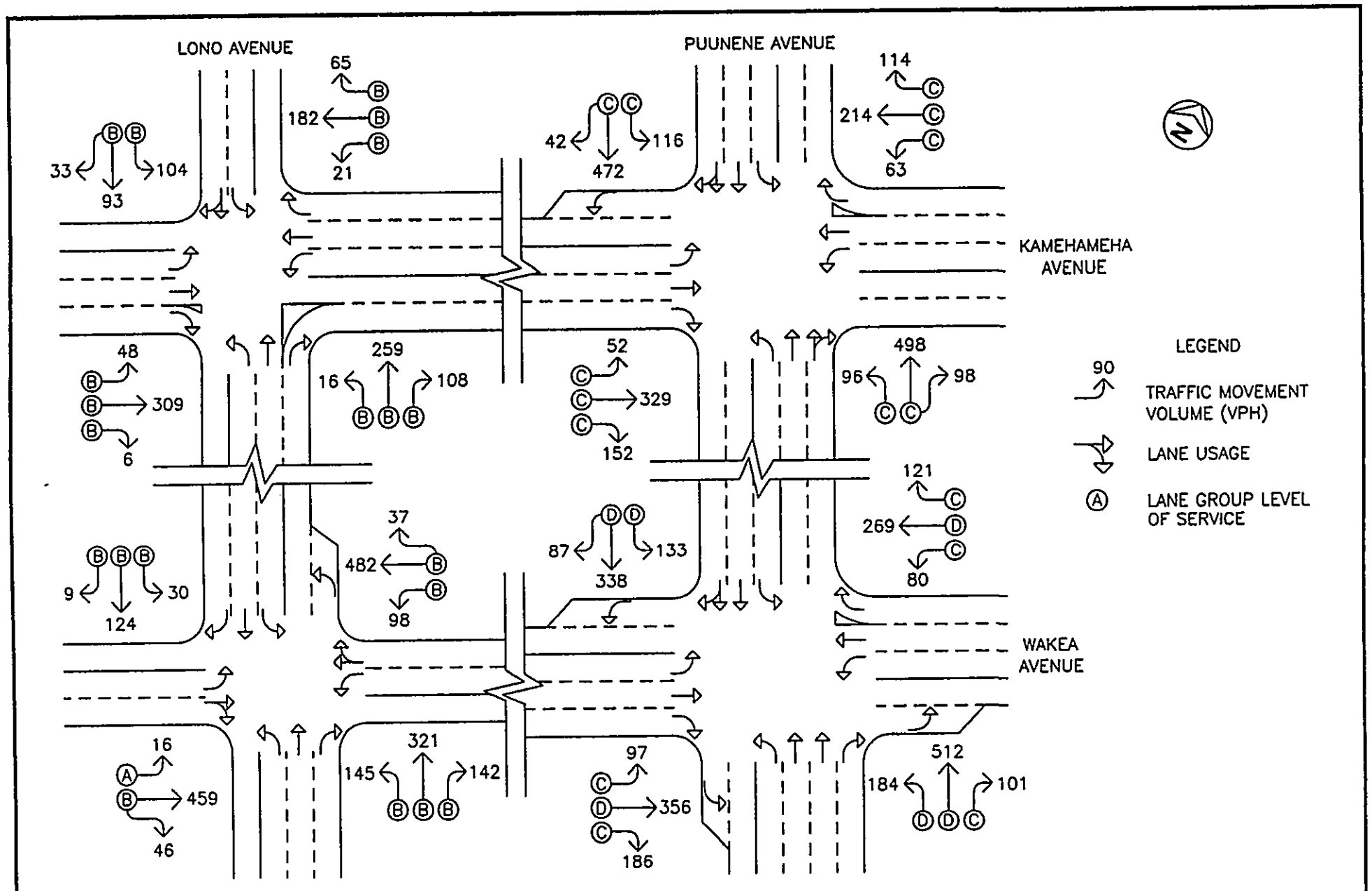
V. TRAFFIC IMPACT ANALYSIS

The Year 2007 cumulative AM and PM peak hour traffic conditions with the development of the proposed Central Maui Senior Housing and County Offices project are summarized in Table 4. The existing and projected Year 2007 (Without Project) operating conditions are provided for comparison purposes. LOS calculations are included in Appendix E.

Table 4: Existing and Projected (Without and With Project) Traffic Operating Conditions

Intersection	Critical Movement	AM			PM		
		Exist	Year 2007		Exist	Year 2007	
			w/out Proj	w/ Proj		w/out Proj.	w/ Proj
Puunene Ave/ Kamehameha Ave	Westbound (LT)	C	C	C	D	D	D
	Northbound (TH-RT)	C	C	C	D	D	D
	Southbound (LT)	C	C	C	D	D	D
Puunene Ave/ Wakea Ave	Westbound (LT)	C	C	C	D	D	D
	Northbound (LT)	D	D	D	D	D	D
	Southbound (TH-RT)	D	D	D	D	D	D
Lono Ave/Wakea Ave	Westbound (LT)	B	B	B	B	B	B
	Northbound (LT)	B	B	B	B	B	B
Lono Ave/ Kamehameha Ave	Eastbound (TH)	B	B	B	B	B	B
	Southbound (LT)	B	B	B	B	B	B

Despite the addition of site-generated vehicles to the surrounding roadways, traffic operations within the project vicinity are expected to remain similar to existing and Year



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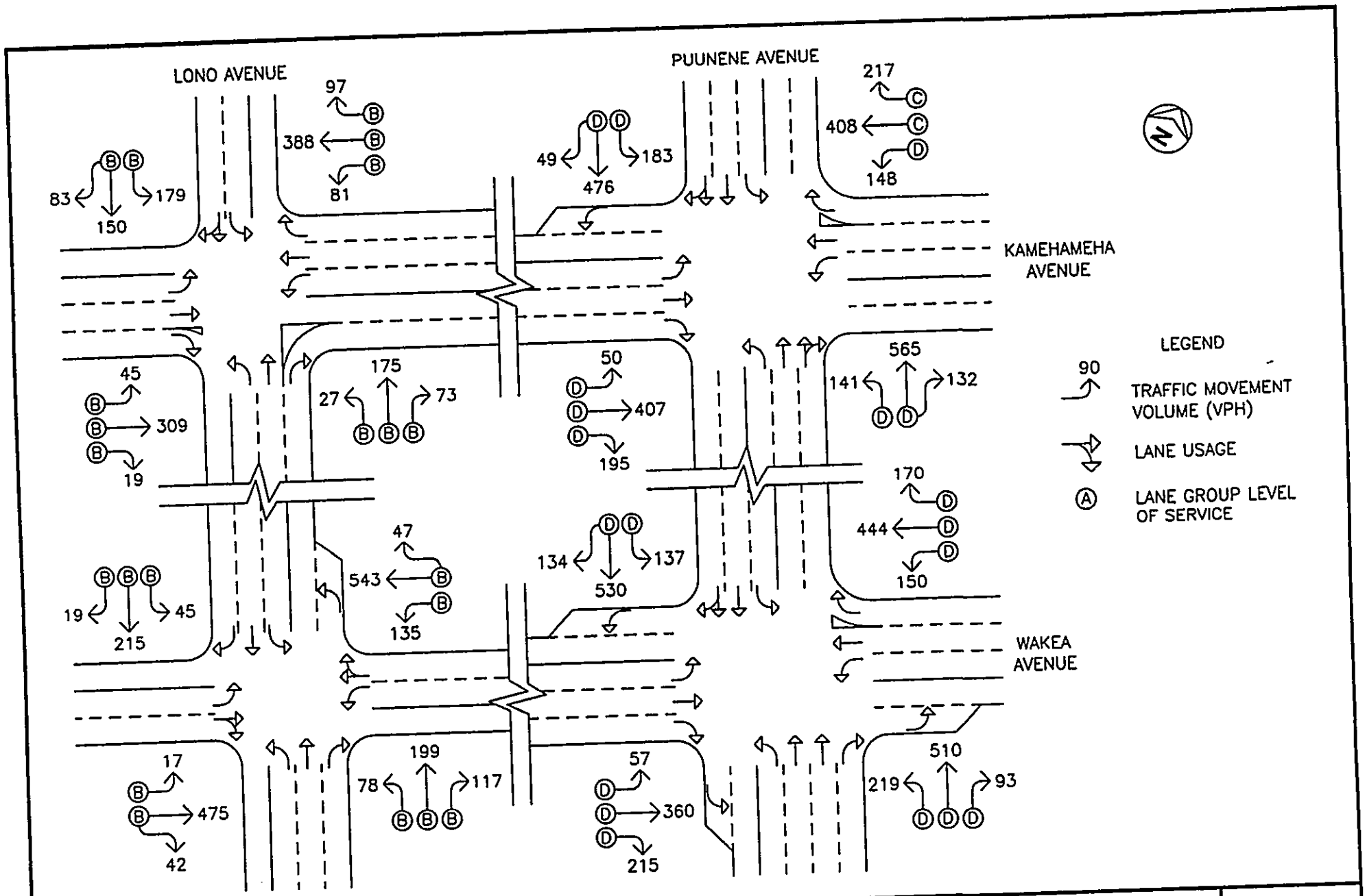
CENTRAL MAUI SENIOR HOUSING AND COUNTY OFFICES PROJECT

YEAR 2007 AM PEAK HOUR OF TRAFFIC WITH PROJECT

FIGURE 9



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CENTRAL MAUI SENIOR HOUSING AND COUNTY OFFICES PROJECT

YEAR 2007 PM PEAK HOUR OF TRAFFIC WITH PROJECT

FIGURE 10

2007 (Without Project) conditions. The critical movements at the intersection of Puunene Avenue with Kamehameha Avenue are anticipated to at LOS "C" and LOS "D" during the AM and PM peak periods, respectively, while those at the intersections of Lono Avenue with Wakea Avenue and Kamehameha Avenue are expected to remain at LOS "B" during both peak periods. Similarly, the critical movements at the intersection of Puunene Avenue with Wakea Avenue remain at LOS "C" and LOS "D" during the AM peak hour of traffic and at LOS "D" during the PM peak hour of traffic.

VI. RECOMMENDATIONS

Based on the analysis of the traffic data, the following are the recommendations of this study:

1. Provide sufficient driveway width to accommodate safe vehicle ingress and egress.

2. Provide adequate turning radii at all project driveways to avoid or minimize vehicle encroachments to oncoming traffic lanes.

3. Maintain adequate sight distances for motorists to safely enter and exit all project driveways.

4. Provide adequate turn-around area for service, delivery, and refuse collection vehicles to maneuver on the project property. Avoid vehicle-reversing maneuvers onto State and County streets.

5. Provide adequate on-site loading and off-loading service areas and prohibit off-site loading operations.

6. Provide exclusive left-turn and right-turn exit lanes for the driveway along Puunene Avenue to facilitate the movement of site-generated vehicles.

7. Provide an exclusive right-turn bay along southbound Puunene Avenue at the project driveway to minimize the impact of site-generated vehicles on the through traffic along Puunene Avenue. The length and layout of the bay to be determined during the design phase of the project.

8. Provide an exclusive left-turn bay along northbound Puunene Avenue at the project driveway to minimize the impact of site-generated vehicles on the through traffic along Puunene Avenue. The length and layout of the bay to be determined during the design phase of the project.

VII. CONCLUSION

The proposed Central Maui Senior Housing and County Offices project is not expected to have a significant impact on traffic operations in the project vicinity. The critical traffic movements at all four study intersections are expected to operate at acceptable levels of service during both peak hours of traffic. In addition, with the development of the proposed project, the total traffic volumes entering the intersections of Puunene Avenue and Lono Avenue with Kamehameha Avenue and Wakea Avenue are expected to increase by 1% or less during both peak hours of traffic. These increases in the total traffic volumes along those roadways are in the range of daily volume fluctuations and represent a minimal increase in the overall traffic volumes.

APPENDIX A

EXISTING TRAFFIC COUNT DATA

Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Counter: T-1839/T-1841
Counted By: CL/PP
Weather: Clear

File Name : kampuua
Site Code : 00000001
Start Date : 02/25/2004
Page No : 1

Groups Printed- Unshifted

	Puunene Avenue Southbound				Kamehameha Avenue Westbound				Puunene Avenue Northbound				Kamehameha Avenue Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
07:00 AM	3	84	26	113	37	51	25	113	28	78	16	122	16	66	4	86	434
07:15 AM	8	92	26	126	46	55	13	114	22	95	20	137	21	61	9	91	468
07:30 AM	11	116	24	151	25	50	12	87	19	125	15	159	44	76	10	130	527
07:45 AM	9	108	23	140	27	54	14	95	26	117	33	176	44	103	14	161	572
Total	31	400	99	530	135	210	64	409	95	415	84	594	125	306	37	468	2001
08:00 AM	6	136	33	175	35	57	19	111	30	127	25	182	27	80	17	124	592
08:15 AM	15	90	34	139	25	49	15	89	20	117	21	158	30	62	10	102	488
08:30 AM	12	85	40	137	37	40	19	96	12	131	26	169	32	58	11	101	503
08:45 AM	7	90	28	125	39	46	24	109	23	119	26	168	32	44	18	94	496
Total	40	401	135	576	136	192	77	405	85	494	98	677	121	244	56	421	2079
Grand Total	71	801	234	1106	271	402	141	814	180	909	182	1271	246	550	93	889	4080
Apprch %	6.4	72.4	21.2		33.3	49.4	17.3		14.2	71.5	14.3		27.7	61.9	10.5		
Total %	1.7	19.6	5.7	27.1	6.6	9.9	3.5	20.0	4.4	22.3	4.5	31.2	6.0	13.5	2.3	21.8	

	Puunene Avenue Southbound				Kamehameha Avenue Westbound				Puunene Avenue Northbound				Kamehameha Avenue Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Intersection	07:30 AM																
Volume	41	450	114	605	112	210	60	382	95	486	94	675	145	321	51	517	2179
Percent	6.8	74.4	18.8		29.3	55.0	15.7		14.1	72.0	13.9		28.0	62.1	9.9		
08:00 Volume	6	136	33	175	35	57	19	111	30	127	25	182	27	80	17	124	592
Peak Factor																	0.920
High Int.	08:00 AM				08:00 AM				08:00 AM				07:45 AM				
Volume	6	136	33	175	35	57	19	111	30	127	25	182	44	103	14	161	
Peak Factor				0.864				0.860				0.927				0.803	

Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Counter: T-1839/T-1841
Counted By: CI/PP
Weather: Clear

File Name : kampuup
Site Code : 00000001
Start Date : 02/24/2004
Page No : 1

Groups Printed- Unshifted

	Puunene Avenue Southbound				Kamehameha Avenue Westbound				Puunene Avenue Northbound				Kamehameha Avenue Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
03:00 PM	7	103	33	143	58	81	42	181	26	106	44	176	38	108	28	174	674
03:15 PM	6	90	38	134	68	113	28	209	25	133	34	192	44	105	19	168	703
03:30 PM	14	103	38	155	67	84	40	191	23	111	28	162	39	87	17	143	651
03:45 PM	18	124	45	187	50	95	34	179	35	142	26	203	52	93	13	158	727
Total	45	420	154	619	243	373	144	760	109	492	132	733	173	393	77	643	2755
04:00 PM	9	125	51	185	46	125	37	208	28	147	36	211	55	122	14	191	795
04:15 PM	7	114	49	170	66	95	31	192	32	138	35	205	40	80	7	127	694
04:30 PM	14	101	35	150	52	86	44	182	32	117	38	187	43	106	15	164	683
04:45 PM	19	102	40	161	37	87	36	160	19	125	32	176	47	111	16	174	671
Total	49	442	175	666	201	393	148	742	111	527	141	779	185	419	52	656	2843
Grand Total	94	862	329	1285	444	766	292	1502	220	1019	273	1512	358	812	129	1299	5598
Apprch %	7.3	67.1	25.6		29.6	51.0	19.4		14.6	67.4	18.1		27.6	62.5	9.9		
Total %	1.7	15.4	5.9	23.0	7.9	13.7	5.2	26.8	3.9	18.2	4.9	27.0	6.4	14.5	2.3	23.2	

	Puunene Avenue Southbound				Kamehameha Avenue Westbound				Puunene Avenue Northbound				Kamehameha Avenue Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 03:00 PM to 04:45 PM - Peak 1 of 1																	
Intersection	03:45 PM																
Volume	48	464	180	692	214	401	146	761	127	544	135	806	190	401	49	640	2899
Percent	6.9	67.1	26.0		28.1	52.7	19.2		15.8	67.5	16.7		29.7	62.7	7.7		
04:00 Volume	9	125	51	185	46	125	37	208	28	147	36	211	55	122	14	191	795
Peak Factor																	0.912
High Int.	03:45 PM				04:00 PM				04:00 PM				04:00 PM				
Volume	18	124	45	187	46	125	37	208	28	147	36	211	55	122	14	191	
Peak Factor				0.925				0.915				0.955				0.838	

Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Counter: D1-0525/D1-0527
Counted By: IQ/GMT
Weather: Clear

File Name : puuwaka
Site Code : 00000045
Start Date : 02/25/2004
Page No : 1

Groups Printed- Unshifted

	Puunene Avenue Southbound				Wakea Avenue Westbound				Puunene Avenue Northbound				Wakea Avenue Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
07:00 AM	9	64	18	91	18	68	9	95	15	87	45	147	55	74	13	142	475
07:15 AM	13	75	15	103	23	68	18	109	25	104	41	170	57	78	20	155	537
07:30 AM	16	85	35	136	22	64	13	99	17	114	44	175	44	90	27	161	571
07:45 AM	36	78	37	151	32	67	21	120	35	140	62	237	37	84	24	145	653
Total	74	302	105	481	95	267	61	423	92	445	192	729	193	326	84	603	2236
08:00 AM	20	92	42	154	39	64	26	129	22	131	33	186	44	97	21	162	631
08:15 AM	14	71	35	120	38	65	26	129	26	102	44	172	29	58	10	97	518
08:30 AM	17	72	29	118	35	53	15	103	17	122	41	180	37	82	15	134	535
08:45 AM	9	96	28	133	37	75	15	127	24	117	55	196	33	70	9	112	568
Total	60	331	134	525	149	257	82	488	89	472	173	734	143	307	55	505	2252
Grand Total	134	633	239	1006	244	524	143	911	181	917	365	1463	336	633	139	1108	4488
Apprch %	13.3	62.9	23.8		26.8	57.5	15.7		12.4	62.7	24.9		30.3	57.1	12.5		
Total %	3.0	14.1	5.3	22.4	5.4	11.7	3.2	20.3	4.0	20.4	8.1	32.6	7.5	14.1	3.1	24.7	

	Puunene Avenue Southbound				Wakea Avenue Westbound				Puunene Avenue Northbound				Wakea Avenue Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Intersection	07:15 AM																2392
Volume	85	330	129	544	116	263	78	457	99	489	180	768	182	349	92	623	
Percent	15.6	60.7	23.7		25.4	57.5	17.1		12.9	63.7	23.4		29.2	56.0	14.8		
07:45 Volume	36	78	37	151	32	67	21	120	35	140	62	237	37	84	24	145	653
Peak Factor																	0.916
High Int.	08:00 AM				08:00 AM				07:45 AM				08:00 AM				
Volume	20	92	42	154	39	64	26	129	35	140	62	237	44	97	21	162	
Peak Factor				0.883				0.886				0.810				0.961	

Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Counter: D1-0525/D1-0527
Counted By: IQ/GMT
Weather: Clear

File Name : puuwakp
Site Code : 00000045
Start Date : 02/24/2004
Page No : 1

Groups Printed- Unshifted

	Puunene Avenue Southbound				Wakea Avenue Westbound				Puunene Avenue Northbound				Wakea Avenue Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
03:00 PM	19	109	31	159	41	89	33	163	21	137	46	204	49	91	10	150	676
03:15 PM	19	111	38	168	41	90	49	180	17	111	36	164	47	82	17	146	658
03:30 PM	19	103	34	156	47	109	37	193	30	121	46	197	40	102	12	154	700
03:45 PM	24	138	29	191	47	119	37	203	19	126	52	197	41	102	14	157	748
Total	81	461	132	674	176	407	156	739	87	495	180	762	177	377	53	607	2782
04:00 PM	38	132	34	204	41	110	47	198	28	125	45	198	58	90	10	158	758
04:15 PM	33	113	38	184	40	98	29	167	21	132	59	212	56	80	12	148	711
04:30 PM	34	126	31	191	38	110	35	183	24	113	60	197	59	83	17	159	730
04:45 PM	29	122	32	183	29	106	39	174	21	128	59	208	60	88	18	166	731
Total	134	493	135	762	148	424	150	722	94	498	223	815	233	341	57	631	2930
Grand Total	215	954	267	1436	324	831	306	1461	181	993	403	1577	410	718	110	1238	5712
Apprch %	15.0	66.4	18.6		22.2	56.9	20.9		11.5	63.0	25.6		33.1	58.0	8.9		
Total %	3.8	16.7	4.7	25.1	5.7	14.5	5.4	25.6	3.2	17.4	7.1	27.6	7.2	12.6	1.9	21.7	

	Puunene Avenue Southbound				Wakea Avenue Westbound				Puunene Avenue Northbound				Wakea Avenue Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 03:00 PM to 04:45 PM - Peak 1 of 1																	
Intersection	03:45 PM																
Volume	129	509	132	770	166	437	148	751	92	496	216	804	214	355	53	622	2947
Percent	16.8	66.1	17.1		22.1	58.2	19.7		11.4	61.7	26.9		34.4	57.1	8.5		
04:00 Volume	38	132	34	204	41	110	47	198	28	125	45	198	58	90	10	158	758
Peak Factor																	0.972
High Int.	04:00 PM				03:45 PM				04:15 PM				04:30 PM				
Volume	38	132	34	204	47	119	37	203	21	132	59	212	59	83	17	159	
Peak Factor				0.944				0.925				0.948				0.978	

Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Counter: D1-0525/D1-0527
Counted By: IQ/GMT
Weather: Clear

File Name : kamlona
Site Code : 00004545
Start Date : 02/26/2004
Page No : 1

Groups Printed- Unshifted

	Lono Avenue Southbound				Kamehameha Avenue Westbound				Lono Avenue Northbound				Kamehameha Avenue Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
07:00 AM	7	24	16	47	8	44	8	60	23	35	2	60	2	50	12	64	231
07:15 AM	9	18	18	45	13	44	5	62	21	50	3	74	4	55	10	69	250
07:30 AM	3	33	20	56	10	44	4	58	24	62	6	92	0	84	7	91	297
07:45 AM	13	22	33	68	22	40	3	65	37	90	4	131	0	100	18	118	382
Total	32	97	87	216	53	172	20	245	105	237	15	357	6	289	47	342	1160
08:00 AM	7	18	30	55	19	49	9	77	23	52	3	78	2	61	12	75	285
08:15 AM	12	24	24	60	23	53	2	78	12	31	1	44	1	50	11	62	244
08:30 AM	7	15	28	50	27	39	3	69	15	26	3	44	1	41	10	52	215
08:45 AM	10	22	28	60	18	38	3	59	22	23	3	48	1	52	17	70	237
Total	36	79	110	225	87	179	17	283	72	132	10	214	5	204	50	259	981
Grand Total	68	176	197	441	140	351	37	528	177	369	25	571	11	493	97	601	2141
Apprch %	15.4	39.9	44.7		26.5	66.5	7.0		31.0	64.6	4.4		1.8	82.0	16.1		
Total %	3.2	8.2	9.2	20.6	6.5	16.4	1.7	24.7	8.3	17.2	1.2	26.7	0.5	23.0	4.5	28.1	

	Lono Avenue Southbound				Kamehameha Avenue Westbound				Lono Avenue Northbound				Kamehameha Avenue Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Intersection	07:15 AM																
Volume	32	91	101	224	64	177	21	262	105	254	16	375	6	300	47	353	1214
Percent	14.3	40.6	45.1		24.4	67.6	8.0		28.0	67.7	4.3		1.7	85.0	13.3		
07:45 Volume	13	22	33	68	22	40	3	65	37	90	4	131	0	100	18	118	382
Peak Factor																	0.795
High Int.	07:45 AM				08:00 AM				07:45 AM				07:45 AM				
Volume	13	22	33	68	19	49	9	77	37	90	4	131	0	100	18	118	
Peak Factor				0.824				0.851				0.716				0.748	

Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Counter: D1-0525/D1-0527
Counted By: IQ/GMT
Weather: Clear

File Name : kamlonp
Site Code : 00004545
Start Date : 02/25/2004
Page No : 1

Groups Printed- Unshifted

	Lono Avenue Southbound				Kamehameha Avenue Westbound				Lono Avenue Northbound				Kamehameha Avenue Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
03:00 PM	20	25	54	99	23	72	10	105	15	52	3	70	2	74	8	84	358
03:15 PM	10	32	35	77	16	68	17	101	20	30	9	59	3	86	9	98	335
03:30 PM	14	30	43	87	23	84	10	117	31	31	8	70	1	91	17	109	383
03:45 PM	17	29	51	97	30	90	19	139	27	47	5	79	5	77	7	89	404
Total	61	116	183	360	92	314	56	462	93	160	25	278	11	328	41	380	1480
04:00 PM	15	35	34	84	27	106	18	151	13	40	9	62	3	75	12	90	387
04:15 PM	20	33	46	99	24	84	20	128	14	51	6	71	8	79	11	98	396
04:30 PM	21	39	49	109	23	86	26	135	21	44	5	70	6	73	11	90	404
04:45 PM	26	41	46	113	21	103	16	140	24	37	7	68	2	75	10	87	408
Total	82	148	175	405	95	379	80	554	72	172	27	271	19	302	44	365	1595
Grand Total	143	264	358	765	187	693	136	1016	165	332	52	549	30	630	85	745	3075
Apprch %	18.7	34.5	46.8		18.4	68.2	13.4		30.1	60.5	9.5		4.0	84.6	11.4		
Total %	4.7	8.6	11.6	24.9	6.1	22.5	4.4	33.0	5.4	10.8	1.7	17.9	1.0	20.5	2.8	24.2	

	Lono Avenue Southbound				Kamehameha Avenue Westbound				Lono Avenue Northbound				Kamehameha Avenue Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 03:00 PM to 04:45 PM - Peak 1 of 1																	
Intersection	04:00 PM																
Volume	82	148	175	405	95	379	80	554	72	172	27	271	19	302	44	365	1595
Percent	20.2	36.5	43.2		17.1	68.4	14.4		26.6	63.5	10.0		5.2	82.7	12.1		
04:45 Volume	26	41	46	113	21	103	16	140	24	37	7	68	2	75	10	87	408
Peak Factor																	0.977
High Int.	04:45 PM				04:00 PM				04:15 PM				04:15 PM				
Volume	26	41	46	113	27	106	18	151	14	51	6	71	8	79	11	98	
Peak Factor				0.896				0.917				0.954				0.931	

Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Counter: T-1839/T-1841
Counted By: CL/MAF
Weather: Clear

File Name : lonwaka
Site Code : 00000005
Start Date : 02/26/2004
Page No : 1

Groups Printed- Unshifted

	Lono Avenue Southbound				Wakea Avenue Westbound				Lono Avenue Northbound				Wakea Avenue Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
07:00 AM	2	38	7	47	2	76	19	97	18	64	24	106	7	107	3	117	367
07:15 AM	3	30	11	44	2	120	29	151	30	64	42	136	9	105	1	115	446
07:30 AM	2	40	4	46	11	114	30	155	47	82	54	183	16	119	5	140	524
07:45 AM	3	30	6	39	12	116	19	147	39	112	33	184	16	123	6	145	515
Total	10	138	28	176	27	426	97	550	134	322	153	609	48	454	15	517	1852
08:00 AM	1	21	8	30	11	122	18	151	22	55	13	90	4	101	4	109	380
08:15 AM	1	21	7	29	7	82	10	99	20	41	12	73	4	79	0	83	284
08:30 AM	1	17	5	23	5	98	21	124	15	37	16	68	2	83	2	87	302
08:45 AM	2	25	9	36	7	103	15	125	14	40	12	66	3	80	2	85	312
Total	5	84	29	118	30	405	64	499	71	173	53	297	13	343	8	364	1278
Grand Total	15	222	57	294	57	831	161	1049	205	495	206	906	61	797	23	881	3130
Apprch %	5.1	75.5	19.4		5.4	79.2	15.3		22.6	54.6	22.7		6.9	90.5	2.6		
Total %	0.5	7.1	1.8	9.4	1.8	26.5	5.1	33.5	6.5	15.8	6.6	28.9	1.9	25.5	0.7	28.1	

	Lono Avenue Southbound				Wakea Avenue Westbound				Lono Avenue Northbound				Wakea Avenue Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Intersection	07:15 AM																
Volume	9	121	29	159	36	472	96	604	138	313	142	593	45	448	16	509	1865
Percent	5.7	76.1	18.2		6.0	78.1	15.9		23.3	52.8	23.9		8.8	88.0	3.1		
07:30 Volume	2	40	4	46	11	114	30	155	47	82	54	183	16	119	5	140	524
Peak Factor																	0.890
High Int.	07:30 AM				07:30 AM				07:45 AM				07:45 AM				
Volume	2	40	4	46	11	114	30	155	39	112	33	184	16	123	6	145	
Peak Factor				0.864				0.974				0.806				0.878	

Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Counter: T-1839/T-1841
Counted By: CL/MAF
Weather: Clear

File Name : lonwakp
Site Code : 00000005
Start Date : 02/25/2004
Page No : 1

Groups Printed- Unshifted

	Lono Avenue Southbound				Wakea Avenue Westbound				Lono Avenue Northbound				Wakea Avenue Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
03:00 PM	2	39	10	51	10	141	29	180	17	54	13	84	8	107	4	119	434
03:15 PM	3	36	12	51	8	108	23	139	27	45	18	90	11	112	0	123	403
03:30 PM	3	35	13	51	11	137	25	173	30	47	13	90	15	118	14	147	461
03:45 PM	2	49	5	56	9	115	23	147	23	59	11	93	15	106	5	126	422
Total	10	159	40	209	38	501	100	639	97	205	55	357	49	443	23	515	1720
04:00 PM	5	45	10	60	16	137	27	180	34	43	15	92	6	127	1	134	466
04:15 PM	4	57	7	68	8	133	31	172	23	59	17	99	13	130	3	146	485
04:30 PM	2	55	12	69	12	125	40	177	35	42	24	101	11	105	3	119	466
04:45 PM	8	55	15	78	10	138	34	182	23	52	21	96	11	105	10	126	482
Total	19	212	44	275	46	533	132	711	115	196	77	388	41	467	17	525	1899
Grand Total	29	371	84	484	84	1034	232	1350	212	401	132	745	90	910	40	1040	3619
Apprch %	6.0	76.7	17.4		6.2	76.6	17.2		28.5	53.8	17.7		8.7	87.5	3.8		
Total %	0.8	10.3	2.3	13.4	2.3	28.6	6.4	37.3	5.9	11.1	3.6	20.6	2.5	25.1	1.1	28.7	

	Lono Avenue Southbound				Wakea Avenue Westbound				Lono Avenue Northbound				Wakea Avenue Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 03:00 PM to 04:45 PM - Peak 1 of 1																	
Intersection	04:00 PM																
Volume	19	212	44	275	46	533	132	711	115	196	77	388	41	467	17	525	1899
Percent	6.9	77.1	16.0		6.5	75.0	18.6		29.6	50.5	19.8		7.8	89.0	3.2		
04:15 Volume	4	57	7	68	8	133	31	172	23	59	17	99	13	130	3	146	485
Peak Factor																	0.979
High Int.	04:45 PM				04:45 PM				04:30 PM				04:15 PM				
Volume	8	55	15	78	10	138	34	182	35	42	24	101	13	130	3	146	
Peak Factor				0.881				0.977				0.960				0.899	

Wilson Okamoto
1907 S. Beretania St., #400
Honolulu, HI 96826

lel : Maui Central Housing
: SUNNY
: 0349

Site: 1
Date: 02/24/04
Day: Tuesday

erval	sb			nb			Combined		
gin	AM	PM		AM	PM		AM	PM	
00	•	49	150	•	40	171	•	89	321
15	•	40		•	43		•	83	
12:30	•	26		•	46		•	72	
12:45	•	35		•	42		•	77	
00	•	40	138	•	40	176	•	80	314
15	•	24		•	46		•	70	
01:30	•	32		•	36		•	68	
01:45	•	42		•	54		•	96	
00	•	37	164	•	62	276	•	99	440
15	•	35		•	94		•	129	
02:30	•	46		•	68		•	114	
02:45	•	46		•	52		•	98	
00	•	39	180	•	60	240	•	99	420
15	•	43		•	66		•	109	
03:30	•	48		•	42		•	90	
03:45	•	50		•	72		•	122	
00	•	58	266	•	99	304	•	157	570
15	•	66		•	74		•	140	
30	•	70		•	72		•	142	
04:45	•	72		•	59		•	131	
00	•	60	219	•	73	255	•	133	474
15	•	51		•	50		•	101	
30	•	55		•	66		•	121	
05:45	•	53		•	66		•	119	
06:00	•	56	180	•	40	190	•	96	370
15	•	40		•	58		•	98	
30	•	47		•	54		•	101	
06:45	•	37		•	38		•	75	
07:00	•	39	118	•	36	106	•	75	224
15	•	29		•	25		•	54	
30	•	24		•	17		•	41	
07:45	•	26		•	28		•	54	
08:00	•	32	116	•	14	92	•	46	208
15	•	36		•	32		•	68	
30	•	27		•	21		•	48	
08:45	•	21		•	25		•	46	
09:00	•	15	71	•	26	79	•	41	150
15	•	16		•	16		•	32	
30	•	25		•	18		•	43	
09:45	•	15		•	19		•	34	
10:00	•	15	41	•	15	32	•	30	73
15	•	6		•	5		•	11	
30	•	10		•	5		•	15	
10:45	20	10		22	7		42	17	
11:00	35	4	19	44	8	21	79	12	40
15	34	5		43	5		77	10	
30	34	5		61	3		95	8	
11:45	52	5		54	5		106	10	
tals	175	1,662		224	1,942		399	3,604	
%	43.9	46.1		56.1	53.9				
y Totals		1,837			2,166			4,003	
y Splits		45.9			54.1				
Hour	11:00	04:15		11:00	03:45		11:00	04:00	
lume	155	268		202	317		357	570	
V	0.75	0.93		0.83	0.80		0.84	0.91	

Wilson Okamoto
1907 S. Beretania St., #400
Honolulu, HI 96826

el : Maui Central Housing
:2 : SUNNY
:3 : 0349

Site: 1
Date: 02/25/04
Day: Wednesday

rval	sb				nb				Combined			
tin	AM		PM		AM		PM		AM		PM	
2:00	3	14	43	158	7	13	39	181	10	27	82	339
2:15	7		44		1		42		8		86	
2:30	2		31		3		40		5		71	
2:45	2		40		2		60		4		100	
1:00	2	7	38	163	1	6	57	258	3	13	95	421
1:15	1		44		2		66		3		110	
1:30	2		40		2		74		4		114	
1:45	2		41		1		61		3		102	
2:00	1	7	26	138	2	5	62	244	3	12	88	382
2:15	1		41		1		68		2		109	
2:30	4		38		1		68		5		106	
2:45	1		33		1		46		2		79	
3:00	1	1	37	180	4	10	78	270	5	11	115	450
3:15	0		47		0		51		0		98	
3:30	0		38		3		66		3		104	
3:45	0		58		3		75		3		133	
4:00	2	3	47	231	3	7	56	265	5	10	103	496
4:15	0		59		1		78		1		137	
4:30	0		62		2		61		2		123	
4:45	1		63		1		70		2		133	
5:00	3	26	62	221	7	60	59	223	10	86	121	444
5:15	6		50		14		53		20		103	
5:30	9		52		15		57		24		109	
5:45	8		57		24		54		32		111	
6:00	15	68	43	181	15	164	56	207	30	232	99	388
6:15	14		53		27		57		41		110	
6:30	16		50		56		56		72		106	
6:45	23		35		66		38		89		73	
7:00	40	180	35	116	66	418	41	147	106	598	76	263
7:15	52		24		84		24		136		48	
7:30	53		27		112		42		165		69	
7:45	35		30		156		40		191		70	
8:00	45	141	26	115	100	263	25	93	145	404	51	208
8:15	34		27		57		28		91		55	
8:30	32		26		56		24		88		50	
8:45	30		36		50		16		80		52	
9:00	29	114	22	72	62	219	15	54	91	333	37	126
9:15	29		21		44		18		73		39	
9:30	23		9		56		14		79		23	
9:45	33		20		57		7		90		27	
0:00	38	144	8	44	58	206	8	30	96	350	16	74
0:15	32		20		56		8		88		28	
0:30	40		9		42		7		82		16	
0:45	34		7		50		7		84		14	
1:00	39	159	7	30	53	173	3	15	92	332	10	45
1:15	42		10		44		4		86		14	
1:30	40		8		44		4		84		12	
1:45	38		5		32		4		70		9	
als	864		1,649		1,544		1,987		2,408		3,636	
t%	35.9		45.4		64.1		54.6					

y Totals	2,513		3,531		6,044	
y Splits	41.6		58.4			
k Hour	07:15	04:15	07:15	03:30	07:15	04:15
lume	185	246	452	275	637	514
tor	0.87	0.98	0.72	0.88	0.83	0.94

Wilson Okamoto
1907 S. Beretania St., #400
Honolulu, HI 96826

ile1 : Maui Central Housing
: SUNNY
: 0349

Site: 1
Date: 02/26/04

ival	sb			nb			Combined			Day: Thursday
egin	AM		PM	AM		PM	AM		PM	
00	5	17	•	4	9	•	9	26	•	
15	5		•	3		•	8		•	
12:30	2		•	2		•	4		•	
12:45	5		•	0		•	5		•	
00	2	6	•	3	7	•	5	13	•	
15	0		•	2		•	2		•	
30	0		•	0		•	0		•	
01:45	4		•	2		•	6		•	
00	2	6	•	0	5	•	2	11	•	
15	3		•	1		•	4		•	
02:30	0		•	2		•	2		•	
02:45	1		•	2		•	3		•	
00	0	1	•	2	13	•	2	14	•	
15	0		•	2		•	2		•	
30	1		•	5		•	6		•	
03:45	0		•	4		•	4		•	
00	1	8	•	2	13	•	3	21	•	
15	3		•	0		•	3		•	
30	2		•	4		•	6		•	
04:45	2		•	7		•	9		•	
00	2	25	•	7	50	•	9	75	•	
15	9		•	11		•	20		•	
30	8		•	20		•	28		•	
05:45	6		•	12		•	18		•	
06:00	16	61	•	22	130	•	38	191	•	
15	8		•	18		•	26		•	
30	11		•	34		•	45		•	
06:45	26		•	56		•	82		•	
07:00	34	133	•	47	335	•	81	468	•	
15	32		•	72		•	104		•	
30	38		•	82		•	120		•	
07:45	29		•	134		•	163		•	
08:00	28	96	•	86	223	•	114	319	•	
15	24		•	49		•	73		•	
30	23		•	44		•	67		•	
08:45	21		•	44		•	65		•	
09:00	0		•	0		•	0		•	
15	•		•	•		•	•		•	
30	•		•	•		•	•		•	
09:45	•		•	•		•	•		•	
10:00	•		•	•		•	•		•	
15	•		•	•		•	•		•	
30	•		•	•		•	•		•	
45	•		•	•		•	•		•	
11:00	•		•	•		•	•		•	
15	•		•	•		•	•		•	
30	•		•	•		•	•		•	
45	•		•	•		•	•		•	
tals	353		0	785		0	1,138		0	
%	31.0		•	69.0		•				
v Totals		353			785			1,138		
v Splits		31.0			69.0					
Hour	07:00		•	07:15		•	07:15		•	
lume	133		•	374		•	501		•	
tor	0.88		•	0.70		•	0.77		•	

APPENDIX B

LEVEL OF SERVICE DEFINITIONS

LEVEL OF SERVICE DEFINITIONS

LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

Level of Service (LOS) for signalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. Specifically, level-of-service (LOS) criteria are stated in terms of the average control delay per vehicle, typically a 15-min analysis period. The criteria are given in the following table.

Table 1: Level-of-Service Criteria for Signalized Intersections

Level of Service	Control Delay per Vehicle (sec/veh)
A	≤10.0
B	>10.0 and ≤20.0
C	>20.0 and ≤35.0
D	>35.0 and ≤55.0
E	>55.0 and ≤80.0
F	>80.0

Delay is a complex measure and depends on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group.

Level of Service A describes operations with low control delay, up to 10 sec per vehicle. This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.

Level of Service B describes operations with control delay greater than 10 and up to 20 sec per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.

Level of Service C describes operations with control delay greater than 20 and up to 35 sec per vehicle. These higher delays may result from only fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. Cycle failure occurs when a given green phase does not serve queued vehicles and overflows occur. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

Level of Service D describes operations with control delay greater than 35 and up to 55 sec per vehicle. At level of service D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

"Highway Capacity Manual," Transportation Research Board, 2000.

Level of Service E describes operation with control delay greater than 55 and up to 80 sec per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent.

Level of Service F describes operations with control delay in excess of 80 sec per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity lane groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.

"Highway Capacity Manual," Transportation Research Board, 2000.

APPENDIX C

CAPACITY ANALYSIS CALCULATIONS
EXISTING PEAK HOUR TRAFFIC ANALYSIS

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/2/2004
Period: AM Peak
Project ID:
E/W St: Kamehameha Avenue

Inter.:
Area Type: All other areas
Jurisd:
Year : Existing

N/S St: Puunene Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	2	0	1	2	0
LGConfig	L	T	R	L	T	R	L	TR		L	TR	
Volume	51	321	145	60	210	112	94	486	95	114	450	41
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			15			11			10			4

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru		A			Thru		A	
Right		A			Right		A	
Peds					Peds			
WB Left		A			SB Left	A		
Thru		A			Thru		A	
Right		A			Right		A	
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green		32.0				24.0	29.0	
Yellow		4.0				4.0	4.0	
All Red		1.0				1.0	1.0	

Cycle Length: 100.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	298	931	0.21	0.32	25.2	C		
T	596	1863	0.67	0.32	32.5	C	30.1	C
R	507	1583	0.32	0.32	26.1	C		
Westbound								
L	172	536	0.41	0.32	28.2	C		
T	596	1863	0.41	0.32	27.1	C	26.7	C
R	507	1583	0.23	0.32	25.2	C		
Northbound								
L	425	1770	0.24	0.24	30.9	C		
TR	1004	3461	0.61	0.29	31.7	C	31.6	C
Southbound								
L	425	1770	0.31	0.24	31.6	C		
TR	1015	3499	0.56	0.29	30.8	C	30.9	C

Intersection Delay = 30.2 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/2/2004
Period: PM Peak
Project ID:
E/W St: Kamehameha Avenue

Inter.:
Area Type: All other areas
Jurisd:
Year : Existing

N/S St: Puunene Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	2	0	1	2	0
LGConfig	L	T	R	L	T	R	L	TR		L	TR	
Volume	49	401	190	146	401	214	135	544	127	180	464	48
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			19			21			13			5

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left		A			NB Left	A			
Thru		A			Thru		A		
Right		A			Right		A		
Peds					Peds				
WB Left	A	A			SB Left	A			
Thru	A	A			Thru		A		
Right	A	A			Right		A		
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	11.0	47.5				32.0	39.5		
Yellow	0.0	4.0				4.0	4.0		
All Red	0.0	1.0				1.0	1.0		

Cycle Length: 145.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	235	716	0.25	0.33	36.2	D		
T	610	1863	0.78	0.33	50.9	D	46.2	D
R	519	1583	0.39	0.33	38.1	D		
Westbound								
L	212	1770	0.75	0.40	48.5	D		
T	752	1863	0.58	0.40	34.8	C	36.3	D
R	639	1583	0.33	0.40	30.0	C		
Northbound								
L	391	1770	0.36	0.22	48.4	D		
TR	939	3447	0.73	0.27	50.9	D	50.5	D
Southbound								
L	391	1770	0.50	0.22	50.4	D		
TR	952	3494	0.57	0.27	46.3	D	47.4	D

Intersection Delay = 45.1 (sec/veh) Intersection LOS = D

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/4/2004
Period: AM Peak
Project ID:
E/W St: Wakea Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Existing

N/S St: Puunene Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	2	1	1	2	0
LGConfig	L	T	R	L	T	R	L	T	R	L	TR	
Volume	92	349	182	78	263	116	180	489	99	129	330	85
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
RTOR Vol			18			12			10			9

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left	A	A		
Thru		A			Thru		A	A	
Right		A			Right		A	A	
Peds					Peds				
WB Left	A				SB Left	A			
Thru		A			Thru			A	
Right		A			Right			A	
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	20.0	26.0				15.0	5.0	19.0	
Yellow	4.0	4.0				0.0	0.0	4.0	
All Red	1.0	1.0				0.0	0.0	1.0	

Cycle Length: 100.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	354	1770	0.27	0.20	34.3	C		
T	484	1863	0.75	0.26	40.8	D	37.3	D
R	412	1583	0.42	0.26	31.4	C		
Westbound								
L	354	1770	0.25	0.20	34.0	C		
T	484	1863	0.61	0.26	34.9	C	33.6	C
R	412	1583	0.28	0.26	29.9	C		
Northbound								
L	354	1770	0.63	0.20	40.1	D		
T	849	3539	0.71	0.24	37.7	D	37.5	D
R	380	1583	0.29	0.24	31.5	C		
Southbound								
L	266	1770	0.55	0.15	41.9	D		
TR	654	3440	0.70	0.19	41.4	D	41.5	D

Intersection Delay = 37.6 (sec/veh) Intersection LOS = D

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/4/2004
Period: PM Peak
Project ID:
E/W St: Wakea Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Existing

N/S St: Puunene Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	2	1	1	2	0
LGConfig	L	T	R	L	T	R	L	T	R	L	TR	
Volume	53	355	214	148	437	166	216	496	92	132	509	129
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
RTOR Vol			21			17			9			13

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		A			NB	Left	A	A		
	Thru			A			Thru		A	A	
	Right			A			Right		A	A	
	Peds						Peds				
WB	Left		A	A		SB	Left	A			
	Thru		A	A			Thru			A	
	Right		A	A			Right			A	
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		21.5	6.0	39.5				26.5	5.0	36.5	
Yellow		0.0	0.0	4.0				0.0	0.0	4.0	
All Red		0.0	0.0	1.0				0.0	0.0	1.0	

Cycle Length: 145.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	262	1770	0.21	0.15	54.6	D		
T	508	1863	0.71	0.27	52.4	D	50.1	D
R	431	1583	0.46	0.27	44.6	D		
Westbound								
L	336	1770	0.47	0.19	53.4	D		
T	585	1863	0.80	0.31	54.2	D	50.8	D
R	497	1583	0.32	0.31	38.4	D		
Northbound								
L	385	1770	0.59	0.22	53.4	D		
T	1013	3539	0.52	0.29	43.8	D	45.9	D
R	453	1583	0.19	0.29	39.3	D		
Southbound								
L	323	1770	0.43	0.18	53.5	D		
TR	866	3441	0.77	0.25	54.6	D	54.4	D

Intersection Delay = 50.3 (sec/veh) Intersection LOS = D

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/4/2004
Period: AM Peak
Project ID:
E/W St: Kamehameha Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Existing

N/S St: Lono Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	1	1	1	1	0
LGConfig	L	T	R	L	T	R	L	T	R	L	TR	
Volume	47	300	6	21	177	64	16	254	105	101	91	32
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
RTOR Vol			1			6			11			3

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
WB	Left	A				SB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		25.0						25.0			
Yellow		4.0						4.0			
All Red		1.0						1.0			

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	487	1169	0.13	0.42	10.9	B		
T	776	1863	0.52	0.42	13.6	B	13.2	B
R	660	1583	0.01	0.42	10.3	B		
Westbound								
L	327	785	0.08	0.42	10.6	B		
T	776	1863	0.27	0.42	11.7	B	11.4	B
R	660	1583	0.10	0.42	10.7	B		
Northbound								
L	515	1237	0.04	0.42	10.4	B		
T	776	1863	0.45	0.42	13.0	B	12.5	B
R	660	1583	0.20	0.42	11.3	B		
Southbound								
L	366	879	0.34	0.42	12.4	B		
TR	748	1796	0.20	0.42	11.2	B	11.8	B

Intersection Delay = 12.4 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/4/2004
Period: PM Peak
Project ID:
E/W St: Kamehameha Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Existing

N/S St: Lono Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	1	1	1	1	0
LGConfig	L	T	R	L	T	R	L	T	R	L	TR	
Volume	44	302	19	80	379	95	27	172	72	175	148	82
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
RTOR Vol			2			10			7			8

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left	A			
Thru	A				Thru	A			
Right	A				Right	A			
Peds					Peds				
WB Left	A				SB Left	A			
Thru	A				Thru	A			
Right	A				Right	A			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	25.0					25.0			
Yellow	4.0					4.0			
All Red	1.0					1.0			

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	317	761	0.15	0.42	11.1	B		
T	776	1863	0.42	0.42	12.7	B	12.4	B
R	660	1583	0.03	0.42	10.3	B		
Westbound								
L	390	937	0.22	0.42	11.5	B		
T	776	1863	0.53	0.42	13.8	B	13.0	B
R	660	1583	0.14	0.42	10.9	B		
Northbound								
L	460	1105	0.06	0.42	10.5	B		
T	776	1863	0.23	0.42	11.5	B	11.2	B
R	660	1583	0.10	0.42	10.7	B		
Southbound								
L	499	1198	0.39	0.42	12.7	B		
TR	737	1770	0.33	0.42	12.1	B	12.4	B

Intersection Delay = 12.4 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/4/2004
Period: AM Peak
Project ID:
E/W St: Wakea Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Existing

N/S St: Lono Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	1	1	0	1	1	1	1	1	1
LGConfig	L	TR		L	TR		L	T	R	L	T	R
Volume	16	448	45	96	472	36	142	313	138	29	121	9
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vol			5			4			14			1

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A			
Thru	A					Thru	A			
Right	A					Right	A			
Peds						Peds				
WB Left	A				SB	Left	A			
Thru	A					Thru	A			
Right	A					Right	A			
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	27.0						23.0			
Yellow	4.0						4.0			
All Red	1.0						1.0			

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	272	605	0.07	0.45	9.5	A		
TR	828	1840	0.67	0.45	15.1	B	14.9	B
Westbound								
L	246	546	0.40	0.45	12.2	B		
TR	830	1845	0.63	0.45	14.2	B	13.8	B
Northbound								
L	476	1243	0.37	0.38	13.8	B		
T	714	1863	0.54	0.38	15.2	B	14.4	B
R	607	1583	0.25	0.38	12.8	B		
Southbound								
L	296	773	0.11	0.38	12.1	B		
T	714	1863	0.20	0.38	12.5	B	12.4	B
R	607	1583	0.01	0.38	11.5	B		

Intersection Delay = 14.2 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/4/2004
Period: PM Peak
Project ID:
E/W St: Wakea Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Existing

N/S St: Lono Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	1	1	0	1	1	1	1	1	1
LGConfig	L	TR		L	TR		L	T	R	L	T	R
Volume	17	467	41	132	533	46	77	196	115	44	212	19
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vol			4			5			12			2

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left	A			
Thru	A				Thru	A			
Right	A				Right	A			
Peds					Peds				
WB Left	A				SB Left	A			
Thru	A				Thru	A			
Right	A				Right	A			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	44.0					36.0			
Yellow	4.0					4.0			
All Red	1.0					1.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	246	503	0.08	0.49	12.4	B		
TR	901	1842	0.62	0.49	18.2	B	18.0	B
Westbound								
L	265	543	0.51	0.49	17.3	B		
TR	901	1843	0.65	0.49	18.9	B	18.6	B
Northbound								
L	412	1029	0.19	0.40	17.8	B		
T	745	1863	0.27	0.40	18.4	B	18.0	B
R	633	1583	0.17	0.40	17.5	B		
Southbound								
L	444	1111	0.11	0.40	17.1	B		
T	745	1863	0.32	0.40	18.9	B	18.4	B
R	633	1583	0.03	0.40	16.4	B		

Intersection Delay = 18.3 (sec/veh) Intersection LOS = B

APPENDIX D

CAPACITY ANALYSIS CALCULATIONS
PROJECTED YEAR 2007 PEAK HOUR TRAFFIC
ANALYSIS WITHOUT PROJECT

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/2/2004
Period: AM Peak
Project ID:
E/W St: Kamehameha Avenue

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/out proj

N/S St: Puunene Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	2	0	1	2	0
LGConfig	L	T	R	L	T	R	L	TR		L	TR	
Volume	52	328	148	61	214	114	96	496	97	116	459	42
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			15			11			10			4

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4	5	6	7	8
EB	Left	A				NB Left	A		
	Thru	A				Thru		A	
	Right	A				Right		A	
	Peds					Peds			
WB	Left	A				SB Left	A		
	Thru	A				Thru		A	
	Right	A				Right		A	
	Peds					Peds			
NB	Right					EB Right			
SB	Right					WB Right			
Green		32.0					24.0	29.0	
Yellow		4.0					4.0	4.0	
All Red		1.0					1.0	1.0	

Cycle Length: 100.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	294	918	0.22	0.32	25.3	C		
T	596	1863	0.69	0.32	33.0	C	30.5	C
R	507	1583	0.33	0.32	26.2	C		
Westbound								
L	164	514	0.43	0.32	28.7	C		
T	596	1863	0.42	0.32	27.2	C	26.9	C
R	507	1583	0.24	0.32	25.3	C		
Northbound								
L	425	1770	0.24	0.24	31.0	C		
TR	1003	3460	0.63	0.29	32.0	C	31.9	C
Southbound								
L	425	1770	0.32	0.24	31.7	C		
TR	1015	3499	0.57	0.29	31.0	C	31.1	C

Intersection Delay = 30.4 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/2/2004
Period: PM Peak
Project ID:
E/W St: Kamehameha Avenue

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/out proj

N/S St: Puunene Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	2	0	1	2	0
LGConfig	L	T	R	L	T	R	L	TR		L	TR	
Volume	50	407	193	148	407	217	137	552	129	183	471	49
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			19			22			13			5

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left		A			NB	Left	A			
Thru		A				Thru		A		
Right		A				Right		A		
Peds						Peds				
WB Left	A	A			SB	Left	A			
Thru	A	A				Thru		A		
Right	A	A				Right		A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	11.0	48.0					31.5	39.5		
Yellow	0.0	4.0					4.0	4.0		
All Red	0.0	1.0					1.0	1.0		

Cycle Length: 145.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	234	708	0.26	0.33	36.0	D		
T	617	1863	0.79	0.33	50.9	D	46.1	D
R	524	1583	0.40	0.33	37.8	D		
Westbound								
L	210	1770	0.77	0.41	50.6	D		
T	758	1863	0.58	0.41	34.6	C	36.5	D
R	644	1583	0.33	0.41	29.7	C		
Northbound								
L	385	1770	0.37	0.22	48.9	D		
TR	939	3447	0.74	0.27	51.3	D	50.9	D
Southbound								
L	385	1770	0.51	0.22	51.1	D		
TR	952	3494	0.58	0.27	46.5	D	47.7	D

Intersection Delay = 45.3 (sec/veh) Intersection LOS = D

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/4/2004
Period: AM Peak
Project ID:
E/W St: Wakea Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/out proj

N/S St: Puunene Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	2	1	1	2	0
LGConfig	L	T	R	L	T	R	L	T	R	L	TR	
Volume	94	356	186	80	269	118	184	499	101	132	337	87
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
RTOR Vol			19			12			10			9

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left	A	A		
Thru		A			Thru		A	A	
Right		A			Right		A	A	
Peds					Peds				
WB Left	A				SB Left	A			
Thru		A			Thru			A	
Right		A			Right			A	
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	20.0	26.0				15.0	5.0	19.0	
Yellow	4.0	4.0				0.0	0.0	4.0	
All Red	1.0	1.0				0.0	0.0	1.0	

Cycle Length: 100.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	354	1770	0.28	0.20	34.3	C		
T	484	1863	0.77	0.26	41.8	D	37.9	D
R	412	1583	0.42	0.26	31.5	C		
Westbound								
L	354	1770	0.25	0.20	34.1	C		
T	484	1863	0.62	0.26	35.2	D	33.8	C
R	412	1583	0.29	0.26	30.0	C		
Northbound								
L	354	1770	0.64	0.20	40.7	D		
T	849	3539	0.73	0.24	38.2	D	38.0	D
R	380	1583	0.29	0.24	31.5	C		
Southbound								
L	266	1770	0.56	0.15	42.3	D		
TR	653	3439	0.72	0.19	42.1	D	42.1	D

Intersection Delay = 38.1 (sec/veh) Intersection LOS = D

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/4/2004
Period: PM Peak
Project ID:
E/W St: Wakea Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/out proj

N/S St: Puunene Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	2	1	1	2	0
LGConfig	L	T	R	L	T	R	L	T	R	L	TR	
Volume	56	360	215	150	444	168	219	503	93	134	517	131
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
RTOR Vol			22			17			9			13

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		A			NB	Left	A	A		
	Thru			A			Thru		A	A	
	Right			A			Right		A	A	
	Peds						Peds				
WB	Left		A	A		SB	Left	A			
	Thru		A	A			Thru			A	
	Right		A	A			Right			A	
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		21.5	6.0	39.5				26.0	5.0	37.0	
Yellow		0.0	0.0	4.0				0.0	0.0	4.0	
All Red		0.0	0.0	1.0				0.0	0.0	1.0	

Cycle Length: 145.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	262	1770	0.22	0.15	54.8	D		
T	508	1863	0.72	0.27	53.0	D	50.5	D
R	431	1583	0.46	0.27	44.6	D		
Westbound								
L	336	1770	0.47	0.19	53.3	D		
T	585	1863	0.80	0.31	53.7	D	50.5	D
R	497	1583	0.32	0.31	38.3	D		
Northbound								
L	378	1770	0.61	0.21	54.5	D		
T	1025	3539	0.52	0.29	43.5	D	46.0	D
R	459	1583	0.19	0.29	38.9	D		
Southbound								
L	317	1770	0.45	0.18	54.2	D		
TR	878	3440	0.77	0.26	54.4	D	54.4	D

Intersection Delay = 50.3 (sec/veh) Intersection LOS = D

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/4/2004
Period: AM Peak
Project ID:
E/W St: Kamehameha Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/out proj

N/S St: Lono Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	1	1	1	1	0
LGConfig	L	T	R	L	T	R	L	T	R	L	TR	
Volume	48	306	6	21	181	65	16	259	107	103	93	33
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
RTOR Vol			1			7			11			3

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left	A			
Thru	A				Thru	A			
Right	A				Right	A			
Peds					Peds				
WB Left	A				SB Left	A			
Thru	A				Thru	A			
Right	A				Right	A			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	25.0					25.0			
Yellow	4.0					4.0			
All Red	1.0					1.0			

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	485	1164	0.13	0.42	10.9	B		
T	776	1863	0.53	0.42	13.7	B	13.3	B
R	660	1583	0.01	0.42	10.3	B		
Westbound								
L	320	769	0.08	0.42	10.7	B		
T	776	1863	0.27	0.42	11.7	B	11.4	B
R	660	1583	0.10	0.42	10.7	B		
Northbound								
L	513	1232	0.04	0.42	10.4	B		
T	776	1863	0.46	0.42	13.1	B	12.5	B
R	660	1583	0.20	0.42	11.3	B		
Southbound								
L	360	865	0.35	0.42	12.5	B		
TR	747	1794	0.20	0.42	11.3	B	11.9	B

Intersection Delay = 12.4 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/4/2004
Period: PM Peak
Project ID:
E/W St: Kamehameha Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/out proj

N/S St: Lono Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	1	1	1	1	0
LGConfig	L	T	R	L	T	R	L	T	R	L	TR	
Volume	45	307	19	81	385	96	27	175	73	178	150	83
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
RTOR Vol			2			10			7			8

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
WB	Left	A				SB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		25.0						25.0			
Yellow		4.0						4.0			
All Red		1.0						1.0			

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	312	749	0.15	0.42	11.1	B		
T	776	1863	0.43	0.42	12.8	B	12.5	B
R	660	1583	0.03	0.42	10.3	B		
Westbound								
L	386	926	0.23	0.42	11.6	B		
T	776	1863	0.54	0.42	13.9	B	13.1	B
R	660	1583	0.14	0.42	10.9	B		
Northbound								
L	457	1096	0.06	0.42	10.5	B		
T	776	1863	0.24	0.42	11.5	B	11.2	B
R	660	1583	0.10	0.42	10.7	B		
Southbound								
L	498	1195	0.40	0.42	12.8	B		
TR	737	1770	0.34	0.42	12.2	B	12.4	B

Intersection Delay = 12.5 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/4/2004
Period: AM Peak
Project ID:
E/W St: Wakea Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/out proj

N/S St: Lono Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	1	1	0	1	1	1	1	1	1
LGConfig	L	TR		L	TR		L	T	R	L	T	R
Volume	16	457	46	98	482	37	145	320	141	30	124	9
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vol			5			4			14			1

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
WB	Left	A				SB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		27.0						23.0			
Yellow		4.0						4.0			
All Red		1.0						1.0			

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	264	586	0.07	0.45	9.5	A		
TR	828	1840	0.68	0.45	15.5	B	15.3	B
Westbound								
L	237	526	0.43	0.45	12.5	B		
TR	830	1845	0.64	0.45	14.4	B	14.1	B
Northbound								
L	475	1239	0.38	0.38	13.8	B		
T	714	1863	0.55	0.38	15.4	B	14.5	B
R	607	1583	0.26	0.38	12.9	B		
Southbound								
L	289	754	0.12	0.38	12.2	B		
T	714	1863	0.20	0.38	12.5	B	12.4	B
R	607	1583	0.01	0.38	11.5	B		

Intersection Delay = 14.4 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/4/2004
Period: PM Peak
Project ID:
E/W St: Wakea Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/out proj

N/S St: Lono Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	1	1	0	1	1	1	1	1	1
LGConfig	L	TR		L	TR		L	T	R	L	T	R
Volume	17	474	42	134	541	47	78	199	117	45	215	19
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vol			4			5			12			2

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	44.0					36.0		
Yellow	4.0					4.0		
All Red	1.0					1.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	239	489	0.08	0.49	12.4	B		
TR	901	1842	0.63	0.49	18.5	B	18.3	B
Westbound								
L	259	529	0.53	0.49	17.9	B		
TR	901	1843	0.66	0.49	19.2	B	18.9	B
Northbound								
L	409	1022	0.20	0.40	17.8	B		
T	745	1863	0.28	0.40	18.4	B	18.1	B
R	633	1583	0.17	0.40	17.5	B		
Southbound								
L	442	1105	0.12	0.40	17.1	B		
T	745	1863	0.33	0.40	18.9	B	18.5	B
R	633	1583	0.03	0.40	16.4	B		

Intersection Delay = 18.5 (sec/veh) Intersection LOS = B

APPENDIX E

CAPACITY ANALYSIS CALCULATIONS
PROJECTED YEAR 2007 PEAK HOUR TRAFFIC
ANALYSIS WITH PROJECT

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/2/2004
Period: AM Peak
Project ID:
E/W St: Kamehameha Avenue

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/ proj

N/S St: Puunene Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	2	0	1	2	0
LGConfig	L	T	R	L	T	R	L	TR		L	TR	
Volume	52	329	152	63	214	114	96	498	98	116	472	42
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			15			11			10			4

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4	5	6	7	8
EB	Left	A							
	Thru	A							
	Right	A							
	Peds								
WB	Left	A							
	Thru	A							
	Right	A							
	Peds								
NB	Right								
SB	Right								
Green		32.5							
Yellow		4.0							
All Red		1.0							

NB	Left	A			
	Thru		A		
	Right		A		
	Peds				
SB	Left	A			
	Thru		A		
	Right		A		
	Peds				
EB	Right				
WB	Right				
		23.5	29.0		
		4.0	4.0		
		1.0	1.0		

Cycle Length: 100.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	300	924	0.22	0.32	24.9	C		
T	605	1863	0.68	0.32	32.4	C	29.9	C
R	514	1583	0.33	0.32	25.9	C		
Westbound								
L	170	524	0.43	0.32	28.2	C		
T	605	1863	0.41	0.32	26.8	C	26.5	C
R	514	1583	0.23	0.32	24.9	C		
Northbound								
L	416	1770	0.25	0.23	31.4	C		
TR	1003	3459	0.63	0.29	32.1	C	32.0	C
Southbound								
L	416	1770	0.32	0.23	32.1	C		
TR	1015	3500	0.58	0.29	31.2	C	31.4	C

Intersection Delay = 30.3 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/2/2004
Period: PM Peak
Project ID:
E/W St: Kamehameha Avenue

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/ proj

N/S St: Puunene Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	2	0	1	2	0
LGConfig	L	T	R	L	T	R	L	TR		L	TR	
Volume	50	407	195	148	408	217	141	565	132	183	476	49
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			20			22			13			5

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left		A			NB Left	A			
Thru		A			Thru		A		
Right		A			Right		A		
Peds					Peds				
WB Left		A	A		SB Left	A			
Thru		A	A		Thru		A		
Right		A	A		Right		A		
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green		11.0	48.0			31.0	40.0		
Yellow		0.0	4.0			4.0	4.0		
All Red		0.0	1.0			1.0	1.0		

Cycle Length: 145.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	234	706	0.26	0.33	36.0	D		
T	617	1863	0.79	0.33	50.9	D	46.1	D
R	524	1583	0.40	0.33	37.9	D		
Westbound								
L	210	1770	0.77	0.41	50.6	D		
T	758	1863	0.58	0.41	34.6	C	36.5	D
R	644	1583	0.33	0.41	29.7	C		
Northbound								
L	378	1770	0.39	0.21	49.5	D		
TR	951	3447	0.75	0.28	51.4	D	51.1	D
Southbound								
L	378	1770	0.52	0.21	51.7	D		
TR	964	3495	0.58	0.28	46.1	D	47.6	D

Intersection Delay = 45.3 (sec/veh) Intersection LOS = D

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/4/2004
Period: AM Peak
Project ID:
E/W St: Wakea Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/ proj

N/S St: Puunene Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	2	1	1	2	0
LGConfig	L	T	R	L	T	R	L	T	R	L	TR	
Volume	97	356	186	80	269	121	184	512	101	133	338	87
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
RTOR Vol			19			12			10			9

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A	A		
Thru		A				Thru		A	A	
Right		A				Right		A	A	
Peds						Peds				
WB Left	A				SB	Left	A			
Thru		A				Thru			A	
Right		A				Right			A	
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	20.0	26.0					15.0	5.0	19.0	
Yellow	4.0	4.0					0.0	0.0	4.0	
All Red	1.0	1.0					0.0	0.0	1.0	

Cycle Length: 100.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	354	1770	0.29	0.20	34.4	C		
T	484	1863	0.77	0.26	41.8	D	37.9	D
R	412	1583	0.42	0.26	31.5	C		
Westbound								
L	354	1770	0.25	0.20	34.1	C		
T	484	1863	0.62	0.26	35.2	D	33.8	C
R	412	1583	0.30	0.26	30.1	C		
Northbound								
L	354	1770	0.64	0.20	40.7	D		
T	849	3539	0.74	0.24	38.8	D	38.4	D
R	380	1583	0.29	0.24	31.5	C		
Southbound								
L	266	1770	0.57	0.15	42.4	D		
TR	653	3439	0.72	0.19	42.1	D	42.2	D

Intersection Delay = 38.3 (sec/veh) Intersection LOS = D

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/4/2004
Period: PM Peak
Project ID:
E/W St: Wakea Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/ proj

N/S St: Puunene Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	2	1	1	2	0
LGConfig	L	T	R	L	T	R	L	T	R	L	TR	
Volume	57	360	215	150	444	170	219	510	93	137	530	134
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
RTOR Vol			22			17			9			13

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A	A		
	Thru			A			Thru		A	A	
	Right			A			Right		A	A	
	Peds						Peds				
WB	Left	A	A			SB	Left	A			
	Thru		A	A			Thru			A	
	Right		A	A			Right			A	
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		21.5	6.0	39.0				26.0	5.0	37.5	
Yellow		0.0	0.0	4.0				0.0	0.0	4.0	
All Red		0.0	0.0	1.0				0.0	0.0	1.0	

Cycle Length: 145.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	262	1770	0.22	0.15	54.8	D		
T	501	1863	0.73	0.27	53.9	D	51.2	D
R	426	1583	0.46	0.27	45.0	D		
Westbound								
L	336	1770	0.47	0.19	53.3	D		
T	578	1863	0.81	0.31	55.0-	D	51.3	D
R	491	1583	0.33	0.31	38.8	D		
Northbound								
L	378	1770	0.61	0.21	54.5	D		
T	1037	3539	0.52	0.29	43.2	D	45.8	D
R	464	1583	0.19	0.29	38.6	D		
Southbound								
L	317	1770	0.46	0.18	54.3	D		
TR	890	3440	0.78	0.26	54.5	D	54.5	D

Intersection Delay = 50.6 (sec/veh) Intersection LOS = D

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/4/2004
Period: AM Peak
Project ID:
E/W St: Kamehameha Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/ proj

N/S St: Lono Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	1	1	1	1	0
LGConfig	L	T	R	L	T	R	L	T	R	L	TR	
Volume	48	309	6	21	182	65	16	259	108	104	93	33
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
RTOR Vol			1			7			11			3

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A			
Thru	A					Thru	A			
Right	A					Right	A			
Peds						Peds				
WB Left	A				SB	Left	A			
Thru	A					Thru	A			
Right	A					Right	A			
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	25.0						25.0			
Yellow	4.0						4.0			
All Red	1.0						1.0			

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	485	1163	0.13	0.42	10.9	B		
T	776	1863	0.53	0.42	13.8	B	13.4	B
R	660	1583	0.01	0.42	10.3	B		
Westbound								
L	317	761	0.08	0.42	10.7	B		
T	776	1863	0.28	0.42	11.7	B	11.4	B
R	660	1583	0.10	0.42	10.7	B		
Northbound								
L	513	1232	0.04	0.42	10.4	B		
T	776	1863	0.46	0.42	13.1	B	12.5	B
R	660	1583	0.20	0.42	11.3	B		
Southbound								
L	360	865	0.35	0.42	12.6	B		
TR	747	1794	0.20	0.42	11.3	B	11.9	B

Intersection Delay = 12.5 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/4/2004
Period: PM Peak
Project ID:
E/W St: Kamehameha Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/ proj

N/S St: Lono Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	1	1	1	1	0
LGConfig	L	T	R	L	T	R	L	T	R	L	TR	
Volume	45	309	19	81	388	97	27	175	73	179	150	83
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
RTOR Vol			2			10			7			8

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
WB	Left	A				SB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		25.5						24.5			
Yellow		4.0						4.0			
All Red		1.0						1.0			

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	319	751	0.15	0.43	10.8	B		
T	792	1863	0.42	0.43	12.4	B	12.1	B
R	673	1583	0.03	0.43	10.0+	B		
Westbound								
L	395	929	0.22	0.43	11.2	B		
T	792	1863	0.53	0.43	13.5	B	12.7	B
R	673	1583	0.14	0.43	10.6	B		
Northbound								
L	446	1092	0.06	0.41	10.8	B		
T	761	1863	0.24	0.41	11.8	B	11.5	B
R	646	1583	0.11	0.41	11.1	B		
Southbound								
L	488	1195	0.41	0.41	13.2	B		
TR	723	1770	0.35	0.41	12.5	B	12.8	B

Intersection Delay = 12.4 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/4/2004
Period: AM Peak
Project ID:
E/W St: Wakea Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/ proj

N/S St: Lono Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	1	1	0	1	1	1	1	1	1
LGConfig	L	TR		L	TR		L	T	R	L	T	R
Volume	16	459	46	98	482	37	145	321	142	30	124	9
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vol			5			4			14			1

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	27.0					23.0		
Yellow	4.0					4.0		
All Red	1.0					1.0		

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	264	586	0.07	0.45	9.5	A		
TR	828	1840	0.69	0.45	15.6	B	15.4	B
Westbound								
L	234	520	0.43	0.45	12.5	B		
TR	830	1845	0.64	0.45	14.4	B	14.1	B
Northbound								
L	475	1239	0.38	0.38	13.8	B		
T	714	1863	0.55	0.38	15.4	B	14.5	B
R	607	1583	0.26	0.38	12.9	B		
Southbound								
L	288	752	0.12	0.38	12.2	B		
T	714	1863	0.20	0.38	12.5	B	12.4	B
R	607	1583	0.01	0.38	11.5	B		

Intersection Delay = 14.4 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 3/4/2004
Period: PM Peak
Project ID:
E/W St: Wakea Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/ proj

N/S St: Lono Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	1	1	0	1	1	1	1	1	1
LGConfig	L	TR		L	TR		L	T	R	L	T	R
Volume	17	475	42	135	543	47	78	199	117	45	215	19
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vol			4			5			12			2

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left A			
Thru	A				Thru A			
Right	A				Right A			
Peds					Peds			
WB Left	A				SB Left A			
Thru	A				Thru A			
Right	A				Right A			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	45.0				35.0			
Yellow	4.0				4.0			
All Red	1.0				1.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	213	425	0.09	0.50	12.0	B		
TR	921	1842	0.62	0.50	17.6	B	17.4	B
Westbound								
L	272	543	0.55	0.50	18.0	B		
TR	922	1843	0.70	0.50	19.9	B	19.5	B
Northbound								
L	399	1025	0.22	0.39	18.6	B		
T	725	1863	0.30	0.39	19.3	B	18.9	B
R	616	1583	0.19	0.39	18.3	B		
Southbound								
L	415	1066	0.12	0.39	17.8	B		
T	725	1863	0.33	0.39	19.5	B	19.1	B
R	616	1583	0.03	0.39	17.0	B		

Intersection Delay = 18.7 (sec/veh) Intersection LOS = B

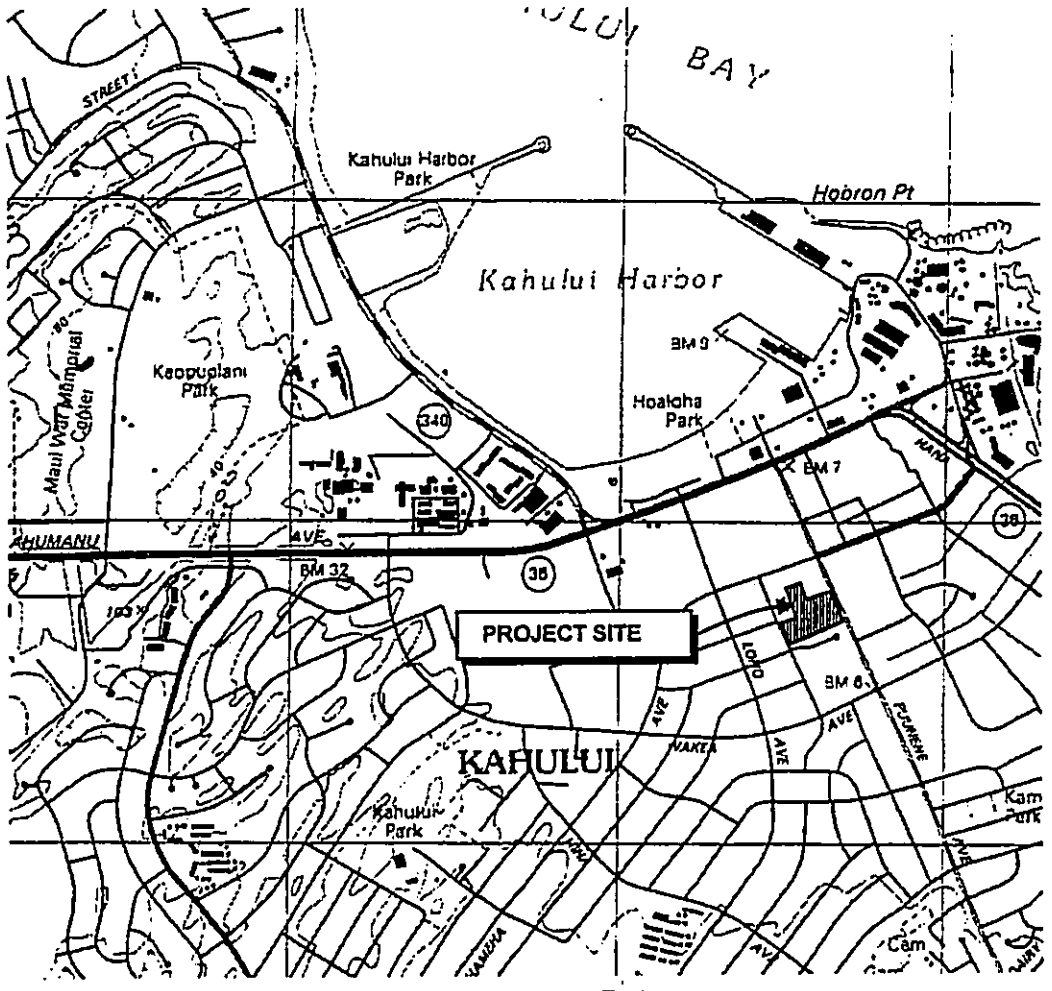
Appendix D

Preliminary Engineering Report

PRELIMINARY ENGINEERING REPORT
For Central Maui Senior Housing & County Office Buildings Project

Kahului, Maui, Hawaii

Tax Map Key: (2) 3-7-013:Portion of 026



Project:

Central Maui Senior Housing
& County Office Buildings Project
Kahului, Maui, Hawaii

Date:

August 13, 2004

Client:

Munekiyo & Hiraga, Inc
305 High Street, Suite 104
Wailuku, HI 96793
Phone: (808) 244-2015
Fax: (808) 244-8729

Consultant:

Ronald M. Fukumoto Engineering, Inc.
1721 Wili Pa Loop, Suite 203
Wailuku, Hawaii 96793
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E-Mail: rfe@mauigateway.com

TABLE OF CONTENTS

I. PURPOSE

The purpose of this report is to evaluate the effects of the project on existing infrastructure. This report will review the water system, wastewater system, and electrical, telephone, and cable television systems serving the project. This report will also provide an analysis of existing and proposed drainage systems. The drainage analysis will describe existing drainage conditions, provide preliminary grading and drainage plans, and provide drainage design information for incorporation into the final designs.

II. PROJECT DESCRIPTION

A. General Location

The project involves the development of senior housing apartments and County of Maui office buildings on a 4-acre parcel in Kahului, Maui. The parcel, located along Puunene Avenue, is currently used as the swap meet site. Puunene Avenue adjoins the easterly side of the parcel and Kaulawahine Street adjoins the westerly side of the parcel. The Kahului Post Office borders a portion of the northerly side of the site and the Store Village Subdivision adjoins the entire southerly side of the site.

The tax map designates this parcel as a portion of Tax Map Key (2) 3-7-013: 026. (See Figure 1 - Location Map (USGS Map), page 7 and Figure 2 - Vicinity Map (Tax Map), page 8.)

B. Project Components

The senior housing component of the project consists of 39 one-bedroom apartment units, one two-bedroom resident manager's unit, a 2,900-square foot community center building, and related site improvements. The office buildings component of the project consists of a 12,400-square foot, two-story building for the Housing Division of the Department of Housing and Human Concerns, and a 6,700-square foot, one-story building for the Immigration Services Division, Community Development Block Grant Program Office, Volunteer Center, and site related improvements.

Related site improvements consist of building pad grading, site grading, paved parking lots and driveways, and site utilities. Site utilities include water; wastewater; electrical, telephone, and cable television; and drainage system improvements.

III. WATER SYSTEM

The County of Maui, Department of Water Supply provides water service for the Kahului Town area. The water system includes reservoirs and a network of distribution lines. Existing distribution lines adjoining the site include a 12-inch main along Puunene Avenue and a 6-inch main along Kaulawahine Street. Existing fire hydrants along both streets provide fire protection for the area.

Projected domestic water demands will be based on the number of apartment units and area of the buildings. Assumed water usage per square foot at the community center building is three times the office building usage due to laundry facilities in the community center building. According to the Department of Water Supply consumption guidelines, the average daily demand for a multi-family low-rise project is 560 gallons per unit. The total unit count is 40 based on 39 rental apartments and 1 manager's unit. This results in an average daily demand of 22,400 gallons per day for the apartment project. In addition, the community center building with an area of 2,900 square feet will require 420 gallon per day per 1,000 square feet of building area, resulting in an average daily demand of about 1,200 gallons per day. The average daily demand for the housing project is therefore 23,600 gallons per day.

The area of the two office buildings is 19,100 square feet. Based on consumption guidelines of 140 gallons per 1,000 square feet of commercial building area, the average daily demand for the two office buildings is about 2,700 gallons per day. The combined housing and office building average daily demand is therefore 26,300 gallons per day. (See preliminary water computations in Appendix A.)

The water system for this project consist of separate fire protection system and domestic system improvements. These systems will tap into the existing 12-inch water main along Puunene Avenue. The preliminary sizes and components of both systems are as follows. The fire protection system consists of a 10-inch double check detector assembly and manhole, 12-inch water lines, and fire hydrants spaced at a maximum of 250 feet apart. The domestic system consists of two 1½-inch water meters, 4-inch distribution lines, and 2-inch laterals to each building. (See Figure 6 – Preliminary Utilities Plan, page 12.)

IV. WASTEWATER SYSTEM

The County of Maui provides a wastewater collection system for the area. The collection system carries wastewater to the Wailuku-Kahului Wastewater Reclamation Facility for treatment and disposal. The wastewater collection system in the vicinity of the project includes a 10-inch gravity sewer along Puunene Avenue.

Preliminary data indicates that the existing collection system and treatment facility can handle the wastewater flows produced by this project. The project's anticipated average wastewater flow is about 13,100 gallons per day based on the wastewater flow standards of the County Wastewater Reclamation Division. This total is based on 255 gallons per day for each apartment unit, 300 gallons per day for each coin-operated washing machine at the community center building, and 20 gallons per day for employees at the community center building, the office building for the Housing Division, and the office building for the Immigrant Services Division, Community Development Block Grant Program, and Volunteer Center. (See preliminary wastewater computations in Appendix B.)

Wastewater improvements for this project include an on-site collection system. Improvements consist of 8-inch sewer mains, 6-inch sewer laterals, and sewer manholes.

These lines will connect to the existing 10-inch gravity sewer on Puunene Avenue. (See Figure 6 – Preliminary Utilities Plan, page 12.)

V. ELECTRICAL, TELEPHONE & CABLE TELEVISION SYSTEMS

Maui Electric Company, Verizon Hawaii, and Oceanic Time Warner Cable provide electrical, telephone, and cable television service for the area. These utility companies confirmed that services are available for the project. The project will be served by new underground lines that connect to existing overhead lines on Puunene Avenue.

VI. DRAINAGE SYSTEM

A. Topography

The topographic map shows existing ground contours and improvements of the on-site areas. (See Figure 5 - Topographic Map, page 11.) The site is a grassed and graveled open space. A small stand of trees and a 120-foot by 180-foot asphaltic concrete tennis court pad occupy the westerly portion of the site. The site is flat with elevations that range from about 6 feet to 8 feet above mean sea level.

B. Soil

According to the Soil Conservation Service, the on-site soils include Puuone Series (PZUE) and Fill Land (Fd). The Puuone Series encompasses about 3.6 acres or about 90 percent of the total area. Fill Land covers about 0.4 acre or about 10 percent of the total area at the northeasterly corner of the site along Puunene Avenue. (See Figure 3 – Soil Map, page 9.)

The Puuone Series consists of excessively drained soils on the low uplands on the Island of Maui. These soils developed from coral and seashells. A representative profile consists of a 20-inch thick surface layer of grayish-brown sand with rapid permeability. This surface layer is underlain with a 20-inch thick layer of grayish-brown, cemented sand. The cemented layer is very hard when dry and does not break down in water, and is described as lime hardpan.

Fill Land consists of mostly of areas filled with bagasse and slurry from sugar mills. A few areas are filled with material from dredging and from soil excavations.

C. Flood and Tsunami Hazard

The flood insurance rate map of the area shows there are no flood hazard areas on the site. The flood insurance rate map designates the site as Zone C, an area subject to minimal flooding. (See Figure 4 – Flood Insurance Rate Map, page 10.)

D. Existing Drainage Improvements

The site is open and flat with no existing drainage improvements. Runoff from the site flows toward Puunene Avenue and Kaulawahine Street.

Existing storm drainage facilities are located directly off-site on both Kaulawahine Street and Puunene Avenue. A 29" x 18" corrugated metal arch pipe carries storm runoff from the storm drain manhole located approximately 130 feet south of the southeast property corner, under Puunene Avenue and then south to an open ditch which flows northeasterly toward Kanaha Pond. Storm drainage from the Store Village Subdivision, directly south of the site, is carried by this system. Calculations indicate this system is at capacity and will not accommodate additional flow from this site.

E. Proposed Drainage Improvements

The County drainage standards require the use of a 50-year, 1-hour rainfall for computing volumes and rates of flow. Drainage design will be based on the Rational Method.

Drainage improvements that involve transmission of storm flows will conform to the "Rules for the Design of Storm Drainage Facilities in the County of Maui." The rules will be applied to the sizing and spacing of inlets and manholes, and sizing of drain lines, channels, and culverts. Based on the County rules, the drainage system will be designed to handle a storm with a recurrence interval of 50 years since the on-site drainage area is less than 100 acres.

The following is a summary of hydrologic design data. (See preliminary drainage information in Appendix C.)

Item	Existing	Developed
Drainage Area	4.0 acres	4.0 acres
50-year, 1-hour Rainfall	2.4 inches	2.4 inches
50-year, 1-hour Runoff Volume	0.77 inches	1.37 inches
50-year, 1-hour Peak Flow Rate	9.9 cfs	14.9 cfs

Drainage improvements include two separate collection systems consisting of grated drain inlets within the parking lots, grated area drains within the landscaped areas, drain pipes, cleanouts, and manholes. Since there are no existing storm drainage systems in the area with sufficient capacity to carry additional runoff from the developed site, the collection systems will direct storm water to on-site drainage basins on the easterly and westerly sides of the site. The drainage basins will mitigate the increases in the rate of runoff and volume of runoff by collecting the runoff, retaining a portion of the collected runoff, and allowing portions of the runoff to be released. The amount of runoff released will be limited to the amounts which currently flow onto the adjoining streets. (See Figure 7 – Preliminary Grading and Drainage Plan, page 13.)

The drainage basins or detention/retention (D/R) basins will be located under the parking lots on each side of the site. Each basin consists of 24-inch diameter corrugated perforated high density polyethylene pipe in a gravel bed of filter rock. Each basin will be designed to keep peak flow rates due to a 50-year, 1-hour storm at pre-development levels and to keep runoff volumes due to a 50-year, 1-hour storm at pre-development levels. (See Figure 8 – Drainage Basin Sections, page 14.)

F. Conclusion

There will be no adverse effects on the adjacent or downstream properties due to this project. This conclusion is based on maintaining storm drainage peak flow rates and runoff volumes at pre-development levels.

VII. REFERENCES

1. City and County of Honolulu, Department of Public Works, Division of Engineering, *Storm Drainage Standards*, Honolulu, Hawaii, May 1988.
2. County of Maui, "Title MC-15, Department of Public Works and Waste Management, Chapter 4, Rules for the Design of Storm Drainage Facilities in the County of Maui," Wailuku, Hawaii, November 1995.
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4. Ronald M. Fukumoto Engineering, Inc., *Kahului Drainage Master Plan, Kahului, Maui, Hawaii*, prepared for Department of Public Works, County of Maui, Wailuku, Hawaii, May 1992.
5. International Association of Plumbing and Mechanical Officials, *Uniform Plumbing Code 1991 Edition*, Walnut, California, January 1991.
6. R. M. Towill Corporation, *Drainage Master Plan for the County of Maui*, Honolulu, Hawaii, October 1971.
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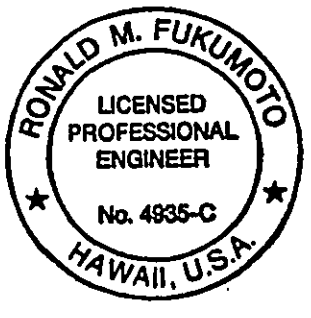
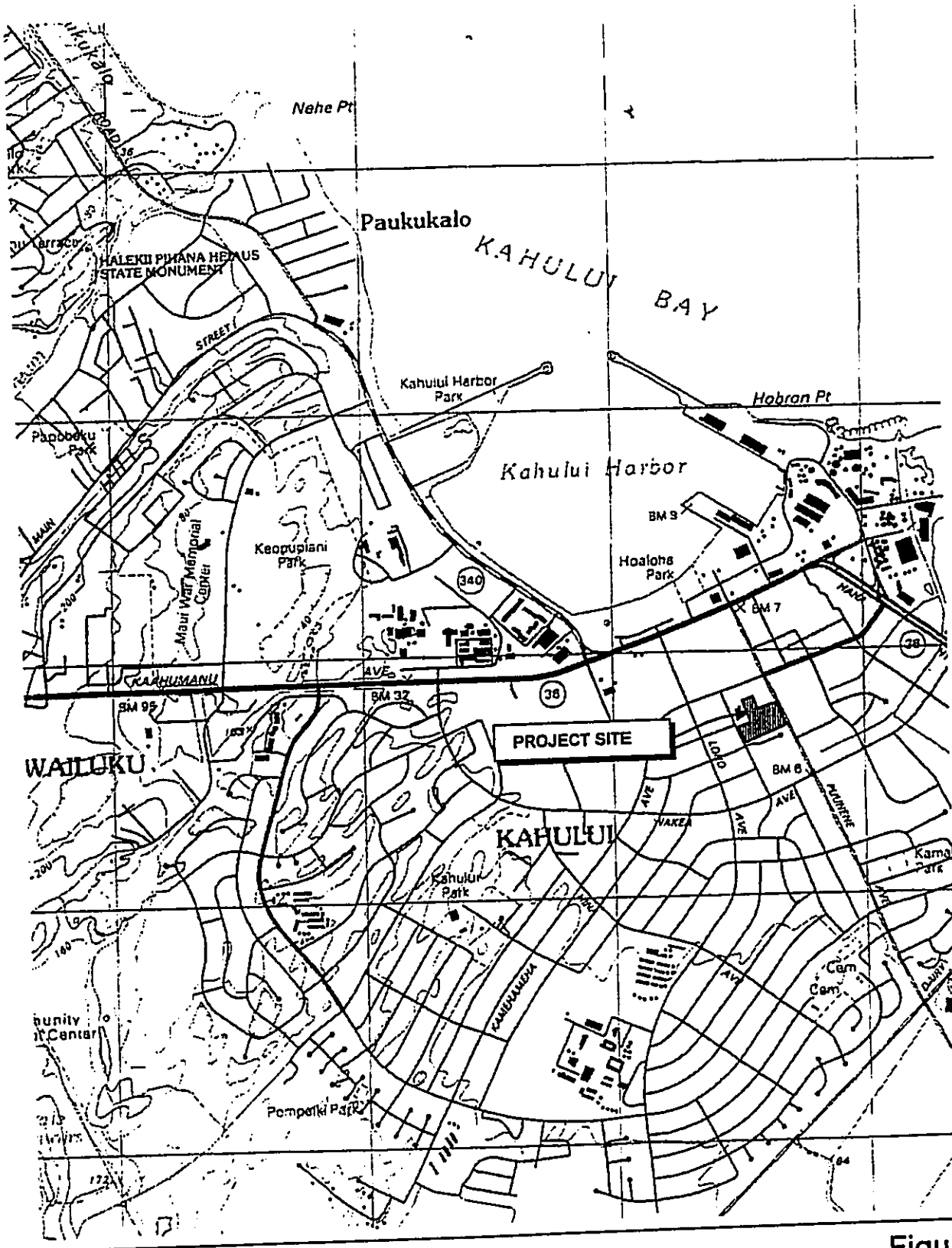
9. U. S. Department of Agriculture, Soil Conservation Service, *Urban Hydrology for Small Watersheds*, Technical Release 55, Second Edition, Washington, D.C., June 1986.
10. U. S. Department of Commerce, Weather Bureau, *Rainfall-Frequency Atlas of the Hawaiian Islands for Areas to 200 Square Miles, Durations to 24 Hours, and Return Periods from 1 to 100 Years*, Technical Paper No. 43, Washington, D.C., 1962.
11. Wilson Okamoto & Associates, Inc., *Construction Plans for Store Village Subdivision*, Record Drawings, TMK: 3-7-13:1 & 3-8-7:30, SD-88-92, February 1991.



This work was prepared by
me or under my supervision.

Ronald M. Fukumoto



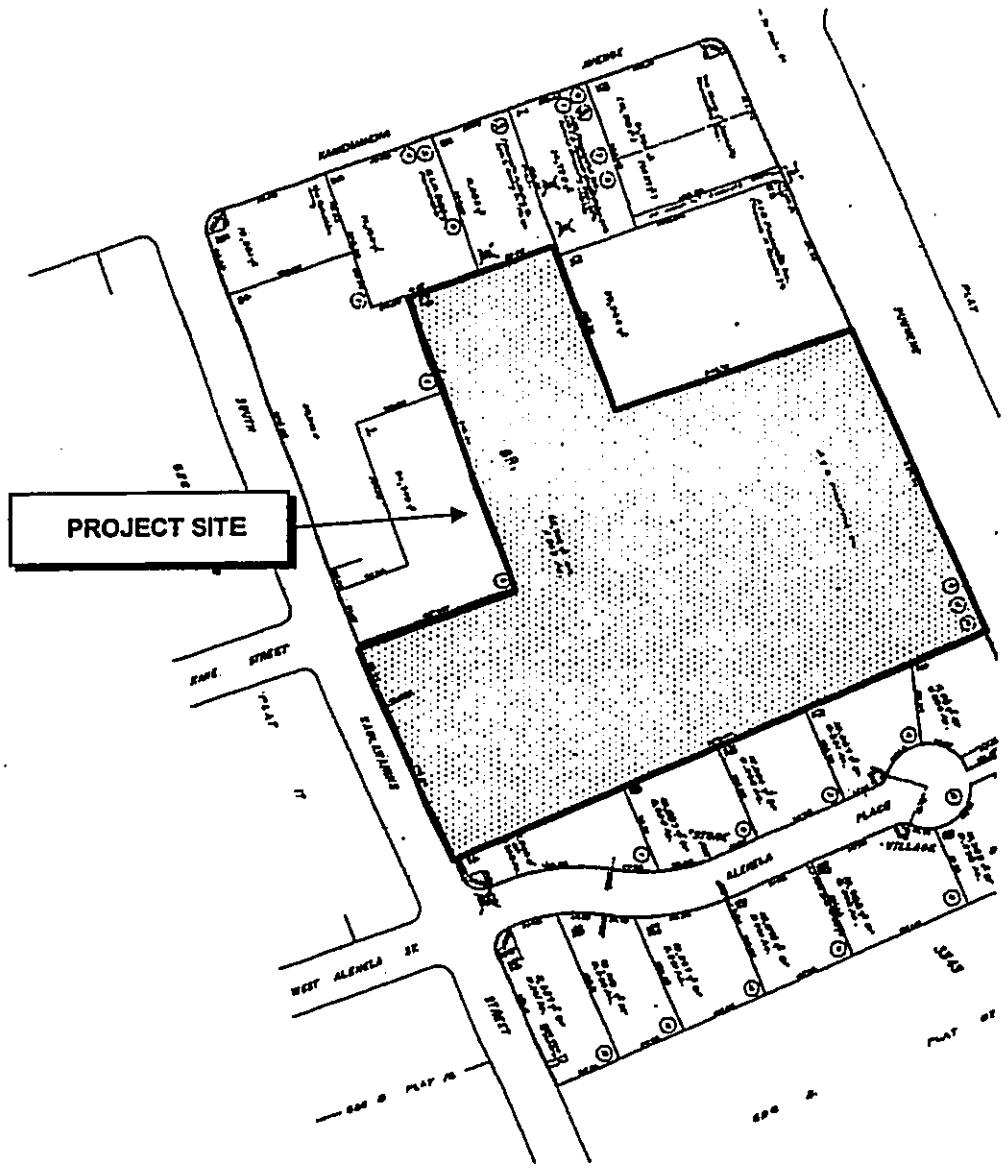
LOCATION MAP (USGS Map)

SCALE IN FEET

NORTH 0 1000 2000 4000 6000

Figure 1

SOURCE: USGS WAILUKU QUADRANGLE MAP



VICINITY MAP (Tax Map)

SCALE IN FEET

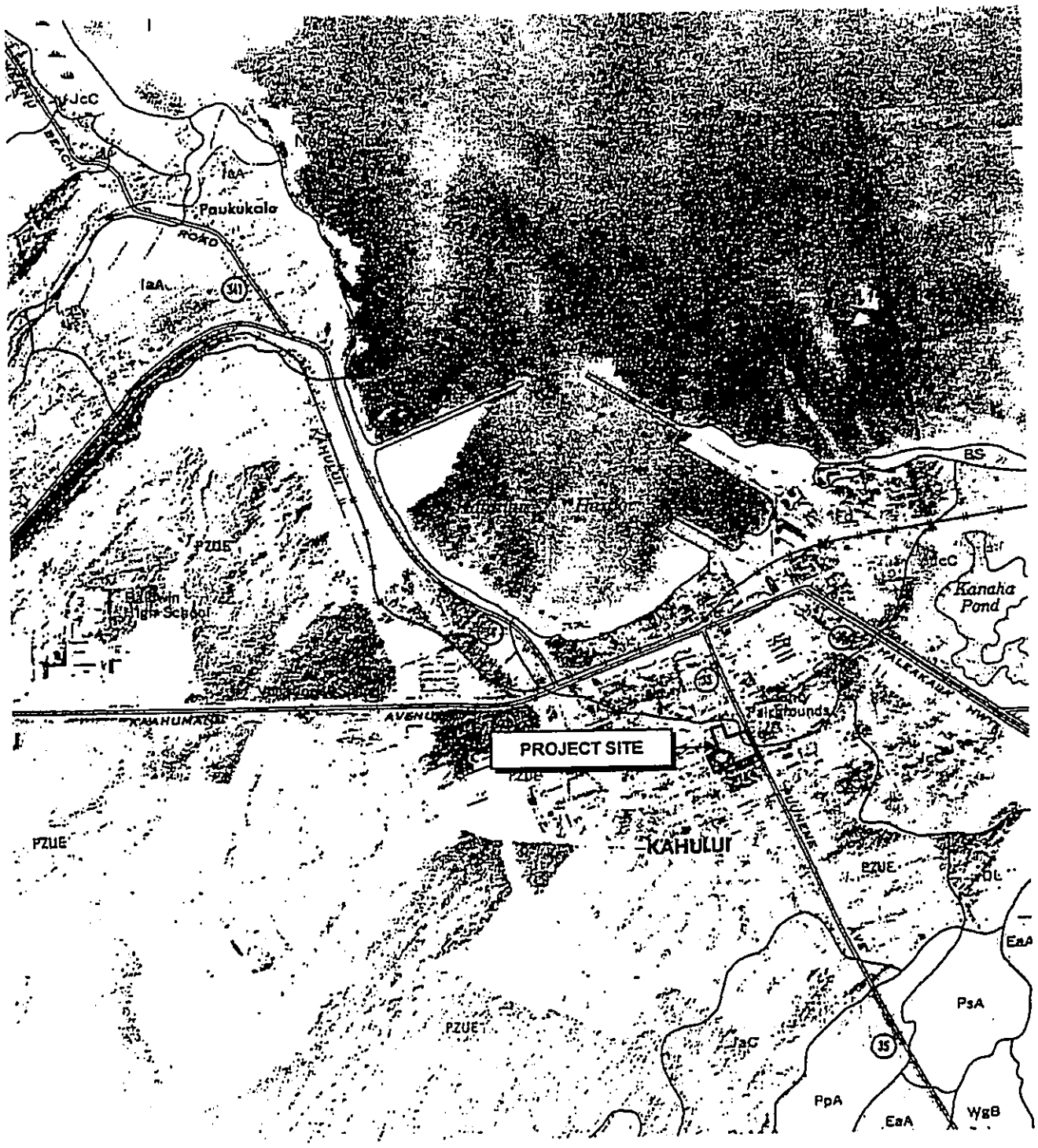
NORTH 0 100 200 400 600

Figure 2

SOURCE: TAX MAP KEY (2) 3-7-013:POR. 026

PREPARED FOR: MUNEKIYO & HIRAGA, INC.

PREPARED BY: RONALD M. FUKUMOTO ENGINEERING, INC.



NORTH 0 1000 2000 4000 6000

SOILS MAP

SCALE IN FEET

Figure 3

SOURCE: SOIL SURVEY

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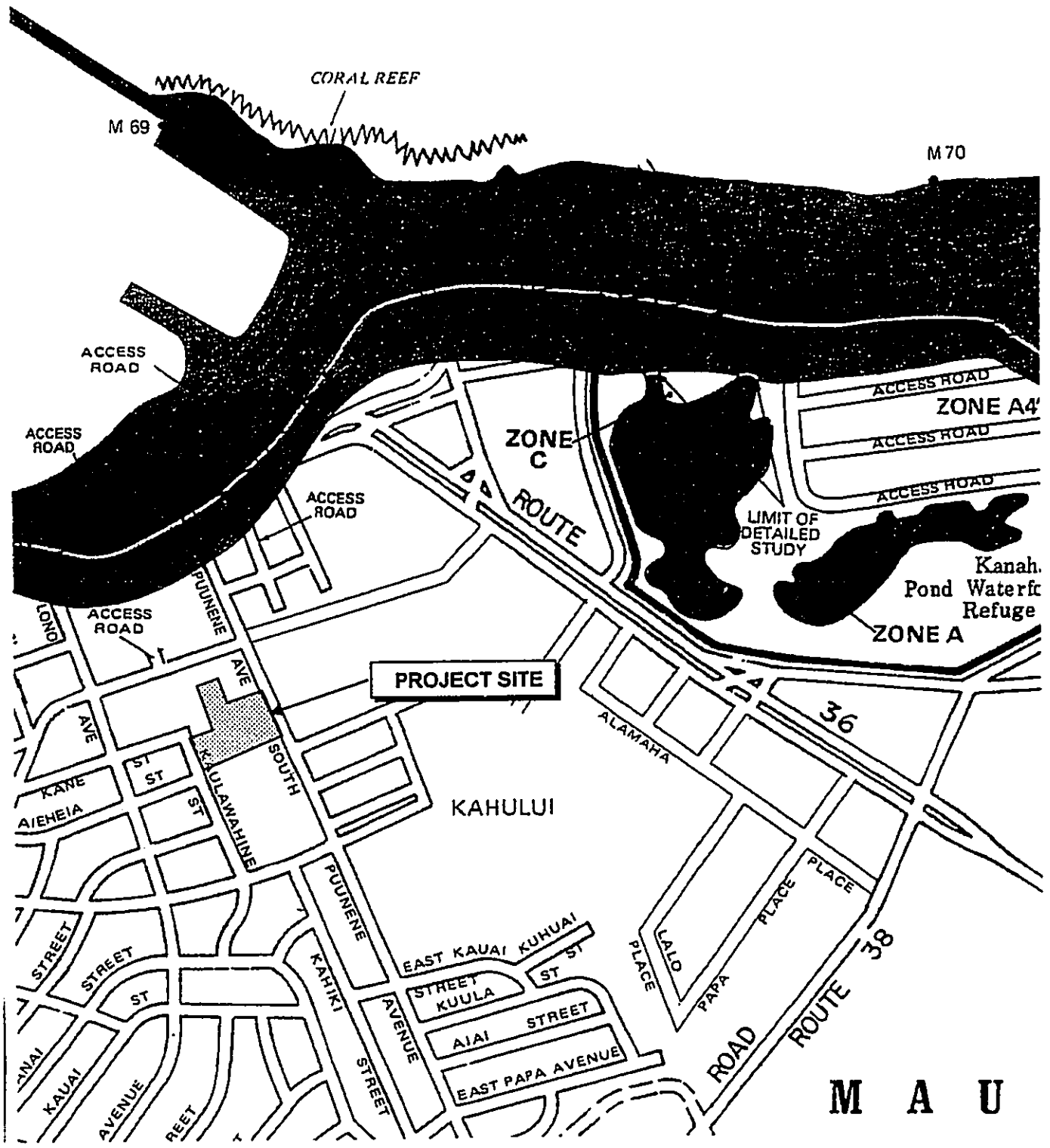
PREPARED BY: RONALD M. FUKUMOTO ENGINEERING, INC.



FLOOD INSURANCE RATE MAP

SCALE IN FEET

NORTH 0 500 1000 2000 3000

Figure 4

SOURCE: FIRM COMM. PANEL NO. 150003 0190D

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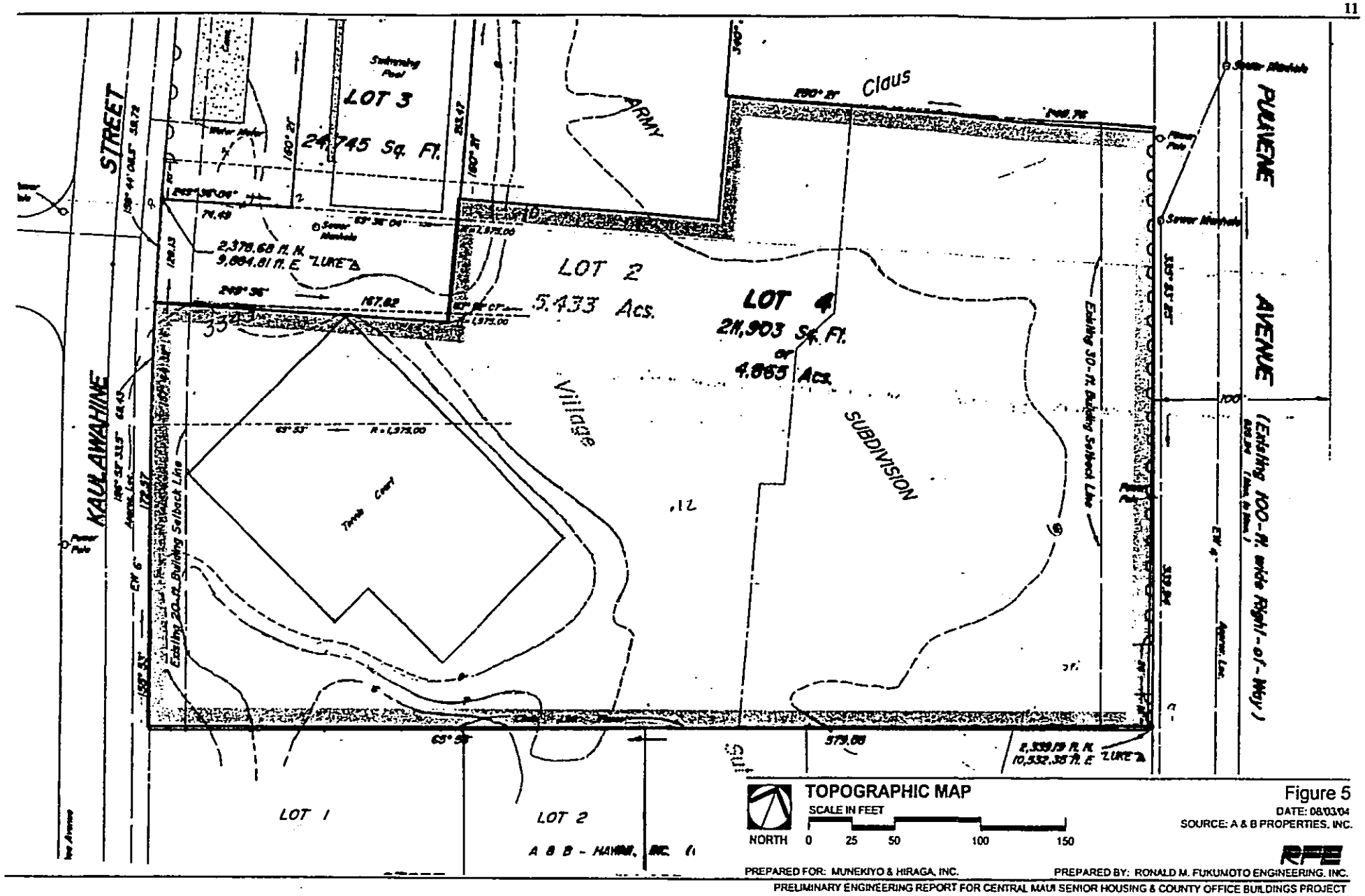
PREPARED BY: RONALD M. FUKUMOTO ENGINEERING, INC.



TOPOGRAPHIC MAP

SCALE IN FEET

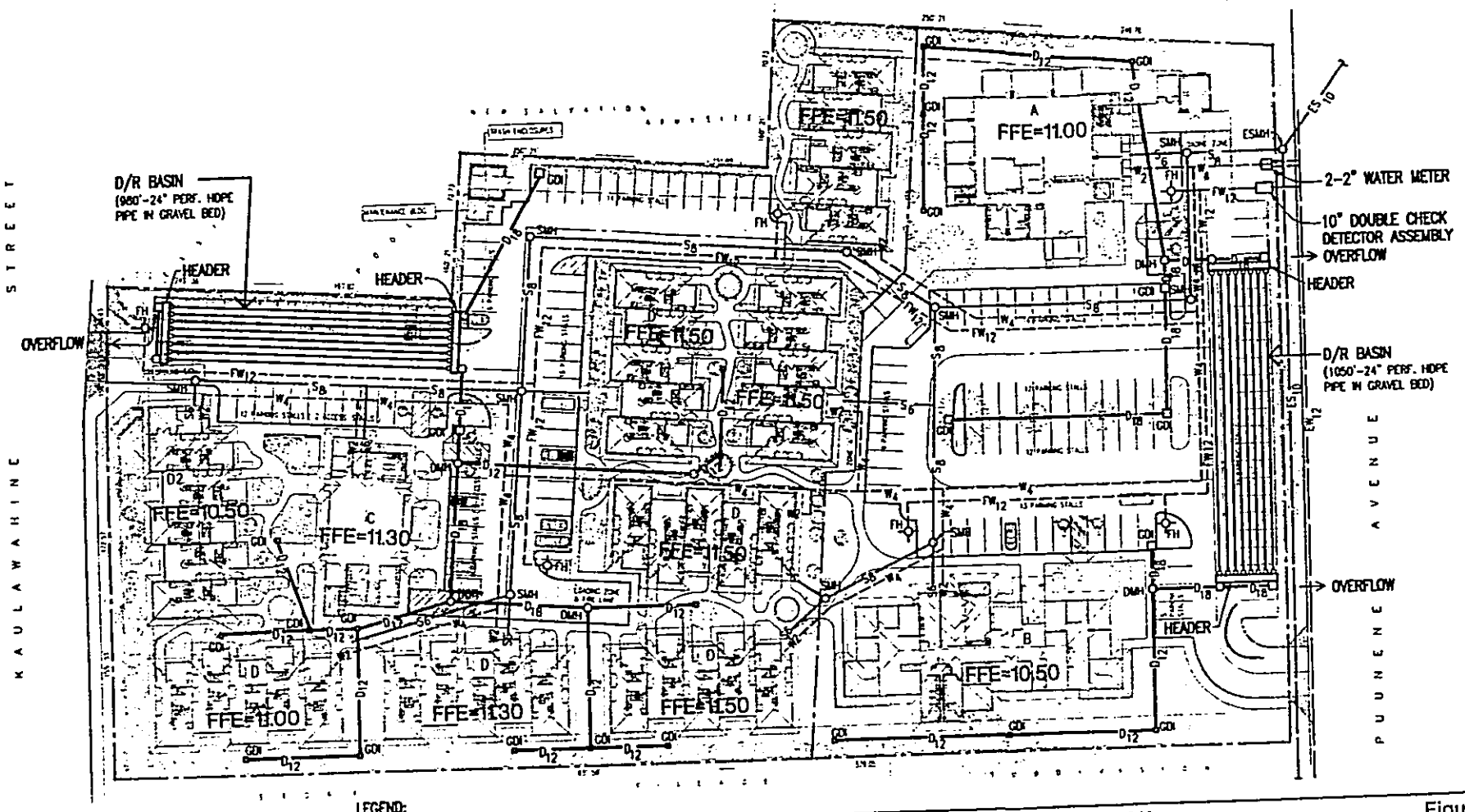
Figure 5

DATE: 08/03/04

SOURCE: A & B PROPERTIES, INC.

PREPARED FOR: MUNEKIYO & HIRAGA, INC.

PREPARED BY: RONALD M. FUKUMOTO ENGINEERING, INC.



LEGEND:

ES_{10} EXISTING UTILITY LINE	GDI GRATED DRAIN INLET
D_{12} DRAIN	DMH DRAIN MANHOLE
S_8 SEWER	SMH SEWER MANHOLE
W_8 DOMESTIC WATER	FH FIRE HYDRANT
FW_{12} FIRE PROTECTION WATER	

NORTH

SCALE IN FEET 0 25 50 100 150

PRELIMINARY UTILITIES PLAN

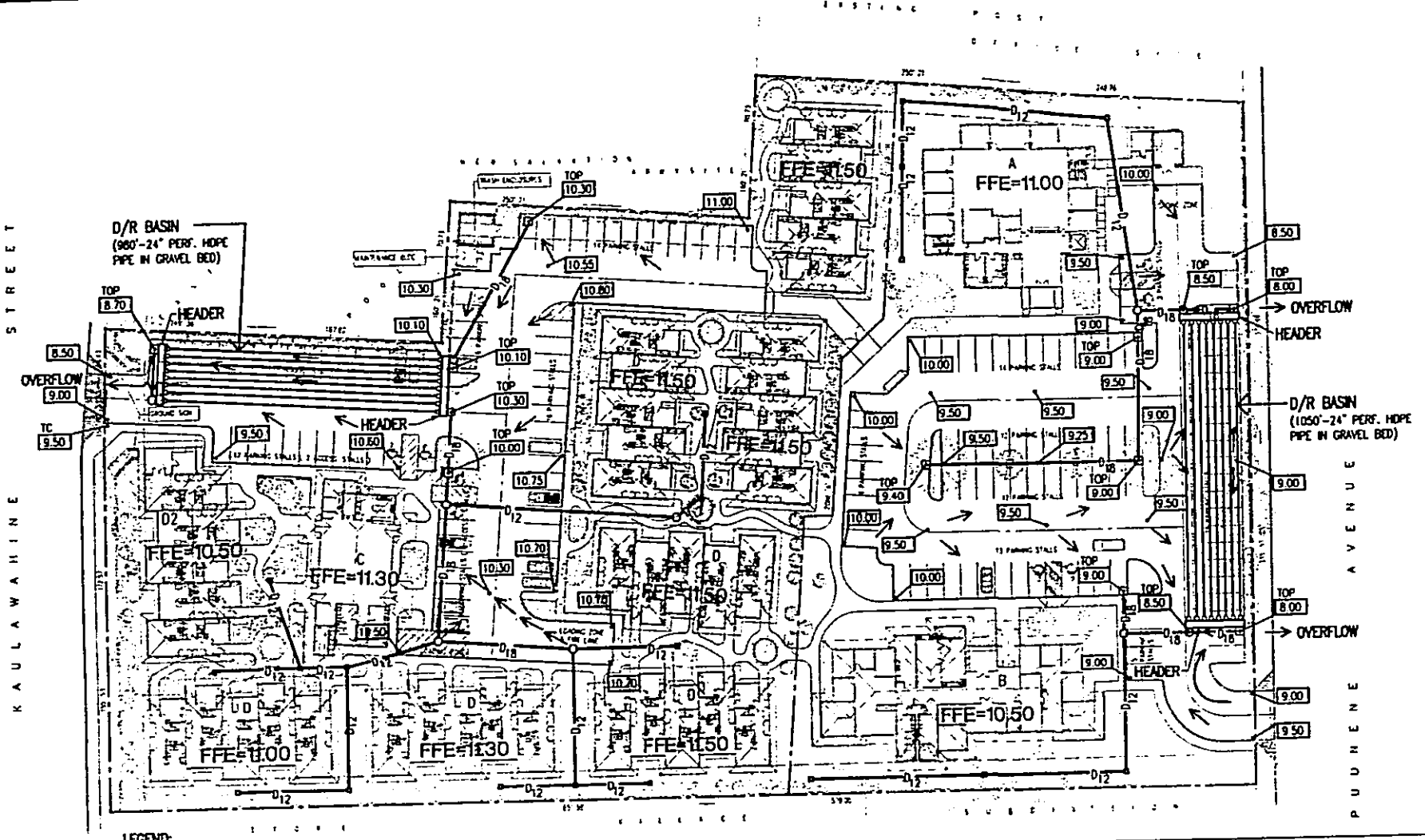
Figure 6

DATE: 08/03/04

PREPARED FOR: MUNEKIYO & HIRAGA, INC.

PREPARED BY: RONALD M. FUKUMOTO ENGINEERING, INC.

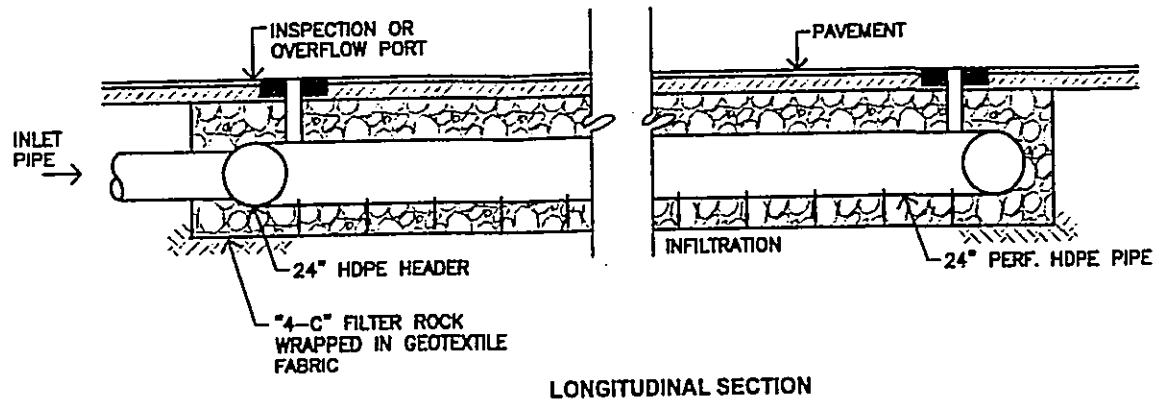
PRELIMINARY ENGINEERING REPORT FOR CENTRAL MAUI SENIOR HOUSING & COUNTY OFFICE BUILDINGS PROJECT



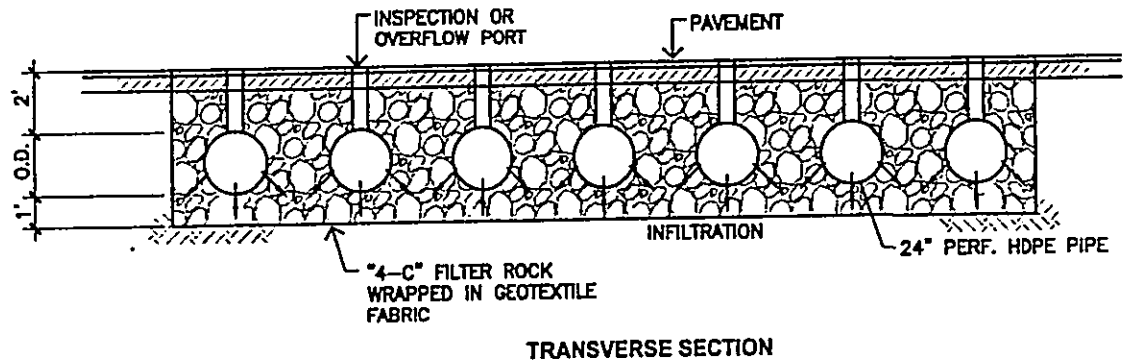
PRELIMINARY GRADING & DRAINAGE PLAN

Figure 7
DATE: 08/03/04

PREPARED FOR: MUNEKIYO & HIRAGA, INC.
PREPARED BY: RONALD M. FUKUMOTO ENGINEERING, INC.



LONGITUDINAL SECTION



TRANSVERSE SECTION

DRAINAGE BASIN SECTIONS

Figure 8

DATE: 08/03/04

SCALE IN FEET

0 1 2 3 4 8 12

PREPARED FOR: MUNEKIYO & HIRAGA, INC.

PREPARED BY: RONALD M. FUKUMOTO ENGINEERING, INC.

PRELIMINARY WATER INFORMATION

A. DOMESTIC WATER DEMANDS

Senior Housing Project:

Rental apartments = 39
Manager's apartment = 1
Total No. of Units = 40
Rate = 560 gallons per day per unit (per DWS guidelines)
Average Daily Demand = ADD for housing = 560 gpd/unit x 40 units = 22,400 gpd
Community Center Building
Area = 2,900 square feet
Rate = 140 gpd per 1,000 sq. ft. (per DWS guidelines)
Assumed Adjusted Rate = 3 x 140 gpd per 1,000 sq. ft. = 420 gpd per 1,000 sq. ft. due to laundry facilities in building
ADD for building = 2,900 sq. ft. x 420 gpd/1000 sq. ft. = 1,218 gpd or approx. 1,200 gpd
Total ADD = 22,400 + 1,200 = 23,600 gpd
Maximum Daily Demand = MDD = 1.5 x ADD = 1.5 x 23,600 = 35,400 gpd
Peak Hour Demand = PHD = 3.0 x ADD = 3.0 x 23,600 = 70,800 gpd

Office Buildings:

Area = 12,400 + 6,700 = 19,100 square feet
ADD = 19,100 sq. ft. x 140 gpd/1,000 sq. ft. = 2,674 gpd or approx. 2,700 gpd
MDD = 1.5 x 2,700 = 4,050 gpd
PHD = 3.0 x 2,700 = 8,100 gpd

Total:

ADD = 23,600 + 2,700 = 26,300 gpd
MDD = 35,400 + 4,050 = 39,450 gpd
PHD = 70,800 + 8,100 = 78,900 gpd

B. WATER METER SIZING DATA

Fixture	Fixture Units per Fixture	Rental Apt.	Mgr. Apt.	Comm. Ctr. Bldg.	Lge. Off. Bldg.	Sml. Off. Bldg.	Maint. Bldg.	Total No. of Fixtures	Total FU
Tub	1.6	-	-	-	-	-	-	-	-
Shower	1.6	1	1	-	-	-	-	40	64.0
Toilet (Low Flow)	1.7	1	1	4	7	3	-	54	91.8
Urinal (Low Flow)	1.7	-	-	2	2	1	-	5	8.5
Lavatory	0.6	1	1	4	5	4	-	53	31.8
Kitchen Sink	1.6	1	1	1	1	1	-	43	68.8
Dish Washer	2	1	1	-	-	-	-	*40*	*80.0*
Washing Machine	2	-	-	-	-	-	-	-	-
Kitchen Service Sink	4	-	-	1	1	1	-	3	12.0
Bar Service Sink	2	-	-	-	-	-	-	-	-
Laundry Service Sink	4	-	-	1	-	-	-	1	4.0
Fill Faucet	2	-	-	-	-	-	-	-	-
Commercial Dishwasher	5	-	-	-	-	-	-	-	-
Comm. Washing Machine	4	-	-	3	-	-	-	3	12.0
Hose Bibb	3	-	-	4	4	4	2	14	42.0
FU per Building/Room		7.5	7.5	46.2	35.9	26.8	6.0		
No. of Buildings/Rooms		39	1	1	1	1	1		
Total FU		292.5	7.5	46.2	35.9	26.8	6.0		414.9
Domestic Peak Demand (gpm)									110
Landscape Peak Demand (gpm)									75
Total Peak Demand (gpm)									185
Meter Selection and Capacity (gpm)						2	1½-inch	100	200

PRELIMINARY WASTEWATER INFORMATION

WASTEWATER FLOWS

Type of Use	Unit	Number of Units	Contribution (Gal/Unit/Day)	Total Flow (Gal/Day)
Apartment	Unit	40	255	10,200
Community Center - Coin Operated Laundry	Machine	3	300	900
Community Center - Manager and Staff	Employee	4	20	80
12,400-sq. ft. Office (1 employee per 200 sq. ft.)	Employee	62	20	1,240
6,700-sq. ft. Office (1 employee per 200 sq. ft.)	Employee	34	20	680
Total Estimated Flow				**13,100**

PRELIMINARY DRAINAGE INFORMATION

A. RUNOFF COEFFICIENT
   1. Existing Conditions
      Park area, unimproved, poor cover 0.50
   2. Developed Conditions
      Impervious "hard surface" 0.90
      Pervious landscaped 0.30

      $C_{composite} = [(0.90 \times 2.81)+(0.30 \times 1.19)] / 4.0 = 0.72$

B. RECURRENCE INTERVAL & RAINFALL
   1. Recurrence interval $T_m = 50$ years (due to sump conditions)
   2. One-hour rainfall $I_{50} = 2.4$ inches

C. TIME OF CONCENTRATION
   1. Existing Conditions $T_c = 10$ minutes
   2. Developed Conditions $T_c = 8$ minutes

D. EXISTING RUNOFF (Rational Method)
   1. $C = 0.50$
   2. $i = 2.4 \times 2.06 = 4.94$
   3. $a = 4.0$ acres
   4. $Q = Cia = 0.50 \times 4.94 \times 4.0 = 9.9$ cfs

E. DEVELOPED RUNOFF (Rational Method)
   1. $C = 0.72$
   2. $i = 2.4 \times 2.164 = 5.18$
   3. $a = 4.0$ acres
   4. $Q = Cia = 0.72 \times 5.18 \times 4.0 = 14.9$ cfs

F. INCREASE DUE TO DEVELOPMENT (Rational Method)
   $\Delta Q = 14.9 - 9.9 = 5.0$ cfs (for 50-year, 1-hour storm)

G. CURVE NUMBER (CN) COMPUTATION
   1. Existing
      Urban, open space, lawn, average condition CN = 79
   2. Developed
      Building, parking CN = 98 Area = 2.48 acres
      Landscaped CN = 74 Area = 1.52 acres

      $CN = [(98 \times 2.48)+(74 \times 1.52]/(4.0) = 89$

H. RAINFALL DATA
   50-year, 1-hour P = 2.4 inches

I. RUNOFF VOLUME

1. Required Retention Volume
   The County drainage rules require retaining the increase in runoff volume due to a 50-year, 1-hour storm.
2. 50-year, 1-hour
   a. Existing – 4.0 acres
      $S = (1000/CN) - 10 = (1000/79) - 10 = 2.658$
      $Q = (P-0.2S)^2/(P+0.8S) = (2.4-0.2x2.658)^2/(2.4+0.8x2.658) = 0.77$ inch
      Volume = (0.77/12)x4.0x43560 = 11,180 cu. ft.
   b. Developed – 4.0 acres
      $S = (1000/CN) - 10 = (1000/89) - 10 = 1.236$
      $Q = (P-0.2S)^2/(P+0.8S) = (2.4-0.2x1.236)^2/(2.4+0.8x1.236) = 1.37$ inch
      Volume = (1.37/12)x4.0x43560 = 19,892 cu. ft.
   c. Increase due to development
      ΔV= 19,892 –11,180 = 8,712 cu. ft.

J. RUNOFF RATE

The County drainage rules require the use of a 50-year recurrence interval for this project. Therefore, a 50-year, 1-hour storm will be used and the required detention volume will be computed using the following tabular method similar to a hydrograph method.

Drainage Area = A = 4.0 acres
Developed Runoff Coefficient = C = 0.72
Design Storm = 50-year
One Hour Rainfall = P = 2.4 inches
Present Peak Discharge = 9.9 cfs = Q_{OUT}
Developed Peak Discharge = 14.9 cfs = Q_{IN}
Q_{OUT} / Q_{IN} = 9.9 / 14.9 = 0.66
Outflow Adjustment Factor = 0.82

Storm Duration, minutes	Correction Factor	Rainfall Intensity, in./hr.	Runoff Volume, cu. ft.	Outflow Volume, cu. ft.	Storage Volume, cu. ft.	Storage Volume, ac. ft.	
T	*f*	*I = fi*	*CIAT*	$kQ_{OUT}T$	(4) - (5)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
5	2.56	6.138	5,347	2,435	2,912	0.0669	
10	2.06	4.944	8,614	4,871	3,743	0.0859	
14	1.88	4.514	11,010	6,819	4,191	0.0962	
15	1.84	4.411	11,530	7,306	4,224	0.0970	
16	1.80	4.313	12,024	7,793	4,231	0.0971	Peak
17	1.76	4.219	12,496	8,280	4,216	0.0968	
20	1.65	3.967	13,824	9,742	4,082	0.0937	
30	1.42	3.408	17,814	14,612	3,202	0.0735	
40	1.25	3.000	20,909	19,483	1,426	0.0327	
60	1.00	2.400	25,091	29,225	-4,134	-0.0949	

K. RETENTION PIPE PRELIMINARY DESIGN

There are no existing underground storm drainage systems in the area with sufficient capacity to carry the additional runoff from the developed site. Presently, the runoff which does not percolate into the soil, flows onto Puunene Avenue and Kaulawahine Street. The proposed drainage basin will be designed to accommodate the volume of both the retention and detention increases. The remaining additional runoff will continue to sheet flow onto Puunene Avenue and Kaulawahine Street.

The storm runoff will be stored in two separate underground retention basins under the parking lots on each side of the site. They will consist of 24-inch diameter corrugated HDPE pipe in a gravel bed of filter rock. The basin will be designed to keep peak flow rates due to a 50-year, 1-hour storm at pre-development levels and to keep runoff volumes due to a 50-year, 1-hour storm at pre-development levels. The following are preliminary sizing computations.

1. Total Required Detention Volume = V = 4,231 cubic feet
2. Total Required Retention Volume = V = 8,712 cubic feet
3. Use 2-foot diameter perforated HDPE pipe in 4-foot deep by 4-foot wide gravel bed consisting of "4-C" filter rock.
4. Pipe Area = Πr^2 = Π x 1^2 = 3.14 square feet
5. Gravel Area = (4x4) – 3.14 = 12.86 square feet
6. Gravel Void Area = 12.86 x 0.45 = 5.79 square feet
7. Allowable Gravel Void Area = 5.79 x 0.50 = 2.89 square feet
8. Pipe Area + Allowable Gravel Void Area = 3.14 + 2.89 = 6.03 square feet
9. Required Length = 12,943 / 6.03 = 2,146 feet
10. Preliminary Design Length Provided:

Western Half:	7 x 140' =	980 feet
	Header =	60 feet
Eastern Half:	7 x 150' =	1,050 feet
	Header =	60 feet
		2,150 feet

Appendix E

Neighborhood Meetings

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) 270-7805 • FAX (808) 270-7165

September 2, 2004

TO: Owners/Lessees

Dear Sir or Madam:

SUBJECT: CENTRAL MAUI SENIOR HOUSING AND COUNTY OFFICE BUILDINGS PROJECT, TMK (2) 3-7-013: POR., 026, KAHULUI, MAUI

The Department of Human Concerns, County of Maui would like to invite you to a meeting to review the conceptual plans for the Central Maui Senior Housing and County Office Buildings Project, which is proposed for development between Puunene Avenue and Kaulawahine Street (swap meet site). The pertinent information on the meeting is as follows:

DATE: Wednesday, September 22, 2004

TIME: 5:30 p.m. to 7:00 p.m.

PLACE: Planning Department Conference Room
Kalana Pakui Building, 1st Floor
250 South High Street
Wailuku, Hawaii 96793

The proposed project will consist of senior housing apartments and County of Maui office buildings on approximately 4.0 acres. The senior housing component will consist of 39 one-bedroom rental units and one (1) two-bedroom manager's unit. The office buildings component will consist of a 12,437 square foot two-story building and a 6,718 square foot one-story building. Each component will have associated parking and landscaping.

Representatives from our department and the planning and architectural consultants for the project will be available to discuss the project with you. We look forward to meeting with you. Enclosed for your information is a location map and site plan of the project.

Should you have any questions regarding the meeting or need further information, please contact Edwin Okubo of our Housing Division at 270-7351. We would also appreciate your confirming your attendance at the meeting by calling Helen of our Housing Division at 270-7351.

Thank you.

Sincerely,

ALICE L. LEE,
Director

Enclosures

cc: Edwin Okubo, Department of Housing and Human Concerns, Housing Division (w/out enclosure)
✓ Daren Suzuki, Munekiyo & Hiraga, Inc. (w/out enclosure)
Alvin Yoshimori, GYA Architects, Inc. (w/out enclosure)

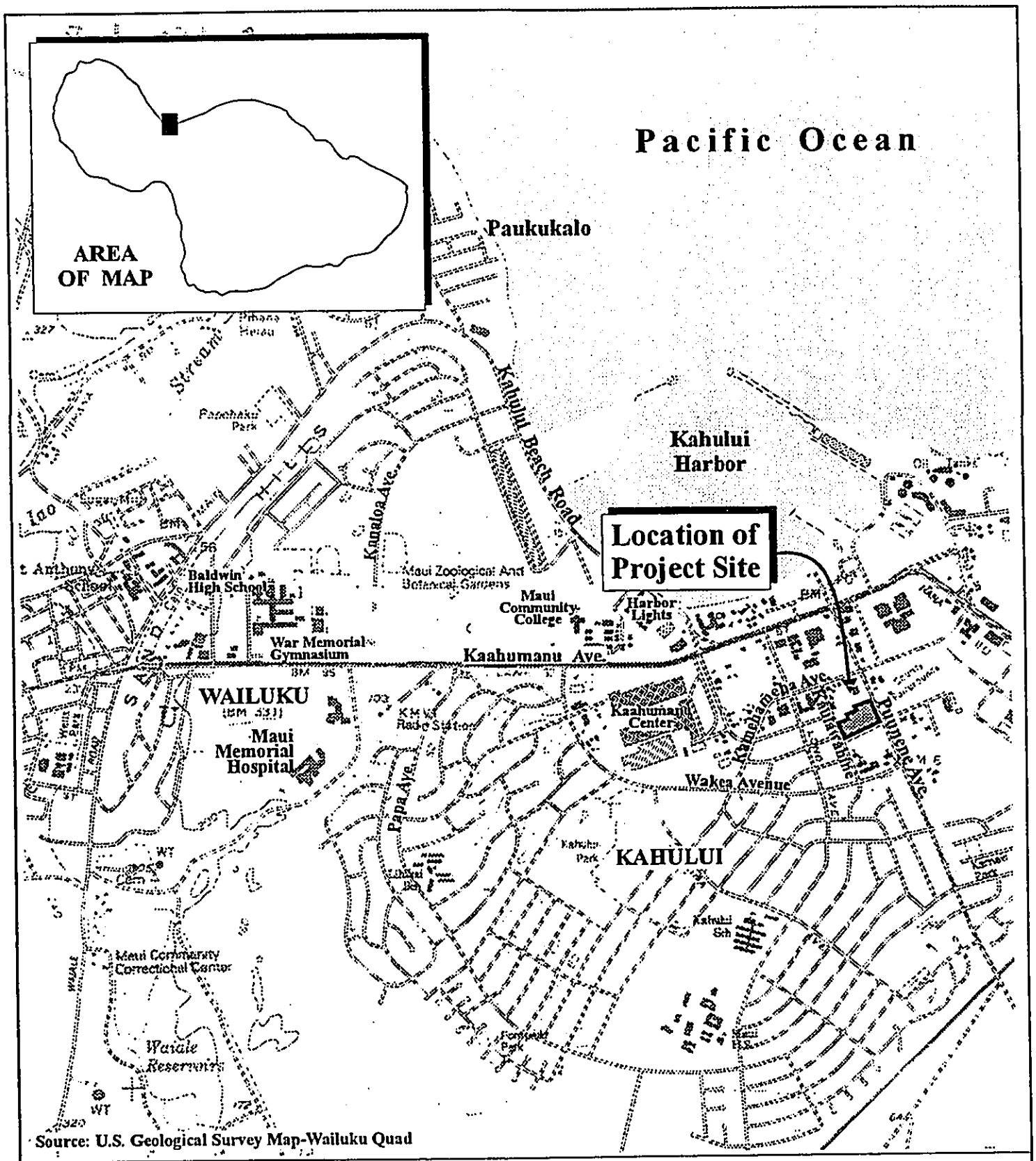


Figure 1 Central Maui Senior Housing and County Office Buildings Project

Regional Location Map

0 500 1000 2000 Feet

Prepared for: County of Maui, Dept. Of Housing and Human Concerns

MUNEKIYO & HIRAGA, INC.

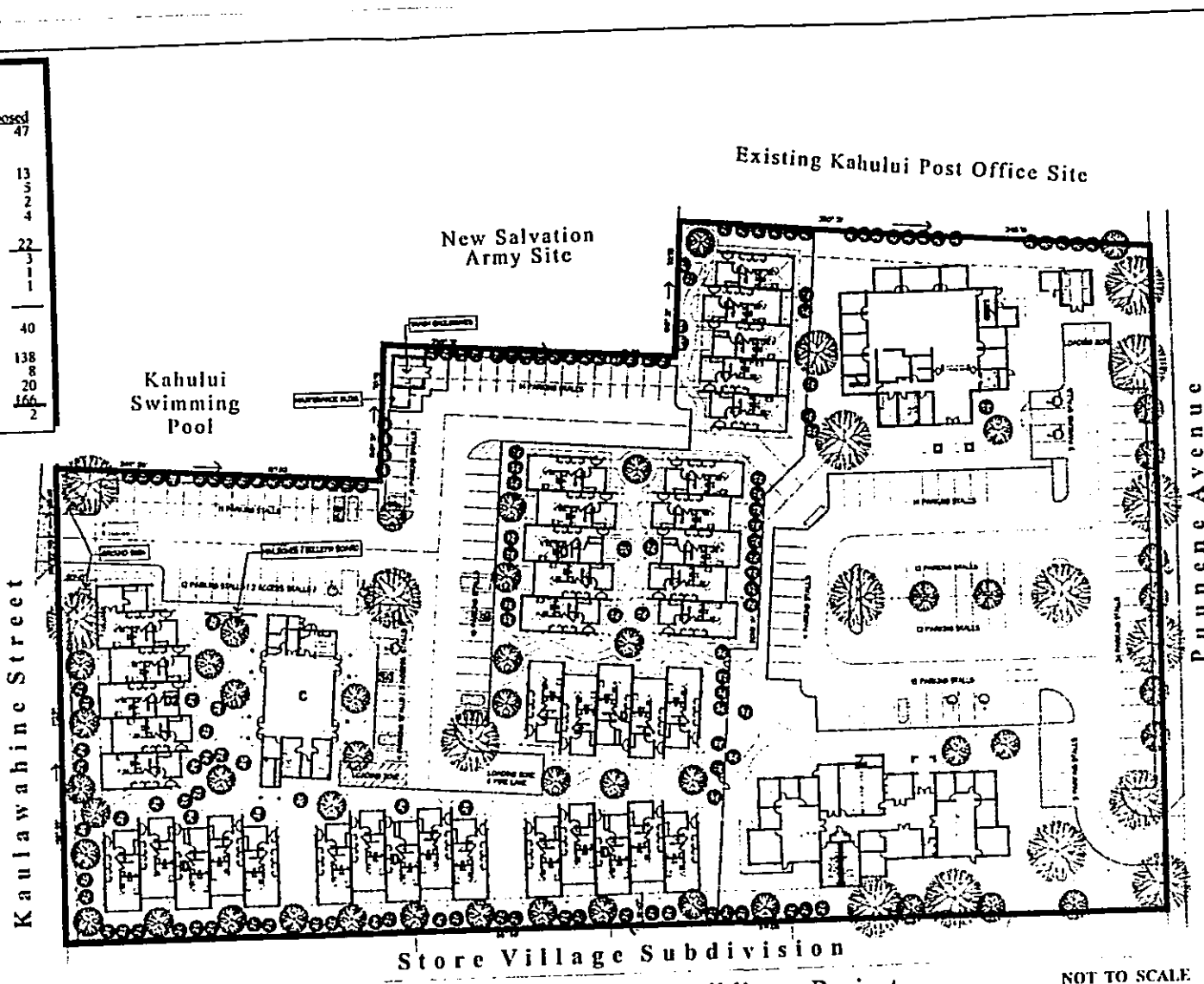
PARKING SUMMARY

	Required	Proposed
Building 'A' (Housing Division Office)		
(40-Employees + 7 Visitors)	47	47
Building 'B' (Immigration Services Division & Volunteer Center & Office of Aging		
(I.S. = 5 Employees + 8-Min. Visitors)	13	13
(V.C. = 2 Employees + 3-Min. Visitors)	5	5
(Aging = 1 Employee + 1-Min. Visitor)	2	2
(CDBG = 4 Employees + 0-Min. Visitor)	4	4
Building 'C' (Community Center Building)	22	22
(1/100 = 28 + 3 Employees)	3	3
(1/500 = 6 Office)	1	1
(1 Laundry)	1	1
(1 Maintenance)		
Building 'D' (Senior Housing)		
(1-Stall/Unit = 39 + 1 Manager Unit = 1)	40	40
	138	138
Parking Sub Total	8	8
Accessible Parking Stalls	0	20
Additional Parking	146	166
Parking Total	2	2
Loading Zone		

CODE INFORMATION

Building Code Data

Tax Map Key:	3-7-13: Parcel 26 (Lot 4)
Lot Area:	3.998 Acres/ 174,156.9 Sq. Ft.
Zoning:	R-3
Community Plan:	Park
Flood Zone:	C
Exemptions:	--



NOT TO SCALE

Source: GVA Architects, Inc.

Figure 2 Central Maui Senior Housing and County Office Buildings Project
Overall Site Plan

Prepared for: County of Maui, Dept. of Housing and Human Concerns

MUNEKIYO & HIRAGA, INC

LIST OF OWNERS/LESSEES ABUTTING AND ACROSS THE STREET OF THE PROJECT SITE
for
PROPOSED CENTRAL MAUI SENIOR HOUSING AND COUNTY BUILDINGS PROJECT
TMK 3-7-013: POR. 026

3-7-013-014-0000
PAET LEONARD/ERMILINDA
60 ALEHELA PL
KAHULUI HI 96732

3-7-013-015-0000
GAPERO JOSE M JR ETAL
P O BOX 4067
KAHULUI HI 96732

3-7-013-016-0000
ALVIEDO CENON/ROSANNA
32 ALEHELA PL
KAHULUI HI 96732

3-7-013-017-0000
MERIALES EDILBERTO ETAL
22 ALEHELA PL
KAHULUI HI 96732

3-7-013-018-0000
PASALO HILARIO L/ADELA A
14 ALEHELA PL
KAHULUI HI 96732

3-7-013-019-0000
CARAANG PATROCINO BAYUDAN ETAL
15 ALEHELA PL
KAHULUI HI 96732

3-7-013-019-0000
CARAANG PATROCINO BAYUDAN
FIRST MAGNUS FINANCIAL
6373 EAST TANGUE VERDE STE 280
TUCSON AZ 85715

3-7-013-020-0000
GARCIA DIONICIO EDDIE G ETAL
27 ALEHELA PL
KAHULUI HI 96732

3-7-013-021-0000
BADUA JOHNNY A SR ETAL
59 LEIPAPA PL
KAHULUI HI 96732

3-7-013-022-0000
UEKI GUY A/SHERRIE M
47 ALEHELA PL
KAHULUI HI 96732

3-7-013-023-0000
SALACUP JOSE Q ETAL
55 ALEHELA PL
KAHULUI HI 96732

3-7-013-024-0000
PAET JIMMY G/ADELINA B
63 ALEHELA PL
KAHULUI HI 96732

3-8-016-001-0000
NODA GARY Y/SARAH H
1610 KANUNU ST #508
HONOLULU HI 96814

3-8-016-002-0000
RAMOS MANUEL A
RAMOS MANUEL/ESTER
75 ALEHELA ST
KAHULUI HI 96732

3-8-016-003-0000
KONG MYRTLE S
83 ALEHELA ST
KAHULUI HI 96732

3-8-016-004-0000
PHILLIP KAT P ETAL
91 ALEHELA ST
KAHULUI HI 96732

3-8-016-005-0000
UYENOYAMA GLEN N ETAL
C/O UYENOYAMA HIDESUKE
97 W ALEHELA ST
KAHULUI HI 96732

3-8-016-006-0000
ABREU ELIZABETH A TRUSTEE
201 S LONO AVE
KAHULUI HI 96732

3-8-016-007-0000
SAKURA NOBUKO ETAL
104 KANE ST
KAHULUI HI 96732

3-8-016-008-0000
CABEBE HERMINA CECILIA
98 NIIHAU ST
KAHULUI HI 96732

3-8-016-009-0000
YOSHIDA DONALD HIROSHI ETAL
90 NIIHAU ST
KAHULUI HI 96732

3-8-016-010-0000
BARTOLOME CONCEPCION JAVIER
ETAL
84 NIIHAU ST
KAHULUI HI 96732

3-8-016-010-0000
BARTOLOME LESLIE GLEN ETAL
2106 ULUWEHI ST
WAILUKU HI 96793

3-8-016-011-0000
KEAU MATTHEW K ETAL
76 NIIHAU ST
KAHULUI HI 96732

3-8-016-012-0000
JOYO LAWERENCE T ETAL
C/O JANICE A KATSUTANI ETAL
PO BOX 5012
KAHULUI HI 96733

3-8-016-012-0000
KONO LESLIE Y/JO-ANN S REVC LVG TR
ETAL
1923 KALAWI PL
WAILUKU HI 96793

3-8-016-013-0000
CORREA FRANK P FAMILY TR
220 S KAULAWAHINE ST
KAHULUI HI 96732

3-8-016-014-0000
PALAFOX CECILIA ETAL
75 NIIHAU ST
KAHULUI HI 96732

3-8-016-015-0000
SAITO TOMIO T ETAL
85 NIIHAU ST
KAHULUI HI 96732

3-8-016-016-0000
NAGAMINE YASUO TR ETAL
91 W NIIHAU ST
KAHULUI HI 96732

3-8-016-017-0000
FUKUSHIMA KAREN K TRUST
97 W NIIHAU ST
KAHULUI HI 96732

3-8-016-018-0000
YASUNAGA ALAN ISAO
101 NIIHAU ST
KAHULUI HI 96732

3-8-016-019-0000
KOSAKA VALERIE M K TRUST ETAL
114 LEHUA ST
KAHULUI HI 96732

3-8-016-019-0000
KUBOTA TOSHIO ETAL
257 LONO AVE
KAHULUI HI 96732

3-8-016-020-0000
SUKIMOTO HIROKI ETAL
102 W WAKEA AVE
KAHULUI HI 96732

3-8-016-021-0000
HO TANAKA & MASAKO TRUST
TAKAO ITO TRS
94 W WAKEA AVE
KAHULUI HI 96732

3-8-016-022-0000
DAIDA MASAO TRS ETAL
86 W WAKEA AVE
KAHULUI HI 96732

3-8-016-023-0000
NAGATA BETTY FUSAYE ETAL
78 W WAKEA AVE
KAHULUI HI 96732

3-8-016-024-0000
COAN ATILIO L ETAL
4212 APACHE ST
OCEANSIDE CA 92056

3-8-017-001-0000
HIGA SEICHI ETAL
170 KAULAWAHINE ST
KAHULUI HI 96732

3-8-017-002-0000
YAMASHITA YOSHIO TRUST ETAL
YOSHIO YAMASHITA TRS
377 KAHOOLAWE ST
KAHULUI HI 96732

3-8-017-002-0000
KAGAWA BETSY M TRUST ETAL
555 AHAKEA ST
HONOLULU HI 96816

3-8-017-003-0000
FURUTA MILDRED M TRUST
88 ALEHELA ST
KAHULUI HI 96732

3-7-8-017-004-0000
ABARRA ROGELLIO R ETAL
98 ALEHELA ST
KAHULUI HI 96732

3-7-8-017-005-0000
ACOB JOSE B ETAL
181 LONO AVE
KAHULUI HI 96732

3-8-017-025-0000
MOLETA PEDRO O ETAL
P O BOX 1
PUUNENE HI 96784

3-8-017-026-0000
MANANGAN RICHARD ETAL
95 W KANE ST
KAHULUI HI 96732

3-8-017-027-0000
UYENO HIROSHI TRUST
960 WAIONO PL
KIHEI HI 96753

3-8-017-028-0000
INOUYE KEVIN H
INOUYE KEVIN H/CONSTANCE F
81 W KANE ST
KAHULUI HI 96732

3-8-017-029-0000
FOOSUM HENRY K/MAGGIE A TRS
161 KAULAWAHINE ST
KAHULUI HI 96732

Neighborhood Informational Meeting
Planning Department Conference Room
Wailuku, Maui

September 22, 2004

Meeting Summary: Neighborhood informational meeting started at approximately 5:30 p.m. with one person in attendance. The person that came was Mrs. Edyne Ah Sau of Wailuku. She came to the meeting because her father lives on Kaulawahine Street. Daren Suzuki of Munekiyo & Hiraga, Inc., Alvin Yoshimori of GYA Architects and Edwin Okubo of the Department of Housing and Human Concerns briefed Mrs. Ah Sau on the project and talked about a number of project related and non-project related matters. The discussions and the public meeting ended at approximately 6:15 P.M.

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FILE

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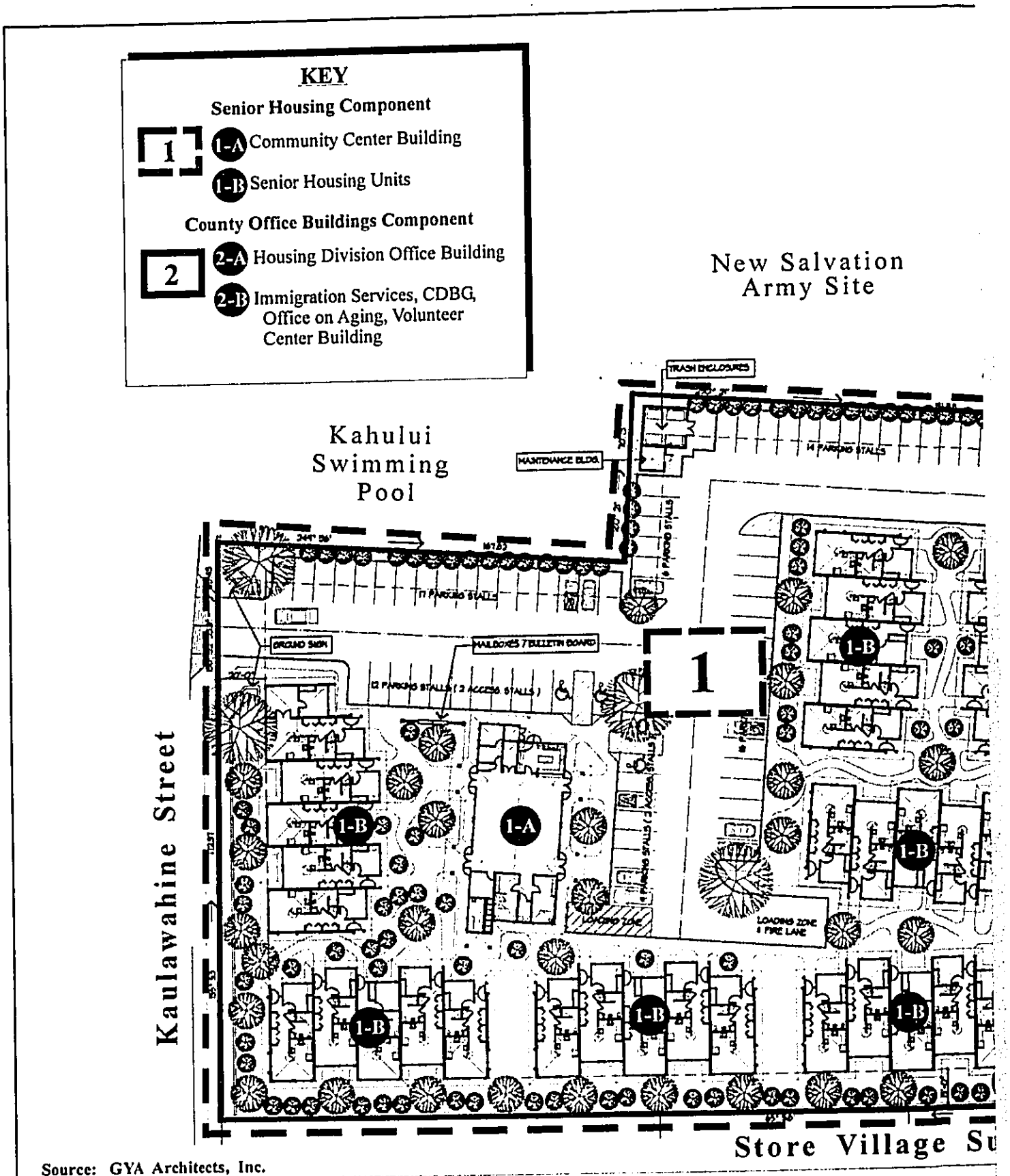

Source: GYA Architects, Inc.

Figure 2 Central Maui Senior Housing and County
Overall Site Plan

Prepared for: County of Maui, Dept. of Housing and Human Concerns

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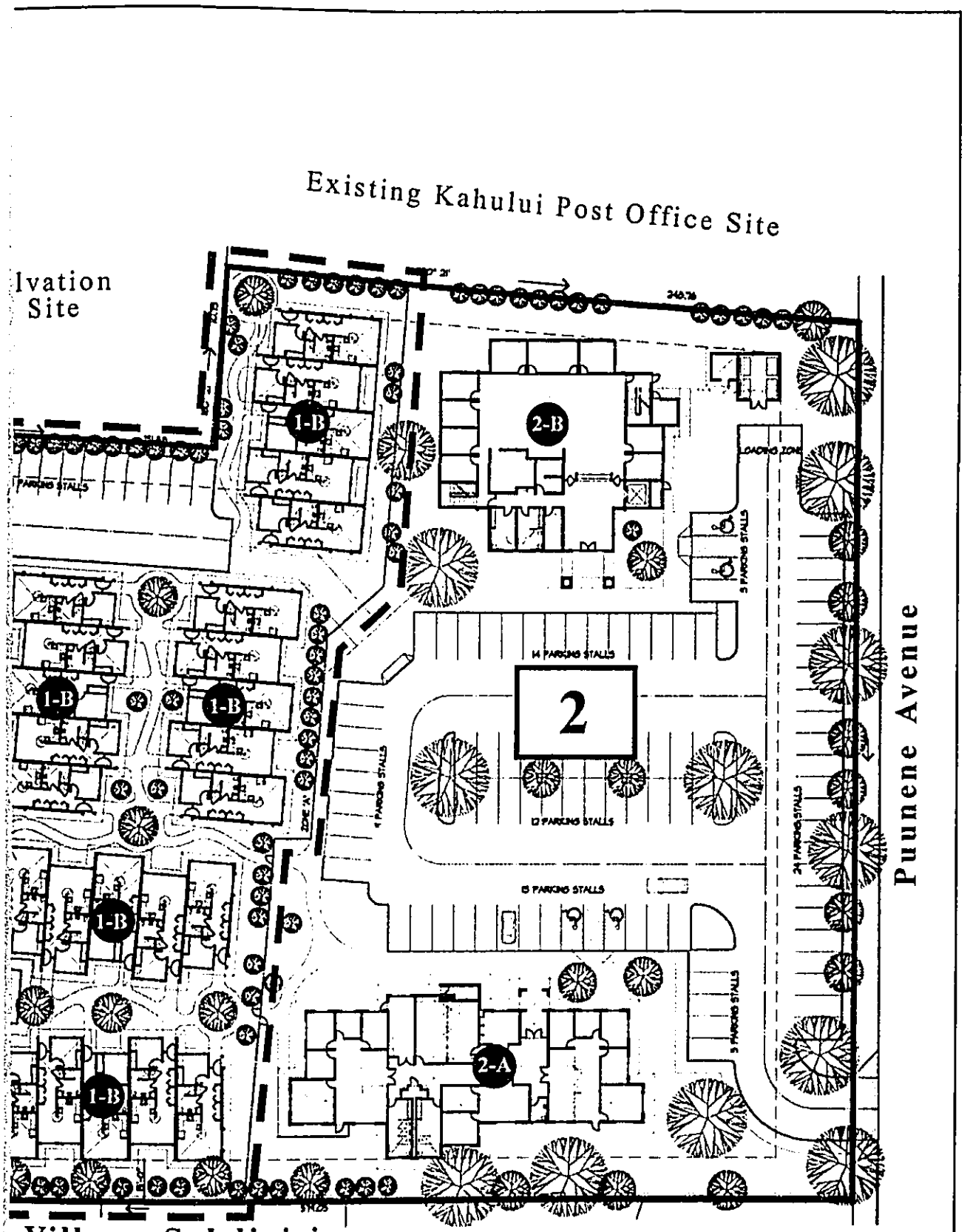

ıd County Office Buildings Project NOT TO SCALE

Site Plan

MUNEKIYO & HIRAGA, INC.

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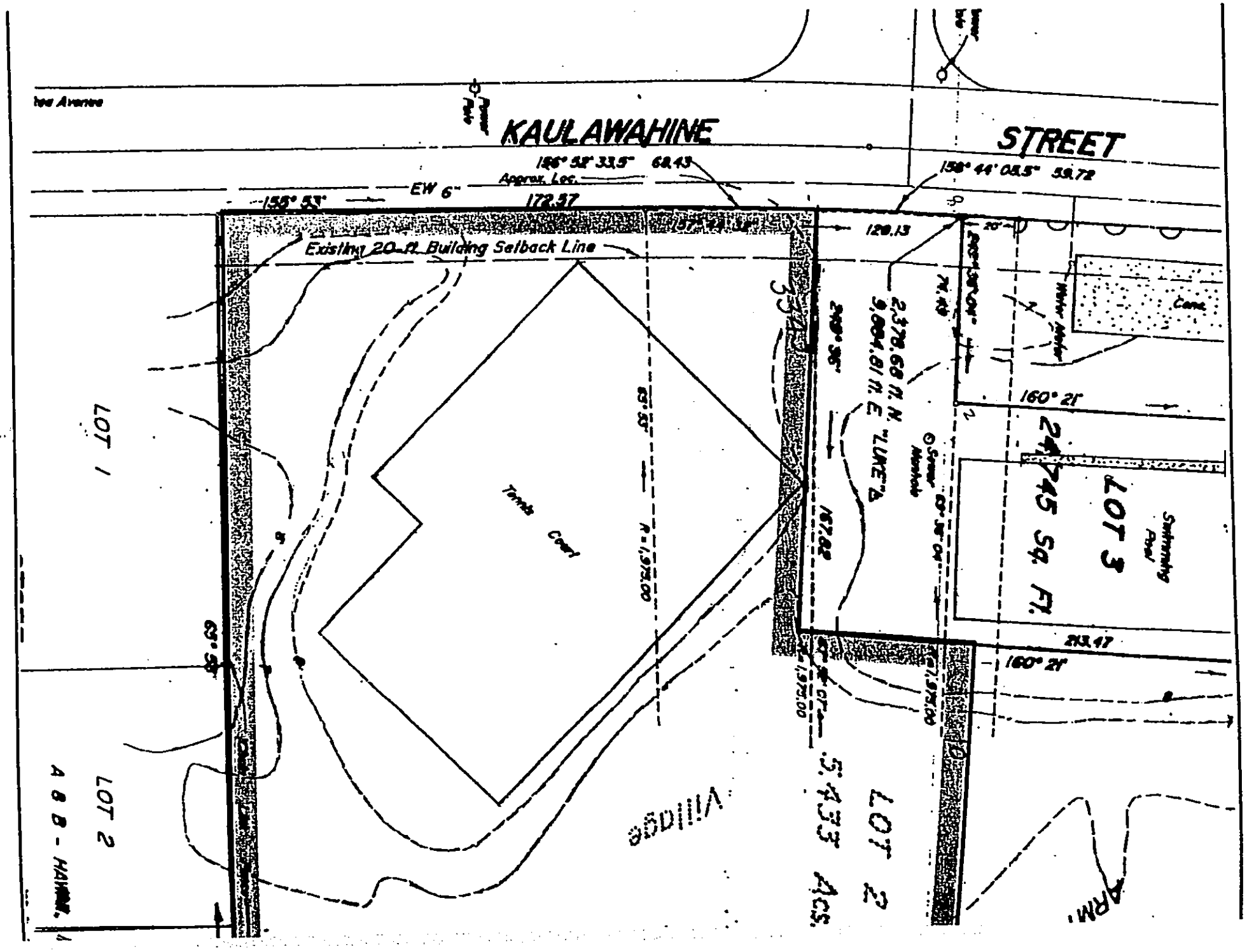

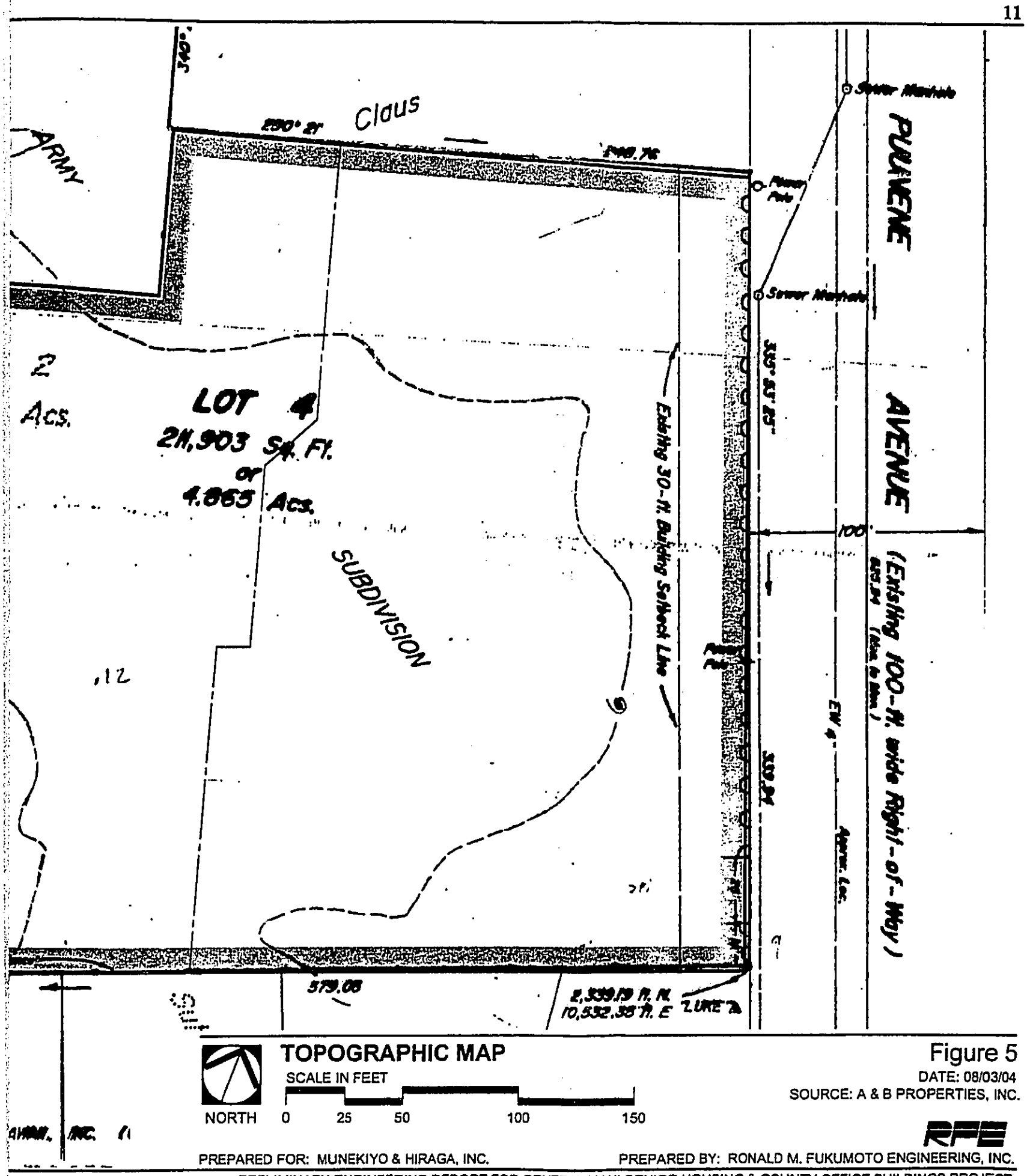

TOPOGRAPHIC MAP

SCALE IN FEET

Figure 5

DATE: 08/03/04

SOURCE: A & B PROPERTIES, INC.

PREPARED FOR: MUNEKIYO & HIRAGA, INC.

PREPARED BY: RONALD M. FUKUMOTO ENGINEERING, INC.

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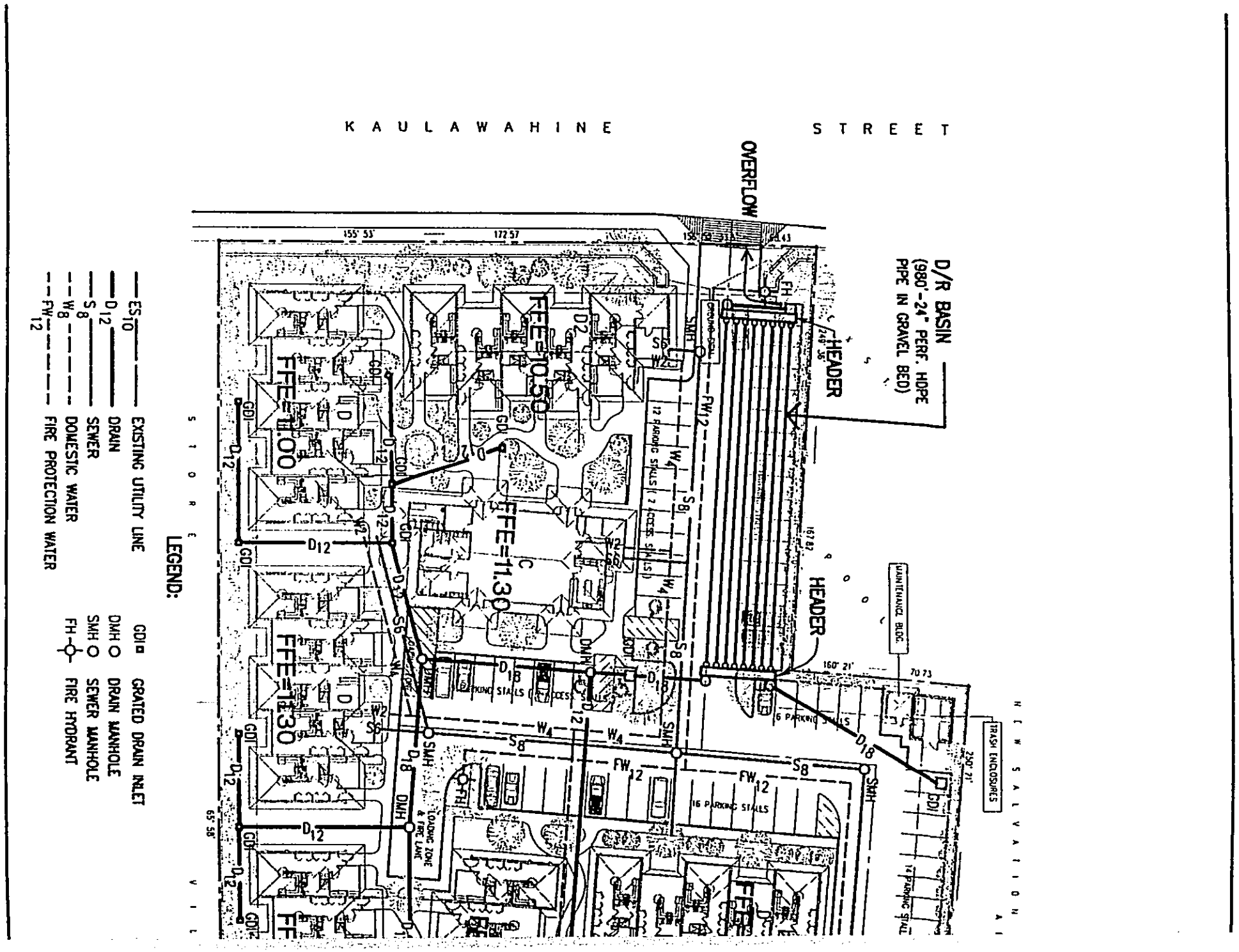

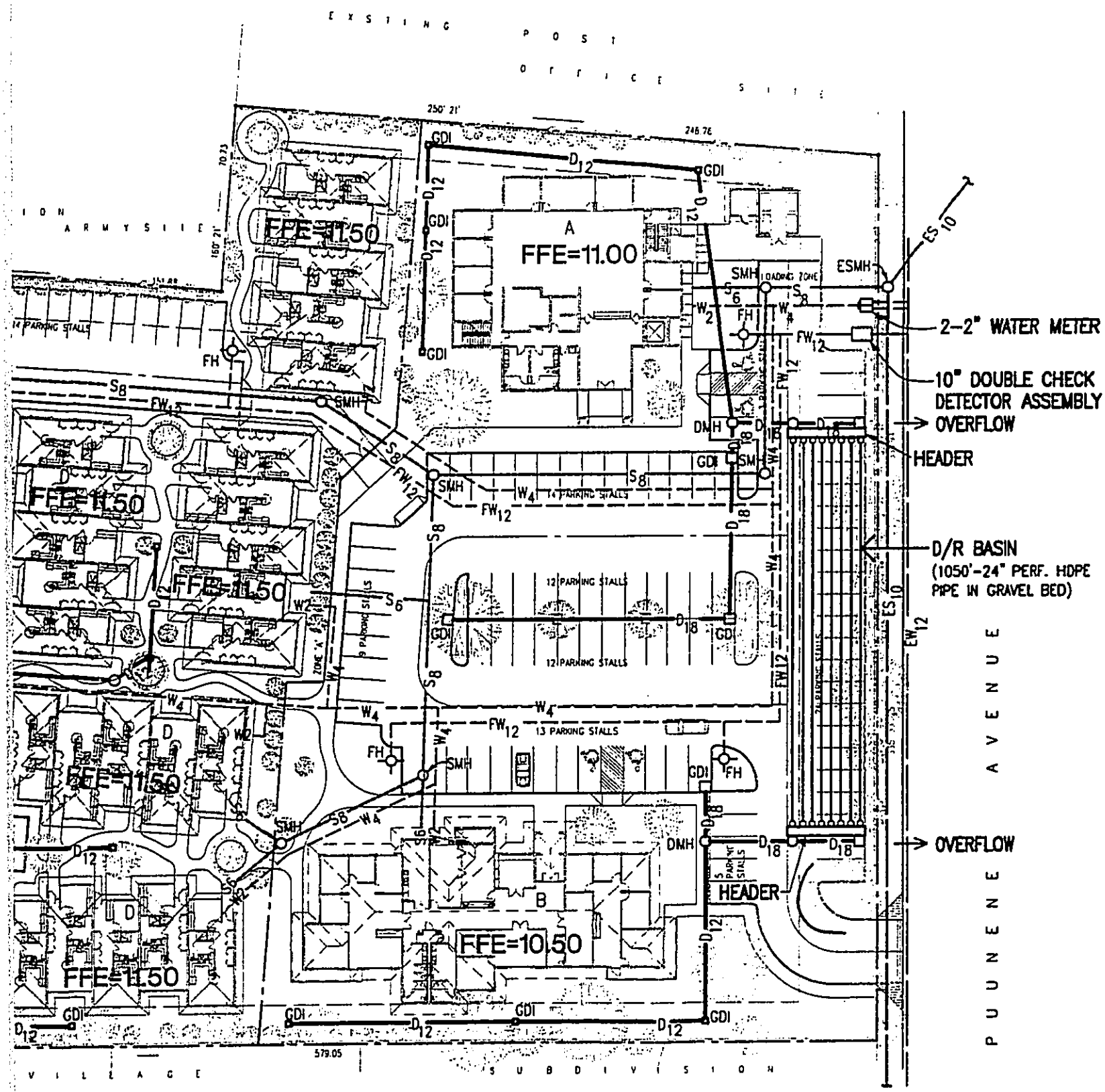

PRELIMINARY UTILITIES PLAN

SCALE IN FEET

Figure 6

DATE: 08/03/04

PREPARED FOR: MUNEKIYO & HIRAGA, INC.

PREPARED BY: RONALD M. FUKUMOTO ENGINEERING, INC.

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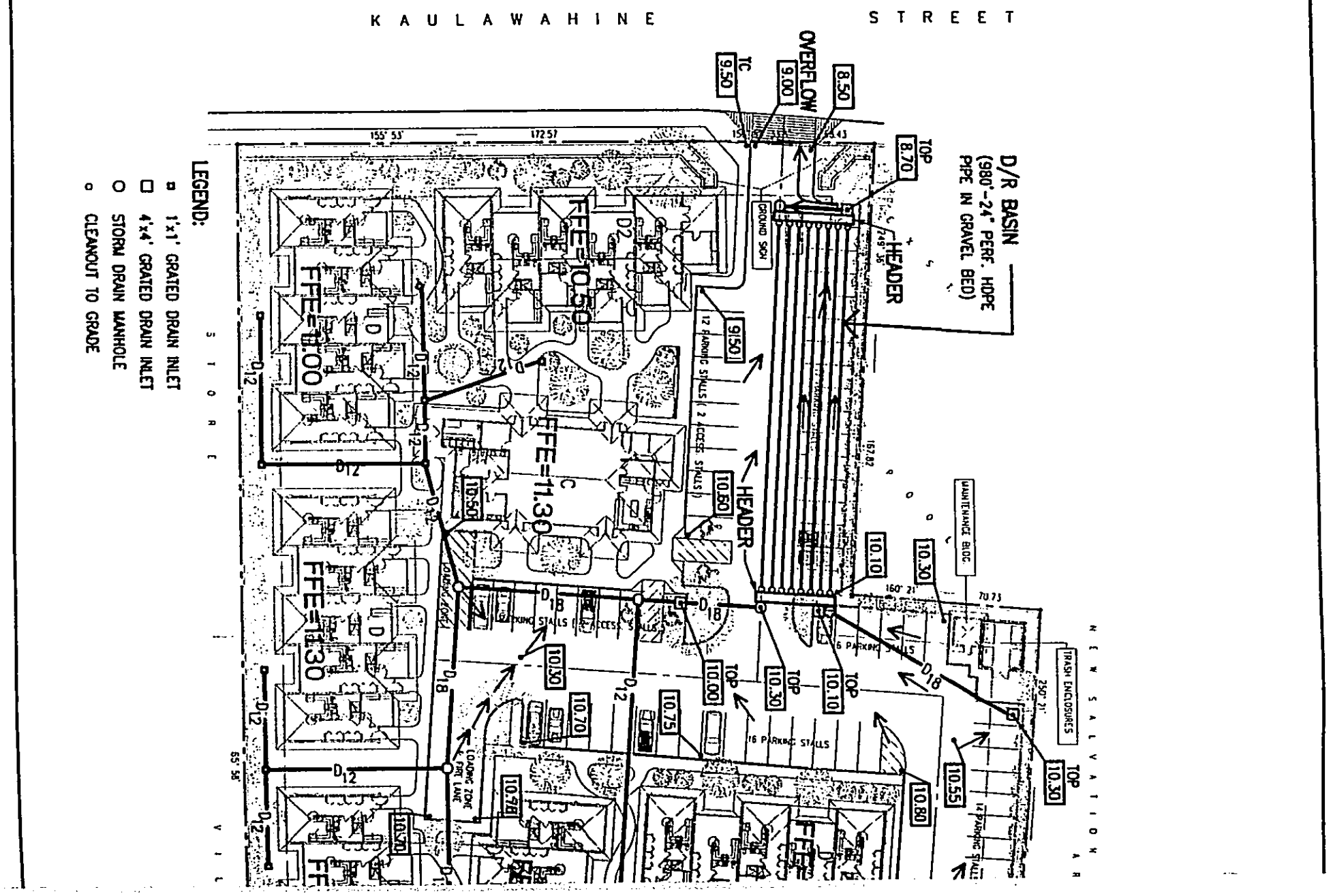

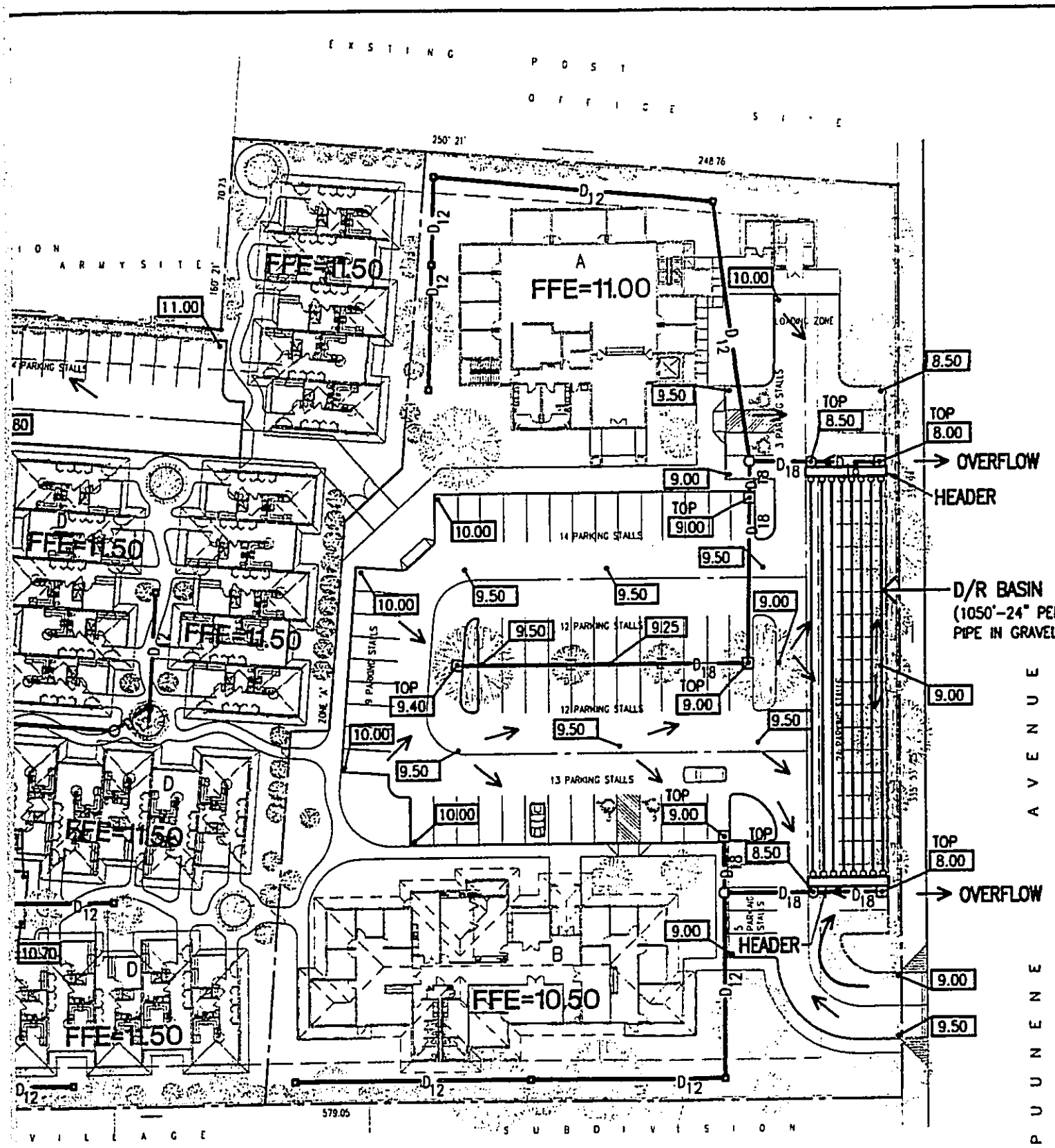

PRELIMINARY GRADING & DRAINAGE PLAN

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NORTH 0 25 50 100 150

Figure 7

DATE: 08/03/04

PREPARED FOR: MUNEKIYO & HIRAGA, INC.

PREPARED BY: RONALD M. FUKUMOTO ENGINEERING, INC.

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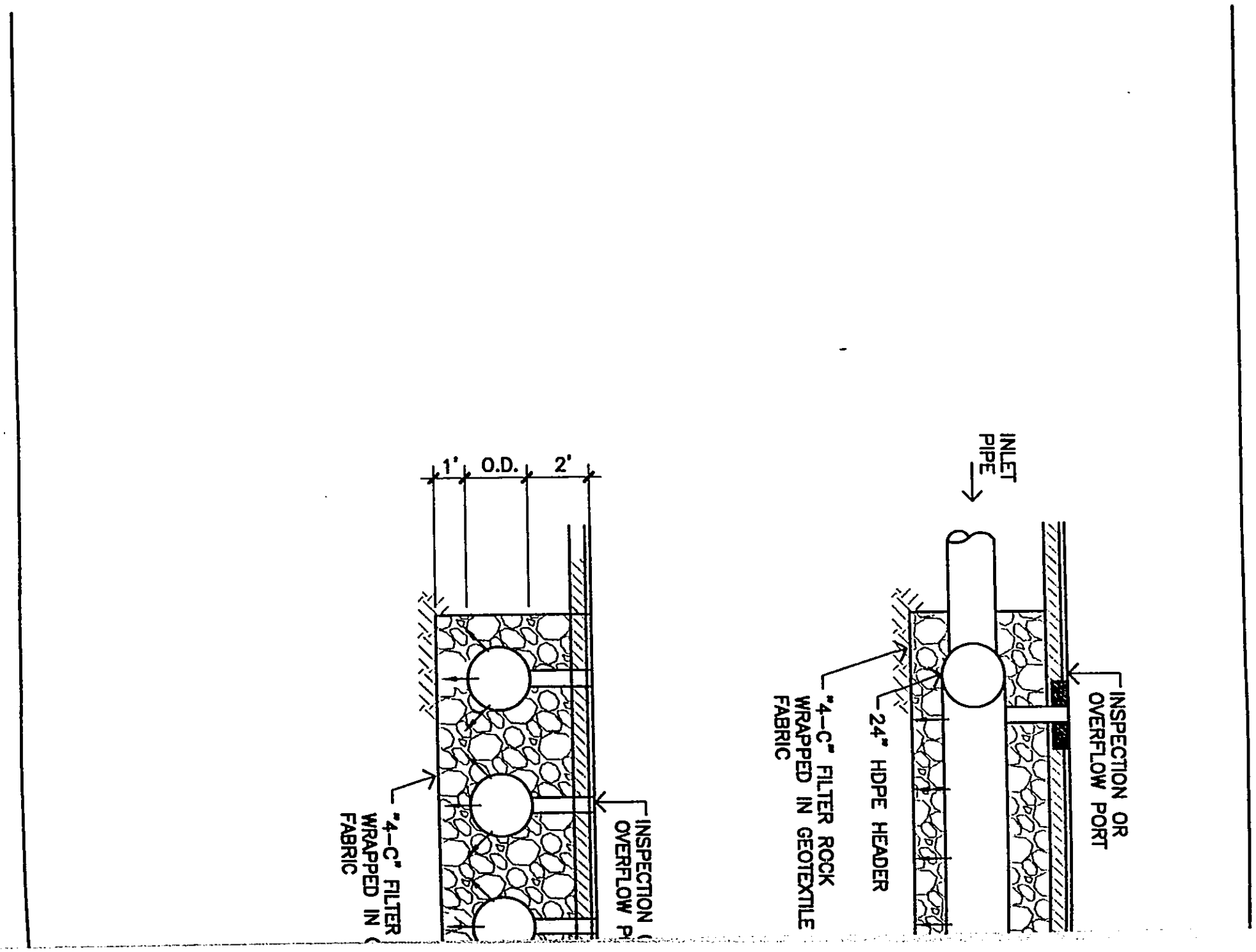

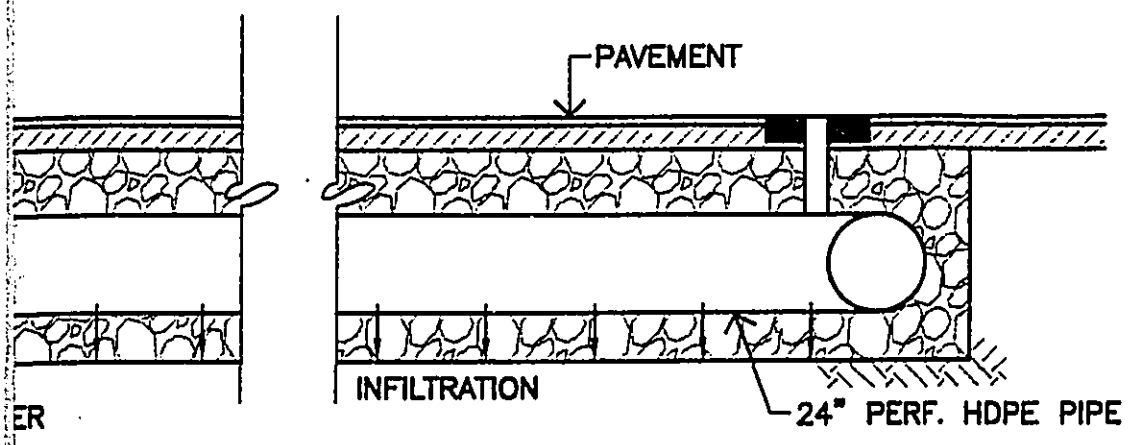

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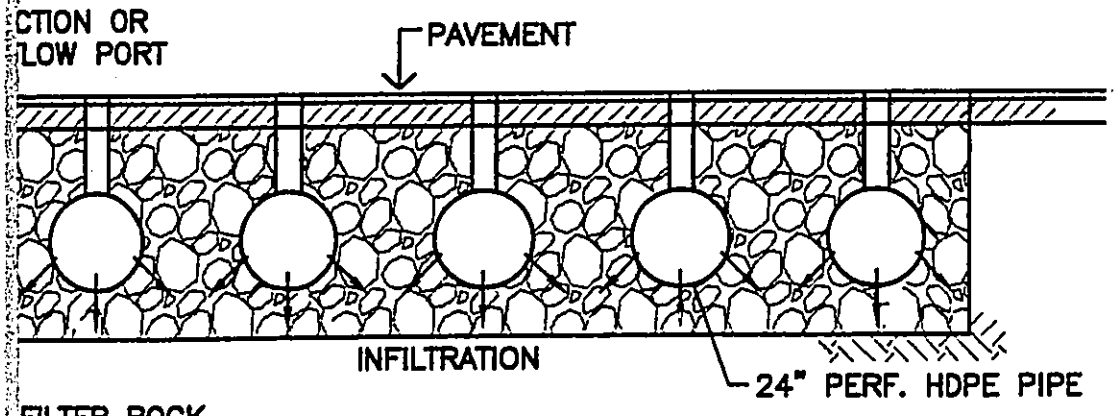

FILTER ROCK
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TRANSVERSE SECTION

DRAINAGE BASIN SECTIONS

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0 1 2 3 4 8 12

Figure 8
DATE: 08/03/04

PREPARED FOR: MUNEKIYO & HIRAGA, INC.

PREPARED BY: RONALD M. FUKUMOTO ENGINEERING, INC.

RECEIVED AS FOLLOWS

PARKING SUMMARY

	Required	Proposed
Building 'A' (Housing Division Office)		
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CODE INFORMATION

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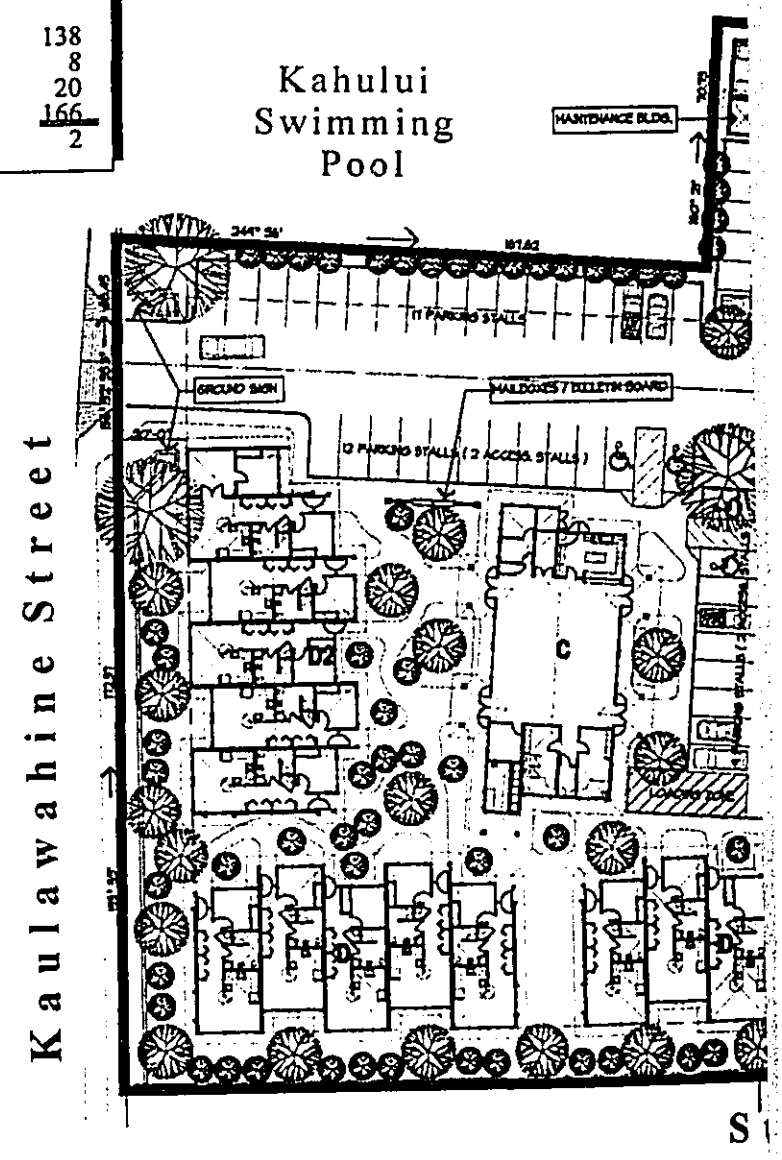
Flood Zone:	C
Exemptions:	--



Source: GYA Architects, Inc.

Figure 2

Central Maui Senior Housing an
Overall

Prepared for: County of Maui, Dept. of Housing and Human Concerns

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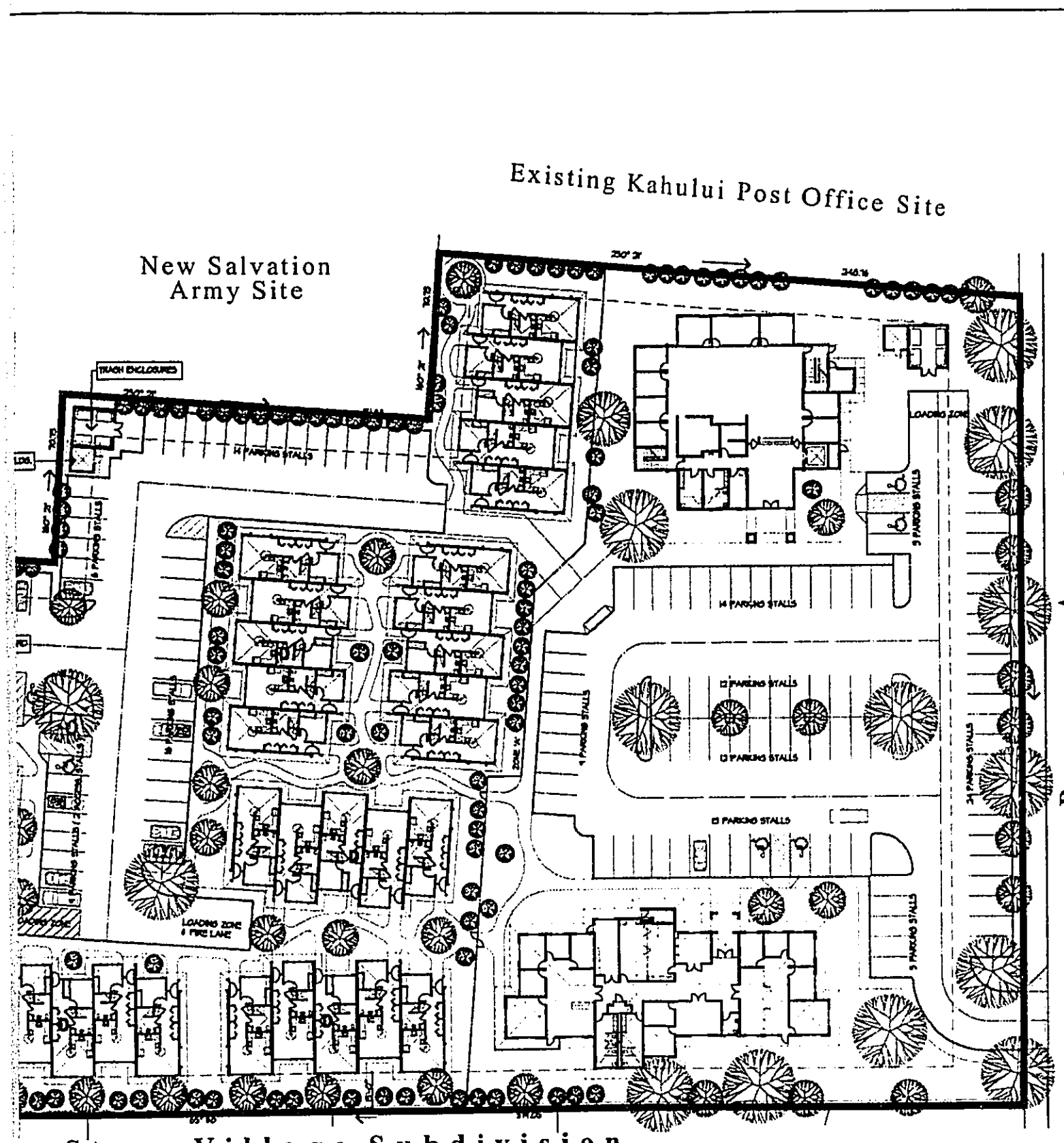

g and County Office Buildings Project

verall Site Plan

NOT TO SCALE

MUNEKIYO & HIRAGA, INC.